

A Journey Through the Scott Creek Watershed



by James A. West

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Headlands

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From Shore to Ridgetop



AS THE CREPUSCULAR AFTERGLOW bathes the chaparral, turning the chamise (*Adenostoma fasciculatum* var. *fasciculatum*) a luminous pink, sun-baked shale releases radiant energy, warming the evening air and teasing resinous fragrances out of the Douglas-firs (*Pseudotsuga menziesii* var. *menziesii*) and knobcone pines (*Pinus attenuata*). Half hidden in the duff, sheltered by skeletal manzanita branches, a slender greenish-white orchid, *Piperia transversa*—with its elongate, horizontally aligned spurs looking like a collection of knitting needles—gives the approaching darkness a spicy note, a mysterious scent that lingers long in the memory.

This mnemonic snapshot, one of literally thousands that have colored my lifelong relationship with this area, has given me the impetus to share with you some of the attributes, both aesthetic and scientific, that define this remarkable watershed. I have often been asked what makes the Scott Creek Watershed unique, particularly when compared with other coastal California ecosystems. My initial response is to give the following statistics: of the 173 plant families found in California, 90+ are represented here. While the first number includes both native and non-native families, the second number includes only natives. This means that the Scott Creek Watershed, comprising some 30 square miles, possesses more than half of all the

native plant families to be found in California!

To partially explain the occurrence of more than 600 native species in the watershed (plus more than 200 non-native species), let us take a four-mile journey, beginning at Greyhound Rock State Beach and progressing in a northeasterly direction toward Lockheed. During the course of this journey, we will traverse several distinct ecosystems and numerous micro-habitats, many of which shelter rare, and in some cases, new species.

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Shore

LEAVING THE STRAND, we first encounter an unstable dune system mixed with displaced coastal scrub at the cliff base. Here we find yellow sand-verbena (*Abronia latifolia*), beach bur-sage (*Ambrosia chamissonis*), coastal sagewort (*Artemisia pycnocephala*), beach morning-glory (*Calystegia soldanella*), beach evening-primrose (*Camissoniopsis cheiranthifolia* subsp. *cheiranthifolia*), salt grass (*Distichlis spicata*), Pacific gumplant (*Grindelia stricta* var. *platyphylla*), American dune grass (*Elymus mollis* subsp. *mollis*), and sand-dune bluegrass (*Poa douglasii*).



Interspersed amongst the arroyo willows (*Salix lasiolepis*), poison oak (*Toxicodendron diversilobum*), coyote brush (*Baccharis pilularis* subsp. *consanguinea*), and lizard-tail (*Eriophyllum staechadifolium*), are mature plants of *Carex "gianonei"* growing up through the shrubbery and producing "keikis" (nodal proliferations) on current flowering culms. This asexual mode of reproduction most likely evolved in response to extended periods of soil aridity coupled with elevated levels of atmospheric moisture.



Looking up, we see the near-vertical perpetually exfoliating cliffs with their seasonal waterfalls and perennial seeps—here coast monkeyflower (*Erythranthe grandis*)

cloaks the vertical faces of the dampened mudstone displaying yellow corollas redolent of honey. Vying for attention on these precarious wind-buffed exposures and held hostage by the ever-changing hydrology, Watson's willow herb (*Epilobium ciliatum* subsp. *watsonii*) in reduced stature shows off intensely pigmented cerise flowers looking like miniature pin-wheels.



Also coexisting in this exposed vertical tapestry, between Post Rock and the south end of Scott Creek Beach, are a group of unrelated species whose rosette growth patterns superficially simulate that of sympatric sea lettuce (*Dudleya caespitosa*)—four of these poseurs are common seaside plantain (*Plantago maritima*), cotton-batting plant (*Pseudognaphalium stramineum*), thick-stemmed pearlwort (*Sagina maxima* subsp. *crassicaulis*), and seaside daisy (*Erigeron glaucus*).

