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James A. West

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## Traversing Swanton Road (10/08/2010)

By James A. West

Although synthetic in origin, Swanton Road, like its fluid counterpart Scotts Creek, traverses a substantial part of the watershed and reveals an informative cross-section of the region's flora. Without leaving the tarmac, one can journey the entire length of "Old Highway One" and observe/study some of Santa Cruz County's rarest, most horticulturally desirable, and just plain overlooked plant life! The Scotts Creek Watershed is more than an aggregation of **600+ native species (subspecies, varieties and forms)**, representing **282+ genera** and **90+ families**: it is that rare occurrence, a living window into California's evolutionary past, still relatively undeveloped by human activity and spared the habitat degradation that has befallen much of the coastal ecology elsewhere in our state.

Momentarily putting aside the nostalgic and visually arresting aspect of the watershed, it is paradoxical that an area logged, ranched/grazed and farmed for the past **130+ years**, could still yield species new to science and sustain habitats that serve as refugia for taxa rare elsewhere in the state. Because there is such a high percentage of the Golden State's native flora, **at least (10-12%) and still counting**, concentrated within **30 square miles**, this area is perhaps the ideal primer for students investigating, for example: **(1)** the underlying evolutionary mechanisms, which from an ecological perspective, define the interrelationships between four taxa within one genus (*Stachys*) sharing the same watershed, ranging from **site specific**, (a) *Stachys chamissonis*/China Ladder Marsh, (b) *Stachys ajugoides*/**seasonally wet, often poorly drained depressions**, (c) *Stachys rigida*/**mesic to xeric (edge of chaparral) habitats** and (d) *Stachys bullata*, **highly adaptive, ranging from coastal marshes, coniferous/oak woodlands, riparian corridor and occasionally extending up to chaparral.....** **(2)** reproductive isolating mechanisms and native versus introduced species of Hymenoptera comparing their overall versatility as pollinating vectors..... **(3)** the roles of mammals, birds and insects, intentional or otherwise, as dispersers of seeds and the co-evolutionary mechanisms involved..... **(4)** chemical signatures (**foliage and floral scents**) as taxonomic markers, used in conjunction with other morphological features to differentiate related taxa (e.g., locally problematic species of *Castilleja* (*Orthocarpus noctuinus*), *Layia*, *Madia*, *Mimulus*, *Monardella*, *Pseudognaphalium*, *Sanicula* and *Stachys*)..... **(5)** creating a digital library/herbarium documenting the watershed's flora at all stages of development (e.g., cotyledon configuration, seed structure and patterning)..... **(6)** habitat stability versus human induced disruptions and the resulting increase/decrease in patterns of biodiversity..... **(7)** palynological (pollen) studies involving core samplings taken throughout the watershed to ascertain historic changes within the local species composition..... **(8)** the geomorphic origins of the "vertical grasslands" and their value as refugia for rare taxa and holding succession in abeyance..... **(9)** slope orientation and the resulting changes in vegetation patterns within the same drainage system..... **(10)** the importance of cyclical riparian scouring to reinvigorate the established, long-lived vegetation and increase species diversity by uncovering seeds deposited and buried decades before in sandbars and adjacent stream banks paralleling the co-evolutional value of fire within the chaparral ecosystem..... **(11)** study gene flow patterns between a given species, e.g., coyote mint (*Monardella villosa*, sensu lato), which ranges elevationally from the coastal bluffs up to the chaparral and is represented in the watershed, **by two well defined subspecies.....** (a) map the distribution patterns of **subsp. villosa** and **subsp. franciscana** and the areas where their populations overlap, (b) what are the underlying ecological conditions that allow the two subspecies to maintain their distinctive phenotypes and where their ranges overlap, is there a breakdown in those distinctions (c) in terms of speciation, is **subsp. franciscana** more recently derived, and are there any mechanical or genetic barriers evolving or in place, save physical proximity, to prevent the exchange of genetic material between the two taxa?..... **(12)** the flowers of *Clarkia purpurea* subsp. *purpurea* and subsp.

*quadrivulnera* vary both within and between populations as to contrasting pigment patterns and their placement/dimensions: in terms of uv radiation absorbed or reflected and the ability of members of the Hymenoptera to perceive this part of the spectrum, is one pattern preferred over another by the prospective pollinators and how does this affect both the variability within and sustainability of the populations as a whole in a changing environment..... (13) undertake a study (a) documenting the primary hybrids locally of *Lupinus arboreus* with *Lupinus formosus* and *Lupinus variicolor* and the relationship of the stabilized taxon tentatively designated *Lupinus propinquus* to both *Lupinus arboreus* and *Lupinus latifolius*, (b) what role, if any, have the primary hybrids played in the variability of the contributing parents through backcrossing and (c) what evolutionary advantages/disadvantages are conferred where sympatric interfertile taxa are both perennial, but either evergreen or seasonal above ground and shrub-like versus decumbent in mode of growth?..... (14) the role of bryophytes: in (a) providing a favorable micro-habitat for seed germination, (b) creating a buffer zone between exposed rock formations with their potentially less than optimal pH and (c) through their hygroscopic capabilities, capturing atmospheric moisture, particularly between dusk and dawn..... (15) the comparative value of dissimilar types of recent and accumulated leaf litter (e.g., *Lithocarpus densiflorus* var. *densiflorus* = *Notholithocarpus densiflorus* var. *densiflorus*, *Arbutus menziesii*, *Sequoia sempervirens*) in mitigating the erosive power of heavy and often prolonged rainfall in unstable areas..... (16) the cumulative capacity of seasonally shed foliage from deciduous streamside trees and shrubs (e.g., *Alnus rubra*, *Sambucus racemosa*, *Salix lasiandra* var. *lasiandra*, *Rubus spectabilis*, *Acer negundo* var. *californicum*) in conjunction with exposed rocky debris, to influence flow patterns and act as catchbasins for particles in suspension..... (17) what isolating mechanisms, if any, allow two closely related species of *Collinsia*..... namely *C. heterophylla* and *C. multicolor*, to co-exist proximal to each other, along Swanton and Purdy Roads, without producing apparent hybrids even though visited by at least two shared pollinating vectors, both members of the genus *Bombus*, and what co-evolutionary factors are in play, causing the *C. heterophylla* populations to be **overwhelmingly pale-flowered**, while sister species *C. multicolor*, remains basically uniform in coloration throughout its range?..... (18) do long-lived fire responsive taxa, such as burl-forming members of the genus *Arctostaphylos*, maintain the integrity of their genome or does each episode of physiological trauma (fire), give rise to new growth, some/all of which display subtle modifications on a chromosomal level?..... (19) examine the evolutionary values conferred upon both native (*Camissonia ovata*, *Sanicula arctopoides*) and introduced (*Plantago lanceolata*, *Hypochaeris radicata*) taxa, where emerging foliage forms horizontally aligned rosettes initiated from fleshy, water-retaining root stocks, in a post-fire but pre-rainy season scenario.... with an emphasis on the rosette pattern: (a) securing valuable surface space from competition, (b) maximizing photosynthesis capabilities and (c) mitigating subsurface loss of moisture and the fleshy taproots: (a) having ample dormant buds to offset damage from the effects of fire plus potential for subsequent herbivory and (b) possessing sufficient stored water to bridge temporal gap until beginning of Fall rains..... (20) compare the net genetic gain/loss from a heterozygous/homozygous perspective, in a long-lived native grass (*Calamagrostis rubescens*), **whose basic mode of seasonal growth is vegetive** (from extensive clonal colonies growing within mixed conifer/oak woodlands) and typically produces inflorescences, only when disturbed by fire, landslides or through canopy removal (with the corresponding change in the light/temperature regimen)..... (21) do a comparative analysis of the watershed's oracle oaks (*Quercus x morehus*): focusing on (1) **ecological** (parental association, habitat preferences and role of disturbance in the broaching of reproductive isolating mechanisms), (2) **morphological** (bark topography, underlying vascular and epidermal patterns in foliage), (3) **physiological** (metabolism and growth rate behavior) and (4) **molecular** (chromosome numbers, mutation rates at specific gene loci, putative gene flow patterns and degree of pollen fertility and whether selfing, outcrossing and/or backcrossing are possible and historically can partially account for variability within the local forest live-oak (*Quercus parvula* var. *shrevei*) populations)..... (22) An extensive, in depth investigation of the variable taxon, Douglas's nightshade (*Solanum douglasii*), needs to be undertaken, sampling a wide range of habitats..... from the coastal bluffs up to the chaparral..... to determine, if all the forms in the watershed and its environs are indeed *Solanum douglasii*, and do those plants with lilac suffused corollas found on the immediate coast, represent past hybridization with the sympatric *Solanum umbelliferum* or is the distinctive anthocyanic pigmentation

found on stem, foliage and flowers, a physiological response to the stressful, unshaded headland habitat?..... (23) in a post-fire scenario, where weathered (both consolidated and in places fragmented) Santa Cruz Mudstone (the "Chalks") is the principal substrate and organic material (duff) is minimal at best..... (a) what is the viability status of the mature fruit (drupes and stones) in the non-burl forming Schreiber's manzanita (*Arctostaphylos glutinosa*) populations when compared with its burl-forming relative, *Arctostaphylos crustaceae* sensu lato, which by occupying the lower ridge tops and interfacing with the oak/conifer woodlands, has accumulated several centimeters of protective leaf litter?..... (b) when the temporal length between fires exceeds 60+ years and the seasonal deposition of manzanita "fruits" encased within the duff can be profiled vertically, have the "oldest" stones via the action of humic acid been rendered inviable..... are the most recently deposited mature fruits, lacking the insulatory protection afforded by the deeper layers of organic material destroyed by the "sustained" intensity of the fire, thereby leaving the "middle" layers of stones, the opportunity to germinate in a seedbed of ash-converted duff?..... (c) where the duff layer, as in the "Chalks", is sparse or absent and the triggering effects of smoke for germination not or minimally present, **can the cracks/fissures in the mudstone act as refugia** for replacement seedlings and are the presence of light, sustained moisture and mineral soil, sufficient to initiate germination and facilitate growth?..... (24) do an in depth analysis, between those sub-populations of *Pinus radiata* (**coastal bluffs/headlands**) outside of the direct influence of *Pinus attenuata* (via wind referenced pollen) and the sympatric sub-populations dominating the conifer/oak woodland interface with the chaparral..... focusing on (a) bark topography, branch alignment and overall growth structure, (b) leaf morphology, coloration, stomatal distribution, (c) cone structure..... color, size, profile/angle of attachment to branch, **with particular emphasis on apophysis and umbo gestalt..... the mucro points back down towards the base (point of attachment) of the ovulate cones in *Pinus radiata*, is dominant in hybrid, miniscule in stature and after a few seasons reduced to a basal scar thru weathering, while in *Pinus attenuata*, the mucro is orientated apically, claw-like, long persisting and recessive in the hybrid,** (d) seed and wing morphology and (e) **postulate the potential role of outlying individuals representing a hybrid population, removed from parental influence thru isolation, creating new resegregates via selfing and thru time, establishing a highly reticulate pattern of heterozygosity.....** (25) do a comparative analysis of the two coastal forms of *Triteleia laxa*..... **form #1** with laterally symmetrical stamens, whitish anthers and filaments of unequal length and **form #2** with radially symmetrical stamens, darker and narrower flowers, short, equal filaments and blue anthers that turn brown..... **to determine if there are two different breeding systems at play, with the regionally wide spread form #1 representing an outbreeding strategy while the immediate coastal headland form #2, in response to prevailing wind patterns, has developed an inbreeding, and consequently less variable from a morphological standpoint, reproductive system.....** (26) examine *Corallorhiza maculata* forma *immaculata* from an ecological, morphological and molecular perspective, **to determine whether local forma *immaculata*, warrants variety, subspecies or species status and is referable to var. *occidentalis*.....** (27) from a reproductive isolating mechanism perspective, study the following (often) sympatric pairs of related species found within the watershed and determine, (a) if gene flow (uni- or bi-directional) is possible and (b) if ecologically disruptive events (fire, mass wasting, cyclical flooding) can broach, otherwise well-established barriers to gene exchange: *Baccharis douglasii* and *Baccharis pilularis*..... *Stachys bullata* and *Stachys rigida*..... *Eriophyllum confertiflorum* and *Eriophyllum staechadifolium*..... *Epilobium ciliatum* and *Epilobium hallianum*..... *Trillium chloropetalum* and *Trillium ovatum*..... *Smilacina racemosa* and *Smilacina stellata*..... *Festuca elmeri* and *Festuca occidentalis*..... *Cryptantha clevelandii* and *Cryptantha micromeres*..... (28) with a substantial representation of both native (*Agoseris*, *Hieracium*, *Malacothrix*, *Microseris*, *Rafinesquia*, *Stebbinsoseris*, *Stephanomeria* and *Uropappus*) and introduced (*Crepis*, *Hedypnois*, *Hypochaeris*, *Latuca*, *Lapsana*, *Leontodon*, *Picris*, *Sonchus* and *Taraxacum*) members of the Asteraceae, subfamily **Cichorioideae** occurring within the area covered by this essay: do a comparative study/analysis (a) from a structural/engineering perspective of the wind dispersed (anemochory) cypselae via pappus, (b) the efficiency of the native versus introduced species dispersal strategies, (c) the effect of disturbance (fire, mass wasting, cyclical flooding patterns, agricultural practices) in maximizing these delivery systems/strategies and (d) map within area of discussion, the native versus introduced taxa

populations and ecological behavior (persistent versus ephemeral) over time..... (29) staying within the Asteraceae but this time the subfamily **Carduoideae**, focusing on the genus **Cirsium**: compare the behavior (population demographics and habitat preferences/response to disturbance and competition/genetic variability between populations) of Indian thistle (*Cirsium brevistylum*), Venus thistle (*Cirsium occidentale* var. *venustum*) and brownie thistle (*Cirsium quercetorum*), all native taxa, with the introduced bull thistle (*Cirsium vulgare*), (30) do an in depth study of the genus **Quercus**, subgenus **Erythrobalanus**, as it progresses up the Schoolhouse Ridge complex from the riparian corridor to the top of the watershed and determine: (a) where coast live-oak (*Quercus agrifolia* var. *agrifolia*) and forest live-oak (*Quercus parvula* var. *shrevei*) are sympatric, is the **foliar variability** of both taxa due, in part, to past hybridization, (b) is there any **reduction in fertility** for those trees which show some degree of intermediacy between the parental types, (c) in those areas where both taxa are growing intermixed, is there any evidence on a molecular level that shows inheritance of hybrid genes, even though from a morphological perspective, traits specific to one parent but not the other (stellate pubescence in abaxial vein-axils, number and orientation of foliar venation) are not apparent, (d) where forest live-oak (*Quercus parvula* var. *shrevei*) enters the chaparral and undergoes both a reduction in stature and change in foliar morphology, is this still the same taxon exhibiting an ecotypic response to a pronounced xeric environment or related chaparral live-oak (*Quercus wislizeni* var. *frutescens*) and (e) are there intergrades where these two related taxa meet and if so, is the gene flow uni- or bidirectional?, (31) with five native species of *Pseudognaphalium* and one putative natural hybrid..... fragrant everlasting (*Pseudognaphalium beneolens*), Bioletti's cudweed (*Pseudognaphalium biolettii*), California cudweed (*Pseudognaphalium californicum*), Gianone's everlasting (*Pseudognaphalium xgianonei*, pro.sp.nov.), pink everlasting (*Pseudognaphalium ramosissimum*) and cotton batting plant (*Pseudognaphalium stramineum*)..... residing within the watershed and in varying combinations, sharing the same habitat, often to the extent that they are growing intermixed: (a) with *P. xgianonei* (*P. californicum* x *P. stramineum*) being the most obvious (sharing an intermediacy in overall morphology and chemical signature) fertile hybrid combination observed, study this taxon's gene flow potential (selfing, sib-crossing and backcrossing to either/or both parents), habitat preference/adaptability for colonizing new environments and is this "new" taxon, a successful chance occurrence or where the parental species ranges overlap, sporadic?, (b) since *P. californicum* and *P. ramosissimum* are often found growing together and blooming concurrently, are the occasional plants of *P. californicum* with pinkish-tinged phyllaries, the result of hybridization or natural variation within the species? and (c) since the native *Pseudognaphalium* species, have **distinct chemical signatures** besides differences in foliar and floral morphology, do these species specific "scents" (when warmed by the sun and begin to vaporize) act like pheromones and aid in attracting pollinating vectors and effectively allowing sympatrically related taxa to maintain their genetic integrity?, (32) Where populations of **introduced** bull thistle (*Cirsium vulgare*) and **native** coast tarweed (*Madia sativa*) grow sympatrically: (a) what role does the glandular/viscid stems and herbage of the tarweed play in **trapping** (like flypaper) the airborne cypselae of the thistle and **concentrating** an otherwise wind-dispersed taxon within a localized area and thereby **increasing** the invasive potential/recruitment for future generations?, (b) study the post-fire ecological impacts of this native/exotic species interaction, where the ash-enhanced growth resulted in both taxa achieving heights/biomass in the 1.5-2(+) meters range and forming, on the *Madia sativa*, pappus cloaked barriers (visually akin to walls of down), (33) Do an in depth study of the California nutmeg (*Torreya californica*) found within the watershed (circa 2,000+ all age category individuals): (a) map and profile population sizes, habitat preferences, associate species and age/stature, (b) document recruitment patterns throughout watershed, (c) from an evolutionary and ecological perspective, analyze the post 2009 Lockheed and historical (if possible) fire responses and subsequent regenerative capabilities, (d) since this taxon is exceedingly long-lived and can perpetuate itself both sexually and asexually, map the genetic diversity within and between populations, clarifying what proportion is clonal versus seed derived in origin, (e) study the number of male to female adults in any given area and see what ratio is needed to establish successful fruit set, (f) do the resinous components found in the aril enclosing the seed, change from protective (when seed is developing) to palatable (when seed is mature and ready for dispersal) and are the clues cueing in the dispersing vector(s), visual (color change) and/or olfactory?, (g) does the aril protect the seed from

desiccation until suitable germinating conditions occur, does the aril have to be ruptured first to allow the mature seed to imbibe the necessary water to initiate germination and is darkness or light needed to initiate germination? and (h) since the majority of seedlings and immature adults are found growing as understory constituents, under shaded or dappled light conditions..... **is the reduction of aerial stature offset by the establishment of an extensive root system**, which when a break in the canopy cover by storm damage or the senescence of adjacent trees occurs, **allows the "waiting-in-the-wings" young adults to quickly take advantage of the change in light regime and "bolt"?**, (34) Distribution patterns and ecological constraints: (a) Why does crinkle-awn fescue (*Festuca subuliflora*) follow the coast redwood (*Sequoia sempervirens*) downstream of the Scotts Creek Bridge (albeit sporadically), while associate species further upstream..... red clintonia (*Clintonia andrewsiana*), slink pod (*Scoliopus bigelovii*), brook foam (*Boykinia occidentalis*), sugar-scoop (*Tiarella trifoliata* var. *unifoliata*), vanilla grass (*Hierochloa occidentalis*), two-eyed violet (*Viola ocellata*), redwood violet (*Viola sempervirens*), yerba de selva (*Whipplea modesta*) and deer fern (*Blechnum spicant*)..... have not expanded their ranges downstream, eventhough in varying combinations, this native species combo also occurs in the other sub-watersheds feeding into Scotts Creek proper?, (b) going from the moist and semi-shaded riparian corridor to the decidedly xeric chaparral and coastal scrub..... what ecological preferences confine the bird's-foot fern (*Pellaea mucronata* var. *mucronata*) to the upper reaches of the watershed (principally the "Chalks") while sister species, coffee fern (*Pellaea andromedifolia*), extends its range all the way down to the coastal headlands? and (35) Using GIS, LIDAR and other related mapping tools, see if there is a correlation between topography, geomorphology and biodiversity, **using the following areas within the Scotts Creek Watershed and the in situ documentation for those areas found within this essay..... area #1:** Schoolhouse Ridge complex, between Scotts and Mill Creeks, extending from Swanton Road up to the "Chalks", **area #2:** Old Schoolhouse Road, between Little and Winters Creek drainages, from Swanton Road to top of ridge/ Cemex property boundary, **area #3:** Laird Gulch complex, from Last Chance Road down to entrance into Scotts Creek, **area #4:** Magic Triangle Ridge/Synform drainage complex and the attendant 7+ "gulchlets" which coalesce into one narrow stem that enters Scotts Creek just below the Scotts Creek Bridge, **area #5:** the e/ne oriented drainage system, beginning near the Mt. Cook area and entering into Scotts Creek, between the confluences of Big and Little Creeks..... **also contains isolated chaparral disjunct, worthy of a study unto itself!, area#6:** the complex series of landslide derived, hydrologically active, benched marshes, beginning with "Beaver Flat" and stepwise, descending southward down to the "Marti's Park Marsh" and **area #7:** the west facing, grassland/chaparral mosaic..... beginning at the top of the Seymore Hill and flanked by Calf Gulch to the south and Bettencourt Gulch on the northwest.

With the distribution patterns of the coast redwood (*Sequoia sempervirens*) limited principally to tributaries and the upper/central portion of the Scotts Creek riparian corridor and not presently found proximal to the Scotts Creek Marsh environs, what factors can be marshalled to explain this conspicuous absence? Excluding human activity, one possible scenario involves the mycorrhizal associations between fungi, roots and seed germination. With shallow fungi-hosting root systems that can extend for hundreds of feet from the tree base and the capability of even relatively young trees producing thousands of seeds, there may be an advantage for the parent trees to establish outbreeding satellite colonies which are sympatric with but not directly competitive for light and subsistence, while retaining the ability to produce asexually, clonal facsimiles. The success of establishing satellite colonies may be offset by the increased seed production and corresponding over-utilization of fungal reserves in the sub-surface root systems, leading to cyclic periods of poor germination and subsequent production of weak, unhealthy seedlings. In the lower portion of the watershed (flood plain area), seasonal/cyclical periods of flooding may upset the balance between beneficial and pathogenic fungi, thereby creating a hostile environment for the long-term establishment of redwood colonies!

Before beginning our traversal, here are some background statistics relating to the flora of Swanton and its environs:

Of the **1,448 species** (native and introduced) listed in the recently published *An Annotated Checklist of the Vascular Plants of Santa Cruz County, California* by **Randall Morgan, et al (2005)**, in excess of **55%** occur within the area defined by our traversal! With reference to those native taxa designated as locally rare, **123+** are known to have occurred or currently reside within the watershed and its surroundings.

**Since much of the published literature dealing with the taxa discussed within this text does not reflect the most recent nomenclatural changes made due to ongoing molecular work, both the superceded and current names are used throughout this botanical overview of the Scotts Creek Watershed and its immediate environs.**

Representing the “Dicots”, the Asteraceae (a family undergoing extensive nomenclatural changes due to recent and ongoing molecular studies) scores big with **43+** genera containing species native to the area (*Achillea*, *Adenocaulon*, *Agoseris*, *Ambrosia*, *Anaphalis*, *Arnica*, *Artemisia*, *Aster\**, *Baccharis*, *Cirsium*, *Conyza*, *Ericameria*, *Erigeron*, *Eriophyllum*, *Euthamia*, *Filago*, *Gnaphalium\**, *Grindelia*, *Helenium*, *Hemizonia\**, *Heterotheca*, *Hieracium*, *Jaumea*, *Lasthenia*, *Layia*, *Lessingia\**, *Madia\**, *Malacothrix*, *Micropus*, *Microseris*, *Pentachaeta*, *Petasites*, *Psilocarphus*, *Rafinesquia*, *Senecio*, *Solidago\**, *Stebbinsoseris\**, *Stephanomeria*, *Symphyotrichum*, *Uropappus*, *Wyethia* and *Xanthium*).

- \**Aster chilense* = *Symphyotrichum chilense*
- \**Aster radulinus* = *Eurybia radulina*
- \**Gnaphalium bicolor* = *Pseudognaphalium biolettii*
- \**Gnaphalium californicum* = *Pseudognaphalium californicum*
- \**Gnaphalium canescens* ssp. *beneolens* = *Pseudognaphalium beneolens*
- \**Gnaphalium gianonei*, pro.sp.nov. = *Pseudognaphalium gianonei*, pro.sp.nov.
- \**Gnaphalium ramosissimum* = *Pseudognaphalium ramosissimum*
- \**Gnaphalium stramineum* = *Pseudognaphalium stramineum*
- \**Gnaphalium purpureum* = *Gamochaeta ustulata*
- \**Hemizonia corymbosa* = *Deinandra corymbosa*
- \**Lessingia filaginifolia* var. *californica* = *Corethrogyne filaginifolia*
- \**Microseris decipiens* = *Stebbinsoseris decipiens*
- \**Madia madioides* = *Anisocarpus madioides*
- \**Solidago californica* = *Solidago velutina* subsp. *californica*
- \**Solidago canadensis* subsp. *elongata* = *Solidago elongata*

Representing the “Monocots”, the Poaceae comes in with **19** genera containing species native to the area (*Agrostis*, *Bromus*, *Calamagrostis*, *Danthonia*, *Deschampsia*, *Distichlis*, *Elymus*, *Festuca*, *Hierochloe*, *Hordeum*, *Koeleria*, *Leymus*, *Melica*, *Nassella*, *Panicum*, *Phalaris*, *Poa*, *Trisetum* and *Vulpia*) and the Liliaceae (*sensu lato*) following up with an additional **15** genera (*Allium\**, *Brodiaea\**, *Calochortus*, *Chlorogalum\**, *Clintonia*, *Dichelostemma\*\**, *Disporum\**, *Fritillaria*, *Lilium*, *Scoliopus*, *Smilacina\**, *Trillium\**, *Triteleia\**, *Xerophyllum\** and *Zigadenus\**). With a combined total of **34** genera, the two largest “Monocot” families contributing to the area’s biodiversity are still outnumbered by the “Dicots” largest contributor, the Asteraceae, even with the removal of the cosmopolitan genus *Xanthium*, which has populations showing founder effects. **Reflecting the recent changes taking place, both within genera and families due to studies based on molecular data, the above statistical assessments no longer hold true!!!**

*Disporum hookeri* = *Prosartes hookeri*

*Zigadenus fremontii* = ***Toxicoscordion fremontii***

\**Allium* placed in **Alliaceae**

\**Brodiaea*, \**Dichelostemma* and \**Triteleia* placed in **Themidaceae**

\**Chlorogalum* placed in **Agavaceae**

\**Prosartes* (*Disporum*) placed in **Colchicaceae**

\**Smilacina* placed in **Ruscaceae**

\**Toxicoscordion* (*Zigadenus*), \**Trillium* and \**Xerophyllum* placed in **Melanthiaceae**

The Apiaceae contributes **15** genera: *Angelica*, *Apiastrum*, *Bowlesia*, *Cicuta*, *Daucus*, *Eryngium*, *Heracleum*, *Hydrocotyle*, *Ligusticum*, *Lomatium*, *Oenanthe*, *Osmorhiza*, *Perideridia*, *Sanicula* and *Yabea*.

The Rosaceae contributes **13** genera: *Acaena*, *Adenostema*, *Amelanchier*, *Aphanes*, *Fragaria*, *Heteromeles*, *Holodiscus*, *Horkelia*, *Oemleria*, *Potentilla*, *Prunus*, *Rosa* and *Rubus*.

The Fabaceae contributes **11** genera: *Acmispon*\*, *Astragalus*, *Hoita*, *Hosackia*\*, *Lathyrus*, *Lupinus*, *Pickeringia*, *Rupertia*, *Thermopsis*, *Trifolium* and *Vicia*.

\*the following taxa, formerly placed in the genus *Lotus*, are now called: *Lotus benthamii* = ***Acmispon cytisoides***, *Lotus heermannii* var. *orbicularis* = ***Acmispon heermannii* var. *orbicularis***, *Lotus humistratus* = ***Acmispon brachycarpus***, *Lotus junceus* var. *junceus* and var. *biolettii* = ***Acmispon junceus* var. *junceus* and var. *biolettii***, *Lotus micranthus* = ***Acmispon parviflorus***, *Lotus purshianus* var. *purshianus* = ***Acmispon americanus* var. *americanus***, *Lotus salsuginosus* var. *salsuginosus* = ***Acmispon maritimus* var. *maritimus***, *Lotus scoparius* var. *scoparius* = ***Acmispon glaber* var. *glaber***, *Lotus strigosus* = ***Acmispon strigosus*** and *Lotus wrangelianus* = ***Acmispon wrangelianus***.

\*the following taxa, formerly placed in the genus *Lotus*, are now called: *Lotus formosissimus* = ***Hosackia gracilis***, *Lotus oblongifolius* var. *oblongifolius* = ***Hosackia oblongifolia*** (according to J.H. Thomas: Flora of the Santa Cruz Mountains, *Lotus oblongifolius* var. *nevadensis* occurred in Swanton), *Lotus stipularis* var. *stipularis* = ***Hosackia stipularis* var. *stipularis*** (note: the isolated populations found on the Laird Gulch Ridge, having foliage and inflorescences covered with balsamic scented glands, fall within the circumscription of *Hosackia balsamifera* Kell.).

The Scrophulariaceae formerly contributed **10** genera: *Antirrhinum*\*, *Castilleja*\*, *Collinsia*\*, *Keckiella*\*, *Linaria*\*, *Mimulus*\*, *Pedicularis*\*, *Scrophularia*, *Triphysaria*\* and *Veronica*\*.

\**Antirrhinum*, *Collinsia*, *Keckiella*, *Linaria* and *Veronica* now placed in family **Plantaginaceae**, along with locally rare mare's tail (*Hippuris vulgaris*)

\**Castilleja*, *Pedicularis* and *Triphysaria* now placed in family **Orobanchaceae**

\**Mimulus* now placed in family **Phrymaceae**

The Brassicaceae contributes **9** genera: *Arabis*, *Athysanus*, *Barbarea*, *Cardamine*, *Caulanthus*, *Erysimum*, *Lepidium*, *Rorippa* and *Thysanocarpus*.

The Boraginaceae contributes **9** genera: *Amsinckia*, *Cryptantha*, *Cynoglossum*, *Emmenanthe*, *Eriodictyon*, *Heliotropium*, *Nemophila*, *Phacelia* and *Plagiobothrys*.

The Lamiaceae contributes **8** genera: *Lepechinia*, *Monardella*, *Pogogyne*, *Prunella*, *Salvia*, *Satureja*, *Scutellaria* and *Stachys*.



The Ranunculaceae contributes **7** genera: *Actaea*, *Anemone*, *Aquilegia*, *Clematis*, *Delphinium*, *Ranunculus* and *Thalictrum*.

The Plantaginaceae contributes **7** genera: *Antirrhinum*, *Collinsia*, *Hippuris*, *Keckiella*, *Linaria*, *Plantago* and *Veronica*.

The Caryophyllaceae contributes **6** genera: *Cardionema*, *Minuartia*, *Sagina*, *Silene*, *Spergularia* and *Stellaria*.

The Saxifragaceae contributes **6** genera: *Boykinia*, *Heuchera*, *Lithophragma*, *Saxifraga*, *Tellima* and *Tiarella*.

The Ericaceae contributes **5** genera: *Arbutus*, *Arctostaphylos*, *Gaultheria*, *Rhododendron* and *Vaccinium*.

The Polemoniaceae contributes **5** genera: *Allophyllum*, *Collomia*, *Gilia*, *Linanthus*\* and *Navarretia*.

\**Linanthus androsaceus* = ***Leptosiphon androsaceus***

\**Linanthus bicolor* = ***Leptosiphon bicolor***

**Five** of the ten described species for the orchid genus *Piperia* occur within the area under discussion, coast rein orchid (*Piperia elegans*), dense-flowered rein orchid (*Piperia elongata*), Michael's rein orchid (*Piperia michaelii*), royal rein orchid (*Piperia transversa*), **including a coastal form of Alaska rein orchid (*Piperia unalascensis*), which matches only the type collection from Unalaska Island!**

Scattered throughout the watershed, four representatives of the Willow Family (Salicaceae) occur, three often growing intermixed but in the case of Scouler's willow (*Salix scouleriana*), usually preferring its own company: the three considerably more gregarious family members are, arroyo willow (*Salix lasiolepis*), yellow willow (*Salix lucida* subsp. *lasiandra* = ***Salix lasiandra* var. *lasiandra***) and velvet willow (*Salix sitchensis*). **Since willows are dioecious, finding a large old specimen of arroyo willow in the upper portion of "Cookhouse Gulch" some thirty years ago producing several bisexual catkins (aments), definitely raised questions about the evolutionary scenario which gave rise to the dioecy of this globally widespread genus!**

Since the early 1970's, two "new to science" clovers (genus *Trifolium*) have been discovered and documented for the Swanton area. One species, **Santa Cruz clover (*Trifolium buckwestiorum*)**, has already been published and is listed FSC/1B while the second taxon, **headland clover (*Trifolium phisanthum* ssp.?)\***, is as yet, unpublished. Staying with the Legume Family (Fabaceae), there are **18+** native species of Clover (genus *Trifolium*), **13+** native species of Trefoil (genus *Lotus*) and **11+** native species of Lupine (genus *Lupinus*) calling the Swanton area home.

**\*Note: due to the misapplication of the name *Trifolium phisanthum* to a taxon originally given the working name of *Trifolium "pseudo-barbigerum"* and documented from the coastal prairie of the Old H-H Ranch circa 25 years ago, a different name will have to be proposed before this new and valid species is published! From a biogeographical perspective, this taxon has also been documented from the lower portion of Whitehouse Canyon in southern San Mateo County.**

Two endemic manzanitas, Schreiber's manzanita (*Arctostaphylos glutinosa* Schreiber) and a recently described and published taxon (*Arctostaphylos ohloneana* M.C.Vasey & V.T.Parker), possibly related to *Arctostaphylos manzanita* subsp. *laevigata* on Mt. Diablo, **are not known to occur outside of the Scotts Creek Watershed!**

Here is a **condensed listing** of native taxa, found within the Swanton area, that due to rarity, uncertain taxonomic status and/or horticultural value, **merit study**: mare's tail (*Hippuris vulgaris*)\*\*, beargrass (*Xerophyllum tenax*)\*\*, oracle oak (*Quercus x morehus*)\*, *Carex gianonei*, **pro. sp. nov.** /*Carex nitidicarpa*, **pro. sp. nov. complexes**\*, Kellogg's horkelia (*Horkelia cuneata* subsp. *sericea*)\*, San Francisco collinsia (*Collinsia multicolor*)\*, California lace fern (*Aspidotis californica*)\*\*, California sword fern (*Polystichum californicum*)\*\*, Schreiber's manzanita (*Arctostaphylos glutinosa*)\*, bent-flowered fiddleneck (*Amsinckia lunaris*)\*, purple godetia (*Clarkia purpurea* subsp. *purpurea*)\*, **Gianone's everlasting (*Gnaphalium gianonei*, pro. sp. nov. = *Pseudognaphalium gianonei*, pro. sp. nov.)\***, marsh microseris (*Microseris paludosa*)\*, lovage (*Ligusticum apiifolium*)\*, bitter cherry (*Prunus emarginata*)\*\*, Alaska rein orchid (*Piperia unalascensis*)\*, service berry (*Amelanchier utahensis*)\*, spotted coralroot (*Corallorhiza maculata* and forma *immaculata*)\*, Santa Cruz microseris (*Microseris decipiens*)\*, Blasdale's bent grass (*Agrostis blasdalei*)\*, banded owl's clover (*Castilleja exserta* subsp. *latifolia*)\*, owl's clover (*Castilleja densiflora* subsp. "?"/*Orthocarpus noctuinus* analog)\*, purple-beaked owl's clover (*Triphysaria micrantha*)\*, San Francisco popcorn-flower (*Plagiobothrys diffusus/reticulatus* = **Plagiobothrys diffusus**)\*, San Francisco wallflower (*Erysimum franciscanum*)\*, bouquet clover (*Trifolium grayi*)\*, Santa Cruz clover (*Trifolium buckwestiorum*)\*, **headland clover (*Trifolium "pseudo-barbigerum"?*)\***, Hoffman's sanicle (*Sanicula hoffmannii*)\*, **Gianone's sanicle (*Sanicula gianonei*, pro. sp. nov.)\***, green cottonweed (*Micropus californicus* var. *subvestitus*)\*, harvest brodiaea (*Brodiaea elegans* subsp. *elegans*)\*\*, Hall's willow herb (*Epilobium hallianum*)\* and Fremont's nemophila (*Nemophila pulchella* var. *fremontii*)\*.

**Note: As of 2007, curitorial action by R.B.Kelley, has reinstated the original diagnosis for Scotts Creek Watershed herbarium specimens tentatively labeled as the rare San Francisco popcorn-flower (*Plagiobothrys diffusus*) but interpreted by some students of the genus, more broadly..... including it within the circumscription of the *Plagiobothrys reticulatus* complex.**

**Note: Much work remains yet to be done in the way of documenting the flora and fauna, both native and exotic, within the Scotts Creek Watershed and its surrounding environs.** During the early 1980s, herbarium pressings numbering in the high hundreds, were made of key elements of the area's flora, specifically those taxa which were (a) putatively "new to science", (b) rare throughout their documented range, (c) represented disjuncts and/or potentially misdiagnosed components of wide ranging or highly localized taxa and (d) offered frames of reference towards the clarification of taxonomic problems found locally within "difficult" genera such as *Agrostis*, *Arctostaphylos*, *Carex*, *Castilleja*, *Clarkia*, *Festuca*, *Grindelia*, *Juncus*, *Melica*, *Microseris*, *Mimulus*, *Nemophila*, *Pinus*, *Piperia*, *Quercus*, *Sanicula*, *Trifolium* and *Trillium*. Between 2007 and 2009, in excess of 1,000 envelopes of in situ collected seed plus several hundred living collections (cuttings, divisions and entire plants) from the watershed, were deposited at the USCS Arboretum, with the ultimate goal: (1) to stock the newly expanded section featuring native taxa representing the biodiversity of the Central Coastal California ecosystem and (2) provide a comprehensive living data base for pursuing physiological, biochemical and genetic analyses, complementing the extensive herbarium documentation. Also noteworthy, are the ongoing photo-documentation projects, begun in the 1970's by the late Mike Perkins (**the localized and possibly extinct coastal populations of *Piperia unalascensis* survive via his 35mm slides**), greatly expanded by Dylan Neubauer and more recently, Brett Hall, and culminating with an ongoing digital library, set up by the CalPoly/Swanton Pacific Ranch (one of the few digital images of a local *Lupinus arboreus* x *Lupinus formosus* hybrid, taken in situ, resides in their collection). In the above condensed listing of native taxa, those species followed by an asterisk have been documented by pressings deposited in the Jepson Herbarium at UC Berkeley; the species with two asterisks following their Latin names have been validated by in situ study but need to be pressed and consigned to major herbaria; and finally, the taxa in boldface represent either new species or hybrid complexes yet to be published but given comprehensive documentation in the form of herbarium pressings which now reside in the Jepson Herbarium, UC

Berkeley. During the course of the past three decades, beginning with the early 1970s, three first class scientists/naturalists, all past or present associates with and products of the UC educational system, have added immeasurably to the understanding of what defines the Scotts Creek Watershed and its place relative to the other ecological “hot spots” within California. Randall Morgan/research associate with the California Academy of Sciences, Roy Buck, Ph.D./botanist and Grey Hayes, Ph.D./ecologist, with combined expertise in botany, ecology, taxonomy, entomology and ornithology, have synergistically created a base line that allows future students clearly defined directions of research to pursue. Equally important in the ongoing clarification of the watershed’s natural history, have been the contributions of five established scientists/teachers with broadbased research backgrounds , namely Roberta Smith, Ph.D./geologist (the geomorphology of the watershed), John Bulger, Ph.D./biologist (amphibians and birds, endangered or otherwise), Walter Mark, Ph.D./dendrologist (plant pathology and silviculture), Brian Dietterick, Ph.D./hydrology (watershed infrastructure) and Sean Hayes, Ph.D./ biologist (the endangered salmonids). Those of us who reside within the watershed and take pleasure from its unique biological and aesthetic attributes, owe a profound debt of gratitude to the aforementioned scholars/scientists and by extension, the parade of notables made aware through their researches, who also have visited the area and unanimously validated its worth.

By just traversing the Scotts Creek Watershed via Swanton Road, in excess of 267 native plant taxa have been visually documented, conservatively accounting for more than one third of the total native flora validated for the entire watershed!

### **The North Entrance to Last Chance Road**

Between the north entrance to Swanton Road and its contact point with Last Chance Road, the following high-profile “rarities”, “uncommoners” and “fascinating juxtapositions”, can be found growing specifically (1) on exposed, often fractured, bedding planes, (2) in the localized grasslands above them, or (3) along the moist ditches at their bases and their often drier mirror-imaged counterparts framing the outside edge of the roadbed:

Welcoming eager students/explorers of things botanical, red maids (*Calandrinia ciliata*) adorns the north entrance to Swanton Road with prostrate plants displaying satiny reddish-pink flowers circa 15-20 mm. across, while further along our route, half-hidden within a brush covered south-facing slope, minute-flowered cryptantha (*Cryptantha micromeres*) presents in contrary fashion, self-pollinating white flowers with corollas 0.5-1 mm. wide, these ultimately developing into a quartet of microscopic nutlets, three with backs fine-tubercled and the fourth larger in size and smooth surfaced! Sharing the same habitat and often growing cheek by jowl, Cleveland’s cryptantha (*Cryptantha clevelandii*), displays corollas 1.5-2.5+ mm. wide with 2-4 flat backed, smooth, mottled, gray brown nutlets. Joining the cryptantha duo and representing the Bellflower Family (Campanulaceae), Venus’s looking-glass (*Triodanus biflora*) merges with the surrounding greenery, its cleistogamous flowers virtually indistinguishable from the subtending leaves, with only the terminal blue-violet flowers visible. Giving contrast with prostrate mats of cinereous foliage, which carpet the roadside edge, Heerman’s trefoil (*Lotus heermannii* var. *orbicularis* = *Acmispon heermannii* var. *orbicularis*), offers the aesthetically motivated landscaper a choice perennial to incorporate into the native rockery. Half-hidden within the roadside grasses and widespread throughout the watershed, Ithuriel’s spear (*Triteleia laxa*) displays considerable variation both as to stature and flower color. Two distinct forms occur within the watershed: **form (a) with laterally symmetrical stamens, whitish anthers and filaments of unequal length while form (b) has radially symmetrical stamens, darker and narrower flowers with short, equal filaments and blue anthers aging brown.** Imparting, both color and seductive fragrance, California wild rose (*Rosa californica*), less refractory than its horticulturally manipulated relatives, offers the native gardener a diverse series of variants from just within the Swanton area..... while further along, a solitary specimen of Michael’s rein orchid (*Piperia michaelii*), introduces to the biogeographer and jaded orchid fancier, **the first of three native species of *Piperia* to be**

encountered as our journey unfolds.

Rare statewide, San Francisco champion (*Silene verecunda* **subsp. verecunda**) and Santa Cruz microseris (*Stebbinsoseris decipiens*), **both FSC/1B agency-listed taxa**, bookend the frozen stream of asphalt. The Santa Cruz microseris, is an allo-tetraploid species derived from coast microseris (*Microseris bigelovii*) and silver puffs (*Uropappus lindleyi*), and exists in at least twenty reproductively isolated populations within the watershed, each exhibiting different recombinations of parental traits, making an ideal living laboratory for the study of species formation and the dynamics of population biology. Also along this stretch of road, a small population of coast microseris (*Microseris bigelovii*), one half of the diploid team responsible for parenting the Santa Cruz microseris, occupies a narrow and exposed 1-2 meter long slice of road bank, vulnerable like its rare offspring, to potential traffic abuse. More generously distributed, silver puffs (*Uropappus lindleyi*), the other diploid component in the hybrid equation, not only shares the occupancy of its celebrated offspring's precarious niche but also resides more securely on the grassy slopes overlooking the diploid/tetraploid intrigues.

(A) Since *Stebbinsoseris decipiens* is an allo-tetraploid ( $2n=36$ ), derived from two diploid species, *Microseris bigelovii* ( $2n=18$ ) x *Uropappus lindleyi* ( $2n=18$ ), is the gene flow between the diploid species uni- or bi-directional? Can *S. decipiens* arise equally from *M. bigelovii* x *U. lindleyi* and *U. lindleyi* x *M. bigelovii* combinations?

(B) What is the pollinating vector and do all pollinations result in successful fertilizations and subsequent production of allo-tetraploid *S. decipiens* or is this a rare occurrence?

(C) Are there diploid *S. decipiens* and if so, are they interfertile with either of their diploid parents?

(D) Can backcrosses between allo-tetraploid *S. decipiens* and either of its diploid parents occur and do these, if possible, result in sterile triploids?

(E) When *Uropappus* consisted of two species (Jepson Manual, 1925), *U. linearifolia* with blackish achenes/deciduous silvery pappus and *U. lindleyi* with tannish achenes/± persistent dull brown pappus, was *U. linearifolia* the true species and *U. lindleyi* (in part) what is now considered *S. decipiens* or is there still an unnamed taxon out there?

(F) Since *Stebbinsoseris decipiens* and its half-sister species *S. heterocarpa* are both allo-tetraploids, sharing *U. lindleyi* as a common parent, are they interfertile should their populations overlap?

(G) With at least **20 documented populations** of *Stebbinsoseris decipiens* found in the watershed and its surrounding environs..... (a) is there gene flow between sympatric populations, (b) are the more isolated populations thru inbreeding, diverging from the common genotype in response to localized ecological pressures, (c) do larger populations, comprising 200+ individuals dispersed over a topographically diverse area, display more heterozygosity than smaller, concentrated ones and (d) what survival strategies has this allo-tetraploid taxon developed, **in response to prolonged drought, successional behavior of surrounding vegetation, herbivory and infrequent but often devastating fires**..... how many seasons, once the mature cypselae have been dispersed, can they persist in the surrounding environment before they start losing their viability and is substrate low in organic content versus one rich in accumulated duff, a significant factor influencing the long-term survival of a given population?

The recently described *Festuca roemerii*, densely caespitose and basally circumscribed by vole runs, shares the tilted grassland with a perversely erect clarkia, aff. *Clarkia davyi*, displaying bicolored flowers and gray-encrusted seeds, which may prove to be a normally erect "new" species and along with blue toadflax (*Linaria canadensis*), junegrass (*Koeleria macrantha*), footsteps-of-spring (*Sanicula arctopoides*) and saw-toothed spurge (*Euphorbia spathulata*), can be viewed with 20/20 vision or a pair of binoculars, overlooking the road cut. One of five native species of violets found within the watershed, Johnny jump-up (*Viola pedunculata*), with deep-seated rootstocks and pumpkin colored flowers circa 3-3.5 cm. across, can easily hold its own against the extensively hybridized European violets (Pansies) while coast larkspur (*Delphinium decorum* subsp. *decorum*), sharing the same botanically diverse environment with a small colony of white globe lily (*Calochortus albus*), spills down the bank, yielding up flowers colored a vibrant bluish-purple. Beginning and ending our botanical quest as subsp. *franciscana*, with thick, sub-orbicular,

tomentose leaves, coyote mint (*Monardella villosa*) between Scotts Creek and Big Creek Bridges, undergoes a nomenclatural change, becoming subsp. villosa, with thin, sparsely pubescent ovate leaves and a different chemical signature. Growing on exposed slopes throughout the length of our survey and acting as an important soil stabilizer, Torrey's melic (*Melica torreyana*), varies considerably as to length and openness of inflorescence, one isolated population overlooking the lower portion of Schoolhouse Gulch averaging 35-40 centimeters between lowest flowering branch and apex. **This grass species displays numerous forms throughout the watershed and with so much material available, warrants an in depth investigation into: (1) which forms are genetically fixed regardless of habitat as opposed to those forms, whose overall gestalt are the result of environmental vagaries (light/shade conditions, vertical/horizontal orientation, presence/absence of continual moisture, competing vegetation pressures, etc.), (2) are there different breeding systems in play, obligate selfing versus outbreeding patterns which correlate with inflorescence configurations, (3) how do any/all of these forms behave when raised under uniform controlled conditions and in a broader sense, do any of these local forms appear, with some consistency, elsewhere within the known range of the species.**

The Davy's clarkia (*Clarkia davyi*) and prostrate clarkia (*Clarkia prostrata*) issue stills remains unresolved taxonomically, at least as far as the north end of Santa Cruz County (the Swanton area) is concerned. Within the purview of our traversal, what appears to be prostrate clarkia (*Clarkia prostrata*) favors a prostrate to ascending mode of growth, generally prefers siliceous terrace deposits on the coastal prairie, displays **concolored flowers**, distinctly pedicellate mature capsules and **dark brown unadorned seeds**; the defiantly erect Davy's clarkia (*Clarkia davyi*), overlooking the north end of Swanton Road is found growing in grasslands whose underpinnings are derived from mudstone, exhibits a consistently erect mode of growth, flaunts **bicolored flowers** which when successfully fertilized, yield capsules, sessile through pedicellate, housing distinctly **gray-encrusted seeds**. These two, decidedly uncommon species of Clarkia, are rarely found growing sympatrically but when they occasionally overlap in habitat preferences, **no** intermediates have been found. When raised together in an open breeding situation, again **no** hybrids and each "species" as per flower color/seed type, consistently perpetuates itself. The type specimens for both Davy's clarkia (*Clarkia davyi*) and prostrate clarkia (*Clarkia prostrata*) need to be studied and compared with our local taxa and chromosome determinations made. With **three disjunct viable populations** of rare purple godetia (*Clarkia purpurea* subsp. *purpurea*) occurring in the Swanton area, a biogeographical investigation into the evolutionary origins of this horticulturally desirable and amenable to cultivation taxon should be undertaken. Are the Swanton populations related genetically to those documented for the Great Central Valley or are they independently derived, an evolutionary response to the prevailing coastal wind patterns and competition from the surrounding grassland vegetation, resulting in reduced stems and inflorescence axes with corresponding density of flower heads and enlargement of floral parts (reduction/augmentation)? Do a comparative analysis between the three local populations with emphasis on edaphic/habitat preferences, sympatry (if any) with related four-spotted godetia (*Clarkia purpurea* subsp. *quadrivulnera*) examining the potential for/direction of interspecific gene flow, and specificity of pollinating vector(s), differences in stature, variability in floral coloration/patterning, capsule and **seed size**, ect., between coastal Lasher Marsh and inland Seymore Hill populations.

Two distinct components of the *Mimulus guttatus* complex occupy moist zones above and below the southeast-facing hairpin turn overlooking Harry Wain's Arroyo. First, is a reduced, inodorous form of var. arvensis, with truncate calyces and a deep, open throat with suppressed longitudinal folds that can be found growing on seasonally moist rock faces. Second, is a rare, immaculate variant of var. grandis, with corollas wholly lacking the maroon spotting immortalized in its species name; it grows intermixed with the honey-scented *forma typica*, amongst Pacific bog-rush (*Juncus effusus* var. pacificus) and brown bog-rush (*Juncus effusus* var. brunneus = *Juncus hesperius*) tussocks. Vegetatively resembling a blue-eyed grass (*Sisyrinchium bellum*), which is found growing roadside further along on our journey, brown-headed rush (*Juncus phaeocephalus* var. phaeocephalus), rhizomatously weaves its way through the densely packed culms of its towering relatives, lost to all but the discerning eye. Sharing this already bursting-at-the-seams

micro-marsh, is tinker's penny (*Hypericum anagalloides*), living up to its name, by mimicking the foliage of the scarlet pimpernel (*Anagallis arvensis*), water smartweed (*Polygonum punctatum* = *Persicaria punctata*), a native member of the Buckwheat Family (Polygonaceae), herbage stippled with transparent glands redolent of freshly cut green apples and a blue-flowered cousin of the aforementioned common monkeyflower, American brooklime (*Veronica americana*), putting out roots whenever its reddish-purple stems come in contact with moisture. Growing between asphalt and periphery of the drainage channel, California vervain (*Verbena lasiostachys* var. *lasiostachys*), lacking the visual impact of its domesticated relatives from the Midwest, redeems itself by being both long lived and resistant to all kinds of maltreatment while Mexican plantain (*Plantago subnuda*), a stately native with conspicuously ribbed leaves and virgate inflorescences, barely hangs on to its razor-thin perch. Found in a few isolated areas within the Swanton area, moisture loving blinks (*Montia fontana*), superficially resembles a prostrate chickweed and tends to be overlooked or ignored because of this hastily arrived at assumption, but as to familial affinities, is a member in good standing of the Purslane Family (Portulacaceae)!

The *Mimulus guttatus* complex presents manifold challenges for the taxonomist, not the least being, whether it is prudent to follow the "lumper" or "splitter" path and justifying the rationale behind making that decision. Within the boundaries of our traversal, there are several reoccurring phases found, that when growing sympatrically, display no evidence of gene exchange. Such is the case with var. *arvensis* and var. *grandis*, one appearing **scentless** while the other, in bright light, emitting a **melliferous odor**. Other local members of this complex are:

*Mimulus nasutus*: formerly considered a valid species and alternately called *Mimulus guttatus* var. *gracilis*, usually found growing on sandbars along the riparian corridor and distinguished by calyces with upper middle lobe  $\pm$  3-times as long and forward pointing, the lower lip of corolla with a distinctive, centrally located, red-brown blotch and deeply lacerate leaves with velvety patches, adaxially. May be obligate selfer in spite of open flowers, as no intermediates found when growing sympatrically on sandbars with out-breeding common monkeyflower (*Mimulus guttatus* sensu lato). **A concentrated population, with the majority of plants exceeding a meter in height, was observed post-Lockheed 2009 Fire (05/2010), margining the moisture saturated banks of a near-vertical gulchlet draining down into Little Creek.**

*Mimulus*, aff. *nasutus*: a nanistic ecotype, restricted to **seasonally wet**, exposed bedding planes, growing out of patches of moss, both on the immediate coast and inland (upper portion of Calf Gulch). Flowers cleistogamous, corollas not opening and expelled from calyces as pale-yellow sausage casings. Quadrate stems can be clothed with short trichomes or be glabrous, but not in the same population. Plants raised from seed in a controlled environment with a continuous supply of water, upon reaching anthesis, transition from cleistogamous stage to one in which flowers open, showing lower lip with centrally positioned maroon blotch, **but still appear to be self-pollinating.**

*Mimulus*, *guttatus* complex: an isolated population growing in a **permanently wet seep**, lower Seymore Field, under a redwood (*Sequoia sempervirens*) grove along with scattered plants of floriferous monkeyflower (*Mimulus floribundus*). Possible affinities with *M. nasutus*, (1) lower leaves widely rounded, shallowly dentate to irregularly lacerate/lobed, particularly near base, **unmarked and uniformly green** on adaxial surface with distinctive erect trichomes looking like hypodermic syringes with attenuate apices (result of aging?), (2) pedicels with short gland-tipped trichomes near base, bases of upper subtending leaves viniferous or not, this coloration also extending in varying degrees to petioles, plicate ribs of calyces and their apices, with/without scattering of like-colored inter-costal dots, (3) observed flowers, 10/13/06, cleistogamous, corollas not opening and expelled from calyces as pale-yellow sausage casings (correlation with late-in-season flowering?), (4) sharing habitat with these late-flowering cleistogamous plants, were spent remnants of the current season's earliest bloomers and **a new generation of recently germinated seedlings** of this **annual component** of the *Mimulus guttatus* complex!

*Mimulus*, aff. *guttatus* complex: a distinctive taxon with  $\pm$  glaucous stems and leaves, upper leaves

connate-perfoliate and flowers pale yellow and scentless, was discovered more than two decades ago growing on a sandbar in the upper Scotts Creek Watershed, indicating a possible affinity with *Mimulus glaucescens*.

Several years ago, while studying the behavior and breeding potential of *Mimulus guttatus* var. *grandis*, I decided to see how my emasculated plants would react when pollen from sticky monkeyflower (*Mimulus aurantiacus*), scarlet monkeyflower (*Mimulus cardinalis*), floriferous monkeyflower (*Mimulus floribundus*) and musk monkeyflower (*Mimulus moschatus*) was placed on their receptive stigmas. To my surprise, rather than reject the foreign pollen and dry up, all of the pollinated flowers started to initiate swollen ovaries, these ultimately developing into capsules filled with viable seed. Equally surprising, was the result of the several flats sown, all the seedlings ultimately turned out to be perfect replicas of their *Mimulus guttatus* var. *grandis* parent. Apparently the placement of foreign pollen on the stigmas of my *Mimulus guttatus* var. *grandis* plants induced apomixis, or in the vernacular, having your cake and eating it too. **If not an isolated and aberrational event, then a fascinating evolutionary strategy: when your genetic integrity is inadvertently or otherwise challenged, overwhelm the potential threat with numerous replicas of yourself!**

As our journey of botanical discovery unfolds, it is of paramount importance to realize that outside of the constraints imposed by being restricted to the road proper, areas with a complex assemblage of “rare and unusual” taxa abound, **within view but not physically accessible!** Two such “hot zones”, comprising the headlands overlooking/bookending the north-west and south-east edges of Greyhound Rock State Beach in orientation, concentrate a multitude of rare and site-specific species into relatively narrow strips of coastal habitat, squeezed between Highway 1 and a vertical drop in excess of 80 feet. Looking up, we see the near-vertical, perpetually exfoliating cliffs, with their seasonal waterfalls and perennial seeps..... here common monkeyflower (*Mimulus guttatus*) cloaks the weathered face of the dampened mudstone, displaying sun drenched corollas redolent of honey. Vying for attention on the precarious wind-buffeted exposures and held hostage by the ever-changing hydrology, Watson's willow herb (*Epilobium ciliatum* subsp. *watsonii*) in a reduced stature, shows off intensely pigmented cerise flowers looking like miniature pin-wheels. Sharing this specialized habitat, are distinctive micro-populations of small-leaved bentgrass (*Agrostis microphylla*), needing to be analyzed and carefully compared with the type..... from both a taxonomic and ecological perspective, two questions need answering: **(1) since the taxon in question possesses a palea and the overall description for *Agrostis microphylla* states palea wanting/none, what taxonomic value can be assigned to the presence/absence of such an organ? and (2) what breeding systems are in play within these isolated populations..... are these obligate selfers, creating in effect, a constellation of micro-species, occupying proximal but separate vertical niches?** A momentary detour to a unique habitat between the cliff bases and primary dunes yields several species losing ground along the immediate coast: fragrant cousin of the horticulturally manipulated bougainvillea, yellow sand-verbena (*Abronia latifolia*) survives the punishing winter storms by anchoring itself with extensive, cord-like root systems, as does sympatric beach morning glory (*Calystegia soldanella*), Vancouver's rye grass (*Leymus x vancouverensis*), and sand-dune bluegrass (*Poa douglasii*). In the seasonally moist depressions behind the dunes, another “native” plantain luxuriates, this inconspicuous annual species, the decidedly uncommon California coast plantain (*Plantago elongata*), superficially looking like its omnipresent relative California plantain (*Plantago erecta*). Sharing this seasonally reconfigured environment, are beach bur (*Ambrosia chamissonis*), mock heather (*Ericameria ericoides*), California sagebrush (*Artemisia californica*), deerweed (*Lotus scoparius* var. *scoparius* = *Acemispom glaber* var. *glaber*), stephanomeria (*Stephanomeria* aff. *virgata* subsp. *pleurocarpa*..... **in light of recent molecular based taxonomic work on this and related species of Stephanomeria, a revisiting and thorough exploration of this maritime population's habitat should be undertaken, since a major landslide buried the originally observed colony and as of 08/10/2010, no trace of this taxon was found**) with outer phyllaries appressed, achene clavate, tannish, 5-sided with each facet lined from top to bottom with two rows of slightly raised verrucosities, pappus white and plumose throughout, leatherleaf dock (*Rumex salicifolius* var. *crassus* = *Rumex crassus*), coast buckwheat (*Eriogonum latifolium*), yarrow (*Achillea millefolium*), coyote brush (*Baccharis pilularis*),

morning glory (*Calystegia purpurata* subsp. *purpurata*), sticky monkeyflower (*Mimulus aurantiacus*), yellow bush lupine (*Lupinus arboreus*), California figwort (*Scrophularia californica* subsp. *californica*), California cudweed (*Pseudognaphalium californicum*), pink everlasting (*Pseudognaphalium ramosissimum*), cotton batting plant (*Pseudognaphalium stramineum*), beach evening primrose (*Camissonia cheiranthifolia* subsp. *cheiranthifolia*), beach saltbush (*Atriplex leucophylla*) and marsh gumplant (*Grindelia* aff. *stricta* var. *angustifolia*). Growing within the embrace of arroyo willows (*Salix lasiolepis*), California blackberries (*Rubus ursinus*), lizard tail (*Eriophyllum staechadifolium*) and poison oak (*Toxicodendron diversilobum*), scattered representatives of the ***Carex gianonei*, pro. sp. nov. complex** thrive, sending their keiki-laden aerial stems up through the surrounding scrub, the origins of this taxonomic conundrum most likely the marshes, which back/margin gulches draining the coastal prairie via seasonal waterfalls. While revisiting this section of maritime habitat on 08/10/2010, these additional "natives" were accounted for: saltgrass (*Distichlis spicata* var. *stolonifera*), Torrey's melic (*Melica torreyana*..... **a reduced in stature form with abbreviate inflorescences**), Indian thistle (*Cirsium brevistylum*), coast tarweed (*Madia sativa*), rattlesnake weed (*Daucus pusillus*), cow-parsnip (*Heracleum maximum*), sea lettuce (*Dudleya caespitosa*), oso berry (*Oemleria cerasiformis*), bracken (*Pteridium aquilinum* var. *pubescens*), Cleveland's cryptantha (*Cryptantha clevelandii*) and Monterey pine (*Pinus radiata*).

In spite of human activity, encompassing both vehicular and foot traffic, numerous micro-habitats, featuring concentrated species diversity can still be found within this unique environment, where earth, sky and sea meet! Half hidden within the coastal scrub, purple-suffused California broomrape (*Orobanche californica* subsp. *californica*), a species complex unresolved taxonomically, parasitizes Pacific gumplant (*Grindelia stricta* var. *platyphylla*), ironically belonging to another genus with poorly defined elements locally. Sharing this wind-buffeted perch, eight members of the Sunflower Family (Asteraceae), when not in flower, would leave most observers hard pressed to see the familial connection: the octet being mock heather (*Ericameria ericoides*), coast sagewort (*Artemisia pycnocephala*), western goldenrod (*Euthamia occidentalis*), coyote brush (*Baccharis pilularis*), seaside daisy (*Erigeron glaucus*), brownie thistle (*Cirsium quercetorum*), cotton batting plant (*Pseudognaphalium stramineum*) and Eastwood's dandelion (*Agoseris apargioides* var. *eastwoodiae*). Drawing from the Grass Family (Poaceae), diversity also prevails, with the following quintet of species persisting despite the unrelenting exposure to sun and westerly winds: wild rye (*Elymus glaucus* subsp. *virescens*), meadow barley (*Hordeum brachyantherum* subsp. *brachyantherum*), seaside brome (*Bromus carinatus* var. *maritimus*), Torrey's melic (*Melica torreyana*) and an isolated reduced-in-stature variant of tall trisetum (*Trisetum canescens*). Sheltered within a few brush-cloaked depressions and meriting horticultural consideration, is the rare local form of San Francisco wallflower (*Erysimum franciscanum* var. ***crassifolium***), suffrutescent in mode of growth, with fleshy leaves and intensely fragrant yellowish flowers. Other species adding to this texturally diverse assemblage of uncommon forms of widespread taxa and unexpected juxtapositions, are hill morning glory (*Calystegia subacaulis* subsp. *subacaulis*), a visually arresting and eminently-worth-of-cultivation form of checker lily (*Fritillaria affinis*, aff. var. *tristulis*), displaying outsized pendant flowers simulating Tiffany lampshades colored an opalescent maroon, the ubiquitous California plantain (*Plantago erecta*), **represented by a particularly robust ecotype looking more like a "new" species**, while offering competition in the olfactory arena, a member of the Rosaceae with foliage saturating the surrounding environment with an unforgettable pungency, wedge-leaved horkelia (*Horkelia cuneata* subsp. *cuneata*) sharing a low-to-the-ground status and also with aromatic herbage but this time clothed with a silky indument topped with contrasting inflorescences of gold, Bolander's golden aster (*Heterotheca sessiliflora* subsp. *bolanderi*). Given structural support by the extensive colonies of poison oak (*Toxicodendron diversilobum*) and associated interdigitating shrubbery, mainly California sagebrush (*Artemisia californica*) and coyote brush (*Baccharis pilularis*), two native species of nightshade, Douglas's nightshade (*Solanum douglasii*) and blue witch (*Solanum umbelliferum*) afford the observant sleuth contrast in floral gestalt, color and presence/absence of scent.



Segueing back to the bluffs, where sufficient moisture is present, western dock (*Rumex occidentalis*), a visually arresting taxon reaching 2+ meters in height, displays mature stems and inflorescences pigmented a luminous reddish-pink and sports a hefty chromosome count of  $2n=140, 200!$  A small drainage depression perched high on the bluffs overlooking the northwest end of Greyhound Rock State Beach and part of a fragmented marsh of unknown age, no more than 10 meters square and buffered from unwarranted human intrusion by an acre or so of poison oak (*Toxicodendron diversilobum*), is home to Blasdale's bent grass (*Agrostis blasdalei*), one of California's rarest grasses and Michael's rein orchid (*Piperia michaelii*), an orchid of uncommon occurrence. Unexpectedly, two more frequently encountered relatives of the aforementioned duo also occur within this "pocket of diversity", namely California bent grass (*Agrostis densiflora*) and coast rein orchid (*Piperia elegans*). This juxtaposing of rare and common members of the same genus occurs throughout the Scotts Creek Watershed and the areas bordering it, providing an abundance of material to predicate an ecological inquiry into the mechanics of reproductive barriers and their effectiveness. Surrounding and nestled within this "congregation of rarities" are one-leaved onion (*Allium unifolium*), a descriptive name at odds with this species' actual foliar status, Wight's paintbrush (*Castilleja wightii*), reduced in stature with pale yellow flowers and crowded glandular-puberulent stems, Mexican plantain (*Plantago subnuda*), a stately native representative of a genus known principally for its weedy and invasive members, plus selfheal (*Prunella vulgaris* var. *lanceolata*), an inodorous member of the Lamiaceae with lilac-purple flowers simulating a terrestrial orchid species, artist's popcorn-flower (*Plagiobothrys chorisianus*), favoring moist depressions and often hidden within the undergrowth, low club rush (*Scirpus cernuus* = *Isolepis cernua*), behaving as a perennial in spite of references in literature to the contrary, harlequin lotus (*Lotus formosissimus*), a perennial pea with flowers colored yellow and cerise, possessing a fragrance rivaling the best French perfumes, California canary grass (*Phalaris californica*), with stems and leaves mimicking the stylized bamboo of the classic Chinese landscapes, large-flowered sand-spurrey (*Spergularia macrotheca* var. *macrotheca*), an ideal candidate for miniature rock gardens, bugle hedge-nettle (*Stachys ajugoides* var. *ajugoides*), with pale pink flowers and sweetly scented herbage and marsh microseris (*Microseris paludosa*), a rarely seen relative of the dandelion and culinary lettuce.

Reconnecting with our asphalt underpinnings, allows one to visually note that sharing the "hairpin turn" locale but growing on exposed mudstone and siliceous terrace deposits, a diverse assemblage of "natives" can be tallied up: a nod to the Rose Family (Rosaceae) yields sticky cinquefoil (*Potentilla glandulosa* subsp. *glandulosa*), wedge-leaved horkelia (*Horkelia cuneata* subsp. *cuneata*) and sinuously weaving a gauntlet of formidable thorns, California wild rose (*Rosa californica*) co-exists in both in adjacent moist drainage ditches and seemingly arid embankments; a cursory survey for representatives of the Legume Family (Fabaceae) produces purple sack clover (*Trifolium depauperatum* var. *truncatum*), pin-point clover (*Trifolium gracilentum* var. *gracilentum*), double-headed clover (*Trifolium macraei*), maiden clover (*Trifolium microcephalum*), tomcat clover (*Trifolium willdenovii*), deerweed (*Lotus scoparius* var. *scoparius*), small-flowered trefoil (*Lotus micranthus*), Chilean trefoil (*Lotus wrangelianus* = *Acmispon wrangelianus*), Lindley's varied lupine (*Lupinus variicolor*), and sky lupine (*Lupinus nanus*); dueling members of the Stonecrop Family (Crassulaceae), literally on opposite sides of the roadbed, are sea lettuce (*Dudleya caespitosa*), whose extreme foliar variability makes it an ideal candidate for the rock garden, and pygmyweed (*Crassula connata*), a micro-miniature which when mature looks like a carpet of reddish-orange moss. Staying with the diminutive, California plantain (*Plantago erecta*), when scrutinized with a hand-lens, reveals fascinating structural details of foliage and flowers, missed when casually viewed from above; shifting the focus to the olfactory, Bioletti's cudweed (*Pseudognaphalium biolettii*), with its unexpected and hauntingly distinctive chemical signature and glandular indument, and pink everlasting (*Pseudognaphalium ramosissimum*), different in gestalt and scent but no less enjoyable, brings into focus the realization that to fully appreciate the natural world around us, full utilization of our sensory resources is demanded.

Within the Swanton area, occurring throughout the coastal prairie/headlands to the top of the Seymore Hill, golden aster (*Heterotheca sessiliflora*) manifests a complex assemblage of forms: variable as to foliar color

and shape, type of indument/trichomes, glandulosity and **chemical signatures** and ranging in gestalt, from Bolander's golden aster (*Heterotheca sessiliflora* subsp. *bolanderi*) thru bristly golden aster (*Heterotheca sessiliflora* subsp. *echioides*), with some of the higher elevation populations possessing a distinct odor of camphor. To what extent has intraspecific hybridization influenced the readily observable variability between/within each of the local populations and has periodic habitat disruptions, both natural and man-made, played key roles? Can the **chemical signatures** be linked to specific genotypes and utilized to determine where subspecies variability ends and gene exchange between sympatric populations begins? With numerous populations readily available and occupying, both edaphically and elevationally, a wide range of habitats, a living laboratory to study species formation, reproductive isolating mechanisms and the value of periodic gene exchange in maintaining population adaptability, is available to the student of ecology and population biology.

