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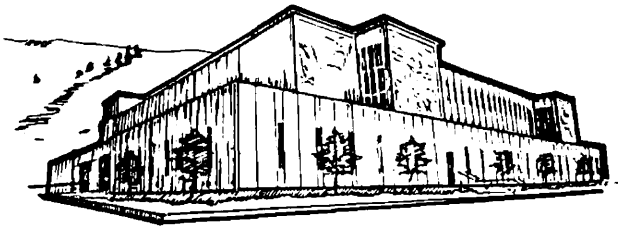
Protection of predator/prey diversity in the North Fork valley of the Flathead River : a case for land use planning

Allen C. May
The University of Montana

ALLEN C MAY



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PROTECTION OF PREDATOR/ PREY DIVERSITY IN THE NORTH FORK VALLEY OF THE FLATHEAD RIVER: A CASE FOR LAND USE PLANNING

By

Allen C. May

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Protection of Predator/Prey Diversity in the North Fork Valley of the Flathead River: A Case for Land Use Planning (114 pp.)

Director: Tom Roy

A component of the Northern Continental Divide Ecosystem, the North Fork Valley of the Flathead River is a transnational drainage that is home to a rich native biotic assemblage, a diverse human community, and a melange of resource extractive land uses. Perceived differently by the various owners that manage its land, the drainage offers a unique challenge and opportunity for the implementation of ecosystem based land use planning.

Scattered throughout the valley bottom, small portions of land on the American side of the border are privately held and valued for recreational and second home development. However, much of this land is critical riparian habitat for imperiled predators and is threatened by the impacts of unplanned development. Biological and ecological research has uncovered the various needs and threats for 3 local predators of concern. The grizzly bear (*Ursus arctos horribilis*), gray wolf (*Canis lupus*), and bull trout (*Salvelinus confluentus*) were chosen for analysis based on their ability to indicate the health of the drainage's terrestrial and aquatic habitats. These species offer insight into the impacts of private residential development, open road densities and improper waste disposal.

Surrounded by federal and state land, private landowners have been forced to accept costs and benefits of public land use planning. Concerned with the inability to control their destiny, the North Fork community has developed a plan to guide private land use. This plan has subsequently become the backdrop for international planning . Analysis, based on research and personal interviews, offers insight into the strength and weaknesses of both grassroots and international plans relative to their ability to protect predator/prey diversity and the interests of local landowners.

In order to provide long term protection for both, it is evident an international treaty is the optimal vehicle for guidance. Given the appropriate structural guidance federal, state, and local governments must then be responsible for progressive changes. Private sector conservation, is the optimal functional approach for sustainable human predator coexistence in the North Fork.

ACKNOWLEDGMENT

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Understanding my need to attack and complete this project in a limited time, my graduate committee funneled my grand ideas into an approachable task. As a goal for this project, I hope to provide information that has practical value. If this goal has been reached it is due largely to guidance from a committee who's experience lends itself to getting the job done. Dr. Bob Ream allowed me, as a non-degree student, to take part in his popular Wilderness Management class, after completion he acquiesced to writing a letter of recommendation to the School of Environmental Studies. My acceptance into the program and completion of the Masters Degree is due in large part to his willingness to take valuable time in order to help someone with a desire to learn. Dr. Chris Servheen has accepted with grace my fast track approach for

completion. Obviously pulled in many directions of critical import, his eagerness to provide technical assistance and guidance in support of a modest graduate project was admired and greatly appreciated. Willing to give me a chance in a very competitive program, I am forever indebted to Dr. Tom Roy. As my academic advisor and committee chair he has been an invaluable teacher and guide. Extremely dedicated to a better world, he, through honesty, fairness, and willingness to give, has set the standard from which I will always measure success. Tom, you are a friend and model of integrity. I thank you.

Life in Montana certainly would be less of an experience without the goodness and understanding of close friends. Dana and I are extremely lucky to have developed such a relationship with Carter and Julie Martin Calle. As fellow Southerners their generosity and open arms warmed and embraced us as common kin in a strange land. Good luck y'all, we'll miss you dearly.

Without the moral support of our family this undertaking may well have been just a dream. Even as an adult, the gentle nod of approval and the words of encouragement make taking a chance a whole lot easier. Thanks for everything, we love you beyond expression.

Finally, I dedicate this work to my dear wife and best friend, Dana. Uprooted from your family and home I realize that this adventure has not always been easy for you. With little to gain and much to lose, you took the big step, and hand in hand we followed my bliss. It is a testament to your unselfish nature and unqualified love that this personal endeavor has been supported and completed successfully, dependent wholly on your work and sacrifice. I thank and love you with all of my heart.

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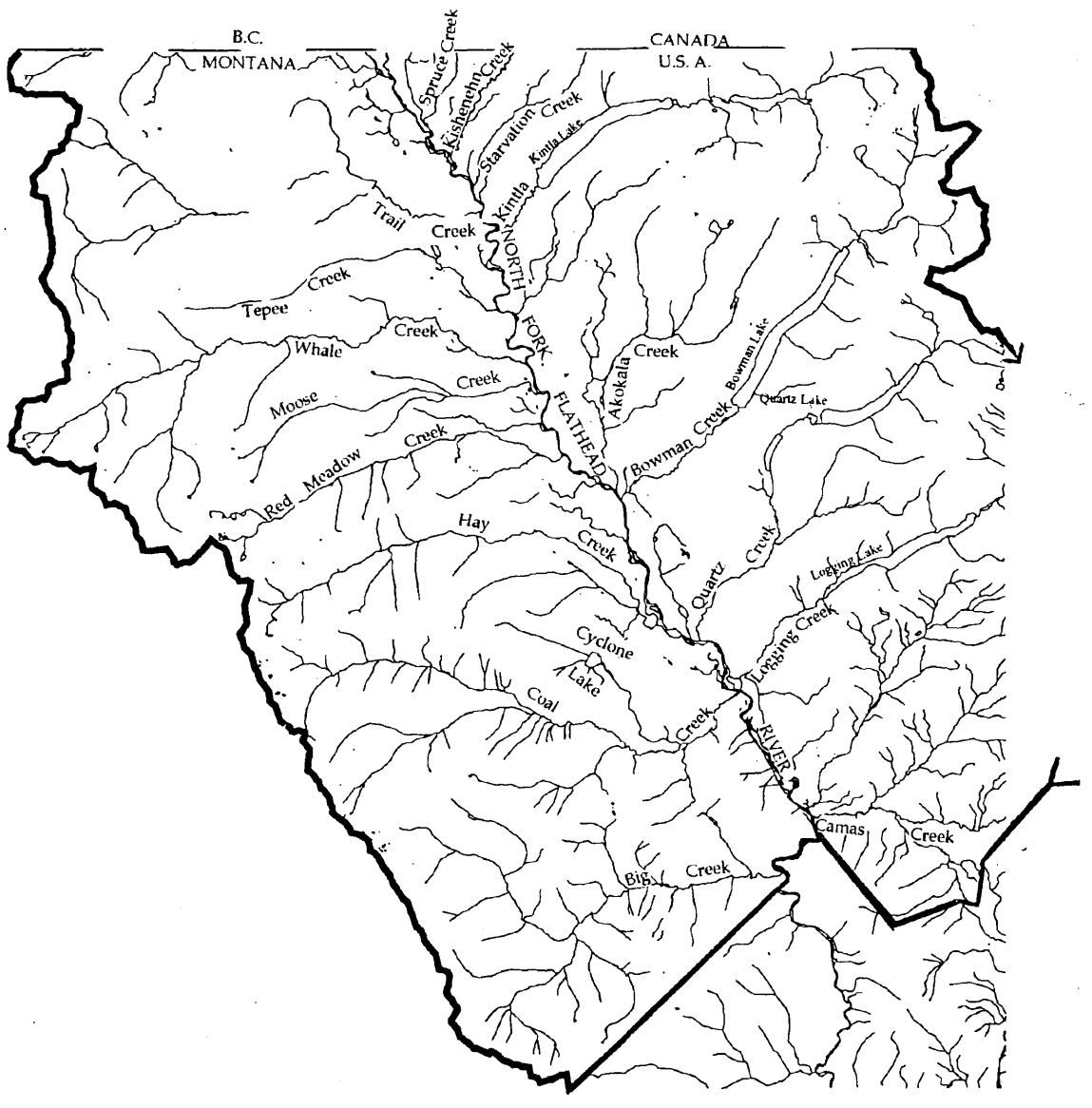
INTRODUCTION

Tucked away in a remote area of northwestern Montana and southeast British Columbia is a mountain valley parted by a free running river. With its origin in the Canadian Rockies, this river, the North Fork of the Flathead, escorts the Continental Divide into the United States. Over the ages this companionship of mountains and water has created a valley of international significance. Geographically, the "North Fork" is bounded by the Livingston range of the Rockies in the east and the McDonald/ Whitefish range in the west. With its headwaters 40 miles north of the international border, it's confluence with the Middle Fork forms the mainstem of the Flathead River. Ecologically it is part of the Northern Continental Divide Ecosystem (NCDE), a largely undisturbed amalgamation of alpine tundra, coniferous forests , prairie grasslands, glacial lakes and the headwaters of 3 distinct continental drainages. The valley's landscape is characterized by heavily forested slopes, perennial streams, and alluvial floodplains. It's montane boundaries are glacier carved peaks in excess of 9,000 feet. Coastal Pacific weather patterns interact with those of the continental variety to produce an abundance of seasonal moisture for the area, as evident by the floral diversity of the numerous riparian corridors and the pristine quality of the water that forms them. This fusion of montane and riparian systems is generally undisturbed and is a scarce haven for biological diversity. Most importantly, it supports a rare assemblage of the dominant native predators once found throughout the western United States.

The primitive character of the North Fork is not absent of human influences. This human presence is most obvious in the political boundaries that determine ownership and resulting land use. Those lands east of the midline of

the river and south of the international border are part of Glacier National Park, while lands west of the river are private holdings in Flathead County Montana, state owned lands administered by the Montana Department of State Lands, and federal lands managed by the Flathead National Forest. Lands north of the river are within the province of British Columbia. Land use planning in the area is currently as varied as ownership, though protection of the natural resources significantly influences all efforts. As a planning unit, the North Fork is considered locally and federally as that area within the crests of the Livingston and Whitefish ranges the Canadian border and the Camas Creek/Big Creek drainages (Figure I.1). Internationally, the North Fork is expanded to include that part of the drainage within British Columbia (Figure I.2).

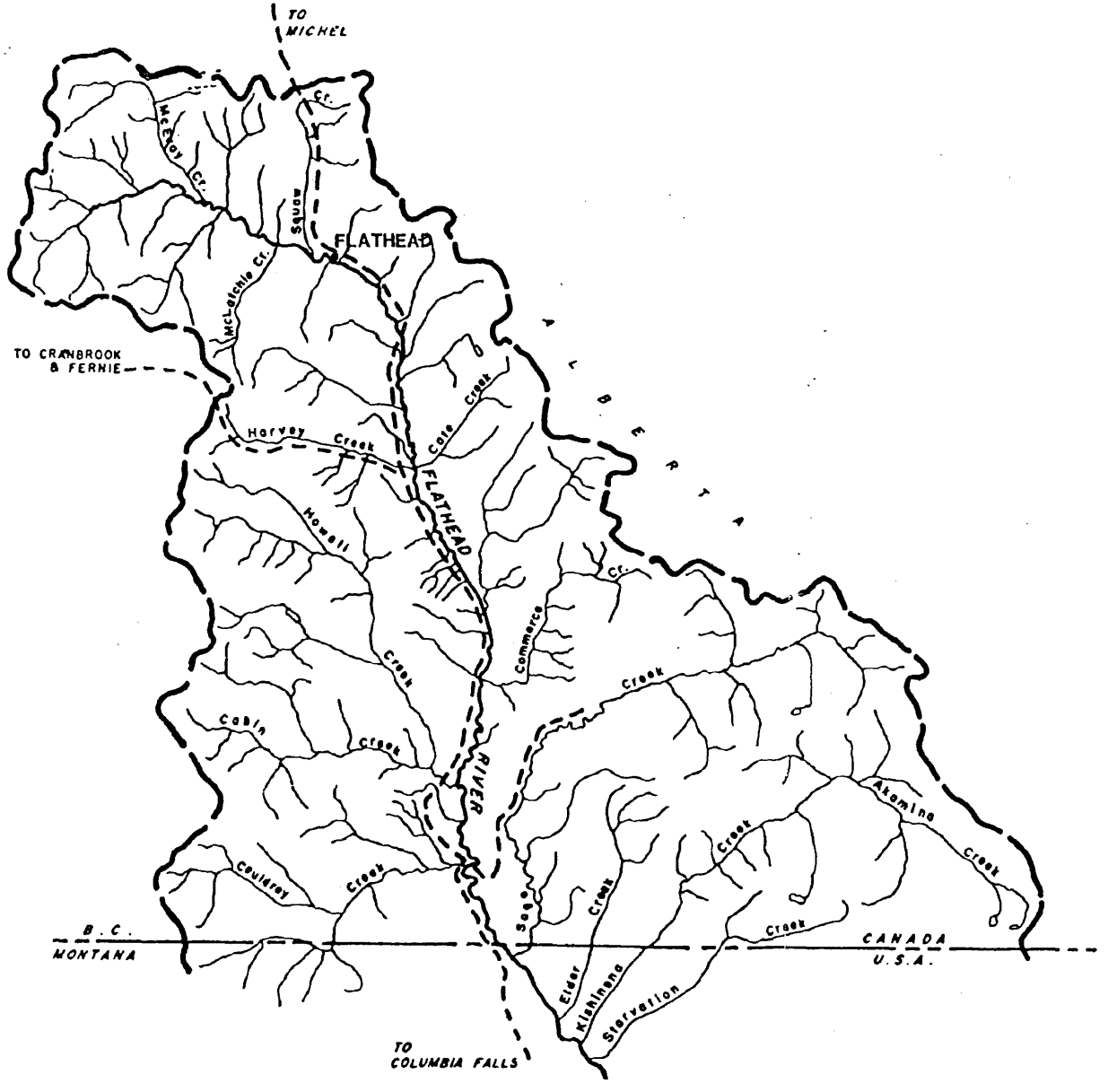
As we come to understand the complexities of natural systems it becomes undeniable that biodiversity cannot be maintained exclusively on federally protected lands. This is no more evident than in the case of broad ranging predators with their diverse habitat and prey requirements. Unfortunately these requirements have come into direct conflict with the ever expanding influence of human populations and our insatiable appetite for natural resources. Because our country has been divided into linear units of equal size and shape, bound only by major topographical features, ownership and use have generally followed this pattern. Those lands set aside for the protection of their natural features and living communities were not delineated by ungulate migratory patterns or the spawning courses of fish, but instead were based on political compromises between conflicting interests. Though these conflicts continue to occur it is becoming evident that proper public land management, though critical, is not the panacea for the protection of species diversity. For example, with less than 2% of the land base in private hands, the ecological integrity of the North Fork would seem undefiled by threatening private land use practices.



LEGEND

Sub-basin Boundary

Figure I.1 Map of the North Fork, Flathead River in Montana.



LEGEND

Sub-basin Boundary

Figure I.2 Map of the North Fork, Flathead River in British Columbia.

Unfortunately, that 2% is critical habitat for predators and prey and if misused could dismantle and consequently detach a large segment of viable habitat from an otherwise contiguous, highly utilized landscape.

Because doom and gloom do not motivate me I prefer to reveal the opportunities these lands represent. Constituting less than 20,000 acres the private lands in the North Fork could well be purchased by the government at a seller's price. However, a move of this sort would undermine many of the creative possibilities available with other protective land use strategies. Where else might we demonstrate human predator coexistence, or integrated, ecologically driven land use management? A mere 20, 000 acres provides a microcosm of what might be, relative to public/ private land preservation efforts. If we are to protect biodiversity it must, through planning and proper ownership, integrate private lands and the concerns of their owners. The outright purchase and subsequent management of an additional 20,000 acres is quite possible but this cannot be duplicated throughout the Rocky Mountains, nor should it. At some point we must learn to live with and within, versus against and adjacent to predators and the natural systems that support them. In fact their perpetual well being might well depend on it.

This treatise will attempt to recognize the pertinent threats to predators in the North Fork while offering insight into the planning efforts that will ultimately determine their destiny. There are currently several approaches that involve the North Fork, with the final product bound to reflect those values prized by the citizens most concerned with the valley's fate. It is my intent to elevate the significance of the area's predator/prey richness while recognizing fully the relevance of private ownership. Having analyzed the strength and weaknesses of the various approaches, recommendations will be made optimizing, when possible private landowner benefits and predator diversity.

CHAPTER 1

WHAT'S IN THE NORTH FORK?

As a component of the Northern Continental Divide ecosystem (NCDE), the North Fork Valley of the Flathead River is unmatched in the lower 48 as home to native predators and their prey. Wolves (*Canis lupus*), grizzly bears (*Ursus arctos horribilis*), black bears (*U. americanus*), wolverines (*Gulo gulo*), mountain lions (*Felis concolor*), coyotes (*Canis latrans*), and lynx (*Lynx lynx*) represent the mammalian predators, while bald eagles (*Haliaeetus leucocephalus*), golden eagles (*Aquila chrysaetos*), osprey (*Pandion haliaeetus*), red-tailed hawks (*Buteo jamaicensis*) and peregrine falcons (*Falco peregrinus*) are the avian predators. The piscivorous bull trout (*Salvelinus confluentus*) and westslope cutthroat (*Oncorhynchus clarki lewisi*), are found in its river, tributaries, and lakes. The concomitant prey base includes, but is not limited to, White-tailed deer (*Odocoileus virginianus*), mule deer(*O. hemionus*), elk (*Cervus elaphus*), moose (*Alces alces*), bighorn sheep (*Ovis canadensis*), mountain goats (*Oreamnus americanus*), beaver (*Castor canadensis*), snowshoe hare (*Lepus americanus*), squirrels and various whitefish (Fraley and Shepard 1989, Pletscher et al 1991, Ream et al 1991, USNPS 1991, Rachael 1992). Of these species, the gray wolf, bald eagle and peregrine falcon are listed as endangered and the grizzly bear as threatened, by the 1973 Endangered Species Act. The bull trout, westslope cutthroat trout, wolverine, lynx, gray wolf, and grizzly bear are listed as species of special concern by the State of Montana (Montana Natural Heritage Program 1992).

Certainly the area's scenic, cultural, and economic values are evident but pale in comparison to its value as the richest predator/prey ecological system in the continental United States. The fact that it is home to both grizzly bears and denning gray wolves distinguishes it not only from other watersheds in the NCDE but from all other bioregions in the United States, with the exception of those in Alaska. The primary prey diversity exceeds that of most systems (Murie 1944, Mech 1966, Messier and Crete 1985, Ballard et al 1987) and establishes the North Fork Valley as an ecosystem that includes all of North America's once dominant predators. The cold, clear water of the river and tributaries is home to the imperiled bull trout, an indicator species of water quality and therefore the health of the entire Flathead drainage (MDFWP 1990). Given its geographical location and its predator prey richness, the North Fork is a valley with global significance.

Unfortunately these species are not secure as long term members of the valley's ecological communities and are indeed threatened in many ways. Because they are found in the North Fork and because the valley provides them viable habitat, the area of concern is a critical part of both grizzly bear and gray wolf recovery zones as delineated by the United States Fish and Wildlife Service (USFWS) (USFWS 1987, USFWS 1990). Critical habitat for bull trout, the North Fork is designated as a federal Wild and Scenic River which provides for the maintenance of ecological integrity. The water quality is rated class A1 by the State of Montana, requiring the highest and most pristine quality based on a nondegredation principal. Its waters are thoroughly monitored by the State of Montana to evaluate usage by this species of special concern (MDFWP 1990). These political designations, both state and federal, offer further evidence that the North Fork is an area unparalleled as a haven for endangered predators.

