

FINDINGS OF FACT

Commodities

- Timber production and lumber manufacture, agriculture, commercial and sport fishing, and recreation will be the economic sectors providing the greatest employment and income to the local economy based on the resources provided from the watershed.
- Mining and special forest products will provide negligible employment and income.

Scenic

- The scenic quality of the river corridor draws on the geology, landforms, water, and vegetative features to create a "significant value" along the Federally designated Recreational and Wild sections.

Recreation

- Campgrounds at Butler Bar and Sunshine Bar are in need of maintenance or improvement. Toilets are primitive and in need of upgrading to modern standards, barrier free access for the disabled is desired, and year-round drinking water supply is needed, as well as hardening sites to protect resources.
- There is a limited number of dispersed recreation sites along the river being used currently. Further development of semi-primitive recreation opportunities along the river is unlikely.
- Recreational traffic on the main Elk River Road 5325 appears to decrease only slightly with an increase in commercial traffic.

Landscape Patterns

- Historically fire was one of the major disturbance agents affecting the watershed. The natural fire disturbance interval can be inferred to be 300 to 400 years.
- During the 19th century, fire use by native Americans, settlers, and miners combined to increase the numbers of fires, and increase the burned acreage. This shortened the disturbance interval to 100 to 300 years and created much of the vegetation patterns we see today.
- From the 1940's to the early 1990's timber harvest was a significant disturbance agent on National Forest lands. This timber harvest combined with wildfires shortened the disturbance interval to 100 to 200 years.
- With the changes in land allocations on National Forest lands timber harvest will effect only a small percentage of the watershed. Continuation of the current standards and guides to promote and protect LSR, including active fire suppression, should cause the disturbance interval to lengthen to 400 to 500 years range.
- Patch size from fire disturbances varies with position on the slope and aspect. The largest patches are high on the south facing slopes and average 280 acres.
- Low intensity fires, which are most likely to occur on north aspects or in riparian areas, often leave large trees within the forest capable of meeting LSR objectives.
- Timber harvest creates a much different disturbance pattern, the result has been regenerating stands that are single storied (like high intensity wildfires), with smaller patch sizes (10 to 40 acres) that are evenly spaced in the landscape with no elevational or aspect differentiation.
- Timber harvest (4,974 acres) on Federal lands peaked during the 1960's.
- Panther Creek Subwatershed has the greatest percent (25%) of Riparian Reserves affected by past timber harvest.
- Approximately 55% of the watershed is presently in mid to late seral structure. On Federal lands, 67% is within mid to late seral structure.

Wildlife

- Previous data have shown consistent marbled murrelet “presence” (1989-1993), “occupancy” (1992), and occupancy and presence (1994-1997) of the main Elk River and its tributaries.
- Two marbled murrelet nest trees have been found in the watershed.
- Low numbers for some neotropical migrant bird species, including Hammond's flycatcher, rufous hummingbird, and western wood peewee.
- Forest openings and sites providing forage for some species (clearcuts) will decline as the bulk of the watershed is managed for late-successional forest conditions.
- Many species of songbirds and amphibians are more strongly associated with habitat upslope from riparian areas than within the riparian habitat itself, including chestnut-backed chickadee, golden-crowned kinglet, clouded salamander, ensatina, and western red-backed salamander.
- Roads have negative impacts on wildlife, including direct mortality, increased stress levels, habitat removal, and habitat fragmentation.
- In the last two years, band-tailed pigeons have been numerous on Iron Mountain.

Landslides and Surface Erosion

- Between 1952 and 1986, road and harvest-related landslides delivered 2.2 times more sediment volume than naturally-occurring landslides.
- The number of landslides per mile of road decreased considerably for roads constructed after 1974. Road practices were improved after 1974, but 93% of the road network had already been constructed.

Water Clarity

- The water clarity of Elk River is outstanding, and is recognized as being a critical component of several river values.