Adding visual spice to the *Juncus* mix are a pair of ubiquitous species, both densely caespitose, with leafless cylindrical culms—bog rush (*Juncus effusus*), with culms various shades of green, formerly represented by two varieties often sharing the same permanently moist habitat, var. *brunneus* (= *Juncus hesperius*) acting like an anorexic version of var. *pacificus* and **recently given a taxonomic divorce with an accompanying name change!** Superficially resembling *Juncus effusus* is common rush (*Juncus patens*), with culms a bluish cast and mature inflorescences displaying pinkish-tan sub-globose capsules, **these when opened and exposed to moisture, producing a mucilaginous mass, which encases the seeds, creating a visual effect not unlike a misplaced cluster of minuscule frog eggs.** Common rush (*Juncus patens*), is the only representative of this genus in the watershed which behaves in this fashion, and going even further to establish its reputation as an iconoclast, forms sexual alliances with brown bog rush (*Juncus effusus* var. *brunneus* = *Juncus hesperius*), the skinny one, producing **offspring\*** of dubious fertility but unchallenged longevity, giving validation to the adage hope springs eternal!

**\*Note:** superficially simulating brown bog rush (*Juncus effusus* var. *brunneus* = *Juncus hesperius*) but culms often with a bluish cast, inflorescences compact to open with elongate branches, number of stamens **3-6**, and the capsules, while  $\pm$  quadrate, **having apices partially attached rather than opening fully and conspicuously exceeded by mature perianth parts.** Fertile seed is produced, and varies from plant to plant, often seasonally, **but is statistically very low per individual.** Second generation hybrids have been raised under controlled circumstances, opening up a frame of reference to further study the potential role of **periodic interspecific hybridization** as a component in the adaptive evolution of taxa in a changing environment or one subject to ongoing patterns of disruption, either due to natural or human induced causation. **When fertile seed is produced, morphologically it can range from one parental extreme to the other!**

Prostrate in growth patterns and forming sympatric horizontal patches subject to vehicular and foot-traffic abuse, sand mat (*Cardionema ramosissimum*) and California aster (*Lessingia filaginifolia* var. *californica* = *Corethrogyne filaginifolia*), are two exceedingly long lived and resilient prospects for innovative xeriscaping. Cosmopolitan toad rush (*Juncus bufonius*) is often found in a depauperate state, circumscribing the fluid boundaries of roadside ditches, tinged red and adhering to the desiccative edges like a monoculture of alien moss. Eyeballing each other across Swanton Road are two native species of strawberry that usually occupy markedly different habitats: forming horizontal mats on the ocean side of the roadway is beach strawberry (*Fragaria chiloensis*), often **dioecious**, with dark green nitid foliage and contrasting reddish stolons, while perched on a near-vertical bank with a southerly orientation is wood strawberry (*Fragaria vesca*), leaflets thin in texture and due to adaxial surface trichomes, dull in appearance. By presenting 4-merous yellow flowers on what appears to be elongate peduncles, sun cups (*Camissonia ovata*) plays a visual joke on the unaware observer—the circa 3-18 cm. long structures supporting the solitary flowers are technically the sterile tips of the ovaries, which upon closer examination, are found buried deep within the basal rosette of leaves!

Tenaciously clinging to a highly unstable bank and observed for more than a decade, an isolated burl-forming manzanita (*Arctostaphylos crustacea*, *sensu lato*) was regrettably done in, not by old age or slope failure, but overzealous road maintenance. Recently, during the course of walking Swanton Road in preparation for this essay, a second specimen of hairy manzanita was located, growing roadside circa 1/8 mile before Big Creek Bridge (sharing edge of bank with a specimen of oracle oak aka *Quercus x morehus*), and either seeded originally from coyote scat or representing the end result of successional processes. Articulating a plausible scenario for the current evolutionary status of the burl-forming manzanitas found within the watershed, is to enter into a scientific debate of gladiatorial proportions--- but signposts, even flawed ones, are a navigational necessity in this ecological arena! **The origins of the *Arctostaphylos crustacea* complex may be polyphyletic: its burl putatively derived from ancient hybridization between a horizontally aligned, nodal-rooting diploid species (aff. *A. uva-ursi*) and a vertically aligned, auriculate-leaved diploid species (aff. *A. andersonii*). Subsequent reduction and coalescence of the node-rooting axis may have occurred through selective evolutionary pressures imposed by seasonal fires and the concurrent/succeeding assimilation of genetic material from sympatric species, ultimately producing an exceedingly long-lived fire-regenerative “genetic sponge”.** Based on an in depth study of the “extreme” variability displayed by the thousands of specimens located within the watershed’s well-defined chaparral, this a biologically sound theory and one worth investigating on molecular (DNA sites), morphological (establish a linkage between specific foliar and floral traits and isolate/identify, if possible, their ancestral contributors), ecological (specificity of fungal associates) and structural (examination of misplaced burls = **epicormic burls**, the possible results of incomplete dominance) grounds.

Occasionally, two related but physically dissimilar taxa share the same habitat, the differences so manifest that without knowledge of the systematics of the family in question, one would not link the two. Such is the case with creeping hearts (*Pterostegia drymarioides*), an annual prostrate herb with bilobed leaves looking as if they had escaped from a Calder mobile, which upon reaching maturity turn an incandescent reddish-pink, and coast buckwheat (*Eriogonum latifolium*), a suffrutescent perennial, clothed with a white felt-like indument that when viewed from afar, gives the impression of a recent dusting of snow. As members in good standing of the Buckwheat Family (Polygonaceae), their shared heritage is demonstrated by the production of trigonous achenes.

Presenting taxonomic problems yet to be fully resolved, California aster (*Symphytotrichum chilense*) shadows the observer from one end of Swanton Road to the other, happily ensconced on road-banks, in drainage ditches and peering out from the impenetrable margins of the coastal scrub. Although extremely variable as to **phenology**, overall stature, foliar morphology, and flower color, **the real problem resides in what value to assign the extremes found within the involucre bract (phyllaries) configuration and orientation:** these ranging from strongly graduate (formerly *Aster chilensis*) to foliaceous and sub-equal (*Aster subspicatus*). Should *Aster subspicatus* be resurrected from synonymy, **if indeed it ever existed in the State**, and treated along with California aster (*Symphytotrichum chilense*) as co-participant in the production of a polymorphic hybrid complex or is California aster (*Symphytotrichum chilense*) an ecologically adaptive species with several phenotypes? Are the foliaceous phyllaries **independently derived** or do they reflect a possible ancestral connection with *Aster eatonii*, since *Aster subspicatus* is now regarded as not occurring in California? The stem leaves while variable, tend to have expanded bases, these somewhat auriculate and clasping, with the marginal trichomes scabrous-ciliolate and decurrent down the stem as whitish lines, akin to those found on common chickweed (*Stellaria media*).

Growing in sandy soil along and spilling down the west facing edge of the Monterey pine (*Pinus radiata*) grove, which mirrors in part, the “hairpin turn,” a diffuse, loosely rhizomatous phase of red fescue (*Festuca rubra*) creates a visual effect akin to a vaporous green gas hovering over the weathered pine needles. Sharing this acidic environment and sheltered within the irregular drifts of pine needles, coast rein orchid

(*Piperia elegans*), one of five species of this genus found within the watershed, seasonally rewards the respectful observer with dozens of fragrant inflorescences, which in their early stages of development, look like stalks of asparagus ready to harvest. Staying with the Orchid Family (Orchidaceae), one of the three documented occurrences for the watershed of calypso orchid (*Calypso bulbosa*), was within this pine grove, while directly across the road, hooded lady's tresses (*Spiranthes romanzoffiana*) graced a seasonally wet depression flanked by wind buffering common rush (*Juncus patens*) tufts. In the 1970's, several small isolated patches of holly-leaved navarretia (*Navarretia atractyloides*) were discovered, growing in undisturbed habitat, which was being encroached upon by ever-expanding populations of poison oak (*Toxicodendron diversilobum*) and coyote brush (*Baccharis pilularis*). Passing a roadside meadow abounding in rain stimulated vegetative growth, one's attention is immediately drawn to the yellow-petaled flowers glistening in the sun as if lacquered and appearing to be suspended in a sea of chlorophyll: California buttercup (*Ranunculus californicus*), although common in status and numerically plentiful, never fails to deliver visual magic heralding the arrival of Spring.

Either growing separately or cheek-to-jowl, lizard tail (*Eriophyllum staechadifolium*) and golden yarrow (*Eriophyllum confertiflorum* var. *confertiflorum*) secure the roadside banks from one end of Swanton Road to the other. Where they grow together, particularly in those areas that are periodically disturbed, a broader range of foliar variation occurs, either underscoring each species' inherent plasticity or warranting investigation into sympatry and interspecific hybridization, with an emphasis on examining the chemical signatures of each species and the variants appearing within the shared habitats. Staying within the Sunflower Family (Asteraceae) and the probable results of interspecific hybridization (both current and ancestral) coupled with selfing, backcrossing, and outcrossing patterns, the **Gianone everlasting complex** (*Pseudognaphalium gianonei*, **pro. sp. nov.**) is the putative result of hybridization between California cudweed (*Pseudognaphalium californicum*) and cotton batting plant (*Pseudognaphalium stramineum*). The primary crosses possess chemical signatures intermediate between the parents, but subsequent backcrossing often results in populations closer in scent to the California cudweed parent but displaying stem and foliar indument of the cotton batting plant parent! Suffice to say, this delightful mess also occurs throughout our biological excursion, often in association with the previously mentioned *Eriophyllum* duo.

Found within this section of our traversal and representing a genus notorious for taxonomic problems are five generally well-behaved species and a polyphyletic hybrid complex of sedges: Taking the straightforward first, slough sedge (*Carex obnupta*) favors and often outlines seasonally wet drainage areas, short-stemmed sedge (*Carex brevicaulis*) prefers the edges of grasslands and coastal prairies, dense sedge (*Carex densa*) with some pistillate scales conspicuously awned but perigynia ovate in outline, one small patch located along a seasonally moist edge of drainage ditch, small-bracted sedge (*Carex subbracteata*), some specimens tending towards *Carex nitidicarpa*, **pro. sp. nov.**, scattered along the roadside edge, while foothill sedge (*Carex tumulicola*) can be found growing on brushy slopes. The problem child within this sextet is *Carex gianonei*, **pro. sp. nov.**, a taxon putatively derived from at least three different sections of the genus and so fluid in distinguishing characters that five concurrently flowering culms on the same plant, when separately pressed, could be viewed as five separate species, closely related or not! To make matters worse, it can be found in all the aforementioned habitats varying seasonally which key traits it would like to display. With a basic gestalt mirroring Harford's sedge (*Carex harfordii*), *Carex gianonei*, **pro. sp. nov.** differs radically from its analog by having inflorescences: (a) with the lower 1-5+ spikelets being compound-congested and androgynous, gynecandrous or mixed, (b) the terminal spikelet, being androgynous or gynecandrous, occasionally with a pronounced clavate base, (c) the lowermost spikelets proximal or conspicuously distant, and on some specimens, subtended/enfolded by foliaceous bracts up to 30 cm in length, (d) producing spikelets, usually 1-2, occasionally 3 or 4, on elongate, filiform stalks (reduced panicle branches?) from near the base of the principal flowering culms, partially fused or free, the lower portion often enclosed in a tubular hyaline sheath, (e) perigynia extremely variable, **dull**, + thin walled, inner face flat, with/without conspicuous venation and outer convex and distinctly veined, orbicular to broadly lanceolate and rounded basally, winged, becoming pronounced below beak\*, (f) producing

“keikis”, asexual nodal proliferations, from both spent flowering-culms and non-flowering innovations. This singular mode of asexual reproduction **does not** occur with either *Carex nitidicarpa*, pro. sp. nov. or the *Carex* “*imperfecta*” phase and most likely evolved in response to extended periods of soil aridity coupled with elevated levels of atmospheric moisture. *Carex gianonei*, pro. sp. nov., is often found growing up through the coastal scrub, particularly coyote brush (*Baccharis pilularis*), and is associated with another nodally proliferous monocot and putative hybrid complex, namely the Hall’s bent grass (*Agrostis hallii*)/leafy bent grass (*Agrostis pallens*) intergradations!

**\*Note: the perigynia of *Carex gianonei*, pro. sp. nov., are variable to an extreme degree, not only within a defined population but also on individual specimens, in all probability, reflecting the polyphyletic origins of this “difficult” taxon!** An in depth analysis should be undertaken, defining the various perigynia morphologies which occur within a given population of *Carex gianonei*, pro. sp. nov. and then comparing them with perigynia of *Carex tumulicola* (sect. Bracteosae), *Carex brevicaulis* (sect. Montanae) and *Carex densa* (sect. Multiflorae), representing, in varying degrees, the putative ancestors of the Gianone’s sedge complex.

**Note:** the *Carex gianonei*, pro. sp. nov./*Carex nitidicarpa*, pro. sp. nov. complexes, can produce inflorescences, at any time during the blooming season but more often than not as the season is winding down, that: (1) have only the terminal spikelet functional, it being either gynecandrous or androgynous, the remaining spikelets suppressed, replaced by their subtending bractlets clothing the rachis, (2) have all or some of the lower spikelets functional, with the terminal one either sterile and reduced to a bractlet clothed rachis or producing exerted stamens apically, (3) have the inflorescence reduced to a non-functional bractlet clothed rachis, (4) have all spikelets functional, tightly clustered but not on same plane and subtended by conspicuous acicular bracts, unequal in length, simulating a western rush (*Juncus occidentalis*) inflorescence and (5) have lowermost spikelets of principal inflorescence, discreet-distant, compound-congested or simple, stalked, terminating in a sterile or functionally staminate spikelet and subtended by a foliaceous bract. As with the highly variable perigynia, a comprehensive analysis of all the inflorescence permutations should be undertaken and see what correlations can be made relative to (a) intersectional hybridization, (b) currently existing sympatric species exhibiting analogous traits and (c) how these species specific characteristics sort out under controlled breeding experiments. The gynecandrous/androgynous and functional/sterile spikelet patterns that these inter-related hybrid complexes display, appear to represent varying degrees of incompatibility, derived from both ancestral and current intersectional hybridization, and **can exist concurrently on the same plant!**

An examination of the specimens found growing within this section of our floral sleuthing, could initiate an investigation into the polyphyletic origins of the *Carex gianonei*/*Carex nitidicarpa* complex, with emphasis on intersectional gene flow, both ancient and current, and the attendant non-mendelian re-segregation of key characters. Since the *Carex gianonei*/*Carex nitidicarpa* complex is basically Harford’s sedge (*Carex harfordii*) and small-bracted sedge (*Carex subbracteata*) matrices, both section Ovales, exhibiting traits specific to other sections, isolate and define these discordant elements.

(1) Traits, which suggest a hybrid connection with *Carex brevicaulis*, section Montanae:

Basal spikelets on elongate, filiform stalks, with the lower portion often enclosed in a hyaline tubular sheath.

Foliaceous bracts 20-25+ cm. in length, enclosing/sheathing lower spikelets, which are often discrete-distant.

Occasional terminal spikelet linear in gestalt, staminate or imperfect and rachis aligned off-center.

(2) Traits, which suggest a hybrid connection with *Carex densa*, section Multiflorae.

(a) Lower 1-5+ spikelets compound-congested, these can be androgynous, gynaeandrous and/or mixed with pistillate flower bracts often awned.

Opaque part of leaf sheaths transversely rugulose.

Flowering culms sharply triangular, marginally scabrous, prostrate thru erect-ascending in alignment, with rachis often elongate.

(3) Traits, which suggest a hybrid connection with *Carex tumulicola*, section Bracteosae.

(a) Inflorescences with lower portion of rachis often bending abruptly at right angle above 1<sup>st</sup> spikelet, the presentation of spikelets  $\pm$  fractiflex and moniliform, some inflorescences with terminal spikelets tending towards androgyny.

Perigynia stipitate and cymbidiform, with margins often infolding, attenuate beaks occasionally displaying modified bifid apices.

Leaves narrow, 1.5-3.0 mm. wide, with flowering culms  $\pm$  filiform and conspicuously elongate with age.

**Note:** examples repeatedly occur within this highly reticulate hybrid complex that superficially resemble members of the section *Stellulatae*, with lower spikelets separate and upper approximate, the terminal spikelet distinctly clavate, perigynia often spreading at maturity, somewhat spongy-thickened basally.

While variable in overall gestalt, specimens of *Carex nitidicarpa*, **pro. sp. nov.**, are quite consistent throughout their studied range in several features: (a) the flowering culms, which start out in an ascending trajectory, soon become arcuate in mode of growth, assuming a prostrate status at maturity, (b) some inflorescences, whether on first-blooming seedlings or mature plants, **with axis bent circa 80-90 degrees above subtending foliaceous bract**, (c) the perigynia thick-walled, often  $\pm$  cymbiform and **varnished** in appearance, (d) asexual nodal proliferations, “keikis”, **never produced**, even with plants found growing under/up through coastal scrub. When originally studied and documented by herbarium pressings in the 1970’s, this complex hybrid taxon was given the working name of *Carex “super-subbracteata”* with the subsequent proposed name, *Carex nitidicarpa*, **pro. sp. nov.**, referring to the shiny, varnished status of the mature perigynia.

**Study the influence/effect of light versus deep shade on the expression and/or suppression of non-ovales derived traits.**

**Note:** Plants observed for several seasons growing in shaded canyon bottoms, which morphologically fit the *Carex harfordii* profile, when placed in a private botanical garden and **grown in full sun**, over the course of 2-3 years, **started exhibiting non-ovales traits**, such as inflorescences with androgynous compound-congested lower spikelets and basal spikelets on elongate filiform stalks!

Examine the ecological role of **habitat disturbance** in the broaching of reproductive isolating mechanisms between sympatric *Carex* species from different sections of the genus.

**Note:** Examine the foliar epidermis, its underlying cellular structure and veining, of short-stemmed sedge (*Carex brevicaulis*), dense sedge (*Carex densa*) and foothill sedge (*Carex tumulicola*), to determine if there are recognizable differences, **which are section specific**, and that occur within the *Carex gianonei*, **pro. sp. nov.** and *Carex nitidicarpa*, **pro. sp. nov.** complexes, **independent of traits attributable only to the section Ovales.**

**Note:** Are the non-Ovales traits (e.g. androgynous spikelets, compound-congested lower spikelets, basal (1-4) spikelets on elongated stalks which are often sheathed with a tubular hyaline prophyll) the result of gene fragments (from centromeric fission/fusion), which do not behave in a Mendelian fashion but still reflect (and are transmitted sexually), in an Ovales gestalt, inter-sectional

## hybridization?

*Carex* “*imperfecta*” appears to be the evolutionary “Rosetta Stone”, linking section Ovale to both the Multiflorae and Montanae sections in this reticulate patterned hybrid syngameon. This scattered and locally not uncommon taxon, often found in habitat of recent disturbance (past 50-60 years), suggests that *Carex* “*imperfecta*” is the product of **current** intersectional hybridization. Gene flow appears to be uni-directional, with anthers producing pollen but **with pistils non-functional**. Lower 1-5+ spikelets compound-congested, the inflorescences infrequently dense and abbreviated but usually displaying a conspicuously elongate rachis, with the occasional presence of 1-2 basal spikelets on filiform stalks as per *Carex gianonei*, pro. sp. nov. and *Carex nitidicarpa*, **pro. sp. nov.**, either free to base or some **fused**, in varying degrees, to the main inflorescence culm.

Stain pollen for viability and see if it varies from plant to plant.

Unlike with *Carex gianonei*/*Carex nitidicarpa*, the pistillate flower bracts of *Carex* “*imperfecta*” occasionally are conspicuously awned, showing a key trait derived from *Carex densa*/*Carex dudleyi*, section Multiflorae. Why is this distinctive trait, present in *Carex* “*imperfecta*” but not found in any *Carex gianonei*/*Carex nitidicarpa* plants studied to date, considering all three taxa share a putative *Carex densa*/*Carex dudleyi* heritage?

To determine if *Carex* “*imperfecta*” is indeed an aneuploid derivative of intersectional hybridization, with the non-functional pistillate flowers a byproduct of chromosomal incompatibility, do an in depth analysis of *Carex* “*imperfecta*” from morphological, chromosomal and habitat/ecological perspectives.

What role has *Carex* “*imperfecta*” played in the formation of the *Carex gianonei*/*Carex nitidicarpa* complex, and does the fertility of *Carex* “*imperfecta*” pollen vary from plant to plant and also with seasonal conditions, age/biomass of plant and the stability of the ecosystem in which it resides?

Large mature plants of *Carex gianonei*, pro. sp. nov., often display concurrent flowering culms that are markedly dissimilar to each other in gestalt, often to such an extent, that 5-6 of these “inflos” could be pressed on separate herbarium sheets and when shown to knowledgeable observers, convince them that they are looking at 5-6 different species, some closely related others not! **ARE THESE DISSIMILARITIES LIMITED TO FOLIAR AND FLORAL MORPHOLOGIES OR DO THE DIFFERENCES EXTEND TO POLLEN AND OVULES AS WELL?**

Within the Scotts Creek Watershed, other notable anomalies within the genus *Carex* also occur:

Populations of Bolander’s sedge (*Carex bolanderi*), sect. Deweyanae, produce inflos with the lower 1-5+ spikelets compound-congested, any or all of the spikelets being androgynous, gynaeandrous and/or mixed. Basal spikelets can also be produced, with the opaque part of the leaf sheaths, on occasion, transversely rugulose.

Plants of foothill sedge (*Carex tumulicola*), sect. Bracteosae, were observed with flwng-culms producing 1-2 basal spikelets on elongate, filiform stalks. Pressings were made and deposited with the Jepson Herbarium, U.C. Berkeley.

On the coastal prairies flanking the central portion of “Big Willow Gulch”, several specimens of dense sedge (*Carex densa*), sect. Multiflorae, were found producing flwng-culms with 1-2 basal spikelets on elongate stalks, these not filiform but markedly thinner than the principal flwng-culms. Pressings were made and deposited with the Jepson Herbarium, U.C. Berkeley.

One specimen of *Carex gianonei*, pro. sp. nov. found growing up through coastal scrub overlooking “Lasher Marsh”, produced flwng-culms, which displayed 1-2 basal spikelets on elongate stalks, but in two instances, **3 & 4!**

Extremes in habitat preferences also characterize the *Carex* within the watershed proper: finding “wet feet”

abhorrent, round-fruited sedge (*Carex globosa*) resides on well-drained, dry summer/fall, wooded slopes while torrent sedge (*Carex nudata*), prefers stream beds and succeeds where few other species can, firmly anchored by tenacious rhizomes in mid-stream rock crevices!

Another family with members that either drive the literal-minded to the brink of frustration or give unalloyed joy to the discriminating pursuer of variety is the Grass Family (Poaceae). Looking down into Harry Wain's Arroyo, a large isolated population of Pacific reed grass (*Calamagrostis nutkaensis*) thrives, sharing habitat with a rare form of western bent grass (*Agrostis exarata*), 1-2 meters in height with awnless spikelets condensed in glomerate verticils, these conspicuously separate. Farther along on our ascending tour, an extensive, long persisting colony of Hall's bent grass (*Agrostis hallii*), perhaps tainted with genetic material contributed long ago by leafy bent grass (*Agrostis pallens*), shares a roadbank, this time flanking Harry Wain's driveway, with a singularly robust form of California wild rye (*Elymus glaucus* subsp. *glaucus*), **some inflorescences seasonally paniculate (a certain percentage of this form appears consistently in hand sown populations raised from locally collected native material, establishing a genetic basis for the elongate flowering branches on inflorescences)**, sporting leaves 26+ cm. in length and 2.5+ cm. in width and overpowering scattered specimens of native meadow barley (*Hordeum brachyantherum* subsp. *brachyantherum*). For many years, scattered populations of western bent grass (*Agrostis exarata* var. *exarata*) were established along this and other sections of Swanton Road but recently, due to the habitat encroaching non-native panic veldt grass (*Ehrharta erecta*), velvet grass (*Holcus lanatus*) and Italian rye grass (*Lolium multiflorum*), this less common awnless variety is becoming scarce. Mimicking a perennial caespitose Grass Family (Poaceae) constituent, western rush (*Juncus occidentalis*) cryptically resides amongst the bona fide grasses, daring a savvy viewer to unmask this consummate poseur. Rigid hedge-nettle (*Stachys ajugoides* var. *rigida*), one of two native members of this aromatic genus occurring within this section of our botanical sleuthing, can be readily distinguished by its chemical signature, lower corolla lip alignment and strongly oblique ring of hairs distending lower part of the corolla tube. Occupying an unstable slope across the current replacement for the original Swanton Road/Highway 1, whose outline can still be discerned some thirty feet below, a scattered population of American vetch (*Vicia americana* var. *linearis*) blends in with and is vastly outnumbered by the European introduction, narrow-leaved vetch (*Vicia sativa* subsp. *nigra*).

Looking downward in a southerly direction, the coastal prairie comes into view: an ecological continuum that parallels Highway 1, from the north end of Swanton Road (where it becomes fragmented) with its isolated populations of Kellogg's horkelia (*Horkelia cuneata* subsp. *sericea*) and purple godetia (*Clarkia purpurea* subsp. *purpurea*) to the California sagebrush (*Artemisia californica*) margined terrace edge overlooking Scotts Creek Marsh proper. Providing habitat for a diverse aggregation of rare and unusual plant species, this horizontal ribbon of terrain, is punctuated with seeps, perennially watered micro-marshes, "vertical" grasslands bounded by coastal scrub and bisected by transverse gulches terminating in varying series of waterfalls before entering the ocean. A substantial part of this ecologically complex series of interrupted grasslands is defined by a triad of monocot families, namely the Sedge Family (Cyperaceae), the Rush Family (Juncaceae) and the Grass Family (Poaceae) and was extensively documented by herbarium pressings during the early 1980's. Of particular interest were the disjunct populations of Blasdale's bent grass (*Agrostis balsdalei*), a rare FSC/IB listed taxon previously known from a narrow coastal zone north of the Golden Gate, and displaying a wide range of growth patterns and inflorescence configurations locally. **It would be of considerable interest, both ecologically and biogeographically, to determine on a molecular level, if the Santa Cruz County populations and the populations of Marin County are of the same age and if the documented examples of hybridization with sympatric California bent grass (*Agrostis densiflora*) and western bent grass (*Agrostis exarata*) locally, have played a role in this taxon's polymorphism?** One member of the Primrose Family (Primulaceae) plus three members of the Gentian Family (Gentianaceae) find suitable habitat in the prairie, both in areas that remain damp after seasonal rainfall and in the drier transitional zones defined by the coastal scrub: favoring the scattered, poorly drained quasi vernal pool patches are *Centunculus minimus* = *Anagallis minima*, an



inconspicuous sister species of the introduced scarlet pimpernel (*Anagallis arvensis*), timwort (*Cicendia quadrangularis*), often barely 2 cm. in height with solitary butter-yellow cruciform corollas markedly contrasting with its less picky and more ruderal relative, Monterey centaury (*Centaurium muehlenbergii* = *Zeltnera muhlenbergii*), exceeding 30 cm. in height, inflorescences dense, flat-topped with pink corollas and greatly expanding its local range over the past two decades and in some places actually becoming weedy and finishing up with Davy's centaury (*Centaurium davyi*) or *Zeltnera davyi* according to the most recent nomenclatural changes, a worthy addition to any wildflower garden, often found growing half-hidden under California sagebrush (*Artemisia californica*), with flowers pink or white, and occasionally "hybrids" between those two polarities which are an unusual tannish-lilac in coloration! California gilia (*Gilia achilleifolia*) and grassland gilia (*Gilia clivorum*) occupy quasi-vertical niches, ranging from shaded slopes to exposed cliff faces throughout the watershed and **varying considerably as to inflorescence configuration, hairiness, glandulosity and flower coloration**. Growing within the confines of "Allium Marsh", so named because it contained scattered plants of one-leaved onion (*Allium unifolium*), a disjunct population of locally rare Hall's willow herb (*Epilobium hallianum*) was documented during the early 1980s. Ensnared in the lower portion of the marsh before it transitions into "Gulch 2" and decidedly uncommon in the Swanton area, cow clover (*Trifolium wormskioldii*) is a rarity amongst our local native clovers, in being perennial, while nearby overlooking the mouth of "Gulch 1", the more frequently encountered strigose trefoil (*Acmispon strigosus*), is annual and proud of it! Occasionally gracing the moist vertical banks adjacent to the seasonal waterfalls draining the prairie, are scattered colonies of western pearlwort (*Sagina decumbens* subsp. *occidentalis*), deftly camouflaged from all but the most diligent of observers and paralleling its relative, shining chickweed (*Stellaria nitens*), in the art of concealment.

Still within the confines of the coastal prairie and more or less midway between Greyhound Rock and Scotts Creek Beaches, **Big Willow Gulch** meanders down from the inner grassland, crosses the prairie and drains into a bifurcate canyon (west fork draining Pumpkin Field Marsh and surrounding area), **creating a watershed which is home to more than 200 species, sub-species, varieties and forms of native plants, several of extreme rarity**. The best way to describe **Big Willow Gulch** ecologically, is as follows: imagine taking floristic elements from all of the habitats within the Scotts Creek Watershed, place them in a giant blender, add water, liquefy, then spill the contents randomly throughout the entire drainage area. Here is an introduction to some of the key players participating in this botanical drama and the unusual juxtapositions in which they present themselves: favoring seasonally wet depressions, coyote thistle (*Eryngium armatum*) and bugle hedge-nettle (*Stachys ajugoides*) thrive amongst hybrids between **Blasdale's bent grass** (*Agrostis blasdalei*) x **western bent grass** (*Agrostis exarata*) and **common rush** (*Juncus patens*) x **brown bog-rush** (*Juncus effusus* var. *brunneus* = *Juncus hesperius*); hidden deep within the *Juncus* clumps that define Big Willow Marsh and further obscured from view by California blackberry (*Rubus ursinus*) canes, one-leaved onion (*Allium unifolium*) and Canada goldenrod (*Solidago canadensis* subsp. *elongata* = *Solidago elongata*) add contrasting color to the prevailing shades of green, while in a seasonally filled pond within the shadow of the **"Big Willow"** (*Salix lasiolepis*), California water starwort (*Callitriche marginata*), mat-forming with pedicellate fruit often buried deep within the moist substrate, Bolander's water starwort (*Callitriche heterophylla* var. *bolanderi*), displaying its foliar rosettes on the water's surface while flowers and sessile fruits are sequestered in the aqueous depths, shares its fluid habitat with common spikerush (*Eleocharis macrostachya*) cleverly mimicing sympatric Mexican rush (*Juncus mexicanus*) with rhizomatous, tortile-compressed culms and is joined by another lookalike (at least from a distance), flowering quillwort (*Lilaea scilloides*); scattered forest live-oaks (*Quercus parvula* var. *shrevei*), representing shrub through arboreal status categories, ecologically enrich the central portion of this complex watershed with their **evergreen status** while blue elderberry (*Sambucus mexicana* = *Sambucus nigra* subsp. *canadensis*) and red elderberry (*Sambucus racemosa* var. *racemosa*) shed their seasonal foliage in the fall, allowing needed light to penetrate the deeper recesses of the gulch and enriching the soil with their copious leaf litter; held hostage by poison oak (*Toxicodendron diversilobum*) and apparently the lone representative of its kind in this all inclusive "mini-hotspot", Pacific madrone (*Arbutus menziesii*) stands out in its singularity, a welcome byproduct of some adventurous coyote or flock of robins; growing

within an **ecologically distinct “island”** composed of California hairgrass (*Deschampsia cespitosa* subsp. *holciformis*), brown-headed rush (*Juncus phaeocephalus* var. *phaeocephalus*), western rush (*Juncus occidentalis*), toad rush (*Juncus bufonius*), common rush (*Juncus patens*), brown bog-rush (*Juncus effusus* var. *brunneus* = *Juncus hesperius*), dwarf club rush (*Isolepis carinata*), low club rush (*Isolepis cernua*), chaffweed (*Anagallis minima*), California brome (*Bromus carinatus* var. *carinatus*), California oat grass (*Danthonia californica* var. *californica*), narrow-leaved mule ears (*Wyethia angustifolia*), harlequin lotus (*Lotus formosissimus*) and tinker’s penny (*Hypericum anagalloides*), one of the two isolated populations of Gairdner’s yampah (*Perideridia gairdneri* subsp. *gairdneri*) found within this "repository of biodiversity" exists, **easily distinguished from sister species, Kellogg’s yampah (*Perideridia kelloggii*), by possessing a flowering stem readily detachable from the fleshy tuberous root and a concave mature inflorescence.**

Growing out of the weathered lichenous mudstone and overlooking the central portion of **Big Willow Gulch** as it crosses the prairie proper, California fuchsia (*Epilobium canum*) and California aster (*Corethrogyne filaginifolia*) soften the harshness of their exposed surroundings with shared canescent herbage but as to flowers, contrasting muted lilac daisy facsimilies with 3-4 cm long glowing red-orange salverform hummingbird enticements..... of particular note, the taxon referred to as California aster, is of the type formerly given the appellation *Corethrogyne californica*, with large solitary heads and **five "alba" flowered individuals were recently discovered**, anchored firmly to the fractured shale and spilling down the gulch complex's western flank (cuttings and cypselae are now being raised at the UCSC Arboretum); the color blue, is often absent or rarely manifests itself in many plant families..... fortunately, the Ranunculaceae as represented by the genus *Delphinium* locally, has generously given the watershed two species with the rarest of this duo, coast larkspur (*Delphinium decorum* subsp. *decorum*), vibrantly standing out against the surrounding verdancy; scattered colonies of California wild rose (*Rosa californica*), unlike many of its domesticated relatives, **thriving in moist habitats** and perfuming the surrounding area with flowers the size of silver dollars arrayed on complex cymes displaying up to 40 flowers ; two morphologically dissimilar species of *Baccharis*, coyote brush (*Baccharis pilularis*), with woody stems and branches, and marsh baccharis (*Baccharis douglasii* = *Baccharis glutinosa*), herbaceous with glutinous herbage, share a mesic niche along the prairie’s edge, while directly below on perpetually moistened bedding planes, common monkeyflower (*Mimulus guttatus*) defies gravity and mortality with rope-like stolons; seemingly out-of-place tan-oaks (*Lithocarpus densiflorus* var. *densiflorus* = *Notholithocarpus densiflorus* var. *densiflorus*) co-mingle with California sagebrush (*Artemisia californica*), while on the opposite side of the gulch, wind-sculpted Douglas-firs (*Pseudotsuga menziesii* var. *menziesii*) cling precariously to near vertical slopes overlooking colonies of thimbleberry (*Rubus parviflorus*) and fraternize with pearly everlasting (*Anaphalis margaritacea*), hazelnut (*Corylus cornuta* subsp. *californica*), California goldenrod (*Solidago californica* = *Solidago velutina* subsp. *californica*) and sea lettuce (*Dudleya caespitosa*), the latter a xeriscaper’s dream plant with vibrant red stems and contrasting yellow-orange flowers; an ornamentally striking form of giant trillium (*Trillium chloropetalum*) was collected from this area thirty years ago, **with texturally thick, broadly obovate cream-colored petals and like-colored anthers, the flowers exuding a distinct lemony scent.** This taxon was also observed in the Gazos Creek Watershed in southern San Mateo County and perhaps should be nomenclaturally referred to white trillium (*Trillium albidum*); isolated colonies of leathery-leaved salal (*Gaultheria shallon*) and coast barberry (*Berberis pinnata* subsp. *pinnata*) are a stone’s throw from a darkly colored large-flowered variant of checker lily (*Fritillaria affinis*), sea pink (*Armeria maritima* subsp. *californica*), Monterey pine (*Pinus radiata*), California acaena (*Acaena pinnatifida* var. *californica*), short-stemmed sedge (*Carex brevicaulis*), prostrate clarkia (*Clarkia prostrata*), with concolored flowers producing dark brown unadorned seeds, scattered patches of Bolander’s golden aster (*Heterotheca sessiliflora* subsp. *bolanderi*) variable both as to color and scent of foliage, and further along with its rootstocks deeply embedded in the mudstone fractures, San Francisco campion (*Silene verecunda* subsp. *verecunda* = *Silene verecunda*?); sheltered within the protective embrace of the coastal scrub, an isolated population of California mustard (*Caulanthus lasiophyllus*) was documented for this “watershed within a watershed” three decades ago and recently

rediscovered (10/18/06) growing in the gulch bottom along the edge of a seasonal watercourse, the nearly spent plants a meter in height with conspicuously reflexed siliques; perhaps the only surviving colony of banded owl's clover (*Castilleja exserta* subsp. *latifolia*) in the county, with its cobwebby indument, sharing the same exposed grass-contoured terrace with **the vanilla scented cream-colored form of owl's clover** (*Castilleja densiflora*, aff. *Orthocarpus noctuinus*) and the myriad polychromatic forms of Indian paintbrush (*Castilleja affinis* subsp. *affinis*), red alder (*Alnus rubra*), creek dogwood (*Cornus sericea* subsp. *sericea*), California buckeye (*Aesculus californica*) which from an aerial perspective gives the impression of verdant brain coral, so coalesced are the individual crowns; wax myrtle (*Myrica californica* = *Morella californica*) and Utah service-berry (*Amelanchier utahensis*), oversee ancient clumps of giant chain fern (*Woodwardia fimbriata*), tussocks of California fescue (*Festuca californica*), Franciscan coyote mint (*Monardella villosa* subsp. *franciscana*) at its most diverse morphologically, a **localized nanistic race** of white globe lily (*Calochortus albus*), California huckleberry (*Vaccinium ovatum*), variable populations of wedge-leaved horkelia (*Horkelia cuneata* subsp. *cuneata*)..... the adaxial foliar surface ranging from a glandular coated grass green to a cinerous indument possibly representing subsp. *sericea* influence; a pair of caespitose members of the Poaceae, junegrass (*Koeleria macrantha*) and ocean-bluff bluegrass (*Poa unilateralis*) with common woodrush (*Luzula comosa*) often favoring moisture retentive pockets on the west-facing slopes, while high above this botanical fray, one of the five documented populations for the county of chia (*Salvia columbariae*) co-exists in a parched abode of fractured mudstone with the uncommon Mt. Diablo cottonweed (*Micropus amphibolus*), the rare Santa Cruz microseris (*Stebbinsoseris decipiens*) sharing habitat with co-parent *Microseris bigelovii*, California filago (*Filago californica* = *Logfia filaginoides*) and slender goldfields (*Lasthenia californica*).

**Note:** Within the Big Willow Gulch drainage system, slender goldfields (*Lasthenia californica*) exists in **two forms**..... growing on an exposed fractured mudstone slope which drops down towards Highway 1, is a population with **cypselae lacking pappus**, while in an analagous environment, higher up in elevation and overlooking the coastal prairie between the east end of the Pumpkin Field and the Frog Pond, is a remnant colony producing **pappus-crowned cypselae**. Both of these populations have been documented with "achene" collections, these deposited at the UCSC Arboretum for future study. **It is possible that *Lasthenia gracilis* may occur within this area and one or more of these populations, upon further study, may be included within the circumscription for that taxon.**

**Note:** Franciscan coyote mint (*Monardella villosa* subsp. *franciscana*), just within Big Willow Gulch, constitutes a complex array of forms, with variations in **foliar morphology** and **indument**, **differing chemical signatures** of individual plants and **inflorescence configurations**: concerning the latter, a specific trait that occurs with some frequency throughout this population and elsewhere in the adjacent coastal gulches, is the production of sessile whorls within the existing flower heads and **do these constitute condensed verticals or reduced branches?**

**Note:** Scattered throughout the prairie's edge and ocean facing coastal scrub are representatives of the genus *Grindelia* (Family Asteraceae), problematic in their taxonomy and behaving as intergrades between what were formerly designated *Grindelia hirsutula* subsp. *rubricaulis* and *Grindelia stricta* subsp. *venulosa*. Standing on the east-facing synform and looking west towards Greyhound Rock State Beach where *Grindelia stricta* var. *angustifolia* resides behind the primary dunes, moving up to the benched tops of the seabluuffs viewing what purports to be *Grindelia stricta* var. *platyphylla* hugging the ground with prostrate stems radiating out from a central woody caudex, then glancing northwest towards Last Chance Road and Laguna de las Trancas, home to what is now called *Grindelia hirsutula* var. *hirsutula* and without inducing vertigo, focusing upwards in an northeasterly direction to the Seymore Hill, colonized by a subglabrous stramineous form of *Grindelia hirsutula* simulating *Grindelia camporum* var. *camporum* **and one has a perfect living laboratory to study on both a macro and micro level, the evolution of this ubiquitous yet imperfectly understood genus!**

As an addendum to the previously discussed overview documenting the botanical diversity of Big Willow Gulch and its surrounding watershed, here is a partial but substantial listing of other native taxa, both locally rare and common species plus two diagnostically challenging hybrid complexes, which help to define this area of special interest. The *Carex gianonei/nitidicarpa/imperfecta* syngameon and the *Agrostis hallii/pallens* intergrades are amply represented, sharing habitat with some of the following “locals”: toyon (*Heteromeles arbutifolia*), western lady's mantle (*Aphanes occidentalis*), California coffeeberry (*Frangula californica* subsp. *californica*), cow-parsnip (*Heracleum maximum*), straggly gooseberry (*Ribes divaricatum* var. *pubiflorum*), California vervain (*Verbena lasiostachys* var. *lasiostachys*), tiny pentachaeta (*Pentachaeta alsinoides*), threadstem madia (*Madia exigua*), dwarf locoweed (*Astragalus gambelianus*), purple sack clover (*Trifolium depauperatum* var. *truncatum*), slough sedge (*Carex obnupta*), foothill sedge (*Carex tumulicola*), small-bracted sedge (*Carex subbracteata*), dense sedge (*Carex densa*), umbrella sedge (*Cyperus eragrostis*), paniced bulrush (*Scirpus microcarpus*), Pacific oenanthe (*Oenanthe sarmentosa*), Pacific bog-rush (*Juncus effusus* var. *pacificus*), California man root (*Marah fabaceus*), California horkelia (*Horkelia californica* subsp. *californica*), Johnny jump-up (*Viola pedunculata*), purple cudweed (*Gamochaeta ustulata*), footsteps-of-spring (*Sanicula arctopoides*), caraway-leaved lomatium (*Lomatium caruifolium* var. *caruifolium*), rattlesnake weed (*Daucus pusillus*), Chinese houses (*Collinsia heterophylla*), sticky monkeyflower (*Mimulus aurantiacus*), California hedge-parsley (*Yabea microcarpa*), American winter cress (*Barbarea orthoceras*), watercress (*Nasturtium officinale*), stinging phacelia (*Phacelia malvifolia*), California plantain (*Plantago erecta*), pelican flower (*Triphysaria eriantha* subsp. *rosea*..... flower color off-white thru pale yellow), dwarf orthocarpus (*Triphysaria pusilla*), blue-eyed grass (*Sisyrinchium bellum*), snowberry (*Symphoricarpos albus* var. *laevigatus*), hairy wood sorrel (*Oxalis corniculata* subsp. *pilosa*), sweet cicely (*Osmorhiza berteroi*), shining peppergrass (*Lepidium nitidum* var. *nitidum*), Watson's willow herb (*Epilobium ciliatum* subsp. *watsonii*), giant horsetail (*Equisetum telmateia* subsp. *braunii*), oso berry (*Oemleria cerasiformis*), sneezeweed (*Helenium puberulum*), yarrow (*Achillea millefolium*), golden yarrow (*Eriophyllum confertiflorum* var. *confertiflorum*), lizard tail (*Eriophyllum staechadifolium*), California maidenhair (*Adiantum jordanii*), coffee fern (*Pellaea andromedifolia*), California polypody (*Polypodium californicum* var. *kaulfussii*), goldback fern (*Pentagramma triangularis* subsp. *triangularis*), wood fern (*Dryopteris arguta*), western sword fern (*Polystichum munitum*), lady fern (*Athyrium felix-femina* var. *cyclosorum*), bracken (*Pteridium aquilinum* var. *pubescens*), Davy's clarkia (aff. *Clarkia davyi*..... erect mode of growth, flowers bicolored, seeds gray-encrusted..... transition zone between Pumpkin Field Marsh and Frog Pond), farewell-to-spring (*Clarkia rubicunda*), thyme-leaved pogogyne (*Pogogyne serpylloides*), checkerbloom (*Sidalcea malvaeflora* subsp. *malvaeflora*), blue witch (*Solanum umbelliferum*), California buttercup (*Ranunculus californicus*), downy buttercup (*Ranunculus hebecarpus*), Gianone's sanicle (*Sanicula gianonei*, pro. sp. nov.), Gianone's gnaphalium (*Pseudognaphalium gianonei*, pro. sp. nov.), California cudweed (*Pseudognaphalium californicum*), cotton batting plant (*Pseudognaphalium stramineum*), pink everlasting (*Pseudognaphalium ramosissimum*), Bioletti's cudweed (*Pseudognaphalium biolettii*), red fescue (*Festuca rubra*), California canary grass (*Phalaris californica*), Pacific reed grass (*Calamagrostis nutkaensis*), slender hairgrass (*Deschampsia elongata*), foothill needlegrass (*Nassella lepida*), purple needlegrass (*Nassella pulchra*), California wild rye (*Elymus glaucus* subsp. *glaucus*), California melic (*Melica californica*), California saxifrage (*Saxifraga californica*), rigid hedge-nettle (*Stachys ajugoides* var. *rigida*), California hedge-nettle (*Stachys bullata*), yerba buena (*Satureja douglasii*), slender miner's lettuce (*Claytonia parviflora* subsp. *parviflora*), miner's lettuce (*Claytonia perfoliata* subsp. *perfoliata*), California poppy (*Eschscholzia californica*), slim Solomon's seal (*Smilacina stellata*), American brooklime (*Veronica americana*), red maids (*Calandrinia ciliata*), climbing bedstraw (*Galium porrigens* var. *porrigens*), blue dicks (*Dichelostemma capitatum* subsp. *capitatum*), soap plant (*Chlorogalum pomeridianum* var. *pomeridianum* and var. *divaricatum*), Indian thistle (*Cirsium brevistylum*), wood strawberry (*Fragaria vesca*), sticky cinquefoil (*Potentilla glandulosa* subsp. *glandulosa*), coast buckwheat (*Eriogonum latifolium*), creeping hearts (*Pterostegia drymarioides*), small-flowered trefoil (*Lotus micranthus* = *Acmispon parviflorus*), deerweed (*Lotus scoparius* var. *scoparius* = *Acmispon glaber* var. *glaber*..... some plants prostrate and referable to var. *prostratus*), Chilean trefoil (*Lotus wrangelianus* = *Acmispon*

*wrangelianus*), American vetch (*Vicia americana* var. *americana*), sky lupine (*Lupinus nanus*), Lindley's varied lupine (*Lupinus variicolor*), woolly marbles (*Psilocarphus tenellus* var. *tenellus*), western nettle (*Hesperocnide tenella*), coast nettle (*Urtica dioica* subsp. *gracilis*), sun cup (*Camissonia ovata*), California milkwort (*Polygala californica*) and California figwort (*Scrophularia californica* subsp. *californica*).

Further along in a southerly direction one encounters Morehus Arroyo, named for the juvenile oracle oak (*Quercus x morehus*) found growing there circa 30 years ago. As with other edge-of-terrace perennial seeps that punctuate the coastal prairie from Lasher's Marsh (overlooking Greyhound Rock State Beach) to China Ladder Marsh and beyond, shared species abound: **but some native taxa are marsh and/or drainage area specific and highly localized even within these sub-watersheds, making each one of the superficially akin permanent seeps, proximal to the ocean with its attendant influence on localized atmospheric moisture, unique and valuable biological resources!** While arroyo willow (*Salix lasiolepis*) defines the Big Willow and China Ladder watersheds, Morehus Arroyo midway between the two, hosts several examples of shining willow (*Salix lucida* subsp. *lasiandra* = *Salix lasiandra* var. *lasiandra*), these concentrated around the **principal edge-of-prairie waterfall, with one old reclining furrowed-bark example dominating the landscape and possessing leaves unusually thick in texture and leathery to the touch!** Where the prairie bounds the willow dominated edge of the terrace and during the rainy season, water often pools in depressions before draining into the gulch proper, specialized micro-habitats occur, acting as repositories for uncommon species locally. A specific example, of these physically enduring but ephemeral as to water content sites, is as follows: within a rectilinear depression circa 3 meters wide x 6 meters long, containing concentrated populations of California oat grass (*Danthonia californica*), California hairgrass (*Deschampsia cespitosa* subsp. *holciformis*), western rush (*Juncus occidentalis*) and brown-headed rush (*Juncus phaeocephalus* var. *phaeocephalus*), an isolated population of perennial harlequin lotus (*Lotus formosissimus* = *Hosackia gracilis*) was discovered in the early 1970s and persisted for many years. Although the drainage area between the coastal prairie and the terminus of the Morehus Arroyo is relatively short, it receives multiple feeds, at least three continually active hydrologically and two only seasonal at best, making for a botanically diverse complex of near vertical habitats. Where water, to some degree is continually present, indicator species such as giant chain fern (*Woodwardia fimbriata*), panicked bulrush (*Scirpus microcarpus*) and wax myrtle (*Myrica californica* = *Morella californica*) create verdant backdrops while their mesic counterparts, poison oak (*Toxicodendron diversilobum*) and coast barberry (*Berberis pinnata* subsp. *pinnata*) offer the viewer fall tapestries threaded with varied patches of red, orange and purple. Giving muted contrast, with subtle shadings of gray and silver, California sagebrush (*Artemisia californica*) and California fescue (*Festuca californica*) define the west facing, species rich slopes where biodiversity runs rampant. A cross-section of taxa inhabiting this wind-sculpted environment includes, near its summit, reduced in stature colonies of farewell-to-spring (*Clarkia rubicunda*), with thick stems and shortened internodes, basically hugging the terrain and covered with large flowers in shades of pink (whether this mode of growth is wholly environmental in response to the prevailing wind patterns or there is a genetic component involved is a project worth exploring); also sharing this exposed-to-the-elements abode are Franciscan coyote mint (*Monardella villosa* subsp. *franciscana*), seaside daisy (*Erigeron glaucus*), coastal rein orchid (*Piperia elegans*), two sanicles, gambleweed (*Sanicula crassicaulis*) and footsteps-of-spring (*Sanicula arctopoides*), tomcat clover (*Trifolium willdenovii*), Indian paintbrush (*Castilleja affinis* subsp. *affinis*), white globe lily (*Calochortus albus*), California aster (*Lessingia filaginifolia* var. *californica* = *Corethrogyne filaginifolia*), Gianone's cudweed (*Pseudognaphalium gianonei*, *pro. sp. nov.*), ocean-bluff bluegrass (*Poa unilateralis*), sea lettuce (*Dudleya caespitosa*), oso berry (*Oemleria cerasiformis*) and cow-parsnip (*Heracleum maximum*). Deep within the arroyo bottom, rich in alluvium and not far from where it drains under Highway 1, a small colony of giant trillium (*Trillium chloropetalum*) was discovered in the late 1970s, displaying two distinct sympatric forms: **form (a) had unsullied white petals, thin in texture while form (b) had rose-pink petals, also thin in texture, both types emitting a spicy scent reminiscent of cinnamon. This same combo was also found growing in the lower Gazos Creek riparian corridor (San Mateo County) along with the lemon-scented "albidum" taxon of Big Willow Gulch, but in true contrarian fashion, showing an ecological**

**preference for the moist recesses above the dirt road, happily ensconced within a colony of bleeding heart (*Dicentra formosa*). Clinical studies need to be done, testing the connections between flower color, scent, pollinating vectors, sympatry and reproductive isolating mechanisms within the genus *Trillium*, and with perhaps more forms present within the Scotts Creek Watershed than any place else in Santa Cruz County, Swanton would be a good place to start!**

Upon entering China Ladder Marsh, although relatively small in stature home to several species warranting consideration, both taxonomically and for potential horticultural merit. Often reaching 2+ meters in height and towering over the supporting vegetation, swamp hedge-nettle (*Stachys chamissonis*) with its cerise, 2-3 cm. long pendent tubular corollas, would provide a visually arresting accent to the wild garden, edging a seep or small stream. In this particular instance, an ideal companion and visual foil is also found growing within the marsh, namely Pacific reed grass (*Calamagrostis nutkaensis*), a long-lived stately native, nearing the southernmost edge of its range and offering multiple uses in the landscaper's arsenal, including visual screening and erosion abatement. Two other attention getting "native" inhabitants of this isolated ecosystem perched on the ocean-facing edge of the prairie are Canada goldenrod (*Solidago canadensis* subsp. *elongata* = *Solidago elongata*) and the titan of docks, western dock (*Rumex occidentalis*), when seen growing together never failing to elicit a sense of awe, the golden plumes of the *Solidago* creating the perfect chromatic counterpoint to the physically imposing, circa 2+ meters in height, *Rumex*, with mature stems and inflorescences pigmented an intense psychedelic reddish-pink. Growing either as a monoculture or intermixed with the other botanical denizens of the marsh such as tussocks of slough sedge (*Carex obnupta*) with foliar margins emulating a newly minted bread knife and variable inflorescences exceeding 2 meters in height with spikelets either pendant or stiffly erect, salt rush (*Juncus lesueurii*) stands apart from its sympatric cespitose relatives, flaunting a rhizomatous growth habit and tortile, laterally compressed culms circa 1-2 meters in height. Deep down within the human scale barrier of seemingly impenetrable marsh vegetation and out of view to the indifferent passer-by, colonies of low club rush (*Scirpus cernuus* = *Isolepis cernua*), standing 5-8 centimeters tall in comparison with their gargantuan cousin slough sedge (*Carex obnupta*), margin the edges of the invisible watercourse that threads its way through the gauntlet of rhizomes. The northern portion of China Ladder Marsh experienced a major disturbance during the 2005 season, opening up this hitherto relatively unmolested and highly specialized environment to a reshuffling of native versus "introduced" components with some unforeseen and intriguing results: a species usually occurring as scattered individuals within a larger aggregation of moisture loving taxa, sneezeweed (*Helenium puberulum*), formed pure stands on the disturbed ground, showing an aesthetic potential for this overlooked and undervalued annual/biennial member of the Sunflower Family (Asteraceae), with upright posture, strongly decurrent leaves and well-presented globose, many-flowered heads. Also benefiting from and thriving in this scenario of disruption, two phases of western bent grass (*Agrostis exarata*), vigorous colonies of the awned form historically known as var. *monolepis*, co-existing and not forming intermediates with the locally uncommon awnless form, aff. var. *exarata*, presenting spikelets condensed into glomerate verticals, these decidedly separate, clearly showing off the main axis (rachis) of the inflorescence.

Returning to and approaching the northwesterly summit of Swanton Road, just below the Last Chance entrance, a near vertical tapestry of interdigitating shrubbery and herbaceous flora, comprising coyote brush (*Baccharis pilularis*), poison oak (*Toxicodendron diversilobum*), lizard tail (*Eriophyllum staechadifolium*), California figwort (*Scrophularia californica* subsp. *californica*..... **including one of three known specimens for the watershed, of the flavistic form, with greenish-yellow flowers**), California manroot (*Marah fabaceus*), climbing bedstraw (*Galium porrigens* var. *porrigens*), California hedge-nettle (*Stachys bullata*), yerba buena (*Satureja douglasii*), stinging phacelia (*Phacelia malvifolia*), wood strawberry (*Fragaria vesca*) and California brome (*Bromus carinatus* var. *carinatus*), a robust form with leaves 2+ cm. in diameter, compliment a long-established population of California horkelia (*Horkelia californica* subsp. *californica*). At least one plant of this sporadically occurring member of the Rose Family (Rosaceae) exceeded a meter in diameter and when last inspected, was welcoming the mutually beneficial ministrations of bumble-bees (genus *Bombus*).

In addition to the species already discussed, here are some others, briefly noted, that within this area, warrant further study: California oat grass (*Danthonia californica* var. *californica*), yarrow (*Achillea millefolium*), checkerbloom (*Sidalcea malvaeflora* subsp. *malvaeflora*), skunkweed (*Navarretia squarrosa*), footsteps-of-spring (*Sanicula arctopoides*), wooly marbles (*Psilocarphus tenellus* var. *tenellus*), hirsute gumplant (*Grindelia hirsutula* var. *hirsutula*), coast tarplant (*Hemizonia corymbosa* subsp. *corymbosa* = *Deinandra corymbosa*), blue dicks (*Dichelostemma capitatum* subsp. *capitatum*), California goldenrod (*Solidago californica* = *Solidago velutina* subsp. *californica*), marsh baccharis (*Baccharis douglasii* = *Baccharis glutinosa*), and soap plant (*Chlorogalum pomeridianum* var. *pomeridianum*).

**Note:** select herbarium specimens of horticulturally meritorious, locally uncommon, rare county wide and agency listed **species referred to in this section** of the Traversal, collected and pressed, with noted exceptions, by Roy Buck and/or James West **within the Scotts Creek Watershed and environs**, then deposited in the Jepson Herbarium, U.C. Berkeley, **are as follows:**

*Abronia latifolia*/accession number **SJSU10582**/Coy, 10/04/70  
*Acaena pinnatifida* var. *californica*/accession number **JEPS82616**/Buck & West #250  
*Agoseris apargioides* var. *eastwoodiae*/accession number **JEPS82557**/West #167  
*Agrostis blasdalei*/accession number **JEPS82927**/Buck & West #177  
*Agrostis blasdalei*/accession number **JEPS82924**/Buck & West #178  
*Agrostis blasdalei*/accession number **JEPS83603**/Buck & West #370  
*Agrostis blasdalei*/accession number **RSA502388**/D.W. Taylor, Roy Buck, Jim West, Glenn Clifton, #9675, 05 22 1988  
*Agrostis blasdalei*/accession number **UCR70879**/D.W. Taylor, Roy Buck, Jim West, Glenn Clifton, #9675, May 22, 1988  
*Agrostis*, "*Agrostis blasdalei* x *Agrostis exarata* var. *monolepis* hybrid complex"/accession number **JEPS81525**/Roy E. Buck, James A. West and Tom Hawke #4, May 24 1982  
*Agrostis*, aff. *Agrostis blasdalei*/accession number **JEPS82929**/West #271  
*Agrostis*, aff. *Agrostis blasdalei*/accession number **JEPS82830**/West #270  
*Agrostis*, aff. *Agrostis blasdalei*/accession number **JEPS82931**/West #269  
*Agrostis*, aff. *Agrostis blasdalei*/accession number **JEPS82932**/West #268  
*Agrostis*, aff. *Agrostis blasdalei*/accession number **JEPS82933**/West #266  
*Agrostis*, aff. *Agrostis blasdalei*/accession number **JEPS82934**/West #266  
*Agrostis*, aff. *Agrostis blasdalei*/accession number **JEPS82935**/West #266  
*Agrostis*, aff. *Agrostis blasdalei*/accession number **JEPS82938**/West #262  
*Agrostis densiflora*/accession number **JEPS82925**/Buck & West #179  
*Agrostis densiflora*/accession number **JEPS82937**/West #263  
*Agrostis microphylla*/accession number **JEPS100279**/Dean Wm. Taylor #9307, Aug 20 1987  
*Allium unifolium*/accession number **JEPS83120**/Buck & West #328  
*Allium unifolium*/accession number **JEPS82582**/West #118  
*Amelanchier utahensis*/accession number **JEPS81565**/Buck & West #81  
*Berberis pinnata* subsp. *pinnata*/accession number **JEPS83474**/Buck & West #473  
*Calamagrostis nutkaensis*/accession number **JEPS83103**/Buck & West #457  
*Calochortus albus*/accession number **JEPS82618**/Buck & West #248  
*Camissonia ovata*/accession number **JEPS81992**/Buck & West #161  
*Cardionema ramosissima*/accession number **SJSU10202**/Sharsmith #8783, May 15 1983  
*Carex densa*/accession number **SJSU10204**/C.W. Sharsmith #8785, May 15 1983  
*Carex densa*/accession number **JEPS83083**/West #367  
*Carex gianonei*, pro. sp. nov./accession number **JEPS82956**/West #46.1  
*Carex gianonei*, pro. sp. nov./accession number **JEPS82940**/West #16

Carex gianonei, **pro. sp. nov.**/accession number **JEPS82941**/Buck & West #17.1  
Carex gianonei, **pro. sp. nov.**/accession number **JEPS82942**/Buck & West #19.1  
Carex gianonei, **pro. sp. nov.**/accession number **JEPS82943**/Buck & West #22.1  
Carex gianonei, **pro. sp. nov.**/accession number **JEPS82951**/West #35.1  
Carex tumulicola/accession number **JEPS82596**/West #206  
Carex tumulicola/accession number **JEPS82607**/West #212  
Carex tumulicola/accession number **JEPS85182**/Buck & West #488  
Carex tumulicola/accession number **JEPS85185**/Buck & West #490  
Castilleja "sp"/accession number **UCSC5621**/Randall Morgan, Dec 8 1976  
Castilleja exserta subsp. latifolia/accession number **JEPS82594**/West #165  
Castilleja exserta subsp. latifolia/accession number **UC1736314**/Taylor #9580  
Castilleja exserta subsp. latifolia/accession number **UC1736279**/Taylor #9666  
Centaurium davyi = Zeltnera davyi/accession number **JEPS81517**/Buck & West #12  
Centaurium davyi = Zeltnera davyi/accession number **JEPS82575**/West #140  
Centaurium muehlenbergii = Zeltnera muehlenbergii/accession number **JEPS83097**/Buck & West #438  
Centaurium floribundum = Zeltnera muehlenbergii/accession number **JEPS82574**/West #123.1  
Centunculus minimus = Anagallis minima/accession number **JEPS814941**/Buck & West #45  
Centunculus minimus = Anagallis minima/accession number **SJSU10206**/Sharsmith #8787  
Clarkia davyi/accession number **JEPS97593**/Stone #679  
Clarkia prostrata/accession number **JEPS83077**/Buck & West #423  
Clarkia prostrata/accession number **JEPS82555**/West #93  
Clarkia prostrata/accession number **JEPS81509**/Buck & West #17  
Clarkia prostrata/accession number **JEPS83118**/Buck & West #330  
Clarkia purpurea subsp. purpurea/accession number **JEPS81519**/Buck & West #10  
Clarkia purpurea subsp. purpurea/accession number **JEPS81520**/Buck & West #9  
Clarkia purpurea subsp. purpurea/accession number **JEPS82579**/West #125  
Clarkia purpurea subsp. purpurea/accession number **JEPS83091**/Buck & West #378  
Corallorhiza maculata/accession number **JEPS82633**/Buck & West #229  
Corallorhiza maculata/accession number **JEPS82635**/Buck & West #227  
Crassula connata/accession number **UCSC6147**/R. Morgan, Apr 18 1986  
Cryptantha clevelandii/accession number **JEPS85187**/Buck & West #493  
Cryptantha clevelandii/accession number **JEPS85192**/Buck & West #518  
Delphinium decorum subsp. decorum/accession number **JEPS81984**/Buck & West #185  
Deschampsia cespitosa subsp. holciformis/accession number **JEPS83108**/Buck & West #350  
Elymus glaucus subsp. virescens/accession number **JEPS81505**/Buck & West #21  
Ericameria ericoides/accession number **JEPS89555**/Taylor #9308  
Eriophyllum staechadifolium/accession number **JEPS81488**/Buck & West #60  
Euphorbia spathulata/accession number **JEPS82654**/Buck & West #207  
Festuca roemerii/accession number **JEPS82399**/Buck & West #265  
Filago californica/accession number **JEPS85188**/Buck & West #513  
Fragaria vesca/accession number **UC1543251**/Nelson #598  
Fritillaria affinis/accession number **JEPS82022**/Buck & West #190  
Gaultheria shallon/accession number **JEPS81981**/Buck, West & Morgan #189  
Gilia achilleifolia subsp. achilleifolia/accession number **JEPS82761**/West #60  
Gilia achilleifolia subsp. achilleifolia/accession number **JEPS82646**/Buck & West #214  
Gilia achilleifolia subsp. achilleifolia/accession number **JEPS85190**/Buck & West #515  
Gilia clivorum/accession number **JEPS82960**/West #53.1  
Gilia clivorum/accession number **JEPS81535**/Buck, West & Stone #463.1  
Gilia clivorum/accession number **JEPS81982**/Buck, West & Morgan #187  
Gnaphalium bicolor = Pseudognaphalium biolettii/accession number **JEPS85162**/Buck & West #512



Gnaphalium gianonei, pro. sp. nov. = Pseudognaphalium gianonei, pro. sp. nov./accession number JEPS82653/Buck & West #206

Gnaphalium gianonei, pro. sp. nov. = Pseudognaphalium gianonei, pro. sp. nov./accession number JEPS82801/Buck & West #293

Gnaphalium gianonei, pro. sp. nov. = Pseudognaphalium gianonei, pro. sp. nov./accession number JEPS82802/Buck & West #293

Gnaphalium gianonei, pro. sp. nov. = Pseudognaphalium gianonei, pro. sp. nov./accession number JEPS81533/Stone, Buck & West #461

Grindelia/accession number JEPS82624/Buck & West #241

Grindelia/accession number JEPS83128/Buck & West #352

Heterotheca sessiliflora subsp. bolanderi/accession number JEPS81545/Buck & West #111

Heterotheca sessiliflora subsp. bolanderi/accession number JEPS81546/Buck & West #110

Hordeum brachyantherum subsp. brachyantherum/accession number JEPS81515/Buck & West #14

Horkelia cuneata subsp. cuneata/accession number JEPS82781/Buck & West #323

Horkelia cuneata subsp. sericea/accession number JEPS82782/Buck & West #322

Hypericum anagalloides/accession number JEPS83112/Buck & West #346

Juncus hesperius x Juncus patens/accession number JEPS81543/Buck & West #114

Juncus hesperius x Juncus patens/accession number JEPS83075/Buck & West #407

Juncus mexicanus/accession number UCSC6016/R. Morgan, Apr 8 1982

Lasthenia californica/accession number JEPS82917/Buck & West #242

Linaria canadensis/accession number JEPS82661/Buck & West #268

Lotus formosissimus = Hosackia gracilis/accession number JEPS81916/Buck, West & Stone #199

Lotus heermannii var. orbicularis = Acmispon heermannii var. orbicularis/accession number JEPS83049/Buck & West #418

Lotus strigosus = Acmispon strigosus/accession number JEPS81917/Buck, West & Stone #198

Lotus wrangelianus = Acmispon wrangelianus/accession number JEPS82619/Buck & West #247

Melica torreyana/accession number SBBG95746/Keil #20630

Melica torreyana/accession number UCR67850/Keil #20630

Micropus amphibolus/accession number JEPS82597/West #214

Micropus amphibolus/accession number JEPS82634/Buck & West #234

Micropus amphibolus/accession number UCSC4599/Randall Morgan, Apr 18 1986

Microseris paludosa/accession number JEPS82401/Buck & West #269

Mimulus guttatus/accession number JEPS82966/West #79

Mimulus guttatus/accession number JEPS82565/West #200

Mimulus guttatus/accession number JEPS82564/West #201

Montia fontana/accession number JEPS89199/Buck & West #329

Navarretia atractyloides/accession number JEPS82577/West #163

Nemophila heterophylla = Nemophila aff. pulchella var. fremontii/accession number JEPS82017/Buck, West & Stone #191

Nemophila heterophylla = Nemophila aff. pulchella var. fremontii/accession number JEPS82573/Buck & West #208

Nemophila heterophylla = Nemophila aff. pulchella var. fremontii/accession number JEPS100958/Taylor #9652

Nemophila heterophylla = Nemophila aff. pulchella var. fremontii/accession number JEPS100959/Taylor #9653

Nemophila aff. pulchella var. fremontii/accession number JEPS82959/West #52.1

Nemophila aff. pulchella var. fremontii/accession number JEPS83082/West #335.1

Nemophila aff. pulchella var. fremontii/accession number JEPS82946/West #30.2

Nemophila aff. pulchella var. fremontii/accession number JEPS82949/West #33.2

Perideridia gairdneri subsp. gairdneri/accession number JEPS81492/Buck & West #56

*Perideridia gairdneri* subsp. *gairdneri*/accession number **JEPS81491**/Buck & West #57  
*Piperia elegans*/accession number **JEPS83102**/Buck & West #456  
*Piperia elegans*/accession number **UCSC4562**/Randall Morgan, Jan 1 1987  
*Piperia elegans*/accession number **UCSC4563**/Randall Morgan, Jan 1 1987  
*Piperia michaeli*/accession number **JEPS81490**/Buck & West #58  
*Piperia michaeli*/accession number **UCSC4679**/Randall Morgan, Dec 30 1980  
*Piperia unalascensis*/accession number **JEPS81531**/Stone #459  
*Plantago subnuda*/accession number **JEPS83094**/Buck & West #395  
*Plantago erecta*/accession number **JEPS81987**/Buck & West #184  
*Plagiobothrys chorisianus* var. *chorisianus*/accession number **JEPS82766**/West #69  
*Plagiobothrys chorisianus* var. *chorisianus*/accession number **UC1561092**/Taylor, Buck, West & Clifton #9651  
*Plagiobothrys chorisianus* var. *chorisianus*/accession number **RSA502387**/Taylor #9651  
*Plagiobothrys chorisianus* var. *chorisianus*/accession number **UC1576781**/Taylor #10193  
*Poa douglasii*/accession number **SJSU10473**/S.C. Beedle #189, May 4 1964  
*Prunella vulgaris* var. *lanceolata*/accession number **JEPS83109**/Buck & West #349  
*Pterostegia drymarioides*/accession number **JEPS 82620**/Buck & West #246  
*Rumex occidentalis*/accession number **JEPS81557**/Buck & West #105  
*Sagina decumbens* subsp. *occidentalis*/accession number **JEPS82623**/Buck & West #243  
*Salix lasiolepis*/accession number **UC1736169**/Taylor #10196  
*Salix scouleriana*/accession number **JEPS82637**/Buck & West #225  
*Salvia columbariae*/accession number **JEPS81989**/Buck & West #180  
*Salvia columbariae*/accession number **JEPS83124**/Buck & West #357  
*Sidalcea malviflora* var. *celata*/accession number **UCSC5412**/Randall Morgan, Jul 2 1999  
*Silene verecunda* (subsp. *verecunda*)/accession number **JEPS82771**/Buck & West #43  
*Silene verecunda* (subsp. *verecunda*)/accession number **JEPS82615**/Buck & West #251  
*Silene verecunda* (subsp. *verecunda*)/accession number **JEPS81534**/Stone, Buck & West #462  
*Silene verecunda* (subsp. *verecunda*)/accession number **JEPS82662**/Buck & West #262  
*Silene verecunda* (subsp. *verecunda*)/accession number **JEPS82663**/Buck & West #262  
*Silene verecunda* (subsp. *verecunda*)/accession number **JEPS90792**/Taylor #9617  
*Silene verecunda* (subsp. *verecunda*)/accession number **RSA502348**/Taylor #9617  
*Silene verecunda* (subsp. *verecunda*)/accession number **JEPS97527**/Stone #678  
*Silene verecunda* (subsp. *verecunda*)/accession number **JEPS82967**/West #80  
*Solanum douglasii*/accession number **JEPS101222**/Dean Wm. Taylor #10194, Mar 30 1989  
*Solidago canadensis* subsp. *elongata* = *Solidago elongata*/accession number **JEPS81556**/Buck #106  
*Stachys ajugoides*/accession number **UCR67852**/Keil #20594  
*Stachys chamissonis*/accession number **JEPS81507**/Buck & West #16  
*Stachys chamissonis*/accession number **JEPS81508**/Buck & West #16  
*Stebbinsoseris decipiens*/accession number **JEPS82648**/Buck & West #211  
*Stebbinsoseris decipiens*/accession number **JEPS85645**/Buck, West & Hawke #235  
*Stebbinsoseris decipiens*/accession number **JEPS82652**/Buck, West & Hawke #235  
*Stebbinsoseris decipiens*/accession number **JEPS81532**/Stone, Buck & West #460  
*Stebbinsoseris decipiens*/accession number **JEPS13995**/Chambers #670  
*Stebbinsoseris decipiens*/accession number **UC1561075**/Taylor, Buck, West & Clifton #9656  
*Stebbinsoseris decipiens*/accession number **UCSC4622**/Randall Morgan, Apr 18 1986  
*Trifolium "pseudo-barbigerum"*/accession number **JEPS85165**/Buck & West #270  
*Trifolium "pseudo-barbigerum"*/accession number **JEPS85166**/Buck & West #223  
*Trifolium willdenovii*/accession number **JEPS82613**/Buck & West #253  
*Trifolium wormskioldii*/accession number **JEPS83115**/Buck & West #342  
*Triodanus biflora*/accession number **JEPS83122**/Buck & West #374  
*Triteleia laxa*/accession number **JEPS83106**/West #354

*Triteleia laxa*/accession number JEPS83117/West #331

*Wyethia angustifolia*/accession number JEPS82805/Buck & West #290

### **Last Chance Road to the Old Seaside Schoolhouse**

Beginning our descent and looking eastward, we view the gauntlet of burl-forming manzanitas (*Arctostaphylos crustacea*, sensu lato) and knobcone pines (*Pinus attenuata*) which characterize the upper Schoolhouse Ridge/Seymore Hill complex, and experience the panoramic view of the watershed, its vastness and topographical complexity, giving one insight, an epiphany if you like, into the evolutionary dynamics, both geological and biological, which have given rise to the biodiversity that is the hallmark of this ecological “hot spot”!