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Headlands

THE HEADLANDS, with their melange of scarce and ubiquitous grasses—leafy bent grass (*Agrostis pallens*), maritime brome (*Bromus maritimus*), California hair grass (*Deschampsia cespitosa* subsp. *holciformis*), wild rye (*Elymus glaucus* subsp. *virescens*), California fescue (*Festuca californica*), June grass (*Koeleria macrantha*), Torrey's melic (*Melica torreyana*), and San Francisco bluegrass (*Poa unilateralis* subsp. *unilateralis*); hidden pockets of coarse-leaved San Francisco wallflowers (*Erysimum franciscanum*), with highly fragrant gold flowers meriting horticultural use; chameleon-like Bolander's golden aster (*Heterotheca sessiliflora* subsp. *bolanderi*), with herbage variable both as to coloration and scent; one of the ancestors of our modern strawberry, beach strawberry (*Fragaria chiloensis*), forming mats of interweaving red stolons contrasting with the durable leathery leaflets; rattlesnake carrot (*Daucus pusillus*), native sister species to the domestic carrot, with foliage and compound umbels so finely dissected that magnification is needed to fully appreciate the structural details; purple-suffused California broomrape (*Orobanche californica* subsp. *californica*), an uncommon taxon parasitizing *Grindelia* species; and western dock (*Rumex occidentalis*), a visually arresting plant reaching four to six feet in height, with mature stems and inflorescences pigmented a luminous reddish-pink.



In spite of human activity, encompassing both vehicular and foot traffic, numerous microhabitats featuring concentrated species diversity can still be found within this unique environment where earth, sky, and water meet! A small drainage depression perched high on the bluffs overlooking Greyhound Rock and no more than 10 meters square 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. Ironically, two more frequently encountered relatives of the aforementioned taxa also occur within this "pocket of biodiversity," namely California bent grass (*Agrostis densiflora*) and coast rein orchid (*Piperia elegans* subsp.



elegans). This juxtaposing of rare and common members of the same genus is found throughout the Scott Creek Watershed. Nestled cheek-to-jowl in this same niche are one-leaved onion (*Allium unifolium*), a descriptive name at odds with this species' actual foliar status; Choris's popcorn-flower (*Plagiobothrys chorisianus* var. *chorisianus*), often hidden within the undergrowth; harlequin lotus (*Hosackia gracilis*), a perennial pea with flowers yellow and cerise possessing a fragrance rivaling the best French perfumes;



California canary grass (*Phalaris californica*), with leaves and stems mimicking the stylized bamboo of the classic Chinese landscapes; sticky sand-spurrey (*Spergularia macrotheca* var. *macrotheca*), an ideal candidate for miniature rock gardens; Mexican plantain (*Plantago subnuda*), a visually arresting species with conspicuously ribbed leaves contrasting with the densely flowered scapes; and marsh microseris (*Microseris paludosa*), a rarely seen relative of the dandelion and culinary lettuce.

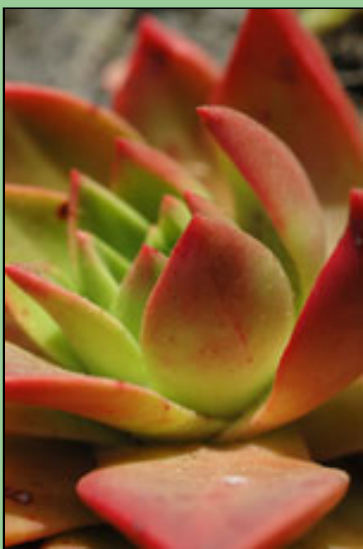


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Gulches



JUST INLAND FROM HIGHWAY 1 we encounter deep, erosion-sculpted gulches running perpendicular to the coastline, their west-facing slopes home to the locally rare Alaska rein orchid (*Piperia unalascensis*). These isolated populations of this widespread orchid are closer in overall gestalt to the type specimen described from material collected on the Aleutian Islands!

While picking our way through the coastal scrub, we can observe cryptic populations of Indian paintbrush (*Castilleja affinis* subsp. *affinis*), Davy's centaury (*Zeltnera davyi*), minute-flowered cryptantha (*Cryptantha micromeres*), sea lettuce (*Dudleya caespitosa*), and coffee fern (*Pellaea andromedifolia*) that sandwich the prairie front and back. A ridge of uplifted and fractured mudstone hosts a trio of triphysarias: specifically butter-and-eggs (*T. eriantha* subsp. *eriantha*), purple-beaked owl's clover (*T. micrantha*), and dwarf owl's clover (*T. pusilla*), plus sporadic hybrids between *T. eriantha* and *T. pusilla*.