Riparian Canopy Disturbance and Stream Water Temperature

- Following the 1955 storm, the loss of shade trees and channel changes probably resulted in increasing summer stream temperatures on the mainstem by several degrees. After the next major storm, in 1964, further changes were evident, but significantly fewer than occurred in 1955.
- Today, the riparian area on the south bank of the mainstem remains altered from its pre-1955 condition with a larger component of hardwoods and immature conifers and less mature conifers.
- Continued temperature monitoring on the mainstem through 1996 shows that maximum summer stream temperature is decreasing.
- The majority of the heating of the Elk River appears to be occurring in the upper reaches of the mainstem, below the confluence of the North and South Fork, and 4 to 5 miles below the Fish Hatchery.
- The 1994/1996 Clean Water Act Section 303 (d) list found the mainstem of Elk River water quality limited for summer stream temperature.
- Since 1980, as stream shade recovers from past disturbance, maximum stream temperatures in Panther Creek has decreased 4 degrees F.
- Stream temperature modeling indicates that temperature at the mouth has increased 5 F to 6 F degrees as a result of timber harvest and road construction. Maximum stream temperatures on Bald Mountain Creek has remained unchanged for two decades.
- Since 1976, as stream shade recovers from past disturbance, maximum stream temperatures in Butler Creek has decreased 4 degrees F.

Stream Flow

- Milbury Creek is the most densely roaded area in Elk River with 5.1 mile per square mile of road. High road densities in some cases can change the timing and increase peak flows.

Channel Morphology

- The number of gravel bars along the mainstem increased 77% from 1940 to 1986.
- There is increasing evidence that 1955 flood had a greater effect on channel morphology than the 1964 flood.
- The adverse effects of the 1955 flood were heightened by the construction of the main access road (#5325) on the south side of Elk River in 1954.
- Below the National Forest boundary, comparison of aerial photos of the Elk River channel from 1940-1986 show increased numbers and sizes of gravel bars, loss of riparian forest, and increased widths of active channel bars.

Fisheries

- Coho salmon populations in the Elk River are depressed over historic levels.
- With the exception of coho, other salmonid populations appear to be stable.
- The lower mainstem contains the bulk of the historic coho salmon habitat.
- The upper mainstem is an important spawning and rearing area for wild chinook salmon.
- The lower mainstem is an important winter refuge and out-migration corridor for all salmonids.
- The November 1996 flood altered aquatic habitat, noticeably decreasing pool depth.
- Restoration activities on private lands are occurring and will continue.
- Steelhead seem to be more tolerant of increased sediments, therefore, increases of sediment tend to favor steelhead production over chinook and coho salmon.
- Excessive sediment from natural and management activities have decreased pool depth.
- Reduction of pool depth decreases available habitat.
- Reduction of available habitat decreases salmonid production, especially species that overwinter in freshwater habitats.
- Reducing sediment supply to more natural levels will benefit salmonid production.

DATA GAPS

Access & Travel

- Number of miles of temporary roads built and returned to a natural state within the watershed.

Landscape Patterns

- Complete mapping of Phytophthora lateralis disease spread within the watershed.
- Life span of Phytophthora lateralis spores in soil and water.
- Acres of private timber harvest listed by location and year harvested.
- Identify landforms, cutting patterns and soil conditions that contributed to windthrow of 203 acres in the Panther Creek Subwatershed.

Wildlife

- Information on peregrine falcon presence.

- Bald eagle use along the main river.
- Current status on northern spotted owls associated with activity centers.
- Information on survival and breeding activity of juvenile northern spotted owls.
- Presence information on snowy plover from Cape Blanco to Elk River.
- Presence information on two sensitive species, Pacific western big-eared bat and white-footed vole.
- Presence information/habitat use for the five woodpeckers representing wildlife species which use cavities: pileated, hairy, downy, red-breasted sapsucker, and Northern flicker.
- Presence information on the ringtail.
- Presence information on marten and fisher.
- Historical information on goshawk presence.
- Information on wildlife tree mortality from different sources, burning, windthrow, disease.
- Status and distribution of exotic species in the watershed.
- Information on the width of protection necessary for upslope riparian corridors for songbirds, small mammals, amphibians, and reptiles.
- Road density thresholds for different wildlife species.
- Status on many survey and manage species of fungi, lichens, bryophytes, mollusks, and arthropods.
- Areas for habitat enhancement in Late-Successional Reserve.

Landslides and Surface Erosion

- Air photo inventory for 1986-1997 landslides, with field measurement of sample areas. Analysis of road and harvest contribution to long-term trend in sediment yield.
- Road inventory to identify road-stream crossings with potential for drainage diversions and where culvert capacities are inadequate.
- Landslide sediment sources on private lands within the watershed
- Landslide potential on older revegetated non-system roads, including private lands within the National Forest boundary.
- Analyze interactions of roads-timber harvest in causing larger or more frequent landslides than from roads or timber harvest alone.

