

CHAPTER 4 CONDITION TRENDS

COMMODITY VALUES

Timber

It is expected that the current trend is likely to continue, whereas timber harvest, in the Federal portion of the watershed, will provide a very small amount of direct economic contribution to the local economy. Timber harvest from Federal lands in the watershed have decreased over the last two decades. The current Management Plan (NFP) covering the Elk River Watershed will allow programmed timber harvest across approximately 3,300 acres.

Mining

It is expected that the current trend will continue and mining will not make any significant contribution to employment in the local area.

There will continue to be conflicts between suction dredging interests and resource protection, related to increased turbidity and the resorting of gravels that can affect the reproduction and development of salmonids.

Special Forest Products

Demand for firewood will remain constant for the next few years, but will probably decline in the long term, because of availability or increased cost. The supply of firewood from National Forest lands and commercial timber lands in the Elk River drainage will be quite low.

Potential conflicts exist over the availability of firewood. Some users expect plentiful, easy to get firewood and view the restrictive policies used to protect LSR values and wildlife habitat (snags and down logs) as unjustified.

There is a great deal of market variability for special forest products (beargrass, boughs, mushrooms, etc.) As a whole class of products the outlook is good; demand is far less than supply. Availability of permits should be good with the exception of Port-Orford-cedar boughs, which are not currently being sold because of past damage and the threat of spreading root rot disease. Conflicts include; collecting products during the wet season and trying to limit use of the roads to reduce the spread of POC root disease, competition between different forest product collectors, and over collection of products before proper administrative rules can be implemented and enforced.

The economic contribution of special forest products will be low.

Agriculture

The Curry County trend for agriculture is good, and the same favorable trend is predicted for the agricultural lands of the lower Elk River. Specialty products (timber from private woodlands) have shown a dramatic increase since 1984. Likewise berry production, primarily cranberries, has doubled in ten years. Livestock and associated products have remained steady through the last decade. Gross farm sales in Curry County have improved from approximately \$30,000,000 in 1984 to \$90,000,000 in 1994 (Anderson 1995).

Fishing

The commercial and sport fisheries industry is probably the second place contributor to the local economy. Salmon was a major share of the total fish catch until recently. The Elk River makes a significant contribution in salmonid fish production. Commercial and sport salmon fishing has been severely restricted during the last three years in an attempt to increase the number of salmon returning to the area's rivers and streams to spawn.

Bottom fish (also called "ground fish") will continue to make up the major share of the commercial catch. The recent trend for commercial fishing has been downward, and the commercial industry will likely continue a downward trend. There has been strong interest in the sport fishery, and this interest will continue and support the recreation segment of the economy.

Potential conflicts exist between commercial and sport fisherman; each wants more fish from what some believe is a declining resource. A second issue is the effects timber harvest and road construction have had on anadromous fish habitat and, ultimately, fish populations.

AMENITY VALUES: Scenery

In the lower portion of the Elk River, road and building construction will continue to increase as the area continues to grow in popularity. Service-oriented small businesses may proliferate in response to the needs and expectations of visitors.

The NFP will result in a decline in opportunities for timber harvest in the upper portion of the Elk River. This will result in the maintenance of a Natural to Near Natural Scenic condition. Views to the river from the Elk River road will become more limited as vegetation continues to grow in the foreground. Increased recreational use and development may be more evident along the Elk River road.

In the North Fork, South Fork, and the tributaries, previously harvested units will become less evident as vegetation continues to grow.

The scenic quality of the Grassy Knob Wilderness area will remain the same.

PUBLIC USE VALUES: Recreation and Access

Most of the current recreation use in the Elk River watershed takes place within the river corridor. This pattern is likely to continue into the future. The Elk River is easily accessible from the parallel road on the south bank, and the most desirable sites for dispersed or developed campgrounds are found close to the river. The high quality of the recreational experience will continue to attract a growing number of users. The majority of the current use is by local residents, but there is certainly some potential to attract visitors to the unique features of the Elk River. In order to accommodate current and anticipated use some recreation facilities will need to be improved to provide better sanitation and access to the river. All improvements should be designed to blend with the natural setting. Improvements should include barrier free access to selected sites along the river. Improved rest room facilities should be provided at higher use sites so proper sanitation is maintained. Site hardening could include designating travelways, controlling drainage, and delineating camping sites to better protect the natural character.

