

provide water oriented recreational opportunities, forage for wildlife and livestock, as well as cover and dispersal habitat for wildlife; and they contain valuable timber resources.

Typical riparian vegetation normally associated with these moist sites is often lacking along the major stream courses such as the Middle Fork of the Eel River. This condition is due, at least in part, to the scouring effect of high peak flows during periods of flooding such as those which occurred during 1964 and during the high flows of the early 1970's. Where the typical riparian vegetation does occur, it is most often found in narrow bands or patches along stream courses, with alder, cottonwood, and maple being the major species.

Wetlands include swamps, marshes, bogs, wet meadows, and natural ponds. There are some larger wet meadows like Kingsley Glade, bogs like Lower Letts Valley, and ponds like Alder Creek Pond and numerous landslide slump ponds that meet the wetland definition.

While most of the true floodplains are outside the Forest boundary, there are minor amounts within the Forest. Flooding occurs along steep narrow mountain canyons of the Middle Fork of the Eel River, Black Butte River, Grindstone Creek, and Thomes Creek. The Middle Creek Campground, Bear Creek Campground, and Road 20N01 across Gravelly Valley are all built on floodplains. Although the flood of 1964 approached these facilities, they remained above the high water mark.

Protection and management of riparian areas on the Forest is a significant public and resource management issue. The major areas of conflict in management of these areas has focused on timber harvest, road construction, livestock grazing, fire suppression activities, and, to a lesser extent, certain forms of recreation, primarily OHV use.

Management direction to protect riparian areas requires the attainment of nine aquatic conservation strategy objectives aimed at maintaining or restoring natural structures, functions, and processes in aquatic and riparian ecosystems. This is accomplished through the implementation of approved Best Management Practices, riparian reserve standards and guides, and on-site examination of conditions within proposed project areas to identify additional mitigation measures, if needed, to meet the aquatic conservation strategy objectives.

ROADLESS AREAS

The California Wilderness Act released approximately 141,950 acres within inventoried roadless areas (RARE II) from further consideration for wilderness until a later date. The released areas and their approximate acreages are shown in the following Table.

Table 3-3
INVENTORIED ROADLESS AREAS

| ROADLESS AREA | ACREAGE |
|------------------------------|---------|
| 05137 *Wilderness Contiguous | 3,380 |
| 05138 Deer Mountain | 11,700 |
| 05139 Thomes Creek | 15,900 |
| 05140 Elk Creek | 17,400 |
| 05141 Thatcher | 12,900 |
| 05142 Grindstone | 26,200 |
| 05143 Reister Canyon | 5,600 |
| 05144 *Snow Mountain | 12,300 |
| 05145 *Big Butte-Shinbone | 5,370 |
| 05269 Black Butte | 15,200 |
| 05280 Skeleton Glade | 9,300 |
| 05281 Briscoe | 6,700 |

*Includes only that portion of the roadless area not designated Wilderness by the California Wilderness Act of 1984.

The following provides a brief description of some of the key attributes for each of the released roadless areas:

Wilderness Contiguous (05137): 3,380 total acres - This area lies adjacent to the existing Yolla Bolly-Middle Eel Wilderness and includes those portions of the original roadless area not included in the additions to the Wilderness under the California Wilderness Act. The entire 3,380 acres provides semi-primitive motorized recreation opportunities. Visual quality is considered high (Variety Class A) on approximately 5% of the area with the balance considered common (Variety Class B) to the Forest. Wildlife values are generally considered to be high with the area providing suitable habitat for spotted owl, marten, fisher, goshawk, and deer. The potential for significant mineral occurrence is considered low throughout the area. The potential for the occurrence of gas and oil or geothermal resources is unknown. The area contains approximately 1,700 acres of tentatively suitable timberland and supports an estimated 43 animal unit months (AUMs) of livestock grazing.

Deer Mountain (05138): 11,700 total acres - This area consists primarily of the brush slopes along the eastern portion of the Forest. Opportunities for solitude and primitive recreation are few to non-existent. Semi-primitive non-motorized recreation opportunities are available on approximately 8,700 acres, with semi-primitive motorized and roaded natural recreation opportunities available on 2,000 and 1,000 acres respectively. The area contains a distinctive (Variety Class A) level of visual quality on approximately 300 acres, common (Variety Class B) on 3,000 acres, and minimal (Variety Class C) visual quality on some 8,000 acres. Wildlife values are considered to be low throughout most of the area with only limited winter deer range being provided. The potential for significant mineral occurrence is considered low on about 3,700 acres and high on the remainder of the area. The potential for the occurrence of gas and oil or geothermal resources is unknown. The area includes approximately 200 acres of tentatively suitable timberland and supports an estimated 50 AUMs of livestock grazing.

Thomes Creek (05139): 15,900 total acres - Opportunities for solitude and primitive recreation are generally considered low within this area. However, opportunities for semi-primitive non-motorized recreation are available on about 90% of the area with opportunities for a roaded natural recreation experience on the remaining area. Visual quality within the area is considered to be high (Variety Class A) on about 1,300 acres, common (Variety Class B) on 12,000 acres, and minimal on 2,600 acres. Wildlife values are considered to be relatively high, with deer winter range and suitable bald eagle and goshawk habitat found within the area. The potential for significant mineral occurrence is considered low on about 11,300 acres, moderate on 2,200 acres, and high on 2,400 acres. The

potential for the occurrence of gas and oil or geothermal resources is unknown. The area contains approximately 3,500 acres of tentatively suitable timberland and provides an estimated 500 AUMs of livestock grazing

Elk Creek (05140): 17,400 total acres - This area is also situated along the western slopes of the Forest and is adjacent to the southern portion of the Bureau of Land Management Thatcher-Eden Valley Wilderness Study Area. A significant portion of this area was burned by the Mendenhall Fire of 1987. Few opportunities for solitude and primitive recreation exist within the area. A semi-primitive motorized recreation setting is provided throughout the entire area. About 20% of the area is classified as having distinctive (Variety Class A) visual quality, with 65% of the area considered common (Variety Class B), and 15% with minimal (Variety Class C) qualities. Wildlife values in the area are considered to be very high and include habitat for tule elk, spotted owl, marten, fisher, and key deer range. The potential for significant mineral occurrence is considered low on about 15,700 acres and moderate on 1,700 acres. The potential for the occurrence of gas and oil or geothermal resources is unknown. The area contains approximately 6,000 acres of tentatively suitable timberland and provides an estimated 300 AUMs of livestock grazing.

Thatcher (05141): 12,900 total acres - This area is situated along the western slopes of the Forest and is adjacent to the northeastern portion of the Bureau of Land Management Thatcher-Eden Valley Wilderness Study Area. Opportunities for solitude and primitive recreation are considered to be low when considering the National Forest lands only, and moderate when the adjacent BLM Study Area is included. A semi-primitive motorized recreation setting is provided over about 80% of the area with a roaded natural recreation experience offered on the remainder of the area. Approximately 15% of the area is classified as having distinctive (Variety Class A) visual quality, 70% with common (Variety Class B) visual qualities, and 15% with minimal (Variety Class C) visual quality. The area contains relatively high wildlife values which include suitable habitat for marten, fisher, spotted owl, and goshawk. The potential for significant mineral occurrence is considered low on about 8,600 acres and moderate on 4,300 acres. The potential for the occurrence of gas and oil or geothermal resources is unknown. The area also contains approximately 2,400 acres of tentatively suitable timberland and provides an estimated 540 AUMs of livestock grazing.