Riparian Canopy Disturbance and Stream Water Temperature

- Historical and current stream temperature on private land.
- Historical aerial photographs to show changes in the riparian vegetation and stream channel below the Forest boundary.

Channel Morphology

- Stream channel condition surveys on private land.
- Historical aerial photographs to show changes in the stream channel below the Forest boundary.

November 1996 Storm

- Stream gage information on the storm flow.
- Channel condition surveys.
- Post flood aerial photograph interpretation.

Fisheries

- Chum salmon escapement.
- Chum salmon smolt out-migration.
- November 1996 flood effects upon salmonid populations.
- Searun cutthroat population trends.

MANAGEMENT RECOMMENDATIONS

- The Elk Wild and Scenic Management Plan, Elk Wild and Scenic River contains a listing of recommended projects in Chapter 5.

Scenic

- Identify opportunities to improve or restore scenic views along forest road 5325. This could include selectively clearing, thinning, pruning vegetation.

Recreation

- Upgrade Butler Bar and Sunshine Bar campgrounds to modern standards. These facilities should be accessible, provide drinking water, provide vault toilets, and be hardened campsites.
- Upgrade or maintain access points to the river along Forest Road 5325, including pullouts to view the river.
- Inventory conditions for dispersed and primitive campsites used along the Elk River. Manage these sites to provide dispersed semi-primitive experiences while protecting the Elk River's remarkable values.
- Recreation facilities should be designed to blend with the natural setting.

Vegetation

- Vegetation Management: Use silvicultural treatments (thinnings, management of competing vegetation, etc.) to enhance stands, specifically in Riparian Reserves and Late-Successional Reserves to more rapidly achieve the objectives for those particular allocations.
- Vegetation Management: Intensively manage stands within the Matrix land allocation utilizing such treatments as fertilization, pruning, thinning and release.

Wildlife

- An assessment for American peregrine falcon presence in the watershed should be completed.
- An assessment of bald eagle use along the main Elk River should be completed.
- Continue monitoring of northern spotted owls; seek funding for banding and/or telemetry of juveniles.
- Continue ongoing amphibian and reptile surveys, with specific emphasis on Del Norte salamander, red-legged frog, foothill yellow-legged frog, tailed frog, southern torrent salamander, and northwestern pond turtle.
- Survey headwater channels in project areas and, if tailed frogs or southern torrent salamanders are present, consider expanding Riparian Reserve boundaries.

- Survey for Pacific fisher and American marten with remote camera systems and track plate devices. Specifically, focus on the Blackberry Creek drainage for fisher.
- Continue ongoing goshawk surveys in the South Fork of Bald Mountain Creek and Bald Mountain Meadows.
- Research historical goshawk information for the watershed (sources: ODFW, Natural Heritage Foundation, local residents).
- Conduct surveys for Pacific western big-eared bat, white-footed vole, and red tree vole.
- Continue the ongoing Breeding Bird Survey routes and also begin a program of point count surveys across a range of habitats (e.g. early, mid, and late seral).
- Maintain riparian habitat with desirable hardwoods and deciduous brush species for neotropical bird populations.
- Consider expanding Riparian Reserves to include protection for upslope bird species and permanent living space for medium to larger-sized mammals. Further research is necessary to determine the appropriate corridor width for each species. Begin breeding bird point count surveys in riparian and upslope habitats in Blackberry, Panther, Red Cedar, and Sunshine Creeks, and the South and North Forks of Elk River.
- Strive for a maximum of one mile of road/square mile of land on National Forest lands in the watershed.
- Roads should be closed to motorized traffic, particularly those which bisect late-successional habitat or are near to sensitive wildlife sites (ponds, meadows, etc.). Additionally, restoring closed roads to natural habitat will benefit wildlife species. Subwatersheds to focus on initially for possible closures are Bald Mountain Creek, Panther Creek, Upper Mainstem, Butler Creek, and Blackberry Creek.
- Analyze interior habitat acreage and patch sizes; priority subwatersheds are Bald Mountain Creek, Panther Creek, Upper Mainstem, Butler Creek, and Blackberry Creek.
- Analyze habitat connections and corridors and determine what species' needs are presently being met.
- Continue active meadow management in Bald Mountain and McGribble Meadows.
- Identify areas within Late-Successional Reserve for possible habitat enhancement activities.
- Considerations with timber removal projects in Late-Successional Reserves:
 1. Commercial thinning to accelerate late-successional conditions is a high priority in northern spotted owl activity centers, particularly the two that have < 30% suitable habitat (see Figure 15). Thinning potential of an area will need to be evaluated in terms of stands that may not be nesting, roosting, foraging habitat currently and < 80 years, however, may also be serving as foraging habitat (eg. 40-80 year old stands).
 2. Commercial thinning to enhance snag and hardwood habitat for neotropical birds is a priority.
 3. Thinning of hardwood species should be avoided.
 4. Thinning of conifer and hardwood species should be avoided in the upper reaches of first order streams
 5. Port-Orford-cedar as a special forest product should be evaluated as an integral component of the ecosystem on a site by site basis.