ENVIRONMENTAL QUALITY AND ECOLOGY: Terrestrial Ecosystem

Landscape Patterns: Disturbance Frequency and Patch Size
Large Woody Material

Landscape Patterns: Disturbance Frequency

Decreased fire frequency can result in a variety of associated changes to stand structure, fire intensity, patch sizes, and the amount of large woody material found on site. Stand structure changes to a more dense understory with a higher percentage of shade tolerant trees, such as western hemlock, in the overstory. The increased fuel loading from fire suppression activities generally results in more high-intensity, stand replacing fires and a net reduction in large woody material. Existing plantations are characterized by "flashy fuels" and will host high intensity fires, which in turn, further reduce large woody material levels.

Increased fuel loading of understory and overstory vegetation alters fire behavior. If the infrequent disturbance patterns of approximately 500 to 800 years continue, then fires will be less frequent than historical patterns, but larger, and more intense.

Weather conditions and vegetation patterns determine the amount of windthrow (Spies and Franklin 1989). The likelihood of windthrow is greatest during the winter months, where soil moisture is at the highest. This characteristic combined with typical northwesterly wind patterns tend to facilitate conditions for windthrow, in combination with timber edge effects. As the patch size increases, the edge effect decreases. Consequently, as patch sizes increase with the changing disturbance pattern, less windthrow is expected to occur. The reduced edge effect and windthrow may be somewhat counter-balanced by the increased western hemlock stand component. Western hemlock is less wind-firm than Douglas-fir; as it becomes a larger component of the overstory, more windthrow can be expected.

Future disturbance trends will vary with the amount and type of disturbance events and management activities. If suppression activities are successful and no harvest occurs, the projected disturbance interval would be 500-800 years.

Future management may begin to introduce fire back into these ecosystems to reduce fuel accumulations where fires were a natural component of the plant community.

Landscape Patterns: Patch Size

Currently the patch sizes in both the Hemlock and Tanoak plant series in the North Coast LSR are smaller than other LSRs analyzed in the Southwest Oregon Late-Successional Reserve Assessment. The patch size in the LSR will become larger with the combined effect of curtailed timber harvest and continued fire suppression. Larger patches will reduce the amount of edge habitat while the amount of interior old growth habitat will increase.

Large Woody Material in the Terrestrial Ecosystem

The amount of large woody material in the watershed is projected to increase due to growth and development of structure associated with older forests, even with the more intense, less frequent, stand replacement fires that tend to consume more large wood.

ENVIRONMENTAL QUALITY AND ECOLOGY - Wildlife

- Late/Early successional Species
- Exotic Species
- Neotropical Migrant Bird Species (NTMB)
- Natural Disturbance
- Wildlife Habitats

Late/Early Successional Species

As the focus of land management changes, so, too, does future impacts on wildlife. With 69% of the watershed devoted primarily to the maintenance of late-successional forest, one would expect to see a

stabilization, or possibly an increase, in those species associated with that habitat type. There exists a concern in predicting an increase in late-successional species simply because habitat removal has been slowed. Observing northern spotted owls with juveniles for the past 2 decades that surveys have been done in Elk River does not necessarily indicate that the population is healthy. (In fact, only one pair with young has been observed for the activity centers in the watershed, see Figure 14). It is also critical to know if the young are surviving and reproducing themselves; we don't have that information for the District. If the young are not finding suitable habitat for territories and are not breeding, then an abrupt crash in population could occur as established breeding pairs die off. Monitoring the activity centers in Elk River will be crucial to determine at least breeding success. To know survival and establishment of young will require a banding or radio telemetry project.

Considerably less area is currently allocated to timber management activities and it is possible that those species dependent on openings and early seral habitat could decline in parts of the watershed (natural disturbances will continue to create openings). Estimated acres of early seral in 1890 are 31.8% of National Forest lands; projected acres for 2040 are 23.8% (see Map 10 and 29; and Appendix B for definitions of seral stages). However, some early successional species are more adaptable and will survive as timber harvesting on a large scale declines.

There is documentation that the northern spotted owl continues to decline across its entire range at a rate exceeding 4% per year, with a 1% annual acceleration (Burnham et al. 1994). Given the recent declines in habitat removal, a possible factor continuing to impede the owl's recovery is disturbance (Hanson et al. 1993). We have not been collecting long-term trend data on northern spotted owls in the Elk River watershed, only presence/probable absence information, and that only in proposed project areas rather than in all suitable habitat. Again, monitoring of activity centers and juvenile dispersal success would give us an idea of population trends for the watershed.

