North Coastal California
A Stewardship Report

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Save-the-Redwoods League

Bureau of Land Management

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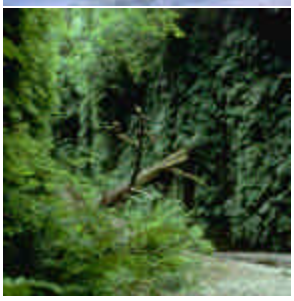
INTRODUCTION

The magnificent natural landscapes of north coastal California inspire and renew resident and visitor alike. From high mountains, through deep valleys lined with ancient redwoods, down cool clear streams home to native salmon, to the remote coast, the region teems with natural wonder.



The Bureau of Land Management and Save-the-Redwoods League convened a series of workshops in late 2000 and early 2001 for groups working region-wide in the north coast on land management and conservation. The objective was to better understand the landscape and discuss ongoing land conservation efforts across the region. The specific goal was to identify non-regulatory actions that contribute to the maintenance and restoration of a natural and healthy ecosystem.

Often we only hear controversial news and event – clear-cuts, tree-sits, floods, fires, declining fisheries, and cash-strapped public agencies - but there are other stories to tell. Successful conservation efforts led by public agencies, local citizen groups, and landowners large and small are underway across the region. All share a common goal: to maintain and enhance the regions' natural landscape. Many groups focus on a particular watershed, issue, or area. But as Aldo Leopold wrote "Instead of learning more and more about less and less, we must learn more and more about the whole biotic landscape". This series of workshops, and resulting report, is an attempt to share our understanding of the specifics so that we all gain a greater understanding of the landscape as a whole.

The report presents a guide to the different 'personalities' of the diverse landscapes of the north coast through a description of eleven focus areas. These focus areas were derived through an iterative group process, which involved recording the locations of critical natural resources and current projects on large maps. Multiple locations were combined into focus areas sharing a common geography or theme. Focus areas cover much, but not all of, the region. Often the boundaries of focus areas follow watershed lines, but sometimes they traverse watershed lines to include other closely related areas. Although important, places falling outside the focal areas described in this report lay outside the expertise of members of the group.

This report presents a snapshot of the north coast at one particular time, recorded by one particular group. As such it is based upon the knowledge of the participants, and the individuals and groups they work with. It should be considered a starting point for exploration, rather than a comprehensive document.

Each focus area write-up follows a standard format that includes the following descriptions:

- resources - including natural, fauna and flora, cultural, recreational, and visual;
- community values;
- opportunities and threats to identified resources and community values;
- current and potential conservation action;
- conservation partners;
- linkage to other areas;
- reference sources for further information.

The sharing of information, ideas, and project experiences generated great excitement about possibilities for future collaborative action. Participants came away with an increased understanding of the region, a greater awareness of the array of conservation projects underway, and an appreciation for the links between projects.

The workshops clearly demonstrated that individual projects benefit greatly from the sharing of results and experiences with colleagues. Our collective effort stems from the view that conservation projects are experiments through which we can learn more about the region and its natural systems. Subsequent projects can be refined, and hopefully improved, based upon the enhanced understanding that emerges. This is adaptive management at a large-scale.

Our combined efforts to reconstruct natural processes disrupted by human use should be done with humility. We should open the door for nature to define its areas and systems, freeing the landscapes from the limiting effects of human use in order for nature to sustain itself once more. We hope this report gives the reader an appreciation of the north coast region and lays the groundwork for collective understanding, an understanding that forms the basis of increased collaboration and cooperative action, and ultimately ensures the survival of the region's natural wonders.

PARTICIPANTS

Bureau of Land Management

California Department of Forestry and Fire Protection

Coastal Conservancy

California Department of Fish and Game

California Department of Parks and Recreation

National Forest Service

National Marine Fisheries Service

National Park Service

North Coast Regional Land Trust

Sanctuary Forest, Inc.

Save-the-Redwoods League

The Conservation Fund

The Nature Conservancy

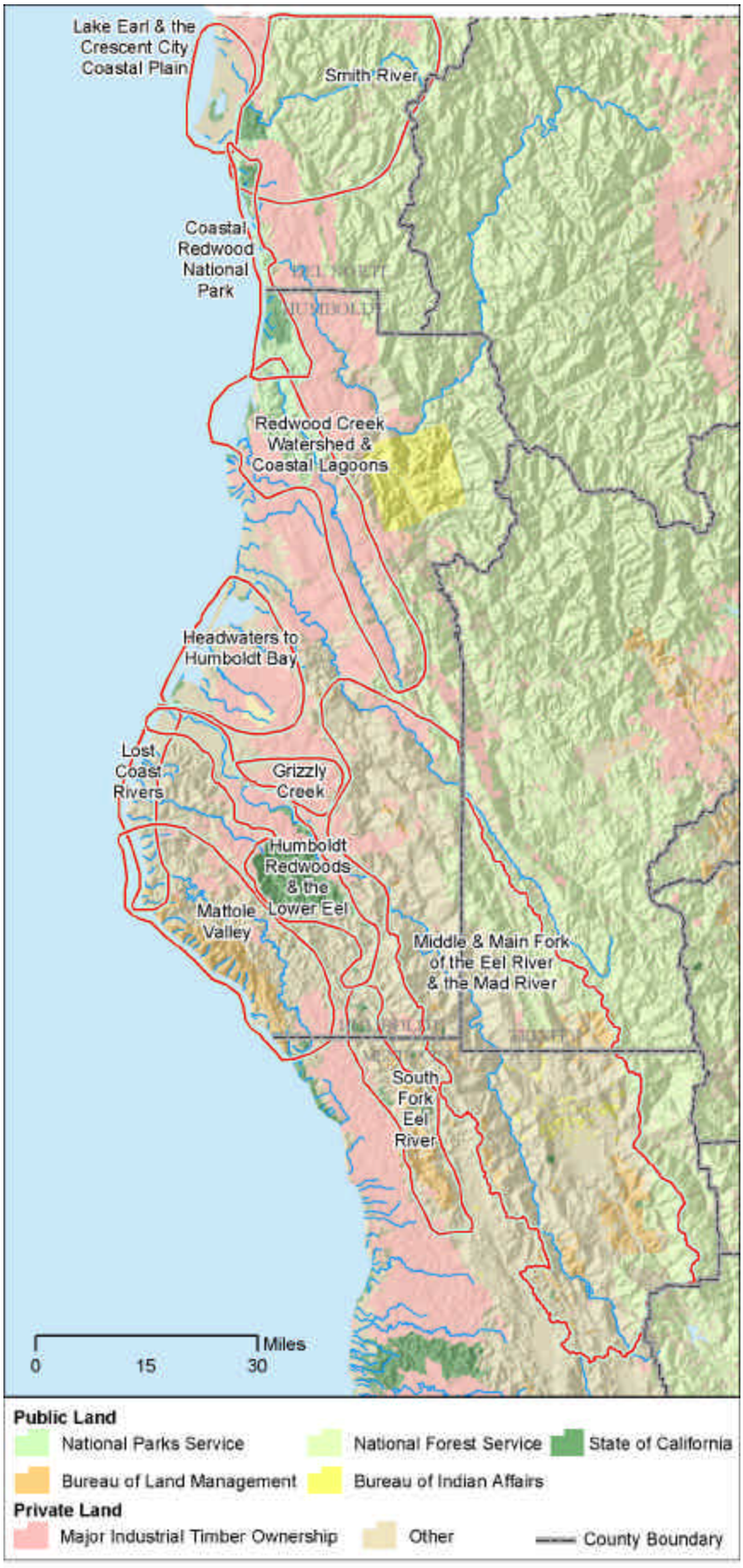
Trust for Public Land

U.S. Fish and Wildlife Service

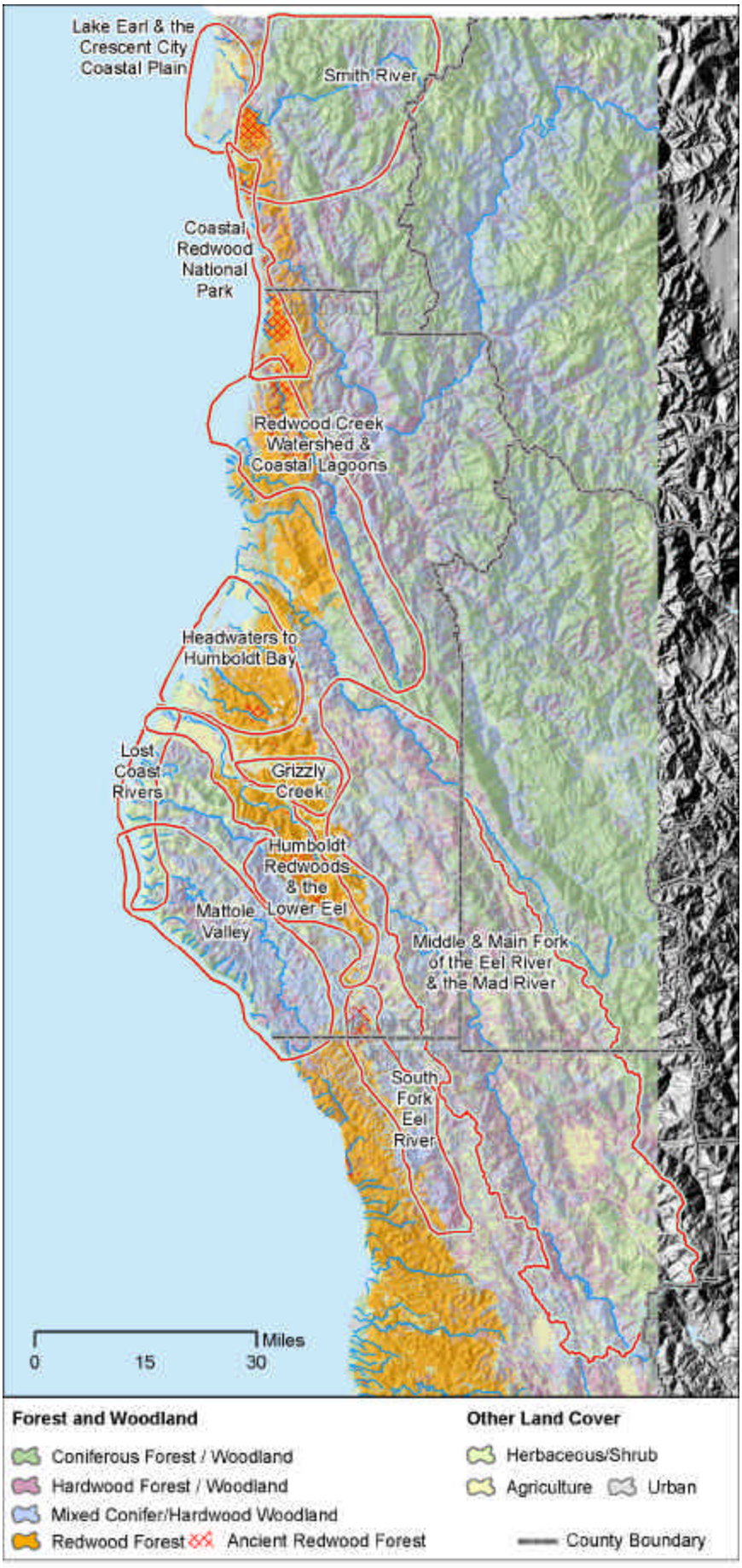
U.S. Geological Survey

The maps on the following pages present an overview of land ownership and vegetation within the study area.

LAND OWNERSHIP



Land Cover


Lake Earl & the Crescent City Coastal Plain
Smith River
Coastal Redwood National Park
Redwood Creek Watershed & Coastal Lagoons
Headwaters to Humboldt Bay
Lost Coast Rivers
Grizzly Creek
Humboldt Redwoods & the Lower Eel
Mattole Valley
Middle & Main Fork of the Eel River & the Mad River
South Fork Eel River
Miles
0
15
30
Forest and Woodland
Coniferous Forest / Woodland
Hardwood Forest / Woodland
Mixed Conifer/Hardwood Woodland
Redwood Forest
Ancient Redwood Forest
Other Land Cover
Herbaceous/Shrub
Agriculture
Urban
County Boundary

A BRIEF LAND-USE HISTORY

All landscapes are palimpsests - being akin to an ancient manuscript that has been written on repeatedly over the centuries, with glimpses of previous texts visible beneath and through the new ones. If we know how to read it, today's landscape includes glimpses and references to events long since past. It is the sum of the geology, climate, human use and other forces over many thousands of years. A basic understanding of the landscape can help us interpret current events and plan future conservation projects.

This section gives a brief introduction to the geology, climate and human ecology of the north coast. More detailed information on vegetation and land use is included in the description of each focus area.

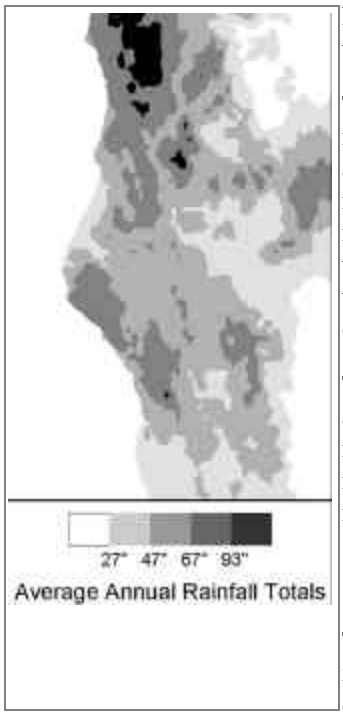
Geology

The California north coast is part of a province known as the Coast Ranges that extend for two-thirds the length of California. It encompasses mountains, hills, valleys, and plains that are close enough to the Pacific Ocean for the climate to be modified greatly by the marine influence. The Coast Ranges is a series of parallel mountain ranges trending approximately northwest to southeast. Generally summit elevations increase as you move inland, reaching 6,000 feet on the eastern edge.

The Coast Ranges rose from the ocean between 20 and 28 million years ago as the Pacific oceanic plate met the North American continental plate along the San Andreas fault. As these plate collided, the oceanic crust was dragged down under the North American Plate, causing earthquakes, while some of the crust was scraped off, buckled and piled up, eventually creating the coast range mountains.

Most rocks in the area belong to the Franciscan Complex. This "complex" is just that - a highly complicated assortment of sedimentary rocks deposited in seawater at various depths on top of harder basaltic ocean floor rock. Once the rocks are brought to the surface through the plate collision, adjacent rock outcrops often seem unrelated to one another and many defy interpretation.

Rapid tectonic uplift (up to 4 meters in 1,000 years) has caused hillslopes to become highly dissected and incised by stream channels, creating steep inner river gorges. The weak rocks are highly fractured along numerous faults and are weathered (in the moist climate) to form deep soils subject to extensive earth-flow and debris slides. Sediment production from the region's many rivers are among the highest in the United States, excluding rivers draining active volcanoes or glaciers. In fact, the Eel River carries over 4,000 tons of sediment every year from every square mile of its drainage basin. On average 4 to 8 inches of soil is washing off the slopes every hundred years. At more than 13 times the national average, this is the



highest rate of erosion ever measured in the United States (except for active volcanoes and glaciers).

The Humboldt Bay flats and the Crescent City Coastal Plain lies at the mouths of the Eel River and Smith River respectively. They are the largest areas of flat land in the region. They were formed when the sediment-laden rivers met the Pacific Ocean, depositing thick alluvial plain and deltas at the river mouths. At one time these delta plains were thick with black cottonwood, willow and red alder forests, often mixed with Sitka spruce and redwood. All of these forests have been cleared for agriculture and urban development.

Three plates, the Pacific Plate, Gorda Plate and North American Plate, meet at a single point at the Mendocino triple junction, off Cape Mendocino. The result is a highly active fault zone capable of producing earthquakes of high magnitude. Between 1980 and 1997 there were five earthquakes close to magnitude 7, and an additional six above magnitude 6.

Climate

The climate of the north coast varies widely, primarily in response to proximity to the ocean and local topography. Rainfall is generally high and concentrated in the winter. Annual rainfall totals in the Mattole Valley, at over 100inches, are among the highest in California. Near the coast fog, cool temperatures, and high humidity characterize summers, while further inland temperatures are higher and humidity lower. Winters temperatures are moderate, with snow occurring on the higher eastern peaks.

Cultural Ecology

Humans have lived in the area for at least 8,000 to 10,000 years; initially they were primarily hunter-gatherers with little direct impact on streams or aquatic communities. Their most significant influence on the landscape resulted from their use of fire for maintenance of oak savanna woodlands and native prairie grasslands for hunting, particularly in the larger river valleys. They probably moved into the area from the north, coming across the Bering Straits land bridge from Russia during the last ice age (8,000 to 12,000 years before present). Much tribal life was focused on the rivers, and on particular the salmon within the rivers, and permanent villages were established almost exclusively along the major salmon streams. The valleys and coastal areas of California, including the landscape of the north coast, in which the native Americans hunted, gathered and fished, were so fertile that this was likely the most densely populated lands anywhere in North America. The variety of northwest California ethnographic cultures is the most complex in the United States, reflecting their diverse prehistory, historic practices and adaptations to the rich and diverse landscape.

These people thrived on the diversity of habitats from ocean to estuary to forest. They intensively gathered numerous resources, including acorns, fish, shellfish and game, which abounded in the region's forests and productive rivers. Salmon was the primary catch, although lamprey eels and sturgeon were also caught. A variety of more recent land management practices, including dams, water withdrawal, over-fishing, timber harvest, gravel extraction and inappropriate grazing pattterns have now weakened the native salmon and trout population and brought it to the edge of extinction.

During the 1800s, the Euro-American settlers decimated almost all of the Native Americans through disease, violence and displacement - in some

instances whole tribes were wiped out. Due to the relative isolation of the region, the Yurok, Hoopa, Tolowa and Karok of the north coast survived better than many other groups in the State. Those who survived the onslaught were rounded up and divided between the Round Valley and Hoopa reservations. Some continue to live on these reservations, while others live on their own more recently established reservations.

The first Euro-American travelers to the region were early explorers, like Jedediah Smith who in 1828 traveled from San Francisco to Oregon along the coast. Jedediah Smith was the first white-man to explore the interior of northern California. Hunters followed the explorers along with early settlers who exploited the region's forests, rivers, and the ocean.

Dating to the first Euro-American immigrants in the 1800's lumbering in particular had a significant effect on the native forests and streams. Early lumbering relied on muscle power alone to fell and move trees - muscles that belonged to early settlers, their horses and oxen. By the early years of the 20th century the steam engine and the railroad replaced the oxen and the pace of cutting accelerated. Improved roads made the region more accessible and opened up new areas to timber extraction. Following World War II the development of larger trucks and tractors, combined with improved mill technology, enabled loggers to cut a higher proportion of trees, entering previously uncut areas for the first time.

At the close of the 20th century over 95% of the primeval forest across the region had been cut at least once. The lumber and agricultural industries remain important to the economy of the north coast, although government services (local, state and federal), recreation and tourism are of growing economic importance across the region.

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Lake Earl & the Coastal Plain

Lake Earl, California's largest coastal lagoon, is widely recognized for its diverse coastal wetlands and its fish, wildlife, and botanical resources. It is one of the most unique and valuable wetland complexes in the state. Lake Earl and Lake Tolowa (collectively, "Lake Earl") are two sections of a single lagoon system, located in western Del Norte County about three miles north of Crescent City. Lake Earl is within, and dominates, the Crescent City coastal plain, a small plain bounded by the Pacific Ocean to the west, the Smith River to the north, and coast ranges to the east and south. The Lake Earl area supports more than 5,000 acres of wetlands, a large coastal dune system, and 15 major plant communities. The ecosystem is particularly rich in rare plant and animal species, including at least 11 threatened and endangered species. Surrounding the Lake Earl ecosystem, the Crescent City coastal plain has extensive beaches and dune, and historically was dominated by Sitka spruce and redwood forests. Logging and agriculture— notably dairy, are important industries in western Del Norte County, in addition to commercial fishing in offshore waters. Much of the Lake Earl area is in State ownership, as the Lake Earl Wildlife Area and Tolowa Dunes State Park, and Highway 101 passes less than two miles to the east of Lake Earl, providing convenient public access.

I. Resource Values

Natural

• **Lake Earl** probably formed about 5,000 years ago, when expanding sand dunes dammed a shallow depression in the Smith River plain. The lake has a relatively small drainage basin of 32 square miles, but is occasionally flooded by overflow from the Smith River. The lake's surface area varies greatly with water level, ranging from about 2,200 acres at 2 feet above mean sea level to 4,100 acres at a water surface of 8 feet above mean sea-level.