Grindstone (05142): 26,200 total acres - This area is also subject to the influences of activities on adjacent lands due to its long and narrow shape. Approximately two-thirds of the area provides opportunities for semi-primitive non-motorized recreation with the remainder of the area providing opportunities for a roaded natural recreation experience. About 5% of the area is classified as having distinctive (Variety Class A) visual qualities, with 45% considered as common (Variety Class B), and 50% as having minimal (Variety Class C) visual quality. Wildlife values include winter deer range and suitable spotted owl habitat. The potential for significant mineral occurrence is considered low on about 19,100 acres and moderate on 7,100 acres. The potential for the occurrence of gas and oil or geothermal resources is unknown. The area contains approximately 1,900 acres of tentatively suitable timberland and provides an estimated 525 AUMs of livestock grazing.

Reister Canyon (05143): 5,600 total acres - This area is located on the brush covered slopes on the southeastern edge of the Forest. Opportunities for solitude and primitive recreation are few to non-existent within the area. The area provides a semi-primitive motorized recreation setting. About 45% of the area is classified as having common (Variety Class B) visual quality with the remaining 55% considered to have minimal (Variety Class C) quality. Wildlife values are considered to be relatively low, although some peregrine falcon habitat and deer winter range are found in the area. The potential for significant mineral occurrence is considered low on about 2,800 acres, moderate on 1,200 acres, and high on 1,600 acres. The potential for the occurrence of gas and oil is unknown on about 2,300 acres and low on 3,300 acres. The potential for geothermal resources is unknown on about 3,200 acres and low on 2,400 acres. There is no tentatively suitable timberland within the area, and there is currently no livestock grazing within the area.

Snow Mountain (05144): 12,300 total acres - This area includes the remaining portions of the original roadless area not included within the Snow Mountain Wilderness under the California Wilderness

Act. The area is divided into four separate pieces which are interwoven with private property and have numerous man-made intrusions, including electronic towers, roads, and buildings. The recreation setting is divided almost equally between semi-primitive non-motorized and semi-primitive motorized opportunities. Approximately 20% of the area is classified as having distinctive (Variety Class A) visual quality, 60% with common (Variety Class B) visual quality, and 20% with minimal (Variety Class C) visual quality. Wildlife values in the area are considered to be relatively high and include habitat for peregrine falcon, marten, goshawk, tule elk, and key summer and winter deer range. The potential for significant mineral occurrence is considered low on about 10,000 acres and moderate on 2,300 acres. The potential for the occurrence of gas and oil is unknown on about 12,000 acres and low on 300 acres. The potential for geothermal resources is unknown on about 9,800 acres and low on 2,500 acres. The area contains approximately 2,800 acres of tentatively suitable timberlands and provides an estimated 320 AUMs of livestock grazing.

Big Butte-Shinbone (05145): 5,370 total acres - This area is situated adjacent to the Yolla Bolly-Middle Eel Wilderness and includes the remaining portion of the original roadless area not included in the Wilderness under the California Wilderness Act. Opportunities for solitude and primitive recreation are considered good within the area. Primitive recreation opportunities are available on approximately one-half of the area with semi-primitive motorized opportunities on the balance. The level of visual quality found in the area is also about equally divided between high (variety Class A) and common (Variety Class B). Wildlife values are considered to be very high with suitable habitat for spotted owl, peregrine falcon, goshawk, marten, deer, black bear, and fisher found within the area. The potential for significant mineral occurrence is considered low on about 2,600 acres and moderate on 770 acres. The potential for the occurrence of gas and oil or geothermal resources is unknown. The area also contains about 2,300 acres of tentatively suitable timberland, and there is currently no livestock grazing within the area.

Black Butte (05269): 15,200 total acres - The long narrow shape of this area makes it vulnerable to the influences of activities on adjacent lands. This entire area provides opportunities for semi-primitive non-motorized recreation. Visual quality over the majority (90%) of the area is classified as common (Variety Class B) with the remainder considered to be of minimal quality (Variety Class C). Wildlife values include deer winter range, eagle foraging habitat, wild turkey, and steelhead trout. The potential for significant mineral occurrence is considered low throughout the area. The potential for the occurrence of gas and oil or geothermal resources is unknown. The area includes 3,800 acres of tentatively suitable timberland and provides an estimated 460 AUMs of livestock grazing.

Skeleton Glade (05280): 9,300 acres total - Opportunities for solitude and primitive recreation are highly limited within this area due to its relatively small size. A semi-primitive motorized recreation setting is provided throughout the entire area. Approximately 5% of the area has been classified as having distinctive (Variety Class A) visual quality, with 70% having common (Variety Class B) visual quality, and 25% having minimal (Variety Class C) visual quality. Wildlife values are considered to be relatively high and include suitable habitat for peregrine falcon, goshawk, and deer winter range. The potential for significant mineral occurrence is considered low on about 8,700 acres and moderate on 600 acres. The potential for the occurrence of gas and oil or geothermal resources is unknown. The area includes approximately 1,700 acres of tentatively suitable timberland and provides an estimated 125 AUMs of livestock grazing.

Briscoe (05281): 6,700 total acres - The majority of this area is situated on the brush covered slopes along the eastern side of the Forest. Opportunities for solitude and primitive recreation are considered low due to the area's small size and exposure to the Sacramento Valley. The area contains 4,500 acres with a semi-primitive motorized recreation setting and 2,200 acres with a roaded natural recreation setting. Approximately 5% of the area is classified as having distinctive (Variety Class A) visual quality, 30% common (Variety Class B) visual quality, and 65% minimal (Variety Class C) visual quality. Wildlife values are relatively low with deer winter range being the primary value. The potential for significant mineral occurrence is considered low on about 5,700 acres, moderate on 700 acres, and high on 300 acres. The potential for the occurrence of gas and oil or geothermal resources is

unknown The area includes about 700 acres of tentatively suitable timberland and provides an estimated 120 AUMs of livestock grazing.

SOILS AND GEOLOGY

The soils found on the Mendocino National Forest are generally derived from metasedimentary sandstone and mudstone, primarily shale and schist. Serpentinite and volcanic greenstone crop out continuously along the eastern boundary of the Forest and represent ancient oceanic crust that has since been thrust onto the continent.

Many of the Forest soils are shallow and gravelly, have low water holding capacities, and are low in productivity. Approximately 15% of the Forest's soils are low in range productivity, producing less than 400 pounds of forage per acre. Highly productive soils cover about 75% of the Forest and generally support thrifty stands of conifers.