Exotic Species

It is difficult to predict future trends for exotic species since so little is known about their distribution and rate of spread in Oregon. It would appear that on National Forest land in the watershed there has not been an explosion of non-native species, however, studies addressing specifically these questions have not been done.

Neotropical Migrant Bird Species (NTMB)

Approximately 70 species of neotropical migrant bird species are present, or potentially present, on the Siskiyou National Forest during the breeding season (Vroman 1994). A study commissioned in the last three years by the Region 6 NTMB steering committee, using U.S. Fish & Wildlife Service Breeding Bird Survey data, determined that 23 species show significant declines in Oregon and Washington. Sixteen of these species are associated with riparian areas. Due to migrants wintering in neotropical areas, it is not certain if the problem of decline is at the breeding or wintering locations, or both. Specific examples include declines in Hammond's flycatchers and western tanagers (*Piranga ludoviciana*) of averages of 19.5%/year and 3.8%/year, respectively, from 1982 to 1991 in Oregon (Hagar 1996). In the Elk River watershed, breeding numbers for Hammond's flycatcher are very low and one tanager was heard in 1993 and 1994 (see Figure 16).

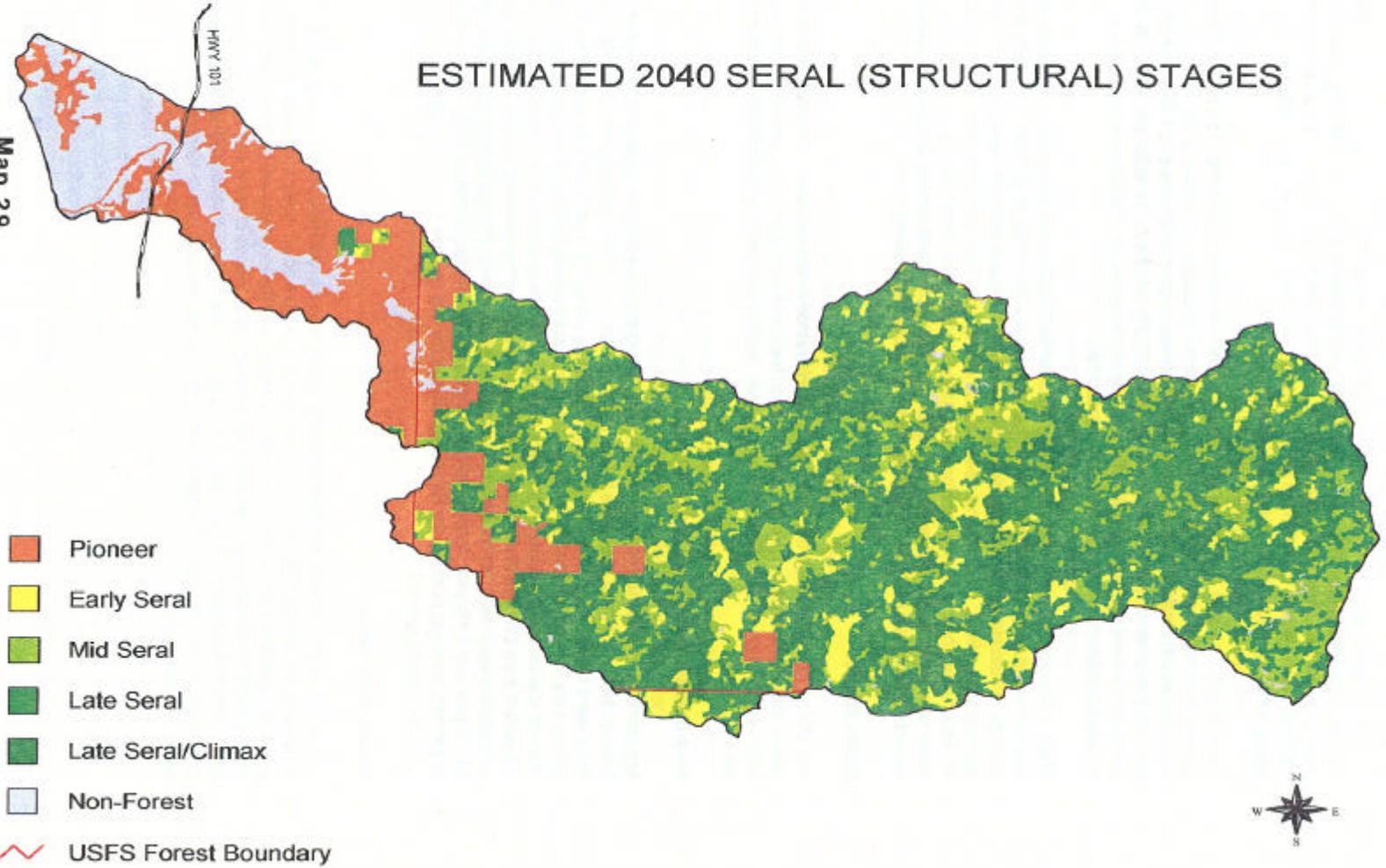
Natural Disturbance

Future natural phenomena will affect wildlife populations in the watershed such as fires, floods, landslides, and windstorms. Fires of a stand replacing nature occur rarely in the watershed and could potentially displace some wildlife, however the impact over the long term will be beneficial providing that refugia exists for displaced animals while an area recovers. Floods of great size also occur rarely and displacement is possible. For example, a study being done on foothill yellow-legged frogs shows early indications of low