Big Willow Gulch

More or less midway between Greyhound Rock and Scott Creek Beach, Big Willow Gulch meanders from the interior grassland through the coastal prairie down into a bifurcate gulch, which overall, is home to more than 200 species, subspecies, varieties, and forms of native plants—several extremely rare. Beginning at the center of Cal Poly's Swanton Pacific Ranch, where thymeleaf beardstyle (*Pogogyne serpylloides*), a native mint so diminutive in stature that an adult plant can fit on the head of a dime, shares seasonally wet grassland cover with two native relatives of the domestic carrot, coast coyote thistle (*Eryngium armatum*) and Gairdner's yampah (*Perideridia gairdneri* subsp. *gairdneri*).

The best way to describe Big Willow Gulch is as follows: Imagine taking floristic elements from all of the habitats within the Scott Creek Watershed, place them in a giant blender, add water, liquefy, and spill the contents randomly throughout the entire drainage area. Tanbark oaks (*Notholithocarpus densiflorus* var. *densiflorus*) co-mingle with California sagebrush (*Artemisia californica*). Salal (*Gaultheria shallon*) and coast barberry (*Berberis pinnata* subsp. *pinnata*) are a stone's throw from sea thrift (*Armeria maritima* subsp. *californica*), Monterey pine (*Pinus radiata*), California acaena (*Acaena pinnatifida* var. *californica*), and San Francisco campion (*Silene verecunda* subsp. *verecunda*). Banded owl's-clover (*Castilleja exserta* subsp. *latifolia*) with its cobwebby indument and the vanilla-scented owl's-clover (formerly recognized as *Orthocarpus densiflorus* var. *noctuinus* and now included in *Castillejadensiflora* subsp. *densiflora*), share the same exposed/eroded grass-contoured





terrace with the myriad polychromatic phases of Indian paintbrush (*Castilleja affinis* subsp. *affinis*). Red alder (*Alnus rubra*), American dogwood (*Cornus sericea* subsp. *sericea*), California buckeye (*Aesculus californica*), wax myrtle (*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*), fairy lantern (*Calochortus albus*, a localized dwarfed race), California huckleberry (*Vaccinium ovatum*), wedge-leaved horkelia (*Horkelia cuneata* var. *cuneata*), and the

creeping tinker's penny (*Hypericum anagalloides*). High above this botanical fray, the small annual chia (*Salvia columbariae*) coexists in a wind-abraded, parched abode of dry, fractured mudstone with the uncommon Mount Diablo cottonweed (*Micropus amphibolus*) and the rare Santa Cruz microseris (*Stebbinsoseris decipiens*).



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Grasslands

THE COASTAL PRAIRIE, an ecological continuum that parallels Highway 1, from the north end of Swanton Road, with its isolated populations of Kellogg's horkelia (*Horkelia cuneata* var. *sericea*) and Roemer's fescue (*Festuca roemerii*) [currently under *F. idahoensis* in *The Jepson Manual, Second Edition*] to the California sagebrush (*Artemisia californica*) margined terrace edge overlooking Scott Creek Marsh proper, hosts a myriad of rare and unusual plant species. This horizontal ribbon of terrain, punctuated with seeps and marshes, is overwhelmingly defined by a triad of monocot families, namely the Cyperaceae, Juncaceae, and Poaceae: the exceedingly rare Blasdale's bent-grass (*Agrostis blasdalei*) vies for attention with the extremely complex *Carex* "gianonei/nitidicarpa" quagmire and the extraordinary representation of *Juncus* species (*J. bufonius* var. *bufonius*, *J. effusus* subsp. *pacificus*, *J. lescurii*, *J. mexicanus*, *J. occidentalis*, *J. patens*, and *J. phaeocephalus*).



Lost in this vertiginous tapestry of rushes, are lilliputian treasures that demand a measured approach lest they be trampled underfoot: timwort (*Cicendia quadrangularis*), a member in good standing of the Gentianaceae coyly masquerading to the uninitiated as a member of the Brassicaceae; Gambel's milkvetch (*Astragalus gambelianus*) comingling with cousins of the *Acmispon* clan; dwarf club rush (*Isolepis carinata*) and tiny pentachaeta (*Pentachaeta alsinoides*) (a 25-cent piece could jointly accommodate both species); and sand pygmy-weed (*Crassula connata*), at maturity displaying foliage pigmented red-orange through pink, coloration that would elicit envy from a Navaho sand-painter!