Prior to the National Forest being set aside in the early 1900's large areas on the Forest were burned each year and heavily grazed. The effects of these past practices can be still be observed on barren ridges with their compacted and eroded soils. Erosion has removed a majority of the productive surface soils, and the productivity has been lost to the extent that natural regeneration of conifers is doubtful. Some of these areas are presently being treated to establish ground cover and reduce erosional impacts, but recovery will take many years.

Forest soils that have a clay or loam texture are highly susceptible to compaction and erosion. Compaction can reduce tree or vegetative growth by limiting the amount of oxygen available to the plant's root system. Compaction reduces water movement through the soil, and compacted soils are subject to overland flow and erosion, reducing the amount of water storage available for plant growth and ground water recharge. The erosion potential of most of the soils on the National Forest range from moderate to high. Most of the soils in the lowest productivity classes have the highest erosion potential.

A reconnaissance level soil survey has been completed for the Forest. This survey began with the soil vegetation concept in the 1940's and was recently completed under the National Cooperative Soil Survey Program. This is a combination of several surveys and is adequate for Forest level planning, but a more detailed, comprehensive survey is needed for project planning.

The timber productivity of Forest soils is based on Region Five site classes which are a measure of the ability of a site to produce wood. High site can potentially produce 85 to 164 cubic feet of wood per acre per year, Moderate site can produce 50 to 84 cubic feet, and Low site can produce 0 to 66 cubic feet. Approximately 15% of this Forest is high site, 60% is moderate site, and 25% is low site.

The soil's ability to produce forage is measured in pounds of forage per acre per year. High productivity corresponds to 801-1500 pounds, Moderate to 301-800 pounds and Low to 0-300 pounds per acre per year. Approximately 7% of this Forest has high range productivity, 78% has moderate range productivity, and 15% has low range productivity.

Mass wasting has been a dominant factor in shaping the land surface of the Forest. Landslides are a function of geologic factors including slope, rock type, structure (faults and folds), and climate. Although mass wasting is primarily a function of geology, management activities and natural occurrences such as road construction, timber harvest, and wildfire can initiate landslides.

A preliminary evaluation to determine the relative risk of landslides resulting from ground disturbance indicates that approximately 5% of the Forest has a high risk of mass wasting, 57% has a moderate risk, and 38% has a low risk. Landslides are most prevalent in the western portions of the Forest. However, they can and do occur throughout the Forest.

Several large fault zones as well as numerous small faults have been identified within and adjacent to the Forest. The Coast Range Thrust and the Stony Creek Fault exist along the eastern edge of the Forest marking borders of ancient plates of the earth's crust. These faults are considered presently inactive (McLaughlin et al, 1975), however, seismicity ranging in magnitude of 2.8 to 3.6 associated with the Stony Creek fault at the latitude of Newville in the Thomes Creek and Elder Creek area make this fault "potentially active" (Earth Science Associates, 1980).

The occurrence of suitable rock and earth road construction materials is extremely limited on the Forest. This has been a major contributing factor to the lack of surfaced roads on the Forest. Sufficient gravels are available from sites located around Gravelly Flat to meet the anticipated needs in the southern portion of the Forest. However, it has proven more economical to utilize commercial sources to meet the needs elsewhere on the Forest due to the long haul required from Gravelly Flat to construction sites in the central and northern parts of the Forest. Suitable rock for crushing is almost non-existent on the Forest.

To date there has been no inventory of groundwater resources within the Forest. Groundwater sources are needed to provide safe and relatively constant water supplies for administrative sites, campgrounds, livestock, and wildlife. Demands are slowly increasing, but total demands are relatively small and confined to specific portions of the Forest. Portions of the Forest may provide recharge to the groundwater recharge area located in Gravelly Valley and to the Sacramento Valley along the east side of the Forest.

There are currently no Geologic Special Interest Areas on the Forest nor are there any areas under consideration. Although the potential occurrence of suitable candidate areas is thought to be relatively slight, there will be a specific effort to identify such areas.

SPECIAL INTEREST AREAS

The objectives of the Special Interest Area program are to protect, and where appropriate, foster public use and enjoyment of areas with scenic, historical, geological, botanical, zoological, paleontological, or other special characteristics.

There are currently two special interest areas within the Snow Mountain Wilderness, and members of the public have suggested several areas for consideration including Blue Banks, Keller Lake, Twin Rocks, and Anthony Peak. These areas need to be studied further in order to make a final determination of their suitability for Special Interest Area designation. There may be other areas on the Forest that are potentially suitable for classification. A Forest-wide inventory will be necessary to complete this Forest's system of Special Interest Areas.

THREATENED, ENDANGERED, AND SENSITIVE PLANTS

Threatened, endangered, and sensitive plants (TES plants) are recognized by the Regional Forester to warrant special management consideration to ensure maintenance of viable populations. They include all federally listed species and may include plants listed by the State as endangered, threatened, or rare. Seventeen TES plant species are known or suspected to occur on or adjacent to the Mendocino National Forest. Howellia aquatilis was added to the Federal list of threatened species in 1994. Brodiaea coronaria ssp. rosea, Eriogonum kelloggii, and Silene campanulata ssp. campanulata are listed as Endangered by the State of California. Eriastrum brandegeae is listed by the State of California as Rare.

TES plant species were considered for selection as Management Indicator Species to monitor the effects of resource management. TES plants are not good indicators of management effects because they are not well distributed throughout the Forest. To get accurate information on management effects, impacts should occur and measurements be taken over a wide variety of circumstances, soils, and climates. Eight of the species are found only on serpentine soils. Others are found only in rocky areas.

on the fringe of higher elevation conifer sites. Others, which occur within the chaparral type, have been found in locations of very limited distribution. Plants which occur in isolated locations or on rare soil types do not serve as good indicators of management effects.

Eight of the TES plant species on the Forest list grow only in areas of serpentine soil. The principal threat to populations of these species appears to be invasion of their habitat by brush species such as whiteleaf manzanita and leather oak. Road construction, heavy livestock use, OHV use, and burning when soils are moist may destroy seed sources during reproductive periods and pose a limited local threat. Continual destruction of seed sources of annual species from excessive dust from roads and OHV trails, over grazing, and road drainage poses a threat to some annual species populations. The Forest currently employs measures to mitigate such effects. Rotational and deferred grazing systems, as well as structural and non-structural improvements to eliminate cattle from certain areas provide opportunities for protecting two species occurring in the upper elevation barren areas.