• Eleven miles of **coastal dune system** from Crescent City to the Smith River mouth, including Lake Earl State Park, portions of the Lake Earl Wildlife Area, and Pala Beach County Park. Although altered by European beachgrass, the system remains important to the federally-threatened Oregon silverspot butterfly and several other rare species, including the rare sand dune phacelia (Phacelia argentea), a dune plant known in California from this location only, and a candidate for state listing in Oregon.

• Lake Earl supports more than 5,000 acres of **wetlands**, including more than 2,300 acres of subtidal estuarine waters within the lagoons, and about 1,600 acres of freshwater marshes with emergent vegetation, and more than 900 acres of seasonally-flooded forest and scrub-shrub wetlands. Streams also provide wetland habitat, including about 2 miles of channels along Jordan Creek and other streams within the Lake Earl Wildlife Area; additional stream habitat occurs elsewhere in the coastal plain.

• The **lagoon and streams** are important for fish, including three anadromous salmonids (coastal cutthroat trout, coho salmon, steelhead), tidewater goby, threespine stickleback, and starry flounder.

• In addition to wetland habitats, the Lake Earl area supports a **diverse mix of habitats**, including moist and dry grasslands, dwarf shrublands, shore pine woods, Sitka spruce- alder and spruce-fir forests, and barren dunes.

• Lake Earl provides foraging and nesting habitat for more than **250 species of birds**, and is an important area for waterfowl, shorebirds, and neotropical migrant birds

• Lake Earl is an important area for **waterbirds**, particularly in the fall and winter, with average annual use by water-associated birds of about 3 million bird-use days at Lake Earl alone; the area is identified in Ducks Unlimited's 2001 Conservation Plan as an important habitat priority area for waterfowl. Diving ducks, such as canvasbacks, use the lake in the winter.

• Lake Earl area is recognized by the National Shorebird Conservation Plan as a Wetland of Importance to Shorebirds. The area provides habitat for large numbers of migrating and wintering **shorebirds**, with an annual average of more than 400,000 bird-use days, and up to 13,000 shorebirds at once.

• The lake also contains a nesting colony of **western grebes**.

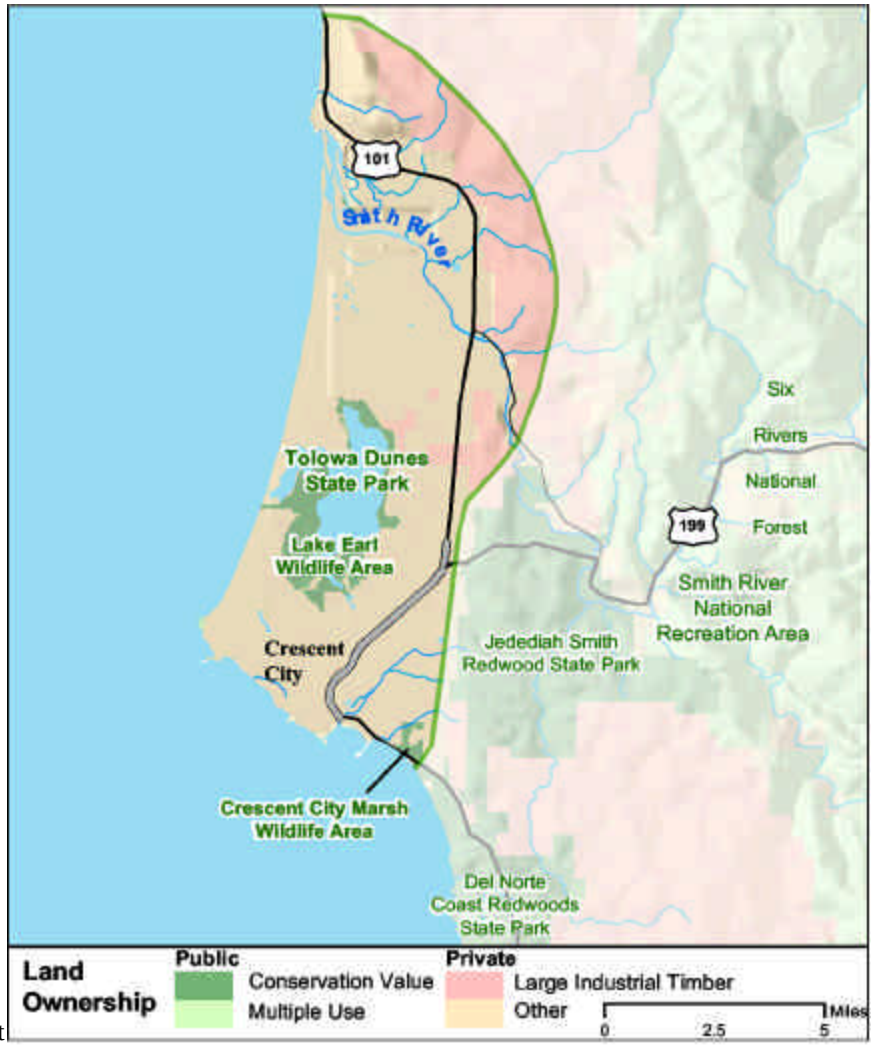
Plants and Animals

• Lake Earl and the coastal plain also support several **rare and local plants**, including Wolf's evening primrose, sand dune phacelia, Langsdorf's violet, and the endangered western lily.

• The **tidewater goby**, a federally-endangered fish, lives in the shallow waters of Lake Earl, which supports a large goby population.

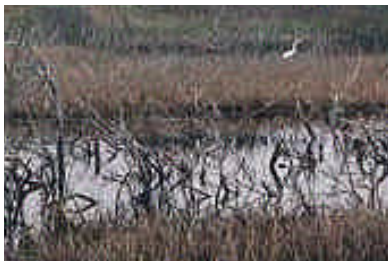
•Coastal meadows around Lake Earl support one of the largest remaining populations of the **Oregon silverspot butterfl**y, a federally-threatened species. The U.S. Fish and Wildlife Service has identified the Lake Earl population as essential to the species' conservation and recovery.

• **Bald eagles** winter around Lake Earl, with up to four recorded at one time.



• Lake Earl provides habitat for the federally threatened c**oho salmon, steelhead, and coastal cutthroat trout**. The lake and its main tributaries, Jordan and Younkers Creeks, support cutthroat trout, which the California Department of Fish and Game identifies as a species of special concern.

• The federally-threatened **western snowy plover** has nested along Lake Tolowa, and use the beaches between the Smith River and Crescent City in the winter.



• The federally-endangered **western lily** occurs on the Crescent City Coastal Plain on poorly-drained coastal soils with scrubby or marsh vegetation. Seven populations are known from the coastal plain, including a population just south of Lake Earl.

• Public and private lands of the coastal plain near Lake Earl are a key fall and spring staging area for migrating **Aleutian Canada geese**. Formerly endangered, it has recovered sufficiently to be removed from the federal endangered species list in March 2001.

• **Other listed species** recorded from the area include the state-threatened bank swallow, state-endangered willow flycatcher, and the state and federally-threatened brown pelican.

Cultural

• The Crescent City plain was part of the ancestral home of the **Tolowa people**, the most recent Native Americans to inhabit the area. At least nine known archaeological sites occur around Lake Earl, including 2 large village sites near Lake Earl's shore, and other sites associated with seasonal resource gathering. Today, Tolowa members are among the residents of the Smith River and Elk Valley Rancherias, located near the Smith River mouth.

• Former village of **Etculet** considered highly significant Tolowa site, eligible for National Register of Historic Places.

• The Crescent City plain contributed significantly to Del Norte County's agricultural development in the **latter 19th century**, when it was transformed from one dominated by native habitats and peoples to large-scale dairy and grazing operations. Historic values include 1800s McLaughlin dairy site and barn, and old mill ponds on the south end of Lake Earl, which mark the site of the county's first commercial sawmill, Wenger's mill.

Recreation

• Lake Earl is **fished** for cutthroat trout, steelhead, and other species

• Waterfowl **hunting** allowed in parts of the wildlife area.

• The area provides a wide array of r**ecreational opportunities**, including hiking, mountain biking, walk-in camping, horse-riding, ranger-guided tours, and nature observation and photography.

• Lake Earl State Park, together with Lake Earl Wildlife Area, includes about 11,000 acres of the **coastal plain** between Point Saint George and the mouth of the Smith River

• **Crescent City Marsh Wildlife** Area along Highway 101 provides access to about 230 acres of coastal wetlands, grasslands, and beach near Crescent City.

Visual

• The **coastal dunes and beaches** of the Lake Earl region offer vistas of the ocean, lagoon system, wetlands and forests, as well as opportunities to view marine mammals, including sea lions, harbor seals, and gray whales.

• The area has great **wildflower displays** in spring and early summer.

• County roads, foot trails and boat launch areas provide access to picturesque **Lake Earl** and its surroundings.

II. Community Values

Land Ownership

• Most of the area surrounding Lake Earl and Lake Tolowa are **state lands**. About 5,100 acres of lake and adjacent shoreline are managed as the Lake Earl Wildlife Area by the California Department of Fish and Game. An additional 5,000 acres to the north and south of the wildlife area is managed by the California Department of Parks and Recreation as the Lake

Earl Project.

• **Private lands** near Lake Earl include scattered residences and large agricultural areas. The area to the south is residential. In the 1960s, the Pacific Shores subdivision was planned for the area between Lake Earl's northwest shore and the ocean. A road system (about 27 miles) was built and lots sold, but building permits have not been issued because of soil and high groundwater conditions.

Economics

• The **natural resources** of the area were very important to the economy and life of the Tolowa people, the most recent Native Americans to occupy the area.

• **Traditionally**, the region's economy was based on **timber and commercial fishing**, with the dairy industry important around Lake Earl. Today, major industries in the coastal plain include dairy and other agriculture, as well as recreation and tourism.

• **Nursery products**, including lily bulb production, have become an important part of the local economy, as has employment at the Pelican Bay State Prison north of Lake Earl.

• The **Lake Earl Wildlife Area and Tolowa Dunes State Park** receive around 25,000 visitor-days per year, with primary uses including waterfowl hunting, fishing, hiking, birdwatching and other nature study, and education.

• Del Norte County has high unemployment, with the major employers being the **County and State Prison**.

III. Opportunities and Threats

• **Lake level managemen**t has created conflict. The lake level naturally fluctuates, increasing during the fall and winter, until the sand bar at the lake's outlet breaches. Currently, the bar is breached artificially to lower the lake level and reduce inundation of private properties around the lake and within the historic lake zone. Parties disagree on the appropriate level at which to breach and maintain the lake. Breaching protects private property, but impacts the lake ecosystem and many species dependent upon it.

• **Invasive introduced plant**s have degraded dune and wetland habitats. European beach grass, planted to stabilize dunes, has greatly reduced biological diversity in the dunes, impacting rare plants and plant communities, and habitat for the snowy plover. Canary reed grass has invaded and dominated meadow/grassland areas, reducing plant diversity. Grazing and fire suppression are thought to have favored the reed grass.

• Acquisition of **flood-prone private lands** around Lake Earl, by fee title or easement, would lessen conflict over lake level management. The California Department of Fish and Game is revising their acquisition plan to identify flood prone properties to be acquired and incorporated into the State Wildlife Area.

• Management of **vehicle use** of beach and dune areas would reduce conflict with management and restoration of habitat and wildlife.

IV. Conservation Actions

Current

• Lake Earl Wildlife Area, Tolowa Dunes State Park, and Crescent City Marsh Wildlife Area currently provide habitat for an array of **biological communities and species**.

• The California Wildlife Conservation Board has approved acquisition of 2,500 acres within the **Lake Earl/Tolowa lagoon system**, and has begun negotiations with willing sellers.

• The Coastal Conservancy is currently negotiating with willing sellers to acquire properties at **Point St. George**. If acquired they will provide new coastal access and protect endangered species, cultural and wetland resources.

• California Department of Fish and Game is currently updating its **management plan** for the Lake Earl Wildlife Area.

• The "**Lake Earl Working Group**" was formed to develop a management plan for the Lake Earl area. The plan would address issues including lake level management, as well as depredation by Aleutian Canada geese on private pastures in the area.

• The California Department of Fish and Game is working to acquire, from willing sellers, **lands adjacent to the Lake Earl Wildlife Area** which support unprotected coastal dune, lagoon, and wetland habitats. Acquisition of properties around the lake would allow managing the Lake Earl/Tolowa lagoon system to function more naturally, and reduce conflict over manipulation of lake levels.

Prospective

• Develop a plan to **monitor and remove invasive plants**, particularly from dune communities, which are very sensitive to invaders. Initial efforts should focus on protecting the surviving native plants and on restoring the least-degraded areas. A long- term goal would be removal of European beachgrass and restoration of the dune ecosystem.

• Efforts to acquire from willing sellers f**lood-prone lands around Lake Earl**, to reduce conflict over lake level management and to improve management for fish and wildlife.

• Formation of a **Resource Conservation District**, currently underway, will enhance opportunities for partnerships with land owners for managing private lands for fish and wildlife benefits.

• **Survey** public lands for **rare and threatened plants**, and for Oregon silverspot butterflies and their host plants (native violets).

• Develop and implement an area-wide management plan for the **Oregon silverspot butterfly**, in concert with management of the lagoon-dune ecosystem for other species.

• Develop a Del Norte County **Weed Management Area**, including contractor standards (to prevent spread of noxious weeds), inventory, mapping and treatment.

• Improve **management of grassland/meadow** systems to favor native plants; evaluate use of burning and/or grazing to manage canary reedgrass and other nonnative species.

• Remove abandoned roads and restore plant communities in **dune areas**.

V. Potential Partners

Army Corps of Engineers
California Department of Parks and Recreation
California Department of Fish and Game
California Department of Food and Agriculture
California Native Plant Society-North Coast Chapter
California Wildlife Conservation Board
Chamber of Commerce
Crescent City
Coastal Conservancy
Del Norte County
Ducks Unlimited
Farm Bureau
Friends of Del Norte
Lost Coast 4x4s
National Audubon Society
National Marine Fisheries Service
Redwood National and State Parks
Resources Conservation District
Point Reyes Bird Observatory
Save-the-Redwoods League
Sierra Club (Redwood Chapter)
Smith River Advisory Council
The Nature Conservancy
U.S. Fish and Wildlife Service

VI. Linkages

•The Smith River area is to the east, and the Coastal Redwood National Park to the south

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The Smith River

The Smith River has been described as the "crown jewel of the Wild and Scenic River system". It is one of California's last undammed river systems; originally protected from dams and major water diversions by its remote location. It rises in Oregon and flows with three branches to its estuary just north of Crescent City. It is characterized by exceptionally clear water, a vigorous anadromous fishery, and steep, forested mountains. The area exhibits tremendous diversity, including: lush coastal redwoods, dense stands of mixed conifers and hardwoods, sparsely vegetated, high elevation plateaus, and high mountain peaks and meadows. Much of the region is in public ownership, either within Six Rivers National Forest, or Redwood National and State Parks. Vegetation is exceptionally diverse, ranging from towering ancient redwoods on the lower Smith River, to unique serpentine plant communities in the heart of the National Forest. Highway 199, a scenic byway, is the major road, connecting Crescent City with Grant's Pass in Oregon.

I. Resource Values

Natural

• One of the last **undammed rivers'** in California, with exceptional water quality. Designated as a Wild and Scenic River.

• **High quality fish habitat** – the entire basin is a "Key Watershed". The Smith River system is home to some of California's strongest salmon and trout runs. The estuary remains open year-round, allowing fish passage in all seasons.

• **Ancient redwoods groves**, and other old growth forests in Redwood National and State Parks and the Smith River National Recreation Area (NRA).

• The world's largest **serpentine Ophiolite outcrop**, the Josephine (Ophiolite) Ultramafic Sheet, with unique plant communities and geologic formation

• **Exceptionally high plant diversity**, in part due to the presence of diverse geological substructure.

• The Smith River watershed supports **four botanical areas**.

- The *North Fork Smith* Botanical Area is one of the most botanically significant areas on the Six Rivers National Forest, containing plant habitat for one Federally Endangered species, nine Sensitive plants, and an estimated 40 rare plant species.

- *Bear Basin Butte and Broken Rib* Botanical Areas are noted for the presence of enriched mixed conifer stands including the Brewer's spruce, a Klamath Mountain endemic.

- *Myrtle Creek* is both a botanical and cultural area. Ecologically, this area marks the boundary between the redwood and Douglas-fir-mixed evergreen forest types.

Plants and Animals

• **Northern spotted owl** in several redwood groves and Late Seral Reserves on Forest Land.

• **Marbled murrelets** occupy areas in many of the ancient redwood groves

• The following species of **anadromous fish** are found in the area's streams

- Coho salmon
- Chinook salmon
- Steelhead trout
- Coastal Cutthroat trout
- Chum salmon
- Pacific lamprey

• The following **endangered plants** and plant series are known to occur:

- Western lily
- Darlingtonia fen series

Cultural

• Ancestral home of **Indian Tribes**, with many sacred ceremonial sites within the watershed. Gathering of foodstuffs and basket materials

• **Historic mining** at Myrtle Creek Cultural Area.

• **Early settler** historical interpretation including mining, dairies, and logging.

Recreation

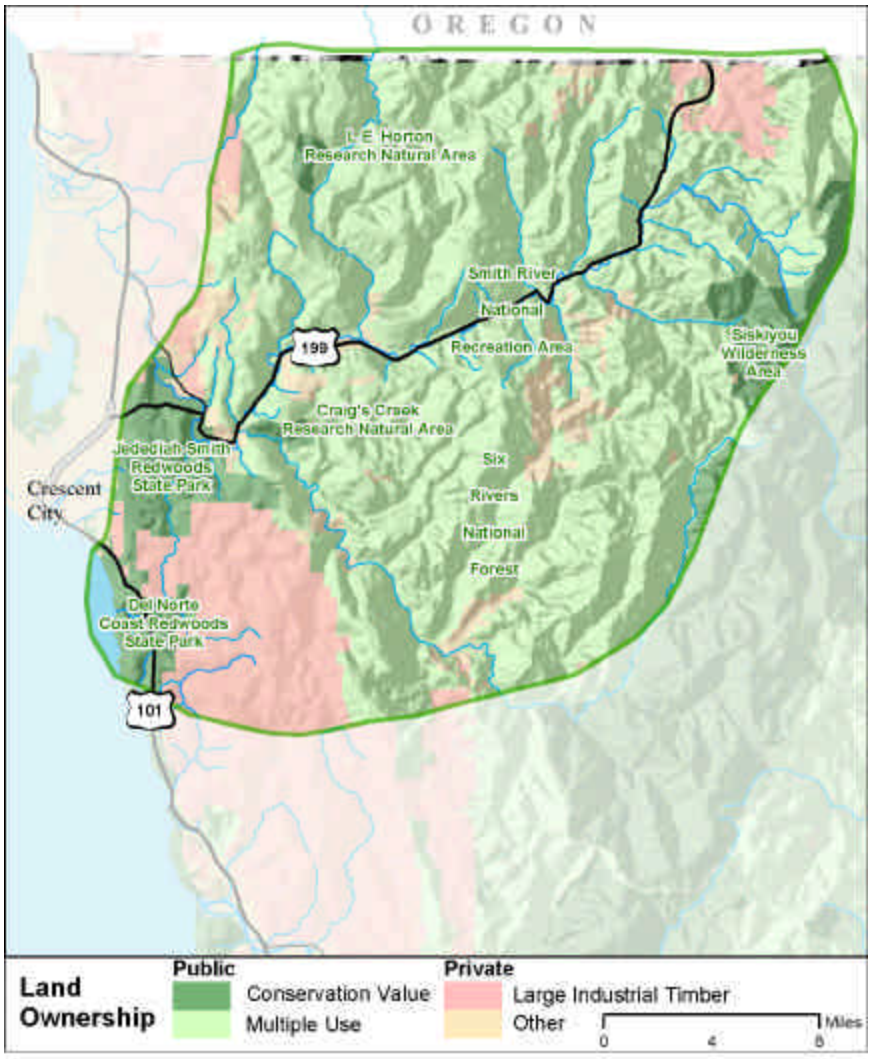
• World-class **fishing** for salmon and steelhead in the clear streams

• **White water** rafting and kayaking with a lot of Class 3 and 4 water

• **Camping** in the developed campgrounds in the National Recreation Area and State Parks.