Where siliceous terrace deposits prevail, rare *Clarkia* species, godetia (*C. purpurea* subsp. *purpurea*) and the separate-but-equal Davy's clarkia (*C. davyi*) and what may be prostrate clarkia (*C. prostrata*) share habitat with the variable, both as to scent and foliar coloration, Franciscan coyote mint (*Monardella villosa* subsp. *franciscana*) complex.

Inner Grasslands

The inner coastal grasslands, with their deeply incised forested gulches draining down into Scott Creek, form a mirror-image compliment to the prairie proper, from which they are separated by an east-facing syncline. At its northwest end, is the "Magic Triangle," refuge to 120+ native plant species, with at least two, Franciscan paintbrush (*Castilleja subinclusa* subsp. *franciscana*) and celery-leaved licorice-root (*Ligusticum apiifolium*), found nowhere else in the county.

Twenty-five years ago, while documenting this microcosm of species diversity, I chanced upon flowering specimens of *Castilleja subinclusa* subspecies *franciscana* and crimson columbine (*Aquilegia formosa*) growing side by side and both being pollinated by hummingbirds, a fascinating lesson in co-evolution! To

this, add the presence of Bigelow's microseris (*Microseris bigelovii*) and silverpuffs (*Uropappus lindleyi*) at opposite edges of this relatively small near-vertical habitat, with their allotetraploid offspring Santa Cruz microseris (*Stebbinsoseris decipiens*) in between, and you have a living laboratory to study species formation.

Heading in a southerly direction along the grass-cloaked syncline, one encounters a nonet of native *Trifoliums* (*T. barbigerum*, *T. depauperatum*, *T. gracilentum*, *T. macraei*, *T. microcephalum*, *T. microdon*, *T. rostratum* [not currently recognized, but placed under *T. variegatum* var. *major* in *The Jepson Manual*], *T. variegatum*, and *T. willdenovii*). This constellation of clover species shares habitat with owl's-clover (*Castilleja densiflora* subsp. *densiflora*), in its distinctive vanilla-scented *noctuinus* phase); caraway-leaved lomatium (*Lomatium caruifolium* var. *caruifolium*), with highly variable foliage ranging from glabrous through densely pubescent; Johnny jump-up (*Viola pedunculata*), with a subterranean stem/root system that would seem commensurate with an adult oak rather than an herbaceous perennial ca. 10-20 cm in height; sky lupine (*Lupinus nanus*), exhibiting flowers ranging in color from white fading tan, through pink, lavender, pale-blue, and finally the traditional dark-blue; and footsteps-of-spring (*Sanicula arctopoides*), with radially aligned, prostrate, yellow-green foliage looking like a surreal sun-dial.



Rare species and hybrid complexes abound within and peripheral to this faux-prairie: in the monocot side of the aisle, documented interspecific crosses occur between Blasdale's bent-grass (*Agrostis blasdalei*) and spike bent grass (*Agrostis exarata*); common rush (*Juncus patens*) and bog rush (*Juncus hesperius*); and at least three sections of the genus *Carex* (Montanae, Multiflorae, and Ovaes).



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 the silk tassel bush (*Garrya elliptica*), common bluecup (*Githopsis specularioides*), Santa Cruz clover (*Trifolium buckwestiorum*); a trio of borages [bent-flowered fiddleneck (*Amsinckia lunaris*), dwarf cryptantha (*Cryptantha torreyana* var. *pumila*), and Pacific hound's-tongue (*Cynoglossum grande*)]; oceanspray (*Holodiscus discolor* var. *discolor*); California fescue (*Festuca californica*); and its common sister species small-flowered nemophila (*Nemophila parviflora* var.

parviflora) (the two species often are found growing intertwined in the same habitat).



Lastly, within this parallel prairie, a species for years thought to be extinct, the rare San Francisco popcornflower (*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.