Table 3-4
TES PLANT SPECIES

| SCIENTIFIC NAME | COMMON NAME |
|--|------------------------------------|
| <u>Antirrhinum subcordatum</u> Gray | dimorphic snapdragon |
| <u>Astragalus clevelandii</u> Greene | Cleveland's milk vetch |
| <u>Brodiaea coronaria</u> (Salisb) Engler spp. <u>rosea</u> (Greene) Niehaus* | rosy/Indian Valley brodiaea |
| <u>Epilobium nivium</u> Bdg. | Snow Mountain willowherb |
| <u>Eriastrum brandegeae</u> Mason*** | Brandegeae's eriastrum/woolly star |
| <u>Eriogonum kelloggii</u> Gray* | Kellogg's/Red Mountain buckwheat |
| <u>Eriogonum nervulosum</u> (Stokes) Reveal | Snow Mountain buckwheat |
| <u>Fritillaria pluriflora</u> Torr. in Benth | Adobe Lily |
| <u>Hesperolinon drymarioides</u> (Curran) Small | western/drymaria-like flax |
| <u>Hesperolinon tehamense</u> H.K.Sharsm. | Tehama flax |
| <u>Howellia aquatilis</u> Gray ** | Howellia |
| <u>Lewisia stebbinsii</u> Gankin & Hildreth | Stebbins' lewisia |
| <u>Linanthus harknessii</u> (Curran)Green ssp. <u>condensatus</u> Mason | Plaskett Meadows linanthus |
| <u>Lupinus antoninus</u> Eastw. | Anthony Peak lupine |
| <u>Madia stebbinsii</u> Nelson & Nelson | Stebbins' madia |
| <u>Raillardella scabrida</u> Eastw. | scabrid raillardella |
| <u>Silene campanulata</u> Wats ssp. <u>campanulata</u> * | Red Mountain catchfly |

* Endangered, State of California
 ** Threatened or Endangered, Federal
 *** Rare, State of California (E. tracyi now considered the same species as E. brandegeae).

TIMBER

There are 471,916 acres of National Forest land capable of producing commercial timber crops at acceptable growth rates. Of this total, the 99,890 acres within the Yolla Bolly-Middle Eel and Snow Mountain Wildernesses and the Middle Fork of the Eel River Wild and Scenic River corridor are unavailable for timber management. Approximately 135,017 acres of otherwise suitable timberlands within Late Successional Reserves (LSRs), have been withdrawn from the suitable land base. Another 28,593 acres are not considered suitable for timber production without irreversible soil and watershed damage, nor is there reasonable assurance that a portion of these lands could be adequately restocked within five years of final harvest.

Although the remaining 208,400 acres of commercial forest land are tentatively suitable for timber management, suitability is affected by other resource and management considerations. Concerns for

uses such as recreation, visual resources, wildlife dispersal habitat, and riparian reserves, impose limits which reduce the area finally considered suitable for regulated timber management. The capable, available and suitable (CAS) timber landbase is approximately 61,000 acres.

Based on timber stand mapping completed in 1980 and updated through 1990, the three major forest types occurring on suitable lands are briefly described below.

Mixed Conifer - Mixed conifer stands are composed of varying mixtures of ponderosa and Jeffrey pines, sugar pine, Douglas-fir, white fir, and incense cedar. At low and middle elevations ponderosa pine is the dominant type on slopes with a southern aspect, and Douglas-fir on north-facing slopes. At upper elevations white fir and Douglas-fir tend to predominate as aspect becomes less important. Mixed conifer stands occupy 143,300 acres, or 69 percent of the tentatively suitable land base.

Conifer-Hardwood - The conifer hardwood type occurs at low to middle elevations. The coniferous component of this type is similar to the mixed conifer type described above. The criteria for distinguishing conifer-hardwood stands from mixed conifer is the presence of hardwood stocking at levels greater than commercial conifer stocking, based on crown cover. The conifer hardwood type occupies 59,950 acres or 29 percent of the tentatively suitable land base. The conifer hardwood timber strata, C2X (small size class trees) is not included in the CAS landbase because the intensity of management activities necessary to maintain a conifer component, when regenerated, is inconsistent with the Forest Plan goals and objectives.

Red Fir - The red fir type occurs at elevations above approximately 6,000 feet. Usually this type is composed of mixtures of red and white fir with red fir as the predominant species, although in some areas red fir grows in nearly pure stands. The red fir type is the smallest of the three commercial forest types, occupying 5,150 acres, or two percent of the tentatively suitable land base.

Significant timber losses have occurred in the mixed conifer and conifer-hardwood types as a result of major fires which burned in September of 1987. Most of the losses occurred in the two largest fires, the Mendenhall Fire on the Upper Lake Ranger District, and the Fouts Fire on the Upper Lake and Stonyford Districts. In these two fires, timber stands on extensive areas of forested land were killed or damaged. Several smaller fires occurred at the same time, but the area of suitable land damaged was relatively small.

The intensity of the fires varied greatly within the boundary of the burns. On much of the tentatively suitable land area within the burns, all, or nearly all, commercial conifers were killed. On the balance of the burned area only partial mortality occurred, and varying levels of live conifer stocking remains.

On the above fire damaged lands the existing timber inventory has been significantly reduced, and timber data used to calculate allowable sale quantity for the final LRMP was adjusted to reflect this. Much of the burned timber has been sold and salvage logged, however, not all fire killed timber was removed. Dead trees were left to meet special wildlife habitat and watershed protection needs created by the fires, and because scattered fire killed trees in some lightly burned stands were uneconomical to log.

Reforestation of the burns began in the spring of 1988, and all of the burned area in need of reforestation has now been planted. Some partially burned areas will be reforested after the remaining live trees have been harvested at a future time as part of the Forest's regular green timber sale program.

Average annual volume sold during the ten years between 1978 and 1987 was 84.0 MMBF. In 1988, due to burn salvage, volume sold was 107.5 MMBF. Since that time timber sold from the Forest has declined, primarily due to northern spotted owl concerns. In 1989, the year northern spotted owls were proposed for listing under the Threatened and Endangered Species Act, volume sold was 53.6 MMBF. In 1990 sale volume was 52.0 MMBF. Volume sold in FY 1991 was 27.0 MMBF.

Under the previous timber management plan, current annual net growth was 64 MMBF per year, which was lower than the potential yield of 85.5 MMBF. On the Mendocino N F., most stands on the forest are understocked, consequently their growth rates are low compared to fully stocked managed stands. For the previous Timber Management Plan the long term sustained yield capacity was 131.1 MMBF per year.

At the national level, long-term demand for timber products is expected to increase at a greater rate than projected supply, causing an increase in real timber prices during the planning period. Programs to increase net annual growth provide an opportunity to meet projected rises in timber demand. In most cases current growth of timber on National Forests is below the potential which could be achieved under management.

Locally, the annual volume offered for sale each year by the Forest is purchased by a number of mills in northern California. In 1986, 20 firms held 67 timber sale contracts on the Forest. As of the end of calendar year 1990, 19 firms held 33 contracts. Timber volume under contract has declined significantly. In 1986 uncut volume under contract was 411 million board feet on June 30. In contrast, un-cut volume under contract was 48 million board feet at the end of calendar year 1990 and 2 million board feet at the end of 1994. The decline reflects the reduction in the Forest timber sale program caused by spotted owl concerns rather than lack of demand. One indicator of demand is the price paid for timber sales. With some exceptions, timber offered for sale by the Forest has been purchased at bid rates which exceed advertised rates. Generally, the amount of timber purchased has reflected only the amount the Forest was able to offer for sale under prevailing resource and budget constraints, rather than the total amount demanded.