• **Backpacking** and back-country camping in undeveloped areas of the National Recreation Area

• **Hiking** trails extend throughout the NRA and Redwood National Park.



• **Driving** for pleasure, especially along highway 199 which is designated as a scenic byway

Visual

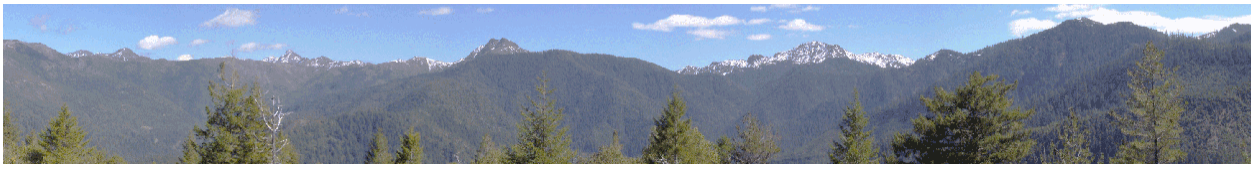
• **Highway 199**, located along the Smith River, is a scenic byway

• Many outstanding vistas and views on the county and forest service roads.

II. Community Values

Land Ownership

• The majority of land is **federally** owned, either in the Six Rivers National Forest, Smith River National Recreation Area or Redwood National Park.



The Smith River

• Jedediah Smith Redwoods **State Park** lies on the lower portion of the Smith River.

• Most **private land** is located along the main stem and south fork of the Smith River, and in Gasquet at the confluence Middle and North Fork.

• **Small communities** in the watershed include Smith River, Hiouchi, Gasquet,and Big Flat. Crescent City, population 8,805, is located several miles outside the watershed and lies about ten miles (16 km) south of the Smith River mouth.

Economics

• Traditionally the region's economy has been based on primary industries, mainly **timber** and **commercial fishing**.

• Increasingly **recreation** and **tourism** are becoming important.

• Del Norte County has high **unemployment**, with the major employers being the County and State Prison.

III. Opportunities and Threats

• **Management within the Highway 199** Corridor has potential to impact a variety of resources including water quality and aesthetics. Most of the highway is located within the inner gorge of the main stem Smith River allowing limited space for highway improvements, including rest areas and scenic pull-outs. The highway is a primary transportation artery carrying much of the region's traffic, including hazardous materials with potential for catastrophic spills into the Smith River (Del Norte County's primary water supply). Caltrans is planning road widening that will result in larger cut-banks and fill areas, degrading scenic quality.

• **Noxious weeds** are spreading throughout the Smith River basin, with Highway 199 and 101 as the primary vectors. Noxious weeds are also becoming established on gravel bars along the river. The movement of construction and road maintenance equipment, as well as general use of the highways, has the potential to introduce and/or spread noxious weeds to other areas. Species of concern include scotch broom, English ivy, pampas grass, cottoneaster, acacia, knapweed, and gorse.

• **Gravel extraction** on private lands downstream of the Smith River National Recreation Area, particularly the practice of trenching (digging out the channel vs. scraping off the top), has impacted aquatic habitat, gravel bars, and spawning habitat. Because it still has good quality habitat (meanders, sloughs, riparian vegetation), and relatively healthy fish runs, the Smith River basin is a high priority for protection measures.

• Past **fire suppression** has increased the risk of destructive, high intensity wildfires. Backcountry access via Forest Service roads increases the risk of human ignitions.

• Unmanaged **dispersed recreation** on the Smith River National Recreation Area poses a number of resource threats. Ninety percent of the dispersed use on the NRA is river-oriented, and there are a number of undesignated dispersed campsites located directly adjacent to streams. Recreational users dump trash, defecate, and cut trees in these areas. Unmanaged use can lead to the loss of riparian vegetation, bank destabi-

lization, and consequent impairment of water quality and aesthetics.

• **Port-Orford-cedar root disease** has killed many cedars in the Smith River basin. The disease is primarily spread by the movement of infested soil or infected seedlings into uninfested areas, mainly by activities such as earth movement in road construction, road maintenance, and vehicle movement on forest roads. The Smith River NRA has imposed wet season closures on many roads in order to minimize the spread of the disease, but further actions are necessary. Management actions need to be coordinated between Redwood National Park and the NRA to control spread of the infectious disease.

• Many Forest Service **roads are in poor condition** due to a lack of maintenance dollars. Some Redwood National and State Parks dirt roads contribute silt to streams and/or pose a safety risk. Failing culverts, impacts to streams, loss of access, loss of productivity, unsafe road conditions, impacts to fish habitat. Additional roads could be constructed in some areas to access fishing holes.

• There are opportunities to enhance resource management by **acquiring** parcels of land or rights-of-way within the Smith River Basin.

• Past **strip-mining activities** in the North Fork Smith watershed have impacted plant habitat, altered scenic quality, and pose a safety risk.

• Past timber harvesting and development in the watershed have **fragmented habitat** for wildlife species of concern, and decades of fuel suppression have altered habitat conditions for a variety of species.

• **Rowdy Creek Fish Hatchery** currently stocks 100,000 steelhead smolts annually at the boat ramp by the forks. There is a risk of displacing the wild juvenile steelhead that may be rearing downstream of the release site and potential impacts to wild steelhead genetics.

• **Elk restoration and reintroduction** at Lower Coon Elk Habitat and Flat Mountain.

IV. Conservation Action

Current

• The **National Fire Plan** is providing funding for fuel reduction on Federal lands.

• The Smith River NRA is currently a**ssessing river access, dispersed recreation**, and sanitation to identify high priority areas for action.

• Evaluate recreational access as part of the **Access Travel Management Plan** that will be performed in 2002 by the Smith River NRA.

• A **Port-Orford cedar conservation strategy** has been developed by the Forest Service and Bureau of Land Management.

• **Seasonal road closure** to reduce road-damage and consequent water quality impairment.

• A Forest Service **road analysis** is scheduled for completion by 2003

• An effort is underway to **acquire** the entire upper watersheds of Mill and Rock Creek, tributaries to the Smith River, for conservation management.

Prospective

• Work with the **County and Caltrans to coordinate management** within the scenic highway 199 corridor through (a) ordinances, and (b) planning and facility design, including rest-stop provision, trail development, improved signage, and (c) minimized herbicide usage. Consider a tunnel through the gorge area that is at prime risk area from a point-source haz-mat spill; slides here often close the highway, affecting tourism, business, and the general population in the county.

• Acquire, exchange or develop **conservation easements** (a) on key Forest in-holdings, (b) on critical watershed land, (c) to provide landscape connections for natural processes and recreational access.

• Acquire right-of-way along the old County Road to **develop mountain bike trail** from the coast to the Oregon Caves.

• Convert existing aerial utility lines to **underground utility lines** in visually sensitive areas including Hiouchi Flat and Redwood State and National Park lands.

• Develop a Del Norte County **Weed Management Area**, including contractor standards (to prevent spread of noxious weeds), inventory, mapping and treatment.

• Improved **management of Botanical Areas**, including prescribed burns and fuel treatment, corrected drainage problems, and visitor facilities (signs and trails).

• Develop an **Interagency Darlingtonia Fen Conservation Strategy** including plant survey, mapping and population documentation of 5 Sensitive and endemic plant species; habitat characterization; documentation of threats; and identification of management recommendations.

• Identify the **least impacting gravel extraction** techniques and alternative gravel sources (e.g. old flood plains, historic river channels) and work with operators to modify their practices.

• Develop one or more **Fire Safe Councils** representing communities in the basin, and seek grants to equip and train volunteer fire departments.

• Work with Tribes to implement treatments to improve conditions for **material gathering** (e.g. for basket materials) at traditional gathering areas

• Develop **visitor facilities** to manage dispersed recreation, including campsites, restrooms, cabins, trails, and spur roads to fishing holes. Offer other types of recreational activities to draw people away from the rivers.

• Consider an **outdoor school** during the off-season at the Big Flat Guard Station to provide educational facilities and to decrease vandalism at the site.

• Work with Del Norte County to manage **illegal refuse dumping** to decrease the amount of illegal dumping on the NRA. Consider creating a trash assessment instead of “pay as you go” dump fees.

• Decommission, maintain, upgrade roads and **replace culverts** to facilitate fish passage.

• **Rehabilitate** old mining sites (e.g. Brown's Mine), including open shafts, workings and old cat roads.

V. Potential Partners

Army Corps of Engineers
BLM-Medford District
California Coastal Conservancy
California Department of Fish and Game
California Department of Food and Agriculture
California Department of Forestry
California Highway Patrol (for planning highway expansion/improvements)
California Native Plant Society-North Coast Chapter
Caltrans
Cave Junction Chamber of Commerce
Chamber of Commerce
Congressional Delegates
Crescent City Cultural Center and Chamber of Commerce
Del Norte County
Del Norte County Planning
Del Norte County Public Health
Del Norte County schools
Environmental Protection Agency
Farm Bureau
Federal Highway Administration
Forest Service
Friends of Del Norte
Gravel operators
Kiwanis Club
Lost Coast 4x4s.
National Marine Fisheries Service
National Off Road Biking Association
Sierra Club (North Group)
Oregon Caves National Park
Redwood National and State Parks
Resource Advisory Committee
Save-the-Redwoods League
Smith River Alliance
Resources Conservation District
State Water Quality Control Board
The Nature Conservancy
U.S. Forest Service
Water Quality Control Board

VI. Linkages

• The area links the Klamath-Siskiyou ecoregion with Redwood National and State Parks.

• Lake Earl and the Crescent City Plain lie to the south of the Smith River estuary

VII. References

USDA Forest Service, Six Rivers National Forest. 1995. "Ecosystem Analysis of the Smith River Ecosystem at the Basin and Subbasin Scales." Six Rivers National Forest, Eureka, CA.

USDA Forest Service, Six Rivers National Forest. 1995. "Smith River National Recreation Area Management Plan." Six Rivers National Forest, Eureka, CA.

USDA Forest Service, Six Rivers National Forest. 1997. "Smith River Basin Port-Orford-cedar Risk Assessment." Six Rivers National Forest, Eureka, CA.

USDA Forest Service, Six Rivers National Forest. 1998. "Special Interest Area Management Strategy." Six Rivers National Forest, Eureka, CA.

Resources for Additional Information

Smith River National Recreation Area, Six Rivers National Forest, Gasquet, CA, 95543. (707) 457-3131 http://www.r5.fs.fed.us/sixrivers/

Redwood National and State Parks, 1111 Second Street, Crescent City, CA 95531. (707) 464-6101 http://www.nps.gov/redw/

Coastal Redwood National and State Parks

This area encompasses the coastal shores and forests of Redwood National and State Parks (RNSP) from Crescent Beach south to Mussel Point, near the town of Orick and include portions of adjacent private lands east of the parks. Portions of this area include the lower stretches of the Smith River, Klamath River, and Redwood Creek watersheds. The Smith and Klamath Rivers are part of the federal and state wild and scenic river systems. Offshore the numerous seastacks provide habitat for many seabirds and contributes to the scenic view.

The climate along the coast area is cool and moist, with only minor variations in temperature, and heavy fogs are nearly a daily occurrence during the summer. The coastal forests receive the heaviest rainfall of any area in California - 60 to100 inches annually. Redwood National and State Parks is designated as a World Heritage Site by the United Nations in recognition of its extraordinary natural ecosystem values and is also recognized as one of 226 International Biosphere Reserves

Prior to European settlement within Redwood National and State Parks, at about 1850, the Yurok, Tolowa, and Chilula lived along the coast and rivers of the parks. American Indians were displaced by incoming miners during this period and a number of coastal towns were established as supply centers for the gold miners. Farmers and ranchers were soon attracted to the north coast. Commercial fisheries were established in the last quarter of the 19th century, and the dairy industry also became important. Toward the end of the 19th century, the timber industry was established in the area and is recognized in the 20th century as a major industry contributing to the economic viability of the area. Now recreation and tourism are important contributorss to local economies.

I. Resource Values

Natural

• Redwood National and State Parks preserve one of the largest expanses of **ancient coast redwood forest** in northern California.

• Over 35 miles of scenic **Pacific Ocean coastline**.

• A variety of **biotic communities** from the Pacific Coast to interior mountains, including ancient redwoods, coastal prairies, and riverine, coastal, littoral, and near-shore marine environments.

Plants and Animals

• **Listed bird species** include the northern spotted owl, bald eagle, marbled murrelet, western snowy plover, California brown pelican, and short-tailed albatross.

• The federally endangered **western lily** may be found in coastal bogs or prairies near the ocean where fog is common.

• Three listed species of **salmon and trout** are found in the area's streams:

- Coho salmon
- Chinook salmon
- Steelhead trout

• Four listed species of **sea turtle** may occur offshore in the ocean and occasionally be found on the beaches:

- Leatherback Turtle
- Green Turtle
- Olive Ridley Sea Turtle
- Loggerhead Turtle

• The federally listed **stellar sea lion** may occasionally be found on some of the area's beaches

• The recently federally de-listed endangered **peregrine falcon** also occurs in this zone

• Non-threatened and endangered species of interest include the Roosevelt elk, black bear, and mountain lion.

Cultural

• Because the subject area includes portions of the aboriginal territories of both the **Tolowa and Yurok Indians**, the zone has important cultural values. Sites containing over 1500 years of prehistory and ethnographic history are distributed throughout the zone. These cultural resources include village sites, trails, ceremonial places, and subsistence areas. Equally important, contemporary traditional Native American use is ongoing. The mouth of the Klamath River and adjacent coastal lands are used by local Yurok for fishing and eeling, for gathering berries, tea, seaweed and shellfish, and for an annual ceremony. To the north, the Tolowa also hold an annual get-together.

• The landscape of the park represents more than **150 years of land use** practices by non-Indian peoples, including exploration, mining, fishing, ranching, timbering, and settlement.

Recreation

• There are many **camping** possibilities in the State Parks, including developed campsites at Nickel Creek, DeMartin Prairie, Flint Ridge, Elk Prairie, and Gold Bluff Beach.

• Both marine and freshwater **fishing** is popular.

• The area includes many **excellent hiking trails** through ancient and second growth redwood forests and along wild coastal bluffs.

• Opportunities for **wildlife viewing** abound, including bird watching on coastal bluffs, forests, coastal prairies, and wetlands; watching for gray whale on their annual migration, and elk in prairies.

• **Surfing** is popular along the beaches.

Visual

• **Coastal panoramic vistas** at many of the overlooks, for example Footsteps Rock, Klamath, and High Bluff.

• **Scenic views** observed while driving along Highway 101.

• Walking along many of the Park's **coastal trails** provide exceptional aesthetic rewards.

II. Community Values

Land ownership

• **Government ownership** includes four units that comprise Redwood National and State Parks - Redwood National Park, Jedediah Smith Redwoods State Park, Del Norte Coast Redwoods State Park and Prairie Creek Redwoods State Park

• **Industrial timberland** owned by Stimson Lumber and Simpson Timber Companies border much of the park to the east. In addition, several small private landholdings in the northern section are adjacent to the Park.

• Lands included within one mile on both sides of the Klamath River are within the boundaries of the **Yurok Reservation**.

Economics

• **Commercial beach fishing** targeting surf smelt and redtail surfperch occur all year round

• Traditional **cultural and subsistence activities** and economic development projects are of importance on the Yuork land.

• **Timber harves**t on adjacent industrial timberland of redwood spruce, hemlock, and Douglas-fir, with occasional red alders.

• **Cattle ranching and dairying** also occur on land adjacent to the Park.

• **Commercial nurseries** grow Easter lily, daffodil bulbs, potted plants and many cut flowers.

• Fern frond/shrub (e.g., huckleberry and Oregon grape) **greenery picking for floral industry.**

• **Particle board** mill and production of **liquid fertilize**r from fish emulsion and particle board by-products.

• Crescent City serves as a **harbor** for commercial and recreational fishing. Commercial fishing primarily involves the seasonal harvesting of ground fish, salmon, shrimp, and Dungeness crab. Recreational fishing targets rockfish, salmon, and Dungeness crab.

III. Opportunities and Threats

• **Protect remaining old-growth** and residual forest stands in adjacent private landholdings of Klamath and Mill Creek watersheds.

• **Logging activities** in the Klamath and upper Mill Creek watersheds that removes remaining ancient forest, and further fragments the forest habitat.

• The **Yurok brush dance site** is vulnerable to natural events, for example extremely high tidal and river flow events.

• **Inability to effectively conduct fire** in old-growth forest. The lack of fire history information in old-growth forests contributes to this impediment.

• **Caltrans work projects** have potential to impact ancient old-growth redwood trees. Projects include (1) stabilization of roadway overlooking Sister Rock area on Highway 101 north of Wilson Creek (“Last Chance Grade”), and (2) widening sections of 101 through old-growth forests in Del Norte Coast Redwoods State Park.

• **Offshore ship traffi**c poses a potential threat to the regions marine and coastal resources. A major oil or hazardous material discharge from this activity poses a serious threat to the Park's coastal marine resources.

• Potential discharge of **hazardous material** (e.g., diesel, gasoline, other toxic material trucked and moved overland) along highways could degrade old-growth trees or affect listed fish and other aquatic resources.

• **Over-fishing** could potentially impact smelt fishery.

• Feeding pressure from California sea lions and Harbor seals ("**Pinnepeds**") on salmonids in the Klamath River mouth could be impacting the recovery of salmon and trout populations.

IV. Conservation Action

Current

• Park staff review and provide comments to **CALTRANS** for projects along Highway 101 for potential effects to existing old-growth forests and other significant natural resources.

• Research is needed to address the issue of whether **pinnipeds affect recovery of salmon and trout** stock in the Klamath River. Research could utilize USFWS and CDFG salmonid survey information for monitoring salmonid population trends in riverine system.

• Park geologists provide **assistance to adjacent landowners** with the expertise in developing programs to de-commission unstable or unused logging roads.

Prospective

• Acquire **private lands** in watersheds from willing seller.

• Acquire **conservation easements** along riparian zones of salmon and trout streams, including:

• **Stronger protection for Class 2 and Class 3 stream**s adjacent to park lands.

• **Reestablish late seral conditions** along all major riparian zones (fund riparian restoration efforts).

• Assist in **second-growth management efforts** of RNSP with the opportunity to accelerate early to mid-seral, uneven-age stand development through management practices.

V. Potential Partners

California Chamber of Commerce
California Coastal Commission
California Coastal Conservancy
California Department of Fish and Game
California Department of Parks and Recreation
California Department of Transportation (Caltrans)
California North Coast Regional Water Quality Control Board
County of Del Norte
County of Humboldt
National Marine Fisheries Service
National Park Service
Non-profit land trusts and corporations
Private land owners
Save-the-Redwoods League
Simpson Timber Company
Stimpson Lumber Company
Tolowa Tribe
U.S. Army Corps of Engineers
U.S. Department of Agriculture, Pacific Southwest Research

Station
U.S. Fish and Wildlife Service
Yurok Tribe

VI. Linkages

• The Smith River watershed adjoins the area to the **north** with linkages to Six Rivers National Forest and ultimately the Klamath-Siskiyou ecoregion.

• Redwood Creek watershed adjoins the area to the **south and east**.

• The Klamath River and Highway 101 are **barriers to linking forests south** of Del Norte Redwoods.

• Despite the extant of second-growth forests in the Redwood Creek watershed links between the coastal forests south of **Klamath River and Prairie Creek are possible**.

Redwood Creek Watershed and Coastal Lagoons

This area encompasses the Redwood Creek watershed, Freshwater, Stone, Dry and Big Lagoons, and the associated streams draining into the lagoons (Maple and McDonald Creeks are the largest of these streams.) Redwood National and State Parks (RNSP) are located in the lower third of the Redwood Creek basin, and are managed jointly. The enabling legislation of Redwood National Park identifies "the primeval coastal redwood forests and the streams and seashores with which they are associated (Public Law 90-545) as the significant resources to preserve. RNSP, a World Heritage Site and an international biosphere reserve, contains 41,000 acres of ancient coast redwood forest as well as the Little Lost Man Creek Research Natural Area. The parks also exercise jurisdiction over near-shore waters and intertidal lands along their western boundaries. Humboldt Lagoons State Park and the Harry A. Merlo State Recreation Area are located in the southern portion of this focus area.

I. Resource Values

Natural

• RNSP contains 41,000 acres of **ancient coast redwood forest**. It is a World Heritage Site and an international biosphere reserve.

• Little Lost Man Creek, within RNSP, is a **Research Natural Area**.