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Scott Creek

UNDERLYING OUR TRAJECTORY towards towards Eagle Rock is the counterpoint of Scott Creek proper, a descending journey from Little Basin to the Pacific Ocean that is defined, in part, by the complex sinuosity of the watercourse. Growing in the upper reaches of the watershed, above the confluence of Bettencourt Gulch with Scott Creek, botanical treasures abound.

Orchids



Several uncommon orchid species can be observed nestled in duff derived from Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*) and coast redwood (*Sequoia sempervirens*) needles: calypso orchid (*Calypso bulbosa* var. *occidentalis*), (un)spotted coralroot (*Corallorhiza maculata* var. *occidentalis*), striped coralroot (*Corallorhiza striata*), and wood rein orchid (*Piperia elongata*).

Grasses

Growing sympatrically are several native grasses: pine reed grass (*Calamagrostis rubescens*) [ca. 25 years ago near the mouth of Bannister Gulch, I discovered a small population producing proliferous spikelets like *Poa bulbosa*]; Elmer's fescue (*Festuca elmeri*), variable as to stature, number of florets, and anther coloration—yellow or purple; crinkle-awn fescue (*Festuca subuliflora*), rare within the county; vanilla grass (*Anthoxanthum occidentale*), distinguished from all other local grasses by aromatic foliage; and tall trisetum (*Trisetum canescens*)—populations within watershed exhibit a high degree of variability, possibly due to past hybridization with nodding trisetum (*Trisetum cernuum*).



Ferns

Ascending in an elevational profile, from streambank to chaparral's edge, 16 species and natural hybrids of ferns have been documented!

- **On moist rocks:** five-finger fern (*Adiantum aleuticum*) and fragile fern (*Cystopteris fragilis*)
- **Spring courses:** lady fern (*Athyrium filix-femina* var. *cyclosum*) and giant chain fern (*Woodwardia fimbriata*)
- **On shaded banks and in forest understory:** *Adiantum jordanii* (California maidenhair), deer fern (*Blechnum spicant*), coastal wood fern (*Dryopteris arguta*), California sword fern (*Polystichum californicum*), Dudley's sword fern (*Polystichum dudleyi*), western sword fern (*Polystichum munitum*), and bracken fern (*Pteridium aquilinum* var. *pubescens*).
- **On tree trunks and branches:** nested polypody (*Polypodium calirhiza*)



- **On exposed outcroppings:** California lace fern (*Aspidotis californica*), coffee fern (*Pellaea andromedifolia*), bird's-foot fern (*Pellaea mucronata* var. *mucronata*), and goldback fern (*Pentagramma triangularis* subsp. *triangularis*)

Monocots



Sheltered within an impenetrable tangle of California huckleberry (*Vaccinium ovatum*), Shreve oak (*Quercus parvula* var. *shrevei*), and tanbark oak (*Notholithocarpus densiflorus* var. *densiflorus*), scattered plants of bear-grass (*Xerophyllum tenax*) occur. Vegetatively, this locally rare monocot could be easily mistaken by the uninformed as a depauperate example of jubata grass (*Cortaderia jubata*). Other native monocots that thread their way through forested slopes and adjacent stream banks are checker lily (*Fritillaria affinis*), red clintonia (*Clintonia andrewsiana*), leopard lily (*Lilium pardalinum* subsp. *pardalinum*), Hooker's fairy bells (*Prosartes hookeri*), fetid adder's tongue (*Scoliopus bigelovii*), false Solomon's seal (*Maianthemum racemosum*), and pussy ears (*Calochortus tolmiei*).



Variety Within Plant Families

From a floristics 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.

- **Example one:** 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 imagining two more polar opposites than western lady's-mantle (*Aphanes occidentalis*), a diminutive annual whose adult biomass can fit with room to spare on the nail of one's little finger and toyon (*Heteromeles arbutifolia*), a 6+ meter high sub-tree with ash-gray bark and fruiting panicles of luminous scarlet pomes.
- **Example two:** Unless one is versed in Carrot Family (Apiaceae) taxonomy and has fruiting plants at hand, it would be difficult to connect Pacific oenanthe (*Oenanthe sarmentosa*), California hedge-parsley (*Yabea microcarpa*), and hoary bowlesia (*Bowlesia incana*) with footsteps-of-spring (*Sanicula arctopoides*), sweet cicely (*Osmorhiza berteroi*), wild celery (*Apiastrum angustifolium*), rattlesnake carrot (*Daucus pusillus*), and cow parsnip (*Heracleum maximum*). 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.