Generally, the timber management program on the Forest has been cost efficient. In 1987, the Forest Service implemented a detailed accounting system in which all timber sale costs and revenues are recorded and summarized in an annual report. In each year beginning with 1987 through 1990, timber program revenues exceeded expenditures by an average of \$3.6 million dollars per year. However, measures implemented to protect ecosystems structures, functions, and processes may require approaches which increase timber sale costs. Since the listing of the northern spotted owl as an endangered species, timber sale costs have increased as timber sales were designed and redesigned to implement complex and changing requirements for the owl's protection.

Table 3-5 displays the distribution of the major timber types by stocking level and slope class for the tentatively suitable landbase.

Table 3-5
**DISTRIBUTION OF MAJOR TIMBER TYPES BY
 STOCKING LEVEL AND SLOPE CLASS**

| Slope Class/Timber Type | Acres of Tentatively Suitable Timberland | Percent of Total |
|--------------------------------|---|---------------------|
| <u>Slopes less than 35%</u> | | |
| ●Mixed Conifer | | |
| Poorly Stocked | 47,200 | 23% |
| Well Stocked | 18,370 | 9% |
| Plantations | 17,290 | 8% |
| ●Conifer-Hardwood | | |
| All Stocking Levels | 37,130 | 18% |
| ●Red Fir | | |
| All Stocking Levels | 2,970 | 1% |
| ●SUBTOTAL..... | 122,960 | 59% |
| <u>Slopes greater than 35%</u> | | |
| ●Mixed Conifer | | |
| Poorly Stocked | 27,860 | 13% |
| Well Stocked | 26,860 | 13% |
| Plantations | 5,720 | 3% |
| ●Conifer-Hardwood | | |
| All Stocking Levels | 22,820 | 11% |
| ●Red Fir | | |
| All Stocking Levels | 2,180 | 1% |
| ●SUBTOTAL..... | 85,440 | 41% |
| <u>Forest Totals</u> | | |
| ●Mixed Conifer | | |
| Poorly Stocked | 75,060 | 36% |
| Well Stocked | 45,230 | 22% |
| Plantations | 23,010 | 11% |
| ●Conifer-Hardwood | | |
| All Stocking Levels | 59,950 | 29% |
| ●Red Fir | | |
| All Stocking Levels | 5,150 | 2% |
| ●TOTAL..... | 208,400 | 100% |

A complete discussion of the advantages and disadvantages of the even-aged and uneven-aged management systems can be found in Appendix F of the Final Environmental Impact Statement, Major Silvicultural Systems and Their Application

During the energy shortage caused by the interruption of foreign oil imports in the mid-1970's, there was a strong interest in developing alternative energy sources. Utilization of wood residues and other woody material from forest lands was one of the alternatives which received attention. In the early 1980's private interests were investigating the feasibility of constructing electrical generating plants capable of using wood biomass from forest land sources including the Mendocino National Forest. When normal oil supplies resumed and energy prices fell, wood energy was no longer cost competitive with other fuels, and interest in wood-fired electrical generating plants declined.

The Forest does, however, have the potential to provide wood biomass for energy generation should the need arise. The biomass potential for this purpose could come from three general sources: 1) woody residues from timber harvests and precommercial thinnings, 2) harvest of hardwoods and non-commercial conifers such as knobcone pine, 3) woody brush species found mainly in the chaparral type. The total estimated sustained annual production potential in dry tons for each of the preceding categories is shown in the following table.

| | |
|---|--------------|
| Residues from timber harvests and thinnings | 40,420 tons |
| Hardwoods and non-commercial conifers | 53,654 tons |
| Chaparral | 40,433 tons |
| Total | 134,507 tons |

The figures above are an estimate of the amount of material potentially available with current road access. There are other considerations which could cause the amount actually available to be significantly less. Riparian reserve standards and guidelines would reduce the area available for this type of activity. Another consideration is the need to maintain an adequate level of dead woody material for wildlife habitat, and where necessary, to furnish ground cover to prevent soil erosion. Harvest of hardwoods and non-commercial conifers may also be limited by wildlife habitat needs, and these vegetation types are not included in the suitable landbase for this LRMP. Any plans to provide biomass for energy production will be subject to a site specific environmental analysis which would deal with these, and other resource management needs.

VISUAL RESOURCES

Many areas of the rugged North Coast Range have long been appreciated for their attractive scenery. Approximately half of the Snow Mountain Wilderness was managed as a Back Country Scenic Area and the balance was managed as a Scenic area prior to its recent designation as a Wilderness. The Middle Fork of the Eel River was designated a Wild and Scenic River in 1981.

The priority given to visual qualities of attractiveness, naturalness, and open space is of concern to both the public and Forest managers. The objective of visual resource management is to manage all Forest lands so as to obtain the highest possible visual quality commensurate with other resource uses and benefits. Intensive visual resource management can accommodate a fairly high level of both commodity and amenity values production.

The Forest uses an analytical model, the Visual Management System, to set Visual Quality Objectives (VQOs) for Forest management. Initial VQOs define theoretically acceptable limits of visual modification for particular areas. The Forest lands are classified according to the degree of inherent scenic attractiveness, visual variety class, and the level of user sensitivity to modification, sensitivity level. A matrix of these factors identifies VQOs appropriate to specific areas. Further evaluations determine the land's

existing visual condition and physical capability to absorb modification, its Visual Absorption Capability. During the formulation of alternatives these parameters are used to develop VQOs for different alternative themes.

Table 3-6
VISUAL VARIETY CLASS, SENSITIVITY LEVEL, AND VISUAL ABSORPTIVE CAPABILITY

| VARIETY CLASS | SENSITIVITY LEVEL | | VISUAL ABSORPTION CAPABILITY | | |
|-----------------|-------------------|----------|------------------------------|----------|-------|
| | | | | | |
| Distinctive (A) | 13% | Most | 26.4% | High | 34.4% |
| Common (B) | 65% | Moderate | 53.2% | Moderate | 34.6% |
| Minimal (C) | 22% | Least | 20.4% | Low | 31.0% |

Variety Class A is a distinctive landscape which generally is the type of landscape photographed by Forest visitors. Variety Class B is a pleasing but not unusual landscape and represents common images of the forest. Variety Class C is rather monotonous.

Sensitivity Level is a measure of people's concern for scenic quality with level 1 being the highest. The Sensitivity Level is determined by the type, purpose, and amount of use, as well as how clearly alterations are visible by distance zone, the seen area, what is seen, and how closely it is viewed.

Visual Absorption Capability is a measure of an area's capability to meet visual quality objectives, based upon physical characteristics and capability to absorb alterations.

A Visual Quality Index (VQI) is a relative scale which reflects both the amount of landscape modification and the inherent scenic quality of the Forest. Research on public preferences indicate higher values are given to more natural appearing views, and to scenery in the higher variety classes. The VQI for the Mendocino National Forest based on an inventory made in 1989 is 47.1. If the entire Forest were without alteration, the VQI would be 54.4. If the entire Forest were managed to a level where every acre met a VQO of maximum modification, the VQI would drop to 23.3.