Grizzly Bear

Once abundant throughout the western United States the grizzly bear's range reached eastward into Nebraska, Minnesota, Kansas, and Texas and southward into the Mexican highlands. Range northward from Mexico included all of the Rocky Mountain states. California populations inhabited the central valley and coastal regions (Storer and Tevis 1955, USFWS 1982). With the westward expansion of white settlers came a significant decrease in the range of the grizzly. Viewed as a vicious threat and the embodiment of wilderness, it was eradicated when encountered and eventually hunted intensely as a target of predator control efforts. Livestock soon became a dominant fixture on the landscape and forever altered the distribution and density of native vegetation that the grizzly bear depended on. This was most evident in riparian areas where succulents valued by the grizzly bear became a favorite food for sheep and cattle. As lower elevational sites were inhabited by a growing human population and valleys were subsequently converted to farmland and townsites, the remaining grizzly populations were limited to those found on public lands in mountainous terrain. Consequently, grizzly bear range in the United States has been reduced to approximately 2% of its historic range and is only found in 5 major ecosystems. These are the Greater Yellowstone (GYE), Cabinet/Yaak, Selkirk, North Cascade and Northern Continental Divide systems (USFWS 1990). All of these except the Greater Yellowstone are contiguous to Canadian systems that support populations of grizzlies.

The grizzly bear in the lower 48 states was listed as "threatened" in 1975 under the 1973 Endangered Species Act as amended (87 stat 884, 16 U.S.C. 1531-1543). Its threatened status is defined "as one which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." The purpose of this act is to provide a means by which the

ecosystems upon which threatened and endangered species depend may be conserved(USFWS 1990).

As part of the NCDE the North Fork Valley falls squarely within the 9,600mi^2, occupied by grizzlies in this proposed recovery zone. The diversity of habitat and the abundance of quality foods found in the flood plain and benchlands of the North Fork are essential for existing grizzly populations that are found in densities of 1 bear per .6 mi^2 in the Canadian portion of the drainage (Jonkel et al 1978, MClellan 1989, USFWS 1990). Recovery targets that differentiate between females with cubs in Glacier National Park (GNP) and females with cubs outside the Park amplify the importance of the North Fork where grizzlies from within and outside the Park utilize this prime grizzly habitat (Singer 1978, Jonkel et al 1981).

Gray Wolf

Wolves in the United States faced the same threats as the once broad ranging grizzly. Found throughout most of the United States, the wolf was persecuted for both mythological and economic reasons. Viewed as a creature of death and darkness by European cultures, white settlers in the new world brought with them this longstanding fear and eliminated the wolf in any areas where coexistence might occur (Lopez 1978). As settlement moved westward, the overharvest of bison on the great plains and the subsequent utilization of carrion by wolves left their populations in a precarious situation. Thriving on an easily accessible food source, populations of wolves increased while its natural prey base declined precipitously. Increases in human populations and their livestock left the wolf exposed to human intolerance and a new domestic prey base (Ream and Mattson 1982). The consequent depredation of sheep and cattle provided the economic justification for wholesale eradication of wolves. Methods such as poisoning, trapping, shooting, and the burning of pups in their

den, were partly driven by private, county, and state bounties (Day 1981). Federal efforts to exterminate predators lasted until the 1930's when wolves were virtually eliminated in the western United States (Ream and Mattson 1982).

The Northern Rocky Mountain wolf was listed as endangered in 1973 pursuant to the 1973 Endangered Species Act. The 1987 Northern Rocky Mountain Wolf Recovery Plan recognizes three large land areas in which wolf populations must become established . These areas, selected because of their biological suitability and low potential for human /wolf conflicts, include northwest Montana, the greater Yellowstone area, and central Idaho (USFWS 1987). Natural recolonization is expected in northwest Montana and central Idaho, relying heavily on dispersal of wolves from Canada (Pletscher et al 1991). The possibility of recolonization became evident in 1972 when the Wolf Ecology Project at the University of Montana began collecting reports of wolves in Montana and northern Idaho. Tracks were verified in the North Fork in the winter of 1984 and 1985. Finally, after an absence of breeding in the Northern Rockies of over 50 years, a litter of pups was born in 1986 in the North Fork within GNP (Ream et al 1989). The successful recolonization is due in large part to the province of British Columbia (B.C.). In the late 1950's, British Columbia began implementation of strategies designed to protect and encourage recovery of wolf populations in the southeastern corner of the province in an area adjacent to GNP (Ream 1984, Pletscher et al 1991).

The diversity of ungulate species and the limited exposure to humans allowed wolves to reestablish themselves in the North Fork (Ream et al 1989, Bureau 1992, Rachael 1992). Though populations are far from stable, increases have averaged about 30% annually between 1984 and 1990 representing a finite increase close to average for wolves (Keith 1983, Pletscher et al 1991). Currently there are 4 packs found in the area of concern (Figure 1.1). The Headwaters Pack

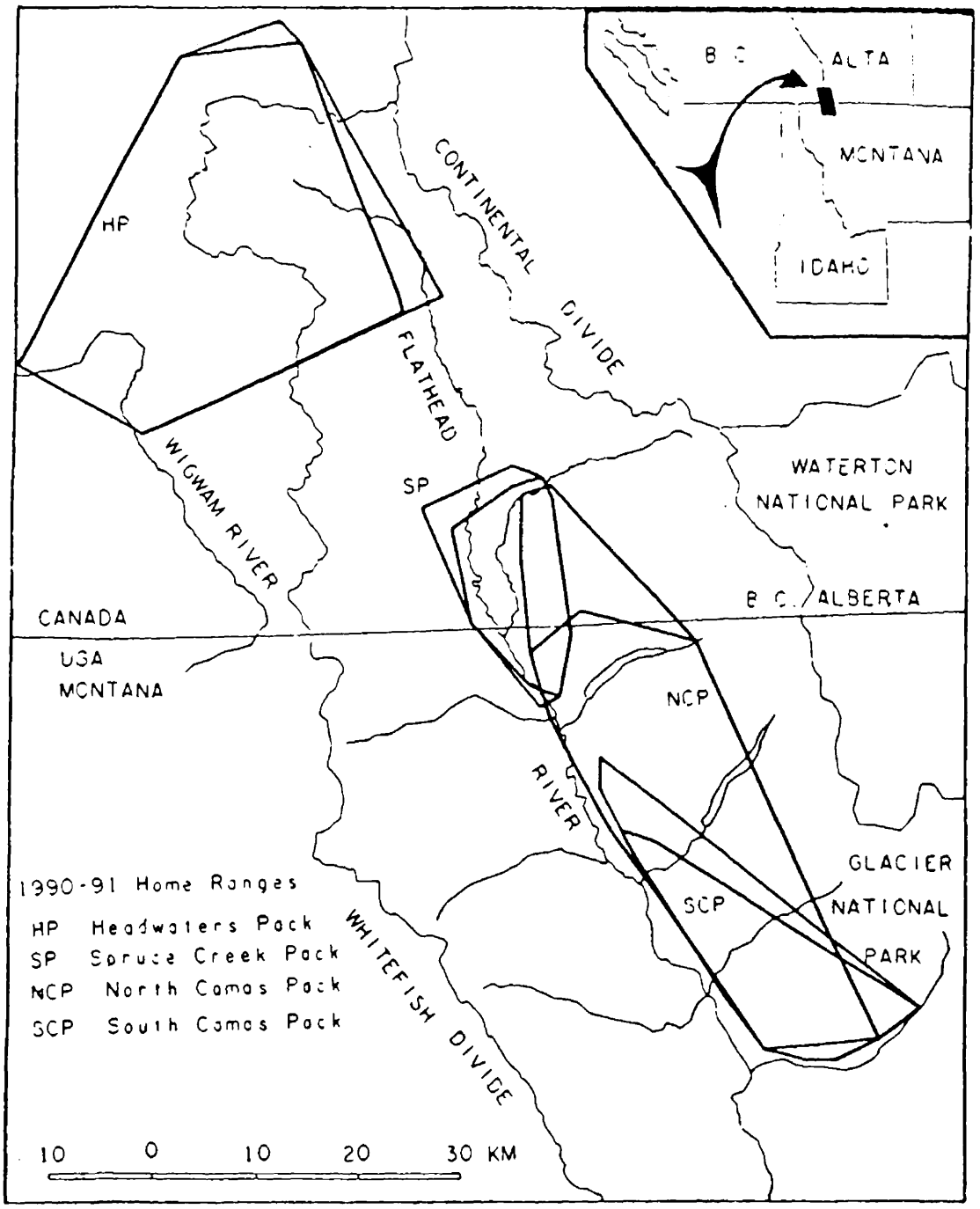


Figure 1.1 North Fork Wolf Pack Home Ranges (Ream et al, 1991).

that dens in the headwaters of the North Fork in B.C., the Spruce Creek Pack whose territory includes the area between Kishenehn and Commerce Creek on the international border, the North Camas Pack that ranges between Logging and Kintla Creek and the South Camas that ranges between Bowman and Camas Creek (Ream et al 1991). Located 115 miles northeast of the central Idaho area and 300 miles north of the GYE, The North Fork is the southernmost "jumping off point" for dispersers (Fritts 1991). Obviously the North Fork is the keystone for wolf recovery throughout the Rockies, and the wolves that reside there represent the future of wolves in the United States Rockies.

Bull Trout

As an indicator of watershed integrity, the bull trout of the Flathead Basin is without equal. Growing to maturity in Flathead Lake, then migrating through the river system to spawning tributaries, this species is sensitive to changes in any part of the system (Fraley and Shepard 1989, MDFWP 1990). An aquatic predator, it migrates up to 150 miles from Flathead Lake to spawn in tributaries of the North and Middle Forks of the Flathead River. Historicaly common throughout the Columbia River system, adfluvial populations are now limited in the Clark Fork, Kootenai, and Flathead drainages (Fraley 1989). Hydroelectric projects, timber harvest activities, residential and agricultural development, introductions of non native fish, and overharvest by anglers reduced population numbers and destroyed once effective habitat (Fraley et al 1989).

Bull trout from Flathead Lake once spawned in all forks of the Flathead system. Hungry Horse Dam on the South Fork, Kerr Dam on the lower Clark Fork, and Bigfork Dam on the Swan River blocked all migratory movements into fluvial and adfluvial stretches, therefore eliminating half of the former habitat once used by these populations (Fraley et al 1989). Currently, the North and Middle Forks of the Flathead offer the last stronghold for this very large (20 to 36

inches, 4 to 25 pounds) piscivorous native (Figure 1.2). It is listed as a Class B Species of Special Concern by the Montana Department of Fish Wildlife and Parks, because of its limited habitat and numbers in Montana. The Flathead bull trout are one of the most significant populations in North America and their elimination would mean at least a moderate loss to the gene pool of the species (Holton 1980). Currently, a petition has been submitted to the USFWS for listing under the 1973 Threatened and Endangered Species Act (Weaver, MT Dept of Fish, Wildlife, and Parks pers. commun.) The unimpeded flow of the North Fork and relative pristine quality of its tributaries provide valuable habitat for 60% of the remaining Flathead bull trout (Weaver MT Dept. of Fish,Wildlife, and Parks pers. commun.).

Certainly all predators and prey play a significant role in maintaining the ecological balance of a given watershed. Though predators occur and thrive in various watersheds throughout the world, it is fair to state that the diversity found in the North Fork rivals the most pristine systems in North America. It is of utmost significance to consider that human beings have also made this valley home for over 100 years and have existed in a manner that has generally perpetuated the human-predator dynamic. Guided by fears and superstitions western culture has historically been unaccepting of a more powerful creature within its domain. In recent times this fear is slowly being put to rest and replaced by a more inquisitive and accepting ecological conscience (Perry 1977, Tucker and Pletscher 1989). Federal and state laws have been enacted that verify this new consciousness and are and will be tested thoroughly in the North Fork. The predators in this valley are certainly found in other parts of the world but as a rich predator/prey community existing with increasing human pressures it stands alone as both a model and yardstick of our ability to coexist.

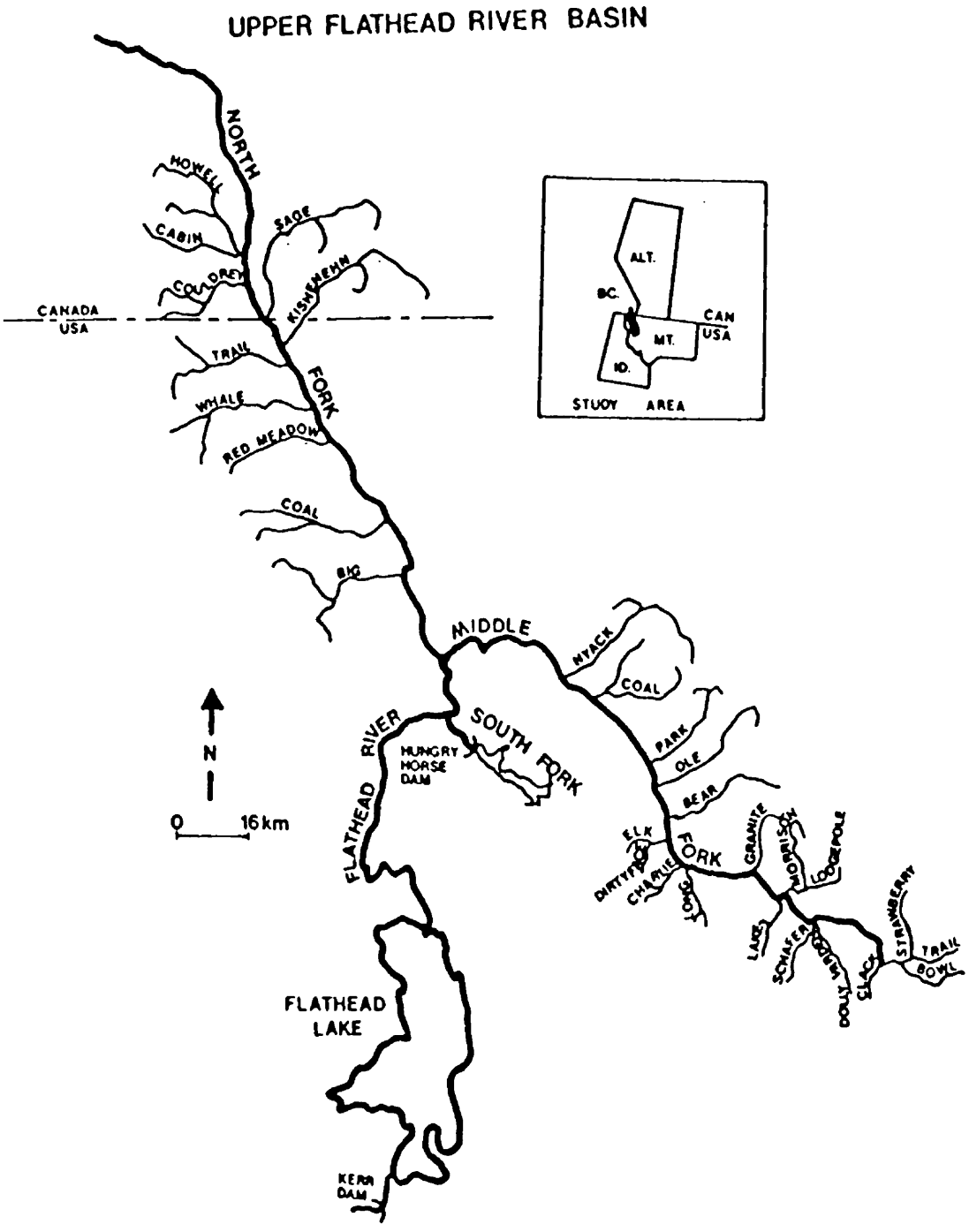


Figure 1.2 Identified bull trout spawning areas in the upper Flathead Basin (Fraley and Shepard 1987).

CHAPTER 2

PREDATORS OF CONCERN

The needs and threats of these three predators, the grizzly bear, gray wolf, and bull trout will be delineated in order to analyze private land use planning in the North Fork. Their existence and imperiled status best represents the reality of human impacts on a natural system while simultaneously offering a window of opportunity for the effective implementation of land use planning as a means to protect the predator/prey richness of the North Fork.

Grizzly Bear

The biological needs of grizzly bears are centered around the availability of food, cover, denning and social areas. These varied needs are best met with a diversity of habitat (USFWS 1990). From snow chutes and alpine meadows through wooded uplands, to the flood plain of the river itself, the North Fork area possesses a full spectrum of prime habitat. The flood plain provides both seasonal and residential home range because its mosaic of bogs, meadows and lakes at low elevation provide nutrient rich succulents. This food source is most valuable in the spring when emerging grizzlies take advantage of the "green up". As fall brings colder temperatures, mid to higher elevational freezing, leaves bears reliant on the foods found at these lower sites. This is particularly critical when berry failure leaves North Fork grizzly bears without their most favored food source (Jonkel et al No Date, Jonkel et al 1978, Jonkel et al 1981). High densities of grizzlies (1 bear per km^2) have been documented at the northern end of the valley in the Ketchikan Creek, Mud Lake and Sage Creek riparian areas (Jonkel et al 1981). Singer (1978), found that 80% of grazing and feeding sites in

his study area occured in the North Fork flood plain or in tributary stream habitats. Seventy percent of the study area was coniferous forest but contained only 20% of the feeding sites.

Though not used extensively as forage sites, lodgepole pine (*Pinus contorta,*) subalpine fir (*Abies lasiocarpa*) and spruce (*Picea engelmanii and P. glauca*) stands that dominate the area provide valuable cover for grizzlies that are generally exposed in open meadows and dry channel sites. Those stands that are part of riparian corridors are of added significance in that they provide both food and cover for seasonal and resident grizzly bears. Because females are more often residents of the flood plain and require secluded areas with little or no disturbance, the importance of cover is exacerbated considering the exigence of females to a recovering population (Jonkel et al 1981).

The upland benches of the valley are forested and offer both cover and berry fruit for seasonal use. If wet, the ridges and sidehill parks in these areas are utilized for their forbs and sedges (Jonkel et al, No Date). The 1988 Red Bench Fire has certainly had an impact on this area but has not been studied to determine its consequence on grizzly movement and forage sites. Alpine habitats in the Livingstone and Whitefish Range are of utmost importance as denning sites and late summer feeding areas. The snow chutes in these areas provide succulents and are often carrion rich, while the secluded nature of these habitats provide space for the rearing of cubs.

Past and present human activities have had the greatest negative impact on grizzly bear populations. Though generally remote, the North Fork grizzly bears have not been immune to the threat of human induced mortality and habitat loss. The 20th century brought settlement to the valley soon followed by oil exploration, timber harvest in the 50's, and gas exploration in the 80's (McLellan and Shackleton 1988). The threat of a coal mine in the B.C. portion of

the valley and the significant increase in human densities in Montana prompted many of the current concerns for the health of North Fork grizzly populations.

Human induced mortality is directly related to the habituation of bears to human activities. Without the innate desire to avoid humans, grizzly bears are likely to come in close contact with human activities (USFWS 1990). When this occurs, the opportunities for bear/human conflicts rises dramatically. Less wary of humans, bears become attracted to unnatural food sources (garbage, fruit trees, gardens, apiaries, livestock, boneyards etc.) associated with human settlement. Opportunistic by nature, food conditioning is the consequence that results in death for the bear, via self defense or management actions (Johnson and Jonkel 1977). Roads in grizzly habitat result in mortalities due to the attractiveness of palatable grasses used to stabilize roadbeds (USFWS 1990). Habituated to the activity that these thouroughfares bring, bears become exposed to poaching and auto accidents (Jonkel et al 1981,McLellan and Shackleton 1988, McLellan 1990,). The USFWS (1990) cites mortality as the most serious consequence of roads in grizzly habitat.