• **Farther inland**, Douglas-fir dominates forests. Much of the eastern divide of Redwood Creek, called the Bald Hills, has prairies and oak woodlands,

• Along the **coast**, there are scattered stands of Sitka spruce, coastal shrub, and the coastal strand.

• The Parks include **35 miles of varied coastline**, from broad, flat marine terraces to steep rocky cliffs and beaches dotted with sea stacks.

• A chain of **lagoons** streches from Orick (Freshwater Lagoon) south to Big Lagoon.

• Redwood Creek is recognized as an important **anadromous fish** stream.

Plants and Animals

• **Birds** of concern include:

- Northern spotted owl
- Marbled murrelet
- Western Snowy Plover
- Bald Eagle
- Brown Pelican
- and the recently delisted Peregrine Falcon

• **Aquatic and riparian** species include:

- Tidewater goby
- Coho salmon
- Steelhead trout
- Chinook salmon
- Southern Torrent Salamander

• Several **large mammals** of concern to Parks', local landowners and population centers:

- Roosevelt Elk
- Black bear
- Mountain lion

• **Beach layia** at Freshwater Lagoon is a federal and state listed endangered plant.

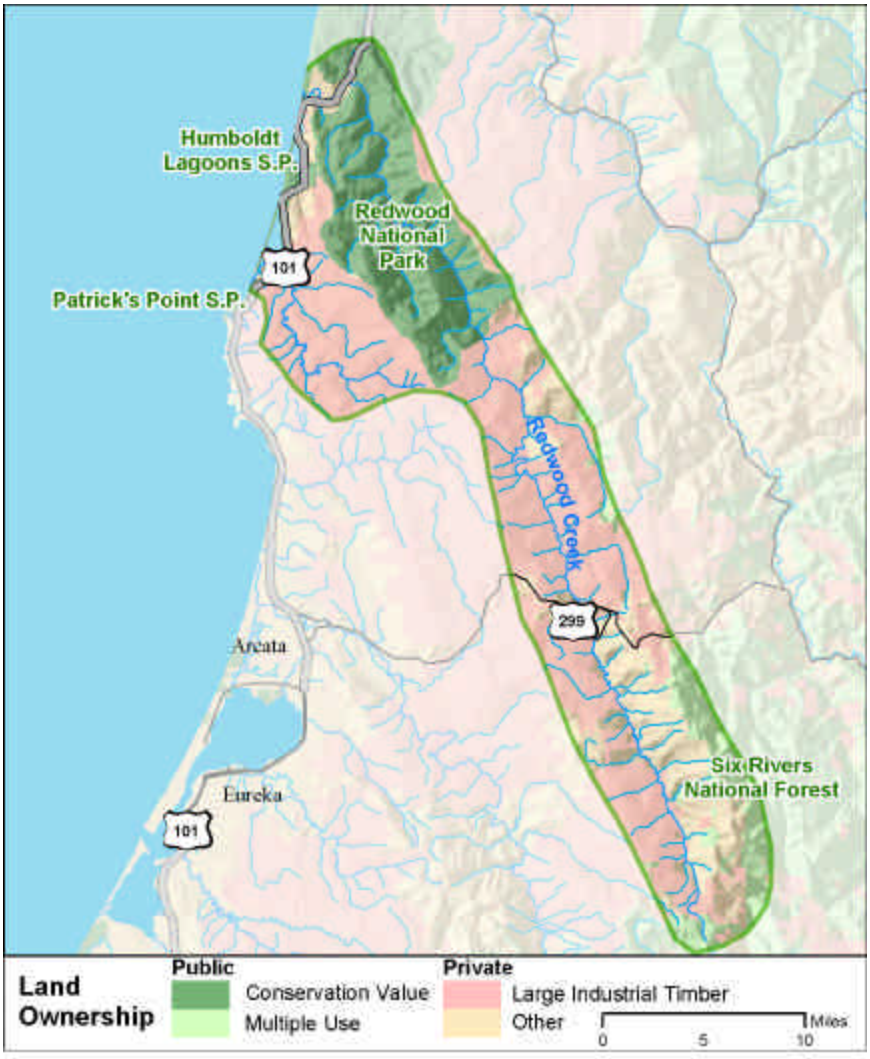
Cultural

• This area is rich in **Native American archeological sites**, based on the use by many tribes: Yurok along coast, Hoopa along Bald Hills, Ancestral Whilkut in upper Redwood Creek basin, and Chilula in lower Redwood Creek basin. Many sites are included in the Bald Hills Archeological District on the east side of Redwood Creek. The area is still used for tradi-

tional subsistence activities (gathering basket weaving materials, fishing, etc.).

• The history of **European settlement** is evident throughout the area. In 1828 Jedediah Smith led the first overland party in this area. In 1848 gold was discovered in inland mountains and soon gold was mined along Gold Bluffs Beach as well. Remnants of mining trails include the Trinidad Trail (seen at the Tall Trees Grove) and the Kelsey Trail in north district of RNSP. Evidence of ranching on Bald Hills is preserved in the form of historic barns, cabins and ranches, many of which are included in Lyons Ranches Rural Historic District.

• Concurrent with mining was the growth of **dairy, fishing and especially timber**. Remains of logging camps, train trestles and railroad grades, and logging roads from early timber harvest are found in many of the forested areas. The Prairie Creek Fish Hatchery, no longer in operation, is on the National Register of Historic Places.



Recreation

• **Popular activities** include hiking, camping in both primitive and developed campgrounds, backpacking, bird and whale watching and wildlife viewing, beachcombing, agate hunting, boating (motorized and non-motorized), fishing, hunting on adjacent private land, swimming, historical sites, local cultures, biking, horseback riding, picnicking, surfing, ranger-guided activities, and visiting museums and visitor centers.

Visual

• Open, undeveloped **beaches** along the wild Pacific coast.

• Viewshed of Bald Hills, and pristine redwood forests, especially **old-growth redwood groves** such as the Tall Trees Grove.

• Popular viewpoints are located along **Bald Hills Road and Highway 101**.

II. Community Values

Land ownership

• Land ownership in the **Redwood Creek watershed** consists of Redwood National and State Parks (41%), BLM and USFS (3%), private lands downstream of Parks (1%), and private lands upstream of Parks (55%).

• Of the **privately owned upstream lands**, there are numerous landowners with < 3000 acres (10%), and eight landowners with > 3000 acres (90%).

• The **coastal lagoons and associated watersheds** are managed by the California Departments of Fish and Game and Parks and Recreation, Humboldt County Parks, Simpson Timber Company, Big Lagoon Rancheria, Redwood Trails (a private campground), and numerous small landowners.

• **Highway 101**, managed by Caltrans, is the major transportation route through this area, and influences resource values as well.

Economics

• Historically, **employment** in this area was strongly based on timber. Timber harvest is still the primary land use in the upper Redwood Creek basin.

• Commercial beach **fishing** and sport fishing occur.

• The parks draw **tourists**, with June, July and August having the highest visitation. The area attracts many international visitors as well.

• **Other economic sectors** include farming, construction, ranching, services, and government.

III. Opportunities and Threats

Redwood Creek watershed

• Continuing **timber harvest** adjacent to park boundaries creates "edge effects" that impact natural values in the adjacent protected parkland.

• An aesthetic issue is that of **clearcuts** near public use areas which mars the perception of an unfragmented forest in park lands.

• **Forest fragmentation** on surrounding timberland due to timber management practices impacts the ability of wildlife to disperse through the area between suitable nesting, foraging and dening habitat.

• Simpson Timber Company is the largest **private landowner**, which provides a stewardship opportunity to cooperate with one entity instead of a checkerboard ownership pattern.

• Continuing **timber harvest and road construction** on private lands upstream of park boundaries has led to a concern regarding downstream impacts. In the past, increased erosion and sedimentation affected downstream park resources through elevated stream temperatures, disrupted

aquatic habitat, increased flood risk, etc. Cooperative erosion control efforts are on-going to reduce the potential for damage in the next large flood.

• The construction of **flood control levees** on Redwood Creek has impaired natural functioning of the estuary by decreasing water circulation, increasing sedimentation and diminishing water quality.

• **Gravel mining** is common near the mouths of north coast rivers. Gravel is extracted from rivers beds for use in industry and road construction or as part of flood-control programs. Gravel extraction can deplete the supply of gravel in a reach of river, can change the aquatic habitat and ground water levels, and increase bank erosion.

• **Fire Suppression** in second-growth and old-growth redwood forests is having unknown effects. The fire ecology of the coast redwood is relatively poorly studied and the long-term effects of such suppression is unknown, but may lead to favoring of more shade-tolerant species and the replacement of redwood over time at the stand level. Prescribed burns are presently used to manage prairie and oak woodlands along the Bald Hills.

• Change in peak and low flow **hydrologic regimes** due to timber harvest, road construction, and possibly diversions.

• **Communicable plant diseases** and pathogens threaten several tree species.

• Oak woodlands are being threatened by an oak fungus causing "**sudden oak death**". It is spreading slowly from the south, but has yet to reach Humboldt County. Loss of native oaks can cause extensive changes in vegetation communities and wildlife use patterns, as well as serious erosion when hillslopes are destabilized by the decay of tree roots.

• **Port-Orford Cedar** is being killed in many areas by a root disease carried through water courses and human transportation networks.

Coastal Lagoons

• **Artificial breaching** of lagoon spits releases a surge of water from estuaries. Due to the timing of the action this may carry young salmon and trout out to sea before they have reached a size needed for ocean survival.

• **Exotic aquatic species**, such as the bass and bullfrogs are out-competing endangered native fish, including the tidewater goby.

• **Stocking trout** for anglers is affecting the endangered tidewater goby and other native fish species.

• **Contamination and pollution** including chemical spills along highway, septic system failures, former Louisiana-Pacific mill site, and use of 2-stroke engines and MTBE-laced fuel in water craft.

• Proposed **commercial development** may affect the character of the area, and threatens to bring with it increased resource impacts, pollution, etc.

• Enforcing **water speed limit** on for motorized vehicles to minimize noise pollution and accidents.

• **Exotic plants**, including European Beach Grass (terrestrial) and aquatic weeds in Freshwater Lagoon, are out-competing endangered native plants.

• **Low capacity culverts** under Highway 101 at Stone Lagoon limits fish passage, creates an upstream flood risk, and constricts natural lagoon flow.

• Upstream **erosion and sedimentation** in streams draining to lagoons, and associated flooding in Redwood Trails area.

• Need to c**oordinate management** among the multiple agencies and landowners involved in management of the Coastal Lagoons (i.e. off-road vehicle policy, exotic plant control, Snowy plover protection).

IV. Conservation Action

Current

• Redwood Creek Landowners Association has a **Memorandum of Understanding** with RNSP. Inventories of road-related problems are in progress. Through a cooperative effort with RNSP, 43 miles of roads on privately owned lands have been upgraded or removed. There is the opportunity to fund a joint study of cumulative watershed effects to help prioritize projects and direct restoration efforts in upper Redwood Creek basin.

• Redwood National and State Parks are currently **decommissioning abandoned logging roads** within park boundaries. Although 205 miles of road have been treated so far, another 130 miles of road are still slated to be removed.

• The **North Coast Watershed Assessment Project** (California Resources Agency) is currently conducting a watershed assessment of Redwood Creek, which will be used to identify restoration and protection needs.

Ready-to-go projects

• Assign a **Redwood Creek Estuary Coordinato**r to coordinate efforts with Army Corps of Engineers, private landowners, and other agencies to explore restoration options for the estuary (i.e. setback levees, restoration of riparian vegetation, breaching the levee)

• The Coastal Conservancy has funded a **hydraulic study** and a feasibility study by the Army Corps of Engineers to assess various designs for set-back levees and alternatives for estuary restoration.

Prospective

• **Acquisitions** from willing sellers to accomplish park resource management goals such as relocating roads, reducing fragmentation, preserving the Scenic Corridor along Prairie Creek, and facilitating trail construction near Stone Lagoon.

• Resolve **remaining land title issues in RNSP** including acquisition of remaining privately held timber and mineral rights on all parkland.

• Acquire conservation easements on **RNSP and Humboldt Lagoon State Park boundaries** (called Special Treatment Areas - 200 ft. buffers - under

the California Forest Practices Act) to reduce edge effects of timber harvest on adjoining parklands. Goal is to retain sufficient canopy in STAs to mitigate edge effects. Especially important where old-growth redwoods adjoin privately held lands. Explore the possibility of expanding the existing Coastal Commission Special Treatment Area rules, which are in place to protect viewsheds.

• Acquire conservation easements along **riparian zones** of salmon and trout streams, especially along steep unstable stream banks.

• **Stone Lagoon**:

- Work with **Caltrans to replace culverts** in McDonald Creek at Stone Lagoon to decrease sedimentation and flooding problems and reduce fish migration barrier.
- Establish **larger riparian protection zones** along the main channel of McDonald Creek and North Fork McDonald Creek, both on state park lands and upstream private lands.

• **Wetland protection/easements** on portions of Big Lagoon formerly managed by Louisiana Pacific.

• Assist in **second-growth management** efforts of RNSP with the opportunity to accelerate late-seral, uneven-age stand development through management practices.

• Establish **Regional Redwood Ecosystem Institute** to coordinate stewardship activities, research, and adaptive management policies in the redwood region.

V. Potential Partners

Big Lagoon Rancheria
Bureau of Land Management
California Coastal Commission
California Coastal Conservancy
California Department of Parks and Recreation (Humboldt Lagoons State Park, Harry Merlo State Recreation Area)
California Department of Transportation
California North Coast Regional Water Quality Control Board
California State Lands Commission
Department of Fish and Game
Department of Forestry and Fire Protection
Hoopa Valley Tribe
Humboldt County Parks and Recreation
Humboldt County Resource Conservation District
National Marine Fisheries Service
Private Landowners
Redwood Creek Landowners Association
Redwood National and State Parks
Simpson Timber Company
State of California's North Coast Watershed Assessment Program
Trinidad Rancheria
U. S. Forest Service
U. S. Geological Survey
U.S. Army Corps of Engineers
U.S. Bureau of Land Management
Yurok Tribe

VI. Linkages

• The Smith River and Lake Earl areas adjoin this area to the **north**.

• Several of the projects listed in Section IV involve **strengthening linkages**, reducing fragmentation, and increasing corridor protection.

VII. References

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HUMBOLDT BAY AND THE HEADATERS FOREST RESERVE

This area includes the coastal watersheds that flow into Humboldt Bay, the second largest estuary in California. The upper watersheds are heavily forested and include the spectacular Headwaters Forest Preserve - a 7400 acre parcal containing a 3,000-acre stand of unentered ancient redwood forest. The city of Eureka, the largest California coastal city north of San Francisco, lies on the Bay. Arcata, home to Humboldt State University, lies just north of the Bay.

I. Resource Values

Natural

• **Humboldt Bay** provides a rich and diverse mixture of natural habitats including tidal marsh, intertidal flats, tidal channels, sloughs, deepwater estuarine habitats, and eel grass beds.

• The **coastal dune** system of the North and South Spits of Humboldt Bay contain approximately 1,600 acres of dune forest, vegetated dunes and open sand. This dune system is recognized as the most complete and least disturbed dune ecosystem on the west coast of the United States.

• The **Humboldt Bay watershed**, which is largely commercial timber land, contains the Headwaters Forest Reserve, a Bureau of Land Management "Special Management Area". It is part of the newly created National Landscape Conservation System (NLCS) and contains a total 7400 acres of which approximately 3,000 acres consists of un-entered redwood and Douglas-fir forest that provides critical habitat for the Marbled Murrelet and other sensitive species.

Threatened, Endangered, and Species of Special Concern

• The Bay and its shore provide **habitat** for 141 invertebrate species, 110 fish species and 251 bird species.

• Among these species are a **number of rare and/or endangered plants and animals**, including:

- Menzies wallflower
- Beach layia
- Humboldt bay gum plant
- Humboldt Bay owl's clover
- Saltmarsh bird's beak
- Marbled murrelet
- Northern spotted owl
- Peregrine falcon
- Western snowy plover
- Brown pelican
- Tidewater goby
- Coho salmon
- Chinook salmon

Cultural

• The **Wiyot tribe** inhabited the Humboldt Bay area prior to the arrival of Europeans in the mid 1800's. Some descendents of the Wiyot now live at the Table Bluff Reservation, at the south end of Humboldt Bay.

• **Indian Island**, which lies in the middle of Humboldt Bay, is an important cultural resource for the Wiyot and the site of a massacre in 1860. The northern portion of the island was purchased by the Table Bluff reservation in 2000. The North Coast Indian Development Council, working closely with the Wiyot tribe, the City of Eureka and the Coastal Conservancy, is currently preparing a resource enhancement plan for the northernmost 60 acres of the island. The plan will include strategies to

restore habitat and to protect important cultural resources.

• Scattered throughout the Humboldt Bay dunes are **Native American middens**.

• The area was settled by **European's** in the 1800's, drawn to the area by the protected harbor and abundant natural resources.

• Field's Landing, one of the **last active whaling stations in the United States**, is still an active port.

Recreation

• Humboldt Bay and its surrounding lands provide important **recreational opportunities** for residents and visitors to the area, including watersports (such as kayaking, canoeing, windsurfing, surfing and sailing), fishing, camping, beachcombing, hiking, bicycling, off-highway vehicles, and walking in the Headwaters Forest Reserve. There are a number of public parks and recreation areas surrounding Humboldt Bay, including:

- Arcata Marsh and Wildlife Sanctuary
- Del Norte Street Pier
- Eel River Wildlife Area
- Elk River Wildlife Area
- Eureka Marsh
- Eureka Waterfront Boardwalk (under construction)
- Fields Landing Boat Ramp
- Headwaters Forest Reserve
- Humboldt Bay National Wildlife Refuge
- Lanphere Dunes
- Mad River County Park
- Manila Community Park
- Manila Dunes
- Samoa Dunes Recreation Area
- South Spit (currently in the acquisition process)
- Table Bluff County Park

Visual

• **Humboldt Bay** is a striking visual resource.

• Views from Table Bluff County Park extend northward from the Humboldt Bay National Wildlife Refuge and the South Spit to the north spit and beyond to the cities of Eureka and Arcata.

II. Community Values

Land ownership

• Primarily **private** land ownership around Humboldt Bay and its watershed.

• Private **timber companies** own much of the forested watershed lands.

• Many of the **dunes are in public ownership**, with BLM, the US Fish and Wildlife Service, Manila Community Services District, City of Eureka, and Humboldt County owning and/or managing land and public access.

• **Wetlands** are both publicly and privately owned. Major public wetland landowners include the Department of Fish and Game and the U.S. Fish and Wildlife Service. Privately-owned wetlands are largely seasonally-inundated diked baylands that are used for agriculture (primarily cattle grazing and dairies).

Economics

• The Humboldt County economy is **transitioning** from a primarily resource-extraction economy to a more service-based economy. In a February 1999 article Humboldt State University Associate Professor Steven C. Hackett states:

> "Our beautiful natural environment will continue to attract tourists to Humboldt County, and growth in national population and income will increase the level of tourism activity….Consequently one can see that protecting and restoring our natural environment is important to sustaining county economic trends."

III. Opportunities and Threats

• **Exotic species** such as Chilean cordgrass, yellow bush lupine and European beach grass are displacing native species and altering habitats. BLM, DFG amd the community of Manilla are all working on exotic species control.

• Continued **resource extraction** in watersheds causing downstream impacts on aquatic and marine habitats, further habitat fragmentation, and impacts on adjacent protected forest areas.

• Alteration of **hydrologic regimes** by the dyking of historic wetlands for agriculture, flood control and development purposes has decreased the quantity and quality of tidal wetlands in and around Humboldt Bay.

• **Port development**, with potential for oil spills, deep-water channel dredging impacting marine habitat etc.

• The **Humboldt Bay Nuclear Reactor** operated from 1963 to 1976 when it was shut down for refueling. Following shutdown geological hazards associated with major earthquake faults were documented. The reactor has never been restarted. The plant is currently in "SAFSTOR" mode, and is scheduled for decommissioning following construction of an independent Spent Fuel Storage Installation on-site.

• At the **Headwaters Forest Reserve** the BLM is working in partnership with the California Department of Fish and Game to restore watershed function critical to spawning habitat for threatened Coho and Chinook salmon. In 2000, approximately 75 percent of the largest road in the

Reserve was removed within the South Fork of Elk River watershed and two additional major restoration sites were completed in the headwaters of Salmon Creek. Work was accomplished through assistance agreements with local non-profit organizations employing local workers. Second year restoration efforts will complete the rest of the Headwaters road and four other road segments within Salmon Creek watershed. The long- term land use management plan will identify additional watershed restoration and forest improvement areas as well as low impact recreational/access opportunities.