The uppermost reaches of the Scotts Creek Watershed and its principal tributaries, center around Eagle Rock and the Locatelli/Lockheed Martin holdings, with their constituent drainages, namely Little Basin, Bannister and Bettencourt Gulches, plus the sources for the Mill, Big and Little Creek Watersheds. A number of rare, uncommon and/or sporadic in occurrence taxa have been documented for this infrequently studied area, some of which are: round-leaved hoita (*Hoita orbicularis*), California rose-bay (*Rhododendron macrophyllum*), canyon liveforever (*Dudleya cymosa* subsp. *cymosa*), false lupine (*Thermopsis macrophylla* var. *macrophylla*), Pacific marsh purslane (*Ludwigia palustris*), Harford’s melic (*Melica harfordii*), rush rose (*Helianthemum scoparium*), redwood penstemon (*Keckiella corymbosa*) and rough bent grass (*Agrostis scabra*).

The summit of the Seymore Hill is ringed with grasslands sheltering scattered clusters of California fuchsia (*Epilobium canum*), displaying cinereous foliage framing tubular scarlet flowers that glow like hidden caches of rubies when backlit by the setting sun. A quintet of *Aster* kin, punctuate the weathered mudstone and offer students of systematics and ecology a unique opportunity to study reproductive isolating strategies between sympatric related taxa: hirsute gumplant (*Grindelia hirsutula* var. *hirsutula*), a glandular ecotype of Bolander’s golden aster (*Heterotheca sessiliflora* subsp. *bolanderi*) which approaches ssp. *echioides* and exudes an odor of camphor...biochemically distinct from its coastal prairie analogue, California goldenrod (*Solidago velutina* subsp. *californica*), coyote brush (*Baccharis pilularis*) and California aster (*Lessingia filaginifolia* var. *filaginifolia* = *Corethrogyne filaginifolia*). Staying within the Asteraceae but belonging to the Sunflower Tribe (Heliantheae), an isolated colony of mules ears (*Wyethia glabra*) occupied a semi-sheltered niche just below the crest of the ridgetop and may have perished in the 2009 fire.... revisiting the area after the Spring(2010) rains may offer a more optimistic scenario but fortunately, collected seed from this lone local population has germinated and is growing up at the UCSC Arboretum. Two of the three documented clarkias for the immediate area manage to stake out territories along the wind-buffeted margin of the exposed ridge top: farewell-to-spring (*Clarkia rubicunda*) and four-spotted godetia (*Clarkia purpurea* subsp. *quadrivulnera*), the seeming fragility of their lilac/lavender flowers offset by the production of numerous capsules yielding viable seed and remarkably stable population sizes. Responding to the prevailing winds out of the northwest, Spanish trefoil (*Lotus purshianus* var. *purshianus* = *Acmispon americanus* var. *americanus*), radically altered its erect-ascending mode of growth by lowering its profile and becoming a visually attractive mat and retaining this prostrate status when raised from seed elsewhere. Visually obscured by the burnished end-of-season tangle of grass stalks, harvest brodiaea (*Brodiaea elegans* subsp. *elegans*), a range extending species in need of further taxonomic clarification, leaves a trail of amethyst dust when viewed from afar, while Kellogg’s yampah (*Perideridia kelloggii*), the more common of the two species of this genus to be found within the watershed, plays sentinel to the proceedings.

Located between the uppermost limits of the Schoolhouse Ridge and the emergence of the “Chalks”, the Seymore Hill presents two radically differing profiles: facing eastward towards the upper Mill Creek

Watershed and **dropping off precipitously is an interrupted series of near-vertical grasslands.** Finding sanctuary in this most precarious of habitats, the families Boraginaceae and Ranunculaceae contribute two members each--- nievitas (*Cryptantha flaccida*), stems and calyces clothed with glistening encrusted trichomes and rusty popcorn-flower (*Plagiobothrys nothofulvus*), staining hands and herbarium sheets purple with anthocyanin colored sap, occupying separate niches from two sympatric species of *Delphinium*, western larkspur (*Delphinium hesperium* subsp. *hesperium*), extremely rare within the watershed and woodland larkspur (*Delphinium patens* subsp. *patens*), departing from the forma typica locally, with some plants pubescent not glabrous. Contrasting exerted reddish corollas with a densely cobwebby indument, Venus thistle (*Cirsium occidentale* var. *venustum*) makes scattered appearances, its sparsity offset by the Faberge-like intricacy of its discoid flower heads. One, in a series of uncommon legumes to be found within the watershed, arroyo lupine (*Lupinus succulentus*), was observed circa two decades ago, growing in a transitional zone between coastal scrub and mixed coniferous/oak woodland, literally perched on an exposed section of weathered mudstone, its fleshy stems and broadly drawn leaflets contrasting with the aridity of the surrounding environment. Staying within the Fabaceae and surrounded by the formidably armed and monotypic chaparral pea (*Pickeringia montana* var. *montana*), the visually arresting silver bush lupine (*Lupinus albifrons* var. *albifrons*), stands out from the surrounding verdancy with foliar indument akin to brushed aluminum! **A 04/2010 preliminary field study, of the east/south facing, often near-vertical slopes overlooking the Upper and Lower Seymore Fields, yielded the following "native" species inventory..... an amazing assemblage of taxa, considering the entire area was burned in the 08/2009 Lockheed fire:** *Lathyrus vestitus sensu lato*, *Lotus humistratus*, *Lotus junceus* var. *junceus*, *Lotus micranthus*, *Lotus purshianus* var. *purshianus*, *Lotus salsuginosus* var. *salsuginosus*, *Lotus scoparius*, *Lotus strigosus*, *Lotus wrangelianus*, *Lupinus albifrons* var. *albifrons*, *Lupinus bicolor*, *Lupinus latifolius* var. *latifolius*, *Lupinus nanus*, *Lupinus succulentus*, *Pickeringia montana* var. *montana*, *Trifolium albopurpureum* var. *albopurpureum*, *Trifolium ciliolatum*, *Trifolium gracilentum* var. *gracilentum*, *Trifolium microcephalum*, *Trifolium microdon*, *Trifolium willdenovii*, *Vicia americana* var. *americana*..... *Heracleum maximum*, *Osmorhiza berteroi*, *Sanicula arctopoides*, *Sanicula bipinnatifida*, *Sanicula crassicaulis*, *Sanicula gianonei*, *pro.sp.nov.*, *Sanicula "pseudo-laciniata"*..... *Eriogonum nudum sensu lato*, *Pterostegia drymarioides*..... *Achillea millefolium*, *Agoseris grandiflora*, *Anaphalis margaritacea*, *Anisocarpus madioides*, *Artemisia douglasiana*, *Baccharis pilularis*, *Cirsium occidentale* var. *venustum*, *Eriophyllum confertiflorum* var. *confertiflorum*, *Gamochaeta ustulata*, *Grindelia hirsutula* var. *hirsutula*, *Madia gracilis*, *Madia sativa*, *Malacothrix floccifera*, *Pseudognaphalium ramosissimum*, *Rafinesquia californica*, *Solidago velutina* subsp. *californica*, *Symphytichum chilense*, *Uropappus lindleyi*..... *Delphinium hesperium* subsp. *hesperium*, *Delphinium patens*..... *Castilleja affinis* subsp. *affinis*, *Castilleja foliolosa*..... *Polygala californica*..... *Galium californicum* subsp. *californicum*, *Galium porrigens* var. *porrigens*..... *Adiantum jordanii*, *Pentagramma triangularis* subsp. *triangularis*..... *Polypodium californicum*..... *Pteridium aquilinum* var. *pubescens*..... *Dryopteris arguta*..... *Toxicodendron diversilobum*..... *Sequoia sempervirens*..... *Pinus attenuata*, *Pseudotsuga menziesii* var. *menziesii*..... *Marah fabaceus*..... *Caulanthus lasiophyllus*, *Thysanocarpus curvipes*..... *Bromus carinatus* var. *carinatus*, *Calamagrostis rubescens*, *Melica californica*, *Melica torreyana*, *Nassella lepida*, *Poa howellii*..... *Arbutus menziesii*, *Arctostaphylos crustacea sensu lato*, *Vaccinium ovatum*..... *Oxalis corniculata* subsp. *pilosa*..... *Mimulus aurantiacus*..... *Iris douglasiana*, *Sisyrinchium bellum*..... *Umbellularia californica*..... *Chrysolepis chrysophylla* var. *minor*, *Quercus agrifolia*, *Quercus chrysolepis*..... *Adenostema fasciculatum*, *Fragaria vesca*, *Heteromeles arbutifolia*, *Rosa spithamea* (NEW ADDITION TO WATERSHED'S NATIVE SPECIES ROSTER..... growin within exposed ridgetop/chaparral interface, dwarf stature circa 30cm in heighth, rhizomatous, stems prickles straight and viniferous in coloration, hypanthium clothed with stalked glands, sepals persistant and pistils 10+ ), *Rubus ursinus*..... *Verbena lasiostachys* var. *lasiostachys*..... *Sambucus nigra* subsp. *canadensis*..... *Camissonia ovata*, *Clarkia rubicunda*..... *Monardella villosa sensu lato*, *Satureja douglasii*, *Stachys ajugoides* var. *rigida*, *Stachys bullata*..... *Solanum umbelliferum*..... *Carex tumulicola*..... *Juncus patens*..... *Toxicoscordion fremontii*, *Trillium chloropetalum*, *Trillium ovatum*..... *Smilacina stellata*..... *Chlorogalum pomeridianum* var. *pomeridianum*..... *Cryptantha clevelandii*, *Cryptantha micromeres*,

*Emmenanthe penduliflora*, *Eriodictyon californicum*, *Nemophila parviflora* var. *parviflora*,  
*Plagiobothrys nothofulvus*..... *Antirrhinum kelloggii*..... *Euphorbia crenulata*..... *Dendromecon rigida*,  
*Eschscholzia californica*..... *Urtica dioica* subsp. *holosericea*..... *Claytonia perfoliata* subsp. *perfoliata*.....  
*Calochortus albus*..... *Dichelostemma capitatum* subsp. *capitatum*..... *Gilia achilleifolia* sensu lato,  
*Leptosiphon androsaceus*..... *Calystegia purpurata* subsp. *purpurata*..... *Scrophularia californica* subsp.  
*californica*..... *Frangula californica* subsp. *californica*..... *Lithophragma heterophyllum*..... and  
*Lonicera hispidula*.

Separating the Seymore Field from the Mill Creek riparian corridor is an intricate series of south-facing ridges, their intervening gulches ultimately draining down into Mill Creek. Basically comprising large expanses of weathered and fractured mudstone, this is an arid environment to be sure, but nonetheless **home to** extensive populations of a **polymorphic** tetraploid burl-forming manzanita complex (*Arctostaphylos crustacea*, sensu lato) and **endemic** to the watershed, the diploid non-burl forming Schreiber's manzanita (*Arctostaphylos glutinosa*). To demonstrate that with the "Arctos", what you see is not necessarily what you get (this caveat also applies to local members of the genus *Carex* as well), I will recount an experience with a "burl-forming" component of this particular manzanita population that took place some twenty-five years ago. While exploring this exposed ridge top and scanning the near-vertical slopes trailing off beneath my feet, three mature "arctos" caught my eye, standing out from the rest of their brethren with the following two distinguishing characteristics: the circa 1.5 meters wide x 2 meters high shrubs possessed stems colored a **tannish-brown** rather than the conspicuously darker reddish-brown of the general population and the smallish lanceolate-ovate shaped leaves were a **vibrant grass-green**, contrasting with the darker and often duller foliage of their neighboring relatives. Working my way down to examine these "stand-outs" a third factor came into play, namely when the adaxial surfaces of the leaves were viewed under a hand-lens, a scattering of stomata could be seen, albeit far fewer than what existed on the abaxial sides. A well-rooted lower branch from one of the specimens was excised and dispatched to a private botanical garden where it thrived, **morphing during its third year of residency into something quite different in gestalt, compared to its in situ origins--- the leaves had trebled in size and were conspicuously auriculate/cordate at base!** Representing a family and genus well distributed throughout the watershed, woolly Indian paintbrush (*Castilleja foliolosa*) lays claim to the upper reaches of the chaparral, and the specimens growing in amongst the manzanitas on this particular ridge were producing yellow pigmented inflorescences. **Of major biogeographical interest, considering the fact that most, if not all, of the upper watershed's populations of *Arctostaphylos glutinosa* were destroyed by the 2009 Lockheed Fire..... an isolated population of this rare endemic manzanita, occurs across Scotts Creek, on a southern facing ridge-top which initiates the Laird Gulch drainage system.** Sharing this isolated portion Lower Last Chance Ridge chaparral, with its interdigitating oak/conifer woodlands, are two equally rare but for differing reasons, native taxa..... Hoffmann's sanicle (*Sanicula hoffmannii*), disjunct populations of a species originally described from coastal San Luis Obispo and Santa Barbara Counties and the locally distinctive stipulate trefoil (*Lotus stipularis* var. *stipularis*), which is densely clothed with basalmic-scented glandular trichomes and historically in the literature, has been referred to as *Lotus balsamiferus* (Kell.) Greene. **The fire of 2009 had a major impact, population wise, on another even rarer endemic manzanita..... namely, *Arctostaphylos ohloneana* M.C. Vasey & V.T. Parker. This recently discovered and described non-burl former, had its main population centered within the Boyer Creek Dam area, which took a major hit from the fire. Like its sister endemic, *Arctostaphylos glutinosa*, a disjunct population exists..... in this case, the upper reaches of the Bannister Gulch sub-watershed!!!**

During 07/2010, I revisited the arid expanse of mudstone separating the upper Seymore Field from the Mill Creek Watershed proper on three separate occasions and was pleasantly surprised to find, **that 10-20% of the Schreiber's manzanita population (*Arctostaphylos glutinosa*) occupying that area had survived the 2009 Lockheed Fire..... also present, were scattered seedlings of this localized endemic, having germinated in the mudstone fragments with taproots circa 7cm deep and aerial stems of comparable height, already displaying a tendency for basal branching, with stems and petioles clothed with**

**gland-tipped trichomes.** The post fire "natives" sharing this exposed, minimalist environment constitute a botanical mosaic of extremes..... a juxtaposing of the common with the rarely seen, and in the case of the latter, usually only after a major fire, the last being in 1948. Here is a preliminary inventory of what has flourished in this lunar landscape, following the mild but protracted rainy season of 2010: rayless arnica (*Arnica discoidea*), slender fescue (*Vulpia octoflora*), woolly malacothrix (*Malacothrix floccifera*), whispering bells (*Emmenanthe penduliflora*), bird's-foot fern (*Pellaea mucronata* var. *mucronata*), Cleveland's cryptantha (*Cryptantha clevelandii*), minute-flowered cryptantha (*Cryptantha micromeres*), bush poppy (*Dendromecon rigida*), twining snapdragon (*Antirrhinum kelloggii*), California mustard (*Caulanthus lasiophyllus*), rush trefoil (*Acmispon junceus* sensu lato), California huckleberry (*Vaccinium ovatum*), canyon live-oak (*Quercus chrysolepis*), chamise (*Adenostema fasciculatum*), brittle-leaf manzanita (*Arctostaphylos crustacea* sensu lato), deerweed (*Acmispon glaber* var. *glaber*), woolly Indian paintbrush (*Castilleja foliolosa*), sleepy catchfly (*Silene antirrhina*..... **observed sharing this habitat, was *Silene multinervia*, new for the watershed and considered a native taxon in the Jepson Manual, 1993, but now considered conspecific with *Silene coniflora*, a taxon naturalized in California**), rush rose (*Helianthemum scoparium*), morning glory (*Calystegia purpurata* subsp. *purpurata*), Brewer's calandrinia (*Calandrinia breweri*), blue toadflax (*Linaria canadensis*), knobcone pine (*Pinus attenuata*), golden yarrow (*Eriophyllum confertiflorum* var. *confertiflorum*) and stephanomeria (*Stephanomeria* aff. *elata*..... **some plants 1.5+ meters high x 1 meter wide overall, flowering branches wand-like and spreading between 45 and 90 degrees from main stem axis, florets 9+, calyculi with apices spreading/reflexed, cypselae 3-4 mm in length with faces tuberculate and grooved longitudinally, pappus plumose throughout**). Other native taxa growing sympatrically with the emergent fire-followers, are as follows: Bioletti's cudweed (*Pseudognaphalium biolettii*), California cudweed (*Pseudognaphalium californicum*), pink everlasting (*Pseudognaphalium ramosissimum*), California poppy (*Eschscholzia californica*), yerbs santa (*Eriodictyon californicum*), California bedstraw (*Galium californicum* subsp. *californicum*..... **forming cespitose tufts on the exposed fractured mudstone and clothed with stiffer trichomes than forms found further down the ridge growing in the mixed conifer/hardwood understory**), climbing bedstraw (*Galium porrigens* var. *porrigens*), toyon (*Heteromeles arbutifolia*), Pacific madrone (*Arbutus menziesii*), sticky monkeyflower (*Mimulus aurantiacus*), sea lettuce (*Dudleya caespitosa*..... **its roots embedded within small fractures of the exposed mudstone, this population may be the watershed's furthest inland population, for this complex, polyphyletic/polyploid taxon..... the majority of the colony, have rosettes with chalky leaves and the apices of the unopened corollas, have a reddish-orange blush, which contrasts with the darker yellow corolla proper and anthocyanic tinted stems**), blue blossom (*Ceanothus thrysiflorus*..... **a copious reseeder following 2009 fire**), Torrey's melic (*Melica torreyana*), small-flowered trefoil (*Acmispon parviflorus*) and minute willow herb (*Epilobium minutum*..... leaves plane not folded along midrib, seeds circa 1mm), also within this relatively narrow zone, ascending from the riparian to chaparral, two other species of *Epilobium* occur: namely, panicled willow herb (*Epilobium brachycarpum*) and willow herb (*Epilobium ciliatum* subsp. *ciliatum*).

Topographically complex and botanically diverse, the Scotts Creek aspect of the Seymore Hill is bounded by a series of interrupted, asymmetrical grasslands, flanked and bisected lengthwise by Bettencourt and **Calf Gulches**, and margined by a mosaic of mixed evergreen/coniferous stands and disjunct manzanita populations. Within an area circa 300 meters x 50 meters, aligned along a north/south axis and abutting the source of **Calf Gulch**, four valid and two recognized but unpublished taxa within the genus *Sanicula* (family Apiaceae) have been documented. Growing vertically on a grassy slope and sympatrically with but reproductively isolated from the common gambleweed (*Sanicula crassicaulis*), is *Sanicula "pseudo-laciniata"*, differing consistently from *Sanicula crassicaulis* sensu strictu, **in foliar morphology, the possession of bright clear-yellow flowers with large like-colored conspicuously exerted anthers and a distinct chemical signature**. Occupying a transitional zone between the exposed, more mesic slopes and oak woodland, footsteps-of-spring (*Sanicula arctopoides*) and purple sanicle (*Sanicula bipinnatifida*) are often obscured from direct viewing by the competing grasses. Located deep within the oak understory, where light is subdued and less moisture is given up due to the actions of sun and wind, the rare

Hoffmann's sanicle (*Sanicula hoffmannii*) shares its domain with the common yet new to science **Gianone's sanicle (*Sanicula gianonei*, pro. sp. nov.)**. Within the watershed, purple sanicle (*Sanicula bipinnatifida*) occasionally produces plants with yellow flowers and regardless of floral coloration, the stems when broken and the oozing sap exposed to air, **turns milky-white in color**, a distinctive characteristic it shares with close relative, Hoffmann's sanicle (*Sanicula hoffmannii*)!

Staying within and adjacent to the "Sanicula Rectangle", several "pairs" of related species have been observed, these juxtapositions rarely or never encountered elsewhere within the watershed. Sharing a narrow near-perpendicular exposure of moss-bedecked mudstone, woodland star (*Lithophragma affine*) and hill star (*Lithophragma heterophyllum*) grow overlooking the steep and tortuous drop characterizing the upper reach of Calf Gulch..... **also choosing to colonize this moisture-retentive "micro habitat", is a locally uncommon, reduced in stature component of the *Mimulus guttatus* complex, with fugacious cleistogamous flowers readily passing for pale yellow miniaturized sausage casings (JEPS82565/WEST#200)**. Cloistered within the upper recesses of this "pinched off" nascent gulch, which rapidly in its precipitous descent evolves into a hydrologically active sub-watershed, is an extensive colony of crinkle-awn fescue (*Festuca subuliflora*)..... its inflorescences, delicate tracteries hovering in midair, appear detached from foliage and rhizomes anchored to near-vertical slopes. Preferring the open and consequently far drier vertical grassland habitat, purple godetia (*Clarkia purpurea* subsp. *purpurea*) and four-spotted godetia (*Clarkia purpurea* subsp. *quadrivulnera*) represent two extremes in population demographics, subsp. *purpurea* being rare or extirpated throughout its known range and subsp. *quadrivulnera*, widespread, extremely variable and as to status, common. Sharing this open grassland but choosing a considerably more horizontal perspective, another locally uncommon species, valley tassels (*Castilleja attenuata*), was documented for the watershed in 1983 as *Orthocarpus attenuatus*, a pressing deposited in the Jepson Herbarium at UC Berkeley and as of 04/03/10, is still a viable population. A variation on the *Clarkia purpurea* paradigm is the relatively common/rare pairing of slender cottonweed (*Micropus californicus* var. *californicus*) and green cottonweed (*Micropus californicus* var. *subvestitus*). Growing sympatrically with purple godetia (*Clarkia purpurea* subsp. *purpurea*) and documented by herbarium pressings, green cottonweed (*Micropus californicus* var. *subvestitus*) has not been placed elsewhere in Santa Cruz County! If two rare taxa sharing the same localized niche isn't intriguing enough, the more frequently encountered slender cottonweed (*Micropus californicus* var. *californicus*) was discovered circa 300 meters lower down the slope overlooking a transversely cut roadbed, which formerly descended into the depths of Bettencourt Gulch and provided habitat by way of another narrowly delimited grassland edge for the hopefully settled from a taxonomic perspective, San Francisco popcorn-flower (*Plagiobothrys diffusus*) and favoring moisture-retentive pockets roadside, our very own FSC/1B listed Santa Cruz clover (*Trifolium buckwestiorum*)! Further up the ridge and growing on a brush and oak shaded slope overlooking a rotational slump/pull apart landslide derived semi-lunate depression known as the "Bowl", the only validated population for the Swanton area of honey-scented navarretia (*Navarretia mellita*) was discovered in the 1970's: a widespread and relatively common species elsewhere but not, to date, in the Scotts Creek Watershed. A recently bulldozed access road, circa 2008, paralleling and overlooking this area of considerable geomorphic interest, in the process of cutting through the chaparral duff and exposing a considerable amount of bare mineral soil, stimulated the germination of several "fire-following" species, encountered only sporadically in the senescent chaparral. In the process of disturbing the 60+ years of accumulated organic debris and exposing dormant seed beds to the pulverized shale, a scenario analogous to a fire disturbance regime took place....with the embankments and road bed displaying extensive populations of Brewer's calandrinia (*Calandrinia breweri*), California mustard (*Guillenia lasiophylla* var. *lasiophylla* = *Caulanthus lasiophyllus*), with some individuals 2 meters in height, vigorous sympatric colonies of Cleveland's cryptantha (*Cryptantha clevelandii*) and minute-flowered cryptantha (*Cryptantha micromeres*), the visually cryptic twining snapdragon (*Antirrhinum kelloggii*), with violet-purple flowers attached to thread-like elongated pedicels, giving the flowers an impression of being suspended in mid-air, plus scattered tufts of slender fescue (*Vulpia octoflora*) sharing a horizontal alignment with miniature lupine (*Lupinus bicolor*) and rancheria clover (*Trifolium albopurpureum* var. *albopurpureum*) and making a not

totally unexpected appearance, one plant of honey-scented navarretia (*Navarretia mellita*)!!!. Returning to the aforementioned “vertical grasslands”, this one located nearer to the summit of the Seymore Hill, two sister species of *Agoseris* occur, their differences manifested in growth habits and conspicuously dissimilar presentation of the mature flower heads and achene morphologies: mountain dandelion (*Agoseris grandiflora*), a robust perennial with stout naked stems supporting the outsized fruiting heads looking ever so much like an aggregation of snowflakes held high above the surrounding grasses and annual agoseris (*Agoseris heterophylla*), a diminutive and delicate annual, usually overtopped by the competing seasonal vegetation and possessing polymorphic achenes, variable both as to color, tan through white and purple, and structure, ribbed or inflated.

**Calf Gulch is a complex bifurcate drainage system with several ancillary gulchlets feeding into it ..... beginning near the summit of the Seymore Hill and ultimately emptying into Scotts Creek. Like its oceanside analog, Big Willow Gulch, what it lacks in length is compensated for by a complex topography, much of which is vertical in orientation. While the final count for native species has yet to be achieved, the current (04/2010) in situ documentation, strongly suggests a biodiversity comparable to that found within the Big Willow Gulch. Here is a preliminary (post 2009 Lockheed Fire) inventory, grouped by familial affinities, of the native plant taxa found within the Calf Gulch subwatershed:** *Arbutus menziesii*, *Arctostaphylos crustacea sensu lato*, *Vaccinium ovatum*..... *Amsinckia menziesii* var. *intermedia*, *Cryptantha clevelandii*, *Cryptantha micromeres*, *Cynoglossum grande*, *Eriodictyon californicum*, *Nemophila parviflora* var. *parviflora*, *Phacelia malvifolia*..... *Notholithocarpus densiflorus* var. *densiflorus*, *Quercus agrifolia* var. *agrifolia*, *Quercus x chasei*, *Quercus parvula* var. *shrevei*..... *Pinus attenuata*, *Pseudotsuga menziesii* var. *menziesii*..... *Bowlesia incana*, *Daucus pusillus*, *Heracleum maximum*, *Osmorhiza berteroi*, *Perideridia kelloggii*, *Sanicula arctopoides*, *Sanicula bipinnatifida*, *Sanicula crassicaulis*, *Sanicula gianonei*, *pro.sp.nov.*, *Sanicula hoffmannii*, *Sanicula "pseudo-laciniata"* ..... *Equisetum telmateia* subsp. *braunii*..... *Athyrium filix-femina* var. *cyclocorum*, *Dryopteris arguta*, *Polystichum munitum*, *Polypodium calirhiza*, *Pteridium aquilinum* var. *pubescens*, *Adiantum jordani*, *Woodwardia fimbriata*, *Pentagramma triangularis* subsp. *triangularis*..... *Sequoia sempervirens*..... *Umbellularia californica*..... *Calystegia purpurata* subsp. *purpurata*, *Dichondra donnelliana* (stems 2+ mm in diameter, growing in lower portion of gulch where meadow interfaces with redwood groves as per Seymore Field population)..... *Laythrus vestitus sensu lato*, *Lotus junceus*, *Lotus micranthus*, *Lotus scoparius* var. *scoparius*, *Lotus strigosus*, *Lotus wrangelianus*, *Lupinus bicolor*, *Lupinus nanus*, *Trifolium barbigerum* var. *barbigerum*, *Trifolium buckwestiorum*, *Trifolium microcephalum*, *Trifolium microdon*, *Trifolium oliganthum*, *Trifolium* aff. *variegatum* (plants growing in lower section of gulch, in open meadow, reduced in stature with involucre cut 1/2-3/4 to base, calyx lobes longer than tube, entire and not splitting as fruit matures), *Trifolium willdenovii*..... *Acer negundo* var. *californicum*..... *Toxicodendron diversilobum*..... *Verbena lasiostachys* var. *lasiostachys*..... *Adenocaulon bicolor*, *Anisocarpus madioides*, *Artemisia douglasiana*, *Baccharis pilularis*, *Cirsium brevistylum*, *Deinandra corymbosa*, *Eriophyllum confertiflorum* var. *confertiflorum*, *Eurybia radulina*, *Gamochaeta ustulata*, *Hieracium albiflorum*, *Layia platyglossa*, *Madia gracilis* (gland-tipped trichomes from midway up stem to apex of inflorescence emitting a cherry-syrup scent), *Madia sativa* (clothed with gland-tipped trichomes from near base of stem..... scent varies between different populations and may represent interspecific hybridization or more than one species being lumped together under the same name), *Microseris bigelovii*, *Micropus californicus* var. *subvestitus*, *Pseudognaphalium ramosissimum*, *Pseudognaphalium stramineum*, *Psilocarphus tenellus* var. *tenellus*, *Rafinesquia californica*..... *Iris douglasiana*, *Sisyrinchium bellum*..... *Ceanothus thyrsiflorus*, *Frangula californica* subsp. *californica*..... *Marah fabaceus*..... *Heuchera micrantha*, *Lithophragma affine*, *Lithophragma heterophyllum*..... *Actaea rubra*, *Clematis lasiantha*, *Ranunculus californicus*, *Ranunculus hebecarpus*, *Thalictrum polycarpum*..... *Adenostema fasciculatum*, *Fragaria vesca*, *Heteromeles arbutifolia*, *Holodiscus discolor*, *Oemleria cerasiformis*, *Potentilla glandulosa* subsp. *glandulosa*, *Rosa gymnocarpa*, *Rubus parviflorus*, *Rubus ursinus*..... *Calandrinia breweri*, *Calandrinia ciliata*, *Claytonia parviflora* subsp. *parviflora*, *Claytonia perfoliata* subsp. *perfoliata*..... *Lonicera hispidula*, *Symphoricarpos albus*



var. laevigatus..... Sambucus nigra subsp. canadensis..... Hesperocnide tenella, Urtica dioica subsp. holosericea..... Alnus rubra, Corylus cornuta var. californica..... Monardella villosa sensu lato, Prunella vulgaris var. lanceolata, Satureja douglasii, Stachys bullata..... Juncus bufonius sensu lato, Juncus hesperius, Juncus patens, Luzula comosa..... Carex bolanderi..... Scrophularia californica subsp. californica..... Mimulus aurantiacus..... Solanum douglasii, Solanum umbelliferum..... Cardamine californica var. californica, Cardamine oligosperma, Caulanthus lasiophyllus, Nasturtium officinale..... Trientalis latifolia..... Chlorogalum pomeridianum var. pomeridianum..... Calamagrostis rubescens, Festuca californica, Melica subulata, Melica torreyana, Nasella pulchra..... Calochortus albus, Fritillaria affinis..... Castilleja attenuata, Triphysaria pusilla..... Smilacina racemosa, Smilacina stellata..... Camissonia ovata, Clarkia rubicunda..... Galium californicum subsp. californicum, Galium triflorum..... Cornus sericea subsp. sericea..... Toxicoscordion fremontii, Trillium chloropetalum..... Dendromecon rigida, Eschscholzia californica..... Collomia heterophylla, Leptosiphon androsaceus..... Ribes divaricatum var. pubiflorum..... Prosartes hookeri..... Dichelostemma capitatum subsp. capitatum..... Antirrhinum kelloggii..... Polygala californica and Pterostegia drymarioides.

Demarcated by Last Chance Road, **Laird Gulch**, the Scotts Creek riparian corridor and Gianone Barn Gulch, a series of hydrologically active, landslide derived “marshes”, beginning topographically at **Beaver Flat** and terminating with Marti’s Park, act as repositories for rare, often localized species. Associated with old bogs and marsh-like habitats, Hall’s willow herb (*Epilobium hallianum*), a locally rare turion-forming species, was discovered in **Beaver Flat** in the mid-1970s. Growing sympatrically with two relatives, willow herb (*Epilobium ciliatum* subsp. *ciliatum*, with some plants tending towards subsp. *watsonii*) and dense-flowered boisduvalia (*Epilobium densiflorum*), this serendipitous discovery was documented with several pressings that now reside in the Jepson Herbarium at UC Berkeley. Gaining structural support from the sympatric poison oak (*Toxicodendron diversilobum*), an isolated colony of California fescue (*Elymus californicus*) with flowering culms approaching 2.5 meters in height, thrives upslope in a more mesic environment..... while tracing the perennial streamlet that defines the marsh proper, **two robust forms** of western bent grass (*Agrostis exarata*) co-exist: a distinctly verticillate form lacking awns, secures the upper reaches and its mirror albeit awned twin, has established itself down in the bottoms.... whether these two morphologically self-maintaining taxa are **reproductively isolated**, is a subject worth exploring!!! Growing under three different ecological regimes, albeit proximal to each other, the genus *Triteleia* diversifies in this secluded environment: when studied at length and in depth during the 1970s, white brodiaea (*Triteleia hyacinthina*) occupied the lower and wettest part of the “marsh”, while Ithuriel’s spear (*Triteleia laxa*) chose the higher and drier grasslands overlooking the wet zone and staking out the middle ground, growing up out of a patch of California blackberries (*Rubus ursinus*), was a small colony of golden brodiaea (*Triteleia ixioides* subsp. *ixioides*). Favoring long established "ancient" marshes, the locally uncommon trifold bedstraw (*Galium trifidum* var. *pacificum*) makes its home growing up through old expansive clumps of *Juncus effusus* var. *pacificus*, its root systems secure from seasonal hydrological changes and its scandent stems protected from herbivory. Scattered throughout the marsh proper and its periphery are colonies of **Gianone sedge** (*Carex gianonei*, *pro. sp. nov.*), while growing more or less restricted to the marsh’s lower east-facing section, are individual plants of the “*imperfecta*” phase. Growing in a seasonally wet pond at the head of Beaver Flat within a dense colony of common spikerush (*Eleocharis macrostachya*), two county-wide rarities were observed and documented, namely narrow canary grass (*Phalaris angusta*) and smooth goldfields (*Lasthenia glaberrima*). Several decades ago, the decidedly uncommon western inflated sedge (*Carex vesicaria* var. *major*) was found, both in this seasonal pond draining into Beaver Flat and along the east facing edge of Last Chance Lagoon..... recent efforts to rediscover both populations have resulted in failure! Two monocots not found elsewhere within the watershed were also studied, pressed and dispatched to the Jepson, the duo being annual hairgrass (*Deschampsia danthonioides*) and what appears to be an isolated colony of slender rush (*Juncus tenuis*), specimens pressed and deposited in the Jepson Herbarium, U.C. Berkeley (accession number **JEPS82593**, James A. West, **101**, May 26 1983).....**this distinctive taxon, which consistently displays a very open inflorescence, not unlike that of *Juncus tenuis*, may in fact be an extreme local phase of western rush**

**(*Juncus occidentalis*)..... as of 07/09, a sexually reproducing sub-population of this taxon still exists and select plants have been collected and are being raised at the UCSC Arboretum for study.** Two members of the common monkeyflower complex (*Mimulus guttatus*, var. *guttatus* and var. *arvensis*) grew sympatrically without displaying any signs of intermediacy..... (note: the var. *arvensis* is **inodorus and this trait, in conjunction with differences in the patterning of the lower corolla lip and whether the palate creates an open or nearly closed throat, could be the mechanism(s) maintaining the reproductive isolation between the two sympatric varieties**)..... while threading their way through the basal seepage, extensive colonies of artist's popcorn-flower (*Plagiobothrys chorisianus* var. *chorisianus*) luxuriated, carpeting the wet spots and perfuming the surrounding area with fragrant white and yellow flowers and **virtually invisible due to its diminutive stature**, timwort (*Cicendia quadrangularis*) would pass unnoticed, were it not for the eye-catching **cruciferous yellow corollas**, acting as points of light against the verdancy of the peripheral grassland but even more inconspicuous, is chaffweed (*Anagallis minima*), recently removed from Primulaceae and nested within the Myrsinaceae.

**Laird Gulch**, like several other morphologically complex sub-watersheds draining into Scotts Creek, can be viewed as a "living laboratory": where the adaptive plasticity of residing taxa and extremes of habitat available within a confined zone, interact to produce ecotypes of the same species varying widely in gestalts. A cogent example is found in **two forms** of the coast redwood (*Sequoia sempervirens*)..... the **forma typica** residing deep within the gulch bottom and adjacent forested slopes, while the **golden-hued reduced-in-stature chaparral form** exists in a markedly xeric and exposed environment, which it shares with knobcone pine (*Pinus attenuata*), hairy manzanita (*Arctostaphylos crustacea sensu lato*), Schreiber's manzanita (*Arctostaphylos glutinosa*..... **disjunct population which survived 2009 Lockheed Fire**), California huckleberry (*Vaccinium ovatum*..... another taxon, like the redwood, adapting to habitat extremes), chaparral pea (*Pickeringia montana* var. *montana*), chamise (*Adenostema fasciculatum*), toyon (*Heteromeles arbutifolia*), canyon live-oak (*Quercus chrysolepis*), forest live-oak (*Quercus parvula* var. *shrevei*), golden chinquapin (*Chrysolepis chrysophylla* var. *minor*), Pacific madrone (*Arbutus menziesii*), Bioletti's trefoil (*Lotus junceus* var. *biolettii*..... variable as to length of peduncle) and stipulate trefoil (*Lotus stipularis*..... isolated populations are uniformly clothed with resinous glands, sweetly fragrant and possibly referable to *Lotus balsamiferus* (Kell.)Greene). **Due to the near vertical topography which defines much of this drainage system, a full accounting of all "native" taxa residing within its mapped boundaries may never be fully realized but the following species list, grouped by familial affinities, sets the groundwork/creates a baseline for future such endeavors:** California brome (*Bromus carinatus* var. *carinatus*), nodding brome (*Bromus vulgaris*), pine grass (*Calamagrostis rubescens*), California bottlebrush grass (*Elymus californicus*), California wild rye (*Elymus glaucus* subsp. *glaucus*), California fescue (*Festuca californica*), western fescue (*Festuca occidentalis*), crinkle-awn fescue (*Festuca subuliflora*), vanilla grass (*Hierochloa occidentalis*), Alaska onion grass (*Melica subulata*), Torrey's melic (*Melica torreyana*), California canary grass (*Phalaris californica*), Howell's bluegrass (*Poa howellii*), tall trisetum (*Trisetum canescens*)..... chamise (*Adenostema fasciculatum*), western lady's mantle (*Aphanes occidentalis*), wood strawberry (*Fragaria vesca*), toyon (*Heteromeles arbutifolia*), ocean spray (*Holodiscus discolor*), wood rose (*Rosa gymnocarpa*), black-cap raspberry (*Rubus leucodermis*), thimbleberry (*Rubus parviflorus*), California blackberry (*Rubus ursinus*)..... pitcher sage (*Lepechinia calycina*), coyote mint (*Monardella villosa sensu lato*..... populations variable, ranging from subsp. *villosa* thru subsp. *franciscana*), yerba buena (*Satureja douglasii*), California hedge-nettle (*Stachys bullata*)..... yarrow (*Achillea millefolium*), trail plant (*Adenocaulon bicolor*), mountain dandelion (*Agoseris grandiflora*), woodland madia (*Anisocarpus madioides*), mugwort (*Artemisia douglasiana*), coyote brush (*Baccharis pilularis*), Indian thistle (*Cirsium brevistylum*), golden yarrow (*Eriophyllum confertiflorum* var. *confertiflorum*), broad-leaved aster (*Eurybia radulina*), purple cudweed (*Gamochaeta ustulata*), white hawkweed (*Hieracium albiflorum*), California cudweed (*Pseudognaphalium californicum*), pink everlasting (*Pseudognaphalium ramosissimum*), woolly marbles (*Psilocarphus tenellus* var. *tenellus*), California chicory (*Rafinesquia californica*)..... cow-parsnip (*Heracleum maximum*), sweet cicely (*Osmorhiza berteroi*), gambleweed (*Sanicula crassicaulis*), Gianone sanicle (*Sanicula gianonei*, pro.sp.nov.),

Hoffmann's sanicle (*Sanicula hoffmannii*)..... baneberry (*Actaea rubra*), pipestems (*Clematis lasiantha*)..... California bay laurel (*Umbellularia californica*)..... California nutmeg (*Torreya californica*)..... bush poppy (*Dendromecon rigida*)..... Pacific starflower (*Trientalis latifolia*)..... morning glory (*Calystegia purpurata* subsp. *purpurata*)..... Douglas's nightshade (*Solanum douglasii*), blue witch (*Solanum umbelliferum*)..... brown bog-rush (*Juncus hesperius*), common rush (*Juncus patens*), common wood rush (*Luzula comosa*)..... Pacific pea (*Lathyrus vestitus sensu lato*), rush trefoil (*Lotus junceus sensu lato*)..... erect to prostrate in mode of growth, with peduncles abbreviated to conspicuously elongate), small-flowered trefoil (*Lotus micranthus*), deerweed (*Lotus scoparius* var. *scoparius*), stipulate trefoil (*Lotus stipularis*, aff. *Lotus balsamiferus*), strigose trefoil (*Lotus strigosus*), chaparral pea (*Pickeringia montana* var. *montana*), few-flowered clover (*Trifolium oliganthum*), American vetch (*Vicia americana* var. *americana*), giant vetch (*Vicia gigantea*), Hasse's vetch (*Vicia hassei*)..... golden chinquapin (*Chrysolepis chrysophylla* var. *minor*), tan-oak (*Notholithocarpus densiflorus* var. *densiflorus*), coast live-oak (*Quercus agrifolia* var. *agrifolia*), canyon live-oak (*Quercus chrysolepis*), forest live-oak (*Quercus parvula* var. *shrevei*)..... bracken (*Pteridium aquilinum* var. *pubescens*)..... lady fern (*Athyrium filix-femina* var. *cyclosorum*), wood fern (*Dryopteris arguta*), western sword fern (*Polystichum munitum*)..... five-finger fern (*Adiantum aleuticum*), goldback fern (*Pentagramma triangularis* subsp. *triangularis*)..... deer fern (*Blechnum spicant*), giant chain fern (*Woodwardia fimbriata*)..... nested polypody (*Polypodium calirhiza*)..... growing as an epiphyte, with lowermost 1-3 sets of pinna shorter than succeeding ones)..... giant horsetail (*Equisetum telmateia* subsp. *braunii*)..... knobcone pine (*Pinus attenuata*), **Monterey pine (*Pinus radiata*..... reflecting the *Pinus attenuata* gestalt in branching pattern, open gray-green needle morphology and often angled umbos, the Last Chance Ridge populations may be closer to the original primary cross, with the initial gene flow uni-directional..... going from *Pinus attenuata* to *Pinus radiata*, and the knobcone's prominent apically aligned prickles (mucros) being recessive in subsequent generations)**, Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*)..... redwood (*Sequoia sempervirens*)..... big-leaf maple (*Acer macrophyllum*)..... Hooker's fairy bells (*Prosartes hookeri*)..... spotted coralroot (*Corallorhiza maculata* forma *immaculata*), royal rein orchid (*Piperia transversa*)..... white globe lily (*Calochortus albus*), red clintonia (*Clintonia andrewsiana*), checker lily (*Fritillaria affinis* var. *affinis*), slink pod (*Scoliopus bigelovii*)..... California milkwort (*Polygala californica*)..... hound's tongue (*Cynoglossum grande*), yerba santa (*Eriodictyon californicum*), small-flowered nemophila (*Nemophila parviflora* var. *parviflora*)..... Fremont's star lily (*Toxicoscordion fremontii*), western trillium (*Trillium ovatum* subsp. *ovatum*)..... blue blossom (*Ceanothus thyrsiflorus*), California coffeeberry (*Frangula californica* subsp. *californica*)..... fat Solomon's seal (*Smilacina racemosa*), slim Solomon's seal (*Smilacina stellata*)..... canyon gooseberry (*Ribes menziesii*), pink-flowering currant (*Ribes sanguineum* var. *glutinosum*)..... **small population observed circa 30 years ago, growing in marshy habitat adjacent to Last Chance Road which drains into Laird Gulch but not seen in recent years**..... area since original observation was made, has been overgrown with poison oak (*Toxicodendron diversilobum*) which may have out-competed and eventually displaced the currant)..... **Carex gianonei complex** (several examples of this putative polysectional hybrid, with inflorescences displaying compound-congested lower spikelets, were found currently growing in the same marsh-like habitat, that the aforementioned pink-flowering currant formerly occupied), foothill sedge (*Carex tumulicola*), umbrella sedge (*Cyperus eragrostis*)..... soap plant (*Chlorogalum pomeridianum* var. *pomeridianum*)..... blue dicks (*Dichelostemma capitatum* subsp. *capitatum*)..... blue elderberry (*Sambucus nigra* subsp. *canadensis*)..... California bedstraw (*Galium californicum* subsp. *californicum*), sweet-scented bedstraw (*Galium triflorum*)..... Douglas's iris (*Iris douglasiana*)..... common milkmaids (*Cardamine californica* var. *californica*), popweed (*Cardamine oligosperma*)..... hairy wood sorrel (*Oxalis corniculata* subsp. *pilosa*), redwood sorrel (*Oxalis oregana*)..... Pacific madrone (*Arbutus menziesii*), brittle-leaf manzanita (*Arctostaphylos crustacea sensu lato*)..... extensive populations of this complex bur-forming "genetic sponge", referencing traits, in part, attributable to *Arctostaphylos andersonii*, *Arctostaphylos glutinosa* and *Arctostaphylos sensitiva*), Schreiber's manzanita (*Arctostaphylos glutinosa*)..... **one of two endemic manzanitas residing within the Scotts Creek Watershed**, western azalea (*Rhododendron occidentale*), California huckleberry (*Vaccinium ovatum*)..... red alder (*Alnus rubra*), hazelnut (*Corylus cornuta* var. *californica*)..... two-eyed violet (*Viola ocellata*)..... California figwort

(*Scrophularia californica* subsp. *californica*)..... miner's lettuce (*Claytonia perfoliata* subsp. *perfoliata*)..... coast nettle (*Urtica dioica* subsp. *gracilis*)..... variable as to ratio of stinging to non-stinging hairs on stems and abaxial leaf surfaces, often tending towards subsp. *holosericea*)..... hairy honeysuckle (*Lonicera hispidula*)..... sticky monkeyflower (*Mimulus aurantiacus*)..... varied-leaved collomia (*Collomia heterophylla*)..... California harebell (*Asyneuma prenanthoides*) and elk-clover (*Aralia californica*).

**note:** streamside in the lower portion of Laird Gulch, the following six species of ferns were observed growing sympatrically within a three square meter area..... deer fern (*Blechnum spicant*), giant chain fern (*Woodwardia fimbriata*), lady fern (*Athyrium filix-femina* var. *cyclosorum*), five-finger fern (*Adiantum aleuticum*), wood fern (*Dryopteris arguta*) and western sword fern (*Polystichum munitum*).

Viewed from an aerial perspective, West's Spring and Marti's Park Marshes appear as a series of ever descending self-contained wetlands, spring fed year round. What they do or do not share in the way of native taxa, with the adjacent Last Chance Lagoon, Rosetta Stone Pine Marsh and Beaver Flat, is intriguing from a biogeographical frame-of-reference..... artist's popcorn-flower (*Plagiobothrys chorisianus* var. *chorisianus*) forms hidden colonies beneath the *Juncus* tussocks and often grows up and through their supportive stems, this rare borage's furtive presence revealed by the intoxicating vanilla scent of its flowers yet it is absent from Laguna de las trancas while forming stable populations in all the above sympatric habitats!!! The behemoth of native docks, decidedly uncommon western dock (*Rumex occidentalis*), misses the Rosetta Stone Pine Marsh but has representatives in the other three named marshes plus the nearby "lagoon". Distinctive and phylogenetically significant, *Carex "imperfecta"*, is well established in all of the previously described hydrologically influenced refugia but refuses to take up residence with its relatives surrounding the 55,000+ years old "palustrine". The rare, turion forming Hall's willow herb (*Epilobium halleanum*), first discovered adjacent to the West Spring Marsh also occurs in Beaver Flat, where it continues to thrive sharing habitat with its variable sister species, *Epilobium ciliatum*, sensu lato, while Pacific reed grass (*Calamagrostis nutkaensis*), nearing the southern end of its range, defines West's Spring Marsh, Marti's Park Marsh and the Last Chance lagoon, with its outsized tussocks.....perhaps the prevailing wind direction, out of the northwest, and first hitting the "laguna", has played a role historically, in referencing the airborne achenes eastward. Canada goldenrod (*Solidago elongata*), a long lived *Aster* kin and having merit as a wild garden introduction, resides within the soggy confines of Beaver Flat, West's Spring Marsh and Marti's Park Marsh leaving the south end of Laguna de las trancas to its cousin, western goldenrod (*Euthamia occidentalis*). Within the Poaceae, the gigas form of western bent grass (*Agrostis exarata*, sensu lato), locally rare and morphologically distinctive, acts like a set of bookends..... with one population found in the Marti's Park Marsh and the other, conspicuously present in Beaver Flat. This "in your face" ecotype, can exceed 2 meters in height and has two phases, with both exhibiting elongate, verticillate inflorescences comprising distinctly separate glomerules: phase one possesses awned lemmas while phase two, acts like *Agrostis exarata* var. *exarata* on steroids..... within the confines of Beaver Flat, the awnless variant secures the upper third of the marsh leaving the lower two-thirds to its awned analog. Collected material of both types with mature seed heads (2008-2009), now reside at the UCSC Arboretum's seed repository, awaiting growing out and resolving the conundrum, as to whether both taxa are reproductively isolated or are each capable of producing both phases and/or are inter-fertile!!! Finally, the West's Spring Marsh can lay claim to sheltering the only known population to date, within the watershed at least, of whorled pennywort (*Hydrocotyle verticillata*), its sister species, floating pennywort (*Hydrocotyle ranunculoides*), a vigorous member of long standing within the Last Chance Lagoon's aquatic repertoire.

**Due west, across Last Chance Road from Laguna de las Trancas, is a relatively short but deep, narrow and complex in configuration drainage area, aptly named Arroyo de las Trancas.** Margining the lower half of the gulch on its eastern flank and overlooking the northern entrance/exit of Swanton Road, an extensive but isolated population of *Arctostaphylos crustacea*, sensu lato, cloaks the weathered, exfoliating mudstone. In keeping with the expected polymorphism displayed by the Scotts Creek "burl-former", one is not disappointed: displaying growth patterns ranging from prostrate through erect, leaves

short-petioled with cordate/auriculate bases at one end of the foliar spectrum and long-petioled with rounded or cuneate bases at the other, enough variability in indument, tomentum and trichomes plus presence/absence of glands to perplex all but the most seasoned taxonomist and several plants referencing sensitive manzanita (*Arctostaphylos nummularia* = *Arctostaphylos sensitiva*) genes, with sub-quadrate, apically emarginated leaves and inflorescences, often downward-appressed, displaying both 4- and 5-merous corollas! Also ensconced in this island of diversity, a long-established population of coast redwood (*Sequoia sempervirens*), **closer to the oceanic influences than anywhere else in the north county and exhibiting no signs of foliar distress but reduced in stature, due to the fast-draining substrate, prevailing westerly winds and reliance on seasonal rainfall/fog induced condensation for its principal water sources.** Other plant taxa of interest, occurring on the upper grasslands which drain down into the arroyo from the Laguna de las Trancas side, the narrow strips of grassland paralleling the lower portion of the arroyo, on the steep soil-poor exposed habitats down slope from the bordering oak woodlands or the wind-referenced dune systems inland from Highway 1, are: a localized colony of small-flowered primrose (*Camissonia micrantha*) discovered circa twenty-five years ago..... an uncommon member of the Apiaceae in the county, wild celery (*Apiastrum angustifolium*)..... a concentrated population of the uncommon marsh microseris (*Microseris paludosa*) growing sympatrically with the rare Santa Cruz microseris (*Microseris decipiens*) and distant cousin, mountain dandelion (*Agoseris grandiflora*)..... California mustard (*Caulanthus lasiophyllus*)..... Michael's rein orchid (*Piperia michaelii*)..... the yet-to-be-defined clarkia with a defiantly erect posture, bicolored flowers and gray-encrusted seeds, provisionally given the appellation, Davy's clarkia (*Clarkia davyi*)..... and one large plant of broad-leaved lupine (*Lupinus latifolius* **aff. var. dudleyi**), stems and herbage densely clothed with stiff dark hairs, first discovered in the late 1970s and persisting for several years afterwards but now apparently lost! Documented in the 1980s with herbarium pressings, an isolated population of San Francisco wallflower (*Erysimum franciscanum*, formerly classified as **var. crassifolium**) shared a semi-stabilized sand dune with a **densely glandular** form of grassland gilia (*Gilia clivorum*): a distinctive variant with dark purplish corollas, which if it still exists in situ, warrants further study, comparing the living material with that of *Gilia millefoliata*! Finally, marching down the spine of the ridge, and even closer to the ocean than the aforementioned redwoods, stands of canyon live-oak (*Quercus chrysolepis*), reduced in stature and taking on an eldritch status. **The Arroyo de las Trancas, draining both chaparral and westward dipping grasslands, is in reality, two sub-watersheds that converge before crossing under Highway 1 and emptying into the Pacific Ocean, via waterfall, near Post Rock..... an in depth botanical overview is warranted, for other undocumented native taxa may still exist on steep out of reach slopes or moist crevices deep within the recesses of this understudied coastal drainage system.** Arranged in familial groupings, the following native taxa help to define this westernmost watershed component of our Traversal: dense sedge (*Carex densa*), Gianone sedge (*Carex gianonei*, **pro.sp.nov.** (plants studied over the past few years producing some inflorescences with compound-congested lower spikelets), *Carex "imperfecta"* (putative aneuploid derivative from *Carex nitidicarpa* complex), *Carex nitidicarpa* (hybrid complex, derived in part, from *Carex densa* x *Carex subbracteata*), small-bracted sedge (*Carex subbracteata*)..... *Juncus* aff. *breweri* (rhizomatous, culms dk green, robust, some twisted/flattened..... inflos lateral, compact, perianth parts dark brown, 5-6mm long..... no upper leaf blade present as per *Juncus mexicanus* and differs consistently from that taxon as found growing on coastal slopes and prairie, between China Ladder Marsh and Morehus Arroyo), toad rush (*Juncus bufonius*), Pacific bog-rush (*Juncus effusus* var. *pacificus*), brown bog-rush (*Juncus hesperius*), *Juncus (hesperius x patens)* hybrid, western rush (*Juncus occidentalis*), brown-headed rush (*Juncus phaeocephalus* var. *phaeocephalus*..... plants with with few, many-flowered heads)..... yarrow (*Achillea millefolium*), pearly everlasting (*Anaphalis margaritacea*), woodland madia (*Anisocarpus madioides*), California sagebrush (*Artemisia californica*), mugwort (*Artemisia douglasiana*), coyote brush (*Baccharis pilularis*), California corethrogyne (*Corethrogyne filaginifolia* var. *californica*), common corethrogyne (*Corethrogyne filaginifolia* var. *filaginifolia*), lizard tail (*Eriophyllum staechadifolium*), broad-leaved aster (*Eurybia radulina*), hirsute gumplant (*Gindelia hirsutula* var. *hirsutula*), white hawkweed (*Hieracium albiflorum*), coast tarweed (*Madia sativa*..... clothed with gland-tipped trichomes, from base of stem up thru inflorescence), Bioletti's cudweed (*Pseudognaphalium biolettii*), California

cudweed (*Pseudognaphalium californicum*), pink everlasting (*Pseudognaphalium ramosissimum*), cotton batting plant (*Pseudognaphalium stramineum*), California chicory (*Rafinesquia californica*)..... Monterey pine (*Pinus radiata*)..... **part of complex, highly reticulate ancient hybrid swarm with *Pinus attenuata*, and showing recombinant characteristics in both gross morphology and ovulate cone gestalt**), Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*)..... chamise (*Adenostema fasciculatum*), wood strawberry (*Fragaria vesca*), toyon (*Heteromeles arbutifolia*), ocean spray (*Holodiscus discolor*), oso berry (*Oemleria cerasiformis*), wood rose (*Rosa gymnocarpa*), thimbleberry (*Rubus parviflorus*), California blackberry (*Rubus ursinus*)..... Hall's/leafy bentgrass intergrades (*Agrostis hallii* x *pallens*)..... **throughout the Scotts Creek Watershed, numerous populations of these "native" *Agrostis* exist, that combine in varying ways, traits specific to either putative parent**), California brome (*Bromus carinatus* var. *carinatus*), nodding brome (*Bromus vulgaris*), pine grass (*Calamagrostis rubescens*), California oat grass (*Danthonia californica* sensu lato)..... **forms attributable, to both var. *americana* and var. *californica*, are present**), California wild rye (*Elymus glaucus* subsp. *glaucus*), California fescue (*Festuca californica*), western fescue (*Festuca occidentalis*), junegrass (*Koeleria macrantha*), Alaska onion grass (*Melica subulata*), Torrey's melic (*Melica torreyana*), foothill needlegrass (*Nassella lepida*), California canary grass (*Phalaris californica*), tall trisetum (*Trisetum canescens*)..... **reduced in stature form, morphologically akin to taxon found growing on Santa Cruz Terrace overlooking south end of Greyhound Rock State Beach**)..... hairy honeysuckle (*Lonicera hispidula*), snowberry (*Symphoricarpos albus* var. *laevigatus*)..... sticky monkeyflower (*Mimulus aurantiacus*)..... coyote mint (*Monardella villosa* sensu lato)..... **within area under discussion, both subsp. *villosa* and subsp. *franciscana* occur, plus intermediate forms**), yerba buena (*Satureja douglasii*), California hedge-nettle (*Stachys bullata*)..... Pacific madrone *Arbutus menziesii*), California huckleberry (*Vaccinium ovatum*)..... California milkwort (*Polygala californica*)..... Bioletti's trefoil (*Acmispon junceus* var. *biolettii*), deerweed (*Acmispon glaber* var. *glaber*), Pacific pea (*Lathyrus vestitus* var. *vestitus*), yellow bush lupine (*Lupinus arboreus*), giant vetch (*Vicia gigantea*)..... poison oak (*Toxicodendron diversilobum*)..... Douglas's iris (*Iris douglasiana*), blue-eyed grass (*Sisyrinchium bellum*)..... soap plant (*Chlorogalum pomeridianum* var. *pomeridianum*)..... tan-oak (*Notholithocarpus densiflorus* var. *densiflorus*), coast live-oak (*Quercus agrifolia* var. *agrifolia*), forest live-oak (*Quercus parvula* var. *shrevei*)..... lady fern (*Athyrium filix-femina* var. *cyclosorum*)..... wood fern (*Dryopteris arguta*), western sword fern (*Polystichum munitum*)..... bracken (*Pteridium aquilinum* var. *pubescens*)..... giant chain fern (*Woodwardia fimbriata*)..... California maidenhair (*Adiantum jordanii*), goldback fern (*Pentagramma triangularis* subsp. *triangularis*)..... Douglas's nightshade (*Solanum douglasii*)..... Pacific starflower (*Trientalis latifolia*)..... baneberry (*Actaea rubra*)..... western nettle (*Hesperocnide tenella*), coast nettle (*Urtica dioica* subsp. *gracilis*)..... small-flowered alum root (*Heuchera micrantha*)..... red elderberry (*Sambucus racemosa* var. *racemosa*)..... cow-parsnip (*Heracleum maximum*), sweet cicely (*Osmorhiza berteroi*), gambleweed (*Sanicula crassicaulis*)..... blue blossom (*Ceanothus thyrsoiflorus*), California coffeeberry (*Frangula californica* subsp. *californica*)..... blue dicks (*Dichelostemma capitatum* subsp. *capitatum*), Ithuriel's spear (*Triteleia laxa*)..... **forma typica, with laterally symmetrical stamens, whitish anthers, and filaments of unequal length**)..... California bedstraw (*Galium californicum* subsp. *californicum*), climbing bedstraw (*Galium porrigens* var. *porrigens*)..... hound's tongue (*Cynoglossum grande*)..... Watson's willow herb (*Epilobium ciliatum* subsp. *watsonii*)..... giant horsetail (*Equisetum telmateia* subsp. *braunii*)..... slim Solomon's seal (*Smilacina stellata*)..... miner's lettuce (*Claytonia perfoliata* subsp. *perfoliata*)..... straggly gooseberry (*Ribes divaricatum* var. *pubiflorum*)..... California figwort (*Scrophularia californica* subsp. *californica*)..... yellow willow (*Salix lasiandra* var. *lasiandra*), arroyo willow (*Salix lasiolepis*)..... water smartweed (*Persicaria punctata*)..... broad-leaved cattail (*Typha latifolia*)..... mare's tail (*Hippuris vulgaris*)..... **one of two populations to be found within the watershed sensu lato, AND THE ONLY POPULATIONS, to date, documented for Santa Cruz County**)..... farewell-to-spring (*Clarkia rubicunda*)..... stinging phacelia (*Phacelia malvifolia*).

**note:** After crossing under Highway 1 and dropping over a circa 6 meter high waterfall, Arroyo de las Trancas crosses the seasonally shifting beach and enters the Pacific Ocean..... even at the end of this

botanically diverse drainage system, native species of interest can be found! Here is a partial inventory and several of these taxa appear to have a high tolerance for wind-born salt spray: three square (*Schoenoplectus americanus*), Pacific cinquefoil (*Potentilla anserina* subsp. *pacifica*), Pacific oenanthe (*Oenanthe sarmentosa*), large-flowered sand-spurrey (*Spergularia macrotheca* var. *macrotheca*), common scouring rush (*Equisetum hyemale* subsp. *affine*), Mexican plantain (*Plantago subnuda*), sea lettuce (*Dudleya caespitosa*), California bent grass (*Agrostis densiflora*), and growing on the near vertical drop-off perpetually moistened by the waterfall, low club rush (*Isolepis cernua*), common monkeyflower (*Mimulus guttatus*) and adhering to the saturated mudstone as ornately textured sheets visually akin to blue-green fish scales, water fern (*Azolla filiculoides*).

Situated along the lower section of Last Chance Road and seasonally draining into a gulch that parallels this portion of our traversal before emptying into Scotts Creek, **Laguna de las Trancas** (Last Chance Lagoon) is a “must see” repository for studying rare and uncommon native plants, growing in isolation, sharing both a terrestrial and aquatic habitat, which seasonally is in a state of hydrological flux. Tephrochronological studies have placed this ancient “pond” (technically a palustrine) at **55,000+** years in age and the following native species, meriting study, reside there. Home to one of the two known populations in the county of mare’s tail (*Hippuris vulgaris*), which shared habitat with the infrequently encountered (**last observed in the "marsh" in the early 1980's**), western inflated sedge (*Carex vesicaria* var. *major*)..... bog yellow cress (*Rorippa palustris* var. *occidentalis*) and its locally uncommon sister species, western yellow cress (*Rorippa curvisiliqua*) hidden from sight, its semi-prostrate stems overtopped by an extensive colony of western goldenrod (*Euthamia occidentalis*)..... flowering quillwort (*Lilaea scilloides*), a locally rare liverwort (*Ricciocarpus natans*), water fern (*Azolla filiculoides*) forming irregular pinkish-red patches akin to an intricate jig-saw puzzle and a visually striking clover with cerise flower heads circa 3-4 cm. in diameter, bouquet clover (*Trifolium grayi*), documented as an herbarium specimen in 1983 and deposited in Jepson Herbarium, UC Berkeley (note. six flowering plants observed on 06/09/09). The preferred habitat of western dock (*Rumex occidentalis*) appears to be old marshes and this landslide derived repository of aquatic and ecologically related vegetation is no exception..... this uncommon native "giant" can also be found in adjacent Beaver Flat, West Spring Marsh and Marti's Park Marsh, often towering over the long established native grass clumps. The trifold bedstraw (*Galium trifidum* var. *pacificum*) is found growing within the protective embrace of Pacific bog-rush (*Juncus effusus* var. *pacificus*), which along with robust tussocks of Pacific reed grass (*Calamagrostis nutkaensis*), California hairgrass (*Deschampsia cespitosa* subsp. *holciformis*) and slough sedge (*Carex obnupta*), margin the water’s edge and overlook floating pennywort (*Hydrocotyle ranunculoides*), Bolander's water starwort (*Callitriche heterophylla* var. *bolanderi*) forming clustered rosettes floating on the surface of the water or diffuse prostrate patches on the moist bank..... **but both phases with sessile fruit sporting styles double its body length**, common spikerush (*Eleocharis macrostachya*), inconspicuous patches of water buttercup (*Ranunculus aquatilis* var. *capillaceus*) with thread-like submerged foliage and ephemeral flowers and equally diffuse in mode of growth, fennel-leaf pondweed (*Potamogeton pectinatus* = *Stuckenia pectinata*) sharing habitat with a morphologically dissimilar sister species, which appears to be long-leaved pondweed (*Potamogeton nodosus?*). Cloistered between the edge of the grassland and the water's edge, lowland cudweed (*Gnaphalium palustre*), artfully makes its presence known through ground-hugging, scattered patches of reflective foliage clothed with a silvery indument and like a taxonomically displaced orphan, **appears to be the only valid native member of the genus Gnaphalium now residing within the watershed!** Creating a centrally positioned island of densely packed, vertically aligned, overarching culms/ stems, common tule (*Scirpus acutus* var. *occidentalis* = *Schoenoplectus acutus* var. *occidentalis*) and broad-leaved cattail (*Typha latifolia*) help to bookend the aqueous corridor that defines the pond proper and provide shelter for the bur-reed (*Sparganium eurycarpum* subsp. *eurycarpum*), flaunting fruiting capitula looking ever-so-much as if a mad scientist had crossed a hedgehog with a golf ball and added chloroplasts for coloration. A brown bog-rush (*Juncus effusus* var. *brunneus* = *Juncus hesperius*) x common rush (*Juncus patens*) hybrid, whose clonal expansiveness superficially suggesting a long established colony, secures the northwestern edge of the pond, while a trio of rare clarkias: purple clarkia (*Clarkia purpurea*

subsp. *purpurea*), prostrate clarkia (*Clarkia prostrata*) and an erect growing "species" with bicolored flowers and gray-encrusted seeds, aff. Davy's clarkia (*Clarkia davyi*), have been observed growing, over the past three decades, in the siliceous soil defining a narrow arc-like zone overlooking the eastern edge of the pond. Creating a visual counterpoint of pink and yellow, checkerbloom (*Sidalcea malvaeflora* ssp. *malvaeflora*) and California buttercup (*Ranunculus californicus*) create vibrant drifts of color, while scattered plants of sympatric hirsute gumplant (*Grindelia hirsutula* var. *hirsutula*) up the ante by displaying vibrant reddish-purple stems with intense butter-yellow rayed heads.....playing the game with a subtle touch, ground-hugging rosettes of suncups (*Camissonia ovata*) throw consistency out the window and contrast golden-yellow flowers with foliage, either totally green or with claret-colored veins. Varying radically in stature and mode of growth, several members of the Rose Family (*Rosaceae*) can be sleuthed out, starting with a true micro-species, western lady's mantle (*Aphanes occidentalis*), which even when mature and in flower, can be small enough to look like moss to the casual viewer.....sister species but differing in foliar aroma, are wedge-leaved horkelia (*Horkelia cuneata* ssp. *cuneata*), whose prostrate rosettes glisten in the sunlight due to the presence of a glandular exudate coating the adaxial surface of its leaflets and California horkelia (*Horkelia californica* subsp. *californica*), sheltered by the brambles of its ubiquitous cousin, California blackberry (*Rubus ursinus*).....with drupes for fruit in spite of its colloquial name to the contrary, oso berry (*Oemleria cerasiformis*) provides food for birds, while hidden within the moist recesses between grass tussocks is the only yellow-flowered relative sporting bicolored leaves, green adaxially/silver abaxially, Pacific cinquefoil (*Potentilla anserina* subsp. *pacifica*), and finally, along the marsh's southeastern edge and thriving in the organically rich muck, a vigorous population of wood strawberry (*Fragaria vesca*). Scattered on the seasonally watered grassy slopes which surround this "ancient" body of water but distaining "wet feet", are two taxa of interest: an isolated colony of brownie thistle (*Cirsium quercetorum*), unique for our area, being a combination of native, perennial, rhizomatous and conspicuously low growing and having florets the color of muddy water to boot (biennial native sister species, *Cirsium brevistylum* aka Indian thistle, favors the palustrine's moist sheltered margins) and a solitary hybrid between the yellow bush lupine (*Lupinus arboreus*) and Lindley's varied lupine (*Lupinus variicolor*), with both proud parents present and the lone offspring being intermediate between the two, as to stature, foliar gestalt and coloration of flowers. **note: a supplemental native species inventory (07/05/10) for the Laguna de las Trancas and the area immediately circumscribing it, is as follows:** sticky monkeyflower (*Mimulus aurantiacus*), common monkeyflower (*Mimulus guttatus* var. *grandis*), tinker's penny (*Hypericum anagalloides*), miniscule duckweed (*Lemna minuscula*), California coffeeberry (*Frangula californica* subsp. *californica*), western sword fern (*Polystichum munitum*), yerba buena (*Satureja douglasii*), purple cudweed (*Gamochaeta ustulata*), Watson's willow herb (*Epilobium ciliatum* subsp. *watsonii*), hoary nettle (*Urtica dioica* subsp. *holosericea*), western rush (*Juncus occidentalis*), meadow barley (*Hordeum brachyantherum* subsp. *brachyantherum*), California oat grass (*Danthonia californica* var. *californica*), Monterey pine (*Pinus radiata*..... **representatives of an ancient hybrid swarm between *Pinus attenuata* and *Pinus radiata*, reticulate in its gene flow patterns and and showing parental intermediacy, in overall gestalt and ovulate cone morphology**), coast live-oak (*Quercus agrifolia* var. *agrifolia*), straggly gooseberry (*Ribes divaricatum* var. *pubiflorum*), gambleweed (*Sanicula crassicaulis*), California man root (*Marah fabaceus*), poison oak (*Toxicodendron diversilobum*), coyote brush (*Baccharis pilularis*), American winter cress (*Barbarea orthoceras*) and California figwort (*Scrophularia californica* subsp. *californica*).