- Consider "unique habitat restorations" as described on page 143 of the LSR Assessment (1995), including using prescribed fire in natural stands to maintain openings and fertilizing.
- As less forested stands are harvested, areas presently providing forage for black-tailed deer will become critical. Maintenance of these will be necessary and should include minimizing effects on older forest habitat by maintaining forage for a longer period of time in managed stands by opening up canopy gaps, using prescribed fire in natural stands to maintain quality forage and micro openings in the forest canopy, and seeding closed roads and other possible sites with high quality forage mixes (LSR Assessment 1995).

Landslides and Surface Erosion

- Use the roads and high watershed sensitivity map (Map 24) to identify high priority road segments for restoration treatments, including culvert/crossing upgrades and diversion dips, as well as hydrologic decommissioning.
- Use the watershed sensitivity map to identify areas that need field examination for slope stability prior to harvest.
- In areas of deep soils, evaluate the need for special harvest prescriptions (e.g. partial cuts, modified harvest layout) within the groundwater influence area to minimize potential adverse effects.

Fisheries

- Lower mainstem should be the focus for coho habitat restoration.
- Butler Creek should be the focus for restoration opportunities on Federal land.
- Inventory and replace road crossing culverts that are barriers to juvenile and adult salmonid migration.
- Focus on reducing and stabilizing sediment inputs into the Elk River, especially Butler and Bald Mountain Subwatersheds. Riparian planting, reconstructing stream crossings, decommissioning roads, controlling road-related runoff, pull back of unstable fills and innovative harvest techniques should be employed wherever possible.
- Silvicultural treatments within Riparian Reserves and uplands should be evaluated to accelerate growth of the residual stand.
- Collaborative opportunities for sharing resources for monitoring and restoration should be pursued.

ORIGINAL RECOMMENDATIONS AND ACCOMPLISHMENTS

These projects were taken directly from the original Elk River Watershed Analysis published in 1994. These recommendations still apply. The **BOLD** type indicates what has been accomplished since the original publication.

Figure 40: Recommended Projects to Promote Watershed Values

Site-specific areas for these activities would be identified at the project level.

VALUES	TOPICS	PROJECTS
COMMODITY		all projects could contribute
Amenity	Scenery	decommission roads restore viewpoints
Public Use	Recreation	upgrade recreation facilities
Environmental Quality and Ecology: Terrestrial	Vegetation	eradicate non-natives control spread of POC root disease
	Disturbance Frequency	vegetation management
	Patch Size	analyze patterns
	Large Wood - Terrestrial	revise Siskiyou Forest Plan Standards & Guidelines (see #7 below)
Environmental Quality and Ecology: Aquatic	Landslide and Erosion	restore roads with various treatments where sediment delivery potential is high
	Large Wood - Aquatic	plant conifers
	Stream Temperature	plant conifers
	Stream Flow	decommission roads stabilize road drainage
	Channel Morphology	plant conifers install structures
	Fish Habitat	decommission roads stabilize road drainage plant conifers install structures