IV. Conservation Action

Current

• A **Humboldt Bay Management Plan** is being developed by the Humboldt Bay Harbor and Recreation District. They are currently leading the effort to prepare a plan for the bay that will, among other things, assess cultural and biological resources and identify habitat restoration projects throughout the bay area.

• The City of Arcata is currently preparing the McDaniel Slough **Wetlands Enhancement Plan** for lands adjacent to the Arcata marsh.

• **Acquisition** of several parcels on the **North Spit** to preserve dune habitat and provide public access through a cooperative arrangement between the Coastal Conservancy, Bureau of Land Management, U.S. Fish and Wildlife Service and the Center for Natural Lands Management.

• The City of Arcata, Jacoby Creek Land Trust and the Wildlife Conservation Board are working cooperatively to acquire land in the **Lower Jacoby Creek Watershed** for habitat enhancement and agricultural and open space preservation.

• The Coastal Conservancy and the Manila Community Services District are implementing the **Manila Dunes Access Plan**, to provide public access while protecting sensitive dune habitat.

• The Wildlife Conservation Board, the Bureau of Land Management, U.S. Fish and Wildlife Service, the County of Humboldt and the Coastal Conservancy are working to secure public ownership and management of the **South Spit**, and the development of appropriate public access and habitat enhancement.

• The U.S. Fish and Wildlife Service is developing a number of resource enhancement projects on the **Humboldt Bay National Wildlife Refuge** in the southern portion of the bay, as well as on-going dune restoration on its North Spit ownerships and improved public access throughout the refuge.

• The Redwood Community Action Agency and the Coastal Conservancy are currently preparing a plan for the **Humboldt Bay Trail**, a trail system that will circumnavigate the bay linking existing trails and create new access opportunities both on land and through a “boating trail”.

• The City of Eureka is currently constructing a **pedestrian boardwalk** along a portion of the Old Town waterfront.

• Humboldt County is implementing the beach and dunes management plan.

• The City of Eureka and the Coastal Conservancy are working to restore the habitat values of the **PALCO Marsh**.

• The City of Eureka, Redwood Community Action Agency, Coastal Conservancy, and Course Co, Inc. are currently evaluating the habitat restoration potential at **Martin Slough** - a tributary to the Lower Elk River. The Department of Water Resources recently approved funding for projects in the watershed.

• The City of Arcata is working to restore habitat values along **Jane's Creek** while simultaneously improving flood management.

• The Bureau of Land Management is working at **Headwaters Forest Reserve** in partnership with Redwood Community Action Agency and Pacific Coast Fish, Wildlife and Wetlands Restoration Association to (a) restore watershed function critical to spawning habitat for threatened coho and chinook salmon, (b) provide a permanent trail system with associated access improvements, and (c) restore old-growth redwood habitat.

• Redwood Community Action Agency is coordinating the **Humboldt Bay Watershed Enhancement Program** with the Humboldt Bay Watershed Advisory Council. The focus is on improving water quality and salmon and trout habitat within the Humboldt Bay watershed through development of a cooperative watershed plan for Humboldt Bay.

V. Potential Partners

Buckeye Land Conservancy
Bureau of Land Management
California Coastal Commission
California Coastal Conservancy
California Department of Fish and Game
California Waterfowl
Center for Natural Lands Management
City of Arcata
City of Eureka
County of Humboldt
Department of Water Resources
Ducks Unlimited
Friends of the Dunes
Humboldt Bay Harbor District
Humboldt Bay Trails Group
Humboldt County Farm Bureau
Humboldt County Resource Conservation District
Jacoby Creek Land Trust
National Marine Fisheries Service
National Resource Conservaion Service

North Coast Indian Development Council
Other Native American groups?
Other Private forestlands and ranches within the Humboldt Bay watershed.
Pacific Coast Fish, Wildlife and Wetlands Restoration Association
Pacific Coast Joint Venture
Pacific Lumber Company
Redwood Community Action Agency
Sierra Pacific Industries
Simpson Timber Company
The Conservation Fund
U.S. Fish and Wildlife Service (Refuge and Ecological Services)

VI. Linkages

• Humboldt Bay is functionally linked to the Mad River and Eel River Delta wetlands.

HUMBOLDT REDWOODS AND THE LOWER EEL

Humboldt Redwoods State Park is one of California's largest and oldest state parks. It is over 52,000 acres in size and includes 17,000 acres of old growth coast redwoods. In 1917, the organizers of the Save-the-Redwoods League visited the area and saw that the magnificent redwood forests of this area would be lost within a few years unless something was done to save them. Their concern and foresight led to the creation of the League in 1918. Through their efforts, the first acres were purchased, legislation was established that led to the development of a statewide system of parks, and the first state park bond act that provided $6 million in matching funds for the acquisition of additional redwood forest lands was approved by voters. The Park was established in 1921 when the Bolling Memorial Grove along the South Fork of the Eel River was purchased by the Save-the-Redwoods League and deeded to the state of California.

The main extent of the park lies along the South Fork Eel River and two of its tributaries: Bull Creek and Salmon Creek. The park is bisected by highway 101, running through the heart of the park parallel to the South Fork Eel River. A series of small communities lie along the Avenue of the Giants, the original Redwood Highway and now a popular scenic alternative that parallels the freeway. The park is named in honor of the Prussian scientific explorer, Alexander von Humboldt.

Private land in the vicinity of the park is zoned for commercial, agricultural, residential and timber production uses. The predominate private land owner in the region is Pacific Lumber Company. Except for development concentrated around small hamlets, the land is largely rural in character.

I. Resource Values

Natural

• **Redwoods** in various associations with other vegetation types dominate the region. Humboldt Redwoods State Park contains the largest remaining continuous old growth redwood forest remaining on earth (approx. 10,000 acres). There are also approximately six to eight thousand acres in the park of mixed redwood and Douglas-fir forest.

• The **other plant communities** that are found are broken into the following types; Tanoak Series, Black Cottonwood Series, Red Alder Series, Eastwood Manzanita Series and California Annual Grassland Series.

• Late-successional, large diameter old-growth redwoods provide **unique habitat** for several vertebrate and numerous invertebrate species.

Plants and Animals

• **Mammals** including Pacific fisher, marbled murrelet, and bald eagle. In addition, one species is listed on the California Fully protected, and eight are listed as California Species of Special Concern.

• **Reptiles and Amphibians**, including the northwestern pond turtle, northern red-legged frog , and foothill yellow-legged frog.

• In addition the park has suitable habitat to support **25 other sensitive animal taxa**.

Cultural

• The **Logangkok Sinkyone** people inhabited the region where the park is today. There are approximately 15 known village sites within Humboldt Redwoods State Park. The native population may have been as high as 2,000 individuals.

• The first **Europeans** came into the area to explore in 1849. Settlers soon followed and the native population was virtually destroyed by the 1860's. By 1900 an estimated 100 were left and by 1920 a census was not possible

• **Homesteading** activities and self-sufficiency were the rule until the Redwood Highway was developed between 1915 and 1917.

• A **logging bonanza** took place in the early years of the 20th century. Concurrently the League raised public awareness of the redwoods and their unique ecosystem arguing it must be preserved before being logged and lost forever.

• In 1918 the **Save-the-Redwoods League** was formed to save the world's greatest forest. It owes its inspirations to the forest's that are now part of Humboldt Redwoods State Park.

• In 1922 **Humboldt Redwoods State Park** was opened to the public.

• The Humboldt Redwoods State Park includes many **prohibition sites** from the "moonshine days" of the 1920's to the marijuana "garden" sites of more recent years.

Recreation

• Humboldt Redwoods State Park has a diverse combination of **public use facilities**: three developed campgrounds, 250 campsites, two group camp areas, a group horse camp, two environmental camp settings, five trail camps, a hike & bike camp, numerous developed day use areas, one visitor center, and over 100 miles of hiking, biking and riding trails/fire roads.

• The **Avenue of the Giant**s, a 32-mile scenic highway, features commercial establishments, the world famous Rockefeller Forest, Founders Grove Nature Trail, and the delightful Humboldt Redwoods Visitor Center.

Visual

• There are endless things to see, viewsheds of the **natural world** everywhere you care to look.

• It is easily possible to find places that seem **untouched** by the modern world of man within easy reach for all park visitors.

II. Community Values

Land ownership

• **Humboldt Redwoods State Park** is owned by the State of California

• A mix of small private and **industrial timber holdings**, the largest of which is Pacific Lumber Company, surrounds the park.

• There are many small acreage **rural residential tracts**, including towns along the Avenue of the Giants.

Economics

• The Southern Humboldt region surrounding the park is in e**conomic transition**. Since the 1970's the local economy has suffered from the end of a resource extraction cycle. No new economic engine has replaced the logging industry and the population demographic is changing to a retirement and cottage industry based economy.

• There is a small **seasonal tourist trade**.

• Some attempts at a **sustainable harvest of forest products** are emerging, including utilization of local hardwoods.

III. Opportunities and Threats

• **Acquisition** of fee-title and conservation easements to acquire ancient forest, protect critical watershed land, provide connectivity to surrounding protected lands, and protect viewshed. In particular The Corridor from the Redwoods to the Sea project seeks to maintain landscape connections between Humboldt Redwoods State Park and the King Range National Conservation Area through a mixture of land purchase, conservation easements, and enhanced stewardship.

• The **public road system** creates barriers and reduces connectivity within Humboldt Redwoods State Park and to surrounding protected land

• Many large ranches are being **subdivided** into rural housing subdivisions.

• **Aggressive logging practices** near Humboldt Redwoods State Park boundaries threatens integrity of the Park's natural resources.

• There is a **public perception** by some that Humboldt Redwoods State Park is large enough as it is.

• Lack of **public funding** limits acquisition.

• **Marijuana cultivation** within the Park creating public risk, polluting creeks, and damaging natural vegetation.

IV. Conservation Action

Current

• Land acquisition for Humboldt Redwoods State Park has been on-going since the 1920's

• Humboldt Redwoods State Park manages a **reforestation** project that is funded through a grant from Save-the-Redwoods League.

• In 2001, the first **General Plan** for Humboldt Redwoods State Park is scheduled for completion and implementation.

• **Watershed restoration** work is on-going, primarily in the Bull Creek watershed.

• **Stream restoration** work is on-going.

• Trail and **road rehabilitation** work is on-going.

Prospective

• Humboldt Redwoods State Park is an essential element in the matrix of this bioregion. The ancient forest of the Park acts as a reservoir of intact forest and can be **linked** with other protected areas in the region.

V. Potential Partners

Buckeye Conservancy
Bureau of Land Management
California Department of Fish and Game
California Department of Parks and Recreation
Private land owners
Save-the-Redwoods League

VI. Linkages

- Via The Corridor from the Redwoods to the Sea to the King Range National Conservation Area
- Humboldt County Parks
- South and Main fork Eel River drainage watersheds
- Headwaters Forest
- Six Rivers National Forest
- Headwaters Forest
- Eel River Estuary
- Humboldt Bay National Wildlife Refuge

Grizzly Creek & the Van Duzen Redwood Groves

This area is defined by the ancient redwood groves along the Van Duzen River located between the confluence with the Eel RIver and Grizzly Creek State Park. The Van Duzen River flows freely for 63 miles from the headwaters to the confluence with the Eel River at the Eel River delta. The watershed drains 429 square miles of Humboldt and Trinity County and ranges in elevation from 60 feet to over 5,000. Most of the area is redwood and mixed redwood/Douglas-fir forest. Towards the drier eastern edge the forest gives way to open grassland with oak woodland and Douglas-fir forest. State Highway 36, a major transportation corridor, bisects the area.

I. Resource Values

Natural

• **Ancient redwood groves** in State and County Park ownership include Grizzly Creek Redwoods State Park, Cheatham Grove, Swimmers Delight, Pamplin Grove and Humboldt Grove. Outside these protected groves are other areas of ancient redwood in private ownership.

• The **Van Duzen Rive**r is a major tributary to the Eel River system. The stretch from the confluence with the Eel River to Dinsmore Bridge is designated under the Wild and Scenic Rivers program.

Plants and Animals

• **Marbled murrelets** occupy ancient redwood groves'. Grizzly Creek State Park is believed to be their most easterly nesting location.

• **Northern Spotted Owl** are found in several of the redwood groves and on surrounding mature forest.

• The following species of **salmon and trout** are found in the area's streams.

- *Coho salmon* are limited to the lower reaches of the Van Duzen watershed, including Grizzly Creek.

- *Chinook salmon* are found in the lower and middle reaches of the Van Duzen watershed. They leave the rivers in June and hence are less vulnerable to low summer flows.

- *Steelhead trout* are found in much of the Van Duzen watershed. Winter-run steelhead is more widely distributed and more viable than summer-run steelhead that are threatened by low summer flows. The Van Duzen is the most southerly of the southern steelhead trout ESU.

- *Coastal cutthroat trout*.

• **Amphibians** are found throughout the rivers, creeks and swales. They are relatively poorly studied, although it is know there is habitat for the endangered southern torrent salamander

Cultural

• The area was once home to the **Nongatl tribe**. Like the neighboring Mattole and Sinkyone tribes they were decimated in the 1800s. Remaining tribal members were spread between Round Valley and Hoopa reservations. Most of the known sites are located upstream from the redwood parks. It is likely that downstream sites were buried with sediment when the river flooded.

• **Timber harvest** began in late 1800's and accelerated in the 1940s as mechanical development and lumber demand expanded following World War Two.

Recreation

• **Swimming** has long been a favorite swimming pastime on the Van Duzen River. Warm summer days and deep swimming holes draw people to the river. Favorite spots are at Grizzly Creek and Swimmers Delight.

Until the 1960s the State Park had a lifeguard on duty all summer, but since the floods of the 1960's the pools have filled up and the swimmers largely moved on. The same is happening at Swimmers Delight and other popular areas as deep pools are filling with gravel and sediment.

• **Fishing** for salmon and trout is another popular way to spend time on the river. There has been a steady and dramatic decline, especially within Grizzly Creek, in recent years.

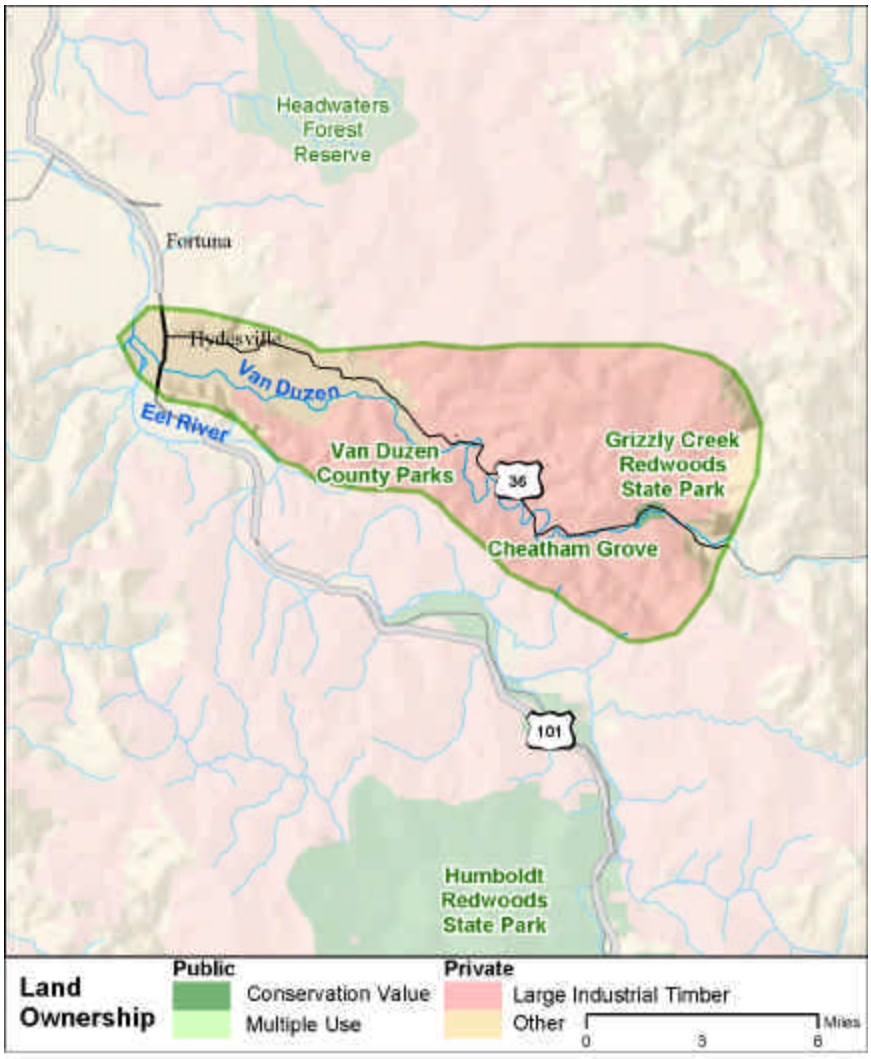
• **Hiking**, although limited by the small size of the parks, is a popular pastime in the redwood groves.

• **Camping** is available in both State and County parks.

Visual

• **Scenic corridor** of Highway 36, especially around the State and County parks.

• Van Duzen River



II. Community Values

Land ownership

• **Industrial timber land** covers much of the area. The Pacific Lumber Company owns the majority of the land in the area, with large tracts owned by Simpson and Sierra Pacific Industries to the north and east.

• **Large ranches** towards eastern edge of study area.

• Grizzly Creek Redwood **State Park**, including Cheatham Grove.

• Van Duzen **County Parks**, including Pamplin Grove, Swimmer's Delight, and Humboldt Grove.

• **Residential subdivisions** in the City of Carlotta

Economics

• Traditionally the region's economy has been based on **primary industries**, mainly timber, with some ranching, and fishing.

• Increasingly **recreation and tourism** are becoming important. During the summer as many as 70,000 people come to recreate in the area's Parks.

III. Opportunities and Threats

Erosion

• A highly **active tectonic setting**, combined with sensitive terrain and high rainfall, makes the Van Duzen River watershed one of the most erodible watersheds in the United States. In turn there is a high natural rates of sediment delivery from hill slopes to the stream channels.

• Due to the local geology and intensive land management techniques the watershed has been listed as **Sediment Impaired** under section 303(d) of the Clean Water Act. The beneficial uses for the Van Duzen River identified under the listing are (a) cold freshwater habitat (COLD), (b) migration of aquatic organisms, (c) habitat necessary for survival and maintenance of plants or animals established under state or federal law as rare, threatened or endangered, and (d) spawning, reproduction and/or early development habitat.

- Erosion on *Grizzly Creek and Stevens Creek* has created a huge slide with a tremendous logjam caused by poorly located roads that regularly fail and are reconstructed.

- Erosion moving down *Van Duzen* mainstem from upstream.

- Erosion has undercut banks and led to loss of ancient trees and park facilities.

• Aggressive **timber harvest** on unstable slopes impacts the ancient redwood groves and aquatic habitat.

• **Roads** crisscross the region. The primary roads are highway 36 and the associated county roads. Beyond these there are many private ranching and logging roads. Where poorly located, constructed or maintained these can have a serious impact on streams through erosion.

• **Intensive land management** on steep and unstable terrain creates serious erosion problems with extensive sediment delivery to the already impaired streams.

Aquatic

• **Floods** (1955, 1964, 1965, and others) deposited many feet of silt over the old riverbed from the heavily harvested hillsides. Old-timers remember when the Van Duzen looked like the Smith River - with deep pools, cold water, and rocky bed. Since the 1960's the river has been converted to a wide gravel-lined channel with slugs of sediment and debris that move slowly downstream, plugging up pools as they go.

• There has been a widespread and catastrophic **decline in salmon and trout habitat** caused by many of the factors listed below:

- *Aggradation* of lower mainstem channel, persistent from 1964 flood event, restricts salmon passage to upstream spawning and rearing grounds, especially during low-flow years.

- *Invasive species* such as the squawfish, western roach & Sacramento pike minnow causing heavy mortality among juveniles. Squawfish thrive in warm, shallow conditions created when the river aggrades.

- *Sedimentation* in pools is limiting spawning and rearing habitat.

- *Paucity of large woody debris* further impairs habitat.

- *Riparian vegetation* is slowly recovering from harvest and flood damage. Many stream reaches lack canopy cover that creates shade and moderates summer temperatures. Spawning salmon and trout cannot survive in warm water.