The deeply incised Gianone Barn Gulch, which drains the overflow of Laguna de las Trancas and the seasonally saturated benched grasslands to the southeast, can be viewed roadside during this part of our botanical exploration, containing throughout its course, several intergrading habitats with their constituent species of interest: surrounding the permanent spring which is the principal water source for the upper drainage area feeding into the gulch are **seven** components of the genus *Juncus*, an amazing concentration for so small an area--- toad rush (*Juncus bufonius*), brown bog-rush (*Juncus effusus* var. *brunneus* = ***Juncus hesperius***), Pacific bog-rush (*Juncus effusus* var. *pacificus*), a robust form of Mexican rush (*Juncus mexicanus*) with dark green tortile-compressed culms, these often arcuate, **compact** inflorescences with



perianth parts 5-6 mm in length, showing possibly a closer affinity with *Juncus breweri* or *Juncus lesueurii*, western rush (*Juncus occidentalis*), common rush (*Juncus patens*) and brown-headed rush (*Juncus phaeocephalus* var. *phaeocephalus*) plus scattered colonies of locally uncommon and unrelated dwarf club rush (*Scirpus koilolepis* = *Isolepis carinata*); further along but still in the upper drainage area, some displaced specimens of knobcone pine (*Pinus attenuata*) look woefully out of place, the closest chaparral some distance away but genuine knobcones, none the less, **with the thickened/flattened incurved prickles of the elevated cone scales aligned apically**; an amazing number of tree species and arboreal wannabes defines this abbreviated but hydrologically complex watershed--- big-leaf maple (*Acer macrophyllum*), California buckeye (*Aesculus californica*), Pacific madrone (*Arbutus menziesii*), blue blossom (*Ceanothus thyrsiflorus*), hazelnut (*Corylus cornuta* var. *californica*), one specimen near mouth of gulch circa 7-8 meters in height, tan-oak (*Lithocarpus densiflorus* var. *densiflorus*), Monterey pine (*Pinus radiata*), Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*), coast live-oak (*Quercus agrifolia* var. *agrifolia*), forest live-oak (*Quercus parvula* var. *shrevei*), California coffeeberry (*Frangula californica* subsp. *californica*), arroyo willow (*Salix lasiolepis*), yellow willow (*Salix lucida* subsp. *lasianдра*), blue elderberry (*Sambucus mexicana* = *Sambucus nigra* subsp. *canadensis*), red elderberry (*Sambucus racemosa* var. *racemosa*), redwood (*Sequoia sempervirens*) and California bay laurel (*Umbellularia californica*); where our traversal takes a sharp turn to the right, the gulch abruptly stops, drops some 10 meters vertically as a seasonally fluctuating waterfall, the exposed bedding planes home to the uncommon deer fern (*Blechnum spicant*) growing sympatrically with fellow pteridophytes, lady fern (*Athyrium filix-femina* var. *cyclosorum*) and five-finger fern (*Adiantum aleuticum*), while the surrounding precipitous banks sustain scattered colonies of western burning bush (*Euonymus occidentalis* var. *occidentalis*) and growing on the adjacent forested slopes, scattered colonies of red clintonia (*Clintonia andrewsiana*); sharing the lower portion of the gulch, sometimes growing intermixed in various combinations, are **seven** native grass species--- California brome (*Bromus carinatus* var. *carinatus*), nodding brome (*Bromus vulgaris*), California wild rye (*Elymus glaucus* subsp. *glaucus*), Elmer's fescue (*Festuca elmeri*), Torrey's melic (*Melica torreyana*), California canary grass (*Phalaris californica*) and tall trisetum (*Trisetum canescens*); finally, the gulch fans out into the Scotts Creek riparian corridor and paralleling Swanton Road in a southerly direction for circa 200 meters as a seasonally wet marsh, creates favorable habitat for the infrequently encountered artist's popcorn-flower (*Plagiobothrys chorisianus* var. *chorisianus*) obscured from view by expanding populations of brown bog-rush (*Juncus effusus* var. *brunneus* = *Juncus hesperius*), Pacific bog-rush (*Juncus effusus* var. *pacificus*), common rush (*Juncus patens*), California canary grass (*Phalaris californica*) and **Gianone's sedge** (*Carex gianonei*, **pro. sp. nov.**). The topography of this water-retentive habitat, coupled with the well defined drainage patterns of two gulches entering it at either end plus the current mosaic of vegetation, strongly suggests that this was at one time a much larger marsh, historically modified by human land use practices--- the drainage course of the lower section is deflected eastward into Scotts Creek, by what could be the remnants of an ancient landslide. Deep within the heart of the remaining marsh, colonies of water-loving Pacific oenanthe (*Oenanthe sarmentosa*) abide, overtopped by box elder (*Acer negundo* var. *californicum*) and sharing this seasonally inundated environment with water smartweed (*Polygonum punctatum*), willow herb (*Epilobium ciliatum* subsp. *ciliatum*), California vervain (*Verbena lasiostachys* var. *lasiostachys*), robust forms of western bent grass (*Agrostis exarata*) and slender hairgrass (*Deschampsia elongata*), both exceeding 1.5 meters in height, plus straggly gooseberry (*Ribes divaricatum* var. *pubiflorum*). **This isolated basin warrants the same palynological studies accorded Laguna de las Trancas, which ironically represents the alpha and omega of one continuous, albeit seasonal, drainage course.** A rare assemblage of nemophila species can also be found growing within the transitional zone where Gianone Barn Gulch enters the flood plain: the sympatric trio consisting of small-flowered nemophila (*Nemophila parviflora* var. *parviflora*), meadow nemophila (*Nemophila pedunculata*) and a recent addition to the watershed's flora, a taxon sharing affinities with Fremont's nemophila (*Nemophila pulchella* var. *fremontii*)! **Parenthetically, molecular studies done on the Waterleaf Family (Hydrophyllaceae) have resulted in segregating several key genera, including *Eriodictyon*, *Nemophila* and *Phacelia*, and embedding them in the Borage Family (Boraginaceae)!**

Entering Swanton Road from a southerly direction, "Back Ranch Road" allows one an unrestricted access, both visually and physically, to the inner grasslands, with their deeply incised forested gulches draining down into Scotts Creek and forming a mirror-image compliment to the prairie proper, from which they are separated by an elevated ridge which gently dips eastward. The number of native species documented for this sinuous corridor and their unusual concentration within specific sites, are impressive both as to diversity and rarity status, several not known from or uncommon elsewhere in Santa Cruz County. Rare species and hybrid complexes abound within and peripheral to this faux-prairie: on the **monocot** side of the aisle, at least twenty documented specimens of hooded lady's tresses (*Spiranthes romanzoffiana*) have been discovered over the past decade, plus interspecific crosses occurring between Blasdale's bent grass (*Agrostis blasdalei*) and western bent grass (*Agrostis exarata*), brown bog-rush (*Juncus effusus* var. *brunneus* = *Juncus hesperius*) and common rush (*Juncus patens*), and a **mind-boggling hybrid complex involving at least three sections within the genus Carex (Montanae, Multiflorae and Ouales)**. Giving the **dicots** equal time, with less emphasis on sex and more on species diversity, a potentially new species of *Nemophila* (**aff. *N. pulchella* var. fremontii**) shares growing space with a dioecious shrub pretending to be an oak with opposite leaves, silk tassel (*Garrya elliptica*) and an easily overlooked, even in flower, member of the Bellflower Family (Campanulaceae), common bluecup (*Githopsis specularioides*). As the grassland peters out and the dirt road ascends towards Mt. Cook, a scattered population of skunkweed (*Navarretia squarrosa*) was studied for several seasons, producing a disproportionately large number of plants, **circa 20-30%, with white flowers**. The white-flowered specimens were **distributed throughout** the entire population, which comprised an estimated 120+ reduced in stature, mephitic-scented individuals. In the 1970's, an analogous occurrence was observed at Harris Flat, along upper Scotts Creek, but differing in that the population consisted of plants 40-60 cm.+ in height with thick, spinescent herbage, still possessing the "odor of skunk" but looking like they had acquired some genetic material from the holly-leaved navarretia (*Navarretia atractyloides*). Sandwiched between the "Solar-panel Hotspot" and Scotts Creek Marsh, with Mt. Cook squarely in the middle, **are two major sub-watersheds..... both are characterized by deeply incised gulches flanked with steep slopes, losing their verticality when crossing the Western Terrace aka coastal prairie and return to gulch status prior to draining under Highway 1**. For future reference, the main watershed to the west of Mt. Cook is given the designation **Cowboy Shack Gulch** and its southeastern counterpart will be called **Prairie Overlook Gulch**, with one smaller unnamed drainage system between the aforementioned "main" gulches and two increasingly reduced-in-stature and less botanically diverse (at least in their upper sections) subsidiary systems, flanking the southeastern edge of the Mt. Cook ridge system. While basically sharing the same alignment/overall length and having the upper portions of their w-facing slopes defined by condensed conifer "woodlands", the distribution patterns for several rare native species are anything but predictable! For starters, the conifer populations inhabiting the upper half of the **Cowboy Shack Gulch**, consist of a 60/40 ratio of Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*) to the "hybrid swarm" Monterey pine (*Pinus radiata*), interspersed with both coast live-oak (*Quercus agrifolia* var. *agrifolia*) and forest live-oak (*Quercus parvula* var. *shrevei*), while the analagous forested portion of **Prairie Overlook Gulch**, consists of **just** a highly variable and densely concentrated population of mature *Pinus radiata*, with a younger generation of replacement trees, in a seemingly haphazard fashion, scattered along the lower portions of the drainage system! An ecological constant, characterizing the west-facing slopes of the coastal gulches between Scotts Creek Marsh and Las Trancas Arroyo, are the extensive, often near vertical populations of California fescue (*Festuca californica*)..... the interstices between the long-lived tussocks of this highly decorous grass and valued erosion abater, providing shelter for a number of refractory moisture-loving annuals and low-growing herbaceous perennials. Within the west-facing conifer shrouded slopes of the **Cowboy Shack Gulch**, a veritable treasure-trove of **native taxa** is concentrated..... conspicuous by their absence in the adjacent gulches to the south-east, are the following rarities ..... an extensive scattering (more than 100 plants observed) of lovage (*Ligusticum apiifolium*) co-existing in the semi-shaded habitat with coast barberry (*Berberis pinnata* subsp. *pinnata*), mosquito bills (*Dodecatheon hendersonii*..... 4-merous ssp. *cruciatum*) and **two highly localized taxa**, both discovered and studied in situ 30 years ago but as of this writing (02/18/2010) not yet refound, namely the Utah service-berry (*Amelanchier utahensis*) and **rarest of the rare**, the coastal genotype of

Alaska rein orchid (*Piperia unalascensis*). While sharing perhaps 90% of its native flora (100+ species) with the two adjacent gulches to the northwest, the **Prairie Overlook Gulch**, can claim a few "uncommoners" for its own..... bent-flowered fiddleneck (*Amsinckia lunaris*), narrow-leaved fringe-pod (*Thysanocarpus laciniatus*), coast larkspur (*Delphinium decorum* subsp. *decorum*), San Francisco collinsia (*Collinsia multicolor*) and Santa Cruz microseris (*Stebbinsoseris decipiens* = *Microseris decipiens*). Several species and one putative natural hybrid, either locally uncommon or in need of further study, which thread their way through this complex maritime ecosystem are as follows: Gianone everlasting (*Pseudognaphalium gianonei*, pro.sp.nov.), Gianone sanicle (*Sanicula gianonei*, pro.sp.nov.), brownie thistle (*Cirsium quercetorum*), cream cups (*Platystemon californicus*), checkerbloom (*Sidalcea malvaeflora* subsp. *malvaeflora*), tall layia (*Layia hieracioides*), California goosefoot (*Chenopodium californicum*), hoary bowlesia (*Bowlesia incana*) and Dannie's skullcap (*Scutellaria tuberosa*). Two variable species in the foliar department, occupying the wind-buffeted ridge tops and worthy of being included within an artfully designed "native garden", are California fuchsia (*Epilobium canum* subsp. *canum*) and California goldenrod (*Solidago velutina* subsp. *californica*).....the former displaying foliage that in the same population can be green or cinerous while the latter goes the structural route and presents, in separate populations, basal leaves that range from oblanceolate to **one population carpeting the near-vertical slope with sub-orbicular leaves, akin to silver dollars in outline.**

Bounded on the west by Cowboy Shack Gulch and the east with Prairie Overlook Gulch and bookended north and south by the edge of the coastal prairie (aka Western Terrace) and Highway 1, are a series of exposed, remnant eastward-dipping bedding planes, reminiscent of the mesas of the southwest albeit greatly reduced in stature. Each of these "mesitas", is a micro-ecosystem unto itself and interface with the various sized drainage systems that have their origins northeast of and overlooking the prairie grasslands. Included within the aforementioned parameters, is the lower drainage of **Prairie Overlook Gulch** giving the following native taxa refuge: *Rumex occidentalis*, with overarching leaves reminiscent of a banana relative growing vertically adjacent to small waterfall, an apetalous/dioecious member of the Ranunculaceae *Thalictrum polycarpum*, a quartet of Rosaceae members growing intermixed.....*Rosa gymnocarpa*, *Fragaria vesca*, *Potentilla glandulosa* subsp. *glandulosa* and *Aphanes occidentalis*, **polyphyletic** *Castilleja affinis* subsp. *affinis* with a scattered population **displaying extreme ancestral re-segregation and looking ever-so-much like a dozen different species**, *Dudleya caespitosa*, *Berberis pinnata* subsp. *pinnata*, an inodorous *Dichelostemma capitatum* subsp. *capitatum* sharing the monocot stage with a near-vertical population of *Smilacina racemosa*..... displaying more than 100 inflorescences discharging an intoxicating fragrance olfactorally perceived long before seen, while *Solanum umbelliferum* gives competition from the dicot side of the aisle. A virtual kaleidoscope of "natives", create a visual tapestry of color and texture, showing the infinite variations in structure and form that Nature is capable of conjuring up: *Lotus wrangelianus*, *Trifolium bifidum*, *Vicia americana* var. *americana*, *Vicia gigantea*, *Vicia hassei*, *Phacelia malvifolia*, *Carex tumulicola*, *Cyperus eragrostis*, *Baccharis douglasi*, *Holodiscus discolor*, *Oenanthe sarmentosa*, *Polypodium californicum* aff. var. *kaulfussii*, *Athyrium filix-femina* var. *cyclosorum*, *Polystichum munitum*, *Epilobium ciliatum* subsp. *watsonii*, *Phalaris californica* ..... often producing asexual nodal propagules on old flowering culms, *Bromus carinatus* var. *carinatus*, *Nasella lepida*, *Festuca californica*, *Poa unilateralis*, *Melica torreyana*, *Claytonia parviflora* subsp. *parviflora*, *Saxifraga californica*..... sadly, the sole representative of this ornamentally valuable genus in the watershed, *Juncus hesperius*, *Luzula comosa*, *Galium porrigens* var. *porrigens*, *Calystegia purpurata* subsp. *purpurata*.....climbing 10(+) feet into a robust *Frangula californica* subsp. *californica*, *Barbarea orthoceras*, *Stachys ajugoides* var. *rigida*, *Stachys bullata*, *Verbena lasiostachys* var. *lasiostachys*, *Mimulus guttatus*..... var. *grandis* coastal form, *Layia hieracioides*, *Pterostegia drymarioides*, an Apiaceae trio..... *Apiastrum angustifolium*, *Daucus pusillus*, *Yabea microcarpa* and *Oxalis corniculata* subsp. *pilosa*.

Further expounding on the concentrated and diverse "native" flora within this general area..... the **western facing slopes (from ridge top to canyon bottom)** of the last sub-watershed draining under Highway 1, before the Western Terrace drops off into the Scotts Creek Marsh proper, contains an extraordinary

representation of coastal taxa for an area subjected to human disturbance over the course of more than 150 years! As with the analogous gulches bisecting the **coastal prairie**, the **near vertical nature of the terrain** may be one of the contributing factors that has turned these mesic habitats into refugia for biodiversity..... being outside the reach of traditional agricultural practices. Eschewing the colloquial names, here is a documentation-in-progress, for the species confined to this micro hot-spot, further validating the premise **that human presence and biodiversity are not incompatible: *Pseudognaphalium gianonei*, pro.sp.nov.** (note: this taxon of putative hybrid origin, is relatively common within area under discussion), *Erigeron glaucus*, *Fragaria vesca*, *Castilleja affinis* subsp. *affinis* (complex series of resegregates validating the polyphyletic origins of this locally wide spread taxon), *Eriophyllum staechadifolium*, *Sanicula crassicaulis*, *Baccharis pilularis*, *Mimulus aurantiacus*, *Cardamine oligosperma*, *Chlorogalum pomeridianum* sensu lato, *Toxicodendron diversilobum*, *Claytonia parviflora* var. *parviflora*, *Claytonia perfoliata* sensu lato, *Rubus ursinus*, *Satureja douglasii*, *Galium porrigens* var. *porrigens*, *Polypodium californicum*, *Artemisia californica*, *Dudleya caespitosa*, *Apiastrum angustifolium*, *Pterostegia drymarioides*, *Layia hieracioides*, *Melica torreyana*, *Fritillaria affinis* aff. var. *affinis*, *Pentagramma triangularis* subsp. *triangularis*, *Scrophularia californica* subsp. *californica*, *Daucus pusillus*, *Adiantum jordanii*, *Phacelia malvifolia*, *Crassula connata*, *Cryptantha micromeres*, *Artemisia douglasiana*, *Pseudognaphalium californicum*, *Piperia michaelii*, *Solidago velutina* subsp. *californica*, *Achillea millefolium*, *Oemleria cerasiformis*, *Deschampsia elongata*, *Nasella lepida*, *Sagina apetala*, *Trifolium microdon*, *Trifolium willdenovii* (occasionally, a nanistic phase, with long-pedunculate reduced-in-stature inflorescences and some calyx-lobes displaying vestigial teeth can be found growing sympatrically with the forma typica..... note: this taxon may prove to be a variant of *Trifolium oliganthum*), *Sanicula gianonei*, pro.sp.nov., *Stachys bullata*, *Pteridium aquilinum* var. *pubescens*, *Festuca californica*, *Berberis pinnata* subsp. *pinnata*, *Triteleia laxa* (form with radially symmetrical stamens, darker and narrower flowers, short, equal filaments and blue anthers that turn brown), *Lathyrus vestitus* sensu lato, *Potentilla glandulosa* subsp. *glandulosa*, *Urtica dioica* subsp. *gracilis*, *Anaphalis margaritacea*, *Gamochaeta ustulata*, *Smilacina stellata*, *Dryopteris arguta*, *Saxifraga californica*, *Luzula comosa*, *Lithophragma affine*, *Cardamine californica* var. *californica*, *Eriogonum latifolium* sensu lato, *Calochortus albus*, *Frangula californica* subsp. *californica*, *Salix lasiandra* var. *lasiandra*, *Sidalcea malvaeflora* subsp. *malvaeflora*, *Horkelia californica* subsp. *californica*, *Heracleum maximum*, *Symphyotrichum chilense*, *Bromus carinatus* sensu lato, *Marah fabaceus*, *Solanum umbelliferum*, *Yabea microcarpa*, *Cirsium brevistylum*, *Vicia americana* var. *americana*, *Vicia gigantea*, *Polystichum munitum*, *Sambucus nigra* subsp. *canadensis*, *Delphinium decorum* subsp. *decorum*, *Pseudognaphalium stramineum*, *Barbarea orthoceras*, *Solanum douglasii*, *Ribes divaricatum* var. *pubiflorum*, *Amsinckia menziesii* var. *intermedia*, *Salix lasiolepis*, *Lotus junceus* var. *biolettii* (peduncles of mature inflorescences 15-25 mm long), *Lotus wrangelianus* and *Plectritis brachystemon* (convex side of fruit body distinctly keeled, flowers circa 3-3.5 mm and pale pink).

While 150+ years of agricultural based land use, coupled with the attendant invasion/entrenchment of European non-native taxa, should render the existence of "native" biodiversity moot..... a small section of the Western Terrace, overlooking the Highway 1 entrance to CalPoly's Swanton Pacific Ranch (circa 1/8 mile east of Agrostis Rectangle) and the lower drainage system of **Cowboy Shack Gulch**, tosses that assumption out-the-window and forces us to re-examine habitats with an extensive history of "human induced" disturbance and our accrued perceptions/biases of said areas, with a fresh perspective! This mini-refugium, consisting of an eastward-dipping (due to an underlying syncline) isolated portion of exposed bedding plane, topped with and surrounded by grassland modified by a long history of grazing, supports an amazing albeit concentrated rolecall of native species, **which warrants listing in full**. Measuring circa 30 meters along an east/west axis, at least three ecological profiles can be drawn to support the degree of biodiversity present: (1) the east/south facing bedding planes are exposed to the early morning sun plus the relentless winds and their concomitant desiccating effects, (2) the west/north aspects are cloaked in shadow for much of the morning and during the winter/spring months, stay damp throughout the day and (3) the top and periphery of the remnant terrace are circumscribed by a matrix of grasses and forbes, which form a

moisture retentive skin. **As of 04/22/10, here are the "legitimate stakeholders" in this microcosm of coastline:** footsteps-of-spring (*Sanicula arctopoides*), checkerbloom (*Sidalcea malvaeflora* ssp. *malvaeflora*), California aster (*Corethrogyne filaginifolia*..... var. *californica*), miner's lettuce (*Claytonia perfoliata*, sensu lato), grassland gilia (*Gilia clivorum*), California hedge-nettle (*Stachys bullata*), stinging phacelia (*Phacelia malvifolia*), lizard tail (*Eriophyllum staechadifolium*), hoary bowlesia (*Bowlesia incana*), rattlesnake weed (*Daucus pusillus*), seaside daisy (*Erigeron glaucus*), popweed (*Cardamine oligosperma*), dwarf orthocarpus (*Triphysaria pusilla*), yellow bush lupine (*Lupinus arboreus*), morning glory (*Calystegia purpurata* subsp. *purpurata*), coast buckwheat (*Eriogonum latifolium*, sensu lato), purple sack clover (*Trifolium depauperatum* var. *truncatum*), pin-point clover (*Trifolium gracilentum* var. *gracilentum*), double-headed clover (*Trifolium macraei*), soap plant (*Chlorogalum pomeridianum* var. *divaricatum*), California poppy (*Eschscholzia californica*), sea lettuce (*Dudleya caespitosa*), ocean-bluff bluegrass (*Poa unilateralis*), purple needlegrass (*Nasella pulchra*), California brome (*Bromus carinatus* var. *carinatus*), California polypody (*Polypodium californicum*), yarrow (*Achillea millefolium*), California man root (*Marah fabaceus*), California blackberry (*Rubus ursinus*), pygmyweed (*Crassula connata*), California mustard (*Caulanthus lasiophyllus*), red maids (*Calandrinia ciliata*), shining peppergrass (*Lepidium nitidum* var. *nitidum*), western lady's mantle (*Aphanes occidentalis*), sky lupine (*Lupinus nanus*), Gianone everlasting (*Pseudognaphalium gianonei*, pro.sp.nov.), cotton batting plant (*Pseudognaphalium stramineum*), California figwort (*Scrophularia californica* subsp. *californica*), California goosefoot (*Chenopodium californicum*), oso berry (*Oemleria cerasiformis*), deerweed (*Lotus scoparius* var. *scoparius*), California plantain (*Plantago erecta*) and California sagebrush (*Artemisia californica*).

One relatively small area, literally designated "Solar-panel Hotspot"..... is principally vertical in orientation and capped with an exposed, sinuous grassland..... faces west/northwest overlooking Cal Poly's metal gate cum solar panel and supports an intensely concentrated, highly diverse "native" flora. Paralleling the "Magic Triangle", not only in alignment but also sharing species of considerable rarity, this "micro-refugium" is a case study unto itself, being home to more than **100 native plant taxa!** Two species rare within the county, which occur on both sites, are lovage (*Ligusticum apiifolium*) and the Santa Cruz microseris (*Stebbinsoseris decipiens*), chaperoned by both of its diploid parents..... coast microseris (*Microseris bigelovii*) and silver puffs (*Uropappus lindleyi*). Another shared species is mosquito bills (*Dodecatheon hendersonii*): a small population was discovered growing on the "Solar-panel Hotspot" circa 30 years ago ( in actuality, long before the existence of the solar panel), which individual plants had **either 4-merous or 5-merous flowers**, raising taxonomic questions about the validity of subsp. *cruciatum*..... pressings were made, documenting both the subsp. *hendersonii* and subsp. *cruciatum* forms, and dispatched to the Jepson Herbarium, UC Berkeley..... **as of 02/13/10, a small (circa 25 plants) population still exists, with at least one 4-merous representative flowering early.** Easily overlooked when out-of-flower and often failing to complete its seasonal reproductive cycle due to lack of sufficient water, leafy daisy (*Erigeron foliosus* var. *franciscensis*), **to date with only two populations documented for the watershed**, maintains a precarious foothold within this dynamic area of concentrated biodiversity, its narrowly defined habitat shrinking due to competing vegetation. Easy to overlook **when in flower**, defines the following four natives, widespread to the degree that the status of their nativity is sometimes questioned..... pygmyweed (*Crassula connata*), California plantain (*Plantago erecta*), western lady's mantle (*Aphanes occidentalis*) and shining peppergrass (*Lepidium nitidum* var. *nitidum*), play hide-and-go seek in the narrow strip of grassland, their adult stature ranging from 0.5-5.5cm in height!!! Dominating the moist understory pockets of soil rich in organic material, Gianone's sanicle (*Sanicula gianonei*, pro.sp.nov.) stands out just by virtue of its yellow-green foliage and where it co-exists with its darker-hued relative, gambleweed (*Sanicula crassicaulis*), the visual contrast is so marked that diagnosis from a distance is easily accomplished..... another member of the Carrot Family (Apiaceae), **not so readily discerned** from the surrounding vegetation, hoary bowlesia (*Bowlesia incana*), further compounds its taxonomic status by superficially mimicing a sympatric non-relative, downy buttercup (*Ranunculus hebecarpus*). Not willing to be left out of the proceedings, the Madder Family (Rubiaceae) contributes two members to this diverse assemblage of natives, California bedstraw (*Galium californicum* subsp. *californicum*) and climbing

bedstraw (*Galium porrigens* var. *porrigens*) and complementing this duo and raising the ante by adding olfactory stimulation to the mix, California hedge-nettle (*Stachys bullata*) and yerba buena (*Satureja douglasii*), are notable representatives of the Mint Family (Lamiaceae). Extending the pairing concept a bit further, two local relatives of the domestic sweet pea, both visually attractive but lacking any noticeable fragrance, Pacific pea (*Lathyrus vestitus* var. *vestitus*) and American vetch (*Vicia americana* var. *americana*), make their presence felt by scaling up through and over any adjacent shrubbery. So far, by itemizing less than one fifth of the “natives” occupying this elevated transitional zone, between coastal prairie and inner grassland, the biogeographical implications alone, should convince the skeptics, that even **the most prosaic of habitats from a distance should not be dismissed out-of-hand without a closer look!** From an ecological perspective, this refugium is a valuable laboratory for the study of interconnected micro-habitats..... influenced by such factors as (a) slope orientation, (b) wind patterns, (c) proximity to the ocean, (d) canopy diversity with the contrasting dynamics of evergreen versus deciduous behavior, (e) long term impact of introduced herbivory, (f) pollen and seed dispersal vectors, (g) changes in soil behavior and associated flora along a vertical cline, (h) corresponding diversity in the faunal representation .....to further emphasize the unifying botanical thread holding this biologically diverse microcosm together, in the form of an addendum, the following native taxa interact to form a complex interdigitating mosaic: California aster (*Lessingia filaginifolia* var. *californica* = ***Corethrogyne filaginifolia***), oso berry (*Oemleria cerasiformis*), pearly everlasting (*Anaphalis margaritacea*), coast live-oak (*Quercus agrifolia* var. *agrifolia*), forest live-oak (*Quercus parvula* var. *shrevei*), California bay laurel (*Umbellularia californica*), Monterey pine (*Pinus radiata*), Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*), Ithuriel's spear (*Triteleia laxa*), rattlesnake weed (*Daucus pusillus*), cow-parsnip (*Heracleum lanatum* = ***Heracleum maximum***), California sagebrush (*Artemisia californica*), mugwort (*Artemisia douglasiana*), pale plecritris (*Plectritis brachystemon*), ocean spray (*Holodiscus discolor*), Roemer's fescue (*Festuca roemerii*), Torrey's melic (*Melica torreyana*), ocean-bluff bluegrass (*Poa unilateralis*), California fescue (*Festuca californica*), California man root (*Marah fabaceus*), Indian paintbrush (*Castilleja affinis* subsp. *affinis*), California maidenhair (*Adiantum jordani*), western sword fern (*Polystichum munitum*), wood fern (*Dryopteris arguta*), California polypody (*Polypodium californicum*..... **lithophyte, lowest sets of pinna longer than succeeding ones**), footsteps-of-spring (*Sanicula arctopoides*), western nettle (*Hesperocnide tenella*), coast nettle (*Urtica dioica* subsp. *gracilis*), sticky cinquefoil (*Potentilla glandulosa* subsp. *glandulosa*), wood strawberry (*Fragaria vesca*), California cudweed (*Pseudognaphalium californicum*), purple cudweed (*Gamochaeta ustulata*), creeping hearts (*Pterostegia drymarioides*), tall layia (*Layia hieracioides*), snowberry (*Symphoricarpos albus* var. *laevigatus*), slender hairgrass (*Deschampsia elongata*), goldback fern (*Pentagramma triangularis* subsp. *triangularis*), Valparaiso clover (*Trifolium microdon*), tomcat clover (*Trifolium willdenovii*), common wood rush (*Luzula comosa*) and Franciscan coyote mint (*Monardella villosa* subsp. *franciscana*).

Visible from Swanton Road, the “Magic Triangle” is a deltoid near-vertical refugium for **120+** native taxa, one of which constituted **the only known documentation for the county** of Franciscan paintbrush (*Castilleja subinclusa* subsp. *franciscana*), discovered circa 30 years ago and specimens later pressed and deposited in the Jepson Herbarium (UC Berkeley). This isolated population was different from the type in that the inflorescences were covered with gland-tipped trichomes. A hummingbird pollinated paintbrush species of great beauty, with flowers superficially resembling a tropical Heliconia, it was growing sympatrically with another co-evolved taxon, this time with pendant orange nectarous flowers, crimson columbine (*Aquilegia formosa*). Still heading in a southward bearing along the grass-cloaked synform, **one encounters a nonet of native clovers:** long-keeled clover (***Trifolium appendiculatum***), bearded clover (***Trifolium barbigerum* var. *barbigerum***), purple sack clover (***Trifolium depauperatum* var. *truncatum***), pin-point clover (***Trifolium gracilentum* var. *gracilentum***), double-headed clover (***Trifolium macraei***), maiden clover (***Trifolium microcephalum***), Valparaiso clover (***Trifolium microdon***), white-tipped clover (***Trifolium variegatum***) and tomcat clover (***Trifolium willdenovii***). This constellation of clover species was sharing habitat with unrelated owl's clover (*Castilleja densiflora*, aff. ***Orthocarpus noctuinus***), the coastal headland race displaying cream-colored vanilla scented flowers, Johnny jump-up (*Viola pedunculata*), with

a subterranean root system that would seem commensurate with an adult oak rather than an herbaceous perennial circa 10-20 cm. in height, an isolated colony of coast dandelion (*Agoseris apargioides* var. *apargioides* = *Agoseris hirsuta*) and distantly related sky lupine (*Lupinus nanus*), exhibiting flowers ranging in color from white fading tan through pink, lavender, pale blue and finally the traditional dark blue. Adding visual spice to the proceedings, a trio of paintbrush relatives and a sporadic natural hybrid between two of them: butter-and-eggs (*Triphysaria eriantha* subsp. *eriantha*), dwarf orthocarpus (*Triphysaria pusilla*) and purple-beaked owl's clover (*Triphysaria micrantha*); the documented hybrids are between *Triphysaria eriantha* subsp. *eriantha* x *Triphysaria pusilla*, with the latter existing in **two forms, one with anthocyanic-pigmented foliage and maroon-brown colored flowers, the other with green herbage and pale yellow flowers**. Hugging this wind-swept ascending mosaic of reduced-in-stature vegetation, two members of the Carrot Family (Apiaceae) warrant close study: caraway-leaved lomatium (*Lomatium caruifolium* var. *caruifolium*), with extremely variable foliage ranging from glabrous through densely pubescent and footsteps-of-spring (*Sanicula arctopoides*), with radially aligned, horizontal, yellow-green foliage looking like a surreal sun-dial. Scattered across this tilted grassland, tidytips (*Layia platyglossa*) perfumes the warm summer days with a memorable scent redolent of cinnamon. Lastly, a species for years thought to be extinct, the San Francisco popcorn-flower (*Plagiobothrys diffusus/reticulatus* = *Plagiobothrys diffusus*), creates isolated tapestries of miniature white-and-yellow flowers on prostrate plants referenced millimeters above a thin skin composed of grass and moss, which covers the exposed geometry of the fractured coastal terraces. The ultimate taxonomic status of this resurrected taxon is still unresolved, strongly suggesting the need for work on the molecular level to determine its place within the *Plagiobothrys reticulatus* complex! (note: as of 2007, the appellation *Plagiobothrys diffusus*, has been reinstated for the aforementioned taxon, resurrecting from extinction, a coastal California native).

Although it encompasses less than a sixth of the roadside tour, the descending stretch between the Last Chance turnoff and the "Old Seaside School" contains 15 tree and 4 sub-tree species native to the watershed, a remarkable tally for a mere blip on the pedometer. Mature specimens of coast live-oak (*Quercus agrifolia*) and forest live-oak (*Quercus parvula* var. *shrevei*), plus related tan-oak (*Lithocarpus densiflorus* var. *densiflorus* = *Notholithocarpus densiflorus*), grow side by side..... their differences in branching patterns, leaf morphologies, fruit maturation times, and bark topographies are easily observed. Presenting a fall display in gold, big-leaf maple (*Acer macrophyllum*) brightens the deep canyon recesses as the shorter days herald the onset of winter, while sister species, box elder (*Acer negundo* var. *californicum*), margins the alluvium-rich flood plains and during the overheated and brightly lit summer months, provides a canopy of soft, diffused light. A sinus clearing aroma, pungent to some and headache inducing to others, is exuded from the crushed leaves of California bay laurel (*Umbellularia californica*), country cousin to the domestic avocado (*Persea americana*) and offers olfactory counterpoint to the overpowering sweetness released by the California buckeye (*Aesculus californica*), whose nectar and pollen are toxic to honeybees! Sharing familial connections with such local natives as the inimitably fragrant western azalea (*Rhododendron occidentale*), the endemic Schreiber's manzanita (*Arctostaphylos glutinosa*), and the delectable California huckleberry (*Vaccinium ovatum*), the Pacific madrone (*Arbutus menziesii*) is by far, aesthetically, our noblest arboreal resident..... the fluid curvature and lacquered sheen of its trunk bring to mind the otherworldly sculptures of Brancusi. Exceeding sub-tree status, toyon (*Heteromeles arbutifolia*)..... **one specimen inhabiting the conifer/oak woodland above the road may exceed 10 meters in height, with the trunk six feet above ground level measuring 30+ cm in diameter**, blue elderberry (*Sambucus mexicana* = *Sambucus nigra* subsp. *canadensis*)..... a sure sign of aboreal status is when nested polypody (*Polypodium calirhiza*) colonizes the braided bark cloaking your 5+ meter high trunk, California coffeeberry (*Frangula californica* subsp. *californica*) and its cousin blue blossom (*Ceanothus thrysiflorus*), are each represented along this particular segment of our walk by **individuals exceeding five meters in height**. One arboreal species that occasionally strays out of its preferred habitat, margining streams and colonizing sand-bars with replacements of itself, is the red alder (*Alnus rubra*)..... a scattering of young trees overlooking the lower portion of our down slope journey, most likely are the

result of updrafts from the riparian corridor below, occurring as the narrowly winged nutlets are being shed from the coniferous pistillate catkins. A ubiquitous presence along much of our watershed tour, aboreal by inclination and within touching distance as we approach Scotts Creek Bridge and The Old Seaside School, arroyo willow (*Salix lasiolepis*) has established residence throughout the watershed, wherever sufficient moisture is present. Sharing this aqueous ecosystem, with rhizomes, tenacious root systems and a tolerance for wet feet, are an unusual trio, often found growing sympatrically along the riparian corridors..... in descending order by virtue of stature, red elderberry (*Sambucus racemosa* var. *racemosa*), salmonberry (*Rubus spectabilis*) and blue creek-sedge (*Carex amplifolia*).

Overlooking Swanton Road, between the Brown/West driveway and the upper half of Mountain Lion Gulch, a sinuous ribbon of conifer/oak woodland, no more than 150-200 feet in width, affords the serious ecologist a treasure trove of diverse "natives". Starting at its western edge and moving in a southeast then southerly direction, **the following native botanical residents can be encountered while exploring this verdant tapestry of biodiversity:** Monterey pine (*Pinus radiata*..... **descendents of a complex and highly reticulate hybrid swarm between *Pinus attenuata* and *Pinus radiata***), Pacific madrone (*Arbutus menziesii*), Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*), common rush (*Juncus patens*), poison oak (*Toxicodendron diversilobum*..... **major provider of the watershed's most vibrant fall colors**), California wild rye (*Elymus glaucus* subsp. *glaucus*), California bedstraw (*Galium californicum* subsp. *californicum*), California brome (*Bromus carinatus* var. *carinatus*), woodland madia (*Anisocarpus madioides*), gambleweed (*Sanicula crassicaulis*), California blackberry (*Rubus ursinus*), forest live-oak (*Quercus parvula* var. *shrevei*), California bay laurel (*Umbellularia californica*), nodding brome (*Bromus vulgaris*), coast live-oak (*Quercus agrifolia* var. *agrifolia*), oracle oak (*Quercus x morehus*..... **a decade ago, several juvenile examples of this misdiagnosed non-F1 hybrid, were removed from their localized habitat under the *Quercus parvula* var. *shrevei* colony and transplanted to the neighboring property of the late Harry Wain..... over the intervening years, the majority of transplants have continued to survive, showing a remarkable variation in growth patterns and foliar gestalt**), yerba buena (*Satureja douglasii*), wood fern (*Dryopteris arguta*), blue blossom (*Ceanothus thyrsiflorus*..... **of the several mature sub-trees present, one stands out with an estimated 30' height and a lower trunk that is circa 1' in diameter at 6' above ground level**), hairy honeysuckle (*Lonicera hispidula*), sticky monkeyflower (*Mimulus aurantiacus*), California hedge nettle (*Stachys bullata*), tan-oak (*Notholithocarpus densiflorus* var. *densiflorus*), Alaska onion grass (*Melica subulata*), Pacific pea (*Lathyrus vestitus* var. *vestitus*), Douglas's iris (*Iris douglasiana*), sweet cicely (*Osmorhiza berteroi*), spotted coralroot (*Corallorhiza maculata* sensu lato..... **the taxon in question lacks any spotting on the labellum, which at best, shows a pale pink suffusion post-anthesis plus other structural differences from the type..... whether the designation forma *immaculata* is an accurate biological definition or the current appellation, var. *occidentalis* best applies to the local populations under discussion, reflects the need for an in depth examination from a combined ecological, morphological and molecular perspective**), coyote brush (*Baccharis pilularis*), mugwort (*Artemisia douglasiana*), American vetch (*Vicia americana* var. *americana*), hound's tongue (*Cynoglossum grande*), Gianone sedge complex (*Carex gianonei*, pro.sp.nov.), California aster (*Symphotrichum chilense*), pine grass (*Calamagrostis rubescens*), broad-leaved aster (*Eurybia radulina*), Hall's/leafy bent grass intergrades (*Agrostis hallii/pallens* complex), foothill needlegrass (*Nassella lepida*), coast redwood (*Sequoia sempervirens*), toyon (*Heteromeles arbutifolia*..... **one asymmetrical "old" specimen possibly exceeds 30' in height, with the trunk 6' from ground level, measuring 12+" in diameter**), western sword fern (*Polystichum munitum*), Torrey's melic (*Melica torreyana*..... **perhaps the most polymorphic member of the Poaceae in the watershed**), Hooker's fairy bells (*Prosartes hookeri*), wood rose (*Rosa gymnocarpa*), hazelnut (*Corylus cornuta* subsp. *californica*), Pacific starflower (*Trientalis latifolia*), wood strawberry (*Fragaria vesca*), blue elderberry (*Sambucus nigra* subsp. *canadensis*), Indian thistle (*Cirsium brevistylum*), California man root (*Marah fabaceus*), Elmer's fescue (*Festuca elmeri*), oso berry (*Oemleria cerasiformis*), coast tarweed (*Madia sativa*), goldback fern (*Pentagramma triangularis* subsp. *triangularis*), California figwort (*Scrophularia californica* subsp. *californica*), climbing bedstraw (*Galium porrigens* var. *porrigens*), bracken (*Pteridium aquilinum* var.



*pubescens*), straggly gooseberry (*Ribes divaricatum* var. *pubiflorum*), slim Solomon's seal (*Smilacina stellata*), fat Solomon's seal (*Smilacina racemosa*), nested polypody (*Polypodium calirhiza*..... **lowest sets of pinna shorter than succeeding ones**), white hawkweed (*Hieracium albiflorum*), California buckeye (*Aesculus californica*), giant trillium (*Trillium chloropetalum*), California nutmeg (*Torreya californica*), Ithuriel's spear (*Triteleia laxa*..... **forma typica, with laterally symmetrical stamens, whitish anthers, and filaments of unequal length**), white globe lily (*Calochortus albus*), checker lily (*Fritillaria affinis* var. *affinis*), sweet-scented bedstraw (*Galium triflorum*) and blue dicks (*Dichelostemma capitatum* subsp. *capitatum*).

Occupying the steep slopes, which flank Swanton Road and drain down into Scotts Creek, is a quartet of gymnosperms: Monterey pine (*Pinus radiata*), Douglas-fir (*Pseudotsuga menziesii*), California nutmeg (*Torreya californica*), and coast redwood (*Sequoia sempervirens*). Drawing from both the monocots and dicots, a varied tapestry of understory associates can be identified by the seasoned observer, although when out of flower and lost in the welter of poison oak (*Toxicodendron diversilobum*), in addition to shifting patterns of sunlight and shadow, can challenge even the most experienced naturalist. On occasion reaching two to three meters in height, bracken (*Pteridium aquilinum* var. *pubescens*) joins thimbleberry (*Rubus parviflorus*), wood rose (*Rosa gymnocarpa*), oso berry (*Oemleria cerasiformis*), Douglas's nightshade (*Solanum douglasii*), cow-parsnip (*Heracleum maximum*) and straggly gooseberry (*Ribes divaricatum* var. *pubiflorum*) in providing a further, albeit lower layer of canopy overtopping sweet cicely (*Osmorhiza chilensis* = *Osmorhiza berteroi*), woodland madia (*Madia madioides* = *Anisocarpus madioides*), wood strawberry (*Fragaria vesca*), the "fat" and "slim" Solomon's seals (*Smilacina racemosa* and *Smilacina stellata*), white hawkweed (*Hieracium albiflorum*), a taxon second only to the previously noted poison oak for being a dispenser of fear and discomfort.....coast nettle (*Urtica dioica* subsp. *gracilis*), broad-leaved aster (*Aster radulinus* = *Eurybia radulina*), hound's tongue (*Cynoglossum grande*), hairy honeysuckle (*Lonicera hispidula* var. *vacillans*) along with its cousin snowberry (*Symphoricarpos albus* var. *laevigatus*) and California man root (*Marah fabaceus*).....the man root, out of spite, will seasonally attempt to smother any shrub within reach of its tendrils!

The alternation of common Chinese houses (*Collinsia heterophylla*) with rare San Francisco collinsia (*Collinsia multicolor*).....both sharing a preference for mudstone debris.....presents an intriguing distributional pattern, further complicated by the fact that the inflorescences of both species possess gland-tipped trichomes, which when pressed firmly leave an iodine-colored stain on some, but not all, hands! This rare/common combination, was previously placed in the Figwort Family (Scrophulariaceae), but now, due to molecular studies, resides within the **Plantaginaceae** and shares reorganized familial linkages with several other species occurring within our specifically defined viewshed, namely Indian paintbrush (*Castilleja affinis* subsp. *affinis*)..... family **Orobanchaceae**, sticky monkeyflower (*Mimulus aurantiacus*)..... family **Phrymaceae**, American brooklime (*Veronica americana*)..... family **Plantaginaceae** and California figwort (*Scrophularia californica* subsp. *californica*), including **its uncommon flavistic (yellow- flowered) form** and staying put within its namesake family, the **Scrophulariaceae!!!** *Castilleja affinis* subsp. *affinis* constitutes an extremely variable complex, with putative elements of *Castilleja latifolia* (leaves oblong-orbicular and entire), *Castilleja applegatei* (wavy leaf margins), *Castilleja subinclusa* subsp. *franciscana* (exserted lower lip, forward-pointed galea, upthrust calyces and distinctly pedicellate flowers), *Castilleja wightii* (yellow flowers, more or less included galea, glandular indument and numerous short axillary shoots below the inflorescence) and *Castilleja foliolosa* or *Castilleja mollis* (occasional branched/forked trichomes). An uncommon and perhaps endemic component of the *Castilleja densiflora* complex occurs on a few coastal headlands, **with creamy-white flowers exuding a vanilla-like scent**. Plants of owl's clover (*Castilleja densiflora*) away from the immediate coast (Schoolhouse Ridge) **have rose-purple flowers with a spicy cinnamon scent** and most likely adapted locally (the *Orthocarpus noctuinus* analogue) to a vespertine pollinating vector in response to the prevailing diurnal coastal wind patterns. **One exposed and isolated coastal grassland, hosted sympatric populations of the extremely rare banded owl's clover (*Castilleja exserta* subsp.**

*latifolia*) and the vanilla-scented form of owl's clover (*Castilleja densiflora*), which were observed and studied for several seasons.

From a floristic perspective, one of the values derived from the watershed's biodiversity is the study of contrasts: the variety and plasticity of morphological templates within a specific family, occupying different niches in the same ecosystem.

Unless one is versed in Apiaceae taxonomy and has fruiting plants at hand with their highly dissimilar schizocarps, it would be difficult to connect floating pennywort (*Hydrocotyle ranunculoides*), Pacific oenanthe (*Oenanthe sarmentosa*), California angelica (*Angelica tomentosa*), hoary bowlesia (*Bowlesia incana*), California hedge-parsley (*Yabea microcarpa*), lovage (*Ligusticum apiifolium*) and rattlesnake weed (*Daucus pusillus*) with cow-parsnip (*Heracleum lanatum*), sweet cicely (*Osmorhiza chilensis* = *Osmorhiza berteroi*), footsteps-of-spring (*Sanicula arctopoides*), wild celery (*Apiastrum angustifolium*), caraway-leaved lomatium (*Lomatium caruifolium* var. *caruifolium*), coyote thistle (*Eryngium armatum*) and Gairdner's yampah (*Perideridia gairdneri* subsp. *gairdneri*). A diverse family indeed, but the constituent taxa are united by the structure of their fruits, these when mature splitting into two halves, each containing one seed and temporarily remaining attached to a portion of the central axis known as a carpophore.

What is found growing on sandbars along Scotts Creek's riparian corridor, is a monocot, vegetatively simulates an *Iris* but is not one? Excluding flowers and fruits, the genus *Juncus* affords the student of form and function, a rare opportunity to observe a bewildering array of variations on a theme, often approaching a sophisticated level of mimicry that can seduce the uninitiated into making a hastily arrived at misdiagnosis! The aforementioned "*Iris* poseur" is none other than the iris-leaved rush (*Juncus xiphioides*). On the coastal prairies another foliar chameleon can be found, brown-headed rush (*Juncus phaeocephalus* var. *phaeocephalus*), which often grows with and masquerades as the blue-eyed grass (*Sisyrinchium bellum*)\* and occasionally forming a threesome is western rush (*Juncus occidentalis*), producing caespitose tufts with leaves and nascent culms acting like counterfeit California hairgrass (*Deschampsia cespitosa* subsp. *holciformis*) plants, which to confuse matters even further, can be found growing sympatrically!

**\*Note:** blue-eyed grass (*Sisyrinchium bellum*), while common throughout the watershed and elsewhere, behaves in a decidedly uncommon fashion locally when it comes to the range of colors exhibited and the concomitant variability of the perianth parts, both as to dimensions and overall gestalt. During the past 30+ years, specimens have been collected and raised, either in containers or naturally in the ground, which produced (a) unblemished white flowers, white flowers with pink or blue pheasant eyes, white flowers veined pink or bluish-purple, (b) pale pink flowers, (c) pale blue flowers, (d) flowers in various shades of blue, violet and purple and (e) rarest of all, purple flowers with the adaxial surface of the perianth parts speckled with pigment free, transparent patches which glistened like mica. The equally, as to configuration, variable perianth divisions, range from stellate with parts separate through flowers with parts so broadly drawn that they + overlap and appear rotate.

Locally, taxonomic conundrums abound within the Rush Family (Juncaceae), namely reconciling morphological differences within one circumscription for a "variable" species. Such a species, with a decidedly schizophrenic nature, is Mexican rush (*Juncus mexicanus*). At least two taxa, scattered in marsh-like areas within/bordering the coastal prairies and adjacent grasslands, which due to the possession of tortile-compressed culms and basal bracts occasionally displaying conspicuous blades, are referable to the *Juncus balticus* complex, aff. *Juncus mexicanus*:

**Taxon 1:** culms dark green, stout, often arcuate, inflorescences **compact** with perianth parts **dark brown and nitid**, 5-6 mm. long, in overall gestalt, simulating a nanistic phase of salt rush (*Juncus lesueurii*) or possibly referable to *Juncus breweri* but on occasion producing basal bracts with readily identifiable blades.

**Taxon 2:** culms light green, sometimes with a bluish cast, usually erect, **slender**, tortile-compressed,

inflorescences **open**, perianth parts **pale**, 3-5 mm. long, basal bracts sporadically displaying culm-like blades. **The aerial portion of the seasonal culms behaves in a strictly annual fashion, turning tannish-brown and rapidly become desiccated with the approach of fall.**

Just when you have brought the *Juncus* to heel and feel secure in possessing skills of discernment, a roadside discovery runs your ship of confidence aground: scattered colonies of an unknown grass appear on the upper slopes—perennial, with basally sheathing plane leaves, these margined with conspicuous filiform whitish hairs unlike any local member of the Poaceae you have seen! A few remnant inflorescences, holdovers from last season are found, these displaying in a very un-grasslike fashion, partially disintegrated one-chambered capsules. Thus common wood rush (*Luzula comosa*) enters the scene, a sister genus to *Juncus*, their foliar disparities overshadowing the shared anatomical structuring of their reproductive organs.

If certain character traits can be ascribed to a specific group of plants within our “green” sightseeing jaunt, then “not knowing their place,” fits the ferns perfectly.

Updraft-borne spores of the lady fern (*Athyrium felix-femina* var. *cyclosorum*) from adjacent Scott’s Creek create a nascent colony in a shaded but only seasonally damp roadside ditch.

Periodic slope failure transports Western sword fern (*Polystichum munitum*) and wood fern (*Dryopteris arguta*) from their woodland habitat to near-vertical positions of long-term uncertainty.

California maidenhair (*Adiantum jordanii*) beats the summer heat by going dormant and leaving discreet traces of its existence with papery dried pinna and wiry varnished black petioles, while the goldback fern (*Pentagramma triangularis* subsp. *triangularis*) twists and contorts its basically deltoid-in-silhouette blades into a gold-dusted Mobius Loop.

And finally, nested polypody (*Polypodium calirhiza*).....an allotetraploid derivative of California polypody (*Polypodium californicum*) and the licorice fern (*Polypodium glycyrrhiza*).....decides that living the high life of an epiphyte on long-lived oaks and California bay laurel (*Umbellularia californica*) is preferable to the terrestrial uncertainties of its brethren.

Adding contrast to the mix, with extremes of stature and overall gestalt, are western burning bush (*Euonymus occidentalis* var. *occidentalis*), displaying fleshy flowers suspended on thread-like stalks and looking as if they escaped from a tidepool and shining chickweed (*Stellaria nitens*), so delicate and finely drawn in stature as to be invisible unless properly backlit. From a purely horticultural perspective, it would be very difficult to best the foliar display put on by small-flowered alum root (*Heuchera micrantha*), with leaves exceedingly variable, both as to pigmentation and adaxial surface patterns, rivaling those found on Rex begonias.

Sadly, not all native species persist in a specific site within a given area and such is the case with Torrey’s cryptantha (*Cryptantha torreyana*). This locally uncommon annual borage, in past years appeared seasonally, restricted to certain east-facing road banks, often concentrated in small groupings and as such, was vulnerable to natural extirpation. When massive sliding, the result of El Nino driven weather patterns, radically changed this species preferred habitat, no replacement seeds were apparently available to reestablish the total population loss for that site. Also factoring into this survival equation, is the longevity of some seeds, actually nutlets in this case, and if short-lived, one or two seasons, even if present may not have been viable when actually needed!

Many observers, encountering California bedstraw (*Galium californicum* subsp. *californicum*), climbing bedstraw (*Galium porrigens* var. *porrigens*), and sweet-scented bedstraw (*Galium triflorum*) would be

surprised to learn that this low-profile trio of “locals” belonging to the Madder Family (Rubiaceae), is in fact related to the exotic genera *Cichona* (Quinine), *Coffea* (Coffee), and *Gardenia* (Gardenia)!

Again, the mixing of the widespread with the locally uncommon defines some of the native grasses found growing along this singled-out portion of our botanical survey, with **Elmer’s fescue (*Festuca elmeri*) leading the pack in the uncommon category (plants vary throughout the watershed as to stature, ca. 0.5-2 m. in height, number of florets per spikelet and anther color, yellow or purple)**, followed in frequency of occurrence by tall trisetum (*Trisetum canescens* = *Trisetum cernuum* subsp. *canescens?*), Alaska onion grass (*Melica subulata*), Howell’s bluegrass (*Poa howellii*), Western fescue (*Festuca occidentalis*), slender hairgrass (*Deschampsia elongata*), pine grass (*Calamagrostis rubescens*), California wild rye (*Elymus glaucus* subsp. *glaucus*) extremely variable with some populations displaying “branched” inflorescences, polymorphic Torrey’s melic (*Melica torreyana*), California brome (*Bromus carinatus* var. *carinatus*), and nodding brome (*Bromus vulgaris*). ***Bromus carinatus* var. *carinatus* constitutes a complex assemblage of “micro-species”, some self-pollinating/cleistogamous (stamens included), others out-breeding (stamens exerted). Plants with broad leaves and large inflorescences, these sometimes displaying drooping branches with few spikelets, may represent ancient hybridization with *Bromus sitchensis*.** Less than ¼ mile from the tarmac but out of viewing range, one of the rarest grasses found within the riparian corridor, crinkle-awn fescue (*Festuca subuliflora*), resides as a component of the redwood under story, visually looking like its sister species, Elmer’s fescue (*Festuca elmeri*), but possessing long-stipitate florets and conspicuous awns.

Mimicry and shared habitat provide food for thought, as one peruses the damp banks with their moss covered rocks and exposed root systems: here, varied-leaved collomia (*Collomia heterophylla*), popweed (*Cardamine oligosperma*), and small-flowered nemophila (*Nemophila parviflora* var. *parviflora*), three unrelated annual species, play out their seed-to-seed life cycles, featuring overlapping juvenile growth patterns of basal rosettes with pinnatifid leaves. Do all three species merely prefer the same ecological conditions, or does one of the three possess chemical constituents that repel predation, insect or otherwise, thereby bestowing protection on the other two imitators? Pacific starflower (*Trientalis latifolia*) also engages in a form of mimicry, perhaps more from this observers perspective than any co-evolutionary causation.....but not only, when still in foliar mode and growing in dappled light, does it superficially look like an anorexic version of the often sympatric western trillium (*Trillium ovatum*) but like that unrelated taxon, also possesses a thickened rootstock. Parenthetically, both *Trientalis* and *Centunculus* have now been removed from the family Primulaceae and resettled within the Myrsinaceae.

A brief notice to the unfortunate passing of an uncommon and controversial taxon which, with its scattered brethren, occupy the mixed coniferous/hardwood tract overshadowing this installment of our walk: I am making reference to the oracle oak (*Quercus x morehus*), **which in the case of our local specimens, represent in my opinion, the highly localized manifestation of ancient hybridization between the black oak (*Quercus kelloggii*) and forest live-oak (*Quercus parvula* var. *shrevei*).** Throughout the watershed, certain “mother trees” (*Quercus parvula* var. *shrevei*) produce, within a population of “normal” offspring, a percentage reflecting *Quercus kelloggii* influence, perhaps acquired during an earlier time frame when the two taxa grew sympatrically and the forest live-oak, as it expanded its coastal range, carried the recessive “hybrid genes” with it. Since the oracle oak specimens are site specific and are always in association with a population or individual specimen of the forest live-oak, in theory the production of *Quercus x morehus* may need two proximal *Quercus parvula* var. *shrevei* trees carrying the recessive “hybrid genes” to produce the oracle oaks! The hybrid offspring are readily distinguished from the surrounding oaks by their slower rate of growth and plane, sinuately-lobulate, semi-deciduous foliage. The taxon in question, was perched on the forested edge overlooking Swanton Road and early into the rainy season, had its root system undercut by slope failure and slowly starved to death by desiccation—an ignoble ending for a noble tree in the making!

Before moving on to the next leg of our rural trek, here is a mini-survey that underscores the diversity of the native flora found bordering this small section of country road: spotted coralroot (*Corallorhiza maculata*..... **immaculata form**, lip unblemished but occasionally during the post-anthesis stage, the lip aging with a pale pink suffusion and **possibly the best name, to assign this morphologically uniform taxon, should be var. occidentalis**), royal rein orchid (*Piperia transversa*), cream cups (*Platystemon californicus*), Hasse's vetch (*Vicia hassei*), checker lily (*Fritillaria affinis* var. *affinis*), American winter cress (*Barbarea orthoceras*), downy buttercup (*Ranunculus hebecarpus*), hairy wood sorrel (*Oxalis corniculata* subsp. *pilosa*), brown bog rush (*Juncus hesperius*), common rush (*Juncus patens*), western nettle (*Hesperocnide tenella*), canyon gooseberry (*Ribes menziesii*), Pacific pea (*Lathyrus vestitus* var. *vestitus*), ground rose (***Rosa spithamea*, new addition to Scotts Creek Watershed native species checklist**)), Hooker's fairy bells (*Disporum hookeri* = ***Prosartes hookeri***), bleeding heart (*Dicentra formosa*), Douglas's iris (*Iris douglasiana*), intermediate fiddleneck (*Amsinckia menziesii* var. *intermedia*), Pacific starflower (*Trientalis latifolia*), willow herb (*Epilobium ciliatum* sensu lato), hazelnut (*Corylus cornuta* var. *californica*), hill star (*Lithophragma heterophyllum*), California canary grass (*Phalaris californica*), gambleweed (*Sanicula crassicaulis*), giant trillium (*Trillium chloropetalum*), broad-leaved lupine (*Lupinus latifolius* var. *latifolius*), yerba buena (*Satureja douglasii*) and Indian thistle (*Cirsium brevistylum*).

One of the hidden or illusory aspects of journeying down Swanton Road, is that several of the smaller sub-watersheds feeding into Scotts Creek, while seeming relatively mundane at their terminus often begin from complex, multi-branched albeit abbreviated drainage systems. One of these highly reticulate assemblages of "gulchlets", encompasses an arc-like swath of acreage..... which includes at its head, the entire east dipping Magic Triangle Synform and within its legitimate boundaries, evolves via erosion, into the Old Road, Magic Triangle, Bifurcate, Dump, Haybarn, Buckeye Grove and Bulb Field "Gulches", before coalescing into a surprisingly narrow exit just below the Scotts Creek Bridge and parallels the final 200+ feet of this segment of our traversal. **The number and variety of "natives" documented for this relatively small component of the Scotts Creek Watershed over the past four decades, are as follows..... arranged by families, many which are undergoing nomenclatural changes resulting from molecular based systematics:** intermediate fiddleneck (aff. *Amsinckia menziesii* var. *intermedia*), bent-flowered fiddleneck (*Amsinckia lunaris*), hound's tongue (*Cynoglossum grande*), white baby-blue-eyes (*Nemophila menziesii* var. *atomaria*..... **genetically complex populations, with some plants gynodioecious and others tending towards var. menziesii in floral coloration and extremely variable as to corolla size and shape**), small-flowered nemophila (*Nemophila parviflora* var. *parviflora*), Fremont's nemophila (*Nemophila pulchella* var. *fremontii*..... **this taxon, either represents a disjunct series of populations within the Scotts Creek Watershed of an interior non-coastal ranging species or a related but new entity!**), stinging phacelia (*Phacelia malvifolia*), bracted popcorn-flower (*Plagiobothrys bracteatus*), artist's popcorn-flower (*Plagiobothrys chorisianus* var. *chorisianus*, San Francisco popcorn-flower (*Plagiobothrys diffusus*)..... western burning bush (*Euonymus occidentalis* var. *occidentalis*)..... Monterey pine (*Pinus radiata*..... **extensive representation of a morphologically variable sub-population derivative of ancient hybridization between *Pinus attenuata* and *Pinus radiata***), Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*)..... Pacific madrone (*Arbutus menziesii*), brittle-leaf manzanita (*Arctostaphylos crustacea* sensu lato..... **oak/conifer woodland succession, has reduced once viable colonies on the ocean side of Scotts Creek to skeletal remnants, with few if any now showing signs of life**), California huckleberry (*Vaccinium ovatum*)..... coast barberry (*Berberis pinnata* subsp. *pinnata*)..... straggly gooseberry (*Ribes divaricatum* var. *pubiflorum*), canyon gooseberry (*Ribes menziesii*)..... creek dogwood (*Cornus sericea* subsp. *sericea*)..... arroyo willow (*Salix lasiolepis*), Scouler's willow (*Salix scouleriana*..... **one small tree with conspicuously oblanceolate leaves, growing on brushy slope overlooking lower portion of gulch complex**)..... redwood *Sequoia sempervirens*)..... big-leaf maple (*Acer macrophyllum*), California buckeye (*Aesculus californica*..... **the genera *Acer* and *Aesculus* have now been placed together within the Sapindaceae**)..... bleeding heart (*Dicentra formosa*), California poppy (*Eschscholzia californica*)..... California nutmeg (*Torreya californica*)..... silk tassel (*Garrya elliptica*)..... California bedstraw (*Galium*

*californicum* subsp. *californicum*), climbing bedstraw (*Galium porrigens* var. *porrigens*), sweet-scented bedstraw (*Galium triflorum*)..... red alder (*Alnus rubra*)..... California bay laurel (*Umbellularia californica*)..... poison oak (*Toxicodendron diversilobum*)..... common bluecup (*Githopsis specularioides*)..... hoary bowlesia (*Bowlesia incana*), rattlesnake weed (*Daucus pusillus*), cow-parsnip (*Heracleum maximum*), lovage (*Ligusticum apiifolium*)..... **rare for county, localized populations within Swanton area, are the only known and documented ones to date**), caraway-leaved lomatium (*Lomatium caruifolium* var. *caruifolium*), sweet cicely (*Osmorhiza berteroi*), footsteps-of-spring (*Sanicula arctopoides*), purple sanicle (*Sanicula bipinnatifida*)..... **a yellow flowered form of this taxon was found several years ago growing in the upper part of the Magic Triangle Gulch**), gambleweed (*Sanicula crassicaulis*), Gianone's sanicle (*Sanicula gianonei*, pro.sp.nov.)..... fat Solomon's seal (*Smilacina racemosa*), slim Solomon's seal (*Smilacina stellata*)..... Hooker's fairy bells (*Prosartes hookeri*)..... Pacific starflower (*Trientalis latifolia*)..... western trillium (*Trillium ovatum* subsp. *ovatum*)..... sticky monkeyflower (*Mimulus aurantiacus*), musk monkeyflower (*Mimulus moschatus*)..... **circa three decades ago, an extensive population of this rhizomatous perennial was observed growing where the two main stems of this drainage system converge..... only to be buried and extirpated by a substantial debris flow during the 1982-83 rainy season**)..... California maidenhair (*Adiantum jordanii*), coffee fern (*Pellaea andromedifolia*), goldback fern (*Pentagramma triangularis* subsp. *triangularis*)..... wood fern (*Dryopteris arguta*), western sword fern (*Polystichum munitum*)..... lady fern (*Athyrium filix-femina* var. *cyclosorum*)..... bracken (*Pteridium aquilinum* var. *pubescens*)..... nested polypody (*Polypodium calirhiza*)..... **lowest sets of pinna shorter than succeeding ones**)..... Douglas's iris (*Iris douglasiana*)..... hairy honeysuckle (*Lonicera hispidula*)..... Blasdale's bent grass (*Agrostis blasdalei*)..... **localized disjunct populations, highly variable as to overall gestalt and showing, on occasion, introgression from sympatric California bent grass (*Agrostis densiflora*) and western bent grass (*Agrostis exarata sensu lato*)**, Hall's/leafy bent grass intergrades (*Agrostis hallii/pallens*), California brome (*Bromus carinatus* var. *carinatus*), nodding brome (*Bromus vulgaris*), pine grass (*Calamagrostis rubescens*), California oat grass (*Danthonia californica sensu lato*), California hairgrass (*Deschampsia cespitosa* subsp. *holciformis*), California wild rye (*Elymus glaucus* subsp. *glaucus*), California fescue (*Festuca californica*)..... **adaxial surfaces of leaves clothed with a cinerous indument akin to fine velvet in texture but not mentioned in the literature**), Elmer's fescue (*Festuca elmeri*), western fescue (*Festuca occidentalis*), red fescue (*Festuca rubra*), junegrass (*Koeleria macrantha*), California melic (*Melica californica*), Alaska onion grass (*Melica subulata*), Torrey's melic (*Melica torreyana*), purple needlegrass (*Nassella pulchra*), California canary grass (*Phalaris californica*)..... western lady's mantle (*Aphanes occidentalis*), wood strawberry (*Fragaria vesca*), toyon (*Heteromeles arbutifolia*), ocean spray (*Holodiscus discolor*), California horkelia (*Horkelia californica* subsp. *californica*), oso berry (*Oemleria cerasiformis*), California wild rose (*Rosa californica*), wood rose (*Rosa gymnocarpa*), thimbleberry (*Rubus parviflorus*), salmonberry (*Rubus spectabilis*), California blackberry (*Rubus ursinus*)..... yarrow (*Achillea millefolium*), mountain dandelion (*Agoseris grandiflora*), coast dandelion (*Agoseris hirsuta*), woodland madia (*Anisocarpus madioides*), California sagebrush (*Artemisia californica*), coyote brush (*Baccharis pilularis*), Indian thistle (*Cirsium brevistylum*), California aster (*Corethrogyne filaginifolia*)..... **var. californica**), golden yarrow (*Eriophyllum confertiflorum* var. *confertiflorum*), broad-leaved aster (*Eurybia radulina*), purple cudweed (*Gamochaeta ustulata*), sneezeweed (*Helenium puberulum*), white hawkweed (*Hieracium albiflorum*), tall layia (*Layia hieracioides*), tidytips (*Layia platyglossa*), slender tarweed (*Madia gracilis*)..... **scattered populations attributable to this taxon are often reduced in stature, with few heads on branches which are positioned in a somewhat flexuous pattern, and the gland-tipped trichomes are redolent of an odor reminiscent of cherry syrup..... the aforementioned traits possibly derived from past hybridization with *Madia exigua*?** ), coast tarweed (*Madia sativa*), slender cottonweed (*Micropus californicus* var. *californicus*), Santa Cruz microseris (*Microseris decipiens*), marsh microseris (*Microseris paludosa*)..... **uncommon in Santa Cruz County, this population from the upper section of the "Old Road" documented with pressings and deposited in the Jepson Herbarium at UC Berkeley**), California cudweed (*Pseudognaphalium californicum*)..... **one plant observed, 06/2010, with pink-tinged phyllaries**), Gianone everlasting (*Pseudognaphalium gianonei*, pro.sp.nov.), pink everlasting (*Pseudognaphalium*

*ramosissimum*), cotton batting plant (*Pseudognaphalium stramineum*), woolly marbles (*Psilocarphus tenellus* var. *tenellus*), California goldenrod (*Solidago velutina* subsp. *californica*), stephanomeria (*Stephanomeria virgata*..... **several years ago, I found a localized population growing on the lower east facing edge of Buckeye Grove Ridge, with flowers colored an apricot suffused pink..... not seen recently, and possibly referable to *Stephanomeria* aff. *elata***), California aster (*Symphotrichum chilense*)..... small-flowered alum root (*Heuchera micrantha*)..... white globe lily (*Calochortus albus*), checker lily (*Fritillaria affinis* var. *affinis*)..... giant horsetail (*Equisetum telmateia* subsp. *braunii*)..... blue elderberry (*Sambucus nigra* subsp. *canadensis*), red elderberry (*Sambucus racemosa* subsp. *racemosa*)..... coast nettle (*Urtica dioica* subsp. *gracilis*..... **some plants tending towards and intermediate with subsp. *holosericea*, specifically the ratio of stinging to non-stinging hairs on leaves and stems**)..... blue blossom (*Ceanothus thyrsiflorus*), California coffeeberry (*Frangula californica* subsp. *californica*)..... California man root (*Marah fabaceus*)..... tan-oak (*Notholithocarpus densiflorus* var. *densiflorus*), coast live-oak (*Quercus agrifolia* var. *agrifolia*), forest live-oak (*Quercus parvula* var. *shrevei*)..... sea lettuce (*Dudleya caespitosa*..... **scattered and isolated populations, growing on near- vertical, exposed bedding planes, usually east facing in orientation**)..... Gianone sedge complex (*Carex gianonei*, pro.sp.nov.), "imperfect" sedge (*Carex imperfecta*..... **this taxon occurs with some frequency on coastal prairie and to a lesser degree, within the Beaver Flat and West Spring Marshes..... pistillate flowers non-functioning and infertile fruits often hosting a whitish fungus, while some plants have functioning stamens which produce pollen and other plants are apparently, wholly sterile**), slough sedge (*Carex obnupta*), small-bracted sedge (*Carex subbracteata*), foothill sedge (*Carex tumulicola*)..... dwarf brodiaea (*Brodiaea terrestris* subsp. *terrestris*), blue dicks (*Dichelostemma capitatum* subsp. *capitatum*), Ithuriel's spear (*Triteleia laxa*..... **typical form with laterally symmetrical stamens, whitish anthers and filaments of unequal length**)..... Pacific pea (*Lathyrus vestitus* var. *vestitus*), small-flowered trefoil (*Lotus micranthus* = *Acmispon parviflorus*), yellow bush lupine (*Lupinus arboreus*), sky lupine (*Lupinus nanus*), Lindley's varied lupine (*Lupinus variicolor*), long-keeled clover (*Trifolium appendiculatum*), bearded clover (*Trifolium barbigerum* var. *barbigerum*), purple sack clover (*Trifolium depauperatum* var. *truncatum*), pin-point clover (*Trifolium gracilentum* var. *gracilentum*), double-headed clover (*Trifolium macraei*), maiden clover (*Trifolium microcephalum*), Valparaiso clover (*Trifolium microdon*), white-tipped clover (*Trifolium variegatum*), tomcat clover (*Trifolium willdenovii*), American vetch (*Vicia americana* var. *americana*)..... California figwort (*Scrophularia californica* subsp. *californica*)..... spotted coralroot (*Corallorhiza maculata* forma *immaculata*..... **several hundred plants of this taxon have been studied this season {2010}, growing throughout this subwatershed under the mixed conifer/oak woodlands, and all the observed specimens lack the maculate lips..... some post-anthesis plants, have the lip lightly flushed with a pale pink suffusion but nothing remotely resembling the labellum gestalt or maculations of the forma typica and perhaps best referable to *Corallorhiza maculata* var. *occidentalis***), hooded lady's tresses (*Spiranthes romanoffiana*..... **growing on exposed slope overlooking grassy ridge separating Haybarn and Buckeye Grove "gulchets"..... growing sympatrically with *Agrostis blasdalei***)..... Indian paintbrush (*Castilleja affinis* subsp. *affinis*), owl's clover (*Castilleja densiflora* sensu lato..... **aff. *Orthocarpus noctuinus*, with white bract tips and flowers exuding a vanilla scent**), Franciscan paintbrush (*Castilleja subinclusa* subsp. *franciscana*..... **only known population for Santa Cruz County, growing at eastern base of "Magic Triangle" and documented by herbarium pressings for the Jepson Herbarium, UC Berkeley in 04/17/85**), butter-and-eggs (*Triphysaria eriantha* subsp. *eriantha*), purple-beaked owl's clover (*Triphysaria micrantha*..... **only documented populations for Santa Cruz County, with pressings made on 03/25/83 and 03/03/84, and deposited at the Jepson Herbarium, UC Berkeley**), dwarf orthocarpus (*Triphysaria pusilla*)..... coyote mint (*Monardella villosa* sensu lato..... **highly variable, with various populations ranging from sub-glabrous, lance-ovate, thin-leaved subsp. *villosa* through tomentose, sub-orbicular, thick-leaved subsp. *franciscana***), selfheal (*Prunella vulgaris* var. *lanceolata*), yerba buena (*Satureja douglasii*), California hedge-nettle (*Stachys bullata*), rigid hedge-nettle (*Stachys rigida* var. *rigida*)..... toad rush (*Juncus bufonius* sensu lato), brown bog-rush (*Juncus hesperius*), western rush (*Juncus occidentalis*), common rush (*Juncus patens*), common wood rush (*Luzula comosa*)..... crimson columbine (*Aquilegia formosa*..... **observed growing sympatrically with another**

**hummingbird pollinated taxon, *Castilleja subinclusa* subsp. *franciscana*, within brush-covered base of "Magic Triangle"**), pipestems (*Clematis lasiantha*), California larkspur (*Delphinium californicum* subsp. *californicum*), California buttercup (*Ranunculus californicus*)..... soap plant (*Chlorogalum pomeridianum* var. *pomeridianum* and var. *divaricatum*)..... American winter cress (*Barbarea orthoceras*), common milkmaids (*Cardamine californica* var. *californica*), popweed (*Cardamine oligosperma*)..... morning glory (*Calystegia purpurata* subsp. *purpurata*)..... coast buckwheat (*Eriogonum latifolium/nudum* intergrades), creeping hearts (*Pterostegia drymarioides*)..... common linanthus (*Leptosiphon androsaceus*)..... San Francisco collinsia (*Collinsia multicolor*), California plantain (*Plantago erecta*)..... miner's lettuce (*Claytonia perfoliata* subsp. *perfoliata*)..... Johnny jump-up (*Viola pedunculata*)..... Douglas's nightshade (*Solanum douglasii*).