Example three:

What is found growing on sandbars along the Scott Creek riparian corridor, is a monocot, and 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 first-time student into making a hastily arrived-at misdiagnosis! The aforementioned "iris poseur" is none other than iris-leaved rush (*Juncus xiphioides*). On the coastal prairies and adjacent grasslands can be found another foliar chameleon, brown-headed rush (*Juncus phaeocephalus*), which often grows with and masquerades as blue-eyed grass (*Sisyrinchium bellum*). Occasionally forming a threesome is western rush (*Juncus occidentalis*), which creates cespitose tufts with leaves and nascent culms playing the roles of a perennial fescue (*Festuca rubra/roemerii*) or tufted hair-grass (*Deschampsia caespitosa* subsp. *holciformis*), both of which (to confuse matters further) can be found growing sympatrically!

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WE BEGIN OUR ASCENT of the west-facing Schoolhouse Ridge complex, the area that is home to the type collection of the Santa Cruz clover (*Trifolium buckwestiorum*). Here the terraced benches are clothed and margined with stands of California oat grass (*Danthonia californica*), purple needlegrass (*Stipa pulchra*), blue wild rye (*Elymus glaucus* subsp. *glaucus*), California brome (*Bromus carinatus* var. *carinatus*), and California melic (*Melica californica*). These perennial grasses are punctuated with randomly dispersed colonies of cinnamon-scented owl's-clover (*Castilleja densiflora* subsp. *densiflora*) and large-flowered agoseris (*Agoseris grandiflora* var. *grandiflora*), its outsized seed heads simulating an aggregation of snowflakes.

Following the Mill Creek side of the ridge, we see pipestems (*Clematis lasiantha*), hairy honeysuckle (*Lonicera hispidula*), California chicory (*Rafinesquia californica*), twining snapdragon (*Antirrhinum kelloggii*), woolly malacothrix (*Malacothrix floccifera*), and stinging lupine (*Lupinus hirsutissimus*). Also here is one of the most dynamic and taxonomically complicated burl-forming manzanita populations in the state, growing in mudstone so weathered it has been reduced to powder-like fragments, reconfigured into miniature dunes reminiscent of a Zen garden.



The *Arctostaphylos crustacea* Complex



exceedingly long-lived, fire-regenerative "genetic sponge." This is for me a biologically sound theory and one worth investigating on molecular (DNA sites), ecological (specificity of fungal associates), and structural (examination of misplaced burls, the possible result of incomplete dominance) grounds.

Articulating a plausible scenario for the current evolutionary status of the manzanitas found here 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 is 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 concurrent/subsequent assimilation of genetic material from sympatric species, ultimately producing an



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AFTER BEING PHYSICALLY CONSTRAINED by the gauntlet of manzanitas and knobcone pines (*Pinus attenuata*) that characterize upper Schoolhouse Ridge, experiencing the panoramic view of the watershed, its vastness and topographical complexity, gives 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 our watershed.

The summit of Seymore Hill is ringed with grasslands sheltering scattered clusters of California fuchsia (*Epilobium canum* subsp. *canum*), displaying cinerous 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*); a glandular ecotype of the bristly golden aster *Heterotheca sessiliflora* subsp. *bolanderi*); California goldenrod (*Solidago velutina* subsp. *californica*); coyote brush (*Baccharis pilularis* subsp. *pilularis*); and California-aster (*Corethrogyne filaginifolia*).



Two of the three documented Clarkias for the immediate area manage to stake out territories along the wind-buffeted margin of the exposed ridgetop—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 fertile capsules and remarkably stable population sizes.