The impact of human settlement and resource extraction has had an equally negative effect on grizzly habitat loss. Homes and worksites and the roads that access them, physically eliminate vegetation and cover while simultaneously forcing unhabituated bears into marginal habitat (Johnson and Jonkel 1977, USFWS 1990, , McLellan 1990). McLellan(1990) reports that road densities of .7km per km^2 in his North Fork study area resulted in a 8.7% daytime loss of viable habitat. This response to disturbance is most significant relative to females and their cubs whose survivorship in marginal habitat is low (USFWS 1990, Manley and Mace In Progress). The energy intensive flight response from roads and activities places physiological stress on bears, removes them from quality forage, and in turn may upset their balance of energy (Jonkel

et al, No Date). This is of most concern in the North Fork where tributary riparian areas and roads are commonly adjacent. Roads in these streamside zones can displace bears from valuable forage and travel corridors. The amount of use these roads receive seem to have no impact on the amount of displacement they are responsible for (McLellan, 1990). This puts into question road closure policies on public lands and the seemingly innocuous seasonal use of private roads in the North Fork.

Roads and human usage of them represent an ominous threat to the North Fork grizzlies. Found in remote areas throughout the valley, roads are the most significant impact of resource extraction industries. They provide long term access to valuable secluded areas while making further development economically feasible. With access comes human settlement which, unfettered, promotes mortalities due to bear/human conflicts. In the North Fork, unregulated residential development has resulted in a deadly mix of attractants and disturbances that has virtually eliminated viable habitat in the Polebridge and Trail Creek areas (Jonkel et al 1978). If development of this kind continues, it could eliminate the flood plain as a valuable feeding ground while simultaneously obstructing the movements and interchange between grizzlies in the Whitefish Range and those whose range is within GNP.

Gray Wolf

As the preeminent predator of large ungulates in the Northern Hemisphere, the wolf utilizes sensory, hunting, and travelling skills, and social organization to effectively stalk and kill ungulates. Its habitat, therefore, is best defined as those areas with an adequate supply of vulnerable prey. These areas must also be minimally accessible to human exploitation (USFWS 1987). Cover requirements for wolves are dependent on what is esential for prey species and what provides security from exposure to humans. Den sites are generally found

on southern aspects in well drained soil and are situated in proximity to water and ungulate winter range and are sensitive to human disturbance.

Wolves in the North Fork prey primarily on white-tailed deer, elk, mule deer, and moose. White-tailed deer, and elk are the most important in that order (Bureau 1992, Rachael 1992). White-tailed deer winter within the range inhabited by wolves in the Kintla Lake area, The Kintla Creek /North Fork River bottom, the Polebridge/Bowman Lake area, and the Sullivan Meadow area. Of these areas only the Kintla Creek/ North Fork bottoms and the Sullivan Meadows are partially outside GNP (Rachael 1992). Elk in the valley wintered along the river between Sage and Camas Creeks primarily within GNP though they routinely crossed into private lands at the Home Ranch bottoms, Whale/Tepee Creek area and the Coal Creek /Cyclone Lake area (Bureau 1992). Both elk and deer migrate from subalpine areas in B.C. and the Whitefish range, to areas of minimum snowpack (Pletscher et al 1991, Bureau 1992, Rachael 1992). Their winter distribution helps explain current den sites all within GNP and winter travels that encompass the long linear valleys of the Park (Tucker et al 1990). Because only the dominant male and female breed, subdominant pack members reaching sexual maturity will either assimilate into the pack's social order or strike out to establish new territory (Ream 1984, Bangs 1991). This dispersal is dependent on prey availability and wolf density and is critical for recolonization to occur. Moving hundreds of miles from their original territory, dispersers are increasingly exposed and face higher rates of mortality. This activity increases the importance of wildland corridors and stable ungulate populations (Ream 1984, Tucker et al 1990).

Because wolves adapt to a variety of climates and habitats, wildland corridors offer cover from the primary threat to their survival, human induced mortality (Weise et al 1975, Ream 1984, Mech 1989). The relatively low densities

of humans combined with a large protected area (GNP) has allowed wolf recovery to occur in the North Fork. Unfortunately, human caused mortality is responsible for 19 of 24 dead wolves found in the area since 1972 (Bureau 1992). If wolf populations are to reestablish themselves, mortality must be held to less than 30% of the population annually(Keith 1983, Ballard et al 1987).

Because the wolf is listed as endangered in Montana, hunting and trapping of wolves is illegal. Unfortunately, intolerance still exists and, combined with access, is a major factor in wolf mortalities (Tucker and Pletscher 1989, Tucker et al 1990). Access is dependent on open road densities and has thus been studied as a means to predict population status. Open road densities in Mech's (1989) study suggests that small areas with open road densities no greater than 1.2 miles per mile^2 could sustain wolves if a large roadless area was adjacent. Thiel (1985) on the other hand found that open road densities above .94 miles per mile^2 resulted in wolf status changing from breeding to nonbreeding and absent. In the North Fork, 100% of wolf mortalities in the Wolf Ecology Project study area occurred within .25 miles of the road (Tucker at al 1990). With ungulate populations at an all time high in Montana, viable wolf habitat is threatened foremost by human caused mortality as a result of roaded access. This is most evident in the North Fork where ungulate numbers and diversity are exceptional while subdivision and resource extraction push upward the miles of roads on private and National Forest lands in the valley.

Bull Trout

The migratory bull trout of the Flathead is dependent on cold clear water throughout its life cycle. As the dominant native predator, its diet consists almost entirely of fish ,with whitefish and yellow perch as the most important (Fraley and Shepard 1989). Reaching maturity in Flathead Lake, approximately 1/2 of these fish migrate annually in April to the North and Middle Forks.

Unimpeded by the free flowing state of these forks, their migration lasts until August when these fish enter spawning tributaries. Holding there in deep holes and hidden in debris, their spawning activity does not begin until September lasting into October. It is during this period that water temperatures, photoperiod, and streamflow effect the initiation of spawning. Site selection at this time is specific and dependent on the size of gravel substrate, low compaction, low stream gradient, groundwater influx, and the proximity to cover (Fraley and Shepard 1989, Fraley et al 1989). After a 200 day incubation period, emergence of the fry begins. During this relatively long incubation period water temperature and water quality determine the success of the embryo (Weaver and White 1985). Juveniles in the tributaries move upstream into stream reaches where spawners would not go. They remain there 1 to 3 years before moving into the river to migrate back to Flathead Lake. Rearing and juvenile success is again dependent on course substrate and water temperature. Survival of embryos is dependent on water temperature that ranges between 2-4 C while juveniles were rarely observed where summer temperatures exceeded 15 C. Juvenile occurence and fry emergence success were closely associated with greater percentages of substrate <6.35mm in diameter (Fraley et al 1989, Fraley and Shepard 1989, MDFWP 1990,).

The migratory nature of bull trout and their precise requirements naturally restrict their distribution in the Flathead system and in the North Fork specifically. Fortunately viable habitat is available both in the U.S. and Canadian portions of the drainage and spawning occurs primarily in Big, Coal, Whale, and Trail Creeks in Montana and Howell Creek in B.C.. This valuable stream habitat is currently threatened by industrial and residential development. Activities such as roadbuilding and improper land use in riparian areas and flood plains alter stream channels therefore increasing the amount of fine sediments that

reach North Fork tributaries. The low gradient streams that spawning bull trout rely upon are unable to blow out the sediments that reach the streambed. As these sediments settle, the percentage of course substrate declines having a negative impact on bull trout spawning and rearing success. Groundwater impacts of mining and residential development include reduction and alteration of flow and deleterious impacts on water quality via domestic sewage and toxic compounds (Fraley et al 1989). Studies by Stanford and Ward (1993) indicate a greater connectivity between groundwater and streams putting in question the belief that channel-aquifer biotic connections are limited to those terrestrial areas directly adjacent to the channel. Groundwater samples taken 2-3 km from Flathead channels have revealed stonefly larvae that emerge in these rivers and streams. This expansive view of groundwater systems magnifies the concern of over development in the North Fork Valley. Though unsubstantiated at this time the cumulative impacts of these developments could be responsible for the precipitous decline in North Fork bull trout populations. Relatively stable over a thirteen year period, 1992 counts are the lowest on record and are 72 % less than average over this period. Counts in 1991 were 36% less than average (Weaver memo 1992). Certainly impacts in other areas in the Flathead system could account for this decrease, but counts were based on the number of redds found in tributaries. Severe drops in populations could possibly eliminate spawning habitat based on a lack of recruitment (Fraley et al 1989).

Though the diversity of predators in the North Fork is great, I have chosen the grizzly bear, gray wolf, and bull trout as my predators of concern. The grizzly bear was chosen based on its need for a diversity of habitat and its sensitivity to impacts to this habitat. Its broad home range is best viewed from a landscape perspective and from a watershed perspective at the least. The North Fork Valley, though not pristine, offers this varied diversity and provides the

opportunity to develop appropriate protection strategies from a watershed context. The existence of a human community offers the sociopolitical dynamic needed to establish bear human coexistence as a positive and achievable local, and international goal.

The gray wolf's reemergence in the U.S. Rockies is another example of an emerging tolerance and appreciation for predators. With an abundant prey base the wolf in the North Fork is threatened primarily by human induced mortalities. Unlike many species, the biological and ecological needs seem less complex in regards to the wolf and wolf recovery. As a model of international cooperation current recolonization in the U.S. would not have occurred without proper management in B.C.. This collaborative approach offers the best hope for wolf recovery in the U.S. Rockies, and the North Fork will increasingly be looked at as the model for what is right and wrong with land use planning in regards to human existence in designated recovery zones.

Though not normally viewed as a predator, the piscivorous bull trout was chosen based on its limited range and its sensitivity to changes in its aquatic habitat. Of all the predators chosen it best exemplifies the connection between land use activities and water quality. Furthermore, its migratory nature makes it an excellent indicator of systemic changes and the human impacts that cause them. As the life blood of the North Fork Valley, water and its dependent communities must be considered in any plans developed for land usage.

Though the threats to these species are numerous, I will analyze both local and international land use plans based on their ability to mitigate or eliminate the following human caused impacts to the species of concern and their habitat. Loss of habitat on private lands due to residential and commercial development, resource extraction and specifically the roads used to access them, and impact to

species due to improper residential waste management, both solid waste and sewage.

CHAPTER 3

THE "GRASS ROOTS" EFFORT

As a remote enclave of the Northern Rockies, the North Fork Valley has nevertheless been influenced for over 100 years by humans and their activities. Planning that guides these activities dates back to 1897 when the entire North Fork, including GNP, was part of the Flathead Forest Reserve. Though squatters and homesteads occurred at that time, settlement was most pronounced after the passage of the 1906 Forest Homestead Act. This Act allowed for the transfer of public lands to the private sector. In 1910 GNP was established and private inholdings were purchased or governed by Park regulations and planning, creating local animosity towards the federal government (NFLUP 1986). The Wild and Scenic River designation (Public Law 94-486) for the river and adjacent lands occurred in 1976 as an amendment to the 1968 Wild and Scenic Rivers Act (Public Law 90-542). This designation allowed for and appropriated public funds for fee simple and scenic easement acquisition of and on private lands in the river corridor (USFS 1978). Subsequent acquisitions coupled with purchases in GNP reduced private landholdings from 20,000 acres to approximately 17,100 acres in 1986 (NFLUP 1986). This decrease in private landholdings promoted long held mistrust among some local citizens. Attempts by local landowners to "zone" the North Fork barely failed a vote in 1978 and in turn exposed the desire for reform while polarizing North Fork residents over the issue of local land use planning.

Concerned with possible federal intervention and unrestricted growth, the most fervent individualists in the community have been somewhat accepting of locally driven land use planning. However, the diversity of attitudes

concerning this subject is broad and has subsequently divided residents. The North Fork Compact established in the late 60's is an organization bound by a voluntary, self imposed covenant agreed upon by a group of landowners who wish to restrict subdivision to 5 acres while banning commercial activity on their lands. This organization of owners is responsible for the attempt at zoning that occurred in 1978 (McNeil, North Fork Compact pers. commun.). Landowner distress over the lack of communication between private landowners and resource agencies resulted in the North Fork Inter - Local agreement which establishes a process for sharing mutual concerns and a means of governmental support for land use planning efforts (see appendix A). Formed in 1947, the North Fork Improvement Association was the first community organization formed in the North Fork providing a forum for residents concerns. This organization became the driving force for the first locally developed land use plan (NFLUP 1986).

As of 1986 only 3.2% of the 534,600 acres in the North Fork were privately owned, 45.82% owned by GNP, 54.18% by Flathead National Forest and 3.8% by the State of Montana (NFLUP 1986). Sandwhiched between GNP and Flathead National Forest, these landowners have been forced to accept the costs and benefits of various federal land use plans. This precarious existence is but one reason for the local, or "Grass Roots" planning that was first approached by the North Fork Compact and later addressed and promoted by the North Fork Improvement Association. Concerned with the impacts of federal planning on property ownership, resource management, and increased residential and visitor use, meetings were held with Forest Service officials and local landowners to discuss land use planning as a means to address local concerns (NFLUPC 1986). Hence, the formation of a committee of private landowners with varied interests, namely, the North Fork Land Use Planning Committee (NFLUPC).

Recommendations developed in 1986 by the North Fork Land Use Planning Committee were centered around the protection of wildlife, recreation, scenic, and agricultural resources. None of these resource values were viewed as preferential or dominant but instead as integrated components of the overall quality of the area (NFLUP 1986). In order to protect these values from increasing human populations and their activities, the committee deemed the preservation of "open space" as the guiding principal for a land use plan based on voluntary compliance. As a guideline for landowners and county officials this plan was based on its ability to develop consensus in the community. Recognizing various tools, both governmental and non-governmental, as ways to protect those values delineated in the plan, it concluded that non-governmental approaches would be most appropriate for local planning. The committee made eight recommendations based on the control of subdivision, the desirability of cluster development, and the restriction of river access. Six major recommendations were made concerning implementation of this plan. They revolved around cyclical review, voluntary compliance and formal acceptance by Flathead County. These recommendations (see appendix B) will be analyzed later in this chapter based on their ability to protect predator/prey diversity.

The recommendations for implementation state that the 1986 plan be reviewed and adjusted in 1991. The 1991 review and subsequent recommendations are a result of an extensive survey mailed to all of the approximate 416 landowners in the North Fork planning area. Of these, 160 or 38.4%, returned their surveys with additional views and comments. The questions in this survey revolved around the perceived effectiveness of current planning, the North Fork road and its maintenance, property development, commercial use, and public utilities. Recommendations were developed and based on these survey results (see appendix C). The planning area was divided

into geographical and special areas. Three geographical areas were divided based on general subdivision and use characteristics. Special areas of concern are river frontage and wildlife corridors, which overlap the geographic areas. The 1991 review concluded with two major points. First, it pointed out the consequences of unplanned and uncoordinated growth that go unnoticed on a day to day basis. Second, it recognized that the diversity of uses and users in the area was great and that a voluntary plan was no longer adequate. Given an increase in population in the North Fork, the committee finally expressed the importance of regulations and compliance (NFLUP 1991).

In order to better understand private land ownership, the 1986 plan included a **Private Land Tract Size - Density Summary by Township**. This table included information on the number of owners, amount of acreage, the total number of tracts, and the number of those tracts based on their size (Table 3.1). Unfortunately, this summary was not updated for review in 1991. I felt that in order to gauge the effectiveness of the '86 plan, it was important to look at current ownership and tract characteristics. The major recommendations were developed to regulate subdivision and tract densities in order to protect open space. Obviously, increased ownership and increased tracts would imply that the maintenance of open space was threatened by subdivision and that impacts to predators in the way of roads, and improper waste disposal would soon follow.

My findings for 1992 (Table 3.2) indicate that significant change has occurred in private land ownership patterns since 1986 but opportunities still exist for the application of "predator safe" land use planning. The number of private tracts in the area has increased 18.01%, from 616 in '86 to 727 in '92. Though no statistical analysis was performed, percentage decreases occurred in tracts 160-320 acres (16.6%), tracts 320+ (50.0%) and tracts 0-2 acres (4.3%).

PRIVATE LAND TRACT SIZE-DENSITY SUMMARY BY TOWNSHIP 1986

T+R	Acres	# Sec	Tracts per Sec	Owners per Sec	# Tracts By Size (Acres) Per Section									Tracts
					0-2	2-5	5-10	10-20	20-40	40-80	80-160	160-320	320+	
34-20	2672.23	10	1.7	1.8 (18)	0	2	2	2	1	2	2	5	1	17
34-21	1147.78	6	2.67	2.67 (16)	0	2	3	2	5	0	2	2	0	16
35-21	5360.96	16	17.56	11.38 (182)	129	47	38	24	16	8	14	3	1	280
35-22	630.93	1	22	20	0	0	0	16	3	2	1	0	0	22
36-21	609.63	3	2	2 (6)	1	1	0	0	0	1	1	2	0	6
36-22	2581.65	13	7.31	6 (78)	25	11	8	17	14	11	9	0	0	95
37-22	4110.47	15	12	7.93 (119)	73	20	23	25	12	16	11	0	0	180
Total	*17,113.65*	*64*	*9.36*	*6.55 (419)*	*228*	*83*	*74*	*86*	*51*	*40*	*40*	*12*	*2*	*616*

Table 3.1., Source 1985 NFLUP.

PRIVATE LAND TRACT SIZE-DENSITY SUMMARY BY TOWNSHIP 1992

T+R	Acres	# Sec	Tracts per Sec	Owners per Sec	# Tracts by Size (Acres) Per Section									Tracts
					0-2	2-5	5-10	10-20	20-40	40-80	80-160	160-320	320+	
34-20	2236.13	8	4.25	1.12 (9)	2	5	2	2	7	7	8	0	1	34
34-21	1322.27	6	3.66	2.5 (15)	2	3	2	3	4	1	3	4	0	22
35-21	3946.27	14	21.78	12.21 (171)	127	44	40	38	32	13	10	1	0	305
35-22	632.24	1	29	17	0	0	0	15	12	1	1	0	0	29
36-21	623.61	3	10.66	2.00 (6)	2	6	5	8	9	0	1	1	0	32
36-22	1988.81	12	9.16	6.66 (80)	28	17	14	11	28	5	7	0	0	110
37-22	4095.71	15	13	8.00 (120)	57	15	29	28	31	21	10	4	0	195
Total	*14,845.0*	*59*	*12.32*	*7.08 (418)*	*218*	*90*	*92*	*105*	*123*	*48*	*40*	*10*	*1*	*727*

Table 3.2

Indeed, tracts of 0-2 acres comprised 37% of the total tracts in 1986 decreasing to 29.9% of total in 1992. Increases in the number of tracts occurred in all other tract ranges with significant upturns in the 5-10 range (24.3%), 10-20 (22%), 20-40 (141.1%) and the 40-80 (20%). As a percentage of total tracts, in 1986 the 20-40 acre tracts comprised 8.2% of total vs. 16.9% in 1992. This indicates a general movement from large tracts to smaller parcels greater than 5 acres (Figure 3.1). Luckily, from a conservation perspective, tract densities less than 5 acres have not increased. Unfortunately, large tracts have decreased and if the shift in densities continues a trend downward, small tract densities would pose increasing problems for open space preservation and habitat protection. It must be understood that an aggressive acquisition program in the Wild and Scenic River corridor decreased private landholdings by approximately 2,300 acres representing a 13.2% decrease from '86 to '92. Analysis of total Forest Service acquisitions points out that 38 of 152 purchased parcels (25%) were tracts of 0-2 acres. Certainly a positive for habitat protection, this skews analysis concerned with the effectiveness of land use planning as it relates to the regulation of tract sizes. It is important not to put too much faith in density changes as a reflection of habitat destruction and increased human influences. Subdivisions do not represent on the ground impacts but they do "set the table" for increased development and consequent human pressure. As a matter of analysis, ownership patterns offer a better picture of what is to come in the near future (O'Herren, Missoula County Rural Planning, pers. commun.).