The VQI calculated in 1981 for the current landbase of 894,400 acres was 48.6. The current 47.1 index rating indicates that, overall, the natural landscape remains fairly dominant. However, management activities in the 1980's resulted in a decline in the visual resource. Approximately 50% of the decline in the 1980's is attributable to the 1987 fires and subsequent salvage logging activities.

Maintaining attractive forests and mountains in their naturally appearing state is fundamental to providing recreation opportunities on the Forest. Recreation use of the Mendocino is expected to continue increasing as a result of population growth in urban areas close to the Forest and because of the popularity and variety of recreation activities which the Forest can accommodate. As both the extent and intensity of use increases so does the demand for a naturally appearing scenery.

The following table displays the results of a 1989 inventory of the existing condition of visual resources on the Forest.

Table 3-7
1989 INVENTORY OF EXISTING VISUAL CONDITION

| VISUAL CONDITION CLASS | ACRES |
|-------------------------------------|---------|
| VC I UNTOUCHED | 221,000 |
| VC II UNNOTICED | 291,000 |
| VC III MINOR DISTURBANCE | 194,000 |
| VC IV DISTURBANCE | 157,000 |
| VC V MAJOR DISTURBANCE | 29,800 |
| VC VI DRASTIC DISTURBANCE | 1,600 |
| TOTAL FOREST ACRES | 894,400 |

WATERSHED

The Mendocino National Forest is divided into the Sacramento River and the Eel River drainages. With the exception of some portions of the Eel River drainage, the amount of water produced on the Forest is generally in excess of downstream demands, or present downstream storage capability. Watersheds contributing to the Sacramento River drainage are Thomas Creek, Stony Creek, Grindstone Creek, Middle Creek, Cache Creek, and Elder Creek. Most of the runoff flows into reservoirs where a primary use is irrigation. Middle Creek flows into Clear Lake and then into Cache Creek. The North Fork of Cache Creek flows into Indian Valley reservoir. Stony Creek feeds East Park and Stony Gorge reservoirs and then Stony Creek converges with Grindstone Creek to flow into Black Butte reservoir. Thomas and Elder Creeks are free flowing streams that enter the Sacramento River on the northeast side of the Forest. This water is mainly used for irrigation and recreation. The Main Eel River and the Middle Fork of the Eel River are the major tributaries of the Eel River drainage, all of which support anadromous fisheries.

Demand for water flowing off the west side of the Forest is increasing. Water in the Eel River is needed for instream uses such as anadromous fish and recreation. Other Eel River water is diverted via the tunnel at Van Arsdale into the Russian River system where it is used for recreation, flood control, and water storage at Lake Mendocino. Subsequent reservoir releases are used for irrigation, domestic, and recreation purposes. The various water demands and flow releases were determined during the recent relicensing of Scott Dam by the Federal Energy Regulatory Commission.

With current demands for water, the entire Forest can be considered to be a domestic watershed even though use in some areas, such as Sacramento, is far removed from the Forest. Although there are no agreements between the Forest Service and any domestic water provider, management is directed toward protection of water quality through the implementation of approved "Best Management Practices", riparian reserve standards and guidelines, and through on-site investigation of watershed conditions to identify additional mitigation measures, if needed to meet aquatic conservation strategy objectives, for Forest Service activities through the environmental analysis process. At least 95% of the water yield meets state water quality standards. The balance of the water not meeting standards is primarily the result of major rain events and the natural instability of the watersheds. Water runoff from some roads during heavy rain storms may not meet water quality standards during the storm.

Potential water yield increases associated with vegetation manipulation is estimated to be less than 5% where the streams leave the Forest boundary. There are high water yields on-site, but once the water is routed downstream, the increased yields become almost unmeasurable. Much of the increased water yield that leaves the Forest during the winter and spring is not utilized because of insufficient downstream storage capacity in existing reservoirs. Current average annual water yield from the Forest is estimated at 3,474,300 acre feet. Of the total runoff, approximately 1,025,700 acre feet are actually utilized for domestic and irrigation purposes.

The primary surface water quality problem on the Forest is sediment. Sediment loads from the Forest are high during the winter due to the unstable nature of Forest soils, management activities, and large

runoff events. Summer stream flows are low and clear. In the mid 1970's, stream channel condition surveys were completed for the major streams and their main tributaries. Most stream channels on the Forest were in the "fair" stability class with a few in the "poor" class and a few, in the southern part of the Forest, in the "good" stability class.

In the early 1990's, annual stream surveys were resumed on the forest for the purpose of updating channel condition and inventorying fish populations and habitat. The results from five years of survey show that overall channel conditions have improved since the 1970's.

The effects of turbidity in Lake Pillsbury and Lake Mendocino and on fisheries in the Eel River are a primary concern in the Eel River drainage. In addition, high water temperature is a problem for fish in the main rivers and streams on the Forest. Most of these streams are in open brushland canyons where vegetation is too short to shade the water. Water from the side streams is much cooler than the main streams as they are well shaded by trees.

Water quality will be maintained and improved through the application of state certified and EPA approved Best Management Practices (BMP) for controlling non-point sources of pollution and riparian reserve standards and guides. Methods and techniques for applying the appropriate BMPs are identified during on site investigation of Forest projects that have the potential to degrade surface water quality. More detailed discussions of BMPs and the implementation process are presented in Appendix G of the Forest Plan.

There has been a growing concern for the cumulative impact of timber harvest, road construction, and prescribed burning on the condition of Forest watersheds. The wildfires which occurred during the summer of 1987 have intensified this concern, particularly within the Lake Pillsbury Basin. A cumulative watershed analysis completed following the fires indicates that 23 of the 226 subwatersheds on the Forest are currently at or above the "Threshold of Concern." These subwatersheds are located within portions of the Middle Fork of the Eel River, Grindstone Creek, Thomas Creek, Black Butte River, and the Lake Pillsbury Basin. Additional land disturbing activities within these areas must be carefully examined to assure that the recovery of these watersheds is not further impaired.

The cumulative watershed effects analysis also showed that each of the three major drainages within the Lake Pillsbury Basin were over threshold. The analysis further showed that the Basin was expected to return to within threshold levels in 1992.

Emergency burned area rehabilitation measures were implemented immediately following the fires. These measures included repairing suppression related damages, grass seeding on areas previously covered by chaparral and along major stream channels, seeding and mulching other sensitive areas such as landslide areas, installing stream grade stabilizers and check dams, and improving road drainage to accommodate the anticipated increase in run-off from the burned area.

These emergency rehabilitation measures were intended to help reduce soil loss and to protect downstream values until longer term recovery of the watersheds is achieved. To assist with the long term recovery of the area, a burned area recovery plan was developed to identify additional watershed improvements designed to help speed the total recovery of the affected lands within the Basin. Implementation of this plan was undertaken during 1988 with completion of work in 1991.