Responding to prevailing winds out of the northwest, Spanish trefoil (*Acmispon americanus* var. *americanus*) radically altered its erect-ascending mode of growth by lowering its profile and becoming a visually attractive mat. Visually obscured by the burnished end-of-season tangle of grass stalks, harvest brodiaea (*Brodiaea elegans* subsp. *elegans*) leaves a diffuse 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 Schoolhouse Ridge and the emergence of the "Chalks," 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*), its stems and calyces clothed with glistening encrusted trichomes, and rusty popcornflower (*Plagiobothrys nothofulvus*), staining hands and herbarium sheets purple with anthocyanin colored sap. These occupy separate niches from two sympatric taxa of *Delphinium*—western larkspur (*Delphinium hesperium* subsp. *hesperium*), extremely rare within the watershed, and woodland larkspur (*Delphinium patens* subsp. *patens*), distinct from the typical local form with 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.

Topographically complex and botanically diverse, the Scott Creek aspect of 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 woodlands and disjunct manzanita populations. Within an area circa 300 m x 50 m, aligned along a north/south axis, and abutting the source of Calf Gulch, four valid and two recognized but unpublished species of *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 anthers; and a distinct chemical signature.

Occupying a transitional zone, between the vertical grassland 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 listed Hoffmann's sanicle (*Sanicula*

hoffmannii) shares its domain with the repeatedly misdiagnosed, still undescribed *Sanicula* "gianonei" pro. sp. nov.—the criteria used to define this widespread taxon center on ecology/habitat preference, biochemical signature, foliar/bractmorphology and marginal trichomes, flower color, an unblemished epigynous disc, and schizocarp configuration/alignment of uncinete bristles.



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, quasi-vertical 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.



Occupying an exposed and consequently far drier vertical grassland habitat, 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*'s status being common and widespread.



A variation on the *Clarkia purpurea* paradigm is the pairing of slender cottonweed (*Micropus californicus* var. *californicus*) and green cottonweed (*Micropus californicus* var. *subvestitus*), the latter of which has not been documented anywhere else in the County. The more frequently encountered slender cottonweed was discovered, circa 400 m lower down the Seymore Ridge, growing in another narrowly delimited grassland edge proximal to two rare, listed taxa—San Francisco popcorn-flower (*Plagiobothrys diffusus*) and Santa Cruz clover (*Trifolium buckwestiorum*).

Returning to the aforementioned "vertical grasslands," this one nearer to the summit of Seymore Hill, two sister species of *Agoseris* occur, their differences manifested in growth habits and conspicuously dissimilar mature flower heads/achene morphologies—large-flowered agoseris (*Agoseris grandiflora* var. *grandiflora*), a robust perennial with stout stems supporting the outsized fruiting heads held above the surrounding grasses, and annual agoseris (*Agoseris heterophylla*), a diminutive and delicate annual, usually overtopped by seasonal grasses and possessing polymorphic achenes, variable both as to color and structure.

A Journey Through the Scott Creek Watershed



Home

Shore

Headlands

Gulches

Grasslands

Scott
Creek

Schoolhouse
Ridge

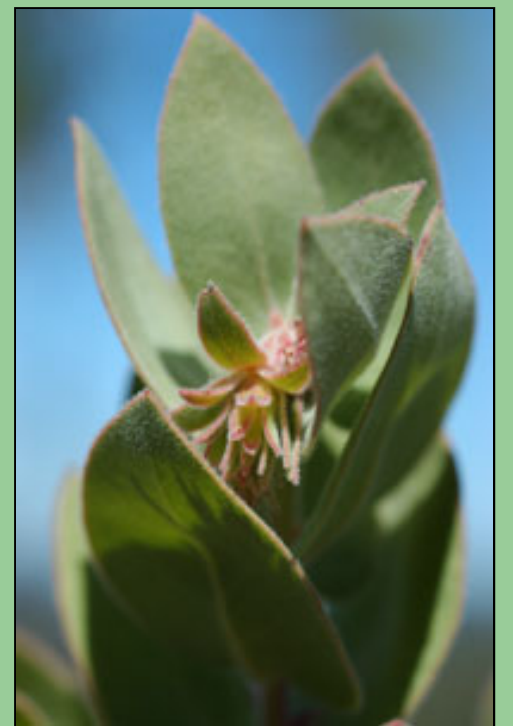
Seymore Hill

Chalks

Chalks



NEAR THE END of our ecological tour, we enter the "Chalks," with mudstone so bleached by the elements that from a distance it looks like snow. If one were to define with a single genus this harsh and unyielding environment, then the pioneering manzanitas would win hands down. While the obligate-seeding sensitive manzanita (*Arctostaphylos sensitiva*) and the rare, listed Anderson's manzanita (*A. andersonii*), Schreiber's manzanita (*A. glutinosa*), and Ohlone manzanita (*A. ohloneana*) 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 crinite manzanita (*Arctostaphylos crustacea* subsp. *crinita*). This phoenix-like, fire-regenerative taxon—a genetic sponge of such complexity that no two specimens are alike—shares habitat and longevity with the coast redwood (*Sequoia sempervirens*) in the chaparral, diminished in stature and often golden in hue.