One of the most optimistic numbers is that which indicates no significant change in the number of owners in the valley (Figure 3.2). Comparison of ownership per section shows only a very slight increase in the overall ownership per section. This number is obviously influenced by a reduction in private lands but is a definite bright spot relative to the concerns expressed over an influx of

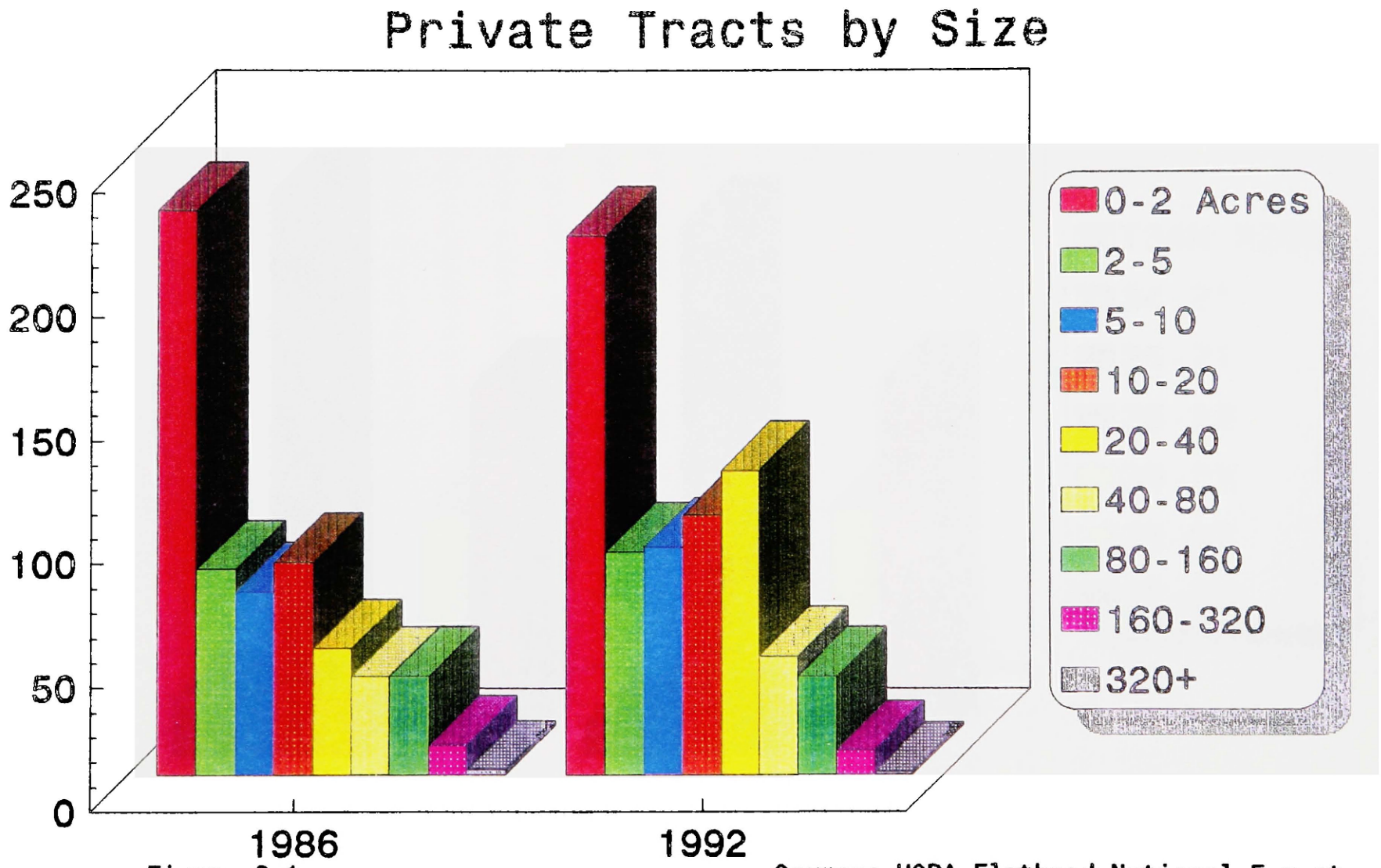


Figure 3.1

Source: USDA Flathead National Forest

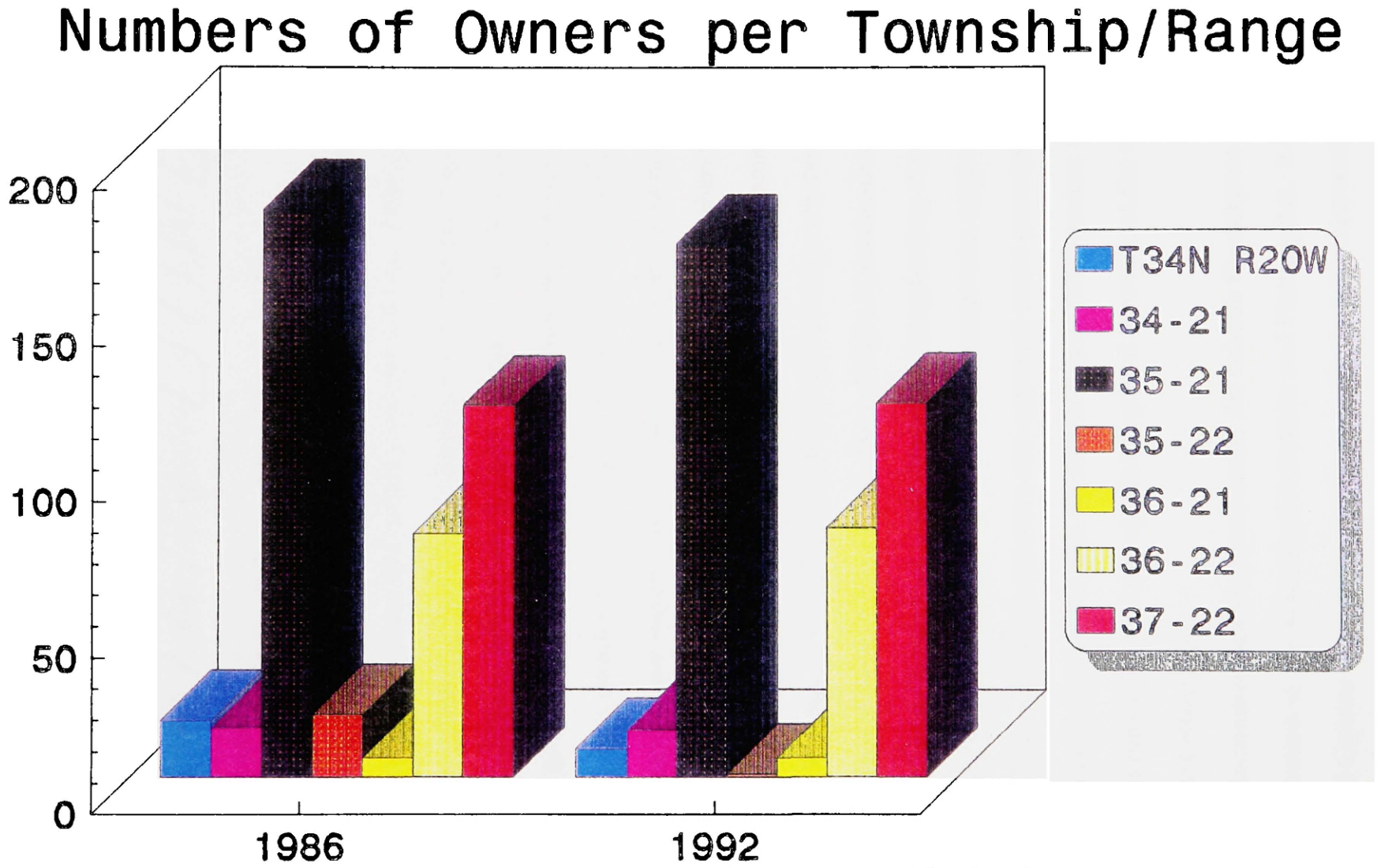


Figure 3.2

Source: USDA Flathead National Forest

new landowners and their cumulative repercussions. If the number of owners had increased with the number of tracts, this could seriously hamper the possibilities for effective land protection. Fortunately, the stabilization of ownership offers a window of opportunity for the implementation of proactive land use planning that is concerned with the existence of grizzly bears, wolves, and bull trout.

Certainly the preservation of open space provides benefits for predators and their prey. Analysis of the 1986 recommendations clearly points out the desire to regulate subdivision in a manner that minimizes impact on the various resource values pointed out in the plan. Unfortunately, these recommendations are very general in nature. For instance, as a non - governmental approach to zoning, cluster development is recommended and is deemed acceptable under current subdivision requirements. This concept could certainly consolidate impacts of development and reduce open road densities, thereby proving beneficial to habitat protection. However, if cluster development is implemented without due regard for habitat needs, clusters could prove detrimental if concentrated in predator use areas. For example, open meadows and creeksides are valuable homesites that could eliminate spring feeding sites, winter range, and fracture riparian travel corridors. If all owners who might subdivide their land owned a minimum 160 acres this approach could prove positive. In the North Fork this is not the case. Therefore cluster development seems to require formal zoning if it is to be properly integrated throughout the valley without regard to ownership.

Recommendations found under the subtitle **Density** are based on a strict interpretation of the Montana Subdivision and Platting Act. It encourages Flathead County to continue its efforts to eliminate circumvention of formal subdivision via the occasional sale and family transfer. The abuse of these

loopholes is well documented and without legislative reform from the state of Montana, county officials' hands are legally "tied" in efforts to eliminate these abuses. Recommendations regarding subdivision and lot splits offer a one unit per five acre maximum for habitation density when applying the cluster concept. This recommendation puts much weight into a concept that is nebulous and unrefined at best. It introduces habitation density without properly defining it and expressly applies the term "unit" but does not distinguish whether it is a single family dwelling or possibly a resort lodge. Regardless of the definition of a unit, densities of 1 unit per five acres could prove harmful to habitat without proper regulations based on biological and ecological research. The NFLUPC recommends that one and two acre lots be allowed if no more than ten such units are included in a subdivision (NFLUP 1986). This recommendation adds no real strength to county review of subdivision, with regards to the preservation of open space. Subdivision review is required for land splits of less than 20 acres that are not occasional sales or family conveyances. In effect this allows for 10 two acre lot splits per twenty acres. This would certainly reward a subdivider who might undergo review, a positive aspect given appropriate regulations, though it would prove detrimental to the already questionable 1 unit per 5 acre density goals. Understanding the value of flood plain and riparian areas, the NFLUPC recommends tract sizes be larger than 5 acres in these critical resource value areas. This is a positive recommendation in that it recognizes the value of these areas but it again assumes that 5 acre tracts are the appropriate size and in effect encourages these type of divisions. These recommendations are in contrast to the overall conclusion that the NFLUPC encourages landowners to keep tracts 20 acres or larger (NFLUP 1986). Ironically, this conclusion is a much stronger position statement than the official recommendations it purports to represent. Finally, a recommendation was made that would eliminate the possible increase

of commercial float trips that could be issued by the Forest Service. This could prove positive for predators if it significantly curtails use of the river and its flood plain. A reduction in use would help minimize the possibilities of bear human conflicts and angling pressure. This is most significant in that it is the only recommendation that addresses federal resource management. If handled properly it could provide a precedent for future recommendations relative to the influence of local planning on federally managed lands.

Several recommendations were made concerning implementation of this plan. Three of the six were most concerned with the adoption of the plan by the Flathead County Planning Board and County Commissioners. If adopted by the commissioners, it would become part of the Flathead County Comprehensive Land Use Plan. As part of the comprehensive plan it would inherit the maximum consideration provided by county law. Two other recommendations deserve closer attention relative to predator/prey diversity. The plan is inherently flexible in that it recommends review and adjustment in 1991 and on a ten year cycle after that. This review process provides resource agencies the ability to further study, on a sight specific basis, the predators they are given the responsibility to protect and promote. Programs like the Wolf Ecology Project, the Border Grizzly Border Wolf Conference, and the Brown Bear Resources Internship are unique and valuable as local tools of influence and education for landowners and planners. Their findings and efforts could have significant influence given the cyclical nature of review. Of utmost concern is the voluntary nature of the plan. Certainly this is more acceptable to those who feel threatened by the perceived threat of planning to private property rights. It is important to consider and integrate their concerns in order to develop community consensus. But, a voluntary plan is not binding and could expose the valley to those who are willing to sacrifice the good of the community for personal gain. In such a small

and ecologically significant valley, one irresponsible landowner could deliver a crushing blow to the values most revered by its residents whether it be predator diversity or open space.

The 1991 revision of the North Fork Land Use Plan approaches many of the issues that were not addressed in formal recommendations in the original Land Use Plan. Several of the latest recommendations are concerned with visual impact and are outside the purview of this analysis. As mentioned earlier in this chapter, this review designated geographical and special use areas. Two recommendations were developed with regards to wildlife corridors. The first encourages the Forest Service to acquire conservation easements on land with wildlife corridors or to acquire such lands in fee simple. The second concerns itself with cluster development and delineates general parameters for appropriate implementation. Both of these could prove positive for predator protection but are not specific in their intent. Certainly public ownership and management of critical habitat is subject to public review and, if appropriate, would prove acceptable. However, it must be realized that the Forest Service is a multiple use agency and there are other values it must incorporate into its land management strategies. Conservation easements on such lands are subject to a mutual agreement between landowner and agency and their strengths and weaknesses are not specifically subject to public comment. Threatened and endangered species are certainly considered in both cases but to what extent they are emphasized is questionable. The concept of cluster development is raised again in this review and is to be considered on large tracts if properly designed with enforceable controls. This is a significant improvement and exposes many of the problems raised in the analysis of the 1986 plan. However, appropriate size, proper design and enforceable controls are not approached specific to predator habitat.

Sanitation was discussed in the original plan but specific recommendations were not made. The 1991 review takes on this concern with three recommendations relative to septic systems. The first recommendation is that advance approval from the County Health Board be obtained before any tank installation occurs. This in fact is the law and such a recommendation,though well intentioned, sends an inappropriate message to those who might consider otherwise. The second recommendation offers the most promise for the control of waste water, in that it calls for a mandatory closed tank system within a designated distance from the river or a lake. Unfortunately, its wording does not distinguish this distance and does not refer to the many tributaries that could be impacted by improper open systems. Because bull trout are dependent on streams with cold, clean groundwater this recommendation falls far short of one that might be specifically concerned with bull trout habitat protection. A final recommendation encourages composting outhouses but does not specify type or where they are most appropriate.

Eight recommendations were made concerning the acceptability of commercial activity. They help clear up the idea of what is to be considered a "unit" with regard to cluster development and the 1 unit per 5 acre concept, proposing a limit on residential construction to single family dwellings. Of most importance are the proposals that restrict development to a scale that would meet the needs of the local community, disallow industry and destination resorts, and any commercial activity that creates a visual , auditory, or olfactory impact on the North Fork. All of these recommendations, if followed and enforced, would help buffer the impact of humans and their activities on the species of concern. For whatever reasons, the wording is quite loose with "should" versus "must" providing ample wiggle room for those who would prefer not to accept the proposed guidelines.

The strongest recommendation made calls for no expansion of utilities in the North Fork. Though this does not directly impact habitat, if accepted, it would seem to prevent development by potential homeowners who would shy away from the area due to the lack of comforts provided in more urbanized areas. In this respect this recommendation might play a significant role in abating the rush of prospective landowners.

It was pointed out in Chapter 2 that the greatest threat to the predators of concern were the associated impacts of roads and improper waste disposal. Of these, sewage treatment was the only threat approached directly in the NFLUPC recommendations. Roads were viewed as a volatile subject in 1986 and were not addressed in order to reach consensus (NFLUP 1986). Solid waste management was not mentioned in either review. In order to effectively develop " predator safe" planning, these threats must be addressed specifically. The impacts of roads on wolves, bears and bull trout are well documented but implementation of proper road planning is a complex task that will take time and effort to develop and implement. Until that time, efforts must be made to reduce the need for roads. This can best be done by minimizing both reviewed and unreviewed subdivision. Local land use planning is currently the most promising tool for doing such. My analysis of current planning efforts points out that there has been no increase in the number of tracts less than 5 acres. This would indicate that the unspoken goal of 1 unit per 5 acres is being achieved. The flip side of this is that it took 2,268 acres of federal acquisition to hold the line on small tract subdivision. This was not the intention of those primarily concerned with a lack of local control. The fact that subdivision has increased significantly better illustrates the plans effectiveness. Of the 111 new tracts none underwent subdivision review (Jentz, Flathead County Regional Development, pers. commun.). This casts serious doubts on voluntary planning as the proper

tool for controlling subdivision. Dramatic decrease in private lands coupled with an increase in unreviewed land splits offers dual testimony to the ineptitude of the current voluntary approach. Though local land use planning leaves much to be desired in regards to predator/prey protection, it has set a very important procedural precedent, that with proper solicitude can be improved upon given the 10 year review process.

CHAPTER 4

THE "BIG PICTURE"

Because the North Fork is a transnational drainage, its value as a resource is different given the diverse socio-economic needs of the regions and nations it spans. Though resource extraction occurs on the American side of the border the extent of this activity is somewhat minimized due to special designations enacted to preserve and protect the various aesthetic, recreational, and ecological values of the valley. The increase in visitors and vacation home owners is a testament to the merit of the area to the U.S. public while extensive timber and petroleum operations and a diminutive local population are an indirect appraisal of the worth of the area to B.C. and Canada. The globally significant ecological value of the North Fork coupled with the multifarious nature of land ownership and interests presents an imbroglio of conflicts for which international land use planning offers a proactive approach for dispute resolution. This broad based planning is currently being addressed in the North Fork where two distinct concepts are being developed based on the same call for international planning. The following analysis reveals the historical context from which these two planning proposals emerged while evaluating their impact on predator/prey diversity and private land use.

Though many issues were responsible for the North Fork's local land use planning, none highlighted the need for international planning as did the proposal for an open pit coal mine in the Canadian portion of the drainage. In 1970, Sage Creek Coal Ltd. was established to undertake exploration and consequent mining of coal reserves 6 miles from the United States border, near

the junction of Howell and Cabin Creeks in the upper North Fork valley. Plans for the mine included removal of 2.4 million tons of coal per year (FRISB 1988). After 5 years of exploration and 8 years of environmental assessment the plan for mining was approved in principle by the Province of British Columbia. Feared for its impact on the water quality of Flathead Lake and on the integrity of GNP and its special designations, federal , state and local officials embarked on a basin wide Environmental Impact Study that identified the proposed Cabin Creek coal mine as the largest environmental threat currently facing the basin (FRBEIS 1983).

As a result of this impact study, the Flathead Basin Commission (FBC) , a 22 member body, was created in 1983 by the Montana legislature. The mission of the FBC is to oversee and coordinate management and regulatory activities affecting water quality in the Flathead Basin while encouraging economic development (FBC 1993, FBC 1985). Four members of the commission are appointed by the governor including the executive director who is a member of the Governor's staff. Other members include private citizens and representatives from all federal, state, reservation, and local agencies and one Canadian laison, who in one way or another effect, via their decisions, the water quality of the basin. This commission was designed to provide a forum for local citizens to voice their concerns with state and federal officials in response primarily to a water quality threat with international implications. Since its creation the FBC has been involved in and responsible for water quality monitoring , phosphorous reduction legislation, and more recently basin wide planning. It was the FBC which in response to the 1983 Environmental Impact Study recommended that the state of Montana request review of the project by the International Joint Commission (IJC), a bi-national commission established by the 1909 Boundary Waters Treaty to settle disputes over joint Canadian and American waters. This

recommendation by the FBC set an important precedent in that it linked international planning with local interests via bi-lateral cooperation.

The Coal Creek mine was approved in principle in 1984 by the British Columbia Environmental Land Use Committee. Upon this approval a request for a reference study from the United States and Canada was issued to the IJC. This study would report on the water quality and quantity of the Flathead River with respect to the transboundary implications of the Cabin Creek coal mine. This investigation and report was guided by Article IV of the 1909 Boundary Waters Treaty which states transboundary waters" shall not be polluted on either side to the injury of health or property on the other," (IJC 1988). In April of 1985 the IJC established the Flathead River International Study Board (FRISB) to undertake this study. Comprised of federal, state, and provincial members, the six person Board was equally represented by Canadians and Americans. The Board appointed 4 committees, 1 subcommittee, and a task force to describe the current environmental status and uses of the river and to assess the possible impacts of the mine. The IJC charged the board with examining and reporting on 6 areas of concern revolving around present water quality and quantity, and the effects of the mine on waters at the border. Furthermore it was to consider the present and possible state of the fishery and water uses in both tributaries and the river (IJC 1988).