presence in the major rivers after the November floods of 1996 (Boreschenko 1997, personal communication).

Map 29

ESTIMATED 2040 SERAL (STRUCTURAL) STAGES



Wildlife Habitats

Presently, the predominant habitat type is temperate, coniferous forest with a very small percentage of the watershed being unique and special habitats such as lakes and ponds, talus sites, meadows, hardwood stands. These latter areas are protected and will continue to be managed as special wildlife areas.

ENVIRONMENTAL QUALITY AND ECOLOGY: Aquatic Ecosystem

Landslides and Surface Erosion
Water Clarity
Large Wood Supply Affecting the Aquatic Ecosystem
Riparian Canopy Disturbance and Stream Water Temperature
Stream Flow
Channel Morphology
Fish Habitat, Distribution, and Populations

Landslides and Surface Erosion

Sediment delivery is expected to continue from three sources:

- the continued effects of past activities on both Federal and non-Federal lands,
- new management-related disturbances on both Federal and non-Federal lands,
- natural disturbances.

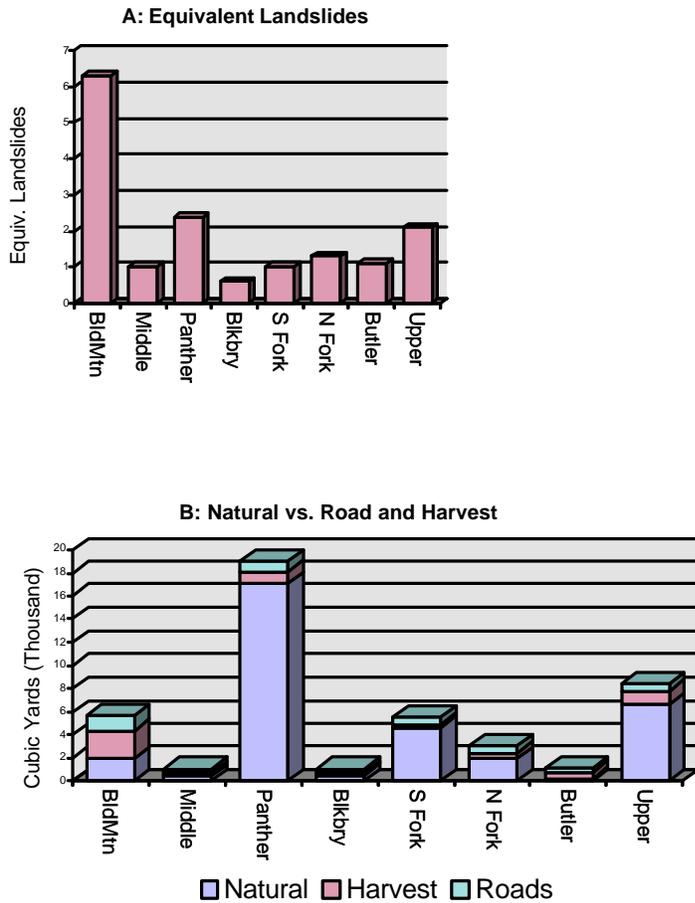
Sediment delivery and surface erosion are expected to be reduced from levels observed from 1960 to the late 1980's. This anticipated change is a result of reduced timber harvest and road construction activities as well as improved land management practices. Because timber harvest has traditionally generated road maintenance funding, the designation of Late-Successional Reserves will reduce funds available for road maintenance. Older roads will continue to fail and erode in some areas.