Salvage of much of the fire killed timber was also undertaken following the fires. While harvesting operations have resulted in additional short term disturbance to the area, the reforestation of the area funded through salvage sales is making a significant contribution to the long term recovery of the burned watersheds.

Watershed rehabilitation and recovery measures were also effective in establishing vegetation on the barren slopes in the burn area. Approximately 80% of the burned area has been stabilized with vegetative cover, but deep rooted tree species are needed for long term stability on the high intensity burned areas. Roads that were not needed for future timber management were ripped and seeded to

grass while drainage was improved on other roads. Structures designed to reduce channel down-cutting were built in stream channels. The effectiveness of these erosion control structures is apparent when compared to untreated stream channels.

WILD AND SCENIC RIVERS

In 1981 a 24-mile stretch of the Middle Fork of the Eel River was designated as a Wild River under the National Wild and Scenic Rivers Act. The designated portion of the river within Forest Service jurisdiction extends from the National Forest boundary to approximately one mile north of Fern Point. The Middle Fork of the Eel provides habitat for the Forest Service sensitive summer run steelhead as well as the winter run steelhead, spring run Chinook salmon, and resident rainbow trout. The presence of this sensitive anadromous fishery is the outstandingly remarkable value that qualified this river for protection under the Wild and Scenic River Act. Other notable values for this river include its free flowing nature, the general inaccessibility except by trail, and the primitive nature of the shorelines.

Management of the Middle Fork of the Eel River is directed toward the protection of the values that led to its designation. The maintenance of the anadromous fisheries resource, particularly the summer run steelhead, receives special management consideration in this area. The Summer Steelhead Management Plan developed by the Mendocino National Forest and the California Department of Fish and Game in 1980 provides the basis for management direction for the fisheries resource.

Most of the Middle Fork of the Eel River is contained in deep, narrow canyons with numerous large, deep pools. The river cuts through highly unstable land forms creating a steep walled canyon characterized by landslides.

An analysis of all rivers and streams on the Forest has been completed to determine if additional rivers or streams possess the qualities which would make them eligible for consideration for inclusion in the National Wild and Scenic Rivers System. As a result of this analysis, six rivers were determined to possess outstandingly remarkable characteristics and therefore eligible for further consideration. The eligible rivers and streams are: the Middle Fork of the Eel River above the portion currently included in the Wild and Scenic River System, Balm of Gilead Creek, Black Butte River, and segments of Cold Creek, the Middle Fork of Stony Creek, and Thomes Creek.

Middle Fork of the Eel River

This segment of the Middle Fork of the Eel River above the portion of the River currently included in the Wild and Scenic River System, is located entirely within the Yolla Bolly-Middle Eel Wilderness. It includes the 14-mile stretch of the River from approximately one mile above Fern Point to its headwaters east of The Knob. This section of the River possesses the same characteristics as that portion already included in the Wild and Scenic River System, and it has also been identified by the Department of the Interior as having potential for inclusion in the Wild and Scenic River System. The outstandingly remarkable characteristic found in this segment include the presence of the furthest upstream habitat for breeding populations of anadromous fish. The potential classification for this river segment is "Wild."

Balm of Gilead Creek

Balm of Gilead Creek is located entirely within the Yolla Bolly-Middle Eel Wilderness. It originates below Vinegar Peak and flows approximately nine miles to its junction with the Middle Fork of the Eel River. This creek contributes substantially to the flow of the Middle Fork of the Eel River. The anadromous fisheries and scenery in and along Balm of Gilead creek are its outstandingly remarkable values. The potential classification for this tributary to the Middle Fork of the Eel River is "Wild."

Middle Fork Stony Creek

The eligible segment of the Middle Fork of Stony Creek reaches from its origin in the Snow Mountain Wilderness approximately 16.5 miles around the northern side of Snow Mountain to the mouth of the canyon, approximately 1/3 mile below the Wilderness boundary. The end of the eligible segment corresponds to the private property boundary at the mouth of the gorge. The outstandingly remarkable characteristics along this portion of the river are the unusual geologic formations and the scenic beauty. The potential classification for this segment of the river is "Wild."

Black Butte River

This river is approximately 24 miles long and extends from the private lands at The Basin to the National Forest boundary approximately 1/2 mile above its confluence with the Middle Fork of the Eel River. The Black Butte River possess outstandingly remarkable fisheries and heritage resources values. The potential classification under the Wild and Scenic River Act for this river is "Wild."

Cold Creek

The eligible segment of this stream extends approximately six miles upstream from its confluence with the Black Butte River to the point where it enters private land. The outstandingly remarkable characteristics found along this segment of the stream include the highly attractive scenery, especially in the Chimney Rock area, and its anadromous fishery. Cold Creek, with its unusually large flows, contributes significantly to the habitat necessary for survival of juvenile fish in the Black Butte River. The potential classification for this tributary to the Black Butte River is "Wild."

Thomes Creek

The eligible segment of this creek is approximately 11 miles in length and extends from approximately 1/2 mile below The Slab, to the National Forest boundary. The outstandingly remarkable characteristics of this segment are based on the geologic formations and the unique scenery these formations create. The most notable feature on the creek is the Gorge area near the Forest boundary. This sheer walled, deep pooled canyon resembles formations that are more common in the arid environments of the southwest. The warm waters of the Gorge are dominated by Ptychocheilus grandis which collect in the pools in summer. The potential classification for this segment is "Wild."

WILDERNESS RESOURCE

With the addition of approximately 25,000 acres of land within the Mendocino National Forest to the Yolla Bolly-Middle Eel Wilderness, and the designation of the 37,000 acre Snow Mountain Wilderness with passage of the California Wilderness Act of 1984, the total wilderness acreage within the Forest now stands at approximately 137,800 acres.

The 156,000 acre Yolla Bolly-Middle Eel Wilderness lies between the north and south Yolla Bolly Mountains in the rugged country of the headwaters of the Middle Fork of the Eel River. The Wilderness includes portions of the Mendocino, Shasta-Trinity, and Six Rivers National Forests, as well approximately 7,400 acres administered by the Bureau of Land Management (BLM). The BLM portion of the Wilderness is currently managed by the Mendocino National Forest under a memorandum of understanding. The BLM has recommended the transfer of these 7,400 acres, plus an additional 2,000 acres designated as a Wilderness Study Area, to the Mendocino National Forest. This recommendation is documented in the Record of Decision for the Arcata Resource Area Resource Management Plan and Environmental Impact Statement, April 1992.

Due to its relatively large size and the rather limited use of the area, the Yolla Bolly-Middle Eel Wilderness offers the opportunity to enjoy a quality wilderness experience with a high degree of solitude within the interior portions of the area.

The Snow Mountain Wilderness lies at the southern tip of the North Coast Range of California and is readily accessible from the Sacramento, San Francisco, and north coast metropolitan areas. This Wilderness is accessible earlier in the spring and later in the fall than most other areas in Northern California with similar proximity to large population centers. The area is well suited to visits of only one or two days duration, as well as longer stays. These factors are likely to make this area more popular than the larger Yolla Bolly-Middle Eel Wilderness to the north.