- Highway *culverts* block fish passage to suitable upstream fish habitat.

- *Gravel mining* at the confluence of the Van Duzen and the Eel River affects channel alignment and can block fish passage.

Terrestrial

• **Forest fragmentation** caused by continuous timber harvest has disrupted the forest's natural connections. The ancient redwood groves are now isolated islands surrounded by young forest on commercial timberland. Many of the animals that rely on intact ancient forest are endangered.

• The presence of **large landowners** has limited rural subdivision and development in the area.

• The State Park campground, located in the ancient redwood grove, has a detrimental effect on the **viability of marbled murrelet nesting**. Known and potential nest predators, including ravens, crows, Stellar's jay, raccoons and squirrels, are attracted to the campground by the presence of food and trash.

• The State Park **campground** is extremely close to the highway that seriously impairs the experience of the Park.

IV. Conservation Action

Current

• Under the Pacific Lumber **Habitat Conservation Plan** (PALCO HCP) the company is required to complete watershed assessments every five-years. These are used to adjust future timber harvest regulation to the local environment to safeguard habitat for threatened and endangered species and prevent further impairment of the streams.

• Under the Headwaters Agreement 12 **Marbled Murrelet Conservation Areas** (MMCA), including one at Grizzly Creek, were set aside from timber harvest for 50-years. The appropriation for purchase of Headwaters (AB 1986) included funds to purchase the Grizzly Creek MMCA grove. The State recently acquired 716 acres of the 1,419-acre Grizzly Creek (MMCA) for **addition to Grizzly Creek State Park**. They retain an option (5-years from the original agreement) to purchase additional lands within the MMCA, pending available funds. Once the option expires a determination will be made whether the remaining portions of the Grizzly Creek MMCA be managed as an MMCA or released for operation consistent with the HCP.

• **Stream monitoring** by the Friends of the Van Duzen is underway at Grizzly Creek, Rainbow Bridge, Hely Creek, and on the Van Duzen near Carlotta. Cuddeback school is planning a monitoring project on Fox Creek.

• **Stream restoration** on Fox Creek by Cuddeback School in collaboration with Eel River Watershed Improvement Group (ERWIG).

Prospective

• **Land acquisition** of (a) old growth redwoods, (b) critical watersheds land supporting the redwood groves, and (c) to provide connectivity between the Van Duzen Groves and the region's other protected ancient redwood forest.

• **Relocate state park campground** from ancient redwood grove to reduce disruption of murrelet nest and improve the visitor experience.

• Road **storm proofing** to reduce sediment yields and improve aquatic quality.

• Avoid **disturbance** in steep headwaters and sensitive hillslopes

• Encourage adoption of **silviculture techniques** that protect sensitive viewsheds along highway 36 and around the State and County Parks.

• Work with County to have Highway 36 designated as a **scenic highway** with associated viewshed and development protection.

• **Stream restoration** to improve aquatic habitat, including alteration of culverts that currently block fish passage.

• **Halt salvage logging** of old-growth trees that fall into the Van Duzen when banks are undermined. If fallen trees are left in the river (anchored if necessary) they can help protect the bank from further erosion in addition to creating fish habitat.

• Expand **monitoring network** to include additional stations and measurement of temperature and sediment on a continuous basis.

V. Potential Partners

California State Parks
California Department of Transportation
California Department of Fish and Game
California Department of Forestry & Fire Protection
State Water Resources Control Board
Humboldt County
Humboldt County Parks
Save-the-Redwoods League
Friends of the Van Duzen
Northcoast Regional Land Trust
Buckeye Land Conservancy
Eel River Watershed Improvement Group
Cuddeback School
Bridgeville School
Private owners - PALCO / Stimson / SPI / others

VI. Linkages

• The **Headwaters Forest Reserve** lies about 12 miles to the northwest.

• **Humboldt Redwoods State Park** is 2 miles southwest from Cheatham Grove over the first ridge as the eagle flies.

• The headwaters of the **Van Duzen abut the Mad River** watershed.

• The Van Duzen enters the Eel River and flows through the Eel River Delta to the **Pacific Ocean.**

VII. References

• US EPA, 1999, Van Duzen and Yager Creek TMDL for Sediment

MATTOLE VALLEY & THE KING RANGE

The free-flowing Mattole River, majestic King Range and isolated Lost Coast combine to make this one of California's most spectacular and diverse coastal areas. The Mattole River flows freely for 62 miles from the headwaters to the Pacific. It drains 304 square miles of Humboldt and Mendocino Counties and ranges in elevation from sea level to 4,000 feet. The western edge of the watershed averages only 3-4 miles inland from the Pacific draining the east slope of the King Range. Numerous coastal streams drain the steep King Range western slope. The adjoining 35-mile coastline is California's most remote, with pristine black sand beaches and colorful rocky tide pools.

In contrast to most of the north coast, redwoods are curiously absent in most of this area which contains a mixed Douglas-fir forest normally found in more inland locations. The King Range peaks block marine air from coming inland making the area too hot and dry in summer for redwoods. One exception occurs in the headwaters of the river where cooling fog spills over the ridges supporting majestic old-growth redwoods. Coast prairies blanket much of the northern part of the area. The 3-4,000 foot peaks in the King Range wring water from pacific storms making this California's wettest spot with rainfall exceeding 120 inches annually.

I. Resource Values

Natural

• The **Lost Coast** is one of the longest remnants of undeveloped coastline in the continental U. S., and the longest in California.

• **Ancient redwood and Douglas-fir groves** in Federal, State and land trust ownership include Mill Creek, Gilham Butte, Honeydew Creek and the Upper Mattole River and Forest Cooperative. Other areas of ancient redwood and Douglas-fir forest remain in private ownership. Species such as sugar and knobcone pine, and incense cedar commonly found further inland are also located here.

• The area is the most **seismically active** in California, especially the lower watershed near Petrolia. Three of the earth's great plates grind together at the Mendocino Triple Junction, just offshore from Cape Mendocino. Earthquakes have a major impact on the landscape causing major landslides and rapid uplift rates.

Plants and Animals

• Northern Spotted Owl nest in the mature forest areas.

• The following species of salmon and trout are found in the area's streams:

- *Coho salmon* are found in the Mattole River and Big Creek.

- *Chinook salmon* are found in the Mattole River

- *Steelhead trout* are found in the Mattole watershed and most of the coastal streams.

• Surveys are ongoing to determine the presence of **fishers and martens** in the area.

• **Habitat** is present for **marbled murrelets**, but none have been confirmed in the area. Surveys are ongoing.

• The area supports a diversity of **coastal and marine birds** including osprey, bald eagles, brown pelicans, cormorants and peregrine falcons.

• The Mattole supports a wide diversity of **herpetofauna**, totaling 27 species including eight species of salamanders, three frogs, five lizards, nine snakes, one turtle and one toad.

• **Marine mammals** including harbor seals, stellar sea lions and grey whales ply the coastline.

• **Beach layia** is a federally listed plant found around the Mattole Estuary.

Cultural

• The area was once home to the **Mattole and Sinkyone tribes**. These tribes were decimated in the 1800s as settlers moved into the area. Because of this, ethnographic records on these tribes are limited. The area is very rich in cultural resources with archaeological sites found throughout the Mattole watershed and all along the coastline.

• **California's first oil** well was drilled in Petrolia in 1861. Production was minimal.

• At the turn of the century, harvesting of **tanoak bark** for use in leather tanning was the area's major industry.

• **Timber harvest** began in earnest after world war two with mechanical harvest improvement and expanded lumber demand. Earlier logging was focused on the valuable redwoods in the adjoining Eel River watershed and bypassed the (primarily) Douglas-fir forests here.

• **Ranching** has had a long history in the area, beginning with the early settlers who supplied the mining camps in the Trinity Alps.

Recreation

• Visitors come from around the U. S. and internationally to backpack and hike the **Lost Coast Trail** through the King Range and Sinkyone Wilderness. Dramatic mountaintop trails combine to provide over 100 miles of hiking opportunities. Guided interpretive hikes are offered in the ancient redwoods of the Mattole headwaters and the tide pools of Shelter Cove.

• The **Mattole River** is renowned for its steelhead trout runs. Local residents have successfully pushed for strict fishing regulations to help protect the dwindling salmon and steelhead runs and aid with recovery. All other streams in the area are closed to fishing to help the recovery effort.

• **Camping** is available in the King Range NCA and A. W. Way County Park, and private campgrounds in Petrolia and Shelter Cove.

• The **coastline** is the major visitor attraction in the study area. Visitors engage in numerous activities including ocean fishing (salmon and bottom fish), surfing, beachcombing, tidepool exploring, sea kayaking and abalone diving to name a few.

Visual

• This area packs in a diversity of **spectacular scenery** that regularly receives attention in national magazine/guidebook articles and photo essays, for example, National Geographic Traveler, Sunset, Backpacker etc.

• The **narrow County Road** Corridors' provide outstanding scenic drives for adventurous travelers.

• Majestic **ancient redwood and fir forest** in the Mattole Headwaters.

• At the **King Range**, the Pacific Ocean meets 3-4,000 foot forested peaks making for a spectacular meeting of land and sea.

• Small villages and grassy mountain ranchlands in the Lower Mattole Valley provide a **pastoral setting**.

II. Community Values

Land ownership

• Private **homesteaders** own a large number of subdivided parcels formerly held by timber companies. Most parcels are in the 20-160 acre size.

• Industrial **timberland** covers a part of the study area, mostly on the east side of the Mattole watershed. The Pacific Lumber Company, Barnum timber and Eel River Sawmills are the major owners.

• Large **ranches** are scattered throughout the study area.

• The **Bureau of Land Managemen**t owns and manages about 11% of the Mattole watershed and most of the land in the coastal watersheds west of the King Range crest.

• Approximately 3,500 acres in the headwaters of the Mattole are managed by members of the **Upper Mattole River and Forest Cooperative**, including Sinkyone Wilderness State Park, California Department of Fish and Game's Ecological Reserve, Save-the-Redwoods League, Sanctuary Forest, Restoration Forestry, Inc, and the Redwoods Monastery.

• Several **land trusts** hold lands in the area mostly for eventual transfer to Federal and state government. Trusts include Save-the-Redwoods League, Sanctuary Forest and the Conservation Fund.

• A. W. Way **County Park**.

• Four small **unincorporated communities** are located within the study area, Petrolia, Honeydew, Whitethorn and Shelter Cove. Of these, Shelter Cove, a 4,200 lot subdivision, has the greatest potential for growth.

Economics

• Traditionally the region's economy has been based on **primary industries** including timber, ranching, and to a smaller extent, fishing and agriculture.

• Increasingly **recreation and tourism** are becoming important. During the summer as many as 180,000 people come to recreate in the area's public lands, and to view the pastoral coastal scenery of ranches and homesteads along the county roads. The largest single concentration of tourist use is in Shelter Cove, a resort community.

• **Cottage industries** such as specialty food products and small organic farms are making a foothold in the area.

• The area has an **underground economy** associated with marijuana cultivation.

III. Opportunities and Threats

• In some instances, **subdivision** of large ranches and industrial forestlands for home development has impacted the area through increased road mileage and heavier use of poorly designed roads. Acquisition or placement of easements on land in the most sensitive/critical watersheds and the education of landowners on the proper construction and maintenance of roadways would reduce this threat. Subdivision of large landholdings is expected to continue into the foreseeable future, as land values are high and increasing in the Mattole Valley. There has been a groundswell of community driven efforts to reduce erosion from private land roadways.

• A highly active tectonic setting, combined with sensitive terrain and the state's highest rainfall, makes the Mattole River watershed one of the most **erodible watersheds** in the United States. In turn there is a high natural rates of sediment delivery from hill slopes to the stream channels.

• **Timber harvest** on unstable slopes impacts the watersheds. Harvests are currently occurring among the area's last remaining privately-held old-growth Douglas-fir groves located in the Upper and Lower North Fork's of the Mattole.

• **Sedimentation** in pools is limiting spawning and rearing habitat for salmon. The Mattole Estuary, an important component of the Salmon/Steelhead spawning cycle, has been degraded to a point where it provides marginal habitat.

• **Riparian vegetation** is slowly recovering from past timber harvest, grazing and resulting flood damage. Many stream reaches lack the canopy cover that creates shade and moderates summer temperatures. Warm, unshaded streams create hostile conditions for salmon and trout spawning and rearing.

• **Private land holdings** are scattered along the coastal backcountry. Opportunities exist to work with owners to carefully consider any further development of these lands that would compromise the unique wilderness character of the Lost Coast. Also, the Shelter Cove Subdivision has several thousand undeveloped lots. Planning carefully for future road access, zoning and development would protect the resource values and aesthetic character of the area. This would benefit visitors by protecting viewsheds, but would also help community members through increased property values.

• There is a high level of **community interest** and long track record of involvement in protection of the area's old-growth forests, water quality, and fisheries habitat and rural character.

IV. Conservation Action

Current

• All of the a**ncient forest on BLM managed lands** in the area is protected through administrative withdrawls from timber harvest, either by designation as a Late Successional Reserve of a Research Natural Area/Old Growth Area of Critical Environmental Concern (ACEC).

• The BLM land surrounding the **Mattole River estuary** is designated as an ACEC and as such is administratively withdrawn to protect beach layia, the estuary ecosystem and archaeological sites.

• Approximately 37,000 acres of BLM managed land in the King Range National Conservation Area and Chemise Mountain Wilderness Study Area are administratively withdrawn from all development pending potential designation by Congress as **Wilderness Area**.

• Upper Mattole River and Forest Cooperative - Approximately 3,500 acres of old-growth and second growth Redwood-fir forest is cooperatively managed by members of the **Upper Mattole River and Forest Cooperative**. Participants include Sanctuary Forest, Save-the-Redwoods League, California Department of Fish and Game, California State Parks, the BLM and several private landowners.

• Ongoing projects to **acquire** old growth forests, watershed land, and supporting habitat for permanent protection in the Corridor from the Redwoods to the Sea and Squaw Creek.

• Ongoing **watershed restoration** efforts by Federal, state and local agencies and individual landowners to reduce barriers to salmon migration (e. g. Culvert realignment), and to restore and remove roadways that contribute sediment loads to the watershed -for example, Good Roads Clear Creeks initiative by Mattole Restoration Council.

• Efforts are ongoing by the **Mattole Salmon Group** to rear, release and monitor salmon and trout in the Mattole watershed.

Prospective

• Numerous **acquisition opportunities** arise in the study area due to intense community interest in protecting significant resource values, a long-term history of land acquisitions and exchanges in the King Range NCA, and changing patterns of ownership. Several immediate opportunities include:

- Several tracts within and adjoining the Upper Mattole River and Forest Cooperative led by Sanctuary Forest.

- A coastal parcel in the center of the King Range NCA led by the Conservation Fund

- Numerous parcels in the Corridor from the Redwoods to the Sea between the King Range and Humboldt Redwoods State Park led by Save-the-Redwoods League.

- Community efforts to raise awareness and protect remaining old-growth stands, most notably in the North Fork of the Mattole, could lead to future requests for acquisition/protective easements.

• **Road inventory and restoration** efforts to reduce sediment yields and improve aquatic quality are occurring throughout the watershed. These include:

- Ongoing and proposed restoration efforts under SB 271 grants for roads in the Mill Creek watershed and the Upper Mattole River and Forest Cooperative.

- Private road inventory/restoration under the "Good Roads Clear Creeks" initiative led by the Mattole Restoration Council. This effort is being initiated this year and has potential for use throughout the watershed.

- Restoration projects under Clean Water Act grants for road removal on the South Fork of Bear Creek, and sediment reducing

trail maintenance throughout the King Range.

• **Planning** - Efforts are proposed to develop long-term management plans for key portions of the study area including The King Range NCA, Mill Creek watershed, Gilham Butte and the Upper Mattole River and Forest Cooperative.

V. Potential Partners

- Bureau of Land Management
- California Coastal Conservancy
- California Conservation Corps
- California Department of Fish & Game
- Wildlife Conservation Board
- California State Parks
- The Conservation Fund
- Environmental Protection Information Center
- Humboldt County
- Mattole Restoration Council
- Mattole Salmon Group
- Mendocino County
- Mid Mattole Conservancy
- Mill Creek Watershed Conservancy
- Pacific Forest Trust
- Private owners
- Redwood Community Action Agency
- Sanctuary Forest, Inc.
- Save-the-Redwoods League
- State Water Resources Control Board
- Trees Foundation

VI. Linkages

• **Sinkyone Wilderness State Park** lies immediately adjacent to the south.

• **Humboldt Redwoods State Park** is immediately adjacent to the east.

• The **South Fork Eel River** watershed adjoins the eastern edge of the Mattole watershed.

• The **Bear River Watershed** adjoins the northern edge of the Mattole watershed.

VII. References

- King Range National Conservation Area Management Program, 1974, Bureau of Land Management.
- Dynamics of Recovery, 1995, Mattole Restoration Council.
- Elements of Recovery, Mattole Restoration Council, 1989.
- The Origin of Mattole, Through the Eyes of a Salmon, 1996, George Minor.
- An Every Day History of Somewhere, Ray Raphael

SOUTH FORK EEL RIVER

The South Fork of the Eel River flows from its source in the Laytonville-Branscomb area to its confluence with the main stem Eel River in Humboldt Redwoods State Park. It drains over 440,000 acres and includes over 700 miles of streams. The South Fork is free of major dams and diversions and was designated as a Wild and Scenic River - the portion in the BLM Angelo Coast Range Preserve being "wild", with the remainder 'recreational". The watershed includes a diverse range of habitats, from ancient redwoods and low-elevation Douglas-fir to Ponderosa pine and chaparral grassland in the drier, upland portions. About 81 percent of the watershed is under private ownership and have been and are being used for timber harvesting, livestock grazing, and dispersed rural development. The predominately private landscape within this focus area has contributed significantly to the rich cultural and rural nature of the region. The remaining lands in the subbasin are State (12%) and Federal (8%) ownership. The alternative lifestyle ("back to the land") people are prominent in this watershed. The values associated with this lifestyle and the participatory nature of the communities involved affect watershed management greatly. U.S. Highway 101, a major California coastal highway, is the major thoroughfare that is located adjacent to the South Fork Eel River. Between 6500 and 8300 vehicles per day traverse this roadway daily creating significant eco-tourism opportunities.

I. Resource Values

Natural

• Identified as a **Key Watershed,** along with Cedar Creek, in the Northwest Forest Plan.

• About eleven miles of South Fork that flows through BLM lands is designated as "wild" under the **Wild and Scenic River Ac**t. The remaining portions are all designated as "recreational".

• The 4,055-acre **Angelo Coast Range Preserve**, managed by BLM and UC Berkeley, contains the last remnants of low-elevation old growth Douglas-fir within the watershed.

• The 6500-acre **Red Mountain Wilderness Study Area** and Area of Critical Environmental Concern, managed by BLM, contain rare botanical associations and unusual geological features.

• Most productive **major tributary for salmon and trout** in the entire Eel River Basin. Among the last remaining wild (non-hatchery), long-run coho salmon streams in California.

• **Vegetation associations** include Montane Hardwood Conifer, Douglas-fir, Redwood, and Montane Hardwood vegetation types that correspond to the following vegetation series: Douglas-fir-tanoak, Douglas-fir, redwood, and tanoak. Chapparral, grasslands, white oak and black oak woodlands along with associated riparian plant communities (cottonwood and alder). The west side of watershed is mostly mesic vegetation types-Montane hardwood conifer, Douglas-fir-tanoak and redwood. The east side is dominated by the drier grassland, oak woodlands and the Douglas-fir-ponderosa pine stands.

• **Tectonically active** with local uplift rates among the highest in California that has produced high rates of downcutting, landsliding and sediment delivery to streams.

Plants and Animals

• Habitat for the **following bird**s: marbled murrelet, northern spotted owl, American peregrine falcon, bald eagle, Aleutian Canada goose.

• Listed species of **salmon and trout** include: Chinook salmon, Coho salmon, and steelhead trout.

• **Red-legged frog** occurs in several tributaries to the South Fork Eel.

• **Rare plants** include: McDonald's rockcress, Mendocino coast indian paintbrush, Kellogg's buckwheat, Mendocino gentian, Red Mountain stonecrop, Red Mountain catchfly.

• Major **non-listed aquatic specie**s include Coastal cutthroat trout, Green sturgeon, Pacific lamprey and American shad.