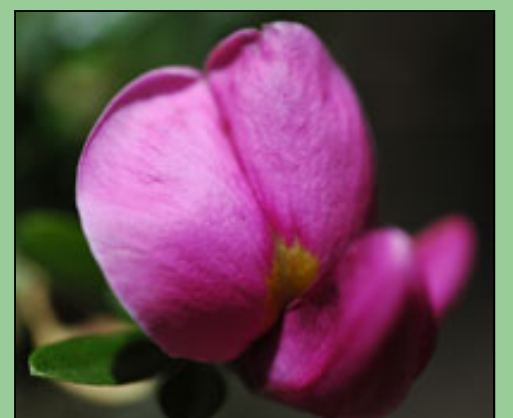
The paucity of soil and rapidly draining fractured substrate places severe restrictions on the growth potential of trees and shrubs,

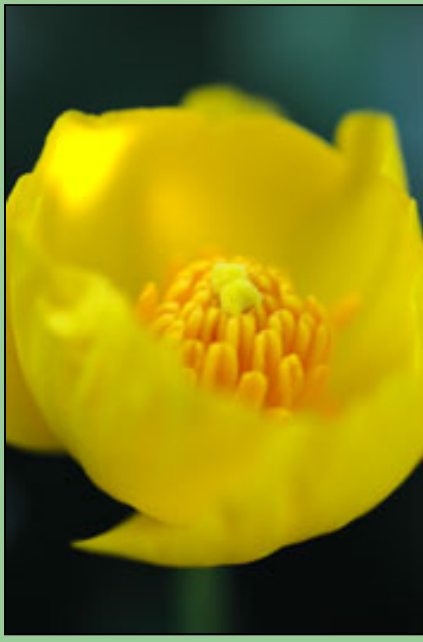
which luxuriate in the watershed's canyon bottoms and soil-retentive staggered slopes. Canyon live oak (*Quercus chrysolepis*), lichen-festooned with reduced, thickened leaves contrasting with the outsized acorns, shares its aridaerie with what purports to be chaparral live-oak (*Quercus wislizeni* var. *frutescens*), displaying small, holly-like leaves, and possibly a chaparral ecotype of Shreve oak (*Quercus parvula* var. *shrevei*), with foliar margins running the gamut from entire through undulate-spinescent. At the opposite end of the spectrum, stature-wise, Pacific stonecrop (*Sedum spathulifolium*) can be found on the west-facing ridges between Bannister and Bettencourt gulches, favoring moss-lined depressions and displaying rosettes colored grass-green and tinted orange thru purple.



As we work our way up Schoolhouse Ridge and pass through the "Chalks," we can observe en route golden chinquapin (*Chrysolepis chrysophylla* var. *minor*), chaparral pea (*Pickeringia montana*), bush poppy (*Dendromecon rigida*), yerba santa (*Eriodictyon californicum*), pitcher sage (*Lepechinia calycina*), buck brush (*Ceanothus cuneatus* var. *cuneatus*), and rush trefoil (*Acmispon junceus*).

At the headwaters of Mill Creek, finally, just below the drainage divide to the San Lorenzo River watershed, we reach the border of the extensive Lockheed Martin facility—an example of careful corporate land stewardship that has retained within its holdings a high degree of biodiversity. What a journey, and this is only 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 Scott Creek Watershed.





["Traversing Swanton Road,"](#) 235-page essay by James A. West documenting the 200+ native species one can see on a journey down Swanton Road (without leaving the tarmac!) is available in PDF format.

Many thanks to botanist extraordinaire James A. West for the use of his text and for showing me the beautiful sights of the Scott Creek Watershed. Website design by Dylan Neubauer. And many thanks to Mike Clark for all of his help!

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