From the technical reports provided by the committees, the Board concluded that there would be an increase at the border of suspended solids, non-toxic nitrogen, and phosphorous to amounts above what is accepted in the United States. Dissolved solids and temperature levels would not undergo significant change at the boundary and would not contribute to eutrophication of Flathead Lake. Serious concerns, however, pertained to the site design of the mine which would be placed between both Cabin and Howell Creeks, two

tributaries that are a significant component in the total amount of bull trout spawning and rearing habitat found in the Flathead Basin. The Biological Resource Committee (1988), estimates that this habitat comprises 10 percent of that which remains in the system. Translated, approximately 10 percent of the remaining bull trout population would be threatened by this mine. Of most concern were the unknown implications of toxic nitrogen in the groundwater and the reverse flow of groundwater that would move water from the creeks to the pits. These two effects combined with the effects of increased sedimentation, temperature change, flow modification, degradation of habitat, reduction of dissolved oxygen, and increased solids would have a cumulative detrimental impact on bull trout habitat and therefore the integrity of the basin's fishery. Though their would be dollar losses for commercial interests that depend on the fishery, it was the integrity of the fishery itself and thus the property interest of the public domain in the United States that was deemed most threatened by coal development. Article IV does not require that the pollution itself cross the border for the treaty to be breached, but that polluted water in one country not be allowed to injure the property on the other. Therefore, the impact to the fishery would be in violation of the 1909 Boundary Waters Treaty.

Three recommendations were made by the commission in order that the provisions of Article IV of the treaty be honored.

> 1) the mine proposal as presently defined and understood not be approved
> 2) the mine not receive regulatory approval in the future unless it can be demonstrated that:
>
> a) the potential transboundary impacts identified in the report of the Flathead River International Study Board have been determined with reasonable certainty and would constitute a level of risk acceptable to both Governments; and,
>
> b) the potential impacts on the sport fish populations and habitat in the Flathead River system would not occur or could be fully mitigated in an effective and assured manner; and,

> (3) the governments consider, with the appropriate jurisdictions, opportunities for defining and implementing compatible, equitable and sustainable development activities and management strategies in the upper Flathead River basin (IJC 1988).

The first and second recommendations obviously addressed the issue at hand while the third vaulted the basin and in particular the North Fork into the realm of international land use planning prompted primarily by the impact of land use practices on the ecosystem of an imperiled aquatic predator, the bull trout.

In an act of neighborly goodwill recommendation 3 was addressed and pursued by the state of Montana under the Schwinden administration. His testimony (1988) to the IJC pointed out the costs involved with mine mitigation and enforcement of controls, and offered an alternative that would meet the requirements of compatible, equitable, and sustainable development. Governor Schwinden seized an important opportunity to stress the need to move beyond water quality issues in order to fully recognize the other values of the Flathead Basin. Of import to this analysis was the stated concern for endangered species and specifically bull trout, grizzly bears, and wolves. As a *modus operandi* to protect these and other values a prospectus for an International Conservation Reserve was submitted. This prospectus called for a reserve that would be similar if not identical to the International Biosphere Reserve Program, a concept developed by the United Nations Man and Biosphere program which included GNP and Waterton Lakes National Park (Schwinden 1988). This reserve would concern itself with inclusion of lands not currently within the biosphere reserve program and would have strong provincial and state presence.

If long term protection for the North Fork is developed to incorporate the needs of broad ranging species it seems inevitable that an agreement or treaty be developed to address protective measures and management policy. A review of current treaties and agreements finds that only two Canadian / American treaties

address the needs of terrestrial fauna. The 1973 Agreement on the Conservation of Polar Bears is a multinational agreement that requires Canada, America, Norway, Sweden and the former Soviet Socialist Republic to take appropriate action to protect the ecosystems of which polar bears are a part while restricting the killing of the species. This agreement did not delineate multi-national policy but instead calls for the strengthening of national legislation to meet the requirements of the agreement. It does not provide a formal body for dispute resolution or policy recommendations. The 1987 agreement between the U.S. and Canada on the Conservation of the Porcupine Caribou Herd was designed to conserve the herd for traditional utilitarian value. Because the herd migrates between Alaska and the Yukon and Northwest territories the treaty was designed to offer a vehicle for international cooperation and coordination. It recognizes the habitat needs of the caribou and calls for conservation based on ecological principles. An International Porcupine Caribou Board was established to make recommendations to U.S. and Canadian officials and to provide a clearinghouse for information and proposals that would effect the herd. Other species centered treaties with Canada are primarily concerned with bi-national salmon fisheries. The 1918 Migratory Bird Treaty closed the hunting seasons on waterfowl and other migratory birds and prohibited the export of the birds and their eggs. Concerned with single species management these treaties did not delineate ecologically based reserve boundaries and therefore provide a meek precedent for a Canadian / American treaty establishing a conservation reserve. At a state / provincial level coordination and cooperation in wildlife management is utilized but there are no official agreements or treaties that bind managers of international wildlife populations or ecosystems (Posewitz, MT Dept. of Fish Wildlife and Parks, pers. commun.).

Established in 1976 the biosphere reserve concept is a result of international concern over human relationship with the environment. It is an integral part of the United Nations Educational, Scientific and Cultural Organization (UNESCO) Man and Biosphere (MAB) program. A major theme of the MAB program is the "conservation of natural areas and the genetic material they contain" (UNESCO 1984). This theme introduced biosphere reserves as representative areas which have been internationally recognized for their value in conservation, ecological research, education, demonstration, and training incorporating fully human values that support sustainable development (UNESCO 1984, Robertson-Vernhes 1989).

As a regional land use plan for ecosystem management and sustainable development, the model biosphere reserve is a concentric prototype based on layers of symbiotic management units. The core area is an example of minimally disturbed ecosystems providing suitable habitat for numerous plants and animals and higher order predators. It is best described as an area of high endemism or biological diversity that has secure domestic legal protection allowing only activities that do not adversely affect natural processes and wildlife. The buffer zone or "zone of managed use" allows for usage of the area in a manner that helps protect the core area. These areas often coincide with those of national park, wildlife refuge, or multiple use areas. Finally, the outermost zone is the transition area, an undelineated "zone of cooperation" which include managed forests, croplands, or other economic uses characterized by the region. This area integrates conservation knowledge and management with manipulative resource development (U.S. MAB 1990).

One of the initial biosphere reserves, GNP is a classic example of core area designation that matches National Park boundaries. Management of the Park has been influenced by this designation as one of 4 purposes in the Land

Protection Plan (1985). This plan guides the purchasing of non -federal lands within the Park. The MAB program has supported through the Park, genetic research and comparative studies with adjacent lands. Most importantly the biosphere reserve designation came into prominence as a reason to stop the Cabin Creek coal mine adding international significance to the regional, state and federal concerns (FRISB 1988). Waterton Lakes National Park was designated as a biosphere reserve in 1979 and the possibility of adding complementary lands to Glacier and Waterton, redesignated as the "Rocky Mountain International Biosphere Reserve" was addressed in the FRISB (1988) report.

Though the core zone is easily discerned and could be managed exclusively by the Park, the role of adjacent lands in the North Fork is not easily understood. As mentioned, Governor Schwinden called for an ICR that was similar if not identical to the international biosphere reserve program. If interpreted literally this seems to call for a reserve that would include well defined core, buffer, and transition zones. However, in 1991 Governor Stephens in a letter to the FBC (Stephens 1991) pointed out that the state was indeed interested in developing a bilateral plan with B.C., namely a "zone of cooperation" but would not support a "buffer zone" to the Park. The idea of buffer zones has not been readily accepted in the U.S. based on the public perceptions that it is an extension of federal jurisdiction rather than a guide for adjacent land use planning. Efforts to develop a buffer zone in Everglades National Park did not garner support for this reason (Kellert 1983). The most successful implementation in the U.S. is the Southern Appalachian biosphere reserve which does not include a buffer zone officially but does call for distinct management units within a "zone of cooperation" that meet the requirements of the buffer zone in the model biosphere reserve. As a means to generate public acceptance, "buffer zone" was not used to promote the concept and in fact was

viewed as a semantic pitfall given public misinformation and distrust towards expansion of federal interests (Hinote, Southern Appalachian MAB Cooperative pers. commun.).

Because the success of biosphere reserves are dependent on both local participation, regional and state cooperation with long term legal and administrative protection, the complexity of implementation strategies is immense. This complexity is exacerbated when wide ranging predators and migratory species are part of the ecosystem of concern (UNESCO 1984). As a means to protect higher order predators and prey the biosphere reserve encompassing large land areas with definite boundaries is conceptually the optimal solution (Gilbert 1976, Tangley 1988). Strategically, however, there is a question of whether administrative policy and institutional agreements provide the appropriate protection needed or if legislative action delineating reserve boundaries offers the best approach for long term viability. This confusion is most evident in the interpretation of the literature concerning buffer zones as legally defined (UNESCO 1987, Tangley 1988, Robertson-Vernhes 1989), or as a component of a zone of cooperation without ecologically grounded political boundaries (UNESCO 1984).

In the North Fork , all of the aforementioned strategic and ecological elements come into play; in addition the bi-national dynamic must be addressed for meaningful symmetry. As members of the North Fork valley, the predators of concern are unique indicators of the health of the ecosystem they are dependent upon. Combined with human populations, the area offers a unique laboratory for research into predator/prey dynamics and human predator coexistence. As a means for protection of genetic diversity and sustainable development the biosphere reserve model is conceptually fitting given proper application. Whether those lands adjacent to the core comprise a "buffer zone" or

a "zone of cooperation" is highly dependent on the scale of area and the values they are designed to protect. Given the significance of predator/prey diversity in the North Fork, a zoning tool addressing the needs and threats of the predators of concern is most appropriate. If, for instance a zone of cooperation adequately protects predator/prey diversity allowing for human coexistence then a reserve without an identifiable buffer zone would be acceptable. If instead it allows for questionable land use manipulation under the auspices of sustainable development while threatening predator viability, the biosphere reserve is then in need of a more restrictive land use classification that is adjacent to the core area and consistent with the buffer zone concept. With, or without, a designated buffer zone those private lands that are part of the reserve must, through local land use planning, develop long term, enforceable regulations to protect genetic diversity, provide for research and education, and allow for "predator safe" sustainable development.

The request by Governor Stephens to initiate a process of bi-national cooperation has since been named the North Fork Initiative. This initiative requested that the FBC begin a process to define appropriate levels of development and management strategies as recommended by the IJC. In so doing he also called for local landowner groups, major federal, state and local managers and conservation and industry members with interests in the North Fork to be organized into a steering committee. The commitee was finalized July 31, 1991 and consisted of 8 local landowners representing the North Fork Improvement Association, 3 presidents or appointed members from the North Fork Compact, the North Fork Preservation Association, and Resources Limited, 1 representative of Flathead County, 1 FBC member, representatives from the wood products and the oil and gas industries and representatives from the federal and state land management agencies. This steering committee was

charged with developing a conservation strategy for the North Fork. This task would be facilitated by a core group consisting of 3 FBC commission members and 2 state officials who played leadership roles in the IJC (FBC 1993). The recently released result of the steering committee's work is the North Fork of Flathead River Conceptual Strategy (see appendix D). This strategy included the following goals for the North Fork:

*Preserve and if necessary restore water and air quality to sustain the environment for fish, wildlife, and people.
*Preserve and if necessary restore the ecological integrity and biodiversity of the drainage including, but not limited to the many special designations including Glacier National Park, Wild and Scenic River, International Biosphere Reserve, and the habitat necessary to sustain endangered species (gray wolf, grizzly, and bald eagle) and species of special concern such as bull trout and cutthroat trout.
*Provide for sustainable , multiple resource uses that meet the above goals. (FBC 1993)

These goals developed by the North Fork Steering Committee provide the foundation for the conceptual strategy that addresses federal, state, and private lands and from which a bi-national strategy will be developed with British Columbia.

Analysis of this strategy indicates that though the predators of concern are to be given management preference, the strategies spelled out in this document do not go beyond what is currently required with regards to planning, and do not significantly venture from the status quo. The goals developed by the steering committee do seem to weigh heavily the protection of biodiversity and in particular the species of concern. Indeed the most progressive strategies are those defined under the private lands. In particular, strategy III F. calls for zoning and regulations to encourage compatible development and usage of private lands with regards to threatened species and special designations. This was not formally recommended in either the '86 or '91 plans. The remaining

strategies follow more closely with the voluntary land use plan devised by the North Fork Land Use Planning Committee. It is important to point out that the bi-national conservation strategy is driven by the same local landowner groups that are members of the North Fork Land Use Planning Committee and are responsible for local planning efforts. This cooperative bridge between local and international planning is a major component of the biosphere reserve program. Conversely, their is no mention of an International Conservation Reserve or for that matter the zone of cooperation that was proposed by Governor Stephens and from which a feasibility study grant was applied for from the Man and Biosphere Program (FBC 1991). This would indicate that cooperative agreements and administrative policy would form the basis for bi-national conservation versus a formally designated reserve. A positive point of the bi-national strategy calls for managing the basin with special emphasis on the eagle, grizzly bear, gray wolf, bull trout, and other species of concern. An emphasis of this sort would place a greater burden on local land use planning to integrate ecologically driven protection mechanisms into their plans. Federal land management on the other hand could foreseeably rest on their laurels to meet requirements of this emphasis.

Concerned with the pace of progress and seeming disregard for the proposed International Conservation Reserve, a citizen driven advocacy organization , the Flathead Transboundary Council (FTC), has been formed. This organization includes but is not limited to North Fork residents and both Canadian and American citizens. Proponents of an ecosystem management approach, the Council, with guidance from a well respected Science Advisory Board (Dr. Brian Horejsi, bear biologist, Dr. Riley Mclelland, avian ecologist, Dr. Keith Shaw botanist, Dr. Jack Stanford, limnologist, Dr. Rosalyn Yanishezvsky, molecular biologist and Jerry DeSanto botanist) , has developed a drainage wide

management plan for the national, state, and provincial forest lands in the North Fork. Concerned primarily with ecosystem corridors, plans for halting their fragmentation and restoring their viability have been developed. Fragmented drainages such as Whale, Coal, Big, Cabin, and Howell creeks have been examined based on their water quality, habitat effectiveness, sustained yield of forest products, landscape connectivity potential, and rare and outstanding species and natural areas (FTC 1992).

Proposals to reduce open road densities, protect corridors and effective habitat, and restore streambeds is of significance for the predators of concern. Strategically, this proposal does call for a designated international reserve and offers an alternative to be addressed given a possible environmental impact analysis (Owen, Flathead Transboundary Council pers. commun.). The principles of restoration, sustainable use, genetic diversity, scientific monitoring all within a ecosystem context are consistent with the goals of the biosphere reserve concept. Based on ecologically sound mangement this proposal is aimed at changing current mangement of public lands but does not address directly the private land use in the area.

A review of the international based proposals finds that only two, The North Fork Initiative and the Flathead Transboundary Council effort, are actively being pursued. Both plans interestingly integrate basic principles of the biosphere reserve program into their proposals. Procedurally, the North Fork Initiative best incorporates multilateral cooperation and local participation into its endeavors. This is a major tenant of the biosphere reserve concept. Unfortunately, the conceptual strategy is short on specifics relative to changes in land use and does not address what the final product of a bi-national agreement might conclude. The FTC on the other hand advocates those ecological precepts that are fundamental to the biosphere reserve concept while calling specifically

for a legally defined reserve. It currently lacks a political strategy for implementation and is deficient in its concern for those private land uses that threaten the basin's integrity. Obviously, an effort to bridge the content of the FTC proposal with the procedural vehicle of the North Fork Initiative would bring about the optimal "predator safe" international land use plan.

Unfortunately this optimal plan is not easily obtained given the diverse interests that must be considered as a means to gain consensus. This phenomenon is evident in all levels of planning in the North Fork. The local land use plan did not approach the issue of road management for the same reason the North Fork Steering Committee shys away from the concept of an internationally designated reserve. Once the bi-national strategy is complete and taken to Canadian officials it will be without a proposed management framework (ie. cooperative agreements, treaties or delineated reserves). Consensus building will surely be used to determine this framework resulting in energy intensive procedural haggling. Substantial consideration for content and site specific change in land use recommendations must not suffer in this process. Certainly consensus building is necessary if ownership in a plan is to be obtained, unfortunately, the current state sponsored effort is a moving target lacking a practical model for closure and simply put is "playing to prevent losing" vs "playing to win."

CHAPTER 5

"THE MAJOR PLAYERS"

The melange of land ownership in the North Fork results in a full spectrum of land uses and conservation tools that deserve analysis based on their ability to protect predator/prey diversity. It is certain that land usage's on federal and state lands impact directly and cumulatively the viability of the predators of concern as do the numerous state laws intended to promote or regulate activities on private lands. Given the critical ecological value of private lands in the valley and the import of local landowner concerns in both grassroots and international planning, conservation tools that considerably effect both warrant special attention. Those agencies and organizations that through their actions have the ability to integrate and optimize both socio-economic and ecological concerns are and will continue to be "Major Players" in the North Fork.

As the major landowner west of the river, Flathead National Forest currently envelops approximately 14,845 acres of privately held land. Located primarily in the valley bottom and adjacent benchlands many of these private tracts are within the North Fork Wild and Scenic River Corridor established in 1976. A study report and environmental impact statement preceded designation and pointed out the impacts of roads and subdivision on the esthetic, scenic, historical, archeological, recreational, and scientific values of the river (USFS 1978). A river management zone was designated and $6,719,000 was appropriated for the acquisition of lands and interests in lands within this corridor. Both fee simple and scenic easement acquisition were addressed in the

plan (1978) outlining specifically the provisions of the "scenic" easement, an acquisition strategy allowing for the preservation of certain property rights for private landowners, while simultaneously limiting subdivision and road building.

This "scenic" easement program has resulted in 4 easement deeds in public ownership on approximately 283 acres within the corridor. The cost of these 4 easements was $123,300. Though specifically designed to protect the Wild and Scenic River and corridor, the scenic easement program should recognize and incorporate the needs of grizzly bear, bull trout, and the gray wolf all of which provide scenic, recreational and natural value to the area. My analysis of these easements is centered on their ability to limit the two major threats to predators; road building and improper human waste disposal.

As a means to protect against subdivision, these easements provide moderate to strong protection. Two of the easements, totaling approximately 110 acres, do not allow for further subdivision of the tract. The other two totaling 173.67 acres allow for the subdivision of a 123.10 acre parcel into 6 tracts no smaller than 20 acres while the easement of 50.37 acres allows for two subdivided tracts greater than 5 acres.

Provisions regarding road building allow for roads, given their location and design is harmonious with the rural environment and is approved by the Secretary of Agriculture or his duly authorized representative. Ingress and egress is allowed between the easement area and an abutting public road and is limited to 1 access point per lot or tract. Maintenance, rebuilding and substitution of roads in substantially the same location is allowed. These provisions provide for the possibility of an increase in open road density with approval, and though scenically harmonious may be in direct conflict with habitat requirements for the species of concern.

Issues of waste management are addressed in 2 provisions allowing for the disposal of water and sewage in a manner that complies with State and local regulations. Plans for these systems must meet the approval of the Secretary of Agriculture or an authorized representative. The dumping of trash, ashes, garbage, sewage, or any similar offensive or unsightly material is not permitted on the easement area. Unfortunately the disposal of such refuse in bearproof containers is not required and the possibility of livestock boneyards is ambiguous given they are unsightly and offensive but would be appropriate for the allowed livestock operation. Other provisions of these 4 easements allow for attractants like livestock and feed, orchard fruit, pet foods, and bee hives.

Threats to aquatic habitats are allowed via subsurface oil, gas, and mineral exploration if surface disturbance is minimal and water quality is not adversely affected. This does not recognize the possible effect on groundwater flows and the impact of altered flows on bull trout spawning. Though pumping or diversion works are not allowed to draw water from the river it does not restrict this activity from tributaries, springs or other possible sights on the easement area.