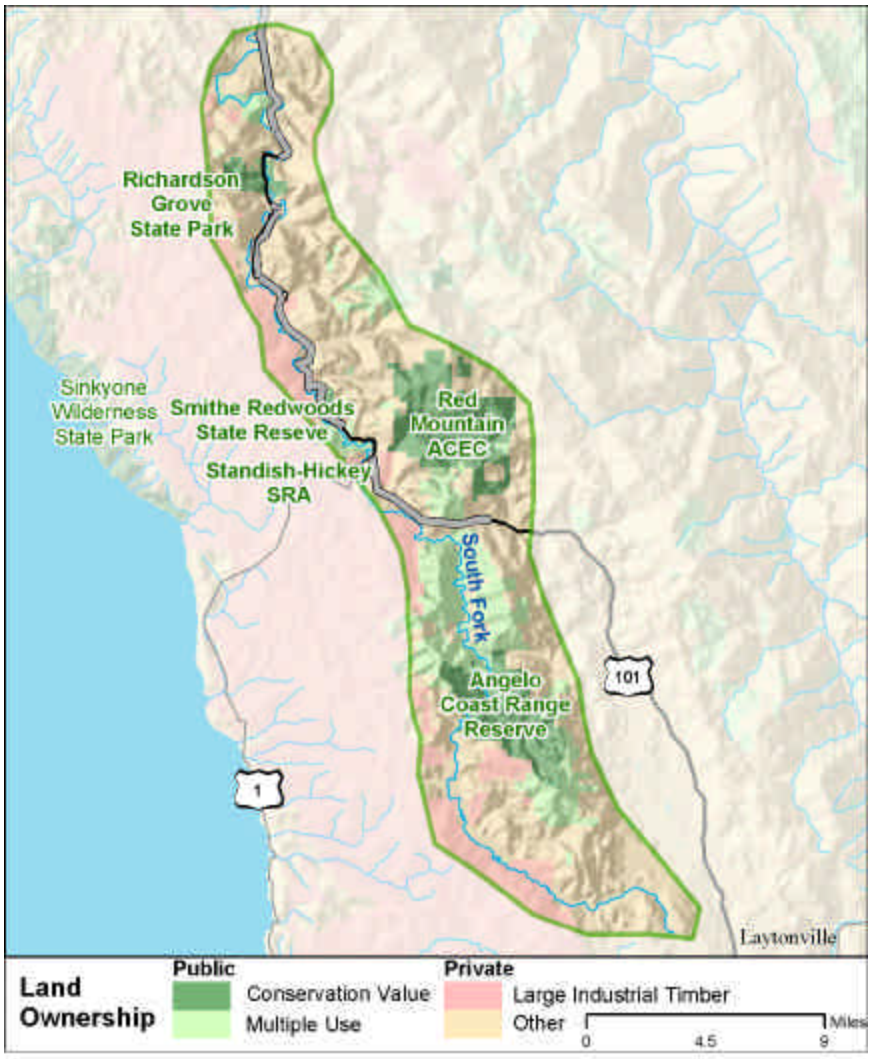
Cultural

• Little or no **cultural survey wor**k has been done on these public lands. Based on an ethnographic literature review, it is highly probable that archaeological reconnaissance would find evidence of a wide variety of prehistoric sites. Existing information indicates various levels of cultural resource sensitivity dependent on geography, topography, environment,

natural resources, and relationship to adjoining Indian territories within the South Fork Eel River Management Plan area.

• No sites or cultural properties have been identified or recorded on public lands located on **Cahto Peak**. Inventories have, to date, been extremely small and limited; however, the area has high site sensitivity according to ethnographic literature.

• Portions of **Elkhorn Ridge** were surveyed in 1987; only isolates, no sites, were recorded at that time. A right-of-way survey covered several lineal acres in 1977; no cultural properties were identified. A small portion of the South Fork Eel River south of Camp St. Michael was examined in 1987 with negative results, even though a high degree of site sensitivity is predicted for this area because of topography, environment, and hydrology.



• **Euroamerican** land use activities started with ranching (1850), along with the traditional hunting of animals for hides and fur. Numerous historical trails were built at this time to link coastal and inland communities. Later came railroad linkages for freight and timber transport and provided a rich cultural history to this area.

Recreation

• River recreation, hunting, hiking and camping predominate. Mountain biking and equestrian use are increasing activities.

• Recreationists use **State Parks, County and Federal facilities**. The South Fork of Eel River corridor (BLM), Richardson Grove, Humboldt Redwood and Benbow State Parks and Standish Hickey Recreation Area along with various private facilities provide the opportunity for the various recreational pursuits.

• **Visitor Services** include: State Park campgrounds, Camp Ravencliff, Benbow Lake, River and Drift Boat guides, Coast Range Reserve and BLM dispersed camp sites. The Catholic sponsored Camp St. Michael along the South Fork Eel River next to BLM provides educational and recreational outdoor experiences to young people.

Visual

• To evaluate scenic qualities of the Watershed, the **BLM** uses a v**isual rating system**. BLM land is divided into sub-units based on relatively

homogeneous landscapes. Each sub-unit is evaluated by seven key factors: landform, vegetation, water, color, adjacent scenery, scarcity, cultural modifications and rated from a standard point system. The higher the score, the greater the landscape's beauty (Class A areas represent the higher score; Class C, the lowest).

- *Class A* areas include all public lands within the Angelo Coast Range Reserve/ACEC (including Stoten Opening) and eight miles of the river classified as wild, for a total of 8,500 acres.

- *Class B* areas total nearly 10,410 acres of relatively undisturbed public land located on the upper slopes and ridgelines surrounding Brush Mountain, the ridgeline and eastern facing slope between Signal Peak and Black Oak Mountain, the headwaters of Kenny Creek and Rock Creek, the middle portion of Elkhorn Ridge, the headwaters of Butler Creek, the area between Horseshoe Bend Road and Surveyors Canyon, and the two miles of river frontage which are classified as recreational.

- *Class C* areas include approximately 2,270 acres in the South Fork Eel River block and 1,080 acres in the Cahto Peak block. These lands have been highly manipulated through past timber management activities and development of communication site facilities.

• Most of the **State Park** land in this area fall within the Class A visual category with most of the private land falling within the Class B category.

II. Community Values

• **Water quality** is a significant value held by all segments of the various communities. Water quality is a rallying point and is viewed as an economic necessity. Domestic and environmental water quality is viewed as key to achieving economic success.

• **Scenic value** is utilized extensively by the local communities: by visitors from the San Francisco Bay Area, and by tourists traveling the Redwood Highway or visiting coastal areas.

• The **alternative lifestyle** (sometimes referred to as the counter-culture or "back-to-the- land: movement), which is prominent in the watershed, is nationally recognized. The values associated with this lifestyle affect watershed management due to the participatory nature of the communities in environmental and political action.

Land ownership

• **Thirteen communities** exist within the South Fork Eel River watershed: Branscomb, Laytonville, Laytonville Rancheria, Cummings, Leggett, Piercy, Whitethorn, Garberville, Redway, Briceland, Phillipsville, Miranda and Myers Flat. These communities exhibit a wide range of social values and orientations including the "back to the land" alternative lifestyle ethic.

• **State lands** comprise about 12 percent of the South Fork Eel River watershed and are mostly located within the boundaries of Humboldt Redwoods State Park.

• **BLM** land comprises the remaining seven percent of watershed, mostly surrounding the upper portion of the South Fork of the Eel River Corridor and the Cedar Creek/Little Red Mountain area.

• The remaining 81 percent of the watershed is under **private ownership** and contain about 80 of the major stream miles. Timber harvesting, livestock grazing and rural development are the dominant uses on this land.

Economics

• **Recreational activities**, including river recreation, hunting, swimming, hiking, fishing and attending cultural events, are important economic generators. Recreationists use private, State Parks, County and Federal (BLM) facilities.

• Economic livelihood within this region depends on the development of **eco-tourism** opportunities and marketing information about the recreation opportunities on the South Fork Eel River. River access, development and improvement of existing campground, and general improvement of roads and facilities will all contribute greatly to the tourism in the area. This will increase use of clean water from the South Fork Eel and in some ways direct land management companies and agencies to assure a healthy and attractive river and river landscape.

• **Land appraisals** completed on properties within the South Fork Eel Corridor in conjunction with a proposed land exchange determined that "the potential buyer would not have plans to remove any of the merchantable timber in the foreseeable future due to relatively low log prices at the date of value, high logging and road building costs, and the relatively small volume of timber that is available for harvest, among other adverse conditions and uncertainties." Nearly all the private ownerships have similar problems with accessibility and quantity of timber that would prohibit, or at least greatly reduce, the value of harvesting.

III. Opportunities and Threats

• **Acquisition from willing sellers** to secure watershed protection for public resource land and consolidate ownership within the Wild and Scenic River corridor.

• CalTrans has had ongoing problems with a **major slide on Highway 101** that could potentially cause sedimentation into the South Fork Eel River.

• The State of the Eel 1995 report indicates that a substantial part of the South Fork Eel River watershed has been **subdivided** from timber and ranch lands into smaller parcels for home development. This has greatly increased the miles and use of roads in the watershed. Chronic erosion of fine-grained material during rainstorms and catastrophic road prism failures during heavy storms from these new roads or from old existing logging roads have greatly impacted fish population and their habitats. Acquisition of certain critical watershed areas to prevent excessive subdividing and education of small landowners on proper road construction and maintenance can greatly reduce this impact to the fish populations in this watershed.

• The US EPA under section 303(d) of the Federal Clean Water Act lists the South Fork Eel River as **Sediment and Temperature Impaired**.

IV. Conservation Action

• The Conservation Fund is acting as a third-party facilitator to **acquire** approximately 858 acres of Whitten estate parcels and 360 acres of Miller Trust parcels. These landowners are willing sellers, and acquisition by the Federal government is dependent upon receiving LWCF and WCB funding to reimburse The Conservation Fund for its investments.

• In 1999 and 2000 an active **road decommissioning** and road "storm-proofing" program has been implemented to reduce chronic sedimentation and road failures on BLM managed property. This will continue in 2001 to improve watershed conditions in this region.

V. Potential Partners

- American Land Conservancy
- California Department of Fish & Game
- California Department of Forestry and Fire Protection
- CalTrans (bypass process and Highway101 upgrades)
- Jack of Hearts Local Watershed Advisory Group
- Jackson Valley Watershed Association
- MapRap
- National Marine Fisheries Service
- Redwood Community Action Agency
- Save-the-Redwoods League
- The Conservation Fund
- The Nature Conservancy
- United States Fish & Wildlife Service
- Private forestland owners and ranches with the South Fork Eel sub-basin.

VI. Linkages

• The South Fork Eel River is part of the **BLM late-successional reserve system** designated by the Northwest Forest Plan and contains excellent examples of low-elevation old growth Douglas-fir.

• Other regional focus areas to the north and directly east, also contained similar examples of low-elevation old growth Douglas-fir habitats that provide linkages for old growth dependent species.

VII. Information Sources

• South Fork Eel River Watershed Analysis, Version 1.0, USFS, BLM, USF&WS. 1996.74pp.

• Draft River Management Plan and Environmental Impact Statement-South Fork Eel Wild and Scenic River, BLM, 1990.

• State of the Eel, An Overview of the Eel Basin, CDF&G, BLM, USFS. 1995. 46pp.

The Lost Coast Rivers

The Eel, Bear and Mattole rivers meet the Pacific Ocean in a remote, sparsely populated coast. The landscape is characterized by broad and beautiful open spaces, rich ecosystems and a wild coastline. The estuarine environments of all three coastal rivers are nurseries for multitudes of wildlife: birds, fish, mammals, invertebrates, and microscopic organisms. The human population of this area has a strong, direct, and active commitment toward the maintenance and enhancement of the natural systems. Now and historically they are engaged in economies dependent on cooperation, self-sufficiency, and sustainability. Where saline ocean water meets fresh river water an "edge environment" rich in plants and animals is created. Local residents embrace life on that edge - living with dynamic storms, floods, extreme seismic activity and the modern threats and pressures of economic change, environmental degradation, and habitat loss. They still enjoy and count on a life marked with peaceful, rural tranquility, miles of open rangeland, lush pastures and fertile forests.

I. Resource Value Description

Natural

• The **Eel River delta** estuary remains open throughout the year. The wide river, which drains 3,600 square miles, meanders through pasturelands and forms a delta that includes sloughs, marshes and other tidal wetlands. The flood plain at the mouth covers 33,000 acres. Draining wetlands and using dikes to maintain land free from river and tidal flooding converted natural wetland to these rich pasture lowlands. The approximate limit of tidal influence is Fernbridge. The valued habitats are freshwater wetlands, salt marsh, slough, Sitka spruce forest, and coastal dune strands.

• The **Mattole and Bear River estuaries** remain open seasonally. In early summer a combination of sediment deposition from coastal longshore ocean currents, and decreased river flows cause a sandbar to build up which closes the rivers mouths and creates a coastal lagoon. Erosion of the sandbar by increased river flow in the rainy season and wave action cause the bar to be breached in the fall. The Bear River drains 128 square miles acres and the Mattole River drains 304 square miles. The mouth and lagoon type estuary of the Bear River is part of a ranch and entirely privately owned. The Mattole River estuary is entirely privately owned with the exception of Bureau of Land Management's beach camping area and trailhead for the Lost Coast Coastal Trail on the south side and BLM's Moore Hill property to the north.

• There are 24 miles of **undeveloped**, and primarily road-less, **coastline**. These are almost entirely held in private ownership by long-time ranching families. The towns of Ferndale and Loleta are located at the mouth of the Eel River and the town of Petrolia is located near the mouth of the Mattole River. The mouth of the Bear River lies between.

• The **coastal rivers** contribute soils, sediments, and woody debris to the ocean environment. All have valuable contributions of nutrients necessary for offshore, undersea habitat. Logs floating out to sea eventually sink to the ocean bottom, or float to remote islands and other continents. Hawaiian war canoes were carved from northcoast redwood trees.

Plants and Animals

• Estuarine wetlands lagoons, sloughs, salt marshes and riverine riparian areas provide seasonal habitat for many **migratory bird species** utilizing the Pacific flyway as well as numerous resident species (173 species identified). Listed species include: bald eagle, golden eagle, western snowy plover, California brown pelican, peregrine falcon, yellow warbler, golden cuckoo, long-eared owl, burrowing owl, white-tailed kite, willow fly catcher, Coopers hawk, sharp-shinned hawk, osprey.

• Estuarine river environment contains anadromous, freshwater, and marine **fish** (35 species identified). Listed species include: long fin-smelt, green sturgeon, coho salmon, chinook salmon, steelhead trout, summer steelhead, Pacific lamprey

• The estuary, lagoon and surrounding riparian areas are habitat for terrestrial, riverine and marine **mammals** [20 species identified] Listed species include the stellar sea lion

• The lower river environments host at least nine distinct **plant associations**, which draw their distinct character from the riverine and marine

influences. The estuary environment is endangered (over 75% in California destroyed by development and reclamation). It is an essential nursery habitat for hundreds of vertebrate and invertebrate species. Listed plant species include: beach layia, Western lily, pink sand verbena, Point Reyes birds beak, Humboldt owls clover,

Cultural

• The **Wiyot and Mattole people** lived in settlements along the Lost Coast near the coastal rivers and estuaries. Contact with Euroamericans began during the Gold Rush years in the early 1850s. Massacre, ill and unjust treatment were methods to remove native people from their homelands. Today there are two small Rancherias: the Bear River Band of Rohnerville Rancheria and the Table Bluff Reservation-Wiyot Tribe. Together they oversee and maintain historic, cultural areas of influence for the entire areas of the Lost Coast Coastal Rivers.

• **European settlers** drained, diked and leveed the Eel River Delta to create first croplands for farming. Following the development of the highway and railroad the delta was converted to rich pasture for dairy and beef cattle ranches. Similar settlement occurred in the Bear River and the lower Mattole River without reclamation of estuary land.

Recreation

• Waterfowl hunting, sport fishing, & crabbing.

• Boating, canoeing, kayaking

• **Auto tours** on quiet and lightly traveled county roads giving the motor-tourist opportunities to view nature

• Pastoral and natural landscape with high quality coastal light, a haven for **photographers and landscape painters**

• Bicycling, walking, and running on rural county roads for exercise and aesthetic pleasure

• Wildlife observation

• Bird watching by land and from watercraft

• Quiet, silence and extraordinary vistas serving **aesthetic and spiritual values**

Visual

• Vistas with panoramic views of the mouths of all **three-river systems**

• Open spaces with complete **ocean horizons** in view give dramatic sunsets

• **Unobstructed views** of open spaces, natural forest, river, grasslands, pastoral dairies, grazing animals and ranching landscapes

• Skies, marshes, islands, and fields teeming with resident and migrating **birds.**

II. Community Values

Land ownership

• There are 2,000 acres of public lands within the **Eel River Delta**. These are principally owned by California Department of Fish and Game with 150 acres in the Table Bluff Ecological Reserve and 1,850 in the Eel River Wildlife Area. Humboldt County owns Crab Park and leased Pedrazinni Park both limited in size to recreational boat launch sites.

• The **Bear River** is predominantly in private ownership, with 85% in small ownerships and 15% in industrial timberlands. The mouth and lagoon type estuary of the Bear River is part of a ranch and is privately owned.

• The **Mattole River** basin comprises 304 square miles with 1/3 of the landmass owned by residents, 1/3 by absentee owners, and 1/3 split between public land and private timber companies. The Mattole River estuary is entirely privately owned with the exception of Bureau of Land Management's beach camping area and trailhead for the Lost Coast Trail on the south side and BLM's Moore Hill property to the north.

• The **24 miles coastline** between the Eel and the Mattole includes grasslands, forests, and open spaces that are generally undeveloped. These are almost entirely held in private ownership and most in extensive acreage holdings stewarded by long-time ranching families. The Lost Coast Headlands project, combining former ranch land and the Centerville Naval Station will establish approximately 600 acres of coastal bluffs for public coastal recreation use while permitting traditional grassland grazing to continue.

Economics

• The Eel River Delta's lush pasture lands feed **dairy herds** and provide milk for the Humboldt Creamery Association line of milk products, Loleta Cheese Company, and is shipped out of the area for more cheese production. The dairy industry is the mainstay of the area.

• **Ranching and landowner** management of timberlands for beef and wood products are historically and presently a key element for sustainable economy in the lower Eel, Bear, and the Mattole River watersheds.

• **Outdoor recreation** is increasing as a source of revenue and employment.

• The **"Victorian" village of Ferndale**, offers multi-ethnic celebrations, civic sponsored public activities, the popular Humboldt County Fair, and is

a year round cultural attraction and destination for tourists. Ferndale and Petrolia provide services for tourists, sportsmen, and naturalists.

• The natural beauty, quiet, uncrowded living conditions, clean air, small town and rural character are attracting a growing number of residents whose **sources of income are from out of the area**: retirement pensions, investment portfolios, and businesses operated by telecommunication.

III. Opportunities and Threats

• The North Coast Regional Water Quality Control Board and the U.S. Environmental Protection Agency (EPA) have listed the Mattole River watershed as an i**mpaired water body for sediment and temperature**. 303(d) list of the Clean Water Act (1972)

• The **estuarine environments** of the Eel, Mattole, and Bear Rivers are critically stressed and endangered. Settlement, resource use patterns, and the constant downstream movement of sediment from upstream sources have dramatically impacted the estuary area. Their role as a nursery for numerous species plays a key role in the survival of related Northcoast economies. Further siltation, channeliztion of tributaries, destruction of riparian habitat, increased temperatures, and pollution place eco-system bio-diversity and the continued sustaining incomes of the resident human population at risk. The status of the wild chinook and coho recovery and other fisheries with high economic value: Dungeness crab, flounder, surf fish and herring will largely depend on how these environments are treated.

• All three estuarine systems are formed from coast range sources with steep headwaters' gradients, then slacking off in mid-reach, and lower mouth structures with very low gradients. Much of headwaters and mid-reach sediment production settles and is deposited at the mouths of these rivers. Following the post-war logging booms with the conversion of old-growth forests by tractor logging, the floods of 1955 and 1964 released huge volumes equal to thousands of year's worth of natural sediment production. **Huge bed loads** reduced the depth of the river, eliminating deep ponds, spread the river out, and destroyed river terraces and riparian habitat. All this contributed to dangerously raising water temperatures. The situation results in the current conditions where recovery remains in the balance of restoration, rehabilitation and conservation land use.