Description of Recommended Projects

1. Restore Viewpoints: Cut vegetation that grows up and obscures scenic views along Forest Service Road 5325. **No viewpoints have been restored, although six areas have been identified and limited clearing will begin shortly.**
2. Upgrade Recreation Facilities: Upgrade and maintain access points to the river along Forest Service Road 5325, including pullouts, parking areas, and trailheads. Upgrade developed campgrounds to modern standards, with full accessibility. **No major upgrades to developed campsites have been done. Routine maintenance of roads, pullouts, access points, parking areas, campgrounds and trailheads is ongoing.**
3. Vegetation Management: Use fire and harvest as vegetation management activities, dispersed over a 50-year period, to bring the vegetation disturbance frequency back within the natural range within the Siskiyou NF portion of the watershed. Initially, this should be done only in one or two selected subwatersheds that have lower fish habitat and population values. **Restoration of Bald Mountain meadows has involved the use of harvest combined with prescribed fire. A total of 17 acres were treated in 1996 and an additional 10 acres are planned for 1998.**

4. Analyze Patterns: Examine historical and existing patch size distributions to determine size of future fire and timber management projects within the Siskiyou NF portion of the watershed. **This has been completed. The Southwest Oregon Late-Successional Reserve Assessment (10/95) included analysis of patch size and distributions.**
5. Eradicate Non-natives: Eradicate the undesirable non-native plant species gorse and tansy, within the Siskiyou NF portion of the watershed. **These projects are ongoing. Over \$6,000 has been spent from 1995 to 1997 to eradicate Scotch and French broom, tansy ragwort and gorse along roads and landings within the Elk River watershed.**
6. Implement Port-Orford-cedar Root Disease Action Plan. This includes road closures and seasonal driving restrictions; and roadside sanitation cutting, limited to trees less than 8" dbh and within 50' of the road edge. **These projects are ongoing. The Port-Orford-cedar root disease action plan is integrated into every Federal management action.**
7. Revise Siskiyou Forest Plan Standards and Guidelines: Inventory natural levels of large woody material in the four plant series in the watershed. Use this data to revise the Siskiyou Forest Plan Standards and Guidelines for leaving LWM following timber harvest. **This has been completed. The Siskiyou's "Working" Prescription Guidelines for Large Woody Material (LWM), Wildlife Reserve Trees/Snags (WRT), and Green Tree Retention (GTR) was finalized in November of 1996.**
8. Road Restoration Treatments such as diversion prevention, culvert capacity upgrades, other drainage treatments, fill pullback outsloping and road decommissioning. Road segments in high watershed sensitivity areas are highest priority. Priority roads are located in Panther Creek, Bald Mountain Creek, Purple Mountain Creek, upper North Fork Elk River, etc. **Since 1991, 10 miles of roads have been decommissioned on National Forest lands. Other roads are currently being evaluated for treatment. Road drainage stabilization projects are ongoing, including annual road maintenance contracts. See also Landslides and Erosion: Road Restoration Treatments.**
9. Inventory roads for diversion potential, culvert capacity. **All culverts >42" diameter have been located from road logs and are recommended for survey.**
10. Plant Conifers in priority areas:
 - Riparian areas where hardwoods have replaced conifers and are not tall enough to shade the channel; primarily Butler Creek, Bald Mountain Creek, and Elk River, both above and below the Forest boundary.
 - Along the lower Elk River below the Forest boundary, where vegetation removal has caused the stream banks to erode at an accelerated rate and depleted the supply of large woody material. Planting conifers and other species on the stream banks and in the riparian area will provide long-term channel stability, stream shading, and large wood.
 - In harvested areas of the East Fork Butler Creek subwatershed, where the supply of large wood is depleted.

Approximately 10 acres of conifers were planted on the mainstem of the Elk River on National Forest lands. Work completed below the forest boundary on private lands will be discussed below.
11. Install Structures: On the lower Elk River outside the Forest boundary, use natural material such as logs, root wads, and boulders to armor the stream bank and protect planted conifers. Placing natural

materials as resistance structures on the outside curves of the river meanders will help create deeper scour pools and narrow the river width while the vegetation is growing. Place logs and boulders in locations that will add complexity to the fish habitat and reestablish pools, without reducing sediment transport capacity.

Within the National Forest, conifers and hardwoods planted for bank stability and stream shade will also need protection. Natural materials placed on point bars and high gravel bars where work is feasible will provide interim stability. Large wood complexes placed at nick points in the channel gradient will also complement upslope restoration work.

In 1995, 10 logs were placed in Purple Mountain Creek. Subsequent monitoring indicated these structures held during the winter of 95-96, but failed during the November storm of 1996. No more instream structure work is planned for Purple Mountain Creek.