Understandably these easements are driven by scenic values and are limited in their effort to provide specific protection for bears, wolves and bull trout. However, the grizzly bear and gray wolf were listed as threatened and endangered prior to completion of the Land Acquisition Plan and, therefore, are deserving of special consideration in the scenic easement program. Because the acquisition policy was developed based on public involvement and framed within the constraints of bureaucratic planning, flexible and creative protective measures are consequently bridled. Without exacting provisions for the specific needs of threatened and endangered species the programmatic scenic easements are limited in their ability to provide for predator/prey diversity. Thus the

establishment of more stringent measures is dependent on the *Use by Grantee* provision establishing for the grantee (USFS) the right to conduct scenic, esthetic, historical, fish and wildlife, sanitation, and other works desirable to protect natural and recreational qualities of the area (USFS 1978). Many of the *Use by Grantor* provisions are dependent on authorization by the Secretary of Agriculture or duly authorized representative therefore placing the burden of predator protection on the shoulder of a decision maker concerned with the various and often conflicting desires of the landowner.

Three landowners have to this point donated conservation easements to the Forest Service encompassing approximately 252 acres of which one tract (69.14 acres) is within and adjacent to the Wild and Scenic river system. Two other parcels are in the vicinity of the river and rights were donated based on their sharing of ecosystems with the National Forest and are important to scenic values and wildlife diversity, natural to the area.

The one parcel within and adjacent to the Wild and Scenic corridor does not allow for further subdivision. Grazing and agriculture is allowed along with the rental or leasing of 3 residences found on the property. Road building is permitted with a provision calling for the maintenance, rebuilding, and substitution of roads in substantially the same location. Sewage and waste management provisions prohibit the dumping of trash, ashes , garbage, sewage or other unsightly or offensive material on the easement area. Sewage and waste systems are to comply with state and local regulations. This easement would allow for garbage or other attractants to be stored outside a bearproof container. The acceptability of boneyards is questionable given the right to use the area for ranching activity. Subsurface mineral exploration is allowed as is surface exploration and development of oil and gas.

The remaining two easements (103 acres, 80 acres) do not allow for subdivision, though new roads are allowed if harmonious with the general landscape and surroundings. The maintenance, rebuilding, and substitution of roads is allowed in substantially the same location. Oil, gas, and mineral exploration is allowed on both parcels but is limited on the 103 acre parcel to those operations that would not degrade water, wildlife, or scenic resources. Agriculture and ranching activities are allowed though limited to cattle and horses on the 103 acre parcel. The 80 acre parcel allows for the leasing of the area for grazing and hay production.

Waste management is approached slightly differently on the two easement areas. Boneyards are expressly prohibited on the 103 acre parcel in addition to the standard language prohibiting the dumping of trash, garbage, sewage, ashes, sawdust and other offensive or unsightly materials. Other attractants such as man made bee hives, pigs, sheep, and goats are not allowed on the 103 acre parcel. The growing of orchard fruit is allowed on both parcels. Though the 103 acre parcel includes protective measures designed to reduce attractants, neither it nor the 80 acre easement requires bear proof containers for pet food and garbage.

Aquatic resources receive stricter protection on the 103 acre parcel with provisions prohibiting the diversion of water from Moose Creek, though wells and water systems elsewhere are allowed for agriculture and wildlife, provided they do not impair the natural beauty of the said easement area. A 200 foot wide strip along Moose Creek allows timber harvest of dead and downed trees only without the construction of new roads. All wetland areas are to be protected from disturbances that would destroy their riparian qualities. The 80 acre parcel allows for the pumping and diversion of waters for grazing, agriculture, wildlife, and residential purposes regardless of source.

Donation of easements is certainly an attractive opportunity for the donee who would not have to pay for those rights obtained. These donations allow the Forest Service in this case to apply their money elsewhere where easement and fee acquisition funds are better utilized. Donors, however, have the advantage of leverage in negotiations and protective measures are more dependent on their individual conservation and or financial concerns. For example, analysis of the donated deeds of easement in the North Fork point out that the 103 acre parcel provides much more protection for predators and aquatic resources than the other donations. This would seem to indicate that the mere preservation of scenic open space is not enough protection for that landowner who may place more value on the long term viability of native species. Likewise, it is possible that stringent protective measures are a means of increasing the value of the donation, decreasing the value of the property and in turn providing desirable tax advantages for the donor. In either case it is important for the donee to educate the donor on the value of his or her property to the long term protection of predators and prey in order that "predator safe" provisions are considered and included in the deed.

In October of 1998 the Flathead National Forest obtained two conservation easements on 511.99 acres within and adjacent to the Wild and Scenic river corridor. The cost of these easements was $452,500 and a federal land exchange valued at $50,000. Unlike any of the previous easements these were titled as conservation easements and were purchased pursuant to the Wild and Scenic Rivers Act, Endangered Species Act, and the Northwest Electric Power Planning and Conservation Act (Public Law 96-501) which is concerned with mitigating the impact of hydropower projects on certain species identified in the Columbia River Basin Fish and Wildlife Program. The grizzly bear and the ecosystem upon which it depends, were specifically targeted for protection in these deeds.

Similar in content with the Wild and Scenic easements previously analyzed, these easements allow domestic livestock grazing, hay farming, and tree harvest in a manner that is compatible with grizzly bear management guidelines and river protection. The easement areas are restricted from further subdivision though further road building is not expressly prohibited. The repair, maintenance, and substitution of current roads is allowed in substantially the same location. New roads within a 200 foot wide strip along the river are not allowed.

Man made bee hives, boneyards, pigs, sheep and goats are prohibited attractants. The no dumping clause is present. There is no requirement for the bear proof storage of pet food and garbage. Aquatic resources are protected in provisions prohibiting the diversion of water from the river and the filling and draining of wetland areas. However, oil, gas, and mineral exploration is allowed if it is screened from public view and does not degrade water wildlife, or scenic resources. Water wells are permitted without restriction and pipes and conduits are allowed provided their installation and repair do not disturb the natural beauty of the area.

Though subdivision is prohibited on these parcels the allowance for roads and the lack of a requirement for bearproof containers weakens the long term effectiveness of this "conservation" easement. It is important to realize the implications of negotiations and unrealistic to expect every protective provision to be included in an agreement. In many cases all or nothing leaves you with nothing which in the long term could prove most detrimental to predator/prey diversity. However, these easements seem most concerned with how the landowner can optimize his resource production in grizzly country rather than what can be done to optimize predator diversity.

Fee simple acquisition as a means to protect Wild and Scenic values is addressed in the 1978 Land Acquisition Plan. On a willing seller basis, lands that are in the public interest will be considered for fee acquisition as will lands that provide stream access for public recreation. It is this protective strategy that is most controversial and in fact moved many local landowners to accept local land use planning. Since 1986 fee acquisition has reduced private lands by approximately 2,268 acres. This reduction decreases the income to counties derived from property taxes while limiting land use options for local citizens. For those who view private property rights as paramount to all other concerns, fee simple acquisition is threatening and unacceptable. Likewise, conservationists are wary of Forest Service ownership and management that is guided by multiple use, exposing critical habitat to the various interests that guide and determine Forest Plans. These plans are not perpetual and are constantly influenced by the socio-economic and political concerns of the local, regional, and national public. Thus, predator diversity is not always best served by public ownership.

A telling example of questionable acquisition policy in the North Fork is the Forest Service cabin rental program. Several of the parcels purchased by the Forest Service have residential structures and accompanying buildings. There are currently three cabin rentals in the North Fork one of which is in the Wild and Scenic corridor. This cabin (Schnauss) is extremely popular for recreationists and is generally booked months in advance. Other cabins located throughout the valley, were purchased with Wild and Scenic acquisition funds. As a means to utilize the value of the purchase several of these have been considered for rental to the general public. Proposals include the following options. First, eliminating the Ford Work Station and moving operations to the Wurtz acquisition (Flying WZ Ranch, T 36 N., R 22 W., sec. 12). Work station

costs would then be offset by rental opportunities at Wurtz. Second, purchased historical cabins (Funk, Thayer) would be located at the sight of the old Ford Work Station (T 36 N., R 22 W., sec 24) and rented as recreational cabins. Third, the purchase of the Wilhelm property (T 35 N., R 21 W., sec 27) included a cabin that is being considered as a possible rental (Hope, Flathead National Forest, Glacier View District, pers. commun.). Consistent with the recreational purposes of the Wild and Scenic designation the cabin rental program would, if maximized, triple the number of rental sites available in the valley. Unfortunately, expansion of this sort could prove detrimental to predators and contrary to local land use plans designed to control commercial activity.

Year round visitation at these sites would certainly increase sporadic traffic patterns while exposing predators to the innumerable visitors these cabins would attract. Waste management would become an increasing problem when homesites that were once only summer homes are now occupied continuously, increasing dramatically solid waste and sewage output. A responsible landowner educated about human predator coexistence is understanding of the do's and don'ts in grizzly country whereas an uneducated public exponentially increases the possibility of improper human activities and conflicts. What was once a predictable quiet homesite or seldomly used summer home is now a drawing card for unpredictable, unmonitored activity .

Concerned with community relations, the Flathead National Forest has taken a leadership role in promoting local planning. Ironically, planning recommendations for private lands that restrict commercial activity to those that meet local needs and a recommendation that prohibits destination resorts run contrary to an expanded federal cabin rental program. "Do as I say not as I do" would be the message sent by such a program, providing fuel to the argument of those who are distrustful of federal motives and their role in local planning.

Land acquisition that decreases the private land base while increasing visitor traffic and threats to wildlife is not consonant with ecological or community concerns.

As a major landowner in the North Fork, the Flathead National Forest, through ownership and resulting use, has the ability to coordinate planning with the private land base in a manner that will likely determine the outcome of an ecosystem driven "predator safe" land use plan. An example of where this integration might be improved is in the management and placement of open roads. Currently a density of 1.0 mile per square mile is the standard for open roads in the North Fork. This density is calculated on 5,000 to 15,000 acre compartments. Based solely on grizzly bear management guidelines this density threshold is not concerned with the impact of open roads on wolves. Furthermore, these compartments apply exclusively to federal and state lands and do not take into account private acreage, which in the case of the North Fork constitutes critical habitat. Though private land use activities, including roads, are considered when projects are proposed, integrated standards do not currently exist (Hope, Flathead National Forest, Glacier View District, pers. commun.). Cumulative effects analysis is currently being developed that will delineate road densities based on habitat types and wildlife usage areas (USFWS 1990). A "moving window" analysis could utilize computer based habitat and land usage information to guide site specific road planning without regard for ownership.

As an owner of 20,000 acres in the North Fork, the Montana Department of State Lands (DSL) manages the Coal Creek State Forest and 5 other parcels found throughout the valley. Guided by the 1972 Montana State constitution and DSL enabling legislation, these timberlands are managed to maximize receipts to the state school trust fund. Though not currently part of a formal Forest Plan, the

development of such is currently underway. A Memorandum of Understanding with Flathead National Forest was developed to provide for coordinated management of those State lands within the Wild and Scenic corridor. This memorandum did not address threatened and endangered species and was primarily an agreement to communicate . The impact on threatened and endangered species is taken into account with any proposed resource manipulation, guided primarily by sec. 9 of the Threatened and Endangered Species Act which prohibits the "taking" of these species. This taking clause has been interpreted liberally by the courts to include the taking or destruction of those habitats T&E species are dependent upon. This concern for T&E species has prompted the DSL to participate in the development of grizzly bear management guidelines and in the case of the North Fork include and integrate state lands into the open road density compartments (Wood, MT Dept. of State Lands, pers. commun.).

Though ownership of 20,000 acres is significant, it is the state's legislative mandates and regulatory guidelines enforced by counties that most affects the ownership and use of private lands in the North Fork. A prime example is the 1972 Montana Subdivision and Platting Act(MCA,10,1991.76-3-101-614). It regulates subdivision, but in turn allows for the subdivision of land without county review of any parcels larger than 20 acres, occasional sale of parcels of any size and parcels conveyed to family members. These loopholes, used to avoid county review, are responsible for every subdivision that has ever occurred in the North Fork. Fortunately diligent efforts by a broad range of Montana citizens have resulted in the 1993 amendment that increases the size of unreviewed parcels to those over 160 acres, eliminates occasional sales and limits family conveyances. This law provides a foundation from which county

planning can begin to limit and mitigate the impacts of subdivision on wildlife habitat.

The Subdivision and Platting Act develops the ground rules for the transfer of ownership of lands within the state but does not enumerate land use controls. These controls are currently guided by enabling legislation allowing counties to develop county wide master plans and county wide zoning. As a strict zoning statute, it does not allow for other creative land use controls that might benefit predators and their habitat. In fact Montana law (MCA 10, 1991. 76-2-209) expressly prohibits zoning from preventing "complete use development or recovery of any mineral, forest, or agricultural resources by the owner thereof". Obviously actions of this sort could prove detrimental to wildlife and ecosystem functions and could not be regulated by county zoning.

Waste management guidelines are developed based on state regulations but are clearly designed to alleviate public health hazards. Solid waste disposal in the North Fork can be handled in three ways . Owners can transport their garbage to Columbia Falls to a county managed dumpster site free of charge, pay a private contractor to haul it from a bearproof dumpster site located in the valley, or through an exemption in the law bury it on private property. Certainly the third option could prove detrimental to bears but it is under utilized given the options of cost free disposal and convenient private service hauling (Stempin, Flathead County Solid Waste Management District, pers. commun.). Limiting hauling alternatives or increasing costs through regulation could cause a backlash from local citizens who then might bury garbage on their own property, or illegally bury it elsewhere. There is no requirement for residential bearproof storage of garbage. Regulations calling for such would first have to designate those areas where bearproof containers are appropriate in order that costs of compliance are not borne by citizens outside the range of concern.

Permits for septic systems are to be obtained through the Flathead City, County Board of Health and placement of such systems is determined based on their proximity to the groundwater table, 100 year floodplain, surface water, structures, and geologic features. The possible ecological impacts of a degraded aquifer is not considered in current regulations. The placement of water wells is covered under the same county sanitation codes and is therefore concerned with positioning of residential wells with respect to septic tanks and drain fields. This placement does not consider impacts of wells on groundwater flow regimes. Groundwater removal is questioned only when it exceeds 35 gallons per minute or less. When removal exceeds this amount a permit must be obtained in order to appropriate this amount for beneficial use (MCA,10, 1991. 85-2-306).

Activities on private lands that would alter or modify streams and their banks require a permit from the conservation district of which the land is part (The Natural Streambed and Land Preservation Act of 1975. MCA 10, 1991. 75-7-101). Recognizing the value of the stream and it's accompanying riparian area this law is designed to protect such areas for the benefit of fish and wildlife and water quality and quantity. Work generally requiring a permit includes residential development , irrigation pump installation, and farming practices. One exemption from regulations that might impact bull trout habitat is the allowance for the removal of debris from a stream channel. It must also be noted that these activities require a permit that is reviewed by the board of supervisors and does not list any prohibited projects. An inspection team, after review of the project, recommends denial, approval, or modification of the project. A final decision by the board to affirm, overrule, or modify the team recommendation is made with concurrence of the majority of the supervisors. Given the value of riparian areas to the predators of concern, this law provides county government the opportunity to deny or request alteration of development plans based on the

impacts to predators. A well informed, educated review team and Board can therefore be quite effective in protecting valuable habitat.

Clearly state and county regulations were developed with concern for human health and well being. It would be unfair to criticize these guidelines based on their ability to protect predator diversity. It is, however, my intention to shed light on those land use regulations that through amendment might incorporate the ecological needs of wildlife with those of human communities. The impacts of human garbage and stream degradation on the predators of concern is well documented. The role of improper residential and agricultural groundwater mining on bull trout is less evident though we do understand the positive relationship between an instream influx of cold clean groundwater and fry emergence. This general lack of knowledge about groundwater systems would indicate a need for further research in this area in order to develop regulations designed to protect this valuable resource. In fact, research of this type would be most appropriate in the North Fork where there is within the local community a genuine concern for water quality and wildlife. The results of such studies could provide much needed knowledge for those involved in rural land use planning throughout the state and region. If the State of Montana truly desires a leadership role in planning for the ecological integrity of the North Fork it would seem appropriate to expand those environmental regulations that protect human health and well being to include concerns for wildlife and the natural systems that both rely on for sustenance.

Because private lands in the North Fork are such a critical component of the drainage's ecological integrity, it is paramount to educate owners about the role they play in protecting the values that distinguish this area from all others. With approximately 400 landowners this job could prove most complex given the

diversity of attitudes and desires. Owner values range on a spectrum from outspoken preservationist to die hard proponents of private property rights. Fortunately, there is a glue that binds these interests, that being the ownership of private land. It is this ownership that provides the best opportunity for long term habitat protection. Theoretically, if all owners in the North Fork were responsible stewards of the land concerned with predator/prey diversity the implementation of land use controls and regulations would be irrelevant. This scenario undescores the importance of responsible proprietorship and its role in protecting predators and their habitat. Likewise, the market value of land drives the transfer of ownership providing financial opportunities for owners whose decision to buy or sell reflect market forces. Solitude, natural landscapes and the existence of predators are marketable features in the North Fork and can be purchased at the right price. Those conservation tools that recognize the importance of both predator diversity and market economics have an opportunity to determine the future integrity of the North Fork.

As a means to protect natural systems and secure private ownership none is more effective than strategies implemented by land trust organizations. As non profit organizations, they utilize market strategies to protect valuable habitat. Fee simple purchases, private /public swaps, and conservation easements provide some of the needed tools. Understanding their role in ecosystem protection, The Nature Conservancy and the Trust for Public Land, are national organizations that have been involved in the Northern Continental Divide Ecosystem as has the Montana Land Reliance and a regional trust, the Flathead Land Trust. Both the Nature Conservancy and the Montana Land Reliance have established field offices to agressively promote private land conservation in northwestern Montana.

Capable of bridging the gap between conservation and property rights the conservation easement has been the tool of choice. Because owners can, through sale or donation, transfer rights to property, protective measures can be purchased or donated, establishing accepted and restricted acts for both the grantor and the grantee of rights. Though the sale or donation of these rights can reduce the overall value of the property, it still remains on the county tax roles and, depending on the easement, is not exposed to multiple use like that of public land. This concern over private property is a major selling point for those landowners in the North Fork who are distrustful of federal intervention. Indeed, it is the perpetuation of private property rights that differentiates land trust efforts from those of federal agencies. Those landowners who support local land use planning as a means to gain local autonomy are a natural market for land trust approaches. Landowners with a strong land ethic have the ability, through conservation easements, to establish and administer small scale preserves by utilizing the ecological expertise of land trust's staff. These preserves most importantly can, through a conservation easement, be protected through time regardless of owner.

Fee acquisition of large parcels is limited in the North Fork given that only about 15,000 acres of land is in the private sector. However, piece meal acquisition would seem apropriate in order to patch togethor enough property to develop a "coexistence demonstration project". This project could be similar to the Nature Conservancy's Pine Butte Swamp Preserve at a smaller scale with an emphasis on residential coexistence. Predator safe land use should be the primary mission providing a clearinghouse of information for those concerned with the human wildlife interface. Researchers in the valley could utilize this center for educating the local community on present and future projects providing a communication link between scientist and the "locals". Most

importantly the experience gleaned from this project could be applied to those areas where private land conservation will be required for predator recovery.

Land swaps or sales with federal agencies is a tool that might indeed protect habitat from irresponsible owners but should be minimized in order to promote goodwill with neighbors that would view such actions as counter to the desires of the community. In many instances land trusts have purchased property with full intention of selling it to the federal government. Admirable in many cases, this approach puts the land trust at risk of being viewed merely as an agent of the government. Perceptions of this sort could prove damaging to the long term relationship between the trust and landholders leary of such actions, threatening future opportunities for beneficial transactions.