• **Local economies are being forced to restructure** due to price fluctuations**,** long downward trends in timber and beef price, foreign competition for lumber, environmental restrictions on land use and ocean fisheries. Employment is shifting from the once dominant wood products and fishery industries to the service and tourism sectors. Global and national market economies put many local landowners in precarious economic positions where selling parcels of land for residential values become viable and necessary.

• State, national, and international focus on maintenance of the North American temperate rainforest for climate control, regeneration of oxygen, maintenance of bio-diversity, and long-term sustainable economies has generated high public interest in the Northcoast forest's health and stability. The Eel, Mattole, and Bear River systems are increasingly subject to government scrutiny in response to such growing public concerns.

• **Pro-active initiatives** from industry and citizens groups in response to threats of increased regulation, habitat loss, and reduced quality of life are increasing conservation efforts. In all three watersheds high levels of activity are present from public non-profits organizations, land trust and restoration groups. Industrial timber companies and ranch and timberland owners are utilizing watershed analysis for planning with greatly increased concerns for environmental impacts and cumulative effects. Fisheries organizations are active in land-based environmental efforts related to the inter-related health of land and sea ecology.

IV. Conservation Actions

Current

• **Lost Coast Headlands**: Located in the landscape connection between the estuarine environments of the Eel River Delta and mouth of Bear River. The headlands include several coastal streams, lagoon environments, diverse wildlife habitat, scenic vistas, grasslands, ranches, and pocket beaches. $2 million was appropriated from Proposition 12 money to the Coastal Conservancy to begin acquisitions for public coastal access and resource protection. Presently the 200-acre Lost Coast Ranch has been purchased by the Conservation Fund and deeded to Bureau of Land Management. The 40-acre Centerville Naval Facility is in the process of being transferred to BLM with assistance of Congressman Mike Thompson. Other properties are under contract or in negotiations. Guidelines for more public acquisition of easements or fee title include protection of the traditional use of grasslands for grazing livestock.

• Resource protections to **reduce and eliminate sediments sources** are proceeding in the lower Eel River, Bear River, and Mattole River watersheds. The 4,000 acre Hackett Ranch in the lower Eel watershed is selling a Conservation Easement to a consortium of public agencies with Pacific Forest Trust holding the easement and monitoring a conservation plan. State and federal funds dedicated for recovery of fisheries are being used to assist pro-active landowners in the Bear River watershed. Humboldt Resources Conservation District is pursuing solutions for environmental problems with the effects of flooding, dairy manure treatment, the blockage of Salt River and health of Eel River estuary. Mattole Restoration Council and Mattole Salmon Group assisted with California Department of Fish and Game, Wildlife Conservation Board, and private funds are being invested in restoration and rehabilitation of up slope, in stream reductions of sediment and greater protection of the estuarine habitat in the lower Mattole River watershed.

Prospective

• **Private landowner initiatives** are under way for conservation planning and action to promote and establish water quality, bio-diversity, and sustainable commercial use of resources. Citizen's organizations such as the Buckeye Conservancy, The Northcoast Regional Land Trust, and watershed restoration groups are promoting voluntary conservation action. Public and private investment that would give economic incentives for stewardship focusing on conservation easements would reduce sedimentation and pollution of estuarine environments.

• Perpetual protection of **North Fork Mattole Heritage Forest**s and Prairies. The largest low elevation old growth Douglas-fir forest remaining in California (3,000 acres) is interlaced with prairies (2,000 acres) to form

a landscape mosaic typical of pre-settlement conditions. It teems with wildlife extirpated elsewhere. The present owner, Pacific Lumber Company, intend to clear-cut these forests during the next decade. This terrain is geologically unstable, naturally producing sediment. The outflow of the Upper and Lower North fork tributaries is released directly into the estuarine environment at the Mouth of the Mattole which is near threshold for survival of the fishery. Sudden release of more then the natural sediment levels could bring the Mattole River estuary to threshold for death of many species. Private or public purchase by fee title and/or conservation easements is an alternative to logging. Fee acquisitions could greatly reduce the threat of catastrophic loss of the wild salmon and other threatened species in the lower Mattole River watershed. The properties are adjacent to Humboldt Redwoods State Park and are linked and ecologically related to the other protected old growth forests in Mattole River watershed basins.

• **Eel River Wildlife Area** expansion by purchase of habitats contiguous with reserve but separated by sloughs. Restoration of coastal dune habitat and tidal restoration South of the Delta by Conservation Easement acquisition.

V. Potential Partners

Ancient Forest International
Assembly member Virginia Strom Martin
Bear River Band of Rohnerville Rancheria
Bear River Conservancy
Buckeye Conservancy
Bureau of Land Management
California Coastal Commission
California Coastal Conservancy
California Department of Conservation
California Department of Fish and Game
California Department of Forestry and Fire Protection
California Department of Parks and Recreation
Conservation Fund
Eel River Sawmills
Environmental Protection Information Center
Ferndale City Council
Fortuna City Council
Friends of Eel River
Humboldt County Farm Bureau
Humboldt County Fish and Game Advisory Commission
Humboldt County Resources Conservation District
Humboldt County Supervisor Jimmy Smith
Humboldt County Supervisor Roger Rodoni
Humboldt Creamery Association
Institute of Sustainable Forestry
Mattole Restoration Council
Mattole Salmon Group
Mid-Mattole Conservancy
Mill Creek Conservancy
Northcoast Regional Land Trust
Northcoast Water Quality Control Board
Pacific Lumber Company
Sanctuary Forest

Save the Redwoods League
Senator Wesley Chesbro
Sierra Pacific Company
Table Bluff Reservation - Wiyot Tribe
United States Congressman Mike Thompson
Upper Mattole River and Forest Cooperative
USDA/Natural Resources Conservation Service

VI. Linkages to other focus areas

- South: Mattole Watershed and the King Range Conservation Area
- North: Humboldt Bay and Headwaters Forest Preserve Area
- East: Humboldt Redwoods State Park and Lower Eel River, Grizzly Creek, & Van Duzen River
- West: Pacific Ocean, State Marine Reserves, And Federal Off Shore Monuments

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Middle and Main Fork Eel & Mad River

The Eel River system is the third largest river system in California encompassing about 3,684 square miles. Private landowners, both individuals and corporation, own most of the land in the Eel River system. Most of the forest land in the basin are private holdings with the private grazing lands being scattered throughout. The predominately private landscape within this focus area has contributed significantly to the rich cultural and rural nature of the region. The Middle, Main and North Forks along with the Van Duzen make up over 80% of this river system (the remaining 20% is in the South Fork Eel River). The Eel River was recently listed as one of the Nation's most endangered river systems. The Mad River watershed, to the north of the Eel, drains about 497 square miles. It rises in Trinity County and flows northwest to the Pacific Ocean just north of Arcata. Portions of the Eel River, North Fork Eel River, Middle Fork Eel River, Van Duzen River and Mad River are Designated under the National Wild and Scenic Rivers System.

I. Resource Values

Natural

• 2800 **stream miles** on the Main, Middle and North Fork Eel, and 105 stream miles on the Mad River.

• **Vegetation** includes:

- Coniferous series ranging from redwood in lower western part of the watershed to Douglas-fir/ponderosa pine in eastern portion over 36% of the basin.
- Woodland series of tanoak, madrone and black oak with riparian species of red and white alder, maple and California laurel and comprise over 30 percent of the watersheds.
- Brush series include of chamise, scrub oak, manzanita comprise about 13 percent of the area with grassland type occupying around 6 percent.

• The Eel River watershed contains 29 of the 53 basin **wildlife habitats** identified in California. About 400 bird species are found in the watershed and around 80 species of mammals. Black bear, mountain lions, Roosevelt Elk and numerous black-tailed deer are dominant populations in this region. Other wildlife include mink, river otter, raccoon, coyotes, bobcats, bush and jack rabbits along with quail, grouse, morning doves and band-tailed pigeons.

Plants and Animals

• **Fishery resources** include important spawning and rearing rivers for salmon and trout populations, including Chinook salmon, Coho salmon, and steelhead trout. Others anadromous species include coastal cutthroat trout, green sturgeon and American shad.

• **Rare birds** include the northern spotted owl, bald eagle, peregrine falcon, northern goshawk, willow flycatcher and pine marten. The area lies within a marbled murrelet recovery zone and includes suitable habitat, although recent surveys by USFWS have recorded no detections.

• **Amphibians** include the Del Norte salamander, northern red-legged frog, tailed frog, northwestern pond turtle, yellow-legged frog and southern torrent salamander.

• Several species of **bats** that are recognized as special status species.

Cultural

• **Indian reservatio**n land totals about 20,000 acres within the Eel River and Mad River basins, mostly Round Valley Reservation and rancherias near Laytonville and Sherwood . The cultural values within this region are extensive and quite diverse due to the large area involved. Native American history goes back for thousands of years. The Indians lived in small semi-sedentary villages and moved throughout different areas of the region for subsistence and seasonal needs. Hence prehistoric cultural values are not concentrated in large village sites but dispersed throughout the region. Archeological inventories of these sites are not extensive.

• **Euro-American** settlement starting in the mid 1800's with ranching, along with the traditional hunting of animals for hides. Numerous historical trails were built at this time to link coastal and inland communities. Later came railroad linkages for freight and timber transport. Both provide

a rich cultural history to this area.

Recreation

• Recreational opportunities in this region are growing rapidly and increasing in importance to the **economy**. The free flowing rivers, diverse climate topography and vegetation along with hunting and fishing make the basin attractive to recreationists and tourists.

• Many landowners in this section of Eel river basin sell **hunting and fishing rights** on their lands to individuals or organizations.

• National Forest and BLM **campgrounds and recreational areas** receive moderate to heavy use during the summer months and fill a primitive "get away from it all" outdoor recreational experience

Visual

• The lands within this area are quite **diverse** and provide tremendous visual contrast.

• The **remoteness** of the area does not provide for extensive viewing opportunities for great many people as it does along the Highway 101 corridor.

II. Community Values

Land ownership

• About 85 percent of the area is in **private ownership**. The private landowners manage most of the forestlands in the basin as well as a majority of the grazing lands, mainly located in the central belt of grass and woodland in the Main Eel sub-basin. The general pattern of private ownership is large blocks managed by major timber companies or large ranches. Private residential lands of 40 to 100 acres are located closer to small towns and rural communities throughout the basin.

• The predominant **public land agencies** are the US Forest Service and BLM.

• The **Round Valley Indian Reservation** is the largest block of American Indian owned property in the planning area.

• There are scattered tracts of **State** owned land throughout the area.

Economics

• The most significant land uses that contribute to the economy in the area

are **timber harvest, grazing/agriculture and recreation**. The economy of the area has been dependent on the development and utilization of timber. Grazing provided the basis for early settlement and community development and along with timberland management has predominately preserved the rural nature of the landscape.

• Since the 1980's **subdivision** and residential development has become increasingly important.

• **Recreation and residential development** have become more important in recent years as California population has steadily increased with urban, rural and summer home development occurring on lands previously used for timber or agriculture.

• Adding to the economy of the area are **truck farm and field crop** agricultural production as well as black-market marijuana production.

III. Opportunities and Threats

• Priority **acquisition** areas include the Eden Valley/Elk Creek area that surrounds the BLM Wilderness Study Area in the southern portion of the region and areas adjacent and within the Big Butte Wilderness and Yolla Bolly Wilderness Areas in the eastern portion of the region.

• Opportunities to partnership with the USFS in completing **watershed analysis and restoration plans** are high, with one assessment completed for the North Fork of Eel River and another started for Thatcher Creek/Eden Valley watershed.

• Opportunities for **fire and fuels management** with multiple partnerships exist in this area due to the mixture of BLM, USFS, Reservation, State and private land.

• Within this large area several **impacts to wildlife/aquatic** species have been identified

- Loss of late successional vegetation
- Alteration of certain disturbance regimes, notably fire
- Roads and subdivisions
- Habitat fragmentation
- Exotic species both plant and animal that have been introduced into the region.

• With the major portion of this focus area in private ownership the opportunities to **partner with the private landowners** to help lessen the impacts to wildlife/aquatic species are significant.

• **Water diversions** from the Eel River to the Russian River basin that severely disrupts natural flows in the Eel River.

IV. Conservation Action

• The BLM has begun to conduct **road and watershed assessments** in the southern portion of the region east of Laytonville. Storm-proofing and road decommissioning projects will be implemented following the assessments to improve the fisheries and aquatic habitat.

• The USFS is conducting **watershed analysis and restoration plans** in the area.

V. Potential Partners

Bureau of Indian Affairs
California Department of Fish and Game
California Department of Forestry and Fire Protection
California Indian Legal Services
CalTrout
County of Humboldt
Department of Interior
Diamond H Ranch
Elk Creek Ranch and Eden Valley Ranch (Ceno)
National Marine Fisheries Service
Redwood Properties Associates (formerly LP properties)
Richard Wilson Properties
Round Valley Indian Reservation
Round Valley Resource Center
United States Forest Service
Upper Eel Forum
Other Private forestland and ranch owners

VI. Linkages

• This large biological region is adjacent to several other focal areas and covers almost the entire Eel River Basin and part of the upper Mad River watershed. It contains several blocks of land identified as Late-Successional Reserves (LSR) by the NorthWest Forest Plan and provides linkages to other LSRs in adjacent blobs throughout this region.

VII. References

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A Conservation Lexicon

Adaptive management: Learning to manage, by managing to learn. Adaptive management considers management actions as experiments taking place in a complex, dynamic environment where controls and strict replication may be impossible. It is a systematic process that continually improves management policy and practice by learning from the outcomes of operational programs. Its key characteristics are:

- Acknowledgment of uncertainty about the "best" policy or practice for a particular management issue,

- Posing of a hypothesis that will be tested and refined through action and monitoring,

- Sufficient monitoring prior to and during action to enable detection of results and thereby allow managers to learn from past experience,

- Analysis of the outcome in consideration of the original objectives.

Anadromous fish: Any fish that migrates up river from the sea to breed and spawn in fresh water. Examples of anadromous fish in the study area include salmon, trout, and the Pacific lamprey.

Biodiversity: The variety of life and its interactions. It is no limited to species diversity; biodiversity includes variety at species, genetic, and ecosystem levels of organization. Each level interacts and influences the others.

Class I, II, III: see Stream Protection System.

Connectivity: The state of being functionally connected by movements of organisms, materials, or energy. Connectivity of land must usually be measured from the standpoint of particular species or ecological processes.

Conservation biology: Science in the service of conservation. An interdisciplinary science that applies scientific methods, principles, data, and reasoning to the solution of conservation problems.

Conservation easement: Acquisition of rights and interests to a property to protect identified conservation or resource values using a reserved interest deed. Easements may apply to entire parcels of land or to specific parts of the property. Most are permanent, although term easements pose restrictions for a limited number of years. Land protected by a conservation easement remains on the tax rolls and is privately owned and managed; landowners that donate conservation easements are generally entitled to tax benefits.

Corridor: Specifically, a habitat corridor: a swath of land, either narrow or wide, through which organisms (usually animals) travel to meet daily or seasonal life-history requirements or to disperse from one area to another. More generally, a habitat linkage between two or more parcels or reserves.

Disturbance regime: The set of events, including fires, floods, landslides, and windstorms, that periodically recur and affect an ecosystem. Disturbance regimes are characterized by such variables as type, seasonality, extent, pattern, frequency, and intensity. Human-induced disturbance regimes typically differ from natural disturbance regimes in at least some of these variables.

Ecological processes: Biotic (living) and abiotic (nonliving) actions and functions taking place in an ecosystem, including disturbances, succession (recovery), decomposition, nutrient cycling, predation, parasitism, herbivory, competition, and mutualism.

Ecosystem: A functional unit including the organisms in a given area and their physical environment. An ecosystem can be characterized by its composition (e.g., species present), structure (e.g., vegetation layering, snags, and downed logs), and function (e.g., ecological processes).

Edge effects: The ecological changes that occur at the boundaries of habitat patches. These include changes in microclimate, vegetation structure, predation rates, and species composition. Sensitive species are often confined to habitat interiors, whereas more opportunistic, weedy species inhabit the edges.

Fragmentation (habitat): The breaking up of a generally continuous landscape into patches of natural habitat surrounded by human-modified habitat. Fragmentation involves a loss of habitat area and increasing isolation of habitat patches.

Habitat: Habitat is the area where an animal or plant lives. Habitat provides for the needs of an organism - light, shelter, nesting and hiding places, places to forage or hunt, and so on. When habitat is disrupted, removed or otherwise disturbed the species living there either adapt, relocate, or die.

Headwaters: The upper, higher-elevation reaches of a watershed (see Watershed). Headwaters are very important to healthy fisheries and are potentially the greatest source of fine sediments if they are logged or roaded.

Indicator species: Specifically, an ecological indicator species: A focal species whose characteristics (e.g., presence or absence, population density, dispersion, reproductive success) can be used as an index of attributes too difficult, inconvenient, or expensive to measure for other species or environmental conditions of interest. Such species must be sensitive to anthropogenic disturbance and able to provide an early warning of habitat change.

Intact: A forest, or site, is intact when it is unfragmented by roads, clearcuts, powerlines, or other artificial openings, and is large enough to avoid edge effects such as microclimatic changes and increased windthrow.

Island biogeographic theory: The theory, proposed by Robert MacArthur and E.O. Wilson in the 1960s, that the number of species on an island or island-like habitat represents an equilibrium between new species colonizing the island and existing species going extinct. The theory predicts that large islands and islands close to a source of colonists (i.e., mainland) will have higher species richness.

Landscape linkage: A broad habitat corridor linking two or more areas in a landscape.

Landscape matrix: The dominant land cover in a given landscape, in which patches of other habitat types are embedded. As a landscape matrix changes from forest to human-created habitats, sensitive species decline and may disappear.

Late seral: Old forests, including mature and old-growth stages, often defined as dominated in the overstory by trees > 80 years old or diameter classes > 24 inches (61 cm). This can apply to stands or forests of any size.

Old-growth forest ecosystem or old-growth forest: A forest dominated by trees in the canopy that are 200 years or older (for redwood). Dominance can be discussed in terms of cover or biomass. A primary old-growth forest is one that has never been logged. Old-growth forests are characterized by complex canopies, multiple vegetation layers, and abundant snags and coarse woody debris in various size classes.

Old trees: Generally, for redwoods and similar species, trees that are 200 years or older. These may occur in old-growth forests or as remnant individuals in younger forests. The diameter class is extremely variable depending on growing conditions.

Pinniped: Carnivorous aquatic mammals that includes the seals, walruses, and similar animals with finlike flippers.

Residual: Remaining after a disturbance (for example, residual old-growth trees in a severely burned area or clearcut).

Salmonid: Member of the salmonidae family that includes salmon, trout, and whitefish. Salmonids found within the study area all are members of the *Oncorhycus* genus (from the Russian for "hook nose"). They include the coho salmon (*O.kisutch*), chinook salmon (*O. tshawtscha*), chum salmon (*O.keta*), steelhead (*O.mykiss*) and coastal cutthroat trout (*O.clarkii*).

Second-growth (forest): Young forest that has developed following a disturbance (e.g wholesale cutting, serious fire, or insect attach) of the previous ancient forest.

Stream classification system (Class I, II, III): Classification system used in the California Forest Practices Act by the California Department of Forestry (CDF): class I represents fish bearing streams; class II represents streams supporting aquatic life other than fish, and class III represents streams not supporting aquatic life. Under the FPA stream protection is based on stream class.

Sustainability: Sustenance of the composition, structure, and function of an ecosystem in perpetuity, with rates of change in these parameters within a natural or historic range of variability (see ecosystem and sustainable redwood forest)

Sustainable forest or sustainable forest ecosystem: A forest ecosystem that is large and intact enough to maintain its natural composition, structure, and function over time, with changes occurring within a natural or historic range of variability (i.e., the rates occurring over the centuries preceding European settlement). A sustainable forest may or may not have wood or other products removed by humans, but if such products are removed, their removal has a negligible influence on basic patterns of ecosystem composition, structure, and function.

TMDL: A Total Maximum Daily Load is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources. Common pollutants in the study region are temperature and sediment. The Clean Water Act, section 303, establishes the water quality stan-

dards and TMDL programs.

Watershed: The region draining into a stream or other body of water.

Wild and Scenic River: The Wild and Scenic River Act of 1968 was enacted to protect free-flowing rivers that were deemed to have "outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values" for present and future generations. The act was designed to complement the nation's dam building policy. The goal of the act is not to halt development and use of a river; but rather to preserve the character of a river.

[Adapted from an internal report prepared by Reed Noss for Save-the-Redwoods League]