Below the Forest boundary, restoration of coho salmon habitat is the highest priority. This will require a cooperative effort between several Federal and state agencies and private landowners. The work will be designed for long-term restoration of the processes that create and maintain habitat, and will complement the upstream restoration on public lands.

Restoration Accomplishments on Private Lands

- Approximately 5,000 conifers (spruce, Douglas-fir and alder) planted along the mainstem and tributaries.
- Approximately 5,000 willows planted along the mainstem and tributaries.
- Approximately 15 miles of riparian fencing built along the mainstem and tributaries.
- Addition of log weirs into Anvil Creek.
- Placed LWM structures near the estuary below the 101 bridge.
- Construction of rock and log barbs to prevent bank erosion along the mainstem.
- Fish barrier removal on Bagley Creek.
- Two culverts were replaced on Bagley Creek to aid in juvenile and adult passage.
- Two jump pools were constructed to aid passage on Bagley Creek.
- The South Coast Watershed Association is cooperating with local landowners to facilitate these projects.
- Moore Mill timber company has been donating trees for these projects.

The main priority for the next few years will be the continual restoration of Bagley and Indian Creeks.

RIPARIAN RESERVE WIDTHS

Watershed analysis provides the basis for considering modification of the riparian width specified in the 1994 Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents (ROD), Appendix, B-13. The following discussion considers the option to modify Riparian Reserve widths in a small area of Matrix lands in the watershed. These Matrix lands comprise 7% of the total watershed within the Forest boundary, and are located in parts of Panther Creek, Blackberry Creek, and very small areas in the South Fork Elk and Upper mainstem.

Riparian Reserve widths on perennial streams must approximate those specified in the ROD, Appendix, C-30. This discussion focuses on intermittent streams, which comprise an estimated 50% of the channel network. Criteria for considering modification of widths in each subwatershed are: hillslope, riparian, and channel processes, and the subwatershed's function in the total watershed.

Figure 41: Results of Watershed Analysis for Subwatersheds in Matrix.

	Panther	Blackberry	South Fork	Upper Area
Past Channel effects from sediment	Mod	Low	Mod	Mod
Loss of large wood	31%	20%	20%	19%
Fish habitat value	High	Mod	Mod	Low

Panther Creek: Has high fish habitat values and is one of the most productive subwatersheds. The east and middle fork tributaries are the only areas in Matrix lands. Both tributary channels have been affected--the middle fork by past management activities, the east fork by a large natural landslide--and are in a state of recovery. The potential large wood supply has also been reduced (pp. 40-42). **It is recommended that interim reserve widths be maintained. For thinning to acquire desired vegetation characteristics, appropriate riparian buffer widths should be determined through site specific evaluation by an interdisciplinary project team.**

Blackberry Creek: Has only moderate fish habitat value, with a moderate steelhead population. There is no evidence that the channel has been affected by excessive sediment from any source. The moderate fish habitat value is attributed to the limited area of stream accessible to anadromous fish. Blackberry Creek does contribute cool stream temperature and large wood to Elk River, and these should be maintained (p. 45). **It is recommended that this subwatershed be considered for modification of interim reserve widths on intermittent streams. Interdisciplinary project teams should consider appropriate buffer widths based on site specific information and type of proposed activity.**

South Fork Elk and Upper Mainstem: Both areas have low fish habitat values because of the limited habitat available to anadromous fish. There is no evidence that sediment from any source has adversely affected fish habitat and there is only a small amount of Matrix land in both these areas. A portion of the groundwater influence area for the Laird Lake earthflow is included in Matrix land. **Project teams could consider appropriate buffer widths on intermittent streams based on site specific information and type of proposed activity.**

Any modification to reduce or increase buffer widths should be done at the project level by an interdisciplinary team and be based on site specific information. Support for these buffer modifications will come from the analysis utilizing the supplement to Section II of Ecosystem Analysis at the watershed scale titled "Riparian Reserve Evaluation Techniques and Synthesis." Specific information would include potentially unstable areas, nutrient cycling, habitat for riparian dependent species, and corridors for terrestrial species. This information should be transferred to a GIS database to aid future management activities. Accurate identification of channel heads will be critical in the lower basin of Blackberry Creek and upper middle Fork of Panther Creek, where steep debris avalanche or ravel-prone slopes are present. All riparian buffers should meet Aquatic Conservation Strategy Objectives, ROD, Appendices B and C.