Outright purchases of lands by trusts are labor intensive and require generous outlays of capital. In most instances, land trusts are unable to follow directly the real estate market in order to match conservation minded owners with like minded sellers. The development of such a program is best left to real estate brokers who specialize in developing leads and negotiating transactions. This is of utmost import when participants are primarily concerned with the bottom line, where non market values are discounted and are not viewed by the seller as significant. Attitudinal surveys (Tucker and Pletscher 1989, NFLUPC 1991) indicate that such outlooks are common among North Fork residents. In these cases, conservation real estate brokers service a niche on the attitudinal spectrum that is unapproachable by land trusts (Kiesling, American Conservation Real Estate, pers. commun.).

Regardless of the tool employed, land trusts and conservation real estate brokers must be in tune with the ultimate value of the area as critical predator habitat, while simultaneously understanding the impacts of their decisions on community attitudes and integrated land use planning. Current uses of the land

are not generally in direct conflict with preservation efforts. Because it is primarily a haven for second home recreational use, the valley's members are sympathetic to conservation efforts. Not dependent on resource extraction, most landowners are concerned with the impacts of too many visitors and neighbors. Those organizations that respect these concerns and the values of private landholders while protecting critical habitat, have a tremendous role to play in the North Fork and therefore should be considered "Major Players".

CHAPTER 6

IN A PERFECT WORLD

Analysis of local and international planning efforts exposes their weaknesses relative to the protection of predator/prey diversity. Both plans require structural and functional improvement if the long term viability of the predators of concern is to be provided for. Fortunately, planning at both levels is underway with only improvement required for an integrated drainage wide plan. Having developed a grassroots plan that in turn influences the international effort, the local community has indeed been heard. However, the current status of both plans has moved beyond the stage of communication. Inter-local meetings, voluntary plans and conceptual strategies have run their course and cannot be viewed as the end product, instead they provide only the foundation for tough choices and significant change. Faced now with the uncertainty of Canadian decisions, the U.S. effort should not be subverted by forces that would undermine hard work and progressive change. Reactive leadership at a local, state, and federal level has, to date, protected the water that both nations share. The United States, the State of Montana, Flathead County, and the North Fork community must now take proactive steps to guarantee the long term health of the drainage and the diversity of species it contains. All of these entities must make evident through their actions the commitment to predator diversity and sustainable human coexistence in order to influence Canadian decisionmakers.

Structurally, the bottom up approach to planning has run its course. The geographical location and the international significance of the area forces the

endeavor into negotiations and agreements formed at the highest level of both nations. The optimal agreement would be embedded in an international treaty. A treaty would protect and support those concerns that have been elevated to a position of international significance. Furthermore, it would guarantee that hard work and effort involved with long term planning would not prove futile when threatened by short term interests. The 1909 Boundary Waters Treaty is a fine example of an agreement designed to protect values through time while providing a vehicle for conflict resolution (IJC). A similar accord, designed to provide for sustainable land use and biodiversity would be appropriate for many shared landscapes along the border. The question of applicability arises in regards to areas of concern. Should such a treaty define the area, ie. the North Fork drainage, or should it be broad based to include other regions where predators and human needs converge and often conflict. If site specific, such a convention could be fine tuned to best represent regional ecosystems and local human communities. A defined area with a mission of predator/prey diversity, sustainable land use, and a mechanism for conflict resolution is ideal. Closely related to concepts associated with biosphere reserves, ecologically driven research should form the foundation of a Canadian-U.S. treaty.

Federal legislation may well end there, leaving open avenues for upper level policy makers at the federal, state, and provincial levels. Site specific in nature, appropriate policies and agreements formulated at the agency level provide incentive for mid-level managers to follow the course of change instituted by their superiors. In this regard, the ecosystem driven concerns of Glacier National Park and the multiple use concerns of the Flathead National Forest should be addressed by formal agreements between Departments of Interior and Agriculture (Salwasser et al, 1987). With appropriate structural changes impacting decision making, functional changes in land management

would be allowed to occur. A scenario of this sort would provide for an ecosystem based management proposal, as outlined by the FTC, that would have support grounded in agency policy.

It is at the functional level that state and local planning has the ability to determine its role in ecosystem management. Driven by a vision, state and local efforts have to this point determined the basis for an international treaty. This, however, is not without responsibility. Practical changes in land use regulations and the promotion of owner stewardship must be enacted. Strengthening of local plans to reflect predator/prey diversity and the proper enforcement of such plans is critical. This could well be attained by the designation of a predator coexistence zone. A zone of this sort, delineated by the county, should restrict subdivision in ecologically sensitive areas, regulate open road densities, prohibit inappropriate waste management, and develop ecologically driven groundwater regulations based on current biological and hydrological research. Incorporated into a strengthened local land use plan, the convergence of predator and human needs can occur without the burden of federal legislation.

The State of Montana has to this point invested heavily in protecting the North Fork both directly and indirectly. The Flathead Basin Commission and subdivison reform legislation are cases in point. However, they are both first steps. A strict regulatory approach has its weaknesses, alienating citizens who are opposed to government intervention regardless of the benefits to the public. Incentives must be devised that reward private conservation efforts. This might best be handled through changes in the tax code. Currently, North Fork landowners are taxed at an agricultural or timber rate regardless of use. Significantly lower than residential rates, there is currently no incentive to reduce the burden of state property taxes when that burden does not exist. Furthermore, the state loses revenue when residential and summer home lands

are taxed at rates lower than that prescribed for residential use. Clearly, the implications of changing complex and far reaching state tax law is beyond the scope of this paper but is deserving of attention. However, adjustments in tax law that recognize the site specific circumstances of the North Fork could prove positive for state revenue while providing incentive for private sector conservation. Progressive change of this sort moves the state beyond the role of negotiator into that of obligated "Player" with a proven commitment to change.

Driven by the ecological significance of the valley's private lands, private sector conservation efforts could have a tremendous impact on the future of predator diversity in the North Fork. As mentioned, two major land trusts, The Nature Conservancy and the Montana Land Reliance are focusing efforts on the Northern Continental Divide Ecosystem. Of particular interest is the Nature Conservancy's efforts in the promotion of bioreserves. Viewed as the next logical step in its conservation work the Conservancy borrowed the concepts proposed by UNESCO's Biosphere Reserve and proposed practical applications (Jenkins, No Date). Accepting of the "core" and "buffer " zone concept, the Nature Conservancy's Virginia Coast Reserve (VCR) is a model of how this concept can incorporate private landowners and local and county governments into integrated ecosystem based land use planning (Badger 1990).

Faced with threats of over development and fueled by the desire of local people to control their destiny the VCR faces many of the same issues that confront the ecological and human communities of the North Fork. Fortunately for VCR the National Science Foundation awarded the University of Virginia a 2 million dollar grant to undergo long-term ecological research on the reserve (Badger, 1990). Could the Wolf Ecology Project or the Flathead Biological station benefit from a similar program if promoted in the North Fork? Possibilities certainly exist as The Nature Conservancy takes a bold step in the movement for

ecosystem protection. The "Last Great Places" campaign has set a goal of 300 million dollars to finance private conservation efforts focused on the major ecosystems of the Western Hemisphere, and has to date raised half of the money. Currently however, the NCDE has not been targeted as a "Last Great Place" by the national organization. Certainly qualified, the NCDE and the North Fork in particular could benefit from such an initiative. Interestingly, this campaign is developed around those concepts prescribed by the biosphere reserve. Efforts such as the VCR and "Last Great Places" point out the leadership role private conservation plays in integrated ecosystem management. State, federal, and county agencies would be well served to promote through actions the appropriateness of the North Fork as fertile ground for such an ambitious program.

Biosphere reserves, bioreserves, and integrated ecosystem management are nebulous terms for those who are more familiar with traditional planning units such as National Parks, National Forests, and the Back 40. Unable to value seemingly boring or valueless landscapes we have in many instances left them exposed to misuse to the detriment of both ecological and human communities. Misunderstanding the complexities of natural systems, we have allowed ourselves to be detached from those species we feared or felt were cared for appropriately in politically determined reserves. Much research has been undertaken to illustrate the falseness of such perceptions while pointing out that managing across political boundaries for predator/prey diversity is as complex as those systems they inhabit. This is no more evident than the current situation that faces the North Fork. Humans that place value on solitude, aesthetics, and independence are not unlike the predators that require undisturbed areas to roam or find sustenance on the banks of a clear blue creek. Indeed, in the North Fork these values converge and subsequently the battle for their protection is

partly won. This however is not without costs, nor should it be. Is it not appropriate to expect more from inhabitants of the North Fork who reside in the presence of imperiled predators? Should they not incur more responsibility than a tenant in a Kalispell apartment building? Certainly they should, and understanding and acting on this unique responsibility is the key to continued predator/prey diversity and local independence.

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Hope, Tom. Glacier View District Ranger. Flathead National Forest. Phone interview. April 1993.

Jentz, Tom. Senior Planner. Flathead County Regional Development Office. Personal interview. Kalispell, MT, March 1993.

Kiesling, Bob. Real Estate Broker. American Conservation Real Estate. Personal interview. Helena, MT, January 1993.

McNeil, Cecily. President , The North Fork Compact. Phone interview. February 1993.

O'Herren, Pat. Rural Planning Specialist. Missoula County Rural Planning. Personal interview. Missoula, MT, March 1993.

Owen, Tom. Chairman. Flathead Transboundary Council. Personal interview. Kalispell, MT, February 1993.

Posewitz, Jim. Chairman, United States delegation. Flathead River International Study Board. Personal interview. Missoula MT, February 1993.

Stempin, Gary. Director. Flathead County Solid Waste. Phone interview. April 1993.

Weaver, Tom. Fisheries Research Specialist, Montana Department of Fish Wildlife and Parks. Phone interview. January 1993.

Wood, Alan. Wildlife Biologist. Montana Department of State Lands. Phone interview. April 1993.

APPENDIX A

NORTH FORK INTER-LOCAL AGREEMENT

INTER LOCAL AGREEMENT

INTER LOCAL AGREEMENT

North Fork Flathead River Drainage
Flathead County, Montana

Purpose:

This joint agreement has been established to formally provide a process among all landowners of this area to work together to enhance the resource values of the North Fork Flathead River Drainage. The document provides an important link to improve communication, support land use planning efforts, and provide continuing opportunities to share mutual concerns and other general information pertaining to this area.

Land Area Involved:

The area involved includes that portion of the North Fork Flathead River bordered on the east by the crest of the Livingston Range in the Rocky Mountains, bordered on the west by the crest of the Whitefish Mountain Range, bordered on the south by Camas Creek-Big Creek Drainages, and bordered on the north by the Canadian Border.

Parties Involved:

This joint agreement is between the Resource Agencies in the area and the Private Landowners in the area.

The Private Landowners will be represented by established organizations currently known as the North Fork Improvement Association, The North Fork Compact, and the North Fork Preservation Association.

The Resource Agencies currently include the Flathead County Commissioners, Montana State Lands Department, Montana Department of Fish, Wildlife and Parks, Glacier National Park, and the Flathead National Forest.

This agreement is intended to be open to other agencies and organizations that may become established in the future which support the intended purpose.

Meetings:

All parties involved agree to meet at least annually and review each other's proposals, plans or actions and explore possible joint support for these activities. The hosting party should develop an agenda with the cooperation of the other parties prior to each meeting.

To provide the best opportunity to allow private landowners to participate, it is suggested that a joint annual meeting be held at the Sondreson Memorial Community Hall sometime during July or August each year. Each party should be responsible for hosting the annual meeting on a rotating basis.

As needed, other joint meetings are encouraged to help resolve mutual concerns when they arise from time to time. Any participating agency or organization may coordinate a meeting of this nature.

Termination:

All parties may jointly agree to terminate this agreement by providing written notice 60 days prior to actual termination.

Any individual party may also terminate its commitment to this agreement by providing a 60 day notification to the remaining parties including the reason for termination.

IN WITNESS WHEREOF, the parties hereto have caused this Inter Joint Agreement to be properly executed by their authorized representatives on this 13th day of September, 1985.

RESOURCE AGENCIES

Flathead County Board of Commissioners:

Chairman

Member

Member

Montana Department of State Lands

Field Supervisor
Stillwater Unit, N.W. Land Office

Montana Department of Fish, Wildlife and Parks

Regional Supervisor

Glacier National Park

per Superintendent

Flathead National Forest

PRIVATE LANDOWNERS

North Fork Improvement Assn.

President

North Fork Company

President

North Fork Preservation Assc.

President

APPENDIX B

1986 NORTH FORK LAND USE PLAN RECOMMENDATIONS

RECOMMENDATIONS

The RECOMMENDATIONS section of the report is crucial. Through input from the landowners and resource management agencies in the North Fork, the LUPC recommends that a Land Use Plan be implemented and monitored over a 5-year period. This plan will be established through **VOLUNTARY COMPLIANCE.** The plan is designed so that landowners wanting to subdivide or develop their property may work with a local North Fork Planning Board to minimize potential impacts on the critical resource values.

PERMANENT AND TEMPORARY PROTECTION

The recommendations which follow include some measures which will temporarily protect open space and some which can provide permanent protection. In the long run, protecting the resources identified in this report will require permanent restrictions on development in some locations. Otherwise, the conversion of open space is merely postponed. There is value, however, in also adopting more temporary measures which encourage continuation of present low-intensity land uses; at the very least, these temporary incentives would provide time to develop methods or options with more lasting results.

The following recommendations were reached through discussions with landowners, through questionnaires, through consulting with the Resource Management Agencies, and through consulting personnel administering State of Montana and Flathead County regulations. All these recommendations have the purpose of helping to maintain or enhance the protection of the Resource Values of the private lands within the planning area.

> THE LUPC RECOMMENDS that open space be maintained by using Cluster Development measures with smaller lot sizes.

As an example of the Cluster Development concept, a 160-acre tract can be broken down into eight 20-acre smaller tracts without a formal subdivision plat. Under the Cluster Development concept, the 8 tracts (or lots) could be grouped on a smaller portion of the 160 acres with the remaining undeveloped area restricted to open space. Clusters may be served by one main access road and each lot is designed to fit the landscape rather than drawing the traditional rectangular lots. This concept probably currently comes under existing subdivision requirements unless the 8 lots in the example radiate like spokes from the residence(s) in the cluster.

> THE LUPC RECOMMENDS that the large scale maps maintained at Sondreson Memorial Hall (originals of those in this document) be used as guides for future

development adjacent to stream courses or wildlife habitat and that they also serve as a baseline for future revisions of the LUP.

The open space restrictions can be accomplished using several options. Land purchases or conservation easements are the most desirable permanent options. Conservation easements would restrict subdividing but have some flexibility to meet individual landowners' needs. Easements can be acquired, donated, or involve a combination of both depending on the wish of the landowner involved. In other areas, financing for these projects has been requested through several regional and national programs concerned with protecting key wildlife habitat as well as managing occupied areas involving threatened and endangered wildlife species.

Land exchange to protect critical resource values will also be considered. Although a more difficult process, on occasion the Forest Service will consider acquiring critical areas through land exchange. This would also require a strong commitment by the landowner.

Temporary measures may also be considered. For example, if a group of landowners neighboring each other wanted to join together to consider a partial development/open space concept, they could enter into a cooperative agreement and impose their own controls. Or, an individual landowner could establish covenants to be filed with Flathead County with self-imposed development restrictions.

The concept of transferable development rights as described in the Appendix "Methods to Protect Open Space" appears attractive as an equitable way of compensating landowners for maintaining open space. The LUPC has reservations on the feasibility of applying the concept to only a local area such as the North Fork. There may also be conflicts between the concept and Montana or Flathead County subdivision, real estate, and securities laws. The LUPC does not have adequate information at this time for recommending transferable development rights as the preferred method of preserving open space in the North Fork.

It is important to look at options while remaining creative by communicating landowner desires and maintaining working interfaces with responsible planning/development boards. The key is to maintain the important qualities that make the area so attractive and valuable. A goal for the future should be to enhance land values through good planning as well as implementing the need for open space, particularly in critical resource value areas.

THE LUPC RECOMMENDS that the Transfer of Development Rights concept be given further study and evaluation before a potential incorporation into the Land Use Plan.

DENSITY

The State of Montana Subdivision and Platting Act requires any subdividing of a single parcel of land under 20 acres in size to have a formal COS (Certificate of Survey) plus a sanitation plan approved by local county authorities. Occasional sales regulations have also been recently adopted by Flathead County clarifying criteria for approving an occasional sale of parcels under 20 acres. Creation of more than one additional lot or use of subdivision exemptions such as an occasional sale, family transfer, etc. to circumvent the subdivision action would require the filing of a full subdivision plat.

THE LUPC RECOMMENDS that in any proposed subdivision or lot split the habitation density in that subdivision or lot split should be no greater than one unit per five acres when applying the cluster development concept.

THE LUPC RECOMMENDS that for any development plan where the habitation density would exceed one unit per 20 acres on the subdivided portion, an additional land area from the same ownership equal to or greater than the subdivided area be included in the plan as undeveloped open space such that the net density for the development plan satisfies the one unit per five acre criteria of the previous recommendation.

THE LUPC RECOMMENDS that one to two acre lots be allowed if no more than ten such units are included in a subdivision.

THE LUPC RECOMMENDS that tract size be five acres or larger in flood plain areas, critical resource value areas, marginal soil conditions or adjacent to water courses where sanitation and water quality are of major concerns.

All subdivision requirements must be met and approved by Flathead County following support by the North Fork Planning Board (the formation of this board is the subject of a separate recommendation under Adopting and Implementation).

Overall, the LUPC encourages landowners to keep tracts 20-acres or larger and use cluster development wherever lands are subdivided into smaller lots. It is important that landowners cooperate by working with the local planning board if they intend to develop their land.

Sanitation: Flathead County regulations require that drain fields be no closer than 100 feet from open water. Approved sealed vaults must be 50 feet from open water.

A soil inventory report "Flathead Country-Land System Inventory" published in December 1983 by the USDA Forest Service, Flathead National Forest, is available at the resource agencies and Sondreson Memorial Hall. This inventory of soil types, including the North Fork area, may be useful for identifying, in a very general way, soil suitability for septic systems. The report, by itself, is no substitute for individual site inspection. Anyone considering a septic system should consult the county sanitarian.

Other solutions to the problem of sewage disposal are possible. Today several closed systems for handling sewage are available. Some types burn the sewage; others store sewage until it has been bacterially decomposed. Portable

closed privies (such as are used at large public events) are feasible, but servicing is expensive. When any of the above closed systems are used a drainage system for gray water is required.

Outhouses can also be used, but separate gray water systems need to be established separate from the outhouses.

VISUAL QUALITY

The use of vegetative screens and a setback of structures to improve the visual quality when developing a property and access roads is encouraged.

Glacier National Park should manage their portion of the planning area to maintain a "near wilderness" experience for visitors. It should be the Park's responsibility to provide campgrounds and other needed visitor facilities within the Park. Glacier National Park has an opportunity to provide visitors a view of homestead life in the 1920's if the Park takes advantage of remaining buildings instead of destroying or allowing them to deteriorate beyond their current historical use values. Some restoration of these sites might be considered in conjunction with summer campsites.

The Glacier View District, Flathead National Forest, has a mandate to manage the area for multiple-uses. Also, they are responsible for management of the North Fork Wild and Scenic River. In the latter capacity, they have granted commercial permits for river float trips. There is a solid landowner concensus (See Appendix) that no additional permits should be granted.

THE LUPC RECOMMENDS that no additional commercial permits for river float trips be issued.

What should be the make-up of the Planning Board? Primarily, the board is envisioned as consisting of between 5 and 7 people (appointed by the Flathead County Planning Board), who can fairly represent the North Fork landowners in a responsive manner. All should be landowners within the planning area. At least two should be yearlong residents, and at least one should be selected from the County Planning Board. Flathead County, with support of the members of the Inter Local Agreement, should establish this board. There should also be a staff member from the Flathead County Development Office (formerly known as the Area Wide Planning Office) that would work directly with this board.

NORTH FORK PLANNING BOARD

LUPC RECOMMENDATION

THE LUPC RECOMMENDS the appointment of a North Fork Planning Board as described above with the function of working with the landowners to provide a landowner interface with Flathead County agencies, represent landowner positions on land use issues before those agencies, and monitor the effectiveness of the LUP as perceived by the landowners.