**Note:** select herbarium specimens of horticulturally meritorious, locally uncommon, rare county wide and agency listed **species referred to in this section** of the Traversal, collected and pressed, with noted exceptions, by Roy Buck and/or James West **within the Scotts Creek Watershed and environs**, then deposited in the Jepson Herbarium, U.C. Berkeley, **are as follows:**

*Adiatum jordanii*/accession number **UC1583770**/Keil, Holland & Kelly #20580  
*Agoseris apargioides* = *Agoseris hirsuta*/accession number **JEPS83123**/Buck & West #375  
*Agoseris grandiflora*/accession number **JEPS83090**/Buck & West #376  
*Agoseris heterophylla*/accession number **JEPS82556**/West #108  
*Agrostis blasdalei* ("*pseudo-densiflora*")/accession number **JEPS82926**/Buck & West #182  
*Agrostis blasdalei* ("*pseudo-densiflora*")/accession number **JEPS82923**/Buck & West #184  
*Agrostis blasdalei* ("*pseudo-densiflora*")/accession number **JEPS82922**/West #192  
*Arctostaphylos* "*sp*"/accession number **UCSC4633**/Randall Morgan, Oct 1 1977  
*Arctostaphylos* "*sp*"/accession number **UCSC4798**/Randall Morgan, Oct 1 1977  
*Arctostaphylos* "*sp*"/accession number **UCSC5772**/R. Morgan, Oct 2 1977  
*Arctostaphylos* "*sp*"/accession number **UCSC6208**/R. Morgan, Feb 1977  
*Arctostaphylos glutinosa*/accession number **JEPS81979**/Buck & West #153  
*Arctostaphylos glutinosa*/accession number **JEPS81980**/Buck & West #152  
*Arctostaphylos sensitiva*/accession number **UCSC5566**/Randall Morgan, Dec 22 1976  
*Arctostaphylos tomentosa* subsp. *crinita* = *Arctostaphylos crustacea* subsp. *crinita*/accession number **UCSC4775**/Randall Morgan, Dec 26 1976  
*Arctostaphylos tomentosa* subsp. *crinita* = *Arctostaphylos crustacea* subsp. *crinita*/accession number **UCSC4776**/Randall Morgan, Dec 21 1976  
*Arctostaphylos tomentosa* subsp. *crinita* = *Arctostaphylos crustacea* subsp. *crinita*/accession number **UCSC4779**/Randall Morgan, Feb 1 1977  
*Arctostaphylos tomentosa* subsp. *crinita* = *Arctostaphylos crustacea* subsp. *crinita*/accession number **UCSC4789**/Randall Morgan, Mar 1 1977  
*Barbarea orthoceras*/accession number **UCSC3123**/Randall Morgan, Apr 9 2002  
*Cardamine californica* var. *integrifolia*/accession number **UCSC3529**/Randall Morgan, Apr 9 2002  
*Carex gianonei*, **pro. sp. nov.**/accession number **JEPS82955**/West #42.2  
*Carex gianonei*, **pro. sp. nov.**/accession number **JEPS82968**/West #207.1  
*Carex gianonei*, **pro. sp. nov.**/accession number **JEPS82969**/West #213.1  
*Carex gianonei*, **pro. sp. nov.**/accession number **JEPS82970**/West #216.1  
*Castilleja affinis* subsp. *affinis*/accession number **JEPS82898**/Buck & West #377  
*Castilleja affinis* subsp. *affinis*/accession number **JEPS81908**/Buck & West #(?)  
*Castilleja affinis* subsp. *affinis*/accession number **JEPS82585**/West #109  
*Castilleja attenuata*/accession number **JEPS82768**/West #74  
*Castilleja densiflora* subsp. *densiflora*/accession number **UCSC6161**/R. Morgan, May 7 1981  
*Castilleja densiflora* subsp. *densiflora*/accession number **JEPS82563**/West #94



*Castilleja densiflora* subsp. *densiflora*/accession number **JEPS82962**/West #55  
*Castilleja densiflora* subsp. *densiflora*/accession number **JEPS82396**/Buck & West #264  
*Castilleja densiflora* subsp. *densiflora*/accession number **JEPS82561**/Buck & West #231  
*Castilleja densiflora* subsp. *densiflora*/accession number **JEPS82562**/Buck & West #230  
*Castilleja densiflora* subsp. *densiflora*/accession number **JEPS81529**/Buck, West & Stone #465  
*Castilleja densiflora* subsp. *densiflora*/accession number **JEPS90563**/Taylor #9465  
*Castilleja subinclusa* subsp. *franciscana*/accession number **JEPS83086**/West #372  
*Castilleja subinclusa* subsp. *franciscana*/accession number **JEPS81530**/Stone, Buck & West #458  
*Castilleja subinclusa* subsp. *franciscana*/accession number **UCSC6143**/R. Morgan, Jun 12 1978  
*Ceanothus thrysiflorus*/accession number **JEPS82636**/Buck & West #226  
*Cirsium occidentale* var. *occidentale*/accession number **JEPS83125**/Buck & West #373  
*Collinsia heterophylla*/accession number **JEPS82803**/Buck & West #492  
*Collinsia heterophylla*/accession number **JEPS85161**/Buck & West #492  
*Collinsia heterophylla*/accession number **SBBG95540**/Keil #20618  
*Collinsia multicolor*/accession number **JEPS81542**/Stone & West #467  
*Collinsia multicolor*/accession number **SJSU9542**/Myatt, 05/02/81  
*Cryptantha flaccida*/accession number **JEPS82587**/West #97  
*Daucus pusillus*/accession number **JEPS81518**/Buck & West #11  
*Delphinium hesperium* subsp. *hesperium*/accession number **JEPS82604**/West #98  
*Delphinium patens* subsp. *patens*/accession number **JEPS82765**/West #63  
*Delphinium patens* subsp. *patens*/accession number **JEPS82642**/Buck & West #218  
*Deschampsia danthonioides*/accession number **JEPS82589**/West #99  
*Deschampsia danthonioides*/accession number **JEPS82590**/West #99.1  
*Deschampsia elongata*/accession number **UCR67855**/Keil #20601  
*Dicentra formosa*/accession number **JEPS81502**/Buck & West #24  
*Disporum hookeri* = *Prosartes hookeri*/accession number **JEPS83469**/Buck & West #478  
*Dodecatheon hendersonii*/accession number **JEPS83088**/West #347  
*Epilobium hallianum*/accession number **JEPS82591**/West #100  
*Epilobium hallianum*/accession number **JEPS83116**/Buck & West #341  
*Erysimum franciscanum*/accession number **JEPS82773**/West #38.2  
*Festuca elmeri*/accession number **JEPS81500**/Buck & West #26  
*Festuca howellii* = *Festuca elmeri*/accession number **JEPS81499**/Buck & West #27  
*Festuca subuliflora*/accession number **JEPS83045**/Buck & West #421  
*Garrya elliptica*/accession number **JEPS82649**/Buck & West #205  
*Githopsis specularioides*/accession number **JEPS83465**/Buck & West #528  
*Hesperocnide tenella*/accession number **JEPS81501**/Buck & West #25  
*Heuchera micrantha*/accession number **UCR67971**/Keil #20573  
*Juncus mexicanus*/accession number **JEPS81506**/Buck & West #15  
*Juncus xiphioides*/accession number **JEPS83061**/Buck & West #453  
*Lasthenia glaberrima*/accession number **JEPS82599**/West #104  
*Layia platyglossa*/accession number **JEPS82806**/Buck & West #289  
*Ligusticum apiifolium*/accession number **JEPS81521**/Buck & West # 8  
*Lupinus latifolius* var. *latifolius*/accession number **UCR67868**/Keil #20655  
*Lupinus nanus*/accession number **JEPS82769**/West #59  
*Lupinus succulentus*/accession number **JEPS83472**/Buck & West #475  
*Melica subulata*/accession number **JEPS82786**/Buck & West #305  
*Micropus californicus* var. *californicus*/accession number **JEPS82586**/West #95  
*Micropus californicus* var. *subvestitus*/accession number **JEPS82588**/West #96  
*Montia fontana*/accession number **UCSC3458**/Randall Morgan, Apr 9 2002  
*Osmorhiza chilensis* = *Osmorhiza berteroi*/accession number **UC1583617**/Keil, Holland &

Kelly #20584

- Phalaris californica*/accession number **JEPS83114**/Buck & West #343  
*Plagiobothrys diffusus*/accession number **JEPS83121**/Buck & West #317  
*Plagiobothrys nothofulvus*/accession number **JEPS82764**/West #62  
*Platystemon californicus*/accession number **JEPS82808**/Buck & West #287  
*Poa howellii*/accession number **JEPS85127**/Buck & West #530  
*Poa unilateralis*/accession number **JEPS82617**/Buck & West #249  
*Polypodium californicum*/accession number **SBBG95532**/Keil #20579  
*Polypodium calirhiza*/accession number **JEPS81993**/Buck & West #158  
*Quercus chrysolepis*/accession number **JEPS81489**/Buck & West #59  
*Quercus parvula* var. *shrevei*/accession number **SBBG96047**/Keil #20641  
*Sanicula arctopoides*/accession number **JEPS82013**/Buck & West #151  
*Sanicula arctopoides*/accession number **JEPS83473**/Buck & West #474  
*Sanicula crassicaulis* ("pseudo-laciniata")/accession number **JEPS82959**/West #403  
*Sanicula bipinnatifida*/accession number **JEPS83475**/Buck & West #472  
*Sanicula bipinnatifida*/accession number **UCSC6030**/R. Morgan, Apr 8 1982  
*Sanicula hoffmannii*/accession number **UCSC6024**/R. Morgan, Mar 23 1982  
*Sanicula hoffmannii*/accession number **UCSC6174**/R. Morgan, Mar 23 1982  
*Sanicula hoffmannii*/accession number **UCSC6175**/R. Morgan, Mar 23 1982  
*Scrophularia californica*/accession number **JEPS82630**/Buck, West & Hawke #236  
*Solanum douglasii*/accession number **UCSC4621**/Randall Morgan, Oct 27 1976  
*Spiranthes romanzoffiana*/accession number **JEPS81566**/Buck & West #75  
*Trifolium barbigerum* var. *andrewsii* = *Trifolium grayi*/accession number **JEPS101723**/Taylor, Buck, West & Clifton #9671  
*Trifolium barbigerum* var. *barbigerum*/accession number **JEPS85128**/Buck & West #224  
*Trifolium barbigerum* var. *barbigerum*/accession number **JEPS83085**/West #370  
*Trifolium barbigerum*/accession number **UCSC5356**/Randall Morgan, May 30 1981  
*Trifolium buckwestiorum*/accession number **JEPS82502**/West #110  
*Trifolium buckwestiorum*/accession number **JEPS83454**/Morgan & West #3  
*Trifolium buckwestiorum*/accession number **JEPS81528**/Buck, West, Hawke & Vigno #1  
*Trifolium buckwestiorum*/accession number **JEPS82767**/West #73  
*Trifolium depauperatum* var. *depauperatum*/accession number **JEPS81915**/Buck & West #200  
*Trifolium grayi*/accession number **JEPS82603**/West #103.1  
*Trifolium* aff. *grayi*/accession number **UCSC5626**/Randall Morgan, May 26 1981  
*Trifolium* aff. *grayi*/accession number **UCSC5355**/Randall Morgan, May 30 1981  
*Trifolium microdon*/accession number **JEPS81914**/Buck & West #201  
*Trifolium variegatum* var. *melananthum* (= *Trifolium appendiculatum*)/accession number **JEPS82762**/West #56  
*Trifolium variegatum* var. *melananthum* (= *Trifolium appendiculatum*)/accession number **JEPS83084**/West #369  
*Trifolium variegatum* var. *melananthum* (= *Trifolium appendiculatum*)/accession number **JEPS82640**/Buck & West #220  
*Triphysaria eriantha* subsp. *eriantha*/accession number **JEPS82002**/Buck & West #159  
*Triphysaria eriantha* subsp. *eriantha*/accession number **JEPS82004**/Buck & West #160  
*Triphysaria micrantha*/accession number **JEPS825841**/West #198  
*Triphysaria micrantha*/accession number **JEPS89206**/West #28  
*Triphysaria pusilla*/accession number **JEPS82638**/Buck & West #222  
*Triphysaria pusilla*/accession number **JEPS82639**/Buck & West #221  
*Vicia hassei*/accession number **JEPS82627**/Buck & West #239

## Scotts Creek Bridge to Big Creek Bridge

The next phase of our watershed perambulation, situated between Scotts Creek and Big Creek Bridges, takes place on a relatively horizontal plane and affects the sinuosity of a real-time stream course. Sheltered within an intricately branched and indirectly lit box elder (*Acer negundo* var. *californicum*)\* and arroyo willow (*Salix lasiolepis*) grove, a flourishing colony of **Gianone's sanicle** (*Sanicula gianonei*, **pro.sp.nov.**), welcomes the attention of the taxonomically inclined. The criteria used to define this widespread but repeatedly misdiagnosed taxon center on **ecology and habitat preference, biochemical signature, foliar/bract morphology and cellular structure/behavior of marginal trichomes (becoming indurate and forming callosities in *S. crassicaulis* versus caducous.....withering and detaching....with *S. gianonei*, pro.sp.nov.), flower color, an unblemished epigynous disc, mature schizocarp configuration, color and alignment of the uncinata bristles. Comparison studies with the related, and where grassland meets woodland understory, sympatric species gambleweed (*Sanicula crassicaulis*), should be undertaken: with emphasis on chromosome counts, biochemical (alkaloids, et al.) analysis.... using gel electrophoresis techniques, a histological investigation of the foliar trichomes, below ground stem and root structures and breeding systems (obligate selfer versus out-breeder) with emphasis on reproductive isolation mechanisms versus potential for reciprocal/unidirectional gene flow.**

\*formerly placed in Family Aceraceae, now placed in Family **Sapindaceae**, along with the local genus *Aesculus*.

Momentarily trading asphalt for the au natural ambience of the Purdy Road, allows one to peruse new habitats roadside for several miles into the heart of the Scotts Creek Watershed and throw into relief, the botanical riches that await the serious student of ecology when leaving the superabundance already present along Swanton Road. Underlying the trajectory towards Eagle Rock is the counterpoint of Scotts Creek proper, a descending journey from Little Basin to the Pacific Ocean that is defined, in part, by the complex sinuosity of the watershed. A cross section of "native" taxa encountered without leaving the reticulate pattern of dirt roads shadowing both sides of the riparian corridor deep into the upper reaches of Scotts Creek and ascending, as old logging roads, into the flanking ridges, is as follows: brook foam (*Boykinia occidentalis*), aptly demonstrating its aesthetic value for landscaping shaded stream banks and moss surmounted, water-splattered rocks; western azalea (*Rhododendron occidentale*), prior to the 1960's, an extensive colony, some individual shrubs exceeding 6 meters in height, lined the lower portion of Lair Gulch where it enters Scotts Creek; leopard lily (*Lilium pardalinum*), scattered populations still existing throughout the upper portion of the watershed in spite of cyclical scouring, often found growing in alluvium filled recesses proximal to the stream course; and along a still negotiable road bed which threads its way up the west-facing, near-vertical canyon slope into a benched depression of considerable size and overlooked by chaparral, several species of considerable interest make their appearance--- starting near the canyon bottom and working upward, crinkle-awn fescue (*Festuca subuliflora*), rarest of the six species of *Festuca* native to area, bicolored linanthus (*Linanthus bicolor* = **Leptosiphon bicolor**), only one small population discovered to date, minute willow herb (*Epilobium minutum*), royal rein orchid (*Piperia transversa*), with its elongate, horizontally aligned spurs looking like a collection of knitting needles and giving off a spicy scent at dusk, golden fleece (*Ericameria arborescens*), beargrass (*Xerophyllum tenax*), sheltered within an impenetrable tangle of huckleberries and oaks, vegetatively this locally rare monocot could easily be mistaken as a depauperate example of pampas grass, rayless arnica (*Arnica discoidea*), pussy ears (*Calochortus tolmiei*), an uncommon species locally, when compared to the widespread and variable white globe lily (*Calochortus albus*), buckbrush (*Ceanothus cuneatus* var. *cuneatus*) and sensitive manzanita (*Arctostaphylos nummularia* = **A. sensitiva**), this distinctive species contributing its genes for virgate positioned stems, quadrate leaves with impressed veins and 4-merous flowers on branched inflorescences that often align themselves in a downward appressed fashion, to the ubiquitous "local" bur-former (*Arctostaphylos crustacea*, sensu lato). On the west-facing ridge complex, which separates

Bannister and Bettencourt Gulches and **bore the initial brunt of the 2009 Lockheed Fire**, Pacific stonecrop (*Sedum spathulifolium*), favors moss-lined depressions in the weathered mudstone and displays grass-green rosettes tinted orange through purple, these often frosted with a glaucous bloom. Directly across the upper Scotts Creek riparian corridor and facing southeast, Pine Mountain hosts scattered populations of Indian warrior (*Pedicularis densiflora*), growing in the chaparral understory, while back down in the riparian corridor, another jettisoned genus from the Scrophulariaceae, *Veronica serpyllifolia* subsp. *humifusa*, luxuriates in the dappled light provided by overtopping conifers and the adjacent spring-fed micro-marsh, which quite possibly is landslide derived and offers sanctuary to an assortment of native Carex, Cyperus and Scirpus and their moisture loving friends. **On 05/20/10, over the course of three hours, I walked the dirt road from the bridge across lower Bettencourt Gulch (Purdy Barnyard) up into the landslide derived "perched marsh", which feeds the unnamed gulch between Bannister and Bettencourt Gulches and made the loop back down to the beginning of my post 2009 Lockheed Fire botanical exploration..... while a substantial part of this traversal had been impacted by the fire with some areas remaining untouched, the sheer number of native species observed and thriving, reminded me of the importance of various disturbance regimes, both natural and human induced, needed to maintain a high degree of biodiversity within a given environment, specifically where the human footprint has an extensive history. The following list of "native" taxa, is recorded as I encountered each species (without leaving the dirt road)..... a botanical narrative, in which the plants speak for themselves via documentation:** white globe lily (*Calochortus albus*), California huckleberry (*Vaccinium ovatum*), two-eyed violet (*Viola ocellata*), woodland madia (*Anisocarpus madioides*), California milkwort *Polygala californica*, western fescue (*Festuca occidentalis*), crinkle-awn fescue (*Festuca subuliflora*), Hooker's fairy bells (*Prosartes hookeri*), Douglas's iris (*Iris douglasiana*), yerba buena (*Satureja douglasii*), sweet cicely (*Osmorhiza berteroi*), bracken (*Pteridium aquilinum* var. *pubescens*), tan-oak (*Notholithocarpus densiflorus* var. *densiflorus*), redwood (*Sequoia sempervirens*), sweet-scented bedstraw (*Galium triflorum*), California bedstraw (*Galium californicum* subsp. *californicum*), wood strawberry (*Fragaria vesca*), poison oak (*Toxicodendron diversilobum*), gambleweed (*Sanicula crassicaulis*), common milkmaids (*Cardamine californica* var. *californica*), round-fruited sedge (*Carex globosa*), redwood violet (*Viola sempervirens*), varied-leaved collomia (*Collomia heterophylla*), California bay laurel (*Umbellularia californica*), Pacific pea (*Lathyrus vestitus* sensu lato), hairy honeysuckle (*Lonicera hispidula*), California water starwort (*Callitriche marginata*), leopard lily (*Lilium pardalinum* subsp. *pardalinum*), black-cap raspberry (*Rubus leucodermis*), small-flowered nemophila (*Nemophila parviflora* var. *parviflora*), hazelnut (*Corylus cornuta* subsp. *californica*), miner's lettuce (*Claytonia perfoliata* subsp. *perfoliata*), western sword fern (*Polystichum munitum*), redwood sorrel (*Oxalis oregana*), elk-clover (*Aralia californica*), Alaska onion grass (*Melica subulata*), fat Solomon's seal (*Smilacina racemosa*), goldback fern (*Pentagramma triangularis* subsp. *triangularis*), windflower (*Anemone oregana*), Pacific starflower (*Trientalis latifolia*), western trillium (*Trillium ovatum* subsp. *ovatum*), slink pod (*Scoliopus bigelovii*), red clintonia (*Clintonia andrewsiana*), California hedge nettle (*Stachys bullata*), sedge\_sect. Ovales (*Carex* aff. *Carex gianonei* complex, **some inflorescences with lowermost spikelets compound-congested**), nodding brome (*Bromus vulgaris*), slender hairgrass (*Deschampsia elongata*), Howell's bluegrass (*Poa howellii*), vanilla grass (*Hierochloa occidentalis*), small-flowered alum root (*Heuchera micrantha*), Torrey's melic (*Melica torreyana*), white hawkweed (*Hieracium albiflorum*), wood rose (*Rosa gymnocarpa*), slender tarweed (*Madia gracilis*), canyon gooseberry (*Ribes menziesii*), Santa Cruz clover (*Trifolium buckwestiorum*), few-flowered clover (*Trifolium oliganthum*), tomcat clover (*Trifolium willdenovii*), maiden clover (*Trifolium microcephalum*), common wood rush (*Luzula comosa*), small-flowered trefoil (*Lotus micranthus*), blue blossom (*Ceanothus thyrsiflorus*), golden yarrow (*Eriophyllum confertiflorum* var. *confertiflorum*), coyote brush (*Baccharis pilularis*), California nutmeg (*Torreya californica*), sticky monkeyflower (*Mimulus aurantiacus*), Fremont's star lily (*Toxicoscordion fremontii*), morning glory (*Calystegia purpurata* subsp. *purpurata*), Venus's looking-glass (*Triodanis biflora*), tall trisetum (*Trisetum canescens*), California polypody (*Polypodium californicum*..... **lithophyte, with lower sets of pinna longer than upper**), big-leaf maple (*Acer macrophyllum*), forest live-oak (*Quercus parvula* var. *shrevei*), wood fern (*Dryopteris arguta*), toyon (*Heteromeles arbutifolia*), red

larkspur (*Delphinium nudicaule*), Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*), Pacific madrone (*Arbutus menziesii*), deerweed (*Lotus scoparius* var. *scoparius*), hound's tongue (*Cynoglossum grande*), purple cudweed (*Gamochaeta ustulata*), cotton batting plant (*Pseudognaphalium stramineum*), pine grass (*Calamagrostis rubescens*), royal rein orchid (*Piperia transversa*), beargrass (*Xerophyllum tenax*), pussy ears (*Calochortus tolmiei*), common rush (*Juncus patens*), willow herb (*Epilobium ciliatum* subsp. *ciliatum*), slender miner's lettuce (*Claytonia parviflora* subsp. *parviflora*), brittle-leaf manzanita (*Arctostaphylos crustacea* sensu lato), pink everlasting (*Pseudognaphalium ramosissimum*), pinole clover (*Trifolium bifidum* var. *bifidum*), selfheal (*Prunella vulgaris* var. *lanceolata*), bright-blue speedwell (*Veronica serpyllifolia* subsp. *humifusa*), Bolander's sedge (*Carex bolanderi*), California brome (*Bromus carinatus* var. *carinatus*), popweed (*Cardamine oligosperma*), red alder (*Alnus rubra*), lady fern (*Athyrium filix-femina* var. *cyclosorum*), paniced bulrush (*Scirpus microcarpus*), western azalea (*Rhododendron occidentale*), yellow willow (*Salix lasiandra* var. *lasiandra*) and hairy wood sorrel (*Oxalis corniculata* subsp. *pilosa*).

Retracing our steps back to a point less than a mile in from Swanton Road, one periodically reactivated slide area overlooking Purdy Road, studied and observed for more than 40 years, accommodates common linanthus (*Linanthus androsaceus* = ***Leptosiphon androsaceus***), with flowers ranging in color from white through deep lavender, favoring "vertical grasslands" which mask landslide debris and associated with a species of *Adela*, a genus of locally uncommon diurnal Fairy Moths (Family Adelidae), with gossamer antennae that are nearly double the body length in size; also concentrated within this narrow zone of vertical instability are naked-stemmed buckwheat (*Eriogonum nudum* sensu lato), woodland larkspur (*Delphinium patens* subsp. *patens*) with glabrous stems and inflorescence branches, pale plectritis (*Plectritis brachystemon*), hairy fringe-pod (*Thysanocarpus curvipes*) with lower portion of stems hirsute, **drying with maroon-brown blotches** and cauline leaves sagittate-clasping growing sympatrically with narrow-leaved fringe-pod (*Thysanocarpus laciniatus*) displaying glabrous/glaucous lower stems and cauline leaves lacking basal auricles extending across stem axis, **the taxonomically perplexing gynodioecious form of white baby-blue-eyes (*Nemophila menziesii* var. *atomaria*)**, California hedge-parsley (*Yabea microcarpa*), a former population of bent-flowered fiddleneck (*Amsinckia lunaris*), an extremely rare CNPS-listed 1B cousin of our beloved hound's tongue (*Cynoglossum grande*) but not seen in recent years, and a vegetatively robust, pale pink, large-flowered variant of farewell-to-spring (*Clarkia rubicunda*), looking more like the San Gregorio (San Mateo County) populations; playing ecological leapfrog along this section of Purdy Road, the pale-flowered form of Chinese houses (*Collinsia heterophylla*) and San Francisco collinsia (*Collinsia multicolor*) repeat their alternating status that conspicuously occurs along Swanton Road, **culminating with an extensive population of *Collinsia heterophylla* occupying the aforementioned slide area and within view of Old Seaside School, a sheltered near-vertical portion of the lower Schoolhouse Ridge blanketed with a shimmering violet haze of *Collinsia multicolor*!** Though small in stature, circa 40' long x 25' high, and seasonally rendered unstable by the vagaries of Winter rains, an amazing number of "natives", both rare and common, co-exist within the the fluid boundaries of the "Cattleguard Slide" .....snowberry (*Symphoricarpos albus* var. *laevigatus*), displaying long after the shedding of its seasonal foliage, small white orbicular fruits, texturally simulating Christmas tree ornaments made out of styrafoam and coinciding with the advent of this almost universal holiday; achieving sub-shrub status and retaining their foliage during the "sunless" months, between Fall and Spring, coyote mint (*Monardella villosa* sensu lato) and golden yarrow (*Eriophyllum confertiflorum* var. *confertiflorum*) share textural contrast with five Pteridophytes with differing gestalts..... seasonally deciduous California maidenhair (*Adiantum jordanii*); the ubiquitous woodlandland understory duo, wood fern (*Dryopteris arguta*) and western sword fern (*Polystichum munitum*); a confirmed alpinist, at least where rock outcroppings and tree trunks are concerned, *Polypodium calirhiza* (an allotetraploid derived from *Polypodium californicum* x *Polypodium glycyrrhiza*) which luxuriates on the bark of the overhanging California buckeyes (*Aesculus californica*) and goldback fern (*Pentagramma triangularis* subsp. *triangularis*), when in active growth and ready to shed its reproductive spores, more than willing to make an artistic impression on the back of an observer's hand and during its dormant period, looking ever so

much like a tortured piece of origami. When removed from the desiccating impacts of wind and sun, that the fractured mudstone experiences throughout the higher elevation "Chalks", it is amazing how much retained moisture this medium provides various taxa deep down within the riparian corridor proper..... both California saxifrage (*Saxifraga californica*) and broad-leaved lupine (*Lupinus latifolius* var. *latifolius*) maximize their growth potential, sharing this seasonally renewed micro-habitat with two aromatic members of the Carrot Family (Apiaceae): sweet cicely (*Osmorhiza berteroi*) and gambleweed (*Sanicula crassicaulis*)..... the former imparting a licorice scent when its foliage and schizocarps are crushed and the latter, an odor reminiscent of its European cousin, celery (*Apium graveolens*). Scattered across the ever-changing face of this biologically active unstable slope, are two native early "risers" or more appropriate in designation, "bloomers", and both belonging to the Mustard Family (Brassicaceae), known locally more for its weedy, non-native, members.... common milkmaids (*Cardamine californica* var. *californica*), standing out from all the local "crucifers" by possessing tuberous rhizomes and popweed (*Cardamine oligosperma*), daring the unsuspecting observer to massage its ripe siliques and get an explosive burst of seed in the face!!! **A checklist of additional "native" taxa occurring on this slide-face, a virtual botanical feast for the eyes, includes:** checker lily (*Fritillaria affinis* var. *affinis*), blue dicks (*Dichelostemma capitatum* subsp. *capitatum*), coast tarweed (*Madia sativa*..... variable as to stature, **stems clothed with gland-tipped trichomes from base and lacking cherry-syrup scent**), California brome (*Bromus carinatus* var. *carinatus*), Torrey's melic (*Melica torreyana*), Howell's bluegrass (*Poa howellii*), Pacific fescue (*Vulpia microstachys* var. *pauciflora*), varied-leaved collomia (*Collomia heterophylla*), California gilia (*Gilia achilleifolia* subsp. *achilleifolia*..... with some plants falling within the circumscription of subsp. *multicaulis*), Pacific pea (*Lathyrus vestitus* var. *vestitus*), miniature lupine (*Lupinus bicolor*), pinole clover (*Trifolium bifidum* var. *decipiens*), maiden clover (*Trifolium microcephalum*), few-flowered clover (*Trifolium oliganthum*), tomcat clover (*Trifolium willdenovii*..... at least one off-white variant has been seasonally observed occurring within this landslide defined population), Hasse's vetch (*Vicia hassei*), woodland star (*Lithophragma affine*), hill star (*Lithophragma heterophyllum*), common wood rush (*Luzula comosa*), California man root (*Marah fabaceus*), miner's lettuce (*Claytonia perfoliata* subsp. *perfoliata*), California blackberry (*Rubus ursinus*), yarrow (*Achillea millefolium*), Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*), California coffeeberry (*Frangula californica* subsp. *californica*), small-flowered nemophila (*Nemophila parviflora* var. *parviflora*) and poison oak (*Toxicodendron diversilobum*).

Not extending below the confluences of Laird and Calf Gulches with Scotts Creek proper but sharing and peripheral to the redwood understory, are the rare Hoffmann's sanicle (*Sanicula hoffmannii*), the aptly named slink pod (*Scoliopus bigelovii*)..... an unusual lilioid with maroon mottled leaves and flowers smelling like dead fish, and the fetching but inodorous two-eyed-violet (*Viola ocellata*), one of five "native" species of violets found within the watershed. Growing roadside, between the south edge of Squirrel Flat and the cattleguard, both in ditches and on overhanging banks, several native "taxa" of interest present themselves..... tree clover (*Trifolium ciliolatum*), the sporadically encountered Chinese caps (*Euphorbia crenulata*), a surprise to the botanically uninitiated, being a visually low-keyed sister species of Mexico's gift for the holidays, the poinsettia (*Euphorbia pulcherrima*), both legitimate members of a genus containing **1,500+ other species** and taking top honors in the fragrance category, a long established plant of fat Solomon's seal (*Smilacina racemosa*), surviving the recent holocaust and currently, (02/2010), initiating at least thirty new growths. An often overlooked and misdiagnosed species, lowland cudweed (*Gnaphalium palustre*), favors the margins of poorly drained areas with pooled water, sharing this preference with the near-endemic artist's popcorn-flower (*Plagiobothrys chorisianus* sensu lato) and opting for more rapidly draining underpinings, **two site specific taxa documented three decades ago for the area but not seen recently..... leather fern (*Polypodium scouleri*) and tower mustard (*Arabis glabra* var. *glabra*).** Retaining a foothold on the seasonally unstable road banks, several monocots make their presence felt, namely blue dicks (*Dichelostemma capitatum* subsp. *capitatum*) and foothill sedge (*Carex tumulicola*), while Elmer's fescue (*Festuca elmeri*) and Howell's bluegrass (*Poa howellii*) flourish, the former uncommon county-wide and the latter forming scattered populations which depending on the locale, can be highly variable as to stature. Following the 2009 fire and subsequent early Winter rains, the scorched

slopes overlooking the lower portion of Purdy Road have brought forth some interesting ecological responses: two examples of the rare oracle oak (*Quercus x morehus*), both rendered null and void as far as aerial stems and foliage are concerned, are resprouting with a multiplicity of new growths..... a solitary specimen of Fremont's nemophila (*Nemophila pulchella* var. *fremontii*) or a "new" species related to this inner valley taxon, exploits the rosette pattern of growth along with several sympatric specimens of downy buttercup (*Ranunculus hebecarpus*)..... following the variations on a theme concept but raising the complexity threshold, the 1-2 pinnately lobed horizontally positioned basal leaves of the California gilia (*Gilia achilleifolia* sensu lato), rival the Irish-lace doileys of yesteryear and perhaps due to the residual ash or lack of competition, are putting on a vigorous growth display! **Note: the steep west-facing slopes making up the lower part of the Schoolhouse Ridge Complex (down to the Purdy Road) and directly overlooking Squirrel Flat (Swanton Pacific Ranch/CalPoly holdings), were severely impacted by the 2009 Lockheed Fire and contained several taxa of both special interest and documented rarity.....** here is a post-fire (04-07/2010) survey of the area in question and the native species (arranged by familial relationships) present: *Lathyrus vestitus* sensu lato, *Lotus micranthus*, *Lotus wrangelianus*, *Lupinus bicolor* sensu lato, *Lupinus hirsutissimus*, *Lupinus latifolius* var. *latifolius*, *Lupinus nanus*, *Trifolium barbigerum* var. *barbigerum*, *Trifolium bifidum* var. *decipiens*, *Trifolium ciliolatum*, *Trifolium gracilentum* var. *gracilentum*, *Trifolium microcephalum*, *Trifolium microdon*, *Trifolium oliganthum*, *Trifolium willdenovii*, *Vicia americana* var. *americana*, *Vicia hassei*..... *Notholithocarpus densiflorus* var. *densiflorus*, *Quercus agrifolia*, *Quercus x morehus*, *Quercus parvula* var. *shrevei*..... *Amsinckia menziesii* var. *intermedia*, *Cryptantha clevelandii*, *Cynoglossum grande*, *Nemophila menziesii* sensu lato (variable and complex with some gynodioecious behavior present), *Nemophila parviflora* var. *parviflora*, *Nemophila* aff. *pulchella* var. *fremontii*, *Phacelia distans*, *Phacelia malvifolia*..... *Achillea millefolium*, *Anisocarpus madioides*, *Artemisia douglasiana*, *Eriophyllum confertiflorum* var. *confertiflorum*, *Hieracium albiflorum*, *Malacothrix floccifera*, *Microseris decipiens*, *Pseudognaphalium californicum*, *Rafinesquia californica*..... *Aesculus californica*..... *Umbellularia californica*..... *Fragaria vesca*, *Heteromeles arbutifolia*, *Holodiscus discolor*, *Oemleria cerasiformis*, *Rubus ursinus*..... *Heuchera micrantha*, *Lithophragma affine*, *Lithophragma heterophyllum*..... *Dudleya caespitosa*..... *Eriogonum nudum* sensu lato, *Pterostegia drymarioides*..... *Adiantum jordanii*, *Pellaea andromedifolia*, *Pentagramma triangularis* subsp. *triangularis*..... *Polypodium calirhiza*..... *Dryopteris arguta*, *Polystichum munitum*..... *Toxicodendron diversilobum*..... *Hesperocnide tenella*..... *Bowlesia incana*, *Daucus pusillus*, *Osmorhiza berteroi*, *Sanicula crassicaulis*..... *Ceanothus thyrsiflorus*, *Frangula californica* subsp. *californica*..... *Delphinium patens*, *Ranunculus hebecarpus*..... *Calamagrostis rubescens*, *Melica subulata*, *Melica torreyana*, *Poa howellii*, *Trisetum canescens* sensu lato..... *Monardella villosa* sensu lato, *Scutellaria tuberosa*, *Stachys bullata*..... *Triodanis biflora*..... *Iris douglasiana*..... *Galium californicum* subsp. *californicum*, *Galium porrigens* var. *porrigens*..... *Collomia heterophylla*, *Gilia achilleifolia* sensu lato, *Leptosiphon androsaceus*..... *Acer macrophyllum*..... *Toxicoscordion fremontii*..... *Clarkia rubicunda*..... *Eschscholzia californica*..... *Lonicera hispidula*, *Sambucus nigra* subsp. *canadensis*..... *Smilacina racemosa*, *Smilacina stellata*..... *Luzula comosa*..... *Marah fabaceus*..... *Epilobium ciliatum* sensu lato..... *Plectritis brachystemon*..... *Fritillaria affinis* var. *affinis*..... *Torreya californica*..... *Antirrhinum kelloggii*, *Collinsia multicolor*, *Nuttallanthus (Linaria) texanus*..... *Mimulus aurantiacus*..... *Pseudotsuga menziesii* var. *menziesii*..... *Arbutus menziesii*, *Arctostaphylos crustacea* sensu lato..... *Cardamine californica* var. *californica*, *Caulanthus lasiophyllus*, *Thysanocarpus curvipes*, *Thysanocarpus laciniatus*..... *Calandrinia breweri*, *Claytonia perfoliata* subsp. *perfoliata*..... *Polygala californica*..... *Calystegia purpurata* subsp. *purpurata*..... *Piperia elongata* (20+ flowering plants observed on steep, burned slope.....only population known for watershed), *Piperia transversa*..... *Dichelostemma capitatum* subsp. *capitatum*.

Further inland along Purdy Road, another near vertical area of concentrated biodiversity remains hidden to all but the most intrepid botanist..... **starting at the cattleguard and using the dirt road as the base line for our botanical sleuthing for the next 250 meters or so**, one encounters directly upslope to the top of the ridge, a series of "vertical grasslands" framed by conifer/oak woodlands and exposed rock

outcroppings, which act as mini-refugia for a number of uncommon taxa. **Although forming a continuous zone of steeply inclined slopes, beginning at the mouth of Schoolhouse gulch and extending along Purdy Road to a "nameless drainage system" just south of Calf Gulch (aka the Scotts Creek side of Schoolhouse Ridge Complex), the native species distribution within this relatively short distance is anything but predictable.....** here is an partial inventory of the rare and common "native" taxa which were observed **just within this fire scarred area** during the month of May/2010: *Dryopteris arguta*, *Polystichum munitum*..... *Adiantum jordanii*, *Pellaea andromedifolia*, *Pentagramma triangularis* subsp. *triangularis*..... *Pteridium aquilinum* var. *pubescens*..... *Bromus carinatus* var. *carinatus*, *Elymus glaucus* subsp. *glaucus*, *Festuca elmeri*, *Melica californica*, *Melica subulata*, *Melica torreyana*, *Trisetum canescens* sensu lato..... *Toxicodendron diversilobum*..... *Pinus attenuata*, *Pinus radiata* (**interface of ancient hybrid swarm between knobcone and Monterey pines..... initial gene flow unidirectional, from knobcone into Monterey, with branch patterns, needle and ovulate cone gestalts strongly influenced by knobcone but alignment and shape of mucro on knobcone's umbo, recessive**), *Pseudotsuga menziesii* var. *menziesii*..... *Euphorbia crenulata*, *Euphorbia spathulata*..... *Lathyrus vestitus* var. *vestitus* (**variable as to foliar indument**), *Lupinus latifolius* var. *latifolius*, *Lupinus nanus*, *Rubus ursinus*, *Trifolium bifidum* var. *decipiens* (**some plants observed, within area under discussion, displaying narrow shallowly-notched leaflets, referable to var. bifidum**), *Trifolium ciliolatum*, *Trifolium gracilentum* var. *gracilentum*, *Trifolium microcephalum*, *Trifolium microdon*, *Trifolium oliganthum*, *Trifolium willdenovii*, *Vicia hassei*..... *Aesculus californica*..... *Torreya californica*..... *Monardella villosa* sensu lato, *Satureja douglasii*, *Stachys bullata*..... *Smilacina stellata*..... *Corylus cornuta* var. *californica*..... *Scrophularia californica* subsp. *californica*..... *Galium californicum* subsp. *californicum*, *Galium triflorum*..... *Sequoia sempervirens*..... *Cynoglossum grande*, *Phacelia malvifolia*, *Nemophila menziesii* var. *atomaria* (**scattered population displaying flowers variable as to both coloration and patterning**), *Nemophila parviflora* var. *parviflora*..... *Achillea millefolium*, *Agoseris grandiflora*, *Anisocarpus madioides*, *Artemisia douglasiana*, *Cirsium brevistylum*, *Cirsium occidentale* var. *venustum*, *Eriophyllum confertiflorum* var. *confertiflorum*, *Eurybia radulina*, *Layia gaillardoides* (**extremely rare in county and within Scotts Creek Watershed, restricted to highly localized section of "vertical grassland" overlooking Purdy Road..... herbage redolent of a citrus-based fragrance and ray-flowers concolored yellow**), *Madia gracilis* (**throughout watershed, extremely variable as to overall gestalt and biochemical signature, possibly the result of past hybridization with Madia exigua and Madia sativa**), *Microseris decipiens*, *Pseudognaphalium californicum*, *Pseudognaphalium stramineum*, *Rafinesquia californica*, *Symphyotrichum chilense*..... *Dichelostemma capitatum* subsp. *capitatum*..... *Trillium ovatum*..... *Marah fabaceus*..... *Daucus pusillus*, *Osmorhiza berteroi*, *Sanicula crassicaulis*..... *Heteromeles arbutifolia*, *Oemleria cerasiformis*..... *Quercus agrifolia* var. *agrifolia*, *Quercus parvula* var. *shrevei*..... *Umbellularia californica*..... *Fritillaria affinis* var. *affinis*..... *Clarkia rubicunda*, *Epilobium ciliatum*, aff. subsp. *watsonii* (**inflorescence dense, leafy and glandular, flowers dark pink with petals 7+ mm. in length**)..... *Crassula connata*, *Dudleya caespitosa* (**colonies growing on west facing exposed near-vertical bedding planes, may be furthest inland for watershed and genetically isolated from populations on immediate coastal headlands..... interior populations, in the Scotts, Mill, Big and Little Creek sub-watersheds, have paler more elongate yellow corollas, which differ from the darker, more intensely pigmented "stouter" corollas of their coastal brethren**)..... *Hesperocnide tenella*..... *Claytonia perfoliata* subsp. *perfoliata*..... *Eschscholzia californica*..... *Gilia achilleifolia* subsp. *multicaulis*, *Leptosiphon androsaceus*..... *Eriogonum nudum*, *Pterostegia drymarioides*..... *Mimulus aurantiacus*..... *Plectritis brachystemon* (**fruit with keeled back**), *Collinsia heterophylla* (variable as to flower color but generally off-white to pale lilac with contrasting veinal patterning)..... *Frangula californica* subsp. *californica*..... *Stellaria nitens* (**since the local populations are few and isolated from each other and the populations appear to be self-pollinating..... are there any measurable genetic differences between them?**)..... *Sambucus nigra* subsp. *canadensis*..... *Lonicera hispidula*..... *Cardamine oligosperma*, *Thysanocarpus laciniatus* and *Delphinium patens*.

Separating the Mill Creek and Scotts Creek drainages from Swanton Road to the summit of the Seymore Hill, and extending up into the "Chalks", with mudstone so bleached by the elements that from a distance it



simulates snow, the **Schoolhouse Ridge complex** is an extraordinarily rich series of benched grasslands, mixed hardwood/coniferous woodlands, deeply incised, often branched, gulches and chaparral, both horizontal and vertical in inclination. Within this one geomorphically defined area, a lifetime could be spent just studying **(1)** the widespread burl-forming manzanita (*Arctostaphylos crustacea*, sensu lato) and its evolutionary origins, **(2)** the role of hybridization, both ancient and modern, within the oak (*Quercus*) subgenus Erythrobalanus, **(3) if the isolated populations of sea lettuce (*Dudleya caespitosa*), with their narrow, elongate, pale-yellow corollas are genetically distinct from the coastal bluff populations, (4)** the role of fire, both ancient and modern, in the broaching of reproductive isolating mechanisms within the sympatric populations of knobcone pine (*Pinus attenuata*) and Monterey pine (*Pinus radiata*) and **the subsequent gene flow patterns (outcrossing versus selfing, coupled with the prevailing wind patterns as pollen delivery vectors) with their corresponding changes in the hybrid population's gross morphology, and measured in part, by ovulate cone gestalt, (5)** the impact of herbivory in the shrinking/expansion of the benched grasslands and how this correlates with the associated species diversity, **(6)** what has been the net result, ecologically, with the current policies of fire suppression, the 2009 Lockheed Fire and the balance between beneficial and pathogenic fungi/bacteria plus the rampant colonization of invasive exotics? and **(7)** investigate the post 2009 Lockheed Fire impact on local populations of pine grass (*Calamagrostis rubescens*) and what percentage of the inflorescences have yielded fertile caryopsis and with the clonally established parental source regenerating, how successful is the recruitment of new and potentially competitive seedlings?

Whether one ventures up or down the access trail along the Mill Creek side of the ridge, the panorama of this ecological journey is a metaphorical overview, an interlocking chain of biological events that stretches from the bone-chilling ocean's edge to the desiccated ridges that reference the top of the world for the Scotts Creek Watershed. Passing by mudstone so weathered that it has been reduced to powder-like fragments, these artfully reconfigured into miniature dunes, reminiscent of a Zen garden, one becomes immediately aware of one genus of related taxa, besides the knobcone pine (*Pinus attenuata*) and chamise (*Adenostema fasciculatum*), that defines this harsh and unyielding environment, the pioneering manzanitas: while Santa Cruz manzanita (*Arctostaphylos andersonii*), sensitive manzanita (*Arctostaphylos nummularia* = *A. sensitiva*), endemic Schreiber's manzanita (*Arctostaphylos glutinosa*), and a recently discovered **localized** species (aff. *Arctostaphylos manzanita* subsp. *laevigata* = *Arctostaphylos ohloneana* M.C.Vasey & V.T.Parker), reside for the most part, in the upper reaches of the watershed, their genetic fingerprints manifest themselves throughout the extensive range of the burl-forming manzanita (*Arctostaphylos crustacea*, sensu lato). This phoenix-like fire-regenerative taxon, a genetic sponge of such complexity, that no two specimens are alike, as to stature, foliar gestalt/alignment and inflorescence configuration, shares habitat and longevity status with the coast redwood (*Sequoia sempervirens*), seemingly out of place in this unforgiving but intensely compelling arena, often golden in hue and greatly reduced in stature. Anomalous manifestations occur, even within these populations of extreme morphological diversity, which immediately stand out as discordant elements. **One such example, tentatively diagnosed by one reviewer as *Arctostaphylos tomentosa*[*crustacea*] subsp. *subcordata*, a Channel Islands taxon, distinguished itself with tannish-brown smooth branches, non-tinted white corollas, scabridulous adaxial foliar surfaces, lacking stomata, which could pass for high-grade sandpaper and all vegetative parts densely glandular-bristly. This iconoclastic manzanita also behaved in an unexpected fashion when transplanted to a controlled environment, by giving its broadly ovate-orbicular leaves cordate bases with conspicuous auriculations! (note: on 08/15/10, while revisiting this portion of the Schoolhouse Ridge, the aforementioned disjunct population of *Arctostaphylos crustacea* subsp. *subcordata*, after suffering major damage from the 2009 Lockheed Fire, was observed vigorously resprouting from basal burls. Less than five meters away, another distinctive burl-former circa half a meter in height and surrounded by overtopping relatives demands closer observation, its manifest differentiae being stature and attendant gestalt, compact inflorescences and foliar presentation..... the latter of particular interest, with leaf outline oblanceolate, apiculate, adaxial surface with impressed reticulate venation and mature petioles retrorse (bent downward). One final manzanita note..... further down the Mill Creek aspect of the**

ridge, on either side of the access trail but out of direct view, are two singular occurrences: (a) near the edge of the ridge overlooking the Mill Creek riparian corridor, an isolated population of Schreiber's manzanita (*Arctostaphylos glutinosa*) exists with one member reflecting its Santa Cruz manzanita (*Arctostaphylos andersonii*) parentage **with glabrous, glaucous, thinner in texture, leaves with fewer stomata on the adaxial surface** and (b) positioned circa five meters into the oak woodland/chaparral transition, an arboreal example of the local *Arctostaphylos crustacea* complex, **approaching six meters in height, occasionally producing auriculate leaves with new growth and inflorescences glandular-pubescent--- height, auriculations and glandulosity an inheritance from the Santa Cruz manzanita ( *Arctostaphylos andersonii*)? (note: while doing a post-fire review (08/15/10) of this satellite *Arctostaphylos glutinosa* population, some seedling recruitment is beginning to take place, with two examples observed and studied..... again like their counterparts higher up in the "Chalks", during the seedling stage, conspicuous lateral branching takes place, just above ground level, leaves elliptic/oblanceolate and irregularly denticulate on upper half, cinerous indument over glaucous coating, stomata isofacial, and stems with eglandular, gland-tipped and nascent dendritic trichomes..... also discovered concurrent with studying the "arctos", was a vigorous flowering specimen of *Pseudognaphalium beneolens*, new to this locale but found in the upper parts of the watershed ).** Working backwards, from top to bottom, the paucity of soil, intense exposure to sun and wind, and rapidly draining fractured substrate, places severe restrictions on the growth potential of trees and woody shrubs, which luxuriate in the watershed's canyon bottoms and soil-retentive, often benched, slopes: behaving as shrubs, scattered specimens of golden chinquapin (*Chrysolepis chrysophylla* var. *minor*), act as understory associates of distantly related maul oaks (*Quercus chrysolepis*), subgenus Protobalanus, lichen-festooned with reduced thickened leaves contrasting with the production of oversized acorns, also sharing its arid aerie with what purports to be chaparral live-oak (*Quercus wislizeni* var. *frutescens*), displaying small, holly-like leaves **and possibly a chaparral ecotype of forest live-oak (*Quercus parvula* var. *shrevei*)**, with foliar margins running the gamut from entire through undulate-spinose. Adding spice to the oak stew, scattered specimens of oracle oak (*Quercus x morehus*) and in the upper reaches of Calf Gulch, at least one mature example of *Quercus x chasei*, have been observed!

A tantalizing overview of the species diversity found within this geomorphically complex slice of the Scotts Creek Watershed is as follows: padre's shooting star (*Dodecatheon clevelandii* subsp. *sanctarum*), a genus highly vulnerable to overgrazing, its shallowly embedded rootstocks easily ripped from their moorings and potential for seed production lost; Dannie's skullcap (*Scutellaria tuberosa*), an odorless member of the Mint Family (Lamiaceae), with rootstocks terminating in tubers, often found growing under chamise and manzanitas, with bilaterally symmetrical pale blue flowers contrasting with the green or bronze-tinted foliage; A monocot with an attitude, Fremont's star lily or chaparral deathcamas (*Zigadenus fremontii* = *Toxicoscordion fremontii*), with all plant parts toxic, particularly the bulbs, the principal toxin being zygadenine, an alkaloid, favoring brush-covered rocky slopes; twining snapdragon (*Antirrhinum kelloggii*), a unique native "scroph" with violet-purple flowers on elongate pedicels, which readily attach themselves by coiling as they ascend up through the surrounding shrubbery; growing within the distinct "vertical grassland" habitat, either on the partially colonized mudstone debris or appearing to defy gravity securing the near-vertical exposed mudstone "in place", such species of interest as Douglas's sandwort (*Minuartia douglasii*), clustered broomrape (*Orobanche fasciculata*), bird's-foot fern (*Pellaea mucronata* var. *mucronata*), dwarf athysanus (*Athysanus pusillus*), few-flowered clover (*Trifolium oliganthum*) and grassland gilia (*Gilia clivorum*) make themselves at home; found along the access trail's margin, either under or emerging through the canopy of the drought-resistant thickets, one can find bush poppy (*Dendromecon rigida*), pipestems (*Clematis lasiantha*), western pearlwort (*Sagina decumbens* subsp. *occidentalis*), pitcher sage (*Lepechinia calycina*), California chicory (*Rafinesquia californica*), rare woodland layia (*Layia gaillardoides*) with concolor yellow rays and tall layia (*Layia hieracioides*) with a somewhat different chemical signature from its coastal scrub counterparts, yerba santa (*Eriodictyon californicum*) and rush trefoil (*Lotus junceus* var. *junceus* = *Acmispon junceus* var. *junceus*).....growing on the exposed ridge-top overlooking Mill Creek, the violet pigmented flowers of blue toadflax (*Linaria*

*canadensis*) are awash in a sea of mauve, generously provided by a concentrated population of blue dicks (*Dichelostemma capitatum* subsp. *capitatum*). Some of the less common species found within this area under discussion, often occur as small isolated colonies, disjunct in range but favoring analogous sites within the Schoolhouse Ridge environs: some examples are woolly malacothrix (*Malacothrix floccifera*) and stinging lupine (*Lupinus hirsutissimus*), found together or growing separately on the bare, exposed, fragmented mudstone; where the densely-wooded slopes transition up into the fingers of chaparral, locally rare sleepy catchfly (*Silene antirrhina*) has been documented; favoring the oak understory with its complex admixture of coniferous, hardwood and deciduous arboreal associates, one can find three orchid species, dense-flowered rein orchid (*Piperia elongata*), documented during the late 1970s and revisited in pre-fire 2009, growing on the west-facing slopes overlooking "Squirrel Flat" sharing habitat with sister species, royal rein orchid (*Piperia transversa*) and deep within the converging drainages that define the lower portion of Schoolhouse Gulch, striped coralroot (*Corallorhiza striata*), variable as to coloration with a rare flavistic form, also observed and photographed in the late 1970s. As Schoolhouse Gulch intersects the Purdy Road, an extensive population of bracted popcorn-flower (*Plagiobothrys bracteatus*), prostrate in mode of growth, occupies a fan-like section of the roadbed. Documented for this general area but not seen by the author of this text, *Plagiobothrys hispidulus*/accession number UCR67980/Kiel #20636, if not mis-identified, would add a new species to the watershed! Half-hidden in the benched grasslands that constitute the lower section of the ridge-complex, dwarf brodiaea (*Brodiaea terrestris* subsp. *terrestris*), our visual/aesthetic equivalent of the European crocus, co-exists with the cinnamon-scented owl's clover (*Castilleja densiflora* subsp. *densiflora*) and a species uncommon countywide, caraway-leaved lomatium (*Lomatium caruifolium* var. *caruifolium*). Perhaps most remarkable in the way of concentrated rarity, is the distribution pattern found within the lower portion of the Schoolhouse Ridge complex for the rare Santa Cruz microseris (*Microseris decipiens* = *Stebbinsoseris decipiens*)..... six separate populations exist: the largest, which at one time contained in excess of 1,000 plants, overlooks Scotts Creek/ Squirrel Flat on a very steep "vertical grassland" and shares this botanically rich hillside with related silver puffs (*Uropappus lindleyi*), woolly malacothrix (*Malacothrix floccifera*) and California chicory (*Rafinesquia californica*)..... facing southeast also on a "vertical grassland" and looking down into the Mill Creek drainage, is a smaller population of circa 100-150 plants; on the benched grassland which comprises the backbone of the upper Pozzi Meadow, a concentrated population of 150-200 plants occupy the transitional grassland/woodland zone, sharing habitat with one parental species, coast microseris (*Microseris bigelovii*)..... segueing back to the Scotts Creek side, **Beehive Hill**, midway between the entrance to Purdy Road and the mouth of Schoolhouse Gulch, maintains a small but stable population (circa 50-60 plants) and sharing a habitat of fractured and fragmented mudstone with a long-established colony of sea lettuce (*Dudleya caespitosa*) and a uncommon constituent of the Phlox Family, grassland gilia (*Gilia clivorum*).....most recently, (08/2010), a small colony was discovered growing on a oak-canopied slope comprised mainly of mudstone debris, which overlooks the Harvey Field and Mill Creek Bridge..... while saving the best for last, flanking the incipient portion of a gulch which drains the upper Pozzi meadow and empties into Mill Creek, are two opposite facing steep grassy slopes, studded with fractured mudstone fragments and acting as a "magnet," attracting not only *Stebbinsoseris decipiens*, but three related members of the Cichorieae..... mountain dandelion (*Agoseris grandiflora*), annual agoseris (*Agoseris heterophylla*) and coast microseris (*Microseris bigelovii*)!!! **The 2009 Lockheed Fire moved through all six *Stebbinsoseris decipiens* populations and it will be of considerable interest to see how fragmented the post-fire germination of this unique allotetraploid near-endemic will be..... comprehensive achene collections have been made for all six populations and their sympatric relatives and were deposited with the UCSC Arboretum.**

**Note: One native species that, post fire (2009/2010), has asserted itself to the point of becoming a dominant understory "germinator", is the native morning glory (*Calystegia purpurata* subsp. *purpurata*). In some areas, particularly within the oak/conifer woodlands that define much of the Schoolhouse Ridge complex, solid sheets of seedlings define the understory!!!**

**Note: The lower portion of Schoolhouse Ridge consists of two benches, elevationally 200(+) feet**

apart, which possibly are unmapped terrace remnants whose eastwardly aligned halves, drain into Mill Creek via two "gulchlets" ..... the upper one, deep and steep, demonstrating the long term erosive power of water on mudstone, while the lower one, is abbreviated, shallower and drains directly into the Harvey Field. The following, is a botanical overview of the Mill Creek side of this ecological equation (which bore the full brunt of the 2009 Lockheed Fire), with the documented native taxa arranged by family: *Clarkia purpurea* subsp. *quadrivulnera* (two separate populations, each with its own distinctive floral color/patterning), *Clarkia rubicunda*..... *Helianthemum scoparium*..... *Daucus pusillus*, *Heracleum maximum*, *Osmorhiza berteroi*, *Sanicula arctopoides*, *Sanicula bipinnatifida*, *Sanicula crassicaulis*, *Sanicula gianonei*, pro.sp.nov. .... *Marah fabaceus*..... *Adenostema fasciculatum*, *Fragaria vesca*, *Holodiscus discolor*, *Rubus parviflorus*, *Rubus ursinus*..... *Antirrhinum kelloggii*..... *Toxicoscordion fremontii*..... *Cardamine californica* var. *californica*, *Cardamine oligosperma*, *Caulanthus lasiophyllus* (**siliques reflexed**)..... *Toxicodendron diversilobum*..... *Ceanothus thyrsoiflorus*, *Frangula californica* subsp. *californica*..... *Achillea millefolium*, *Agoseris grandiflora*, *Anisocarpus madioides*, *Baccharis pilularis*, *Artemisia douglasiana*, *Cirsium brevistylum*, *Corethrogyne filaginifolia*, *Eurybia radulina*, *Gamochaeta ustulata*, *Madia gracilis* (**stems generally slender with narrow leaves, glandular in upper half and possessing a chemical signature akin to that of cherry syrup..... a trait shared with *Madia exigua*, inflorescences variable, racemose or paniculate, with lowest branches not overtopping terminal**), *Madia sativalcapitata* (**plants often robust, densely glandular from base to apex, inflorescences consisting of cymose glomerules or open and paniculate, with differing chemical signatures present**), *Microseris decipiens*, *Pseudognaphalium californicum*, *Pseudognaphalium aff. gianonei*, pro.sp.nov., *Pseudognaphalium ramosissimum*, *Pseudognaphalium stramineum*, *Rafinesquia californica*, *Solidago velutina* subsp. *californica*, *Symphotrichum chilense*..... *Lathyrus vestitus* var. *vestitus* (**variable as to foliar indument and wing-like margins of stems**), *Lotus micranthus*, *Lotus salsuginosus* var. *salsuginosus*, *Lotus scoparius* var. *scoparius*, *Lotus strigosus*, *Lotus wrangelianus*, *Lupinus nanus*, *Trifolium barbigerum* var. *barbigerum*, *Trifolium bifidum* var. *decipiens*, *Trifolium bifidum* var. *bifidum*, *Trifolium buckwestiorum* (**area where type specimen for Santa Cruz clover was collected**), *Trifolium ciliolatum*, *Trifolium gracilentum* var. *gracilentum*, *Trifolium microcephalum*, *Trifolium microdon*, *Trifolium willdenovii*, *Vicia americana* var. *americana*, *Vicia hassei*..... *Pinus radiata* (**subpopulation reflecting intermediacy of key character traits of both *Pinus attenuata* and *Pinus radiata* and perhaps closer in overall gestalt to original hybrid population rather than specimens on the coastal headlands..... which are the byproduct of a highly reticulate pattern of selfing, backcrossing and isolation from direct reinroduction of *Pinus attenuata* genes**), *Pseudotsuga menziesii* var. *menziesii*..... *Umbellularia californica*..... *Arbutus menziesii*, *Arctostaphylos crustacea* sensu lato..... *Cardamine oligosperma*, *Caulanthus lasiophyllus*..... *Cryptantha clevelandii*, *Cryptantha micromeres*, *Emmenanthe penduliflora*, *Nemophila parviflora*..... *Agrostis hallii/pallens* intergrades, *Bromus carinatus* var. *carinatus*, *Bromus vulgaris*, *Danthonia californica* sensu lato, *Elymus glaucus* subsp. *glaucus*, *Festuca occidentalis*, *Festuca subuliflora*, *Melica californica*, *Melica subulata*, *Melica torreyana*, *Nassella pulchra*, *Poa howellii*, *Vulpia octoflora* var. *octoflora*..... *Eschscholzia californica*..... *Quercus agrifolia* var. *agrifolia*..... *Monardella villosa* sensu lato (**Schoolhouse Ridge is home to a complex assemblage of forms, which range from *Monardella villosa* subsp. *villosa* thru *Monardella villosa* subsp. *franciscana***), *Satureja douglasii*, *Scutellaria tuberosa*, *Stachys bullata*, *Stachys rigida* sensu lato (**where both species form interdigitating populations, there appears to be gene exchange/flow between the two, with some plants showing intermediacy in chemical signatures, folial gestalt, positioning of calyx/corolla with respect to inflorescence axis, corolla coloration and veinal patterning, alignment of internal ring of hairs in corolla tube and expression of external saccate base of corolla**)..... *Juncus bufonius* sensu lato, *Juncus patens*..... *Dichelostemma capitatum* var. *capitatum*..... *Calandrinia breweri*, *Claytonia perfoliata* subsp. *perfoliata*..... *Verbena lasiostachys* var. *lasiostachys*..... *Veronica serpyllifolia* subsp. *humifusa*..... *Euphorbia crenulata*..... *Sequoia sempervirens*..... *Aesculus californica*..... *Acer macrophyllum*..... *Galium californicum* subsp. *californicum*, *Galium porrigens* var. *porrigens*, *Galium triflorum*..... *Hesperocnide tenella*, *Urtica dioica* subsp. *gracilis*, *Urtica dioica* subsp. *holosericea* (**populations along Mill Creek riparian corridor/lower Schoolhouse ridge interface, are variable as to**

ratio of stinging versus non-stinging trichomes on stems and leaves)..... *Alnus rubra*..... *Sambucus racemosa* var. *racemosa*..... *Calystegia purpurata* subsp. *purpurata*..... *Navarretia squarrosa*..... *Scrophularia californica* subsp. *californica*..... *Lonicera hispidula*..... *Dudleya caespitosa*..... *Mimulus aurantiacus*..... *Chlorogalum pomeridianum* var. *pomeridianum*..... *Plectritis brachystemon* (**both winged and wingless fruit populations present, but not mixed**)..... *Castilleja densiflora* subsp. *densiflora* (**yellow pouch, lilac-purple galea, off-white bract tips**)..... *Actaea rubra*..... *Adiantum jordanii*..... *Dryopteris arguta*, *Polystichum munitum*..... *Pteridium aquilinum* var. *pubescens*..... *Polypodium calirhiza* (**lithophyte, lowest sets pinna shorter than succeeding ones**)..... *Epilobium ciliatum* sensu lato (**within this area under discussion, forms which can be assigned to subsp. *ciliatum* and subsp. *watsonii*, occur**) and *Sisyrinchium bellum*.