Some parts of Snow Mountain, such as the Middle Fork of Stony Creek, provide outstanding opportunities for isolated recreation. However, because the unique features of this rather small wilderness are concentrated in the crest areas, opportunities for solitude will decrease rapidly with increased recreation use. The fact that the Wilderness consists mostly of one mountain makes users susceptible to impacts from outside activities, particularly in the high crest areas. For example, users in the higher crest areas will be subjected to a variety of visual impacts including smoke columns from agricultural burning in the Sacramento Valley, the electronic towers on St. John Mountain, road cuts and fills, and timber harvest activities on adjacent lands.

All or portions of three grazing allotments lie within the Mendocino National Forest portion of the Yolla Bolly-Middle Eel Wilderness, and one allotment lies within the Snow Mountain Wilderness. Conflicts between grazing and other wilderness uses are primarily with primitive recreation around riparian areas. The dry landscape forces both recreationists and cattle to concentrate at the few accessible water sources.

WILDLIFE AND FISH

All lands within the Forest provide cover, food, space, and water for wildlife and fish. Some species occur throughout the Forest in a wide variety of habitats while others are restricted in distribution by specific habitat requirements. Approximately 329 vertebrate wildlife species are either known to be present or have the potential to occur within this Forest. These include 16 amphibian, 21 reptilian, 70 mammalian, 204 avian, and 18 fish species.

Wildlife and fish populations are managed by the Department of Fish and Game while the Forest Service is responsible for managing the habitat which they are dependent upon. Wildlife and fish issues are, therefore, addressed in terms of habitat management.

The main objective of the Mendocino's habitat management program is to maintain or enhance viable populations of existing wildlife and fish species. To ensure that viable populations of all species occurring in this Forest are maintained, certain species are designated as "management indicator species" (MIS) to function as barometers for wildlife communities. These species were selected because: 1) they are believed to represent the vegetation types, successional stages, and special habitat elements necessary to provide for viable populations of all species in the Forest; and 2) their population changes are believed to indicate or represent the effects of management activities on wildlife and fish. These MIS include species designated as sensitive by the U.S. Forest Service, species of local interest, and species listed as threatened or endangered by either the Federal or State government. One species listed as threatened, the valley elderberry longhorn beetle, has not been selected as an MIS. This beetle occurs at the Lake Red Bluff Recreation site, a riparian area in the central valley which is not representative of most riparian habitat found in this Forest. Another species limited to the Red Bluff site is the Sacramento Splittail, currently proposed for Federal listing as threatened.

Wildlife

Thirteen wildlife species have been selected as management indicator species for this Forest. These species and an estimate of current habitat supply for them in the Forest is listed in Table 3-8. The habitats or specific habitat elements represented by the MIS are listed in Table 3-9. These are estimates of the extent of high and medium quality habitat capable of supporting viable populations of MIS. These estimates are consistent with habitat parameters presented in the habitat capability models, they reflect Forest inventory data on vegetative types and successional stages, and they incorporate site-specific information wherever possible.

Fisheries

The Mendocino National Forest supports an extensive resident trout fishery and more limited anadromous and warm-water fisheries. Rainbow trout are found in nearly all portions of the 400 miles of perennial streams and in over 2,000 acres of lakes and ponds. Anadromous species, steelhead and salmon, are found in river systems on the west side of the Forest. There are about 17 miles of salmon streams and 80 miles of steelhead streams. Table 3-19 of the Land and Resource Management Plan Environmental Impact Statement describes the current habitat quality for rainbow trout and anadromous fisheries.

The warm-water fishery on the Forest is becoming increasingly more important. The recently-introduced largemouth bass population is expanding and gaining recognition in the angling community. The warm-water fishery represents an estimated 12% of the total Fish User Days attributable to the Forest.

Issues concerning the fisheries resource are for the most part concerned with adverse impacts of timber and range management, road construction, and small hydroelectric generation projects. Several large hydroelectric projects and other water diversions have been proposed for areas adjacent to the Forest which could affect the Forest fisheries by flooding streams or by blocking the migration of anadromous fish. In addition, non-native fish are an increasing concern, as they may monopolize available habitat and/or cause direct mortality of native species.

It is critical that habitat requirements for trout and anadromous species be taken into account in activities that may affect habitat quality. This is particularly important for the anadromous fisheries in the Middle Fork of the Eel River, Black Butte River, and Thatcher Creek watersheds. Habitat improvement is dependent primarily on improvement of the watershed condition as a whole. This includes ensuring adequate shading of streams through vegetative cover, maintaining water quality (including summer temperatures and levels of siltation), stream channel stability, and keeping streams clear of unnatural debris.

Management measures include riparian reserve standards and guides, Best Management Practices, key watershed standards and guides, and the aquatic conservation strategy objectives.

Table 3-8
 CURRENT ESTIMATED SUPPLY OF HIGH AND MEDIUM QUALITY HABITAT FOR
 MANAGEMENT INDICATOR SPECIES (MIS) WITHIN THE MENDOCINO NATIONAL FOREST.

| MIS | HABITAT (acres) |
|-----------------------|------------------|
| Acorn Woodpecker | 251,365 |
| Bald Eagle | 5 sites |
| Black-tailed Deer | 312,535 (forage) |
| | 452,103 (cover) |
| California Thrasher | 189,798 |
| Douglas Tree Squirrel | 145,139 |
| Fisher | 201,043 |
| Goshawk | 171,435 |
| Marten | 104,037 |
| Peregrine Falcon | 8 sites |
| Pileated Woodpecker | 139,867 |
| Northern Spotted Owl | 90,506 |
| Tule Elk | 177,360 (forage) |
| | 546,980 (cover) |
| Western Gray Squirrel | 203,099 |

Table 3-9
 MANAGEMENT INDICATOR SPECIES - ECOLOGICAL ELEMENTS REPRESENTED

| SPECIES CATEGORY | ECOLOGICAL ELEMENTS |
|------------------------------|--|
| <i>Threatened/Endangered</i> | |
| Bald Eagle | Riparian |
| Peregrine Falcon | Riparian, Lithic Areas |
| Northern Spotted Owl | Old Growth, Snags, Dead & Down |
| <i>Sensitive</i> | |
| Fisher | Old Growth, Snags, Riparian, Dead & Down |
| Goshawk | Old Growth, Snags, Riparian, Dead & Down |
| Marten | Old Growth, Snags, Riparian, Dead & Down |
| <i>Harvest</i> | |
| Black-Tailed Deer | Riparian, Hardwoods, Meadow, Brush Field |
| Douglas Tree Squirrel | Snags, True Fir |
| Western Gray Squirrel | Snags, Hardwoods |
| <i>Special Interest</i> | |
| Tule Elk | Riparian, Hardwoods, Meadow |
| <i>Maintenance</i> | |
| Acorn Woodpecker | Snags, Hardwoods |
| Pileated Woodpecker | Old Growth, Snags, Dead & Down |
| California Thrasher | Brush Field |