ADOPTION AND IMPLEMENTATION

ADOPTING THE PLAN

The LUPC makes the following recommendations:

1) Each landowner should receive a copy of this plan for review and comment during the summer of 1986. Meetings should be held during the comment period for the landowners. Individuals are also encouraged to contact any member of the LUPC or Board of County Commissioners to express comments, concerns or solicit further information.

2) The Flathead County Planning Board should conduct a hearing after landowners comment on this plan. Following the hearing, recommended modifications and adoption of the LUP will be considered by the Commissioners.

3) If adopted, the LUP for the North Fork will become a part of the Flathead County Comprehensive Land Use Plan.

4) This plan should be reviewed and adjusted in 1991 and on a 10-year update cycle thereafter.

5) The plan is designed as a voluntary landowner-developed plan for the people of the North Fork. This concept should be maintained for the future with the support of the landowners, Flathead County and members of the Inter Local Agreement.

FLATHEAD COUNTY LINK

Strong support for establishing a North Fork Planning Board came from the 1986 survey of the landowners responding. Some individual comments expressed concern that the make-up of the board should be well balanced with representatives from both large and small ownership, both conservative and liberal views represented, and that biases don't conflict with the responsibilities of the board.

OBJECTIVES

What are the objectives of the North Fork Planning Board? Three primary objectives are recommended by the LUPC:

1) Encourage landowners to become part of the Land Use Planning process,

2) Work responsively with landowners who want to subdivide and to develop their properties, using large-scale maps of sensitive resource value areas plus providing planning materials to help support decisions. The board recommendations would then be made to Flathead County authorities prior to approval of a proposed project,

3) Monitor the effectiveness of the plan. The board should make an annual report and review the results and recommendations with members of the Inter Local Agreement. A report to the landowners should be made at the joint annual meeting of the Inter Local Agreement members in the North Fork each summer.

APPENDIX C

1991 NORTH FORK LAND USE PLAN RECOMMENDATIONS

REPORT OF THE 1991 REVIEW BY THE LUPC

GENERAL: The basic North Fork Land Use Plan required a review in 1991 by the North Fork Land Use Planning Committee. The committee prepared a survey form in late summer/fall of 1990 which was mailed to all known North Fork landowners at their last recorded address. There was an active pursuit of current addresses as the need became known. Then an additional copy of the survey was mailed to the new address.

Of the approximately 416 North Fork Landowners, one hundred and sixty (160) completed and returned forms to the committee. This represents a 38.4% return. Most landowners responding to the survey sincerely expressed their views, and many volunteered additional and useful information. Without such response the survey would be useless.

I. SPECIAL AREAS--There should be more than one policy to control the land use of the entire North Fork because the North Fork may be roughly divided into three geographical areas and two types of special areas (which overlap the geographical ones). Each of these requires its own use and maintenance policy. The geographical areas are: A) Camas to Polebridge, B) the Polebridge area itself, and C) Polebridge to the Canadian Border. The special areas are D) River Frontage and E) Wildlife corridors. Brief descriptions of each area follow:

A. Camas to Polebridge: This area, which contains 13 miles of the North Fork Road, has tha heaviest vehicular traffic, especially during the summer months. Several miles of the road are lightly paved. There are stretches of of open space with mountain views. Part of the area is used for agricultural purposes. There are large tracts of undivided land. There is a new commercial development south of Hay Creek.

B. Polebridge area: This area has a small concentration of light seasonal commercial development, consisting of an AYH Hostel, rental cabins, a combination saloon and restaurant, a (Historical Landmark) mercantile store with fuel, food, souvenirs and post

office. Near the mercantile there are a number of private residences on small lots. A road to the Polebridge entrance to Glacier Park passes through this commercial area

C. Polebridge to Canadian Border: This area consists mainly of wooded areas and contains 22 miles of the North Fork Road. Private land with improvements is most heavily concentrated south of Trail Creek. There is access to public land (camping/launching) at the following sites of the North Fork River: the old Sondreson place near Moose Creek, Ford Work Center, and at the Canadian Border. The Border is open only during the summer months. Fewer than 8 cars per day cross the Border going south. The road north of Trail Creek is especially poor. There is a small seasonal combination bar-restaurant with rental cabins just north of the Border.

D. RIVER FRONTAGE: The North Fork of the Flathead River has been designated a component of the Wild and Scenic River system. This designation requires a primitive shoreline, and it is managed by the Forest Service on the West Bank and the National Park Service on the East Bank. The West Bank shoreline consists of both public and private land, developed and undeveloped. In the past the Forest Service has purchased river frontage or scenic easements from private sources and it is expected to continue to do so.

E. WILDLIFE CORRIDORS: All of the above areas include wildlife corridors, which change from time to time, and should be considered in any plan. Four Endangered or Threatened Species live in the North Fork. Subdivisions with high people densities and increased land development located in or near these corridors have a negative impact on wildlife. *(Maps are available in the original 1986 LUPC report.)*

In all these five areas, the consequences of unplanned and uncoordinated growth would be serious, although on a day-to-day basis the impact might not be apparent until too late.

II. RECOMMENDATIONS

A. Wildlife Corridors: Wildlife, for reasons explained above, should be considered during the process of land use planning. Sixty-five percent (65%) of the landowners responding to the survey stated that the wildlife corridors should be preserved. Glacier Park and the Forest Service have an interest in and data on these corridors.

LUPC RECOMMENDS--

1. The Forest Service be encouraged to acquire conservation easements on land with wildlife corridors or to acquire such land in fee simple.

2. Cluster development on large tracts of land could be considered if properly designed and if enforceable controls exist.

B. River Frontage: Sixty-one percent (61%) of the survey respondents did not feel that too many people were using the river. Seventy-nine percent (79%) stated that the present river access was sufficient. Any deliberations on policy having to do with recreational use of the river should be a joint effort of the National Park Service and the National Forest Service with every effort being made by both services to involve the public.

LUPC RECOMMENDS--

1. No additional public access to the River on the West Bank.

2. Consultation between Flathead County and the NFS in keeping the private land bordering the river free from additional improvements which would be visible from the river.

C. Signs: Some of the most beautiful scenery in Montana, from creeks and forests to towering mountains can be enjoyed from the North Fork Road. Signs along the road should be controlled in order to prevent degradation of the scenery. Since it is impractical to eliminate all signs, those which are necessary or permitted should be constructed so that contrast with the surrounding area is at a minimum. They should blend in as much as possible to become a part of the scene.

LUPC RECOMMENDS--

1. Wooden signs are to be encouraged. All signs should be limited to a maximum of four (4) square feet. Lighted or animated signs should not be allowed. Real Estate signs should be located only on the tract of land being offered and should be limited to one sign per tract. Personal or business signs located away from the owner's property or business should be restricted to two (2) off-premises signs per person or business. Proper upkeep of a sign, including its removal when necessary is the responsibility of the sign-owner. No commercial signs, including real estate signs, should be visible from the river.

   Existing signs would be "grandfathered" for a ten-year period from the adoption of this plan. Thereafter, the signs must comply with existing rules.

   No Hunting and No Trespassing signs are regulated by the state.

D. Septic Tanks: The original LUP (1986) estimated 213 dwellings on the North Fork and more have been built since. Twenty percent (20%) of the 1991 survey returns indicated that landowners planned construction within five years. Alternatives to outhouses were an expressed interest in the survey but not as a mandatory requirement.

LUPC RECOMMENDS--

1. Advance approval from the County Health Department before any septic tank installation.

2. Mandatory closed-tank systems within a designated distance from the river or a lake.

3. Composting outhouses be encouraged by the county making information available on the advantages, sources, and cost of such systems.

E. Commercial Activity: Sixty-four percent (64%) of the returned surveys were against additional commercial development.

LUPC RECOMMENDS--

1. Commercial activity, when allowed, should be concentrated in the heavier traffic zone from Polebridge south.

2. There should be no commercial venture that would create a negative visual, auditory or olfactory impact on the North Fork.

3. Approved commercial construction visible from the main road should blend with the surrounding area.

4. No destination resorts should be permitted.

5. No industry should be permitted.

6. There should be no transportation of commercial quantities of any toxic materials by either private or public means. This would not include materials in quantities intended for domestic use.

7. Permitted commercial development should be scaled to meet the needs of the immediate neighborhood; not to attract customers from outside the area.

8. Residential construction should be limited to single family dwellings.

F. Montana sub-division and platting act: This act pertains to sub-dividing parcels of land under 20 acres. The uniqueness of the North Fork is well described in the initial LUP, and the importance of protecting the values of the area is widely accepted. Increased development can strain the water quality and cause sewage pollution and noise pollution from the increased human activity.

In the 1985 survey only 52% of the respondents supported a minimum lot size. In the 1991 survey landowner support of a minimum lot size increased to 75%, reflecting their concern on this subject.

LUPC RECOMMENDS--

1. That Flathead County officials strictly interpret county regulations concerning "exemptions to the sub-division and platting act" so as to prevent erosion of the area's natural state .

2. That no sub-division be permitted that would create a significant negative impact on the area.

G. Utilities: Expansion of public utilities continues to receive opposition from the North Fork landowners. They seem satisfied in providing their own power with personal generators.

LUPC RECOMMENDS--

1. No expansion of utilities in the North Fork.

H. Visual Impact: Scenic value is a very important part of the North Fork experience. To see a neighbor's roof or outbuilding is a very negative experience and contrary to the wilderness frame of mind we would like to maintain. It is reasonable to expect each North Fork landowner to exercise some thought and to compromise when necessary in order to permit each landowner to appreciate the area in his own way.

LUPC RECOMMENDS--

1. That, during the planning stage of any construction all homeowner/builders consider the visual impact on their neighbors. Communication with surrounding landowners is important.

2. New structures which are visible to the public should be rustic and/or compatible with the landscape. New homes should be screened from view of others and set back from major roads whenever possible.

I. Education: All landowners should be aware of problems that may occur due to living in a wild area--fire hazards and fire safety precautions, garbage disposal so as not to attract predators, encounters with wildlife , etc.

LUPC RECOMMENDS--

1. That local organizations prepare a joint information system containing necessary information to help educate and inform property owners, particularly newcomers, on "Living in the North Fork".

J. Landowner Compliance: Compliance with the basic LUP is on a voluntary basis. The LUP was created by input from the landowners and resource management agencies in the area. The LUPC at that time thought the landowners would comply with a plan they helped to create. The survey returns showed only five percent (5%) of the respondents thought the voluntary compliance system was effective. Only 32% said that the voluntary procedure was somewhat effective.

The North Fork consists of full time and summer residents, weekenders, public and private land, the river, lakes, roads, hunting and fishing, boating, commercial activity, sub-divisions, large land tracts, home construction, forests, logging, domestic animals, visiting tourists, investors, retirees, the rich, and the not so rich. **It is recognized that a voluntary land use plan for such a varied area is no longer adequate.**

The returned surveys did not contain sufficient information on the degree of compliance, if any, to be recommended by this committee. This subject was covered in the last question of the survey which was on a page by itself. Because 44% of the respondents did not respond to that question, it is assumed that they did not see this question at all. Therefore , the LUPC does not make any recommendations on this subject.

CONCLUSION

Two sentences from earlier parts of the report bear repeating--

In all these five areas, the consequences of unplanned and uncoordinated growth would be serious, although on a day-to-day basis the impact might not be apparent until too late.

It is recognized that a voluntary land use plan for such a varied area is no longer adequate.

It is the conclusion of this committee that regulations and compliance with such regulations will become more important with the increase of population on the North Fork.

The LUPC requests that the county approve and put in place a system which will protect the rights of all landowners, resident and non-resident, and also preserve those unique values so important to the North Fork: clean air, pure water, open space, freedom from noise and light pollution. For this request to be possible the LUPC urges everyone to compromise when necessary, in order to reach an equitable solution acceptable to all.

NORTH FORK OF FLATHEAD RIVER CONCEPTUAL STRATEGY
FINAL
North Fork Steering Committee
September 22, 1992

MISSION To define and implement compatible, equitable, and sustainable activities and management strategies in the upper Flathead River Basin of Montana and British Columbia.

The Mission is based on a recommendation by the International Joint Commission for the North Fork of the Flathead River Basin, (Impacts of a Proposed Coal Mine in the Flathead River Basin, December, 1988) and modified to be consistent with the British Columbia definition of sustainability (Towards a Strategy for Sustainability, British Columbia Round Table, January, 1992).

GOALS FOR NORTH FORK DRAINAGE IN MONTANA

* Preserve and if necessary restore water and air quality to sustain the environment for fish, wildlife, and people.

* Preserve and if necessary restore the ecological integrity and biodiversity of the drainage including, but not limited to the many special designations including Glacier National Park, Wild and Scenic River, International Biosphere Reserve, and the habitat necessary to sustain endangered species (gray wolf, grizzly, and bald eagle) and species of special concern such as bull trout and cutthroat trout.

* Provide for sustainable, multiple resource uses that meet the above goals.

[Above three Goals established by the North Fork Steering Committee.]

CONCEPTUAL STRATEGY FOR THE NORTH FORK DRAINAGE OF MONTANA

I. Glacier National Park

A. Maintain and manage the North Fork drainage in Glacier as a "wilderness threshold zone" with minimal development.

B. Limit intense recreational usage and provide for

primitive recreational experiences such as hiking, boating, and non-motorized camping.

C. Implement a limit of acceptable change program to ensure that visitor use does not alter the unique character, visitor experience, and special qualities of the park.

D. In conjunction with U.S. Forest Service, manage floating on the wild and scenic river by; creating designated campsites, establishing sanitation facilities, and determining limits of acceptable change for the river corridor.

E. Give management preference to preserve and restore the gray wolf, grizzly bear, bald eagle, and peregrine falcon and other species of special concern such as bull trout and large ungulates.

F. Purchase of private inholdings as opportunities become available.

G. Maintain an early 1900's rustic motif of buildings.

H. Eradicate noxious weeds.

I. Cooperate with other management agencies and local residences to identify limits of acceptable change for the North Fork drainage.

J. Manage and recommend designation of the North Fork drainage in Glacier Park as Wilderness.

II. U.S. Forest Service Lands

A. Give management preference to the special designations, critical wildlife habitat, and non degradation of water and air quality over all other management practices.

B. Give management preference to preserve and restore the habitat of the gray wolf, grizzly bear, bald eagle, peregrine falcon and other species of special concern such as bull trout and large ungulates over all other management practices.

C. Manage and control access into existing logged areas to conform with the first two goals identified above for the North Fork drainage in Montana.

D. Recommend congressional approval of the Mount Hefty-Tuchuck and Thompson-Seton areas, as defined in the Thompson-Seton roadless area, for Wilderness designation.

E. Cooperate with Department of Fish, Wildlife and Parks to enhance and manage populations of resident game animals and fish.

F. Manage the wild and scenic river stretch by establishing limits of acceptable change, and designating campsites and sanitation facilities. Buy land and/or conservation easements along wild and scenic river corridor. Develop a management plan jointly with Glacier National Park, Department of State Lands, and private landowners.

G. Promote acquisition and enforcement of conservation easements throughout the North Fork drainage.

H. Eradicate noxious weeds.

I. Limit and control commercial guiding services for hunting, fishing, floating, and snowmobiling.

J. Implement a limit of acceptable change program to ensure that visitor use does not alter the unique character of the North Fork drainage.

III. Private land

A. Do not expand existing phone or electrical utilities up the North Fork drainage, unless buried underground and approved by a majority of the residents.

B. Define and preserve riparian areas and wildlife corridors.

C. Maintain existing rustic character of dwellings.

D. Allow cottage type industries throughout the North Fork drainage. Prohibit destination resorts, commercial guiding, heavy industry or other non-compatible commercial activity. Acceptable commercial activity should be located at Polebridge and south, and blend with the surrounding environment and severely restrict visual, auditory, and olfactory impacts.

E. Maintain low population density by encouraging cluster development as a method of protecting "open spaces" and wildlife habitat. Discourage subdividing and summer home developments. Develop a program that promotes the creation of conservation easements and land trusts that maintains low population density.

F. Develop zoning and regulations to encourage compatible development and usage on private lands that protects the

special designations, critical wildlife habitat, water and air quality, endangered species and species of special concern.

G. Enforce non degradation standards for sewage systems.

H. Develop no more public access sites to the North Fork River from the westside of the river. Keep the private land bordering the river free from additional improvements which would be visible from the river.

I. Develop an education program for property owners regarding living in the North Fork that is compatible with its special qualities.

J. Implement a limit of acceptable change program to ensure resident and visitor use does not alter the unique character of the North Fork.

K. Eradicate noxious weeds.

IV. North Fork Road

A. Maintain the existing condition of the road. However, do mitigate and control those stretches of the North Fork road where sediment and dust enters into the North Fork River or its tributaries. Explore alternative means other than paving the road to control dust for safety and health purposes.

B. Explore ways of limiting usage of the road such as limiting destination sites such as new or expanded campgrounds in the North Fork. A part of this task would be to conduct a traffic study on origin and destination of vehicle usage. Also, evaluate whether creating a scenic route along the Camas Creek road in Glacier and then southward on the North Fork road where it intersects with the Camas Creek Road would curb traffic from going north into the basin.

C. Eradicate noxious weeds along roads.

D. Develop turnouts where necessary to enhance traffic safety.

V. Department of State Lands

A. Encourage the Department of State Lands through the State Board of Land Commissioners and U.S. Forest

Service to conduct land exchanges where State Lands would exchange its North Fork land to the Forest Service for comparable Forest Service land elsewhere.

B. Manage the forest to produce a reasonable and legitimate income for the state trust funds while giving management preference to the special designations, critical wildlife habitat, and non degradation of water and air quality over all other management practices.

C. Manage the forest to produce a reasonable and legitimate income for the state trust funds while giving management preference to preserve and restore the gray wolf, grizzly bear, bald eagle, peregrine falcon and other species of special concern such as bull trout and large ungulates over all other management practices.

D. Manage and control access into existing logged areas to conform with the first two goals identified above for the North Fork drainage in Montana.

E. Cooperate with Department of Fish, Wildlife and Parks to enhance and manage populations of resident game animals and fish.

F. Eradicate noxious weeds.

G. Cooperate in a limit of acceptable change program to ensure visitor use does not alter the unique character of the North Fork.

Mineral Leasing, Exploration, and Development.

A. Mineral leasing, exploration, and development on all lands in the North Fork drainage must be subject to the same management considerations, goals, standards, and objectives as the other resources identified in this document which include stringent public and environmental review.

B. Mineral exploration and development on all lands must not adversely affect the many special designations in the North Fork drainage, and critical wildlife habitat, nor cause the degradation of water and air quality.

BINATIONAL CONSERVATION STRATEGY

To begin discussions with British Columbia, the Core Negotiating Team and a comparable B.C. entity should consider the following:

I. Establish a Joint Board with equal representation from British Columbia and Montana to achieve compliance on the goals and objectives of the binational Conservation Strategy.

II. Establish a new common trust fund to manage and implement the binational management plan.

III. Components of the binational management plan might include:

A. Ensure compliance with the three goals defined for the North Fork drainage in Montana.

B. Manage the basin with special emphasis on the eagle, grizzly bear, gray wolf, bull trout, and other species of concern.

C. Develop and administer a benign research program that focuses on: monitoring baseline conditions, developing environmentally compatible resource utilization methods, preserving animal and plant species of special concern, restoring new and already disturbed areas, and defining appropriate types and levels of development.

D. Develop a strategy for research that limits handling of fish and wildlife and provide for a stringent review process to ensure elimination of unnecessary research projects.

E. To encourage binational symmetry, the Province of British Columbia and the Canadian Federal governments and Canadian public will be invited to participate in all United States and Montana environmental review processes on actions affecting the North Fork drainage.

F. Such other issues that are of interest to the people and government of British Columbia.

IV. Other details of the binational program, including the management structure and financing would probably be defined through this formal process. Input would be directly sought from the North Fork Steering Committee and the Flathead Basin Commission between negotiation sessions.