Doing a post-fire vegetation response analysis on the near-vertical **Beehive Hill** mini-refugium (03/10), has resulted in the following "native" taxa being documented for the burned area, which begins along the inner edge of Purdy Road and extends upward to a narrow, west-facing grassland extension of the Upper Pozzi Meadow..... flanked on the north by the mouth of Schoolhouse Gulch and to the south by a nameless "micro" drainage system that with time, could evolve into a small gulch. Although restricted in size, at least four specific habitat subsets exist..... central to and readily seen from a distance, is the "vertical grassland" component, which most likely is the byproduct of an ancient landslide and is bounded at its base by a zone of fire-responsive, deciduous and evergreen shrubs, flanked by mixed coniferous/oak woodlands, overlooked by an exposed terrace face which is capped with a gently sloping meadow: *Pinus radiata*, *Sequoia sempervirens*, *Smilacina stellata*, *Calystegia purpurata* subsp. *purpurata*, *Lathyrus vestitus* sensu lato, *Oemleria cerasiformis*, *Pentagramma triangularis* subsp. *triangularis*, *Nemophila parviflora* var. *parviflora*, *Quercus parvula* var. *shrevei*, *Sanicula crassicaulis*, *Anisocarpus madioides*, *Dryopteris arguta*, *Marah fabaceus*, *Adiantum jordanii*, *Rubus ursinus*, *Umbellularia californica*, *Baccharis pilularis*, *Iris douglasiana*, *Satureja douglasii*, *Toxicodendron diversilobum*, *Fragaria vesca*, *Lonicera hispidula*, *Scrophularia californica* subsp. *californica*, *Pteridium aquilinum* var. *pubescens*, *Frangula californica* subsp. *californica*, *Galium porrigens* var. *porrigens*, *Artemisia douglasiana*, *Sambucus nigra* subsp. *canadensis*, *Anaphalis margaritacea*, *Galium californicum* subsp. *californicum*, *Oxalis corniculata* subsp. *pilosa*, *Stachys bullata*, *Claytonia perfoliata*, *Leptosiphon androsaceus*, *Nemophila menziesii* sensu lato, *Pseudotsuga menziesii* var. *menziesii*, *Agoseris grandiflora*, *Lupinus nanus*, *Madia gracilis*, *Osmorhiza berteroi*, *Aesculus californica*, *Clarkia rubicunda*, *Achillea millefolium*, *Eschscholzia californica*, *Lotus wrangelianus*, *Trifolium ciliolatum*, *Dudleya caespitosa*, *Thysanocarpus* aff. *laciniatus* (stems glabrous and glaucous, leaves not conspicuously sagittate-auriculate and extending beyond other side of stem, style conspicuously exerted), *Crassula connata*, *Gilia clivorum*, *Dichelostemma capitatum* subsp. *capitatum*, *Polypodium* aff. *californicum* (growing as lithophyte), *Chlorogalum pomeridianum* var. *pomeridianum*, *Phacelia distans*, *Quercus agrifolia*, *Cardamine oligosperma*, *Cardamine californica* var. *californica*, *Vicia americana* var. *americana*, *Sanicula gianonei*, pro.sp.nov., *Fritillaria affinis* var. *affinis*, *Cynoglossum grande*, *Juncus patens*, *Cirsium brevistylum*, *Heracleum maximum*, *Pseudognaphalium ramosissimum*, *Mimulus aurantiacus*, *Hesperocnide tenella*, *Trillium chloropetalum*, *Actaea rubra*, *Monardella villosa* subsp. *villosa*, *Solanum douglasii*, *Euonymus occidentalis* var. *occidentalis*, *Polystichum munitum*, *Epilobium ciliatum* sensu lato, *Ceanothus thyrsiflorus*, *Galium triflorum*, *Festuca elmeri*, *Melica torreyana*, *Calandrinia ciliata*, *Sanicula arctopoides*, *Ranunculus californicus*, *Plectritis* aff. *brachystemon*, *Lomatium caruifolium* var. *caruifolium*, *Solidago velutina* subsp. *californica*, *Bromus carinatus*, *Trisetum canescens*, *Camissonia ovata*, *Oxalis corniculata* subsp. *pilosa*, *Elymus glaucus* subsp. *glaucus*, *Poa howellii* and *Quercus x morehus*.

Returning back to Swanton Road and the centenarian duo, blue elderberry (*Sambucus mexicana* = *Sambucus nigra* subsp. *canadensis*) "trees," (circa 7-8 meters in height and trunks circa 2 meters in circumference at 1.8 meters from ground level), their furrowed bark replicating the patterning of desiccated

mud flats, we pass through a zone of Rosaceae diversity. Presenting themselves are California wild rose (*Rosa californica*), California blackberry (*Rubus ursinus*), wood strawberry (*Fragaria vesca*), oso berry (*Oemleria cerasiformis*), and California horkelia (*Horkelia californica* subsp. *californica*). Easily lost on the disinterested viewer and in plain sight for the botanically curious, are scattered representatives of the hybrid Gianone everlasting (*Pseudognaphalium gianonei*, pro.sp.nov.) and one of its putative parents, cotton batting plant (*Pseudognaphalium stramineum*). Like another hybrid-derived member of the Asteraceae, Santa Cruz microseris (*Microseris decipiens* = *Stebbinsoseris decipiens*), the presence of one or both parents is not necessary for the continued existence of the fertile offspring, the main difference being, that the diploid Gianone everlasting **can backcross with either diploid parent** producing a complex and variable series of intermediates and the Santa Cruz microseris, being an allotetraploid, is interfertile with its siblings **but not with its diploid parents**. The presence of two oaks, **both members of the section Erythrobalanus**, coast live-oak (*Quercus agrifolia* var. *agrifolia*) and forest live-oak (*Quercus parvula* var. *shrevei*), growing so close together that from a distance they can be perceived as a single entity, allows for the serious viewer all the diagnostic tools necessary to separate these related taxa in the field.

A given throughout the watershed and the habitat buffering it, are the isolated pockets of concentrated biodiversity, these often found at the backs of landslides, ancient or modern. Facing east/northeast and overlooking the convergence of Mill Creek with the watershed's namesake, Scotts Creek, one such botanical aggregation, wholly hidden from view, warrants discussion. Occupying a benched, bowl-shaped depression, comprising circa 1.5 acres, with the surrounding forested slopes fan-shaped in contour and centrally incised by seasonal drainage, **this concealed environment showcases an extensive population of western azalea (*Rhododendron occidentale*), variable both as to flower size and color!**

Complementing the aesthetic values, both visual and olfactory, that this sequestered component of the Heath Family (Ericaceae) offers the intrepid naturalist, is a diverse assemblage of "natives", a comprehensive cross-section of the watershed's flora contained within a metaphorical pinprick on the local topographical map! The tally for arboreal associates within this compressed ecosystem is a veritable who's who: Monterey pine (*Pinus radiata*), Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*), California nutmeg (*Torreya californica*), redwood (*Sequoia sempervirens*), tan-oak (*Notholithocarpus densiflorus* var. *densiflorus*), forest live-oak (*Quercus parvula* var. *shrevei*), some trees showing the influence of coast live-oak (*Quercus agrifolia* var. *agrifolia*) with leaves concave-convex and the axils of some abaxial veins with scattered tufts of stellate pubescence, California bay laurel (*Umbellularia californica*), arroyo willow (*Salix lasiolepis*), big-leaf maple (*Acer macrophyllum*), and California buckeye (*Aesculus californica*). Less elevated in stature, but often conspicuously ligneous, evergreen or deciduous and varied in gestalt, the shrubs weigh in significantly, both in number and variety: blue elderberry (*Sambucus mexicana* = ***Sambucus nigra* subsp. *canadensis***), not acquiring tree status like its brethren along Swanton Road, red elderberry (*Sambucus racemosa* var. *racemosa*), coyote brush (*Baccharis pilularis*), one individual studied two decades ago south of Mill Creek Bridge exceeded 6 meters in height, the gooseberry duo, straggly gooseberry (*Ribes divaricatum* var. *pubiflorum*) and canyon gooseberry (*Ribes menziesii*), the latter with memorably aromatic glandular herbage, hazelnut (*Corylus cornuta* var. *californica*), two members of the Buckthorn Family (Rhamnaceae), blue blossom (*Ceanothus thyrsiflorus*) and California coffeeberry (*Frangula californica* subsp. *californica*), blue witch (*Solanum umbelliferum*) and sub-shrub sister species, Douglas's nightshade (*Solanum douglasii*), oso berry (*Oemleria cerasiformis*), its fruit a drupe not a berry, and depending on the circumstances, a woody shrub or vine, poison oak (*Toxicodendron diversilobum*). Creating an understory tapestry, ranging from the prostrate stems of sweet-scented bedstraw (*Galium triflorum*) and California bedstraw (*Galium californicum* subsp. *californicum*) to the virgate stramineous canes of thimbleberry (*Rubus parviflorus*) and the 2.5+ meter high fistulous stems of cow-parsonip (*Heracleum maximum*) are a host of "locals": California hedge-nettle (*Stachys bullata*), hound's tongue (*Cynoglossum grande*), California figwort (*Scrophularia californica* subsp. *californica*), small-flowered nemophila (*Nemophila parviflora* var. *parviflora*), baneberry (*Actaea rubra*), two scandent members of the Legume Family (Fabaceae), Pacific pea (*Laythrus vestitus* var. *vestitus*) and giant vetch (*Vicia gigantea*), a robust form of California man root (*Marah fabaceus*) growing in an exposed sunny niche with leaves 25+

centimeters wide x 21+ centimeters long, coast tarweed (*Madia sativa*), cotton batting plant (*Gnaphalium stramineum*) along with sibling species pink everlasting (*Pseudognaphalium ramosissimum*), a colony of slough sedge (*Carex obnupta*) fulfilling its mandate as erosion abater plus its diagnostically challenging relative, the Gianone sedge (*Carex gianonei*, pro. sp. nov.) as unrepentant as ever and sharing habitat with two diplomats from the Carrot Family (Apiaceae), sweet cicely (*Osmorhiza chilensis* = *Osmorhiza berteroi*) and gambleweed (*Sanicula crassicaulis*) and the ubiquitous California blackberry (*Rubus ursinus*). Other monocots besides the *Carex* demand recognition, namely common rush (*Juncus patens*) and brown bog-rush (*Juncus effusus* var. *brunneus* = *Juncus hesperius*), Hooker's fairy bells (*Disporum hookeri* = *Prosartes hookeri*), slim Solomon's seal (*Smilacina stellata*), western trillium (*Trillium ovatum* subsp. *ovatum*) and a quintet of grasses: Hall's bent grass (*Agrostis hallii*), California brome (*Bromus carinatus* var. *carinatus*), nodding brome (*Bromus vulgaris*), California wild rye (*Elymus glaucus* subsp. *glaucus*) and Alaska onion grass (*Melica subulata*). Rounding out this mini-survey with the vascular challenged ferns, present and accounted for, are wood fern (*Dryopteris arguta*), western sword fern (*Polystichum munitum*) and bracken (*Pteridium aquilinum* var. *pubescens*).

Perhaps the narrowest of the secondary drainage systems entering into Scotts Creek, Mill Creek, in spite of the near-vertical severity of its upper watershed, rewards the intrepid plant-hunter with botanical novelties uncommon or rare elsewhere in the county. Without straying more than 5-6 meters from the banks of Mill Creek, one can encounter long established colonies of leopard lily (*Lilium pardalinum*), perhaps the most amenable to cultivation of the North American lilies, sharing the riparian habitat with robust specimens of western azalea (*Rhododendron occidentale*), seasonally inundated tussocks of torrent sedge (*Carex nudata*), dimorphic coltsfoot (*Petasites frigidus* var. *palmatus*) with its + dioecious, bracted, vanilla-scented inflorescences appearing before the stalked palmate leaves, these looking ever so much like they were purloined from sympatric big-leaf maple (*Acer macrophyllum*), impenetrable colonies of another admirer of the foliar gestalt displayed by maples, thimbleberry (*Rubus parviflorus*), extensive monocultures of giant horsetail (*Equisetum telmateia* var. *braunii*) and in apparent defiance of gravity, five-finger fern (*Adiantum aleuticum*) and western burning bush (*Euonymus occidentalis* var. *occidentalis*), growing out of the overtopping moist banks that appear to reach skyward. Imparting an exotic mien to the streamside ambience, elk-clover (*Aralia californica*) acts as a perfect foil to the more prosaic red elderberry (*Sambucus racemosa* var. *racemosa*), both deciduous with distinctively textured stems and sporting contrasting clusters of miniature fruits attractive to birds. Other riparian inhabitants sharing the leafless syndrome during the winter months that add an aesthetic richness to the proceedings, whether naked or not, are red elderberry's cousin, snowberry (*Symphoricarpos albus* var. *laevigatus*) and kin to the previously noted thimbleberry, ocean spray (*Holodiscus discolor*). **As with other ancillary roads branching off from Swanton Road and accessing the various sub-watersheds en route, the circa half-mile journey into the lower Mill Creek drainage and terminating at the one-lane bridge, yields the following windfall of native plant species..... all of which can be seen without leaving the dirt road: small-flowered nemophila (*Nemophila parviflora* var. *parviflora*), stinging phacelia (*Phacelia malvifolia*), nested polypody (*Polypodium calirhiza*), wood fern (*Dryopteris arguta*), goldback fern (*Pentagramma triangularis* subsp. *triangularis*), California maidenhair (*Adiantum jordanii*), western sword fern (*Polystichum munitum*), bracken (*Pteridium aquilinum* var. *pubescens*), lady fern (*Athyrium filix-femina* var. *cyclosorum*), giant horsetail (*Equisetum telmateia* subsp. *braunii*), California wild rye (*Elymus glaucus* subsp. *glaucus*), California brome (*Bromus carinatus*), nodding brome (*Bromus vulgaris*), Alaska onion grass (*Melica subulata*), Torrey's melic (*Melica torreyana*), wild ginger (*Asarum caudatum*), hound's tongue (*Cynoglossum grande*), blue creek-sedge (*Carex amplifolia*), Bolander's sedge (*Carex bolanderi*), common rush (*Juncus patens*), Indian thistle (*Cirsium brevistylum*), California nutmeg (*Torreya californica*), Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*), redwood (*Sequoia sempervirens*), snowberry (*Symphoricarpos albus* var. *laevigatus*), hairy honeysuckle (*Lonicera hispidula*), blue elderberry (*Sambucus nigra* subsp. *canadensis*), red elderberry (*Sambucus racemosa* var. *racemosa*), California buckeye (*Aesculus californica*), western nettle (*Hesperocnide tenella*), coast nettle (*Urtica dioica* subsp. *gracilis*), giant trillium (*Trillium***

*chloropetalum*), western trillium (*Trillium ovatum* subsp. *ovatum*), thimbleberry (*Rubus parviflorus*), salmonberry (*Rubus spectabilis*), California blackberry (*Rubus ursinus*), fat Solomon's seal (*Smilacina racemosa*), slim Solomon's seal (*Smilacina stellata*), Douglas's iris (*Iris douglasiana*), checker lily (*Fritillaria affinis* var. *affinis*), big-leaf maple (*Acer macrophyllum*), box elder (*Acer negundo* var. *californicum*), red alder (*Alnus rubra*), hazelnut (*Corylus cornuta* var. *californica*), cow-parsnip (*Heracleum maximum*), sweet cicely (*Osmorhiza berteroi*), Gianone's sanicle (*Sanicula gianonei*, pro.sp.nov.), California huckleberry (*Vaccinium ovatum*), baneberry (*Actaea rubra*), meadow rue (*Thalictrum polycarpum*), sweet-scented bedstraw (*Galium triflorum*), American winter cress (*Barbarea orthoceras*), common milkmaids (*Cardamine californica* var. *californica*), popweed (*Cardamine oligosperma*), small-flowered alum root (*Heuchera micrantha*), hill star (*Lithophragma heterophyllum*), selfheal (*Prunella vulgaris* var. *lanceolata*), California hedge-nettle (*Stachys bullata*), California figwort (*Scrophularia californica* subsp. *californica*), miner's lettuce (*Claytonia perfoliata* subsp. *perfoliata*), California coffeeberry (*Frangula californica* subsp. *californica*), poison oak (*Toxicodendron diversilobum*), tan-oak (*Notholithocarpus densiflorus* var. *densiflorus*), forest live-oak (*Quercus parvula* var. *shrevei*), California bay laurel (*Umbellularia californica*), canyon gooseberry (*Ribes menziesii*), willow herb (*Epilobium ciliatum* subsp. *ciliatum*), Pacific pea (*Lathyrus vestitus* var. *vestitus*), hairy wood sorrel (*Oxalis corniculata* subsp. *pilosa*), California man root (*Marah fabaceus*) and oso berry (*Oemleria cerasiformis*).

Still streamside, two members of the Poaceae appear: one species notable for its aromatic foliage and widespread throughout the upper drainage systems of the Scotts Creek Watershed, vanilla grass (*Hierochloa occidentalis*), **generally prefers dry feet and perfect drainage** while the other species, uncommon to rare elsewhere in the county, but represented by substantial numbers in Swanton, crinkle-awn fescue (*Festuca subuliflora*), can often be found growing at the water's edge. A quartet of *Rubus* reside within the riparian corridor: the least common being black-cap raspberry (*Rubus leucodermis*), favoring moist semi-shaded slopes in the redwood-Douglas fir woodlands along with red clintonia (*Clintonia andrewsiana*), while its omnipresent sister species, California blackberry (*Rubus ursinus*) is not finicky in habitat preference and exceedingly variable as to foliar gestalt; of the remaining two species which can be found together securing the stream banks, salmonberry (*Rubus spectabilis*) does not stray to far from the alluvium-rich bottomlands, contrasting with thimbleberry (*Rubus parviflorus*), a valuable indicator species for the presence of water, often found growing around hillside seeps contrasting with the adjacent scrub. As Spillway Gulch enters Mill Creek from the east, it forms an alluvial fan, providing habitat for two unrelated species, windflower (*Anemone oregana*), decidedly uncommon within the watershed and Pacific starflower (*Trientalis latifolia*), in leaf looking like an aberrant, slightly undernourished member of the genus *Trillium*, found throughout the watershed, even growing on seasonally disturbed embankments along Swanton Road. Also taking up residence in this cyclically scoured transitional zone are California harebell (*Campanula prenanthoides*), redwood violet (*Viola sempervirens*), trail plant (*Adenocaulon bicolor*) and California milkwort (*Polygala californica*). Several decades ago, a colony of calypso orchid (*Calypso bulbosa*) was discovered in the upper part of Spillway Gulch, growing within a grove of redwoods (*Sequoia sempervirens*), making it the third known site for this rarely seen orchid in the watershed. Revisiting (08/2010) the lower 100 meters of Spillway Gulch, as it interfaces with Mill Creek proper..... **an area severely impacted by the 2009 Lockheed Fire..... demonstrated the resiliency and co-evolved adaptive mechanisms that the various native taxa have developed in response to periodic fire disturbances. Observing the post-burn terminus of Spillway Gulch as it enters Mill Creek, yielded the following species..... documented as they were encountered:** *Anemone oregana*, *Scoliopus bigelovii*, *Trillium ovatum* subsp. *ovatum*, *Trientalis latifolia*, *Melica subulata*, *Oxalis oregana*, *Polystichum munitum*, *Galium triflorum*, *Adenocaulon bicolor*, *Stachys bullata*, *Pteridium aquilinum* var. *pubescens*, *Bromus vulgaris*, *Notholithocarpus densiflorus* var. *densiflorus*, *Galium californicum* subsp. *californicum*, *Dryopteris arguta*, *Umbellularia californica*, *Sequoia sempervirens*, *Rubus ursinus*, *Lathyrus vestitus* var. *vestitus*, *Iris douglasiana*, *Festuca subuliflora*, *Torreya californica*, *Asyneuma prenanthoides*, *Acer macrophyllum*, *Calystegia purpurata* subsp. *purpurata*, *Adiantum aleuticum*, *Toxicodendron*



*diversilobum*, *Ribes menziesii*, *Equisetum telmateia* subsp. *braunii*, *Lonicera hispidula*, *Aralia californica*, *Athyrium filix-femina* var. *cyclosum*, *Rhododendron occidentale*, *Arnica discoidea*, *Polygala californica*, *Juncus patens*, *Viola sempervirens*, *Cardamine californica* var. *californica*, *Cynoglossum grande*, *Osmorhiza berteroi*, *Sanicula crassicaulis*, *Epilobium ciliatum* subsp. *ciliatum*, *Carex amplifolia*, *Scrophularia californica* subsp. *californica*, *Frangula californica* subsp. *californica*, *Persicaria punctata*, *Rubus parviflorus*, *Alnus rubra*, *Juncus hesperius*, *Trisetum canescens*, *Petasites frigidus* var. *palmatus*, *Cyperus eragrostis*, *Urtica dioica* subsp. *holosericea* (abaxial surface of leaves clothed with soft cinerous pubescence), *Carex bolanderi* (some plants with lower spikelets compound-congested), *Boykinia occidentalis*, *Lilium pardalinum* subsp. *pardalinum*, *Satureja douglasii* and *Elymus glaucus* subsp. *glaucus*.

**note: While doing post-Lockheed Fire exploration (08/2010) in the upper reaches of the Mill Creek riparian corridor, the following taxa were observed growing streamside or proximal to it..... *Mimulus cardinalis*, *Hierochloa occidentalis*, *Juncus effusus* var. *pacificus* and *Montia parvifolia* (making infrequent appearances on moss-buffered boulders).**

The chaparral surrounding and overlooking the upper section of the Mill Creek Watershed is both topographically and ecologically complex, with the west facing ridge slopes extending up towards Mill Creek Dam, the subject of a major forest fire in 1948, leaving in its wake an extensive zone of mature knobcone pine (*Pinus attenuata*). This area, along with its east facing counterparts, is the domain of *Arctostaphylos crustacea*, sensu lato, a polyphyletic taxon that morphologically displays recombined traits attributable to at least six different species and natural hybrids: sympatric with the burl-forming tetraploid, are interdigitating colonies of Schreiber's manzanita (*Arctostaphylos glutinosa*) and sensitive manzanita (*Arctostaphylos nummularia*), chaparral pea (*Pickeringia montana* var. *montana*), knobcone pine (*Pinus attenuata*), golden chinquapin (*Chrysolepis chrysophylla* var. *minor*) and an assortment of shrubby to sub-arboreal oaks, section *Erythrobalanus*, possibly representing a transitional zone where forest live-oak (*Quercus parvula* var. *shrevei*) and chaparral live-oak (*Quercus wislizeni* var. *frutescens*) co-exist. Further down the fingers of mudstone that anchor the xeric fire-responsive vegetation, new additions to the flora appear: some like the pitcher sage (*Lepechinia calycina*), during the heat of mid-day make their presence known through the volatile oils in their herbage, others like the chamise (*Adenostoma fasciculatum*) and bush poppy (*Dendromecon rigida*) by their distinctive heather-like foliage or delicate yellow flowers seemingly out-of-place in such an arid environment. Often growing around the bases of these resilient shrubs, sheltered from both the moisture stealing wind and desiccating effects of the sun are unnoticed annuals, such as Cleveland's cryptantha (*Cryptantha clevelandii*) and minute-flowered cryptantha (*Cryptantha micromeres*). Hardy perennials also share this specialized habitat, with its water-retentive carpeting of moss and leaf-litter, prime examples being California bedstraw (*Galium californicum* subsp. *californicum*), Dannie's skullcap (*Scutellaria tuberosa*) and California milkwort (*Polygala californica*). Secured to an exposed section of bedding plane by several small patches of moss, an isolated population of small-leaved bent grass (*Agrostis microphylla*) stands out in its singularity but considered from an ecological perspective, replicates the far more extensive populations found growing, on the seasonally moist vertical cliff faces, overlooking Greyhound Rock State Beach! Sporadically distributed throughout the understory and often overlooked due to its nondescript floral presentation, rayless arnica (*Arnica deltoidea*) rewards the olfactorily curious with a glandular indument, which is both distinctive and somewhat unpleasant! A reintroduction to the native species list for the watershed occurred recently (10/06) and post 2009 fire (07/10) while exploring the lower portion of this ridge, the species in question being Torrey's cryptantha (*Cryptantha torreyana*): to further sweeten the Boraginaceae pot, nievitas (*Cryptantha flaccida*) was documented in the early 1980's by herbarium pressings, growing on the east facing slope of the Seymore Hill and overlooking the very same site that the rediscovered Torrey's cryptantha was found, making a total of **four** *Cryptantha* species existing within an area less than a mile square! Two days prior to the Lockheed Fire, 08/10/09, while exploring the coast redwood margined spring that separates the upper and lower portions of the Seymore Field, another rare and new to the watershed native was discovered,

mat-forming and superficially resembling the redwood violet (*Viola sempervirens*): namely, ***Dichondra donelliana***. I revisited this ecologically diverse continuum, unified geologically by the underlying Santa Cruz Mudstone, almost one year (07/10) after the 2009 conflagration, and found little loss in the way of native species composition (but a numerically increased representation of rarely seen firefollowing species). With leaf litter converted to ash and a decidedly changed light regime, at least two of the locally common native Madieae, slender tarweed (*Madia gracilis*) and coast tarweed (*Madia sativa*), were behaving as ruderals..... aggressive in their colonization and outsized, some attaining two meters in height status (although this essay/discussion is focused primarily on native taxa, numerous non-native species were behaving in a similar fashion). As this narrow slice of ridge dips downward towards Mill Creek and with both the gulchlet derived incising and mixed hardwood/conifer canopy cover increasing, so does the species diversity. Grouped by families, here is an preliminary overview of the native taxa found within this transitional zone, between chaparral and riparian corridor: lady fern (*Athyrium filix-femina* var. *cyclosorum*)..... five-finger fern (*Adiantum aleuticum*), goldback fern (*Pentagramma triangularis* subsp. *triangularis*)..... wood fern (*Dryopteris arguta*), western sword fern (*Polystichum munitum*)..... California brome (*Bromus carinatus* var. *carinatus*), nodding brome (*Bromus vulgaris*), pine grass (*Calamagrostis rubescens*), slender hairgrass (*Deschampsia elongata*), California wild rye (*Elymus glaucus* subsp. *glaucus*), western fescue (*Festuca occidentalis*), Alaska onion grass (*Melica subulata*), Torrey's melic (*Melica torreyana*)..... canyon gooseberry (*Ribes menziesii*)..... slink pod (*Scoliopus bigelovii*)..... trail plant (*Adenocaulon bicolor*), rayless arnica (*Arnica discoidea*), broad-leaved aster (*Eurybia radulina*), purple cudweed (*Gamochaeta ustulata*), white hawkweed (*Hieracium albiflorum*), slender tarweed (*Madia gracilis*), coast tarweed (*Madia sativa*), Bioletti's cudweed (*Pseudognaphalium biolettii*), cotton batting plant (*Pseudognaphalium stramineum*), California chicory (*Rafinesquia californica*)..... Pacific starflower (*Trientalis latifolia*)..... bush poppy (*Dendromecon rigida*)..... sticky monkeyflower (*Mimulus aurantiacus*)..... morning glory (*Calystegia purpurata* subsp. *purpurata*)..... varied-leaved collomia (*Collomia heterophylla*)..... hairy honeysuckle (*Lonicera hispidula*)..... rattlesnake weed (*Daucus pusillus*), sweet cicely (*Osmorhiza berteroi*), gambleweed (*Sanicula crassicaulis*)..... California bay laurel (*Umbellularia californica*)..... Pacific madrone (*Arbutus menziesii*), hairy manzanita (*Arctostaphylos crustacea*, sensu lato), California huckleberry (*Vaccinium ovatum*)..... deerweed (*Acmispon glaber* var. *glaber*), Bioletti's trefoil (*Acmispon junceus* var. *biolettii*), rush trefoil (*Acmispon junceus* var. *junceus*), coastal trefoil (*Acmispon maritimus* var. *maritimus*), small-flowered trefoil (*Acmispon parviflorus*), Pacific pea (*Lathyrus vestitus* var. *vestitus*), maiden clover (*Trifolium microcephalum*), giant vetch (*Vicia gigantea*)..... tan-oak (*Notholithocarpus densiflorus* var. *densiflorus*), coast live-oak (*Quercus agrifolia* var. *agrifolia*), canyon live-oak (*Quercus chrysolepis*), forest live-oak (*Quercus parvula* var. *shrevei*)..... California milkwort (*Polygala californica*)..... wood strawberry (*Fragaria vesca*), ocean spray (*Holodiscus discolor*), thimbleberry (*Rubus parviflorus*)..... redwood sorrel (*Oxalis oregana*)..... California bedstraw (*Galium californicum* subsp. *californicum*), sweet-scented bedstraw (*Galium triflorum*)..... Cleveland's cryptantha (*Cryptantha clevelandii*), minute-flowered cryptantha (*Cryptantha micromeres*), yerba santa (*Eriodictyon californicum*), small-flowered nemophila (*Nemophila parviflora* var. *parviflora*)..... foothill sedge (*Carex tumulicola*)..... white globe lily (*Calochortus albus*), checker lily (*Fritillaria affinis* var. *affinis*)..... soap plant (*Chlorogalum pomeridianum* var. *pomeridianum*)..... California nutmeg (*Torreya californica*)..... elk-clover (*Aralia californica*)..... Douglas's iris (*Iris douglasiana*)..... common milkmaids (*Cardamine californica* var. *californica*), California mustard (*Caulanthus lasiophyllus*)..... sleepy catchfly (*Silene antirrhina*)..... miner's lettuce (*Claytonia perfoliata* subsp. *perfoliata*)..... Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*)..... redwood (*Sequoia sempervirens*)..... Hooker's fairy bells (*Prosartes hookeri*)..... western trillium (*Trillium ovatum* subsp. *ovatum*)..... blue witch (*Solanum umbelliferum*)..... paniced willow herb (*Epilobium brachycarpum*), willow herb (*Epilobium ciliatum* subsp. *ciliatum*)..... yerba buena (*Satureja douglasii*)..... California figwort (*Scrophularia californica* subsp. *californica*)..... blue blossom (*Ceanothus thyrsiflorus*)..... California man root (*Marah fabaceus*)..... royal rein orchid (*Piperia transversa*).

Growing in alluvium south of Mill Creek Bridge surrounded by red elderberry (*Sambucus racemosa* var.

*racemosa*), are salmonberry (*Rubus spectabilis*) and coast nettle (*Urtica dioica* subsp. *gracilis*), with red alder (*Alnus rubra*) and arroyo willow (*Salix lasiolepis*) giving vertical contrast. Sequestered within this organic latticework of interwoven branches, a magnificent specimen of giant chain fern (*Woodwardia fimbriata*) visually impacts the roadside observer, its nearly 2.5 meters-high stature simulating a short-trunked tree fern. Scattered throughout this seasonal umbrella of light modifying foliage, robust examples of lady fern (*Athyrium filix-femina* var. *cyclosorum*) and western sword fern (*Polystichum munitum*) can be discerned and wood fern (*Dryopteris arguta*) reluctantly adjusts to an environment wetter than the nearby well-drained slopes that it calls home. Paralleling the 2.5 meters-high *Woodwardia fimbriata* as to stature, circa 300 meters below Scotts Creek Bridge, growing in alluvium and set back from the creek by 5-6 meters, a magnificent specimen of lady fern (*Athyrium filix-femina* var. *cyclosorum*), easily topped 2 meters in height and at least, 1.5 meters across at the maximum spread of its fronds!

The riparian corridor between Scotts and Big Creek Bridges (**on the Scotts Creek side of Swanton Road**), features a mixture of deciduous/evergreen trees and shrubs, that from an ecological perspective, warrant a study unto itself. Besides providing shade during the hottest months of the year and mitigating water temperatures of the shallower and slower moving streams, the arboreal and sub-arboreal vegetation that define this segment of Scotts Creek's sinuous journey to the ocean, also act as moderators for air movement, recycle valuable nutrients through their seasonal or periodic foliar replacement and with extensive root systems, help to stabilize the stream banks during periods of high water flow. Here is a listing of the native components of this complex ecological drama and following their latin names, in brackets, **(D)** signifies seasonally deciduous and **(E)** represents those taxa that maintain their foliage for several continuous seasons..... while the principals in this equation are arboreal, I have also included those associate species, both with subshrub and herbaceous characteristics, that play a significant part in the understory and streamside composition.

*Acer macrophyllum* **(D)**

*Acer negundo* var. *californicum* **(D)**

*Aesculus californica* **(D)**

*Alnus rubra* **(D)**

*Aralia californica* **(D)**

*Athyrium filix-femina* var. *cyclosorum* **(D)** ..... **important streambank stabilizer**

*Carex amplifolia* **(E)** ..... **important sandbar stabilizer**

*Ceanothus thyrsiflorus* **(E)**

*Cornus sericea* subsp. *sericea* **(D)**

*Corylus cornuta* var. *californica* **(D)**

*Dryopteris arguta* **(E)** ..... **slope stabilizer**

*Euonymus occidentalis* var. *occidentalis* **(D)**

*Frangula (Rhamnus) californica* subsp. *californica* **(E)**

*Juncus patens* **(E)** ..... **important stabilizer for both dry and seasonally inundated soils**

*Oemleria cerasiformis* **(D)**

*Pinus radiata* **(E)** ..... **variable and highly adaptive endemic component of hybridization between**

***Pinus attenuata* and *Pinus radiata***

*Petasites frigidus* var. *palmatus* **(D)** ..... **important sandbar and streambed component**

*Polystichum munitum* **(E)** ..... **important slope stabilizer**

*Pseudotsuga menziesii* var. *menziesii*

*Pteridium aquilinum* var. *pubescens*

*Quercus agrifolia* var. *agrifolia* **(E)**

*Quercus parvula* var. *shrevei* **(E)**

***Rhododendron occidentale* **(D)** ..... a streamside component in upper reaches of Scotts, Mill and Big Creek's riparian corridors**

*Ribes menziesii* **(D)**

*Rubus parviflorus* **(D)**

*Rubus spectabilis* (D) ..... **all three species of *Rubus* valuable erosion abaters with their clonal expansivity and bird referenced seed dispersal**

*Rubus ursinus* (D)

*Salix lasiandra* subsp. *lasiandra* (D)

*Salix lasiolepis* (D) ..... **these three species of *Salix* constitute one of the most important erosion control/habitat modifiers native to the in the watershed**

*Salix sitchensis* (D)

*Sambucus nigra* subsp. *canadensis* (D)

*Sambucus racemosa* var. *racemosa* (D) ..... **along with *Alnus rubra* and the *Salix* trio, these two species, particularly var. *racemosa*, act as stream bank buffers in mitigating erosion**

*Sequoia sempervirens* (E) ..... **in terms of permanent canopy/shade provider, sheer biomass plus major water consumer, the coast redwood is in a class by itself**

*Torreya californica* (E)

*Toxicodendron diversilobum* (D) ..... **very important erosion control, particularly on slope dipping down into riparian corridor**

*Umbellularia californica* (E)

*Urtica dioica* subsp. *gracilis* and subsp. *holosericea* (E) ..... **extensive root systems important stream bank and sandbar protectors**

In a blatant case of familiarity breeds contempt, miner's lettuce (*Claytonia perfoliata* subsp. *perfoliata*), is a botanical leitmotiv, accompanying and rewarding the perspicacious observer with structural nuances missed when viewed hastily or from afar. Categorized by stature, this "species" exhibits environmental plasticity to an extreme degree, ranging from diminutive to exceedingly robust with stems and leaves varying in coloration from green to bronze and reddish-pink. The fused cauline leaves, taking the shape of an orbicular or angled disc, when thin are like sheets of paper but in some populations can exhibit thickness in the 1-2 millimeter range! A varied constellation of characters greets one when cataloguing the inflorescences, both as to gestalt and pigmentation: displaying a full spectrum from stalked thru sessile, open or condensed, with calyces concolored green thru chocolate, uniformly viniferous or bicolored with bases and apices pigmented differently from the main body..... some populations distinguished by vertical barring analogous to those found on a bird cage. Flowers can vary not only in size but color, with white predominant but some populations suffused with pink and even the shiny black seeds refusing to be held hostage to one particular measurement. Paradoxically, as widespread and variable miner's lettuce is within the watershed, its sister species candy flower (*Claytonia sibirica*), currently exists only in the lower portion of the Little Creek Watershed, is relatively uniform in gross morphology and where populations of the two species overlap, no evidence of interspecific hybridization has been observed. Other family members documented as residing within our "ecological hot spot", are serpentine miner's lettuce (*Claytonia exigua* subsp. *exigua*), slender miner's lettuce (*Claytonia parviflora* subsp. *parviflora*) and little-leaf montia (*Montia parvifolia*). During the summer of 2005, a small population of what purported to be red-stemmed miner's lettuce (***Claytonia rubra* subsp. *depressa***) was digitally photographed growing on a ne-facing ridge connecting the "Bulb Field" with Swanton Road. Using this relatively small (thirty square miles) but topographically complex watershed as a living laboratory to investigate, on several fronts, the causal factors underlying the polymorphism inherent in the local populations of miner's lettuce (*Claytonia perfoliata* subsp. *perfoliata*), is a research project eminently worth considering. Lines of inquiry should include, the interplay between environmental and genetic factors, ploidy levels and direction of gene flow, out-breeding versus obligate selfing patterns, pollination and seed dispersal vectors and the potential for cryptic species/endemism with

the mapping of local morphologies occurring outside of the watershed. **The following genera, *Caladrinia*, *Claytonia* and *Montia*, formerly placed within the Portulacaceae have been given their own family.... the Montiaceae.**

Within the Scotts Creek Watershed, several populations of white baby blue-eyes (*Nemophila menziesii* var. *atomaria*) have been found, combining traits of both var. *menziesii* and var. *atomaria*: the taxa in question produce polymorphic flowers, ranging from 3-25+ mm. in diameter, highly variable as to coloration and a certain percentage, producing 1-5 non-functional stamens with pinkish-tan anthers on reduced filaments but with functional stigmas, making the plants + gynodioecious! The high degree of variability, as to both foliar and floral morphologies, coloration and 10-20% occurrence of imperfect androecia, may be the result of past hybridization between populations of both var. *menziesii* and var. *atomaria*, some of which exhibit in varying degrees, reproductive isolating mechanisms, which range from partial through total incompatibility. Further work needs to be done clarifying these morphological anomalies and their evolutionary significance.

Locally, the native tarweeds form a complex series of intergrades: some are sporadic and highly localized, **threadstem madia (*Madia exigua*) x slender tarweed (*Madia gracilis*)** with its distinctive zigzag growth pattern and cherry-syrup aroma, while along the roadbanks and their highly disturbed bases, **coast tarweed (*Madia sativa/capitata*) x slender tarweed (*Madia gracilis*)** gives rise to an often bewildering assemblage of forms differing in stature, glandulosity/chemical signatures and foliar/floral morphologies. There may even be an unrecognized or unnamed species hiding within this taxonomic free-for-all! Threadstem madia (*Madia exigua*), slender tarweed (*Madia gracilis*) and coast tarweed (*Madia sativa/capitata*) are in varying degrees clothed with gland-tipped trichomes, **each species defined by a specific chemical signature**, with the hybrids displaying scents + intermediate between the putative parents.

**The forested tracts margining the central portion of our passage through Swanton Valley collectively act as a refugium for at least 2,000 all-age category California nutmegs (*Torreya californica*).** Claiming ecological association with this lone local member of the Yew Family (Taxaceae) is a most diverse cast of characters. Sampling those species visible from our rigidly defined viewing area, several intergrading habitats give the discerning observer a virtual smorgasbord of biota to study:

The richly vegetated slopes, ascending from road embankment to ridge top, offer sanctuary to hairy honeysuckle (*Lonicera hispidula* var. *vacillans* = *Lonicera hispidula*) and snowberry (*Symphoricarpos albus* var. *laevigatus*), which although dissimilar in overall appearance are both members of the Honeysuckle Family (Caprifoliaceae). Two other occasionally sympatric members of this family famed for its often-scented ornamental vines, are blue elderberry (*Sambucus mexicana* = ***Sambucus nigra* subsp. *canadensis***) and red elderberry (*Sambucus racemosa* var. *racemosa*).

**note: due to recent molecular studies, the genus *Sambucus* is now placed in the family ADOXACEAE.**

Giving the Nightshade Family (Solanaceae) its due, a set of unlike species, with careful scrutiny, can be ferreted out from the brushy margins on either side of the roadway. Scentless, deeply-lobed, white corollas with basal greenish blotches characterize Douglas's nightshade (*Solanum douglasii*) while blue witch (*Solanum umbelliferum*) wins over even the most insensitive of observers with exceedingly fragrant, shallowly-lobed, bluish-purple corollas, eminently deserving a place of honor in any wild garden.

Formerly representing the Waterleaf Family (Hydrophyllaceae) but now ensconced within the **Borage Family (Boraginaceae)**, are small-flowered nemophila (*Nemophila parviflora* var. *parviflora*), extremely variable as to foliar gestalt but fairly uniform in floral configuration, and stinging

phacelia (*Phacelia malvifolia*), the stiff, pustulate-based trichomes on leaves and stems packing a wallop when inadvertently squeezed and the plants, when growing in a suitable environment forming a monoculture, aggressively colonizing a sunny slope often at the expense of neighboring species.

Several unrelated species sharing this environment are intrinsically fascinating just because of their foliar polymorphism. Besides the aforementioned species of *Nemophila*, included in this group are California figwort (*Scrophularia californica* subsp. *californica*), **which includes rare individuals with flavistic flowers**; common milkmaids (*Cardamine californica* var. *californica*), variable as to both floral and foliar pigmentation; Pacific pea (*Lathyrus vestitus* var. *vestitus*), some road bank populations combining aspects of formerly recognized subsp. *puberulus* and subsp. *bolanderi*, with herbage glabrous or pubescent and stipules ranging from narrow and entire through broad with undulate margins and when found growing intermixed with American vetch (*Vicia americana* var. *americana*) in a non-flowering state, can challenge all but the most seasoned observer; and finally ubiquitous mugwort (*Artemisia douglasiana*), adjacent populations often looking like separate species, exceedingly variable as to stature, **chemical signature**, foliar morphology and indument.

Adding an olfactory component to the observational mix are three members of the Mint Family (Lamiaceae): coyote mint (*Monardella villosa* subsp. *villosa*), yerba buena (*Satureja douglasii*), and California hedge nettle (*Stachys bullata*), differing in modes of growth and scents released from their crushed herbage. Blending into the roadside banks already brimming with visual and olfactory treats, a visually unpretentious member of the Legume Family (Fabaceae), California tea (*Rupertia physodes*), startles and rewards the scent-driven connoisseur with gland-stippled foliage that aromatically lingers both on the hands and in the memory.

The presence of Scotts Creek, even when outside of direct viewing, makes itself known by the arborous mosaic that lines and secures the streambanks. During the winter months, the leafless red alder (*Alnus rubra*) becomes a ghostly procession of interlocking skeletal branches, ashen and lichen dappled. When bathed in rising mist, they attain a fluidity that rivals the headlong rush of the water they overarch. Entering the creek, between spring and summer, at any point along its 6+ mile journey to the ocean and merely wading some 50 meters, in either direction, can yield unexpected botanical treasures, in some cases just the number of species representing one genus and collectively occupying a sandbar or stream bank. One sandbar observed circa 25 years ago, above the confluence of Schoolhouse Gulch with Scotts Creek, hosted scarlet monkeyflower (*Mimulus cardinalis*), floriferous monkeyflower (*Mimulus floribundus*), Snouted monkeyflower (*Mimulus guttatus* var. *gracilis* = ***Mimulus nasutus***), musk monkeyflower (*Mimulus moschatus*) and downy monkeyflower (*Mimulus pilosus*)! Also during this time frame, a gigas (giant) form of common rush (*Juncus patens*) was discovered growing on sandbars scattered throughout the watershed. Robust in stature, with glaucous-blue culms circa 1-1.5+ meters in height and 2-4+ mm. in diameter, these topped off with spreading inflorescences 10-12+ cm. across, offered the creative landscaper a superb accent plant to utilize in the water garden or seasonally wet areas in need of stabilization. Regrettably, several seasons of high winter flow, eradicated or reconfigured the sand bars in question, virtually eliminating this highly distinctive form from the riparian corridor. Parenthetically, somewhat less robust individuals have been observed in recent years, growing in the upper Scotts Creek Watershed and possibly representing the source material for the original find. Two species that also grace the streamside margins are the relatively common, common horsetail (*Equisetum arvense*) looking like a malnourished variant of the giant horsetail (*Equisetum telmateia* subsp. *braunii*) and the decidedly uncommon clammy clover (***Trifolium obtusiflorum***), subtly passing for an overtly glandular version of tomcat clover (*Trifolium willdenovii*). Another legume, an infrequently encountered sandbar/stream bank denizen, coastal trefoil (*Lotus salsuginosus* var. *salsuginosus* = ***Acmispon maritimus* var. *maritimus***), was found growing down stream below the entrance of Mill Creek into Scotts Creek and disappeared following the “El Nino” scouring (**this population was fortunately documented by a seed collection deposited at the UCSC Arboretum.....**

**during a post 2009 Lockheed Fire botanical review of the upper/central portion of the Schoolhouse Ridge, which took place in early spring of 2010, more than 1,000 plants of this previously rare to the watershed taxon, were observed, rendering the rarity status moot! ).**

Sharing habitat and foliar nakedness, salmonberry (*Rubus spectabilis*) sports muted-gold stems, which contrast with the glossy, vinaceous twigs of creek dogwood (*Cornus sericea* subsp. *sericea*) and the gnarled asymmetry of the red elderberry. Hugging the moist leaf litter, and visible from our perspective only in winter due to the deciduous nature of the understory shrubbery, wild ginger (*Asarum caudatum*), with brownish-maroon flowers, sporting attenuate calyx lobes and pungently aromatic, sub-surface rhizomes topped with cordate leaves, gives a first impression of being more animal than plant. Occupying the same relatively narrow zone between road bed and stream bed, semi-dormant during Winter when viewing from tarmac is possible and screened by leafed-out bushes from Spring through Summer, renders from our traversal point-of-view, a peek at uncommon California bottlebrush grass (*Elymus californicus*), a logistical nightmare!

A sigmoid pattern to the roadbed affords the botanically immersed statistician a chance to observe along the creek two sets of three: (1) arroyo willow (*Salix lasiolepis*), yellow willow (*Salix lucida* subsp. *lasiandra* = *Salix lasiandra* var. *lasiandra*), and velvet willow (*Salix sitchensis*), sharing a bend in the watercourse with (2) representatives of the Sedge Family (Cyperaceae), namely blue creek-sedge (*Carex amplifolia*), its glaucous-blue, v-shaped in cross-section foliage contrasting with the surrounding greenery, **Bolander's sedge (*Carex bolanderi*), a distinctive taxon locally, with inflorescences displaying 1-5+ compound-congested lower spikelets, these often androgynous**, and cousin panicle bulrush (*Scirpus microcarpus*), luxuriant during the growing season but dying back annually to long-lived, soil-binding rhizomes. Varying from several hundred to less than 5 meters in width, the area between road edge and stream bank is ecologically complex, in part due to cyclical hydrological disruptions.

**One of the ecological values of sandbars within a watershed is the capturing via seed or asexual division, of floristic components, that by their nature are often uncommon and restricted to specific sites overlooking but not actually belonging to the riparian corridor proper.** Such is the case with sharp-fruited rush (*Juncus acuminatus*), historically recorded as occurring along the edges of the pond behind Mill Creek Dam and recently (2003-2004) found growing circa 1/8 mile below the confluence of Mill Creek with Scotts Creek. Some other displaced native species, which occasionally crop up on Scotts Creek sandbars and normally frequent more mesic habitats which are higher in elevation, are Brewer's calandrinia (*Calandrinia breweri*), straggling gilia (*Allophyllum divaricatum*), coast whitethorn (*Ceanothus incanus*), wartleaf ceanothus (*Ceanothus papillosus* var. *papillosus*), fragrant everlasting (*Gnaphalium canescens* ssp. *beneolens* = *Pseudognaphalium beneolens*), stipulate trefoil (*Lotus stipularis*/ *balsamiferus*), silver bush lupine (*Lupinus albifrons* var. *albifrons*), downy monkeyflower (*Mimulus pilosus*) and Pacific panic grass (*Panicum acuminatum* var. *acuminatum*). **Although transitory by nature, sandbars can concentrate disparate elements of a watershed, creating a point of departure to study biodiversity, distribution mechanisms and adaptation strategies.**

Along the Scotts Creek riparian corridor during the Summer/Fall transitional period when water levels drop and flow rates are often greatly reduced, the thalli of the smaller duckweed (*Lemna minor*), a monocot with minuscule flowers, often form extensive mat-like colonies, covering pools and stream margins. Do these clonal aggregations have a salutary value within the aquatic environment?

Do the verdant sheets of *Lemna minor* afford a visual protection for the young salmonids from aerial predators such as the Belted Kingfishers?

Do the *Lemna minor* colonies mitigate water temperatures by directly absorbing the radiant energy of the midday sun?

Do the photosynthesizing thalli increase oxygen levels in the aqueous environment, thereby benefiting the associate biota?

Appearing sporadically throughout our botanical quest, intermediate fiddleneck (*Amsinckia menziesii* var. *intermedia*), carries with it a history of more than one hundred described variants. Self-pollination allows several forms to co-exist within a shared habitat and a least two distinct phases of this highly variable taxon occur locally, either growing separately or sympatrically. **Phase #1** is early blooming, delicate in stature with linear ascending leaves clothed with appressed, soft to the touch, hairs and simple stems terminating in unbranched scorpioid spikes, the entire plant, save the orange salverform corollas, lost in the surrounding wash of green, while **Phase #2** is robust with hispid pustulate hairs and branched spreading stems above, often still in or emerging from the basal rosette stage while **Phase #1**, is in full flower. A unique sister species, **rare statewide and existing in a few isolated colonies locally**, is bent-flowered fiddleneck (*Amsinckia lunaris*), either a relic or ahead of its time, choosing near-vertical, often exfoliating shale banks to call home. How ironic, that a species with the lowest chromosome number (n=4) in the genus, has undergone the most radical change in floral morphology, going from being radially to bilaterally symmetrical! Bringing the total number of resident “native” fiddleneck taxa to four, seaside fiddleneck (*Amsinckia spectabilis*) stakes out the coastal headlands as its home, often half-hidden within the California sagebrush (*Artemisia californica*) understory.

Two members of the Buttercup Family (Ranunculaceae), dissimilar in reproductive mechanisms and foliar patterns but sharing the same environment, are baneberry (*Actaea rubra*) with toxic, nitid red berries, leaves cauline, bi- or tri-ternately compound and meadow rue (*Thalictrum fendleri* var. *polycarpum* = *Thalictrum polycarpum*), dioecious and apetalous, pistillate plants with reddish-purple stigmas looking like miniature sea anemones and the male counterpart with bronze, pendant stamens mimicking tassels on an old-fashion lampshade, the fruit a laterally compressed achene, with emerging seasonal foliage readily passing for an undescribed species of maidenhair fern (genus *Adiantum*). Another pairing, this time within a genus, is that of fat Solomon’s seal (*Smilacina racemosa*) and slim Solomon’s seal (*Smilacina stellata*), the singular fragrance of the the “fat” one an elusive blending of violets and narcissi.

Sticking with the monocots are four more “treasures” that present themselves artfully along the roadside. Starting off with checker lily (*Fritillaria affinis* var. *affinis*)—occasional robust individuals can produce racemes with 10 or more Tiffany-like, pendant flowers, varying in size and ranging from chartreuse thru maroon in coloration. The second is giant trillium (*Trillium chloropetalum*), which presents a fascinating case study in the **linkage between flower color, scent, habitat, and pollinating vectors—and ultimately, how does one define a species?** Entering third in this ecological drama is western wake robin (*Trillium ovatum* subsp. *ovatum*), morphologically fairly consistent with pedicellate flowers, usually white drying a pinkish-lavender and fragrant of honey. At home in several moist habitats, ranging from isolated marshes to shaded woodland margins, number four is California canary grass (*Phalaris californica*), while caespitose in habit, gives the impression of being distinctly rhizomatous by producing asexual nodal propagules, which when touching the damp earth, root some distance from the origins of parent culms. Sharing this distinctive mode of replication and in some local forms, vegetatively mimicking the canary grass, is California wild rye (*Elymus glaucus* subsp. *glaucus*): focusing on blade and ligule differences, when inflorescences are not available, quickly separates the two genera.

Adding visual spice to our botanical sleuthing, a disparate trio of unrelated “dicots”, punctuate the verdancy that frames our southward journey: hound’s tongue (*Cynoglossum grande*), a stately native embarrassed by the aggressive colonization of its upstart European cousin, forget-me-not (*Myosotis latifolia*); American winter cress (*Barbarea orthoceras*), usually encountered as individual specimens or a scattering, unless growing in a recently disturbed environment and then sometimes behaving in a ruderal fashion; and Canada goldenrod (*Solidago canadensis* subsp. *elongata* = *Solidago elongata*), which of all our goldenrods is the least common and is usually restricted to old coastal marshes. Three “disjuncts” have been documented along Swanton Road, between Mill Creek and Big Creek Bridges, raising questions about the overall distribution pattern for this horticulturally desirable species within the watershed!



Situated between pavement and bank, drainage ditches are often mere slivers of habitat, subject to the vagaries of both nature and man—transient catchalls for a diverse assemblage of flora, usually naturalized exotics but some uncommon, localized and native! Sharing this micro-habitat of concentrated moisture, uncommon meadow nemophila (*Nemophila pedunculata*) can be found with stems intertwined, snuggling with its ubiquitous relative, small-flowered nemophila (*Nemophila parviflora* var. *parviflora*). Usually found growing in moist shaded spots within the riparian corridor, fringe cups (*Tellima grandiflora*) makes a brief appearance roadside, its pendulous flowers changing from green to rose during maturation. Growing intermixed with brown bog-rush (*Juncus effusus* var. *brunneus*), **Gianone's sedge** (*Carex gianonei*, **pro. sp. nov.**) and willow herb (*Epilobium ciliatum* subsp. *ciliatum*) is bracted popcorn-flower (*Plagiobothrys bracteatus*): Beginning as a small rosette hidden deep within the shadows of its robust brethren and stimulated by and drawn to the higher light intensities reaching down through breaks in the vegetation, it sends out lateral stems, these branching and threading their way through the adjacent foliage, often some distance from its anchoring annual root system. Persisting in place through the seasonal production of seed (nutlets) gives the popcorn-flower an illusion of permanence. At the other extreme, underground rhizomes of the neighboring giant horsetail (*Equisetum telmateia* subsp. *braunii*) may persist for centuries, in spite of the abuse piled on them, literally, in the form of asphalt! Perennial status also grants the California dock (*Rumex salicifolius* var. *denticulatus* = ***Rumex californicus***) a secure tenure, albeit a punctuated one, along our meandering route.

A Lilliputian world of flowering plants, wholly missed by weekend vehicular botanists and, in general, overlooked by the casual explorers of the coastal prairies, interior grasslands and riparian meadows, can be readily encountered by just getting down on “all fours” and sleuthing with a hand lens. Here is a tantalizing introduction into the world of “minimalist botany”: occasionally found growing together in moist ditches and the adjoining grassland, dwarf club rush (*Scirpus koilolepis* = ***Isolepis carinata***) and timwort (*Cicendia quadrangularis*) make for a visually accommodating duo, the timwort with 4-merous yellow corollas passing for a dwarf “crucifer”, but in reality, a bona fide member of the Gentian Family (Gentianaceae); another habitat sharing pair, this time within the “Sandy-bottom Reservoir”, are water pygmyweed (*Crassula aquatica*), a micro-miniature when compared with the rosettes of its cousin, sea lettuce (*Dudleya caespitosa*), and thyme-leaved pogogyne (*Pogogyne serpylloides*), a native mint so diminutive in stature that an adult plant can be accommodated on the head of a dime but possessing a scent so penetrating that one's first introduction is made through smell rather than sight; their root systems embedded within a water retentive skin composed of grass detritus and moss, which partially obscures the exposed angularity of the weathered mudstone, dwarf locoweed (*Astragalus gambelianus*), strigose trefoil (*Lotus strigosus*), tiny pentachaeta (*Pentachaeta alsinoides*), San Francisco popcorn-flower (*Plagiobothrys diffusus/reticulatus*), shining peppergrass (*Lepidium nitidum* var. *nitidum*), purple-beaked owl's clover (*Triphysaria micrantha*), Mt. Diablo cottonweed (*Micropus amphibolus*) and slender goldfields (*Lasthenia californica*), to introduce just a small part of an extraordinary cast of players inhabiting a “world within a world” and more apt to be crushed underfoot than perused. To legitimately embrace and lay claim to the title of naturalist, demands that any traversal, whether on tarmac or naturally occurring terrain, should be leisurely, in order to savor the less conspicuous but not insignificant constituents of the plant world and recognize that ultimately **it is only a matter of scale.**

Whether common or otherwise, the following “legitimate” residents along this stretch of watershed add variety to the proceedings: purple cudweed (*Gnaphalium purpureum* = ***Gamochoeta ustulata***), California poppy (*Eschscholzia californica*), hairy wood sorrel (*Oxalis albicans* subsp. *pilosa*), pinole clover (*Trifolium bifidum* var. *decepiens*), pin-point clover (*Trifolium gracilentum* var. *gracilentum*), Valparaiso clover (*Trifolium microdon*), Spanish trefoil (*Lotus purshianus* var. *purshianus* = ***Acmispon americanus*** var. ***americanus***), gambleweed (*Sanicula crassicaulis*), mountain dandelion (*Agoseris grandiflora*), morning glory (*Calystegia occidentalis* subsp. *occidentalis* = ***Calystegia purpurata*** subsp. ***purpurata***), California sagebrush (*Artemisia californica*), coyote brush (*Baccharis pilularis*), rattlesnake weed (*Daucus*

*pusillus*), selfheal (*Prunella vulgaris* subsp. *lanceolata*), and canyon gooseberry (*Ribes menziesii*).

**Note:** select herbarium specimens of horticulturally meritorious, locally uncommon, rare county wide and agency listed **species referred to in this section** of the Traversal, collected and pressed, with noted exceptions, by Roy Buck and/or James West **within the Scotts Creek Watershed and environs**, then deposited in the Jepson Herbarium, U.C. Berkeley, **are as follows:**

*Acer negundo* var. *californicum*/accession number **JEPS42732**/Jepson #4168  
*Allophyllum divaricatum*/accession number **JEPS81555**/Buck & West #108  
*Amsinckia lunaris*/accession number **JEPS81537**/Buck, West & Stone #466  
*Amsinckia lunaris*/accession number **UC1561077**/Taylor, Buck, West & Clifton #9659  
*Antirrhinum kelloggii*/accession number **JEPS82645**/Buck & West #215  
*Antirrhinum kelloggii*/accession number **JEPS85163**/Buck & West #516  
*Arctostaphylos* "sp"/accession number **UCSC4784**/Randall Morgan, Dec 22 1976  
*Arctostaphylos* "sp"/accession number **UCSC4785**/Randall Morgan, Dec 22 1976  
*Arctostaphylos* "sp"/accession number **UCSC5684**/R. Morgan, Jan 31 1977  
*Arctostaphylos* "sp"/accession number **UCSC5723**/Randall Morgan, Jan 19 1977  
*Arctostaphylos* "sp"/accession number **UCSC5727**/Randall Morgan, Dec 21 1976  
*Arctostaphylos* "sp"/accession number **UCSC5738**/Randall Morgan, Dec 21 1976  
*Arctostaphylos* "sp"/accession number **UCSC5814**/R. Morgan, Dec 26 1976  
*Arctostaphylos* "sp"/accession number **UCSC6152**/R. Morgan, Jan 1979  
*Arctostaphylos* "sp"/accession number **UCSC6180**/R. Morgan, Jan 1979  
*Arctostaphylos* "sp"/accession number **UCSC6181**/R. Morgan, Jan 1979  
*Arctostaphylos crustacea*, sensu lato/accession number **JEPS82578**/West #204.1  
*Arctostaphylos crustacea*, sensu lato/accession number **JEPS81974**/Buck & West #212  
*Arctostaphylos crustacea*, sensu lato/accession number **JEPS81975**/Buck & West #157  
*Arctostaphylos crustacea*, sensu lato/accession number **JEPS81976**/Buck & West #156  
*Arctostaphylos crustacea*, sensu lato/accession number **JEPS81978**/Buck & West #154  
*Arctostaphylos glandulosa*"/accession number **UCSC5796**/R. Morgan, Jan 1977  
*Arctostaphylos glandulosa*"/accession number **UCSC5805**/R. Morgan, Jan 17 1977  
*Arctostaphylos tomentosa* subsp. *subcordata* = *Arctostaphylos crustacea* subsp. *subcordata*/accession number **JEPS81977**/Buck & West #155  
*Arctostaphylos tomentosa* subsp. *subcordata* = *Arctostaphylos crustacea* subsp. *subcordata*/accession number **UCSC5812**/Randall Morgan, Dec 26 1976  
*Arnica discoidea*/accession number **JEPS30906**/Thomas #4089  
*Astragalus gambelianus*/accession number **JEPS82614**/Buck & West #252  
*Athyanus pusillus*/accession number **JEPS82961**/West #54.1  
*Brodiaea terrestris* subsp. *terrestris*/accession number **JEPS82807**/Buck & West #288  
*Carex bolanderi*/accession number **JEPS82963**/West #76.1  
*Carex bolanderi*/accession number **JEPS82964**/West #77  
*Carex bolanderi*/accession number **JEPS83452**/Morgan & West #1  
*Carex bolanderi*/accession number **JEPS82778**/Buck & West #306  
*Carex bolanderi*/accession number **JEPS83060**/Buck #454  
*Carex bolanderi*/accession number **JEPS101037**/Taylor #9649  
*Carex gianonei*, pro. sp. nov./accession number **JEPS83024**/West #296  
*Carex gianonei*, pro. sp. nov./accession number **JEPS85180**/Buck & West #487  
*Claytonia exigua* subsp. *exigua*/accession number **JEPS81986**/Buck & West #182  
*Claytonia parviflora* ssp. *parviflora*/accession number **JEPS82772**/West #39  
*Clematis lasiantha*/accession number **JEPS83087**/West #345  
*Corallorhiza striata*/accession number **JEPS89230**/Buck & West #228  
*Elymus californicus*/accession number **JEPS81548**/Buck & West #109

*Epilobium ciliatum* /accession number **JEPS 83119**/Buck & West #348  
*Epilobium ciliatum*/accession number **JEPS83098**/Buck & West #439  
*Epilobium minutum*/accession number **JEPS85126**/Buck & West #529  
*Equisetum arvense*/accession number **JEPS81561**/Buck & West #86  
*Eriogonum nudum*/accession number **JEPS83099**/Buck & West #441  
*Eriogonum nudum*/accession number **JEPS83100**/Buck & West #442  
*Gilia clivorum*/accession number **JEPS82958**/West #51.1  
*Gilia clivorum*/accession number **JEPS82571**/Buck & West #210  
*Gnaphalium purpureum* = *Gamochaeta ustulata*/accession number  
SJSU10203/Sharsmith #8784  
*Juncus* "sp"/accession number **UCSC4804**/Randall Morgan, Oct 27 1976  
*Juncus acuminatus*/accession number **UC1009585**/Hesse #1318  
*Juncus acuminatus*/accession number **JEPS6052**/Hesse #1318  
*Linanthus androsaceus* = *Leptosiphon androsaceus*/accession number **JEPS82809**/Buck & West  
#286  
*Lotus stipularis* var. *stipularis* (*balsamiferus*)/accession number **JEPS83126**/Buck & West #372  
*Madia exigua*/accession number **JEPS83093**/Buck & West #380  
*Madia exigua*/accession number **JEPS82580**/West #114  
*Madia gracilis*/accession number **JEPS82629**/Buck & West #237  
*Malacothrix floccifera*/accession number **JEPS82788**/Buck & West #308  
*Mimulus cardinalis*/accession number **JEPS83050**/Buck & West #417  
*Mimulus floribundus*/accession number **JEPS81562**/Buck & West #85  
*Mimulus floribundus*/accession number **JEPS82875**/Buck & West #416  
*Mimulus moschatus*/accession number **JEPS81560**/Buck & West #87  
*Minuartia douglasii*/accession number **JEPS82647**/Buck & West #213  
*Nemophila menziesii*/accession number **JEPS81922**/Buck, West & Stone #192  
*Nemophila menziesii*/accession number **JEPS82016**/Buck, West & Stone #135  
*Nemophila menziesii*/accession number **JEPS82018**/Buck & West #162  
*Nemophila menziesii*/accession number **JEPS82019**/Buck & West #163  
*Nemophila menziesii*/accession number **JEPS82020**/Buck & West #164  
*Nemophila menziesii*/accession number **JEPS82021**/Buck & West #165  
*Nemophila pedunculata*/accession number **JEPS82775**/West #57  
*Nemophila pedunculata*/accession number **JEPS82776**/West #31  
*Oemleria cerasiformis*/accession number **JEPS81994**/Buck & West #150  
*Oemleria cerasiformis*/accession number **UCR67869**/Keil #20656  
*Pellaea mucronata* var. *mucronata*/accession number **JEPS82789**/Buck & West #309  
*Phacelia malvifolia*/accession number **UC794459**/Constance & Macbride #3307  
*Plagiobothrys bracteatus*/accession number **UCSC4033**/Randall Morgan, May 14 2003  
*Pogogyne serpylloides*/accession number **JEPS82600**/West #139  
*Polypodium scouleri*/accession number **UCSC4869**/Randall Morgan, May 26 (2)005  
*Quercus agrifolia*/accession number **UCSC5525**/Randall Morgan, Oct 13 1978  
*Rhododendron occidentale*/accession number **JEPS83604**/Buck & West #443  
*Ribes menziesii*/accession number **JEPS82000**/Buck & West #146  
*Ribes menziesii*/accession number **JEPS82001**/Buck & West #148  
*Rubus spectabilis*/accession number **JEPS81998**/Buck & West #147  
*Sanicula crassicaulis* = *Sanicula gianonei*, pro. sp. nov./accession number **JEPS83081**/West #358  
*Sanicula crassicaulis* = *Sanicula gianonei*, pro. sp. nov./accession number **JEPS89270**/  
West #358a "TYPE"  
*Sanicula crassicaulis* = *Sanicula gianonei*, pro. sp. nov./accession number **JEPS83051**/West #298  
*Sanicula hoffmannii*/accession number **JEPS83059**/Buck & West #455  
*Satureja douglasii*/accession number **UCR67854**/Keil #20598

*Scirpus koilolepis* = *Isolepis carinata*/accession number SJSU10205/C.W.Sharsmith #8786, May 15 1983

*Scutellaria tuberosa*/accession number JEPS82626/Buck, West & Hawke #240

*Symphoricarpos albus* var. *laevigatus*/accession number JEPS85160/Buck & West #491

*Thysanocarpus curvipes*/accession number SBBG95498/Keil #20615

*Torreya californica*/accession number SJSU15167/D. Garvey, Apr 13 1993

*Torreya californica*/accession number UC463449/Wiggins #5086

*Torreya californica*/accession number UC463450/Wiggins #5088

*Trifolium ciliolatum*/accession number JEPS82644/Buck & West #216

*Trifolium gracilentum* var. *gracilentum*/accession number JEPS101286/Taylor, Buck, West & Clifton #9662

*Trifolium obtusiflorum*/accession number JEPS82876/Buck & West #415

*Trifolium oliganthum*/accession number JEPS82641/Buck & West #219

*Trifolium variegatum*/accession number UCSC5683/Randall Morgan, May 23 1995

*Veronica serpyllifolia* subsp. *humifusa*/accession number UCSC3115/Randall Morgan, Apr 9 2002

### Between Big Creek and Little Creek Bridges

Leaving Swanton Road for a brief detour into the Big Creek riparian corridor via an unpaved road affords us the luxury, of viewing five species not encountered on our primary traversal but still conforming to the protocol of not departing the road, dirt or otherwise! The quintet of "locals", consists of sugar-scoop (*Tiarella trifoliata* var. *unifoliata*), with an apt colloquial name in view of its unequal 2-valved mature carpels, water hemlock (*Cicuta douglasii*), one of the most toxic native California plants that a bipedal clothed mammal can encounter, durango root (*Datisca glomerata*..... **outside of an isolated plant found a few years back growing down stream from the confluence of Archibald and Scotts Creeks, this 2 meters high sandbar anchored goliath, was the only other representative of this locally uncommon taxon observed and its parental source/origins a mystery..... until early in 2009, pre-Lockheed Fire, while visiting upper Dead Man's Gulch, an extensive population of this toxic native was discovered..... its use as a fish poison by California Indians is well documented**), Dudley's sword fern (*Polystichum dudleyi*), an uncommon fern species locally and co-parent of the rarer, California sword fern (*Polystichum californicum*), which also occurs within the Scotts Creek Watershed, and sticking with the ferns and found growing in the weathered/decomposed granite along lower "Powerhouse Grade", California lace fern (*Aspidotis californica*). Bending the rules ever so slightly and moving up Big Creek a short distance, a fern-like plant is found growing in the shadowy recesses of the stream bank and if not in flower, could cause some consternation: the perpetrator in this case of botanical fraud is redwood ivy (*Vancouveria planipetala*), a member of the Barberry Family (Berberidaceae) and related to two other native taxa found in the watershed, barberry (*Berberis nervosa*) and coast barberry (*Berberis pinnata* subsp. *pinnata*). Still within our riparian detour and gracing the sculpted moist face of lower Big Creek Falls, is arguably our most beautiful larkspur, red larkspur (*Delphinium nudicaule*), hummingbird pollinated, a vector it shares with its cousin, crimson columbine (*Aquilegia formosa*) and non-relative, California fuchsia (*Epilobium canum* subsp. *canum*), both taxa sporadically occurring within the watershed. The Santa Cruz manzanita (*Arctostaphylos andersonii*), in **species form** rather than as a contributor to the polyphyletic burl-forming *Arctostaphylos crustacea* complex, makes an appearance near the top of Powerhouse Grade..... perhaps the lowest elevational point within the Scotts Creek Watershed that this occurs and going in the opposite direction from an ecological perspective, sea lettuce (*Dudleya caespitosa*) has been documented growing on the near-vertical banks **above** the lower Big Creek Falls..... note: this particular observation was made circa 30 years ago, and due to the severity of the El Nino driven winterstorms since then, whether the aforementioned *Dudleya* population still exists is uncertain. **On 06/03/10, a two hour post fire exploration of the riparian corridor between the Fish Hatchery and below the first falls, yielded the following "legitimate" residents aka native taxa (listed more or less in order of appearance)..... in an area that**

**was extensively burnt on both sides of the creek:** *Stachys bullata*, *Athyrium filix-femina* var. *cyclosorum*, *Juncus hesperius*, *Sambucus racemosa* var. *racemosa*, *Rubus parviflorus*, *Rubus ursinus*, *Carex bolanderi* (form with compound-congested lower spikelets), *Sequoia sempervirens*, *Alnus rubra*, *Acer macrophyllum*, *Melica subulata*, *Hierochloa occidentalis*, *Epilobium ciliatum* sensu lato, *Solanum douglasii*, *Notholithocarpus densiflorus* var. *densiflorus*, *Woodwardia fimbriata*, *Umbellularia californica*, *Cynoglossum grande*, *Collomia heterophylla*, *Claytonia perfoliata* subsp. *perfoliata*, *Nemophila parviflora* var. *parviflora*, *Frangula californica* subsp. *californica*, *Melica torreyana*, *Scrophularia californica* subsp. *californica*, *Laythrus vestitus* sensu lato, *Vicia gigantea*, *Phacelia californica* (leaves, stems and inflorescences clothed with stiff, pustulate-based eglandular trichomes), *Deschampsia elongata*, *Petasites frigidus* var. *palmatum*, *Carex amplifolia*, *Scirpus microcarpus*, *Pseudotsuga menziesii* var. *menziesii*, *Oxalis oregana*, *Galium triflorum*, *Cardamine californica* var. *californica*, *Smilacina stellata*, *Bromus carinatus* var. *carinatus*, *Urtica dioica* subsp. *gracilis*, *Mimulus guttatus* complex, aff. *Mimulus nasutus*, *Pteridium aquilinum* var. *pubescens*, *Poa howellii*, *Cyperis eragrostis*, *Aralia californica*, *Torreya californica*, *Equisetum telmateia* subsp. *braunii*, *Tiarella trifoliata* var. *unifoliata*, *Trillium ovatum*, *Cicuta douglasii*, *Callitriche marginata*, *Veronica americana*, *Juncus patens*, *Sanicula crassicaulis*, *Trisetum canescens*, *Elymus glaucus* subsp. *glaucus*, *Carex* sect. *Ovales*, aff. *Carex gianonei*, pro.sp.nov., *Osmorhiza berteroi*, *Rumex salicifolius* complex, *Trifolium microcephalum*, *Iris douglasiana*, *Polypodium californicum* (lithophyte, lower sets of pinna longer than succeeding ones), *Prosartes hookeri*, *Ribes menziesii*, *Vaccinium ovatum*, <<concentrated within an area of circa 15 meters x 7 meters, on both sides of the dirt road, the following fern species were noted: *Polypodium calirhiza* (growing on stumps, lower sets of pinna shorter than succeeding ones), *Woodwardia fimbriata*, *Athyrium filix-femina* var. *cyclosorum* and *Pteridium aquilinum* var. *pubescens* (growing in alluvial deposits proximal to Big Creek), *Polystichum dudleyi*, *Polystichum munitum*, *Dryopteris arguta*, *Adiantum aleuticum* and *Polypodium* sp. (the quintet occupying a near vertical slope where the Santa Margarita Sandstone underlying the Santa Cruz Mudstone pinches out)>>, *Hesperocnide tenella*, *Dicentra formosa*, *Lilium pardalinum* subsp. *pardalinum*, *Scoliopus bigelovii*, *Calystegia purpurata* subsp. *purpurata*, *Pentagramma triangularis* subsp. *triangularis*, *Asyneuma prenanthoides*, *Festuca occidentalis*, *Carex globosa*, *Smilacina racemosa*, *Fritillaria affinis* var. *affinis*, *Heuchera micrantha*, *Mimulus aurantiacus*, *Festuca elmeri*, *Fragaria vesca*, *Oxalis corniculata* subsp. *pilosa*, *Ceanothus thyrsiflorus*, *Trifolium willdenovii*, *Cirsium brevistylum*, *Anisocarpus madioides*, *Salix sitchensis*, *Calamagrostis rubescens*, *Holodiscus discolor*, *Festuca subuliflora*, *Delphinium nudicaule* (growing on "granitics" aka quartz diorite cliff face and base, where quarrying took place historically, along with *Calochortus albus*, *Eriophyllum confertiflorum* var. *confertiflorum* and robust pendant clumps of *Heuchera micrantha*), *Lonicera hispidula*, *Boykinia occidentalis*, *Veronica americana*, *Carex nudata*, *Mimulus cardinalis*, *Adiantum jordanii*, *Helenium puberulum* and *Montia parvifolia* (growing streamside on moss-covered boulders..... with compact colonizing rosettes and chartaceous white flowers, aesthetically holding its own when compared to florally vibrant cousins, the *Lewisias*).