MONITORING PLAN

Monitoring is an essential component of any management action and should be guided by the results of the watershed analysis. The 1994 Record of Decision for Amendments to the Forest Service and Bureau of Land Management Planning Document (ROD), Appendix B-32; and Siskiyou National Forest Land and Resource Management Plan (pages V-9 thru V-14) provide guidance for project monitoring.

Monitoring allows us to make decisions based on site specific information. Monitoring results will provide information for updates and revisions to both watershed analysis, and project planning and design. With a smaller federal work force, successful monitoring will depend on a cooperative effort by research stations, universities, other agencies, community groups and volunteers.

The Forest Service has been monitoring in the Elk River watershed for several years. Projects include stream temperature, measured with recording thermographs at several locations, macroinvertebrate sampling, and fish habitat surveys modeled on Hankin and Reeves. The USGS has been collecting streamflow data with its gage at the fish hatchery. In addition to on-going monitoring, several studies have been conducted by research stations and universities. Studies included landslides, erosion, channel morphology, fish populations and habitat, and provide base information for future monitoring. Most monitoring and studies have been conducted within the Forest boundary.

The Elk River Watershed Analysis team and Project Restoration Teams share the responsibility to assure that needed monitoring is accomplished. It is vital that these teams work with other agencies, the residents of Elk River and concerned citizens in neighboring communities to accomplish monitoring on the lower river. All monitoring projects should: (1) have a written plan, (2) state specific objectives, (3) be tied to the ROD, the Siskiyou Forest Plan, and the Elk River Watershed Analysis, (4) define how the data are to be collected and stored, (5) assign responsibility, (6) follow a timeline.

The following figure identifies monitoring that would provide information on the condition, maintenance, or recovery of values associated with Elk River.

Figure 42: Recommended Monitoring Projects

VALUE	TOPICS	MONITORING PROJECTS
Commodity		
Amenity	Scenery	Photo points of visual quality from viewpoints on main road
Public Use	Recreation	Number of visitors using recreation facilities
Environmental Quality and Ecology: Terrestrial	Vegetation	Location and number of non-native plants eradicated: trends/location Presence of <u>Phytophthora lateralis</u> , especially within the North and South Elk River. Effectiveness over time of riparian planting and manual release within the Riparian Reserves.
Environmental Quality and Ecology: Aquatic	Landslides and Surface Erosion	Photo Inventory followed by field sampling.
	Large Wood - Aquatic	Riparian stocking surveys Large Wood in channel
	Stream Temperature	Stream Shade - Solar Pathfinder thermographs
	Channel Morphology	Photo points Channel cross sections
	Fish Habitat	Hankin and Reeves type survey Macroinvertebrate sampling Photographic inventory of aquatic and riparian restoration projects

High Priority Locations and Types of Monitoring

1. Continue monitoring that is presently occurring in the watershed.
2. Lower Elk River:
 - Stream Temperature monitoring.
 - Channel Morphology - photo points and/or channel cross sections
 - Fish Habitat - Photo inventory of aquatic and riparian restoration projects.

3. Elk River productive flat above the Forest Boundary
Photo points and/or channel cross sections
4. Bald Mountain Creek:
Landslides photo inventory
Channel Morphology - photo points and/or channel cross sections on low-gradient reaches of the mainstem
5. East fork of Butler Creek:
Landslides photo inventory
Channel Morphology - photo points and/or channel cross sections
6. Blackberry Creek
Spawning surveys and juvenile counts to see if contract work constructing rock weirs were successful in meeting project objectives.

Wildlife Monitoring

1. Number and distribution of green trees left in harvested areas.
Photo points
Classify remaining wildlife trees (I, II, III, etc.)
2. Snags and coarse woody debris.
Plot data collected in forested stands of different ages.
3. Size, location, spatial distribution, species composition, and development of late-successional and old-growth forests.
GIS mapping and analysis of patch sizes, connections, and corridors.
4. Abundance and diversity of species associated with late-successional forest communities.
This will be done through continued presence/probable absence surveys.
Continue northern spotted owl activity center monitoring.
5. Percent of land area affected by exotic species.
Continue documentation of sightings, including photographs, if possible.
6. Commercial thinning in Late-Successional Reserves.
Point count surveys before and after.