While passing through Swanton, framed by pastures populated with cattle, horses, bobcats, coyotes, and an occasional great blue heron, the prospects for encountering even remnants of the native flora seem dim. A stretch of west-facing hillside, circa 60 meters in length and located near the end stage to this section of our journey rectifies the problem, producing a host of surprises! Only one addition to the observable native species list was recorded while crossing Big Creek Bridge, growing midstream with its rhizomes securely embedded in a cluster of mudstone fragments, coltsfoot (*Petasites frigidus* var. *palmatum*) proudly displayed its maple-like leaves on erect stalks.

Entering Scotts Creek more or less midway between the confluences of Big and Little Creeks and oriented in an easterly direction, an unnamed gulch, which extends up to Mt. Cook and drains the brush covered slopes and adjacent grasslands, contains a remnant chaparral component with extensive, albeit fragmented, burl-forming manzanita (*Arctostaphylos crustacea*, sensu lato) populations. Mirroring

each other across the deep but narrow in profile gulch, both “arcto” colonies are, for this watershed, typically perverse: displaying misplaced burls, isofacial or bifacial leaves with or without cordate bases and auriculations, a smorgasbord of trichomes, simple through dendritic, glandular or not, and inflorescences ranging from compact through open and intricately branched! Isolated from the chaparral fires that historically shaped the patterns of vegetation defining the ridges across the Scotts Creek riparian corridor, succession in the form of mixed coniferous/hardwood stands are overtopping and gradually shading out **the pioneer “ericoids” and their unique genetic legacy!** Sharing this habitat in transition, an extensive population of California tea (*Rupertia physodes*), randomly dispersed plants of Elmer’s fescue (*Festuca elmeri*), near the head of the gulch an oracle oak (*Quercus x morehus*), 3+ meters in height and growing with sympatric forest live-oak (*Quercus parvula* var. *shrevei*), also two reliable indicators of hillside moisture and constituents of the Rose Family (Rosaceae), ocean spray (*Holodiscus discolor*) and thimbleberry (*Rubus parviflorus*), long established hazelnut shrubs (*Corylus cornuta* var. *californica*), plus a scattering of sleepy catchfly (*Silene antirrhina*), which was observed, during the late 1970s-early 1980s, growing on the south facing steep slope supporting the larger of the two manzanita populations. As with the majority of secondary gulches feeding into Scotts Creek, the “Mt. Cook Gulch” is a diverse self-contained ecosystem representing a microcosm, both in habitat and representative species, of the watershed as a whole. **The relictual manzanita populations**, mirroring their Schoolhouse Ridge counterparts, are growing, for the most part, on exposed/weathered mudstone modified by the accumulated detritus formed by their leaf litter and that derived from the ever encroaching coast live-oak (*Quercus agrifolia* var. *agrifolia*) and forest live-oak (*Quercus parvula* var. *shrevei*) populations, which in terms of foliar variability, give the “arctos” a definite run for their money! The shaded and moisture retentive west facing slopes are fast losing their remaining manzanitas and within this decade will remain only as memories for those few observers fortunate enough to have studied them! Several of the species sharing the “**disjunct chaparral**” element of this ecologically complex gulch are also associated with the extensive “burl-forming” manzanita populations that define the ridges overlooking the upper watersheds of Scotts, Mill, Big and Little Creeks: bush poppy (*Dendromecon rigida*), pitcher sage (*Lepechinia calycina*), pine grass (*Calamagrostis rubescens*), California bedstraw (*Galium californicum* subsp. *californicum*), rush trefoil (*Lotus junceus* var. *junceus*), deerweed (*Lotus scoparius* var. *scoparius*), hairy honeysuckle (*Lonicera hispidula*), toyon (*Heteromeles arbutifolia*), pink everlasting (*Pseudognaphalium ramosissimum*) and scattered along the upper margins of an adjacent slope growing in coastal scrub, yerba santa (*Eriodictyon californicum*).

**During 05-06/10, preliminary exploration within this ancillary component of the Scotts Creek Watershed, yielded the following native taxa in addition to those previously discussed..... these grouped by familial alliances:** yarrow (*Achillea millefolium*), mountain dandelion (*Agoseris grandiflora*), woodland madia (*Anisocarpus madioides*), mugwort (*Artemisia douglasiana*), coyote brush (*Baccharis pilularis*), golden yarrow (*Eriophyllum confertiflorum* var. *confertiflorum*), purple cudweed (*Gamochaeta ustulata*), white hawkweed (*Hieracium albiflorum*), Bioletti’s cudweed (*Pseudognaphalium biolettii*), California cudweed (*Pseudognaphalium californicum*), Gianone everlasting (*Pseudognaphalium gianonei*, pro. sp. nov.), woolly marbles (*Psilocarphus tenellus* var. *tenellus*), California chicory (*Rafinesquia californica*)..... chaffweed (*Anagallis minima*), Pacific starflower (*Trientalis latifolia*..... **one white flowered plant observed**)..... California water starwort (*Callitriche marginata*..... **fruit, both aquatic and terrestrial, distinctly pedicellate**), California plantain (*Plantago erecta*..... **while appearing as strange bedfellows, on a molecular level, the Water-Starwort clan has found a new home, nestled within the Plantaginaceae**)..... toad rush (*Juncus bufonius* sensu lato), brown bog-rush (*Juncus hesperius*), western rush (*Juncus occidentalis*), common rush (*Juncus patens*), brown-headed rush (*Juncus phaeocephalus* var. *pharocephalus*)..... bent grass hybrid complex (*Agrostis hallii* x *Agrostis pallens* putative intergrades), California brome (*Bromus carinatus* var. *carinatus*), nodding brome (*Bromus vulgaris*), California oat grass (*Danthonia californica* sensu lato), California fescue (*Festuca californica*), western fescue (*Festuca occidentalis*), red fescue (*Festuca rubra*..... **localized population at top of gulch, nativity uncertain**), California wild rye (*Elymus glaucus* subsp. *glaucus*), Torrey’s melic (*Melica torreyana*), foothill needlegrass (*Nassella lepida*), purple needlegrass (*Nassella pulchra*), Howell’s bluegrass (*Poa howellii*)..... California maidenhair (*Adiantum jordanii*), coffee fern (*Pellaea andromedifolia*), goldback fern

(*Pentagramma triangularis* subsp. *triangularis*)..... wood fern (*Dryopteris arguta*), western swordfern (*Polystichum munitum*)..... bracken (*Pteridium aquilinum* var. *pubescens*)..... nested polypody (*Polypodium calirhiza*)..... Monterey pine (*Pinus radiata*..... **population part of ancient hybrid swarm, with *Pinus attenuata* being other species component**), Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*)..... big-leaf maple (*Acer macrophyllum*..... **a magnificent old specimen, with five divergent ascending trunks, was observed high up on the west facing side of the gulch, growing in what appears to be a landslide derived draw**)..... redwood (*Sequoia sempervirens*)..... California nutmeg (*Torreya californica*)..... California buckeye (*Aesculus californica*)..... California bay laurel (*Umbellularia californica*)..... coyote mint (*Monardella villosa* sensu lato..... **variable as to stature and foliar morphology**), yerba buena (*Satureja douglasii*), California hedge-nettle (*Stachys bullata*..... **putative intergrades with *Stachys rigida*, based on vestigial saccate base of corolla tube with corresponding positioning of internal ring of hairs found on some plants, plus biochemical signature differences and corolla alignment within calyx and corolla shape and coloration**)..... short-stemmed sedge (*Carex brevicaulis*), dense sedge (*Carex densa*), Gianone sedge complex (*Carex gianonei*, pro.sp.nov..... **lower 1-3 spikelets compound-congested**), slough sedge (*Carex obnupta*), small-bracted sedge (*Carex subbracteata*), dwarf club rush (*Isolepis carinata*)..... red elderberry (*Sambucus racemosa* var. *racemosa*)..... sweet-scented bedstraw (*Galium triflorum*)..... sticky monkeyflower (*Mimulus aurantiacus*)..... poison oak (*Toxicodendron diversilobum*)..... blue blossom (*Ceanothus thyrsiflorus*), California coffeeberry (*Frangula californica* subsp. *californica*)..... California man root (*Marah fabaceus*)..... dwarf brodiaea (*Brodiaea terrestris* subsp. *terrestris*), blue dicks (*Dichelostemma capitatum* subsp. *capitatum*), Ithuriel's spear (*Triteleia laxa*)..... lovage (*Ligusticum apiifolium*..... **scattered population, of this rare for SC County taxon, growing on west facing slope overlooking upper portion of gulch**), sweet cicely (*Osmorhiza berteroi*), gambleweed (*Sanicula crassicaulis*), Gianone sanicle (*Sanicula gianonei*, pro.sp.nov.)..... wood strawberry (*Fragaria vesca*), oso berry (*Oemleria cerasiformis*), ground rose (*Rosa spithamea*..... **isolated population, growing on upper part of north/northwest facing ridge top overlooking lower portion of gulch..... dwarf in stature, rhizomatous, with hypanthium covered with stalked glands and sepals persistent on fruit..... habitat, unlike its south facing "displaced chaparral" counterpart directly across gulch, modified by succession, with wind-sculpted oak woodland overtopping former *Arctostaphylos crustacea* sensu lato population, leaving a graveyard of lifeless trunks and branches anchored in non-viable burls**)..... California blackberry (*Rubus ursinus*)..... slim Solomon's seal (*Smilacina stellata*)..... giant trillium (*Trillium chloropetalum*), western trillium (*Trillium ovatum* subsp. *ovatum*)..... canyon gooseberry (*Ribes menziesii*)..... California figwort (*Scrophularia californica* subsp. *californica*)..... hound's tongue (*Cynoglossum grande*), small-flowered nemophila (*Nemophila parviflora*), stinging phacelia (*Phacelia malvifolia*)..... soap plant (*Chlorogalum pomeridianum* var. *pomeridianum*)..... Douglas's iris (*Iris douglasiana*), blue-eyed grass (*Sisyrinchium bellum*)..... American winter cress (*Barbarea orthoceras*), popweed (*Cardamine oligosperma*)..... checker lily (*Fritillaria affinis* var. *affinis*)..... coast nettle (*Urtica dioica* subsp. *gracilis*..... **some plants tending towards subsp. *holosericea*, with more non-stinging hairs on stems and abaxial surface of leaves**)..... Douglas's nightshade (*Solanum douglasii*), blue witch (*Solanum umbelliferum*)..... Hooker's fairy bells (*Prosartes hookeri*)..... Pacific pea (*Lathyrus vestitus* var. *vestitus*..... **variable as to foliar indument**), yellow bush lupine (*Lupinus arboreus*)..... checkerbloom (*Sidalcea malvaeflora* subsp. *malvaeflora*)..... small-flowered alum root (*Heuchera micrantha*)..... striped coralroot (*Corallorhiza striata*), rein orchid (*Piperia* species..... **still in foliar stage**)..... hairy wood sorrel (*Oxalis corniculata* subsp. *pilosa*)..... dwarf orthocarpus (*Triphysaria pusilla*) and California buttercup (*Ranunculus californicus*).

Back along Swanton Road, a sedge new to our inventory, round-fruited sedge (*Carex globosa*), displays antrorsely scabridulous culms and leaves with fibrous basal sheaths tinted reddish-purple, these configured into matted patches overlooking the edge of the bank. Sharing this condensed habitat and also representing the monocot camp are Torrey's melic (*Melica torreyana*), California brome (*Bromus carinatus* var. *carinatus*), nodding brome (*Bromus vulgaris*), foothill needlegrass (*Nasella lepida*), California wild rye (*Elymus glaucus* subsp. *glaucus*) and Douglas's iris (*Iris douglasiana*). Contributing a disproportionate

share of the botanical bounty, the herbaceous and low center-of-gravity suffrutescent dicots go the extra mile with the following diverse assemblage: poison oak (*Toxicodendron diversilobum*), sticky monkeyflower (*Mimulus aurantiacus*), California hedge-nettle (*Stachys bullata*) and its polymorphic cousin coyote mint (*Monardella villosa* subsp. *villosa*) with some plants tending towards subsp. *franciscana* in foliar outline; hairy honeysuckle (*Lonicera hispidula*) along with morning glory (*Calystegia occidentalis* subsp. *occidentalis*), California blackberry (*Rubus ursinus*) and Pacific pea (*Lathyrus vestitus* var. *vestitus*), scandent in behavior, often leaving traces of past season's growth covering the understory shrubbery, and gambleweed (*Sanicula crassicaulis*), possessing a chemical signature somewhat reminiscent of its prized culinary cousin, celery (*Apium graveolens*); speaking up for the Madder Family (Rubiaceae) are California bedstraw (*Galium californicum* subsp. *californicum*) and climbing bedstraw (*Galium porrigens* var. *porrigens*), while the Sunflower Family (Asteraceae), extremely variable in gestalt, is exemplified by California aster (*Symphotrichum chilense*), Gianone everlasting (*Pseudognaphalium gianonei*, pro. sp. nov.), golden yarrow (*Eriophyllum confertiflorum* var. *confertiflorum*), coyote brush (*Baccharis pilularis*), and California sagebrush (*Artemisia californica*); within the Rose Family (Rosaceae), two stature extremes can be observed, one often found growing under the other, these being wood strawberry (*Fragaria vesca*) and toyon (*Heteromeles arbutifolia*).

Residing in the moisture-retentive roadside drainage ditch, small-flowered nemophila (*Nemophila parviflora* var. *parviflora*) and miner's lettuce (*Claytonia perfoliata* subsp. *perfoliata*) luxuriate, while hairy wood sorrel (*Oxalis albicans* subsp. *pilosa* = ***Oxalis corniculata* subsp. *pilosa***) holds steadfast to the slope's near-vertical profile. Not being particularly finicky as to choice of habitat but a fervent forty-niner, California figwort (*Scrophularia californica* subsp. *californica*) can be found growing in association with California buckeye (*Aesculus californica*), California coffeeberry (*Frangula californica* subsp. *californica*), and California bay laurel (*Umbellularia californica*). With foliage variable as to color, size, shape and margins (entire through spinescent), forest live-oak (*Quercus parvula* var. *shrevei*) dominates the proceedings, even managing to produce one oracle oak (*Quercus x morehus*), invisible to all but the most observant. Rounding out the arboreal contingent, are two Gymnosperms: both being members of the Pine Family (Pinaceae), with Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*) ranging widely as to nativity and Monterey pine (*Pinus radiata*) highly localized (Ano Nuevo Population) and reaching the southern limits of its range near the Molino Creek watershed. This northernmost living population of a geographically disjunct endemic conifer is unique in at least two ways: it grows sympatrically, in part, with the related knobcone pine (*Pinus attenuata*) and in the opinion of this author, **represents an ancient hybrid swarm which now appears to be reproductively isolated from its knobcone co-parent but continues to re segregate definable knobcone traits throughout the Scotts Creek population, demonstrated by growth patterns, branch configurations, foliar and cone morphologies and a high degree of heterosis (hybrid vigor)**. Finally, giving the precursors to flowering plants their due, scattered within the canopied slope with its dappled light and acidic duff, goldback fern (*Pentagramma triangularis* subsp. *triangularis*) and wood fern (*Dryopteris arguta*) remain terrestrial while nested polypody (*Polypodium calirhiza*), prefers the vertical topography of live oaks and bay laurels! Upon reaching Little Creek Bridge and looking upstream, a cloistered population of the locally rare candy flower (*Claytonia sibirica*) can barely be seen due to the suffocating nature of the non-native forget-me-not population while shifting our attention to the opposite side of the bridge and looking downstream, a native member of the Ginseng Family (Araliaceae), elk-clover (*Aralia californica*) lends an exotic mien to the riparian corridor.

As with most of the ancillary watersheds emptying into Scotts Creek, Little Creek can be accessed via an unpaved but maintained road paralleling the stream course for several miles and giving the alert naturalist an in-depth representation of the residing flora. **Reiterating the underlying premise of this Traversal**, one can explore a substantial part of the Little Creek drainage without leaving the dirt road and witness in excess of **150** native plant species, several of which are absent from the Swanton Road survey. While exploring the Little Creek Watershed, the following "natives" were encountered roadside, **some of which**, have not been observed along or from Swanton Road: crimson columbine (*Aquilegia formosa*), California



harebell (*Campanula prenanthoides* = *Asyneuma prenanthoides*), redwood violet (*Viola sempervirens*), varied-leaved collomia (*Collomia heterophylla*)..... **a distinctive population of circa 50 plants discovered displaying a circa 5 to 1 ratio of plants with white flowers, the typical pink-flowered form definitely in the minority**, straggly gooseberry (*Ribes divaricatum* var. *pubiflorum*), black-cap raspberry (*Rubus leucodermis*) sharing locale with thimbleberry (*Rubus parviflorus*) and California blackberry (*Rubus ursinus*), redwood sorrel (*Oxalis oregana*), sneezeweed (*Helenium puberulum*), western burning bush (*Euonymus occidentalis* var. *occidentalis*), trail plant (*Adenocaulon bicolor*), white-tipped clover (*Trifolium variegatum*), five-finger fern (*Adiantum aleuticum*), stephanomeria (*Stephanomeria* aff. *elata*), California phacelia (*Phacelia californica*) **with multiple spreading to erect stems, along with the inflorescences, clothed with stiff pustulate-based eglandular trichomes, the dingy white flowers with hirsute exerted styles**, California gilia (*Gilia achilleifolia* sensu lato), mountain iris (*Iris fernaldii*) with narrow grayish-green leaves tannish at base and sister species Douglas's iris (*Iris douglasiana*) with greenish tinted leaves distinctly pinkish basally, pipestems (*Clematis lasiantha*), California huckleberry (*Vaccinium ovatum*), wax myrtle (*Myrica californica* = **Morella californica**) and vanilla grass (*Hierochloa occidentalis*) both possessing foliage that rewards the olfactorally curious, small-flowered melic (*Melica imperfecta*), rancher's fiddleneck (*Amsinckia menziesii* var. *menziesii*) with corolla pale yellow, 2-3 mm. wide at top, limb without red-orange markings, "kissing cousins" hairy honeysuckle (*Lonicera hispidula* var. *vacillans* = **Lonicera hispidula**) and snowberry (*Symphoricarpos albus* var. *laevigatus*), yerba de selva (*Whipplea modesta*) a distant cousin of the cultivated Hydrangea (*Hydrangea macrophylla*), a papilionaceous mimic California milkwort (*Polygala californica*) and *Lupinus* sp. (aff., *L. propinquus*), a putative hybrid derived from yellow bush lupine (*Lupinus arboreus*) x broad-leaved lupine (*Lupinus latifolius* var. *latifolius*).

A conspicuous component of the Grass Family (Poaceae) within the Scotts Creek Watershed proper but uncommon throughout the county, Elmer's fescue (*Festuca elmeri*), luxuriates roadside in the Little Creek drainage, producing vigorous stands containing individuals 1-2 meters in height and variable both as to number of florets and anther pigmentation! **Other native members of the Poaceae, sharing both habitat and a penchant for structural variability, include:** western fescue (*Festuca occidentalis*), California fescue (*Festuca californica*) with localized colonies persisting high up on the south-facing forested ridge top in proximity to the General Smith Redwood, growing sympatrically with **one** isolated colony of Harford's melic (*Melica harfordii*) that appears to be healthy and well established..... **rare county wide**, crinkle-awn fescue (*Festuca subuliflora*), **displaying shiny, plane, dark-green leaves** at a time when sister species, Elmer's fescue (*Festuca elmeri*), is usually defined by sterile inflorescences and basally desiccated foliage..... the ubiquitous brome duo, California brome (*Bromus carinatus*), **a complex unto itself**, and nodding brome (*Bromus vulgaris*), often growing together and to the botanically informed, representing two distinct sections within the genus *Bromus*, which ranges worldwide in the temperate climes..... with foliage possessing a scent redolent of vanilla and on a hot summer's day, smelt before being seen, vanilla grass (*Hierochloa occidentalis*) rewards the horticulturally inclined with a worthy but rarely seen addition to the native rock garden..... the polymorphic California wild rye (*Elymus glaucus* subsp. *glaucus*) sharing habitat with the omnipresent yet imperfectly understood Hall's bent grass (*Agrostis hallii*)/leafy bent grass (*Agrostis pallens*) **intergrades**, Torrey's melic (*Melica torreyana*), chameleon-like in gestalt and along one part of the roadbank, growing sympatrically with small-flowered melic (*Melica imperfecta*) and **possibly exchanging genetic material** plus scattered colonies of tall trisetum (*Trisetum canescens* = **Trisetum cernuum subsp. canescens?**), Howell's bluegrass (*Poa howellii*) and a valuable provider of ground cover, pine grass (*Calamagrostis rubescens*) round off a diverse assemblage of wind-pollinated monocots, waiting to be discovered and appreciated by serious students of both biodiversity and biogeography.

Out of viewing range and perched high above the Little Creek riparian corridor, growing sporadically on west-facing slopes cloaked with mixed coniferous/oak woodlands, three species infrequently encountered within Scotts Creek Watershed occur, namely rayless arnica (*Arnica discoidea*..... **note: more prevalent in chaparral since 2009 Lockheed Fire**), windflower (*Anemone oregana*) and salal (*Gaultheria shallon*), while across the watershed growing on weathered mudstone within the chaparral zone one can occasionally

encounter an uncommon local “borage”, namely Torrey’s cryptantha (*Cryptantha torreyana*)..... **on 08/18/2010, while exploring these steep and fire scarred slopes, another addition to the "native" species inventory for the Little Creek subwatershed was added, namely golden fleece (*Ericameria arborescens*).** Going from the visually obscure to the olfactorally bewitching, one can be led blindfolded on a “scentual” journey into the watershed, brushing against, trodding on, being impaled by and tactually caressing native vegetation that act as chemical factories for oils, resins and terpenes. To experience the natural world through senses other than sight can broaden ones awareness as to the significance of co-evolution in the biodiversity surrounding us even under the most mundane of circumstances and emphatically should be practiced by all budding naturalists. An abbreviated listing of readily accessible aromatic biota encountered along this mutual exploration of self and watershed is as follows: sweet-scented bedstraw (*Galium triflorum*), California hedge-nettle (*Stachys bullata*), California bay laurel (*Umbellularia californica*), vanilla grass (*Hierochloe occidentalis*), yerba buena (*Satureja douglasii*), yarrow (*Achillea millefolium*), California nutmeg (*Torreya californica*), golden yarrow (*Eriophyllum confertiflorum* var. *confertiflorum*), wild ginger (*Asarum caudatum*), blue blossom (*Ceanothus thrysiflorus*), sweet cicely (*Osmorhiza heteroi*), California sagebrush (*Artemisia californica*), Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*), canyon gooseberry (*Ribes menziesii*), coltsfoot (*Petasites frigidus* var. *palmatus*) and pink everlasting (*Pseudognaphalium ramosissimum*). **A variation on this exercise of non-visual awareness can be applied to the tactile arena by exploring the various foliar topographies presenting themselves roadside and familiarizing oneself with the scientific terminology that describes each characteristic, such as glabrous, coriaceous, spinose, hispid, papillate, chartaceous, pilose, serrate, pungent, rugose, scabrous and viscid.** An introductory sampling of leaves conforming to the previously mentioned descriptive terms could include thimbleberry (*Rubus parviflorus*), sticky monkeyflower (*Mimulus aurantiacus*), toyon (*Heteromeles arbutifolia*), round-fruited sedge (*Carex globosa*), hazelnut (*Corylus cornuta* subsp. *californica*), Pacific madrone (*Arbutus menziesii*), tan-oak (*Notholithocarpus densiflorus* ), Heermann’s trefoil (*Lotus heermannii* var. *orbicularis*), coast nettle (*Urtica dioica* ssp. *gracilis*), redwood (*Sequoia sempervirens*), forest live-oak (*Quercus parvula* var. *shrevei*) and California phacelia (*Phacelia californica*). Groupings of **morphologically dissimilar taxa belonging to the same family** occur with some frequency throughout the Scotts Creek Watershed, giving one pause to ponder the mechanics underlying the ecology of such interactions: one such example observed along the dirt road traversing the interior of Little Creek included toyon (*Heteromeles arbutifolia*), thimbleberry (*Rubus parviflorus*), ocean spray (*Holodiscus discolor*), oso berry (*Oemleria cerasiformis*), wood strawberry (*Fragaria vesca*), California blackberry (*Rubus ursinus*) and wood rose (*Rosa gymnocarpa*), all bona fide members of the Rose Family (Rosaceae)..... **conspicuously absent from lower Little Creek's riparian corridor is salmonberry (*Rubus spectabilis*) but encountered in Scotts Creek proper and lower Big and Mill Creeks and whether or not this taxon ever occurred in the Little Creek Watershed, or during some past extreme flooding event (1955) which severely scoured the watershed's lower portion removed the population, remains unknown.**

While not exactly common along Swanton Road proper, the following species contribute to the **150+** checklist of indigenous taxa accessible for viewing along/from the dirt road threading its way into the heart of the Little Creek sub-watershed: three native representatives of the Family: Asteraceae, Tribe: Cichorieae..... mountain dandelion (*Agoseris grandiflora*), California chicory (*Rafinesquia californica*) and stephanomeria (*Stephanomeria* aff. *elata* ) sharing a geologically unstable, seasonally watered hillside, with scattered clumps of sea lettuce (*Dudleya caespitosa*..... corollas colored a greenish-yellow with margins overlapping and apices spreading), some long established plants with 8-12 rosettes underpinned by elongate caudices, their replacement seedlings germinating within patches of moss secured to the bare rock surface, toyon (*Heteromeles arbutifolia*) sub-trees barely anchored to the near-vertical substrate with their ashen bark and contorted growth patterns lending an alien air to the proceedings and visually complimented by the intricate branching patterns of golden yarrow (*Eriophyllum confertiflorum* var. *confertiflorum*), clothed with a cottony tomentum and seasonally terminating in flat-topped clusters of yellow-orange heads sharing space with fellow perennial sub-shrub sticky monkeyflower (*Mimulus aurantiacus*). At the opposite

extreme along the same road, several species which luxuriate along perennial hillside seeps feeding into Little Creek and can also be found margining Little Creek itself are giant chain fern (*Woodwardia fimbriata*), lady fern (*Athyrium filix-femina* var. *cyclosorum*), red elderberry (*Sambucus racemosa* var. *racemosa*) and elk-clover (*Aralia californica*), these “natives” in concert establishing a “forest primeval” atmosphere particularly when provided with a backdrop of moist vertical banks of fractured mudstone covered with colonies of western sword fern (*Polystichum munitum*) and five-finger fern (*Adiantum aleuticum*) supplemented by our most exotic indigenous willow, velvet willow (*Salix sitchensis*), sporting foliage clothed with a silvery indument akin to finely spun aluminum. **Since the 2009 Lockheed Fire had a major ecological impact on this sub-watershed, a (05/2010) followup documenting the status of which "native" plant taxa have rebounded along the dirt road (from Swanton Road entrance to gauging station between north and south forks of Little Creek), with the observed taxa grouped by their familial alliances:** *Daucus pusillus*, *Heracleum maximum*, *Osmorhiza berteroi*, *Sanicula crassicaulis*..... *Carex amplifolia*, *Carex bolanderi*, *Carex globosa*, *Cyperus eragrostis*..... *Achillea millefolium*, *Adenocaulon bicolor*, *Agoseris grandiflora*, *Anisocarpus madioides*, *Artemisia californica*, *Artemisia douglasiana*, *Baccharis pilularis*, *Cirsium brevistylum*, *Eriophyllum confertiflorum* var. *confertiflorum*, *Gamochaeta ustulata*, *Hieracium albiflorum*, *Layia hieracioides*, *Petasites frigidus* var. *palmatus*, *Pseudognaphalium californicum*, *Pseudognaphalium ramosissimum*, *Pseudognaphalium stramineum*, *Rafinesquia californica*, *Solidago velutina* subsp. *californica*, *Stephanomeria* aff. *elata* (plants 1-2 meters in height, consisting of one central axis with numerous alternate lateral branches, these ascending at circa a 45 degree angle..... stem leaves auriculate and clasping, retrorsely toothed basally, sub-entire, linear, attenuate apically..... calyculi with apices spreading/recurved, florets 9-15, cypselae 3-4mm long, faces tuberculate with longitudinal grooves, pappus plumose entire length)..... *Agrostis hallii/pallens intergrades*, *Bromus carinatus* var. *carinatus*, *Bromus vulgaris*, *Calamagrostis rubescens*, *Deschampsia elongata*, *Elymus glaucus* subsp. *glaucus* (one localized population producing inflorescences with racemose/compound branching, branches 4-5cm in length), *Festuca elmeri*, *Festuca occidentalis*, *Hierochloa occidentalis*, *Melica imperfecta*, *Melica subulata*, *Melica torreyana*, *Poa howellii*, *Trisetum canescens*..... *Oxalis corniculata* subsp. *pilosa*, *Oxalis oregana*..... *Polygala californica*..... *Viola ocellata*, *Viola sempervirens*..... *Asyneuma prenanthoides*, *Triodanis biflora*..... *Ribes menziesii*..... *Iris douglasiana*, *Iris fernaldii*..... *Calochortus albus*, *Fritillaria affinis*..... *Trillium ovatum*..... *Aralia californica*..... *Torreya californica*..... *Alnus rubra*, *Corylus cornuta* var. *californica*..... *Claytonia perfoliata* subsp. *perfoliata*, *Claytonia siberica*..... *Lathyrus vestitus* sensu lato, *Lotus heermannii* var. *orbicularis*, *Lotus micranthus*, *Lotus scoparius* var. *scoparius*, *Lotus wrangelianus*, *Lupinus* aff. *propinquus* E. Greene, *Trifolium bifidum* var. *decipiens*, *Trifolium ciliolatum*, *Trifolium gracilentum* var. *gracilentum*, *Trifolium microcephalum*, *Trifolium obtusiflorum* (growing roadside overlooking drainage system for small, near vertical gulchlet which feeds into Little Creek and in upper part of gulchlet, adjacent to small waterfall and persisting as an annual longer, due to the presence of continual moisture..... not previously seen locally since 1983, when discovered growing on sandbar below Scotts Creek Bridge and documented via pressing for the Jepson Herbarium), *Trifolium oliganthum*, *Trifolium willdenovii*, *Vicia gigantea*, *Vicia hassei*..... *Chlorogalum pomeridianum* var. *pomeridianum*..... *Callitriche marginata*..... *Corallorhiza striata*..... *Fragaria vesca*, *Heteromeles arbutifolia*, *Holodiscus discolor*, *Oemleria cerasiformis*, *Potentilla glandulosa* subsp. *glandulosa*, *Rosa gymnocarpa*, *Rubus leucodermis*, *Rubus parviflorus*, *Rubus ursinus*..... *Calystegia purpurata* subsp. *purpurata*..... *Arbutus menziesii*, *Vaccinium ovatum*..... *Asarum caudatum*..... *Aesculus californica*..... *Hesperocnide tenella*, *Urtica dioica* subsp. *holosericea*..... *Notholithocarpus densiflorus*, *Quercus agrifolia* var. *agrifolia*, *Quercus parvula* var. *shrevei*..... *Ceanothus thyrsiflorus*, *Frangula californica* subsp. *californica*..... *Sequoia sempervirens*..... *Pinus radiata* (isolated population near southern end of its naturally occurring range, representing an ancient hybrid swarm between *Pinus attenuata* and *Pinus radiata*), *Pseudotsuga menziesii* var. *menziesii*..... *Acer macrophyllum*..... *Monardella villosa* sensu lato, *Satureja douglasii*, *Stachys bullata*..... *Oxalis corniculata* subsp. *pilosa*..... *Collomia heterophylla*, *Gilia achilleifolia* (scattered but concentrated populations, with both subsp. *achilleifolia* and subsp. *multicaulis* represented)..... *Heuchera micrantha*, *Lithophragma heterophyllum*..... *Smilacina racemosa*, *Smilacina*

*stellata*..... *Trientalis latifolia*..... *Aquilegia formosa*, *Clematis lasiantha*, *Ranunculus hebecarpus*.....  
*Amsinckia menziesii* var. *intermedia*, *Cryptantha clevelandii*, *Cryptantha micromeres*, *Cynoglossum grande*, *Emmenanthe penduliflora*, *Nemophila parviflora* var. *parviflora*, *Phacelia* aff. *californica* (stems and herbage clothed with stiff pustulate-based eglandular trichomes, calyx lobes not overlapping and flowers a dingy off-white..... further along on our botanical exploration, a second component of the perennial *Phacelia californica* complex appears, this time having inflorescences clothed with short, gland-tipped trichomes interspersed amongst the much larger and rigid glandless ones..... the presence of glandular hairs, suggests possible introgression from *Phacelia imbricata* genes), *Phacelia malvifolia*.....  
*Morella californica*..... *Epilobium ciliatum*..... *Juncus bufonius*, *Juncus patens*..... *Galium californicum* subsp. *californicum*, *Galium porrigens* var. *porrigens*, *Galium triflorum*..... *Mimulus aurantiacus*, *Mimulus guttatus* aff. *Mimulus nasutus* Greene (localized population growing on south facing, moisture saturated banks, of near-vertical streamlet circa 40+ meters above Little Creek..... plants 1(+)  
meters in height, nascent inflorescence scorpioid with upper calyx-tooth conspicuously exceeding the others in length and lower corolla lip marked centrally with a maroon blotch)..... *Dudleya caespitosa* (isolated populations persisting on near vertical mudstone outcroppings, with corollas tending towards a greenish-yellow and apices of nascent buds lacking a pinkish suffusion)..... *Solanum douglasii*, *Solanum umbelliferum*..... *Umbellularia californica*..... *Collinsia heterophylla*..... *Salix sitchensis*..... *Cardamine californica* var. *californica*, *Cardamine oligosperma*..... *Guillenia lasiophylla* = *Caulanthus lasiophyllus*..... *Scrophularia californica* subsp. *californica*..... *Marah fabaceus*..... *Lonicera hispidula*, *Symphoricarpos albus* var. *laevigatus*..... *Toxicodendron diversilobum*..... *Sambucus racemosa* var. *racemosa* ( now placed in family Adoxaceae)..... *Dryopteris arguta*, *Polystichum munitum*..... *Athyrium filix-femina* var. *cyclosorum*..... *Polypodium calirhizal/californicum* complex (variable as to substrate preference.....soil, rock or bark, length of lowermost sets of pinna relative to those above, shape and elevation of sori, and as epiphytes, luxuriating on *Acer macrophyllum* and *Umbellularia californica* trunks and branches)..... *Adiantum aleuticum*, *Adiantum jordanii*, *Pentagramma triangularis* subsp. *triangularis*..... *Woodwardia fimbriata*..... *Pteridium aquilinum* var. *pubescens*..... *Eschscholzia californica*..... *Pterostegia drymarioides*..... *Dichelostemma capitatum* subsp. *capitatum*..... *Equisetum telmateia* subsp. *braunii*..... *Euonymus occidentalis* var. *occidentalis*..... *Silene antirrhina*

**Note:** select herbarium specimens of horticulturally meritorious, locally uncommon, rare county wide and agency listed **species referred to in this section** of the Traversal, collected and pressed, with noted exceptions, by Roy Buck and/or James West **within the Scotts Creek Watershed and environs**, then deposited in the Jepson Herbarium, U.C. Berkeley, **are as follows:**

*Arctostaphylos andersonii*/accession number UCSC4778/Randall Morgan, Jan 4 1977

*Arctostaphylos tomentosa* subsp. *crustacea* = *Arctostaphylos crustacea* subsp. *crustacea*/accession number UCSC6184/R. Morgan, Feb 1977

*Aster chilensis* = *Symphotrichum chilense*/accession number JEPS83107/West #351

*Bromus carinatus* var. *carinatus*/accession number JEPS83046/West #420

*Bromus carinatus* var. *carinatus*/accession number JEPS83047/West #420

*Calamagrostis rubescens*/accession number JEPS83101/Buck & West #452

*Campanula prenanthoides*/accession number JEPS83048/Buck & West #419

*Claytonia siberica*/accession number UCSC5451/Randall Morgan, Jul 26 2004

*Disporum hookeri* = *Prosartes hookeri*/accession number SJSU9926/M.B. Wood, Oct 4 1964

*Eriophyllum confertiflorum* var. *confertiflorum*/accession number JEPS81513/Buck & West #20

*Eriophyllum confertiflorum* var. *confertiflorum*/accession number JEPS81514/Buck & West #20

*Eriophyllum confertiflorum* var. *confertiflorum*/accession number JEPS81510/Buck & West #18

*Galium californicum* subsp. *californicum*/accession number JEPS83072/Buck & West #426

*Galium californicum* subsp. *californicum*/accession number JEPS82583/West #130

*Galium porrigens* var. *porrigens*/accession number UC1583603/Keil, Holland & Kelly #20608

*Galium* sp. = aff. *Galium porrigens* var. *porrigens*/accession number JEPS83071/West #344

*Galium* sp. = **aff. *Galium porrigens* var. *porrigens***/accession number **JEPS83073**/West #344a  
*Gnaphalium ramosissimum* = ***Pseudognaphalium ramosissimum***/accession number **JEPS81544**/Buck & West #113  
*Lepechinia calycina*/accession number **JEPS83079**/Buck & West #427  
*Lomatium caruifolium*/accession number **UCSC6128**/R. Morgan, Apr 27 1995  
*Lotus scoparius* var. *scoparius* = ***Acmispon glaber* var. *glaber***/accession number **JEPS82800**/Buck & West #295  
*Melica imperfecta*/accession number **JEPS85183**/Buck & West #489  
*Mimulus aurantiacus* var. ***aurantiacus***/accession number **UCR67974**/Keil #20574  
*Nemophila parviflora* var. ***parviflora***/accession number **JEPS82954**/West #41.2  
*Nemophila parviflora* var. *parviflora* = ***Nemophila* aff. *pulchella* var. *fremontii?***/accession number **JEPS85186**/Buck & West #173  
*Nemophila parviflora* var. ***parviflora***/accession number **JEPS81538**/Buck, West & Stone #471  
*Nemophila parviflora* var. *parviflora* = ***Nemophila* aff. *pulchella* var. *fremontii?***/accession number **JEPS81539**/Buck, West & Stone #470  
*Nemophila parviflora* var. *parviflora* = ***Nemophila* aff. *pulchella* var. *fremontii?***/accession number **JEPS85181**/Buck, West & Stone #138  
*Nemophila parviflora* var. ***parviflora***/accession number **JEPS85184**/Buck, West & Stone #143  
*Phacelia californica*/accession number **JEPS82792**/Buck & West #304  
*Pinus radiata*/accession number **JEPS83129**/Buck & West #440  
*Polygala californica*/accession number **JEPS83127**/Buck & West #353  
*Quercus x morehus*/accession number **JEPS81522**/Buck & West #7  
*Ribes* "sp"/accession number **UCSC5358**/Randall Morgan, Nov 10 1976  
*Silene antirrhina*/accession number **JEPS85191**/Buck & West #517

## Between Little Creek and the Southern Edge of the Watershed

Growing on a west facing rocky slope situated between Little Creek and Winter Creek, one of three localized populations within our viewshed of hoary bowlesia (*Bowlesia incana*), herbage and stems clothed with distinctive stellate hairs, resides with two foliar counterparts: in outline, the (3-5)-lobed leaves of downy buttercup (*Ranunculus hebecarpus*) and hill star (*Lithophragma heterophyllum*), when growing intermixed with the previously mentioned member of the Carrot Family (Apiaceae), present a fascinating study of sympatry between unrelated species and variations on a shared leaf pattern. Scattered within and adjacent to this mini-congregation of leafy mimics, California chicory (*Rafinesquia californica*) displays foliage, that when crushed, exudes an acrid smell reminiscent of domestic lettuce (genus *Latuca*), a European cousin. Concentrated within a 10' x 8' near-vertical grassy slope and virtually lost from view within the competitive tangle of vegetation, the attentive observer is introduced to a locally uncommon member of the Phlox Family (Polemoniaceae), many-stemmed gilia (*Gilia achilleifolia* subsp. *multicaulis*). Restricted to one embankment, an isolated colony of California tea (*Rupertia physodes*) stands out from other proximal members of the Legume Family (Fabaceae), with punctate-dotted trifoliolate herbage that when rubbed between the fingers releases a distinctive fragrance, while on the opposite side of the road and lost in a welter of bromes and fescues, native and otherwise, tall trisetum (*Trisetum canescens* = ***Trisetum cernuum* subsp. *canescens?***) makes a welcome addition to the native grass species check-list.

The relatively short distance between Little Creek Bridge and the entrance to Old Schoolhouse Gulch Road, affords the observant pedestrian an interesting concentration of local flora..... unusual, because one has to visit several different and often not contiguous habitats to observe the taxa in question. All of the following "natives" can be viewed without leaving the tarmac.....growing on the west facing roadbank, the slope above and within the centrally positioned, landslide derived drainage system aka "mini-gulch", which is now blocked by Swanton Road: wood strawberry (*Fragaria vesca*), California blackberry (*Rubus*

*ursinus*), toyon (*Heteromeles arbutifolia*), goldback fern (*Pentagramma triangularis* subsp. *triangularis*), wood fern (*Dryopteris arguta*), bracken (*Pteridium aquilinum* var. *pubescens*), western sword fern (*Polystichum munitum*), nested polypody (*Polypodium calirhiza*).....**lowermost pairs of pinna shorter than succeeding ones**, California maidenhair (*Adiantum jordanii*), Torrey's melic (*Melica torreyana*), California wild rye (*Elymus glaucus* subsp. *glaucus*), California brome (*Bromus carinatus* var. *carinatus*), nodding brome (*Bromus vulgaris*), Pacific madrone (*Arbutus menziesii*), redwood (*Sequoia sempervirens*), big-leaf maple (*Acer macrophyllum*), box elder (*Acer negundo* var. *californicum*), coast live-oak (*Quercus agrifolia* var. *agrifolia*), forest live-oak (*Quercus parvula* var. *shrevei*), California buckeye (*Aesculus californica*), red alder (*Alnus rubra*), California bay laurel (*Umbellularia californica*), tan-oak (*Notholithocarpus densiflorus* var. *densiflorus*), California nutmeg (*Torreya californica*), Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*), arroyo willow (*Salix lasiolepis*), poison oak (*Toxicodendron diversilobum*), coast nettle (*Urtica dioica* subsp. *gracilis*), western nettle (*Hesperocnide tenella*), hound's tongue (*Cynoglossum grande*), blue blossom (*Ceanothus thrysiflorus*), California coffeeberry (*Frangula californica* subsp. *californica*), western burning bush (*Euonymus occidentalis* var. *occidentalis*), blue elderberry (*Sambucus nigra* subsp. *canadensis*), red elderberry (*Sambucus racemosa* var. *racemosa*), hairy honeysuckle (*Lonicera hispidula*), striped coralroot (*Corallorhiza striata*), checker lily (*Fritillaria affinis* var. *affinis*), western trillium (*Trillium ovatum* subsp. *ovatum*), slim Solomon's seal (*Smilacina stellata*), Douglas's iris (*Iris douglasiana*), common wood rush (*Luzula comosa*), willow dock complex (*Rumex salicifolius* sensu lato), California bedstraw (*Galium californicum* subsp. *californicum*), sweet-scented bedstraw (*Galium triflorum*), gambleweed (*Sanicula crassicaulis*), cow-parsnip (*Heracleum maximum*), sweet cicely (*Osmorhiza berteroi*), coyote brush (*Baccharis pilularis*), mugwort (*Artemisia douglasiana*), woodland madia (*Anisocarpus madioides*), California hedge-nettle (*Stachys bullata*), small-flowered alum root (*Heuchera micrantha*), canyon gooseberry (*Ribes menziesii*), California man root (*Marah fabaceus*), small-flowered nemophila (*Nemophila parviflora* var. *parviflora*), miner's lettuce (*Claytonia perfoliata* subsp. *perfoliata*), common milkmaids (*Cardamine californica* var. *californica*), popweed (*Cardamine oligosperma*), California figwort (*Scrophularia californica* subsp. *californica*), sticky monkeyflower (*Mimulus aurantiacus*), Pacific pea (*Laythrus vestitus* sensu lato), small-flowered trefoil (*Lotus micranthus*), sky lupine (*Lupinus nanus*), California tea (*Rupertia physodes*), morning glory (*Calystegia purpurata* subsp. *purpurata*) and California poppy (*Eschscholzia californica*).

Upon entering **Old Schoolhouse Gulch Road**, one encounters topographically, a complex series of ancient landslides..... rotational slumps and pull-aparts, re-activations, water course blockages with their marshy backings, transverse incisings..... all of which create an Escher-like environment that is inordinately rich in native biota. Addressing the botanical component of this equation, immediately upon leaving Swanton Road and proceeding up to where the ancillary Al Smith House driveway begins, the following arboreal and suffrutescent taxa margin our ascending journey: *Torreya californica*, *Aesculus californica*, *Umbellularia californica*, *Pinus radiata*, *Pseudotsuga menziesii* var. *menziesii*, *Notholithocarpus densiflorus*, *Quercus agrifolia* var. *agrifolia*, *Quercus parvula* var. *shrevei*, *Arbutus menziesii*, *Sequoia sempervirens*, *Heteromeles arbutifolia*, *Ceanothus thrysiflorus*, *Frangula californica* subsp. *californica*, *Vaccinium ovatum*, *Ribes menziesii*, *Sambucus nigra* subsp. *canadensis*, *Holodiscus discolor*, *Baccharis pilularis*, *Toxicodendron diversilobum*, *Rubus parviflorus*, *Mimulus aurantiacus* and *Eriophyllum confertiflorum* var. *confertiflorum*. Complimenting their overtopping brethren, the following annuals and herbaceous perennials, plus one quasi-woody vine (*Lonicera hispidula*) and a gravity-defying adventurous fern (*Polypodium calirhiza*), turn the understory into a texturally complex botanical tapestry: *Fritillaria affinis*, *Galium californicum*, *Galium porrigens* var. *porrigens*, *Galium triflorum*, *Pseudognaphalium californicum*, *Laythrus vestitus*, *Stachys bullata* (**possible intergrades with *Stachys ajugoides* var. *rigida*..... variations in ring-of-hairs alignment in corolla tube and positioning of corolla within calyx**), *Fragaria vesca*, *Rubus ursinus*, *Cynoglossum grande*, *Cardamine californica* var. *californica*, *Cardamine oligosperma*, *Nemophila parviflora* var. *parviflora*, *Satureja douglasii*, *Artemisia douglasiana*, *Ranunculus californicus*, *Ranunculus hebecarpus*, *Melica torreyana*, *Melica subulata*, *Deschampsia elongata*, *Festuca occidentalis*, *Bromus carinatus*, *Bromus vulgaris*, *Elymus glaucus* subsp. *glaucus*, *Solanum douglasii*, *Iris*

*douglasiana*, *Marah fabaceus*, *Juncus patens*, *Scrophularia californica* subsp. *californica*, *Heracleum maximum*, *Urtica dioica* subsp. *gracilis*, *Hesperocnide tenella*, *Luzula comosa*, *Anisocarpus madioides*, *Adiantum jordanii*, *Pteridium aquilinum* var. *pubescens*, *Dryopteris arguta*, *Polystichum munitum*, *Pentagramma triangularis*, *Osmorhiza berteroi*, *Rafinesquia californica*, *Claytonia perfoliata* subsp. *perfoliata*, *Nemophila parviflora* var. *parviflora*, *Phacelia malvifolia*, *Oxalis corniculata* subsp. *pilosa*, *Gamochaeta ustulata*, *Calystegia purpurata* subsp. *purpurata*, *Carex* aff. *subbracteata*, *Sisyrinchium bellum*, *Smilacina racemosa*, *Corallorhiza striata*, *Dichelostemma capitatum* subsp. *capitatum* and *Chlorogalum pomeridianum* var. *pomeridianum*. As a biodiversity **control/baseline**, note that this lower section of a highly reticulate landslide influenced drainage system, was spared the trauma of the 2009 Lockheed Fire..... but passing thru the **CalPoly Games Area**, which shows attributes of once being a marsh-like catchbasin, possibly carved out by a debris flow from further upslope and/or the result of a rotational slump and pull apart activity..... **we now enter the post-fire zone**. Forming an sinuous arc across the face of this slope for **circa 100 meters** and perpendicular in orientation to the prevailing drainage patterns, is a dirt road whose west-facing upper bank was directly impacted by the fire's ascending trajectory..... yet, as of 03/15/10, this area is revegetating with a degree of botanical diversity that compares favorably, with the lower and much longer **unburned** stretch of road! Restricting the height of the transect from the dirt road's inner edge and going directly upslope for 7 meters, yields the following native taxa: ***Sanicula gianonei*, pro.sp.nov., *Sanicula crassicaulis*, *Cynoglossum grande*, *Arbutus menziesii*, *Marah fabaceus*, *Claytonia perfoliata* subsp. *perfoliata*, *Claytonia parviflora* subsp. *parviflora*, *Trifolium willdenovii*, *Psilocarpus tenellus* var. *tenellus*, *Calystegia purpurata* subsp. *purpurata*, *Galium californicum*, *Galium triflorum*, *Epilobium ciliatum*, *Hesperocnide tenella*, *Anisocarpus madioides*, *Cirsium brevistylum*, *Lithophragma heterophyllum*, *Phacelia malvifolia*, *Cardamine californica* var. *californica*, *Cardamine oligosperma*, *Ranunculus hebecarpus*, *Quercus agrifolia* var. *agrifolia*, *Quercus parvula* var. *shrevei*, *Thalictrum polycarpum*, *Bromus carinatus* var. *carinatus*, *Deschampsia elongata*, *Elymus glaucus* subsp. *glaucus*, *Festuca elmeri*, *Melica torreyana*, *Nassella pulchra*, *Poa howellii*, *Juncus bufonius sensu lato*, *Juncus patens*, *Luzula comosa*, *Stachys ajugoides* var. *rigida*, *Stachys bullata*, *Holodiscus discolor*, *Rubus ursinus*, *Laythrus vestitus* var. *vestitus*, *Vicia americana* var. *americana*, *Actaea rubra*, *Smilacina stellata*, *Dichelostemma capitatum* subsp. *capitatum*, *Lonicera hispidula*, *Navarretia squarrosa*, *Scrophularia californica* (one specimen with flavistic flowers observed, making it the third such discovery of this uncommon forma for the watershed), *Fragaria vesca*, *Frangula californica* subsp. *californica*, *Oemleria cerasiformis*, *Mimulus aurantiacus*, *Dryopteris arguta*, *Polystichum munitum*, *Adiantum jordanii*, *Pteridium aquilinum* var. *pubescens*, *Heracleum maximum*, *Toxicodendron diversilobum*, *Nemophila parviflora*, *Aphanes occidentalis*, *Rubus ursinus*, *Heteromeles arbutifolia*, *Pseudotsuga menziesii* and *Notholithocarpus densiflorus*. Directly above the area encompassing the transect and extending upslope for circa 700(+) meters, are a complex series of exposed, interrupted grass dominated slopes, which are bookended by mixed conifer/oak woodlands and incipient chaparral (with Little Creek sub-watershed to the west and the upper parts of Winter and Archibald Creek drainage systems to the south)..... these supporting, in a series of isolated, near-vertical "perched meadows", a concentrated and diverse assemblage of "native" taxa, some of which are listed as rare within Santa Cruz County. These grassland dominated slopes, are plagued with numerous "non-native" species of European origin but still contain remnants of the original pre-european "native" flora, while some of the "hidden-from-view" meadows in counterpoint, go to the other extreme, being populated by a high percentage of "native" species!!! Grouped by families, here is a comprehensive overview of the "native" species found within this area which was **completely burned** by the 2009 Lockheed Fire: Pacific pea (*Lathyrus vestitus* sensu lato), short-podded trefoil (*Lotus humistratus*), small-flowered trefoil (*Lotus micranthus*), strigose trefoil (*Lotus strigosus*), Chilean trefoil (*Lotus wrangelianus*), yellow bush lupine (*Lupinus arboreus*), miniature lupine (*Lupinus bicolor*), sky lupine (*Lupinus nanus*), bearded clover (*Trifolium barbigerum* var. *barbigerum*), pinole clover (*Trifolium bifidum* var. *decipiens*), purple sack clover (*Trifolium depauperatum* var. *truncatum*), pin-point clover (*Trifolium gracilentum* var. *gracilentum*), double-headed clover (*Trifolium macraei*), maiden clover (*Trifolium microcephalum*), Valparaiso clover (*Trifolium microdon*), few-flowered clover (*Trifolium oliganthum*), Santa Cruz clover (***Trifolium buckwestiorum*..... a recently described****

clover species, the **TYPE SPECIMEN** originating on the lower portion of the Schoolhouse Ridge aka **Upper Pozzi Meadow**), tomcat clover (*Trifolium willdenovii*), American vetch (*Vicia americana* var. *americana*), Hasse's vetch (*Vicia hassei*)..... Johnny jump-up (*Viola pedunculata*)..... California man root (*Marah fabaceus*)..... morning glory (*Calystegia purpurata* subsp. *purpurata*)..... common linanthus (*Leptosiphon androsaceus*)..... **concentrated population of 300-400 plants dominating isolated "mini-meadow" perched on steep west-facing slope**)..... owl's clover (*Castilleja densiflora* sensu lato..... **an intermediate form, between the rose-purple, cinnamon-scented forma typica and the vanilla-scented *Orthocarpus noctuinus*** Eastwood analog of the Magic Triangle Ridge, was discovered growing in scattered drifts on the west-facing grass dominated slopes (04/24/10).....the linear-lobed bracts were basically greenish with the apices faintly colored an off-white and circa 1/2 the length of the mature flowers, with the calyces same-colored and the corollas also an off-white, the beak straight, purplish and pubescent..... the post-anthesis flowers colored a pale pink and one potential pollinating vector observed, namely a *Bombus* sp.) ..... sticky monkeyflower (*Mimulus aurantiacus*)..... rattlesnake weed (*Daucus pusillus*), cow-parsnip (*Heracleum maximum*), sweet cicely (*Osmorhiza berteroi*), footsteps-of-spring (*Sanicula arctopoides*), gambleweed (*Sanicula crassicaulis*), Gianone's sanicle (*Sanicula gianonei*, pro.sp.nov.)..... coyote mint (*Monardella villosa* sensu lato), yerba buena (*Satureja douglasii*), rigid hedge-nettle (*Stachys ajugoides* var. *rigida*)..... creeping hearts (*Pterostegia drymarioides*)..... chamise (*Adenostema fasciculatum*), western lady's mantle (*Aphanes occidentalis*), wood strawberry (*Fragaria vesca*), toyon (*Heteromeles arbutifolia*), ocean spray (*Holodiscus discolor*), oso berry (*Oemleria cerasiformis*), wood rose (*Rosa gymnocarpa*), California blackberry (*Rubus ursinus*)..... yarrow (*Achillea millefolium*), coast dandelion (*Agoseris grandiflora*), California sagebrush (*Artemisia californica*), mugwort (*Artemisia douglasiana*), coyote brush (*Baccharis pilularis*), Indian thistle (*Cirsium brevistylum*), California aster (*Corethrogyne filaginifolia*), golden yarrow (*Eriophyllum confertiflorum* var. *confertiflorum*), broad-leaved aster (*Eurybia radulina*), purple cudweed (*Gamochaeta ustulata*), sneezeweed (*Helenium puberulum*), coast tarplant (*Hemizonia corymbosa* subsp. *corymbosa*), threadstem madia (*Madia exigua*), slender tarweed (*Madia gracilis*), coast tarweed (*Madia sativa*), green cottonweed (*Micropus californicus* var. *subvestitus*)..... **the second documented population locally for this very rare taxon**), Santa Cruz microseris (*Microseris decipiens*), California cudweed (*Pseudognaphalium californicum*), pink everlasting (*Pseudognaphalium ramosissimum*), cotton batting plant (*Pseudognaphalium stramineum*), woolly marbles (*Psilocarphus tenellus* var. *tenellus*), California aster (*Symphotrichum chilense*)..... red maids (*Calandrinia ciliata*)..... California poppy (*Eschscholzia californica*), cream cups (*Platystemon californicus*)..... American winter cress (*Barbarea orthoceras*), common milkmaids (*Cardamine californica* var. *californica*), popweed (*Cardamine oligosperma*), narrow-leaved fringe-pod (*Thysanocarpus laciniatus*)..... **the miner's lettuce aka *Claytonia perfoliata* complex, is represented within this post-burn environment by a vast array of forms ascribable in varying degrees to:** slender miner's lettuce (*Claytonia parviflora* subsp. *parviflora*), miner's lettuce (*Claytonia perfoliata* subsp. *perfoliata*) and red-stemmed miner's lettuce (*Claytonia rubra* subsp. *depressa*)..... hairy honeysuckle (*Lonicera hispidula*), snowberry (*Symphoricarpos albus* var. *laevigatus*) ..... blue elderberry (*Sambucus nigra* subsp. *canadensis*)..... recently removed from the Caprifoliaceae and placed in the **ADOXACEAE**)..... California verbena (*Verbena lasiostachys* var. *lasiostachys*)..... Douglas's iris (*Iris douglasiana*), blue-eyed grass (*Sisyrinchium bellum*)..... Pacific madrone (*Arbutus menziesii*), brittle-leaf manzanita (*Arctostaphylos crustacea* sensu lato)..... California brome (*Bromus carinatus* var. *carinatus*), pine grass (*Calamagrostis rubescens*), California oat grass (*Danthonia californica* sensu lato... variable taxon, with forms representing both var. *americana* and var. *californica* present), slender hairgrass (*Deschampsia elongata*), California wild rye (*Elymus glaucus* subsp. *glaucus*), junegrass (*Koeleria macrantha*), California melic (*Melica californica*), Torrey's melic (*Melica torreyana*), foothill needlegrass (*Nassella lepida*), purple needlegrass (*Nassella pulchra*), pine bluegrass (*Poa secunda* subsp. *secunda*), tall trisetum *Trisetum canescens*)..... Hooker's fairy bells (*Prosarte hookeri*)..... soap plant (*Chlorogalum pomeridianum* var. *pomeridianum*)..... white globe lily (*Calochortus albus*)..... dwarf brodiaea (*Brodiaea terrestris* subsp. *terrestris*), blue dicks (*Dichelostemma capitatum* subsp. *capitatum*)..... poison oak (*Toxicodendron diversilobum*)..... Cleveland's cryptantha (*Cryptantha clevelandii*), minute-flowered cryptantha (*Cryptantha micromeres*), hound's tongue



(*Cynoglossum grande*), whispering bells (*Emmenanthe penduliflora*), white baby-blue-eyes (*Nemophila menziesii* var. *atomaria*), small-flowered nemophila (*Nemophila parviflora* var. *parviflora*), stinging phacelia (*Phacelia malvifolia*)..... coast live-oak (*Quercus agrifolia* var. *agrifolia*), forest live-oak (*Quercus parvula* var. *shrevei*)..... sun cup (*Camissonia ovata*), four-spotted godetia (*Clarkia purpurea* subsp. *quadrivulnera*), farewell-to-spring (*Clarkia rubicunda*)..... California bedstraw (*Galium californicum* subsp. *californicum*), climbing bedstraw (*Galium porrigens* var. *porrigens*), sweet-scented bedstraw (*Galium triflorum*)..... common wood rush (*Luzula comosa*)..... rein orchid (*Piperia* sp.)..... shooting star (*Dodecatheon* sp.)..... pale plectritis (*Plectritis brachystemon*..... at least two forms of this taxon occur within area under discussion and both have flowers measuring between 1.5-3.5 mm in width and are pale pink in coloration: **population #1** has achenes winged and **population #2** has achenes lacking wings and smaller flowers)..... pipestems (*Clematis lasiantha*), California buttercup (*Ranunculus californicus*)..... woodland star (*Lithophragma affine*)..... bracken (*Pteridium aquilinum* var. *pubescens*)..... California maidenhair (*Adiantum jordanii*)..... wood fern (*Dryopteris arguta*)..... toad rush (*Juncus bufonius*..... **extremely variable as to stature, and how much is due to environmental factors needs to be studied locally**), common rush (*Juncus patens*)..... knobcone pine (*Pinus attenuata*), Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*)..... heterocodon (*Heterocodon rariflorum*)..... California water starwort (*Callitriche marginata*)..... chaffweed (*Anagallis minima*..... now placed in the family **MYRSINACEAE**)..... California plantain (*Plantago erecta*..... one population growing on post-burn grassy slope producing flowering stems **26 cm** in height)..... big-leaf maple (*Acer macrophylla*)..... dwarf pearlwort (*Sagina apetala*) and Fremont's star lily (*Toxicoscordion fremontii*).

While the utilization of terms and phrases like "biodiversity" and "areas of botanical richness" are usually applied to scenarios where the human impact has been minimally felt, just perusing a small section of Swanton Road can yield quite the opposite result..... in this particular case, the west-facing inner roadbank extending upslope circa 10 meters from the tarmac's edge, and stretching ribbon-like between Winter and Archibald Creeks. Here is a comprehensive review of the native taxa found growing within this narrowly defined section of our botanical journey, illustrating on the micro level what surprises await the botanical sleuth elsewhere in remoter parts of the watershed: hoary bowlesia (*Bowlesia incana*), California figwort (*Scrophularia californica* subsp. *californica*), morning glory (*Calystegia purpurata* subsp. *purpurata*), wood strawberry (*Fragaria vesca*), California blackberry (*Rubus ursinus*), coyote mint (*Monardella villosa* sensu lato), mountain dandelion (*Agoseris grandiflora*), coast live-oak (*Quercus agrifolia*), forest live-oak (*Quercus parvula* var. *shrevei*), toyon (*Heteromeles arbutifolia*), golden yarrow (*Eriophyllum confertiflorum* var. *confertiflorum*), yarrow (*Achillea millefolium*), poison oak (*Toxicodendron diversilobum*), climbing bedstraw (*Galium porrigens* var. *porrigens*), wood fern (*Dryopteris arguta*), California maidenhair (*Adiantum jordanii*), California buckeye (*Aesculus californica*), mugwort (*Artemisia douglasiana*), California man root (*Marah fabaceus*), stinging phacelia (*Phacelia malvifolia*), California aster (*Symphotrichum chilense*), California hedge-nettle (*Stachys bullata*), California bay laurel (*Umbellularia californica*), hound's tongue (*Cynoglossum grande*), Pacific pea (*Laythrus vestitus* sensu lato), miner's lettuce (*Claytonia perfoliata* sensu lato), western nettle (*Hesperocnide tenella*), goldback fern (*Pentagramma triangularis* subsp. *triangularis*), California polypody (*Polypodium californicum*, sensu lato), popweed (*Cardamine oligosperma*), Torrey's melic (*Melica torreyana*), California larkspur (*Delphinium californicum* subsp. *californicum*), giant trillium (*Trillium chloropetalum*), bracken (*Pteridium aquilinum* var. *pubescens*), slim Solomon's seal (*Smilacina stellata*), Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*), oso berry (*Oemleria cerasiformis*), American winter cress (*Barbarea orthoceras*), Gianone's sanicle (*Sanicula gianonei*, pro.sp.nov.), Douglas's nightshade (*Solanum douglasii*), redwood (*Sequoia sempervirens*), western sword fern (*Polystichum munitum*), checker lily (*Fritillaria affinis* var. *affinis*), cow-parsnip (*Heracleum maximum*), blue elderberry (*Sambucus nigra* subsp. *canadensis*), California coffeeberry (*Rhamnus californica* subsp. *californica*), coyote brush (*Baccharis pilularis*), sticky monkeyflower (*Mimulus aurantiacus*), soap plant (*Chlorogalum pomeridianum* var. *pomeridianum*), straggly gooseberry (*Ribes divaricatum* var. *pubiflorum*), California wild rye (*Elymus glaucus* subsp. *glaucus*), California sagebrush (*Artemisia californica*), Gianone everlasting (*Pseudognaphalium gianonei*,

pro.sp.nov.), hairy honeysuckle (*Lonicera hispidula*), giant vetch (*Vicia gigantea*), California bedstraw (*Galium californicum* subsp. *californicum*), gambeweed (*Sanicula crassicaulis*), narrow-leaved fringedpod (*Thysanocarpus laciniatus*), nodding brome (*Bromus vulgaris*), sweet cicely (*Osmorhiza berteroi*), small-flowered nemophila (*Nemophila parviflora* var. *parviflora*), creeping hearts (*Pterostegia drymarioides*) and yerba buena (*Satureja douglasii*).

A Rosaceae is a Rosaceae is a Rosaceae or the case of the ant and the elephant! In terms of stature extremes, it is hard to imagine two more polar opposites, than the western lady's mantle (*Aphanes occidentalis*), a diminutive annual whose adult biomass often can fit, with room to spare, on the nail of one's little finger and the toyon (*Heteromeles arbutifolia*), a 6+ meters high sub-tree with ash-gray bark and fruiting panicles of luminous scarlet pomes. Even roadside pull-offs can create micro-habitats that concentrate native species within a narrowly defined, repeatedly disturbed area. **Depressions left from tire tracks can act as vernal pool facsimiles with the elevated horizontal zones in between functioning as micro-meadows.** One such quasi-natural environment within this section of our botanical purview contains the following mélange of locals: bracted popcorn-flower (*Plagiobothrys bracteatus*), western lady's mantle (*Aphanes occidentalis*), woolly marbles (*Psilocarphus tenellus* var. *tenellus*), California water starwort (*Callitriche marginata*), dwarf pearlwort (*Sagina apetala*) and a variant of toad rush (*Juncus bufonius*) with filiform flowering culms.

Within and contiguous to the Scotts Creek Watershed, the genus *Agrostis* (family Poaceae) is represented by several species complexes. These need to have comprehensive studies done to clarify their component taxa, several of which have been given but not currently recognized species, subspecies and varietal status.

The *Agrostis blasdalei* complex:

Document all local populations and **collate with the extensive local collections made circa twenty-five years ago and deposited at the Jepson Herbarium, UC Berkeley.**

Are the populations south of the Golden Gate sufficiently distinct genetically to warrant subspecies status? Comparative studies on a molecular level need to be undertaken plus a detailed examination (a) on foliar morphology and epidermal coloration, (b) caespitose versus distinctly rhizomatous mode of growth as displayed in seasonally unstable micro-dune habitat, (c) stature: prostrate through erect-ascending, (d) open or closed breeding systems, (e) anther length and color both fresh and dry, (f) palea gestalt and venation or lack thereof plus ratio of palea length to that of lemma, (g) presence or absence of callus-hairs, (h) tardily deciduous or caducous mature spikelet behavior and (i) do statistical analysis of caryopsis morphology and a comparison study with *Agrostis densiflora* and *Agrostis exarata*.

Study sympatric associations with related native species and the putative role of introgressive hybridization in population variability:

(A) Coastal headland population designated "Agrostis Rectangle", southeast of "China Ladder Gulch", circa twenty-five years ago comprised in excess of 1,000 extremely variable taxa growing intermixed with and proximal to *Agrostis densiflora* and *Agrostis exarata* var. *exarata*.

(B) The interior grasslands between the east-fork of "Cookhouse Gulch" and the former "H-H Ranch" hay barn, have yielded up four separate sites, where *Agrostis blasdalei* x *Agrostis exarata* var. *monolepis* hybrids have been observed. One site, designated "Sandy-bottom Reservoir", contained 30-40 prostrate taxa (growing sympatrically with a prostrate *Agrostis blasdalei* and an erect *Agrostis exarata* var. *monolepis*) which due to their superficial resemblance to *Agrostis densiflora*, were given the working name of *Agrostis "pseudo-densiflora"*. These + stable (persistent) taxa appear to be crossing amongst themselves and possibly backcrossing (receiving genetic material) from an erect *Agrostis exarata* var. *monolepis*.

Endosperm: liquid or solid at maturity and not only pertaining to *Agrostis blasdalei* but other native species of *Agrostis* in the watershed as well.

Is the gene flow principally unidirectional when the growth pattern of one hybrid complex constituent is erect and the other is + prostrate, with wind being the specific vector for pollen conveyance (anemophily)?

Since fertile hybrids are produced with both *Agrostis densiflora* and *Agrostis exarata* var. *monolepis*, a phylogenetic analysis needs to be undertaken. Does *Agrostis blasdalei* share a common ancestor with the *Agrostis densiflora/exarata* alliance, is it derived from one of these two species or does it represent an end product of a parallel relictual line?

Where is the evolutionary point of origin, biogeographically speaking for *Agrostis blasdalei*, and what affinities, if any, does it have with *Agrostis breviculmis* Hitchc. of Peru?

Chloroplast and other DNA site studies need to be done for the entire disjunctive range of *Agrostis blasdalei*, from Mendocino to Monterey Counties, to see what gene flow and corresponding mutation rate patterns occur.

Encompassing most of the area viewed within this traversal, including the coastal sage scrub and the mixed evergreen/coniferous woodlands that insinuate themselves into the chaparral, colonies of native bent grass (genus *Agrostis*) occur, which combine key characters (in the literature at least) of both Hall's bent grass (*Agrostis hallii*) and leafy bent grass (*Agrostis pallens*) and possibly represent a long-term reticulate pattern of hybridization, with each recombination of genetic material stabilized by isolation and asexual (vegetative) colonization. In determining boundaries between naturally occurring variations attributable to each species and the expression of traits resulting from interspecific gene flow, study and compare the various populations using the type descriptions and the following key characters based on "in situ" observations:

Stature: culms growing up through shrubbery often display a totally different gestalt than free standing adjacent innovations of the same plant.

Ligules (specifically those of upper leaves): 2-3(5) mm. long, sub-entire and + truncate (*A. pallens* influence) versus 5-7(10+) mm. long, acuminate and often deeply lacerate (*A. hallii* influence).

Inflorescences: length, measured from lowest branch to apex, can exceed 30+ cm. in putative intergrades/hybrids.

Glumes: length, between the various populations within the watershed tends to be fluid, ranging from (2)2.5-3.0 mm. long (*A. pallens* influence) through 5-6 mm. long (*A. hallii* influence).

Lemmas: in the majority of populations studied, they averaged out at 3.0 mm. long.

Awns: when present, they ranged in length from 1.5-3+ mm., straight or bent, often conspicuously exceeding the glumes. In some populations, where awned lemmas were present (*A. pallens* influence), all other visible traits reflected *A. hallii* influence. Study placement and point of attachment on back of lemma.

Callus-hairs: variable, ranging from 0.5-2.1 mm. in length, but not necessarily correlating with other features used in keys to separate *A. hallii* from *A. pallens*.

Anthers: study color and length when fresh and length when dry.

Palea: presence/absence, length ratio to lemma, entire or marginally modified, with or without venation.

Endosperm: semi-liquid or solid at maturity.

The *Agrostis microphylla* complex:

- (1) Plants growing on seasonally moist cliff faces overlooking the southern half of Greyhound Rock State Beach (pressed and deposited at the Jepson Herbarium, UC Berkeley), need to be analyzed and carefully compared with the type of *Agrostis microphylla*. Since the taxa in question possess a palea and the overall descriptions for *Agrostis microphylla* state palea wanting/none, what taxonomic value can be assigned to the presence/absence of such an organ? What breeding systems are at play within these

isolated populations? Are these obligate selfers, creating in effect, a constellation of “micro-species”, occupying proximal but separate vertical niches?

- (2) Less than ½ mile due east of the “Greyhound Rock” populations, on the inland side of Highway 1 (growing on exposed mudstone), was a singular colony of what in gross morphology, appeared to be a facsimile of *Agrostis aristiglumis* Swallen. This highly localized member of the *Agrostis microphylla* retinue was described from an isolated population growing on an outcrop of diatomaceous shale (Monterey Series) in Marin County on the Point Reyes Peninsula. Several pressings of the “*aristiglumis*” analogue were made and deposited at the Jepson Herbarium, UC Berkeley. The distinctive lateral nerves of the lemma, which are excurrent as conspicuous awns, coupled with the presence of a palea, the overall glumes to lemma length ratio plus awn placement on glumes and back of lemma, makes this biotype along with the “Greyhound Rock” colonies, candidates for an in-depth study of the mechanics underlying speciation, distribution patterns and maintenance of genetic integrity.

A roadside assemblage of intermediate fiddleneck (*Amsinckia menziesii* var. *intermedia*), stinging phacelia (*Phacelia malvifolia*), slender tarweed (*Madia gracilis*), soap plant (*Chlorogalum pomeridianum* var. *pomeridianum*), gambleweed (*Sanicula crassicaulis*), miner’s lettuce (*Claytonia perfoliata* subsp. *perfoliata*) and California man root (*Marah fabaceus*), could be easily passed by and casually viewed as “more of the same” but within this snapshot of local biodiversity, a concentrated population of ***Plectritis ciliosa* subsp. *insignis*** resides. Belonging to the Valerian Family (Valerianaceae), **subsp. *insignis*** can be distinguished from other *Plectritis* species encountered within the watershed, by possessing pink corollas, circa 1.5-3.5 mm long with two reddish spots at the juncture between the upper and lower lips and having a spur shorter than the ovary. Since this species occurrence within Santa Cruz County has not been noted in Randall Morgan's recent (2005) "An Annotated Checklist of the Vascular Plants of Santa Cruz County, California", in situ seed collections have been made and deposited at the UCSC Arboretum.

Several species historically documented as occurring within the watershed and its environs, remain to be rediscovered and may still exist in some isolated and overlooked niche: a listing of some of those “neither here nor there” taxa would include alkaline marsh butterweed (*Senecio hydrophilus*), white-rayed pentachaeta (*Pentachaeta bellidiflora*), varnish leaf (*Ceanothus velutinus* var. *hookeri*), purslane speedwell (*Veronica peregrina* subsp. *xalapensis*), marsh trefoil (*Lotus oblongifolius* var. *oblongifolius*), Bentham’s trefoil (*Lotus benthamii*), swamp thistle (*Cirsium douglasii* var. *douglasii*), San Francisco gumplant (*Grindelia hirsutula* var. *maritima*), rough bent grass (*Agrostis scabra*) and pink sand-verbena (*Abronia umbellata* subsp. *umbellata*).

Between Little Creek Bridge and the ridge separating the Molino Creek drainage, several additional species are visually captured, identified, and added to the checklist of encountered roadside natives. Growing in a sheltered gulchlet, perpendicular to the roadway, ocean spray (*Holodiscus discolor*) is a member in good standing of a group of local shrubs that when leafless are rendered invisible to the unfocused viewer.

**Notorious for disrespecting the genetic integrity of its relatives, yellow bush lupine (*Lupinus arboreus*), has formed discrete alliances in the watershed, with both summer lupine (*Lupinus formosus* var. *formosus*) and Lindley’s varied lupine (*Lupinus variicolor*) and most likely, with broad-leaved lupine (*Lupinus latifolius* var. *latifolius*), the last-named resulting in a distinctive local taxon tentatively referable to (*Lupinus propinquus*) described by E. L. Greene in 1893.** Half hidden by the roadside grasses, miniature lupine (*Lupinus bicolor*) tries valiantly to elevate its flower heads above the competing greenery. Upon closer inspection, the overlooked basal rosettes, with opposite, glabrous, twice ternately dissected leaves featuring petiole bases with expanded hyaline margins and found growing beneath California sagebrush (*Artemisia californica*), prove to be the locally uncommon wild celery (*Apiastrum angustifolium*). Accenting the deep drainage ditch, between the roadbank and adjacent cultivated fields, broad-leaved cattail (*Typha latifolia*) shares its sinuous habitat with various species of

waterfowl, the most likely seed conveyors of this cosmopolitan species, which forms extensive colonies in nearby Scotts Creek Marsh. Growing roadside in sandy soil and superficially passing for a narrow-leaved variant of its cousin California aster, western goldenrod (*Euthamia occidentalis*) also aggressively colonizes alluvium-rich areas both within and adjacent to the Scotts Creek Marsh. Shadowing the lower portion of Swanton Road and threading its way through other native and introduced grass species, creeping rye (*Leymus triticoides*), luxuriates within the western confines of the Scotts Creek Marsh and forms diffuse scatterings on the coastal prairie where siliceous terrace deposits prevail.

Some seasons, farewell-to-spring (*Clarkia rubicunda*), replaces the chlorophyll saturated vernal lushness with slopes a shimmering wall of mauve, while another representative of the Evening Primrose Family (Onagraceae), paniced willow herb (*Epilobium brachycarpum*), nearing the closure of our journey, recedes into the background vegetation with its naked, exfoliating stems, diffuse, attenuate branches, and numerous but diminutive flowers. With linear non-auriculate cauline leaves and delicate inflorescences with filiform pedicels supporting crenulate silicles, narrow-leaved fringedpod (*Thysanocarpus laciniatus*), a rare species within the county, is visually lost within a rank population of miner's lettuce (*Claytonia perfoliata* subsp. *perfoliata*), distinguished from the typical white-flowered forms by its pink tinged flowers. Sporadically occurring California larkspur (*Delphinium californicum* subsp. *californicum*), nestled within and occasionally rising above the hillside shrubbery, has traded eye-catching coloration for inflorescence size and number of flowers, these often exceeding fifty!

With rhizomes precariously embedded in rock outcroppings and often shaded by suffrutescent members of the coastal scrub, coffee fern (*Pellaea andromedifolia*) imparts an exotic impression to a parched, wind-buffed exposure. Encountering a concentrated population of variable California melic (*Melica californica*), displaying parchment-textured florets akin to miniaturized Japanese paper lanterns, purple needlegrass (*Nasella pulchra*), with bent and twisted persistent awns, 7-9 times the lemma length and sister species foothill needlegrass (*Nasella lepida*), possessing half the stature of its anthocyanic infused sibling species, gives the traveler a cumulative awareness of the richness and diversity of the Grass Family (Poaceae) found within the Scotts Creek environs. Adding structural contrast to the vertical array of surrounding vegetation, eleven members of the morphologically diverse Asteraceae.....Biolettii's cudweed (*Pseudognaphalium biolettii*), California cudweed (*Pseudognaphalium californicum*), Gianone everlasting (*Pseudognaphalium gianonei*, pro.sp.nov.), pink everlasting (*Pseudognaphalium ramosissimum*), California goldenrod (*Solidago velutina* subsp. *californica*), coyote brush (*Baccharis pilularis*), California sagebrush (*Artemisia californica*), mugwort (*Artemisia douglasiana*), golden yarrow (*Eriophyllum confertiflorum* var. *confertiflorum*), California aster (*Symphotrichum chilense*) and yarrow (*Achillea millefolium*) challenge the passing observer to connect the phylogenetic dots and discern the familial relationship between this native nonet. An aesthetically fascinating, genetically complex and amenable to cultivation succulent, that both greets and bids farewell to us on this eco-tour, is sea lettuce (*Dudleya caespitosa*)..... while variable in leaf morphology, the preponderance of plants encountered share a vibrant, grass-green coloration with a minority colored a dull gray (inherited from diploid ancestor *Dudleya farinosa*), but sharing the base of this ancient landslide with our Poaceae trio and the aforementioned Asteraceae quartet, is a small population with uniformly chalky-gray herbage and eminently worthy of cultivation (both divisions and seed repose up at the UCSC Arboretum). **Getting up close and personal with select taxa growing on this humungous rotational slump/pull apart (guiding Swanton Road in a westernly direction then abruptly turning northward) can yield some fascinating results: from a purely olfactory perspective, two plant families offer up a banquet of foliar scents that would be missed from just visually perusing the road bank with a quick drive/walk by..... representing the Asteraceae: *Achillea millefolium*, *Artemisia californica*, *Artemisia douglasiana*, *Eriophyllum confertiflorum* var. *confertiflorum*, *Pseudognaphalium biolettii*, *Pseudognaphalium californicum*, *Pseudognaphalium gianonei*, pro.sp.nov., *Pseudognaphalium ramosissimum* and *Symphotrichum chilense*..... while fewer numerically, the Lamiaceae's contributions are no less rewarding, with *Monardella villosa* sensu lato displaying remarkable variation throughout the watershed, *Satureja douglasii* and *Stachys ajugoides* var. *rigida* = *Stachys***

***rigida* exuding a pungency not to everyone's liking!**

Marching down the steep, topographically irregular slopes of tributary gulches feeding into the flood plain of the lower Scotts Creek and reveling in the alluvium rich bottoms, California buckeye (*Aesculus californica*) rivals the red alder (*Alnus rubra*) during the dormant season for the intricacy of its branching patterns and easily bests all competition save the Pacific madrone (*Arbutus menziesii*) in inflorescence presentation and fragrance, not to mention toxicity of nectar! **Several long established specimens of *Aesculus californica* been have observed within the watershed, producing seasonally, a certain percentage of seedlings displaying a chlorophyll deficit, with foliage ranging from a muted gold to off-white with a pinkish cast and like colored veining!** Sister species to previously encountered hill star (*Lithophragma heterophyllum*), with a campanulate, basally truncate hypanthium and axillary bulblets in upper bracts of inflorescence, **woodland star (*Lithophragma affine*)**, forming scattered colonies along the terminal portion of our traversal, resists the adornment of asexual propagules and sports an obconic hypanthium instead.

Although artificially straightened more than a century ago, Archibald Creek's original course, based on existing distribution patterns of vegetation, apparently veered sharply in a southwesterly orientation, where water still flows..... **overlooking this agriculturally modified drainage system, an extensive population of California buckeye (*Aesculus californica*) obscures the downslope's topography, by forming a seamless tapestry of interwoven canopies and taking on the appearance of a gargantuan colony of brain coral.** Sheltered within a grove of shining (*Salix lucida* subsp. *lasiandra* = *Salix lasiandra* var. *lasiandra*) and arroyo (*Salix lasiolepis*) willows, red elderberry (*Sambucus racemosa* var. *racemosa*), straggly gooseberry (*Ribes divaricatum* var. *pubiflorum*), giant vetch (*Vicia gigantea*), and cow-parsnip (*Heracleum lanatum*) luxuriate, while the drainage ditch abutting Swanton Road hosts umbrella sedge (*Cyperus eragrostis*), watercress (*Rorippa nasturtium-aquaticum* = *Nasturtium officinale*), flowering quillwort (*Lilaea scilloides*) and forming a green skin on the water's surface, smaller duckweed (*Lemna minor*) and directly across the tarmac, colonies of California wild rose (*Rosa californica*) and California aster (*Symphotrichum chilense*) weave tapestries tinted mauve and pink against the backdrop of a red alder (*Alnus rubra*) lined Scotts Creek. The upper portion of the Archibald Creek sub-watershed, is defined in part, by south facing near-vertical cliff faces shaped by landslides, capped with exposed grasslands interfacing with mixed oak/coniferous woodlands and margining manzanita-defined zones of chaparral..... these often spilling downwards, softening the verticality of the slopes, basally being less severe in inclination but treacherous to navigate because of loose rocky debris. Along this narrow strip, when earth and sky abruptly meet, a well-defined example of "disjunctive chaparral" can be found, in full post-fire (03/15/10) botanical display. As with the watershed in general, even this exposed aerie hosts a diverse and in one case, new species for the area, namely whispering bells (*Emmenanthe penduliflora*). **Here is a partial listing of the native species concentrated within this isolated island of chaparral, which was totally burned in the 2009 fire: yerba santa (*Eriodictyon californicum*), coyote mint (*Monardella villosa* sensu lato), broad-leaved aster (*Eurybia radulina*), white globe lily (*Calochortus albus*), California tea (*Rupertia physodes*), brittle-leaf manzanita (*Arctostaphylos crustacea* sensu lato), chamise (*Adenostema fasciculatum*), California huckleberry (*Vaccinium ovatum*), golden chinquapin (*Chrysolepis chrysophylla* var. *minor*), pine grass (*Calamagrostis rubescens*), stinging lupine (*Lupinus hirsutissimus*), sky lupine (*Lupinus nanus*), Cleveland's cryptantha (*Cryptantha clevelandii*), minute-flowered cryptantha (*Cryptantha micromeres*), yarrow (*Achillea millefolium*), tall layia (*Layia hieracioides*), Torrey's melic (*Melica torreyana*), slender fescue (*Vulpia octoflora* var. *octoflora*), California bedstraw (*Galium californicum*), climbing bedstraw (*Galium porrigens* var. *porrigens*), California brome (*Bromus carinatus* var. *carinatus*), California wild rye (*Elymus glaucus* subsp. *glaucus*), Hasse's vetch (*Vicia hassei*), small-flowered nemophila (*Nemophila parviflora* var. *parviflora*), Venus's looking-glass (*Triodanis biflora*), coyote brush (*Baccharis pilularis*), creeping hearts (*Pterostegia drymarioides*), hairy wood sorrel (*Oxalis corniculata* subsp. *pilosa*), bush poppy (*Dendromecon rigida*), short-podded trefoil (*Lotus humistratus*), Bioletti's trefoil (*Lotus junceus* var.**

*biolettii* = *Acmispon junceus* var. *biolettii*), small-flowered trefoil (*Lotus micranthus* = *Acmispon parviflorus*), strigose trefoil (*Lotus strigosus* = *Acmispon strigosus*), yerba buena (*Satureja douglasii*), knobcone pine (*Pinus attenuata*), Douglas's iris (*Iris douglasiana*), sweet cicely (*Osmorhiza berteroi*), pink everlasting (*Pseudognaphalium ramosissimum*), maiden clover (*Trifolium microcephalum*), common milkmaids (*Cardamine californica* var. *californica*), popweed (*Cardamine oligosperma*), wild celery (*Apiastrum angustifolium*), California chicory (*Rafinesquia californica*), woodland madia (*Anisocarpus madioides*), rattlesnake weed (*Daucus pusillus*), toyon (*Heteromeles arbutifolia*), hound's tongue (*Cynoglossum grande*), Fremont's star lily (*Toxicoscordion fremontii*), gambleweed (*Sanicula crassicaulis*), common rush (*Juncus patens*), downy buttercup (*Ranunculus hebecarpus*), redwood (*Sequoia sempervirens*), California milkwort (*Polygala californica*), twining snapdragon (*Antirrhinum kelloggii*), Indian thistle (*Cirsium brevistylum*) and morning glory (*Calystegia purpurata* subsp. *purpurata*).

Between Archibald and Queseria Creeks, **two small but botanically diverse west-facing watersheds exist**, drained by seasonal streamlets emptying into the bottomland paralleling Scotts Creek. From Swanton Road these two neglected areas appear as narrow, deeply incised gulches flanked by steep, often near-vertical slopes, terminating in broad alluvial fans as they approach the flood plain. As with the complex of gulches perpendicular to Highway 1, which drain the coastal prairie between Greyhound Rock and Scotts Creek Beaches, slope orientation often markedly determines the vegetation patterns present. The gulch closest to Queseria Creek, which I will call **George Valentine Gulch** after an eccentric hermit who lived there during the post WWII years, hosts an extensive population of bitter cherry (*Prunus emarginata*), the second recently discovered site within the Scotts Creek Watershed for this decidedly uncommon species county wide! In terms of **slope orientation** and this drupaceous member of the Rose Family (Rosaceae), the population found growing along the lower portion of Queseria Creek is **established on the moist northwest facing slopes (in part, directly overlooking Swanton Road)**, while the George Valentine Gulch counterpart is growing within the moist gulch bottom and also more extensively, on the **wind-buffed west facing slopes**, in association with California sagebrush (*Artemisia californica*), sticky monkeyflower (*Mimulus aurantiacus*), stinging phacelia (*Phacelia malvifolia*), yellow bush lupine (*Lupinus arboreus*), yarrow (*Achillea millefolium*), coyote brush (*Baccharis pilularis*), lizard tail (*Eriophyllum staechadifolium*), deerweed (*Lotus scoparius* var. *scoparius*), climbing bedstraw (*Galium porrigens* var. *porrigens*), intermediate fiddleneck (*Amsinckia menziesii* var. *intermedia*), gambleweed (*Sanicula crassicaulis*), coffee fern (*Pellaea andromedifolia*), grassland gilia (*Gilia clivorum*), *Eriogonum latifolium/nudum* intergrades (attaining shrub-like status circa 1 meter in height, coyote mint (*Monardella villosa* sensu lato) and poison oak (*Toxicodendron diversilobum*). Ironically, three deciduous members of the rose family (**Rosaceae**) can be found growing sympatrically on this slope, and when in full-leaf mode and flowering, showing no apparent relationship to each other.... the shrubs in question being *Holodiscus discolor*, *Oemleria cerasiformis* and *Prunus emarginata*. Apparently, both populations of bitter cherry (*Prunus emarginata*) are expanding their range clonally as well as by dispersed fruits, those within lower Queseria Creek varying considerably as to stature, foliar morphology and inflorescence gestalt. Other species of interest, both uncommon and widespread, that populate the George Valentine Gulch, are: (1) scattered colonies of wild celery (*Apiastrum angustifolium*), forming delicate traceries hidden from view within the coastal scrub, often growing at the bases of coyote brush and California sagebrush, (2) adorning exposed but moisture retentive rocky slopes, their seasonal rosettes held steadfast by slender rhizomes, fragmentary patches of California saxifrage (*Saxifraga californica*) plus two cousins.... woodland star (*Lithophragma affine*) and hill star (*Lithophragma heterophyllum*), (3) lost in the welter of competing vegetation and fractured mudstone, clusters of sea lettuce (*Dudleya caespitosa*) approach the year's end with their biomass often radically reduced through herbivory, (4) **four aromatically distinct** species of native cudweed: Bioletti's cudweed (*Gnaphalium bicolor* = *Pseudognaphalium biolettii*), California cudweed (*Gnaphalium californicum* = *Pseudognaphalium californicum*), pink everlasting (*Gnaphalium ramosissimum* = *Pseudognaphalium ramosissimum*) and scattered plants of Gianone everlasting (*Gnaphalium gianonei*, pro. sp. nov. = *Pseudognaphalium gianonei*, pro. sp. nov.), (5) grass species

galore: *Agrostis hallii/pallens* intergrades, foothill needlegrass (*Nasella lepida*), California brome (*Bromus carinatus* var. *carinatus*), California fescue (*Festuca californica*), Howell's bluegrass (*Poa howellii*), pine bluegrass (*Poa secunda* subsp. *secunda*), California wild rye (*Elymus glaucus* subsp. *glaucus*) and Torrey's melic (*Melica torreyana*), (6) a ground-hugging sanicle (*Sanicula arctopoides*) and Paul Bunyanesque larkspur (*Delphinium californicum* subsp. *californicum*), while (7) overlooking the upper reaches of this abbreviated gulch and exposed to the unrelenting forces of the offshore winds, **isolated specimens** of California huckleberry (*Vaccinium ovatum*) and maul oak (*Quercus chrysolepis*) have adjusted by reducing their vertical status, in the maul oak's case, with one old specimen hugging the hillside with a copycat coast live-oak (*Quercus agrifolia* var. *agrifolia*). Acting as an environmental modifier, a wind sculpted Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*) colony shades the west facing central portion of the gulch, creating a moisture-retentive habitat favored by ocean spray (*Holodiscus discolor*), oso berry (*Oemleria cerasiformis*), arroyo willow (*Salix lasiolepis*) and, surprisingly, a small population of tan-oak (*Lithocarpus densiflorus* var. *densiflorus* = *Notholithocarpus densiflorus*) with reduced leaves, which from a distance, simulate the nearby coast live-oaks!

This is an addendum, further elaborating on the native species diversity found within the "micro" sub-watershed given the appellation of George Valentine Gulch: Gianone sanicle (*Sanicula gianonei*, pro.sp.nov.), western lady's mantle (*Aphanes occidentalis*), goldback fern (*Pentagramma triangularis* subsp. *triangularis*), wood fern (*Dryopteris arguta*), California maidenhair (*Adiantum jordanii*), western sword fern (*Polystichum munitum*), California polypody (aff. *Polypodium californicum*), morning glory (*Calystegia purpurata* subsp. *purpurata*), downy buttercup (*Ranunculus hebecarpus*), tall layia (*Layia hieracioides*), California bedstraw (*Galium californicum* subsp. *californicum*), Douglas's nightshade (*Solanum douglasii*), soap plant (*Chlorogalum pomeridianum* var. *pomeridianum*), blue dicks (*Dichelostemma capitatum* subsp. *capitatum*), California figwort (*Scrophularia californica* subsp. *californica*), western nettle (*Hesperocnide tenella*), woolly marbles (*Psilocarphus tenellus* var. *tenellus*), wood strawberry (*Fragaria vesca*), western rush (*Juncus occidentalis*), common rush (*Juncus patens*), purple cudweed (*Gamochaeta ustulata*), hairy honeysuckle (*Lonicera hispidula*), sun cup (*Camissonia ovata*), hairy wood sorrel (*Oxalis corniculata* subsp. *pilosa*), California vervain (*Verbena lasiostachys* var. *lasiostachys*) and common corethrogyne (*Corethrogyne filaginifolia*).

The "**Unnamed Gulch**" appearing to the casual traveler along Swanton Road, as: (a) one more over-grazed grassy meadow populated with noxious aliens, (b) backed by precipitously descending brush cloaked slopes with poison-oak appearing to be the principal inhabitant and (c) the principal source (a complex series of feeder gulchlets) of the **gulch proper** being obscured by a somewhat generic woodland.....**but upon closer examination, reveals quite the opposite, in terms of "native" residents!** This "nameless" drainage system, wedged in between George Valentine Gulch and the expansive lower Archibald Creek sub-watershed, offers the following botanical inventory.....surprisingly diverse in species represented, for so prosaic a setting! As of 03/20/10, here is a preliminary listing of "native" taxa to be found, in an inconspicuous, overlooked and shamefully ignored but hardly remote, part of the Scotts Creek Watershed: *Prunus emarginata* (new population and range extension), *Sanicula crassicaulis*, *Sanicula gianonei*, **pro.sp.nov.** (extensive colonies scattered on moist slopes), *Marah fabaceus*, *Sambucus nigra* subsp. *canadensis*, *Baccharis pilularis*, *Toxicodendron diversilobum*, *Claytonia perfoliata* subsp. *perfoliata*, *Fragaria vesca*, *Stachys bullata*, *Hesperocnide tenella*, *Heracleum maximum*, *Lithophragma affine* (hypanthium conical basally), *Lithophragma heterophyllum* (hypanthium truncate basally), *Plectritis brachystemon*, *Frangula californica* subsp. *californica*, *Pseudotsuga menziesii* var. *menziesii*, *Scrophularia californica* subsp. *californica*, *Galium porrigens* var. *porrigens*, *Galium californicum* subsp. *californicum*, *Trillium chloropetalum* (several color phases present), *Oemleria cerasiformis*, *Monardella villosa* sensu lato, *Calystegia purpurata* subsp. *purpurata*, *Nasella lepida*, *Nasella pulchra*, *Bromus carinatus* sensu lato, *Festuca californica*, *Melica torreyana* (extensive colonies scattered throughout micro-watershed), *Pseudognaphalium californicum* (some plants showing influences of *Pseudognaphalium stramineum* = *Pseudognaphalium gianonei*, **pro.sp.nov.**), *Pseudognaphalium*



*stramineum*, *Holodiscus discolor*, *Aphanes occidentalis*, *Lupinus arboreus*, *Artemisia californica*, *Artemisia douglasiana*, *Solanum douglasii*, *Solanum umbelliferum*, *Apiastrum angustifolium* (extensive colonies occurring in both shaded and exposed locations), *Bowlesia incana*, *Nemophila menziesii* (variable but basically var. *atomaria*), *Nemophila parviflora* var. *parviflora*, *Cynoglossum grande*, *Madia gracilis*, *Solidago velutina* subsp. *californica*, *Saxifraga californica*, *Phacelia malvifolia*, *Chlorogalum pomeridianum* var. *pomeridianum*, *Achillea millefolium*, *Laythrus vestitus* var. *vestitus*, *Vicia americana* var. *americana*, *Fritillaria affinis* var. *affinis*, *Clarkia rubicunda*, *Eschscholzia californica*, *Adiantum jordanii*, *Polystichum munitum*, *Pentagramma triangularis* subsp. *triangularis*, *Dryopteris arguta*, *Pteridium aquilinum* var. *pubescens*, *Polypodium californicum* (growing as lithophyte)?, *Polypodium calirhiza* (growing as epiphyte)?, *Mimulus aurantiacus*, *Rubus ursinus*, *Cirsium brevistylum*, *Aesculus californica* (one golden-leaved seedling observed), *Osmorhiza berteroi*, *Smilacina stellata*, *Quercus agrifolia* var. *agrifolia*, *Umbellularia californica*, *Corylus cornuta* var. *californica*, *Cardamine californica* var. *californica*, *Cardamine oligosperma*, *Anaphalis margaritacea*, *Cryptantha micromeres*, *Urtica dioica* subsp. *gracilis*, *Symphyotrichum chilense*, *Satureja douglasii*, *Angelica tomentosa* (second population discovered within watershed), *Erigeron foliosus* var. *franciscensis* (second population discovered within watershed), *Pinus attenuata*, *Arbutus menziesii*, *Juncus bufonius*, *Juncus occidentalis*, *Juncus patens*, *Ceanothus thyrsoiflorus*, *Agrostis hallii/pallens* intergrades, *Galium triflorum*, *Sequoia sempervirens*, *Psilocarphus tenellus* var. *tenellus*, *Dudleya caespitosa*, *Carex brevicaulis*, *Carex tumulicola*, *Heteromeles arbutifolia*, *Calochortus albus*, *Castilleja affinis* subsp. *affinis*, *Sisyrinchium bellum*, *Eriogonum latifolium/nudum* intergrades, *Oxalis corniculata* subsp. *pilosa*, *Ranunculus californicus*, *Stachys ajugoides* var. *rigida*, *Eriophyllum staechadifolium*, *Crassula connata*, *Dichelostemma capitatum* subsp. *capitatum*, *Lotus scoparius*, *Ribes menziesii*, *Pseudognaphalium ramosissimum*, *Potentilla glandulosa*, *Heterotheca sessiliflora* subsp. *bolanderi*, *Epilobium canum* subsp. *canum*, *Camissonia ovata*, *Corallorhiza striata*, *Barbarea orthoceras*, *Iris douglasiana*, *Verbena lasiostachys* var. *lasiostachys* and *Gamochaeta ustulata*.

As our botanical exploration through the Scotts Creek Watershed draws to a close and we approach the ridge that defines the lower Molino Creek drainage, an amazing visual recapitulation takes place: the hydrologically active, landslide benched slopes overlooking Swanton Road from Queseria Creek to the terminus of our traversal, **\*support conservatively 28% of the flora noted since beginning our tour.** Only recently discovered and behaving more like a malodorous dwarf willow, bitter cherry (*Prunus emarginata*) resists easy detection by being deciduous part of the year and growing intermixed, if not wholly engulfed, by the surrounding suffrutescent vegetation. On these west-facing slopes, rare San Francisco collinsia (*Collinsia multicolor*) gives its last hurrah while California saxifrage (*Saxifraga californica*) graces the moist recesses with nascent rosettes simulating a hairy sundew (genus *Drosera*) and willow dock (*Rumex salicifolius* var. *transitorius*), with three callous grains per flower, resides contentedly in the ditch between slope base and road edge, unless pummeled and buried by mudstone debris. Staking out the wettest portion of the drainage ditch and conspicuous by virtue of its anthocyanin pigmented stems and foliage, Watson's willow herb (*Epilobium ciliatum* subsp. *watsonii*) generously rewards the viewer with flowers colored an intense reddish-purple, worthy of a selective breeding program to enhance that permanently moist section of the wild garden. Growing in close proximity to its pestiferous European relatives, Pacific fescue (*Vulpia microstachys* var. *pauciflora*) is readily identifiable by the lower glume being more than half the length of the upper, florets less than five and spikelets subglabrous with lowest branches reflexed, while the densely cespitose clumps of fellow Poaceae traveler, California fescue (*Festuca californica*), visually define the moist parts of the hillside with their grayish culms and stramineous mature inflorescences.

Ensnared within a moist, west-facing slope dominated by coastal scrub and concealed from all but the most observant eyes, California angelica (*Angelica tomentosa*) or a reasonable facsimile thereof, makes a welcome addition to the watershed's ongoing native species check list. Rankly odorous, fistulose stems and glaucous foliage clothed with both simple and forked hairs, readily separate this taxon from all other

sympatric Apiaceae, which includes California hedge-parsley (*Yabea microcarpa*), a species rare county wide. A scattered population of pine bluegrass (*Poa secunda* subsp. *secunda*), with purple suffused spikelets and like colored anthers, holds steadfast to a less than stable mudstone perch, while a small colony growing on the lower portion of the Schoolhouse Ridge has green spikelets with yellow anthers. Adding color, with a purplish-maroon sunscreen, and making up through visual contrast what it lacks in stature, dwarf orthocarpus (*Triphysaria pusilla*), occupies the roadside edges, caught between tire burn and suffocation from displaced shale. With yellow ligules 5-6 mm long, disk fruit with circa 20 pappus bristles and herbage distinctively scented, a variable population of tall layia (*Layia hieracioides*) boosts the number of rare/uncommon/widely scattered "natives" concentrated within this zone of plant diversity at the southern edge of the watershed.

\*Forming, in part, a vertical tapestry of concentrated "natives", so closely integrated that they appear as one organic continuum..... the following taxa reveal themselves through closer examination: pygmy weed (*Crassula connata*), woodland star (*Lithophragma affine*), intermediate fiddleneck (*Amsinckia menziesii* var. *intermedia*), climbing bedstraw (*Galium porrigens* var. *porrigens*), California man root (*Marah fabaceus*), coast buckwheat (*Eriogonum latifolium* sensu lato), yellow bush lupine (*Lupinus arboreus*), California figwort (*Scrophularia californica* subsp. *californica*), lizard tail (*Eriophyllum staechadifolium*), California sagebrush (*Artemisia californica*), coyote brush (*Baccharis pilularis*), stinging phacelia (*Phacelia malvifolia*), yarrow (*Achillea millefolium*), California blackberry (*Rubus ursinus*), soap plant (*Chlorogalum pomeridianum* var. *pomeridianum*), California poppy (*Eschscholzia californica*), gambleweed (*Sanicula crassicaulis*), California coffeeberry (*Frangula californica* subsp. *californica*), mountain dandelion (*Agoseris grandiflora*), miner's lettuce (*Claytonia perfoliata* subsp. *perfoliata*), California hedge nettle (*Stachys bullata*), slim Solomon's seal (*Smilacina stellata*), wood fern (*Dryopteris arguta*), goldback fern (*Pentagramma triangularis* subsp. *triangularis*), California maidenhair (*Adiantum jordanii*), California polypody (*Polypodium californicum*, in part approaching var. *kaulfussii*), western sword fern (*Polystichum munitum*), bracken (*Pteridium aquilinum* var. *pubescens*), California brome (*Bromus carinatus* var. *carinatus*), California wild rye (*Elymus glaucus* subsp. *glaucus*), Torrey's melic (*Melica torreyana*), sea lettuce (*Dudleya caespitosa*), arroyo willow (*Salix lasiolepis*), blue witch (*Solanum umbelliferum*), coyote mint (*Monardella villosa* sensu lato), Pacific pea (*Lathyrus vestitus* var. *vestitus*), coast nettle (*Urtica dioica* subsp. *gracilis*), blue elderberry (*Sambucus nigra* subsp. *canadensis*), California aster (*Symphotrichum chilense*), western lady's mantle (*Aphanes occidentalis*), oso berry (*Oemleria cerasiformis*), Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*), mugwort (*Artemisia douglasiana*), poison oak (*Toxicodendron diversilobum*), brown bog-rush (*Juncus hesperius*), common wood rush (*Luzula comosa*), sticky monkeyflower (*Mimulus aurantiacus*), popweed (*Cardamine oligosperma*) and woodland star (*Lithophragma affine*).

Ending our traversal with a subtle but noteworthy native, California goosefoot (*Chenopodium californicum*), a relative of the culinary beet (*Beta vulgaris*), positions itself within a remnant portion of coastal scrub overlooking the southern limits of the watershed which encompasses the Scotts Creek Marsh, and when viewed from Swanton Road in a westerly arc, takes on the attributes of an abstract Diebenkorn landscape. Each chromatic zone can be defined botanically by a particular plant species or the interdigitation of one taxon into a long established colony of another. Centrally positioned within the marsh proper is pickleweed (*Salicornia virginica*), a salt tolerant native changing color from grayish-green through pink and as the season progresses becoming a vibrant reddish orange, and like its cousin California goosefoot, once belonging to the Goosefoot Family (Chenopodiaceae, now placed in **Amaranthaceae**). Sharing habitat with pickleweed, are fleshy jaumea (*Jaumea carnosa*), a representative of the Sunflower Family (Asteraceae) superficially passing for a non-native member of the Fig-Marigold Family (Aizoaceae) with succulent foliage bedecked with orange flowers, Pacific oenanthe (*Oenanthe sarmentosa*) a locally common member of the Apiaceae of unknown toxicity, western yellow cress (*Rorippa curvisiliqua*), fat hen (*Atriplex triangularis*), like *Chenopodium* and *Salicornia*, formerly registered as a member of the goosefoot alliance, Pacific cinquefoil (*Potentilla anserina* subsp. *pacifica*) and alkali heath (*Frankenia salina*),

displaying grayish-green foliage and lavender flowers often growing intermixed with two native grass constituents of the marsh, saltgrass (*Distichlis spicata*) and creeping wild rye (*Leymus triticoides*), colonies of both species forming distinctive textural patterns when viewed from afar. In terms of height and density, three species in particular characterize the vertical components of the marsh: broad-leaved cattail (*Typha latifolia*), possibly forming hybrids with sister species narrow-leaved cattail (*Typha angustifolia*) and California tule (*Scirpus californicus* = *Schoenoplectus californicus*), imposing in stature with distinguishing deltoid apices and paniculate inflorescences overtopping all competing vegetation; while subordinate to but yielding nothing in the way of structural contrast, salt rush (*Juncus lesueurii*), its tortile-compressed dark green culms 1-2 meters in height with condensed or open inflorescences, some branches 15+ cm. in length, bearing dark brown nitid flowers, forms dark-green ribbons, these free standing or commingling with western goldenrod (*Euthamia occidentalis*), which adds a dusting of yellow when in full flower and three additional, lower in stature, members of the Sedge Family (Cyperaceae), three square (*Scirpus americanus* = *Schoenoplectus americanus*), paniced bulrush (*Scirpus microcarpus*) and umbrella sedge (*Cyperus eragrostis*). Within the seasonally inundated northwestern portion of the marsh, two native species of *Polygonum* grow sympatrically, **both taxa now placed in the genus *Persicaria*: widespread** throughout the watershed, water smartweed (*Polygonum punctatum* = *Persicaria punctata*) with its gland-stippled foliage exuding a fragrance of freshly cut green apples dramatically contrasts with sister species, swamp knotweed (*Polygonum amphibium* var. *emersum* = *Persicaria amphibia* var. *emersa*), the latter apparently **restricted** only to this section of the marsh, a perennial with terrestrial stems nodally clothed with a membranous ocrea displaying a combination of short gland-tipped and longer eglandular trichomes, terminating in a conspicuous bristly collar spreading at an oblique angle. Along the transitional zone between grassland and marsh proper, growing in amongst poison oak (*Toxicodendron diversilobum*) and California blackberry (*Rubus ursinus*), adjacent populations of Santa Barbara sedge (*Carex barbarae*) and slough sedge (*Carex obnupta*) occur, sharing space with a dissimilar sibling duo, marsh baccharis (*Baccharis douglasii*) and coyote brush (*Baccharis pilularis*). An Asteraceae foursome also contributes to the diversity of marsh inhabitants, one enjoying wet feet, another flexible as to soil saturation while the remaining two preferring the higher and drier banks: in the order stated, the quartet consisting of sneezeweed (*Helenium puberulum*), California aster (*Aster chilensis* = *Symphyotrichum chilense*), lizard tail (*Eriophyllum staechadifolium*) and pink everlasting (*Pseudognaphalium ramosissimum*). Further back on the southward facing slopes which overlook the marsh, in hydrologically active zones and spilling out onto the drier adjacent habitat, extensive colonies of **Gianone's sedge (*Carex gianonei*, pro. sp. nov.)** can be observed, growing up through the rushes and coyote brush. Where the formerly cultivated fields abut the vertical walls of coyote brush (*Baccharis pilularis*), scattered plants of *Carex "imperfecta"* occur, lending further support to the **correlation between periodically disturbed habitat and broaching of reproductive isolating mechanisms.**

As a botanical denouement for the entire watershed, the perpetually exfoliating mudstone cliff faces, with their perennial seepages overlooking the south end of Scotts Creek Beach, act as vertical mini-refugia for an assortment of rare, unique and outright ubiquitous native species. Concentrated in these hanging or perched gardens, an uncommon member of the Pink Family (Caryophyllaceae), beach pearlwort (*Sagina maxima* subsp. *crassicaulis*) threads its way through three rosette forming species, which when not in flower, look ever so much like exotic relatives of the sea lettuce (*Dudleya caespitosa*): making up this triad of mimics, are cotton batting plant (*Gnaphalium stramineum*), seaside plantain (*Plantago maritima*) and with a little stretching of the imagination, seaside daisy (*Erigeron glaucus*). While beach pearlwort is the rarity in this gathering, **a unique form of California bent grass (*Agrostis densiflora*) definitely holds center stage for being visually striking. This distinctive ecotype, growing on permanently moist near-vertical shale outcroppings has leaves 20+ cm. long and 2.5+ cm. wide, pigmented an intense blue-green with a glaucous overlay; the inflorescences are 20-25+ cm. in length, 3-5+ cm. in width, golden in hue, and in overall gestalt mimicking Powell's amaranth (*Amaranthus powellii*); from a diagnostic perspective, the florets possess a distinctly lacerate palea; pressings were made and deposited some two decades ago with the Jepson Herbarium, UC Berkeley.**

**Note:** select herbarium specimens of horticulturally meritorious, locally uncommon, rare county wide and agency listed **species referred to in this section** of the Traversal, collected and pressed, with noted exceptions, by Roy Buck and James West **within the Scotts Creek Watershed and environs**, then deposited in the Jepson Herbarium, U.C. Berkeley, **are as follows:**

*Achillea millefolium* var. *californicum*/accession number **UCSC5700**/M.F. Wilson, Apr 26 1985  
*Aesculus californica*/accession number **JEPS85125**/Buck & West #521  
*Agrostis blasdalei*/accession number **JEPS81559**/Buck & West #102  
*Agrostis blasdalei*/accession number **JEPS82919**/Buck & West #369  
*Agrostis blasdalei*/accession number **JEPS82920**/Buck & West #368  
*Agrostis blasdalei*/accession number **JEPS82926**/Buck & West #182  
*Agrostis blasdalei*/accession number **JEPS82936**/West #264  
*Agrostis densiflora*/accession number **JEPS82595**/West #170  
*Agrostis densiflora*/accession number **JEPS82899**/Buck & West #371  
*Agrostis microphylla*/accession number **JEPS82598**/West #218  
*Agrostis microphylla*/accession number **JEPS82606**/West #210  
*Apiastrum angustifolium*/accession number **JEPS85193**/Buck & West #519  
*Bowlesia incana*/accession number **JEPS81913**/Buck & West #203  
*Carex gianonei*, **pro. sp. nov.**/accession number **JEPS82957**/West #48.1  
*Carex gianonei*, **pro. sp. nov.**/accession number **JEPS82939**/West #11.2  
*Carex gianonei*, **pro. sp. nov.**/accession number **JEPS82944**/West #23.1  
*Carex gianonei*, **pro. sp. nov.**/accession number **JEPS82945**/West #26.1  
*Carex gianonei*, **pro. sp. nov.**/accession number **JEPS82950**/West #34.1  
*Carex gianonei*, **pro. sp. nov.**/accession number **JEPS83089**/West #328  
*Carex obnupta*/accession number **UC1561094**/Taylor, Buck, West & Clifton #9679  
*Chenopodium californicum*/accession number **JEPS85151**/Buck & West #520  
*Clarkia rubicunda*/accession number **JEPS83076**/Buck & West #422  
*Clarkia rubicunda*/accession number **JEPS82779**/Buck & West #326  
*Clarkia rubicunda*/accession number **JEPS81511**/Buck & West #19  
*Clarkia rubicunda*/accession number **JEPS90016**/Taylor, Buck, West & Clifton #9655  
*Collinsia multicolor*/accession number **SBBG95535**/Keil #20619  
*Delphinium californicum* subsp. *californicum*/accession number **JEPS81497**/Buck & West #28  
*Delphinium californicum* subsp. *californicum*/accession number **JEPS81498**/Buck & West #28  
*Festuca californica*/accession number **JEPS81997**/Buck & West #175  
*Festuca californica*/accession number **JEPS81912**/Buck, West & Stone #196  
*Gilia achilleifolia* subsp. *multicaulis*/accession number **JEPS82621**/Buck & West #245  
*Gilia achilleifolia* subsp. *multicaulis*/accession number **UC1561076**/Taylor, Buck, West & Clifton #9657  
*Juncus lesueurii*/accession number **JEPS81547**/Buck & West #112  
*Juncus lesueurii*/accession number **JEPS81563**/West #83  
*Juncus lesueurii*/accession number **JEPS88968**/West #196  
*Lilaea scilloides*/accession number **JEPS81516**/Buck & West #13  
*Lupinus arboreus*/accession number **JEPS81495**/Buck, West & Stone #40  
*Lupinus arboreus*/accession number **JEPS82783**/Buck & West #315  
*Lupinus bicolor*/accession number **JEPS82655**/Buck & West #209  
*Lupinus bicolor*/accession number **JEPS82656**/Buck & West #209  
*Lupinus formosus* var. *formosus*/accession number **JEPS83096**/Buck & West #437  
*Lupinus variicolor*/accession number **JEPS82804**/Buck & West #291  
*Melica californica*/accession number **JEPS81995**/Buck & West #181  
*Nasella lepida*/accession number **JEPS83471**/Buck & West #476

*Nasella pulchra*/accession number **JEPS83470**/Buck & West #477  
*Pellaea andromedifolia*/accession number **JEPS85189**/Buck & West #514  
*Pentachaeta bellidiflora*/accession number **JEPS21642**/Thomas #4031  
*Piperia michaelii*/accession number **UCSC4699**/Randall Morgan, Jan 6 1981  
*Poa secunda* subsp. *secunda*/accession number **JEPS82650**/Buck & West #204  
*Potentilla anserina* subsp. *pacifica*/accession number **JEPS83095**/Buck & West #401  
*Psilocarphus tenellus* var. *tenellus*/accession number **JEPS83111**/Buck & West #347  
*Rafinesquia californica*/accession number **JEPS83078**/Buck & West #425  
*Ranunculus hebecarpus*/accession number **JEPS81919**/Buck & West #197  
*Ribes divaricatum* var. *pubiflorum*/accession number **JEPS81920**/Buck & West #195  
*Ribes divaricatum* var. *pubiflorum*/accession number **JEPS81923**/Buck & West #166  
*Saxifraga californica*/accession number **JEPS81990**/Buck & West #174  
*Thysanocarpus laciniatus*/accession number **JEPS81985**/Buck & West #183  
*Trisetum canescens* = *Trisetum cernuum* subsp. *canescens*?/accession number **JEPS82810**/Buck & West #285  
*Vicia gigantea*/accession number **UCR67982**/Keil #20570  
*Vulpia microstachys* var. *pauciflora*/accession number **JEPS82628**/Buck, West & Hawke #238  
*Yabea microcarpa*/accession number **JEPS81910**/Buck & West #202

Here is a recapitulation of the extraordinary depth and diversity of the native flora, both current and historical, defining the Scotts Creek Watershed and its environs, this time by enumerating those genera represented by **5 or more** documented species.

The genus *Trifolium* with **18+** species: *T. albopurpureum* var. *albopurpureum*, *T. appendiculatum*, *T. barbigerum* var. *barbigerum*, *T. bifidum* var. *decipiens*, *T. buckwestiorum*, *T. ciliolatum*, *T. depauperatum* var. *truncatum*, *T. gracilentum* var. *gracilentum*, *T. grayi*, *T. macraei*, *T. microcephalum*, *T. microdon*, *T. obtusiflorum*, *T. oliganthum*, *T. "pseudo-barbigerum"*, *T. variegatum*, *T. willdenovii* and *T. wormskioldii*.

The genus *Carex*, excluding the *C. gianonei*/*C. nitidicarpa* complexes and an undetermined taxon simulating *C. vulpinoidea*, with **15+** species: *C. amplifolia*, *C. barbarae*, *C. bolanderi*, *C. brevicaulis*, *C. densa*, *C. dudleyi*, *C. globosa*, *C. gracilior*, *C. harfordii*, *C. nudata*, *C. obnopta*, *C. subbracteata*, *C. subfusca*, *C. tumulicola* and *C. vesicaria* var. *major*.

The genus *Lupinus* with **11+** species, excluding documented hybrids between (*L. arboreus* x *L. formosus*) and (*L. arboreus* x *L. variicolor*): *L. albifrons* var. *albifrons*, *L. arboreus*, *L. bicolor*, *L. chamissonis* (according to J.H. Thomas: Flora of the Santa Cruz Mountains), *L. formosus* var. *formosus*, *L. hirsutissimus*, *L. latifolius* var. *latifolius*, *L. nanus*, *L. propinquus*, *L. succulentus* and *L. variicolor*.

The genus *Acmispon* with **10+** species: *A. americanus* var. *americanus*, *A. brachycarpus*, *A. cytisoides* (Flora of the Santa Cruz Mountains by J. H. Thomas places this taxon in Swanton), *A. glaber* var. *glaber*, *A. heermanii* var. *orbicularis*, *A. junceus* var. *junceus* and var. *biolettii*, *A. maritimus* var. *maritimus*, *A. parviflorus*, *A. strigosus* and *A. wrangelianus*

The genus *Juncus* with **10+** species, not counting documented hybrids between (*J. patens* x *J. hesperius*): *J. acuminatus*, *J. bufonius*, *J. effusus* var. *pacificus*, *J. hesperius*, *J. lesueurii*, *J. mexicanus*, *J. occidentalis*, *J. patens*, *J. phaeocephalus* sensu lato and *J. xiphioides*.

**Note:** a species related to and possibly confused with *J. lesueurii*, *J. breweri* may also occur within the Scotts Creek Watershed, two of the criteria used to distinguish it, being inflorescence configuration and placement!

The genus *Gnaphalium* with **7+** species, excluding *G. gianonei*, **pro. sp. nov.** = *Pseudognaphalium gianonei*, **pro. sp. nov.**, a putative hybrid between *G. californicum*\* x *G. stramineum*\*: *G. bicolor*\*, *G. californicum*\*, *G. canescens* subsp. *beneolens*\*, *G. palustre*, *G. purpureum*\*, *G. ramosissimum*\* and *G. stramineum*\*.

**Note:** with the exception of *Gnaphalium palustre* and *Gnaphalium purpureum*\*, the remaining species of *Gnaphalium* have been transferred to the genus **Pseudognaphalium**.

\**Gnaphalium purpureum* = *Gamochaeta ustulata*

The genus *Castilleja* with **7+** species, not including the *Orthocarpus noctuinus analog*: *Castilleja affinis* subsp. *affinis*, *C. attenuata*, *C. densiflora* subsp. *densiflora*, *C. exserta* subsp. *latifolia*, *C. foliolosa*, *C. subinclusa* subsp. *franciscana* and *C. wightii*.

The genus *Mimulus* with **7+** species: *M. aurantiacus*, *M. cardinalis*, *M. floribundus*, *M. guttatus* complex, *M. moschatus*, *M. nasutus* (**valid species in own right versus component of *Mimulus guttatus* complex**) and *M. pilosus*.

The genus *Agrostis* with **7+** species, not including documented hybrids between (*A. blasdalei* x *A. densiflora*) and (*A. blasdalei* x *A. exarata*) plus the *A. hallii/pallens* intergrades: *A. blasdalei*, *A. densiflora*, *A. exarata*, *A. hallii*, *A. microphylla*, *A. pallens* and *A. scabra*.

The genus *Festuca* with **6** possibly **7** species found in the watershed: *F. californica*, *F. elmeri*, *F. occidentalis*, *F. roemerii*, *F. rubra*, ***F. subulata*\*** and *F. subuliflora*.

**Note:** An herbarium pressing, Buck & West #307, from the Scotts Creek riparian corridor and designated ***Festuca subulata*\***, was made on 05/29/83 and deposited in the Jepson Herbarium at UC Berkeley with the accession number, **JEPS82787**. ***F. subulata*\*** differs from related *F. elmeri* by having a lemma which is sparsely scabrous, the awn terminal, not from a bifid apex and differs from *F. subuliflora*, in having florets sessile not long-stipitate. Within the watershed, *F. elmeri* is variable as to **stature, number of florets** and **anther color**--- whether the latter two traits, separate or combined, have taxonomic significance above the forma designation is an issue worth investigating!

The genus *Delphinium* with **5** species: *D. californicum* subsp. *californicum*, *D. decorum* subsp. *decorum*, *D. hesperium* subsp. *hesperium*, *D. nudicaule* and *D. patens* subsp. *patens*.

The genus *Viola* with **5** species: *Viola adunca*, *V. glabella*, *V. ocellata*, *V. pedunculata* and *V. sempervirens*.

**Supplementing the extensive herbarium documentation found throughout this essay, is a partial listing of the seed (achene, cypselae, nutlet, et al) collections, representing rare, uncommon, taxonomically problematic and horticulturally valuable native taxa, that have been deposited with and accessioned by the UCSC Arboretum:**

*Agoseris apargioides* var. *eastwoodiae* (one population documented)

*Agoseris heterophylla*

*Agrostis blasdalei* (comprehensive collections representing all local morphological variants of this rare coastal California endemic)

*Agrostis densiflora* (+ *gigas* phase from s-end of Scotts Creek Beach)

*Agrostis microphylla*  
*Amelanchier utahensis* (one population documented)  
*Amsinckia lunaris*  
*Antirrhinum kelloggii*  
*Apiastrum angustifolium* (several collections made)  
*Arabis glabra* (**one collection made circa 30 years ago..... this taxon has not been seen in the watershed since original discovery and the collected seed is no longer viable**)  
*Arctostaphylos glutinosa* (several collections made, including "green glut" of Schoolhouse Ridge)  
*Arctostaphylos crustaceae* subsp. *subcordata* (one population)  
*Astragalus gambelianus*  
*Athysanus pusillus* (one population)  
*Bowlesia incana*  
*Bromus carinatus* var. *carinatus* (comprehensive documentation of the distinctive ecotypes found within watershed)  
*Bromus carinatus* var. *maritimus*  
*Calandrinia breweri* (one population)  
*Carex gianonei* complex (comprehensive documentation)  
*Carex nitidicarpa* complex (comprehensive documentation)  
*Castilleja exserta* subsp. *latifolia*  
*Chenopodium californicum*  
*Clarkia* aff. *davyi* (all local populations documented)  
*Clarkia* aff. *prostrata* (all local populations documented)  
*Clarkia purpurea* subsp. *quadrivulnera* (several local populations with flower color/patterning documented)  
*Clarkia purpurea* subsp. *purpurea* (all local populations documented)  
*Claytonia sibirica*  
*Collinsia multicolor* (several populations documented for watershed)  
*Corethrogyne filaginifolia* (var. *californica*..... **alba form**)  
*Cryptantha torreyana*  
*Delphinium californicum* subsp. *californicum*  
*Deschampsia cespitosa* subsp. *holciformis*  
*Dichondra donelliana* (one population)  
*Elymus californicus* (comprehensive collections)  
*Elymus glaucus* subsp. *glaucus* (type with racemose/compound inflorescences)  
*Elymus glaucus* subsp. *virescens* (coastal bluff ecotype)  
*Epilobium hallianum* (recollected from Beaver Flat in 2009)  
*Eryngium armatum*  
*Euphorbia crenulata*  
*Festuca californica*  
*Festuca elmeri* (comprehensive collections)  
*Festuca idahoensis* subsp. *roemeri* = ***Festuca roemeri?***  
*Festuca subuliflora* (several collections made of this locally uncommon fescue)  
*Filago californica* = ***Logfia filaginoides***  
*Galium trifidum* var. *pacificum*  
*Garrya elliptica*  
*Gilia achilleifolia* subsp. *multicaulis*  
*Gilia clivorum* (comprehensive collections)  
*Gnaphalium palustre*  
*Guillenia lasiophylla* = ***Caulanthus lasiophyllus***  
*Heterotheca sessiliflora* subsp. *bolanderi* (comprehensive collections, **including Seymore Hill**)

populations, which approach subsp. *echioides* in bristly indument and herbage exuding scent of camphor)

*Hippuris vulgaris*  
*Horkelia californica* subsp. *californica*  
*Horkelia cuneata* aff. subsp. *sericea*  
*Hydrocotyle verticillata*  
*Juncus acuminatus* (one collection)  
*Lasthenia californica* complex (types with/without pappus)  
*Layia gaillardiioides* (one population, concolor yellow rays)  
*Ligusticum apiifolium*  
*Lomatium caruifolium* var. *caruifolium*  
*Lotus salsuginosus* var. *salsuginosus* = *Acmispon maritimus* var. *maritimus*  
*Lotus stipularis* aff. *Lotus balsamiferus* = *Hosackia stipularis* var. *stipularis*  
*Lupinus arboreus* x *Lupinus variicolor*  
*Lupinus formosus* var. *formosus*  
*Lupinus hirsutissimus*  
*Lupinus* aff. *propinquus*  
*Lupinus succulentus*  
*Melica californica* (collections made for several different ecotypes, including form found growing in coastal sage scrub overlooking lower Big Willow Gulch)  
*Melica harfordii*  
*Melica imperfecta* (collections from ridge complex separating Big and Little Creek sub-watersheds variable and possibly reflect introgression of *Melica torreyana* genes)  
*Melica subulata* (several populations documented with caryopsis collections)  
*Melica torreyana* (one of the most morphologically plastic native grass species in the watershed..... several phases documented with caryopsis collections)  
*Micropus amphibolus* (several populations documented with cypselae collections)  
*Micropus californicus* var. *subvestitus*  
*Microseris decipiens* (12+ separate populations documented)  
*Microseris paludosa* (Arroyo de las trancas population documented)  
*Mimulus guttatus* complex  
*Nemophila pedunculata*  
*Nemophila* aff. *pulchella* var. *fremontii* (comprehensive collections)  
*Perideridia gairdneri* subsp. *gairdneri*  
*Plagiobothrys bracteatus*  
*Plagiobothrys chorisianus* var. *chorisianus* (comprehensive collections)  
*Plagiobothrys diffusus*  
*Plantago erecta* (exceedingly robust ecotype from exposed headlands overlooking s-end of Greyhound Rock State Beach)  
*Plantago maritima*  
*Plantago subnuda*  
*Plectritis ciliosa* subsp. *insignis* (one population documented)  
*Poa unilateralis*  
*Pseudognaphalium gianonei*, pro.sp.nov.  
*Rafinesquia californica*  
*Rorippa curvisiliqua*  
*Rumex occidentalis*  
*Rumex salicifolius* complex  
*Sagina maxima* subsp. *crassicaulis* (one population documented)  
*Salvia columbariae*  
*Sanicula gianonei*, pro.sp.nov.



*Sanicula hoffmannii* (comprehensive documentation)  
*Sanicula "pseudo-laciniata"* (one population documented)  
*Scrophularia californica* subsp. *californica* (**flavistic form**.....seed collected from one large plant growing bankside along north end of Swanton Road)  
*Silene antirrhina*  
*Silene verecunda* subsp. *verecunda* (comprehensive documentation)  
*Stachys chamissonis* (one population documented)  
*Thysanocarpus laciniatus*  
*Trifolium buckwestiorum* (several collections, **including original population**)  
*Triphysaria eriantha* subsp. *rosea*  
*Trisetum canescens* (reduced in stature form from coastal bluffs overlooking Greyhound Rock State Beach and south facing slope overlooking north end of Swanton Road)  
*Vicia hassei*  
*Wyethia angustifolia* (three populations documented)  
*Wyethia glabra* (only known population in watershed..... Scotts Creek side of upper Seymore Hill)  
*Yabea microcarpa*

Regardless of which direction one takes the **Swanton Road Botanical Journey**, the in depth representation, of "natives" via genera and species of key families, is remarkable. Without leaving the tarmac, here are some of the families with the largest numerical representation within viewing range:  
**Asteraceae**..... *Achillea millefolium*, *Agoseris grandiflora*, *Anisocarpus madioides*, *Artemisia californica*, *Artemisia douglasiana*, *Baccharis glutinosa*, *Baccharis pilularis*, *Cirsium brevistylum*, *Corethrogyne filaginifolia* (**var. californica**), *Deinandra corymbosa*, *Eriophyllum confertiflorum* var. *confertiflorum*, *Eriophyllum staechadifolium*, *Euthamia occidentalis*, *Gamochaeta ustulata*, *Grindelia hirsutula* var. *hirsutula*, *Hieracium albiflorum*, *Layia hieracioides*, *Madia gracilis*, *Madia sativa*, *Microseris bigelovii*, *Petasites frigidus* var. *palmatus*, *Psilocarphus tenellus*, *Pseudognaphalium biolettii*, *Pseudognaphalium californicum*, *Pseudognaphalium x gianonei*, pro.sp.nov. (*P. californicum* x *P. stramineum*), *Pseudognaphalium ramosissimum*, *Pseudognaphalium stramineum*, *Rafinesquia californica*, *Solidago elongata*, *Solidago velutina* subsp. *californica*, *Stebbinsoseris (Microseris) decipiens* and *Uropappus lindleyi*.

**Poaceae**..... *Agrostis exarata* (var. *exarata*), *Agrostis hallii*, *Agrostis pallens* (**plus a complex series of hybrid resegregates between A. hallii and A. pallens**), *Bromus carinatus* var. *carinatus* (**several forms of this exceedingly variable taxon exist within viewing range of the tarmac**), *Bromus vulgaris*, *Calamagrostis nutkaensis*, *Calamagrostis rubescens*, *Danthonia californica* sensu lato, *Deschampsia elongata*, *Elymus glaucus* subsp. *glaucus* (**exceedingly variable as to overall gestalt, with occasional plants seasonally producing branched inflorescences**), *Festuca californica*, *Festuca elmeri*, *Festuca occidentalis*, *Festuca roemerii* = (*Festuca idahoensis* subsp. *roemerii*?), *Festuca rubra* (**diffuse mode-of-growth ecotype growing proximal to Harry Wain's pine grove**), *Festuca subuliflora*, *Hordeum brachyantherum* subsp. *brachyantherum*, *Koeleria macrantha*, *Leymus triticoides*, *Melica californica*, *Melica subulata*, *Melica torreyana*, *Nassella lepida*, *Nassella pulchra*, *Phalaris californica*, *Poa howellii*, *Poa secunda* subsp. *secunda*, *Trisetum* aff. *canescens*, *Vulpia microstachys* var. *pauciflora*.

**Fabaceae**..... *Acmispon americanus* var. *americanus*, *Acmispon glaber* var. *glaber*, *Acmispon heermannii* var. *orbicularis*, *Acmispon wrangelianus*, *Lathyrus vestitus* var. *vestitus* (**variable as to growth patterns and foliar indument**), *Lupinus arboreus*, *Lupinus bicolor*, *Lupinus latifolius* var. *latifolius*, *Lupinus nanus*, *Lupinus variicolor*, *Rupertia physodes*, *Trifolium bifidum* var. *decipiens*, *Trifolium depauperatum* var. *truncatum*, *Trifolium gracilentum* var. *gracilentum*, *Trifolium macraei*, *Trifolium microcephalum*, *Trifolium microdon*, *Trifolium willdenovii*, *Vicia americana* var. *americana*, *Vicia gigantea* and *Vicia hassei*.

**Rosaceae.....** *Aphanes occidentalis*, *Fragaria chiloensis*, *Fragaria vesca*, *Heteromeles arbutifolia*, *Holodiscus discolor*, *Horkelia californica* subsp. *californica*, *Horkelia cuneata* subsp. *cuneata*, *Oemleria cerasiformis*, *Potentilla glandulosa* subsp. *glandulosa*, *Prunus emarginata* (**rare in Santa Cruz County..... three populations in southern half of watershed, with one observable from the tarmac, this overlooking the Casa verde**), *Rosa californica*, *Rosa gymnocarpa*, *Rosa spithamea*, *Rubus parviflorus*, *Rubus spectabilis* and *Rubus ursinus*.

**Apiaceae.....** *Angelica tomentosa*, *Apiastrum angustifolium*, *Bowlesia incana*, *Daucus pusillus*, *Heracleum maximum*, *Osmorhiza berteroi*, *Sanicula arctopoides*, *Sanicula crassicaulis*, *Sanicula gianonei*, pro.sp.nov. and *Yabnea microcarpa*.

**Boraginaceae.....** *Amsinckia menziesii* var. *intermedia*, *Cryptantha clevelandii*, *Cryptantha micromeres*, *Cryptantha torreyana* (**one population occurred along Swanton Road but was lost during a severe El Nino weather system in the early 1980's**), *Cynoglossum grande*, *Nemophila parviflora* var. *parviflora*, *Nemophila pedunculata*, *Phacelia malvifolia* and *Plagiobothrys bracteatus*.

By way of an ecological epilogue, here are 14 native species that welcomed us during the first 100 meters of our circa 6-mile traversal and bid us farewell exiting the final 100 meters: lizard tail (*Eriophyllum confertiflorum* var. *confertiflorum*), cow-parsnip (*Heracleum lanatum* = ***Heracleum maximum***), sticky monkeyflower (*Mimulus aurantiacus*), California figwort (*Scrophularia californica* subsp. *californica*), California sagebrush (*Artemisia californica*), stinging phacelia (*Phacelia malvifolia*), poison oak (*Toxicodendron diversilobum*), oso berry (*Oemleria cerasiformis*), California wild rye (*Elymus glaucus* subsp. *glaucus*), coyote brush (*Baccharis pilularis*), California aster (*Symphotrichum chilense*), common rush (*Juncus patens*), California blackberry (*Rubus ursinus*), and mugwort (*Artemisia douglasiana*).

**Note: the author has personally observed examples of all underlined taxa in this text without leaving the tarmac, which defines Swanton Road!**

For additional data and photos pertaining to the Scotts Creek Watershed and its environs, go to [www.scottscreekwatershed.org](http://www.scottscreekwatershed.org) and [www.spranch.org](http://www.spranch.org)