In 1992, an average volume of road and harvest-related sediment delivery was estimated for each subwatershed (except Lower Elk - no data available) for the next decade. This volume is displayed in terms of numbers of landslides of average size (Figure 35 A). The method used to calculate this volume is discussed in Appendix J. These values include the location and timing of past activities and anticipated future activities for non-Federal lands. To provide a context, road and harvest-related landslide sediment is compared with similar estimates for natural landslides (Figure 35 B). The frequency of large natural slides such as the one that dominates the East Fork Panther Creek, is not easily predicted. Therefore, natural slide volumes are expected to vary considerably from these values. In order to compare the landslide sediment yield from the November 1996 storm with the projected trends, an air photo inventory of landslides is needed.

Landslide sediment delivery could be reduced if a comprehensive restoration program is implemented as detailed in Chapter 5.

Figure 35: Estimated Future Sediment

Natural volumes are based on past landslides. Future volumes are uncertain.



Water Clarity

On Federal lands, the NFP of 1994 allocated most of the watershed to Late-Successional Reserves. With the reduction of timber harvest and road building from previous decades and continued restoration efforts on private lands in the lower part of the watershed, water quality is expected to remain excellent in future decades.

Large Wood Supply Affecting the Aquatic Ecosystem

Large wood already in the channel will continue to move downstream. Previously harvested areas with potential to deliver additional large wood will be in a state of recovery for the next 100 years as immature conifers grow. This includes approximately 27 percent of the watershed area that lies outside of the wilderness.

For most areas, sufficient large wood remains to meet future needs (see Current Conditions). However, two subwatersheds may have long-term effects from loss of large wood supply. Reaches of Butler Creek outside of the wilderness may be seriously depleted from harvest of some of the area potentially supplying large wood. Future recovery may be delayed because surface ravel and shallow failures slow establishment of new conifers. Approximately 33 percent of the potential large wood supply has been lost

on Bald Mountain Creek. Here, there may be minimal recovery in harvested riparian areas as hardwoods dominate these once conifer-rich areas.

In general, the supply of large wood to off-Forest reaches will continue to be limited by agricultural practices and development.

Riparian Canopy Disturbance and Stream Water Temperature

McSwain (1988) compiled existing data to evaluate summer stream temperature trends in Elk River. The study concluded that overall, maximum stream temperatures in the mainstem Elk River have been declining since 1964. The three subwatersheds with elevated stream temperatures, Bald Mountain, Panther, and Butler, are expected to show a decline in summer stream temperatures as shade trees grow in harvested riparian areas. Estimated recovery rates range from a low of 0.5°F/decade in Bald Mountain to a high of 1.6°F/decade in Panther Creek.

Below the Forest boundary, stream temperatures are expected to remain critical. Cooling trends within the forest boundary will not be sufficient to offset stream heating below the boundary resulting from the loss of riparian vegetation.

Stream Flow

As vegetation grows in previously harvested units and roads are decommissioned, any effects these activities may have had on streamflow will gradually decrease.

Channel Morphology

The ratio of sediment delivery to stream transport capacity was shown in Chapter 3 for the three subwatersheds analyzed in detail. The historical condition may be compared with the projected future condition for both natural and road/harvest sources.

Two subwatersheds which remain most affected by excessive sediment loading are Butler and Bald Mountain. Future recovery trends will remain poor despite a decrease in sediment production, because of depleted large wood supply and continued timber harvest on private lands in Bald Mountain Creek. Tributaries to the mainstem of Panther Creek are expected to continue to recover, incising and creating deeper pools over the next two decades.

Channel conditions are expected to improve overall. However, if road maintenance continues to decline without decommissioning unmaintained roads, channel conditions could again decline.

Below the Forest boundary, loss of vegetation from private development will continue to affect stream bank stability, producing sediment from bank erosion. This, combined with the continuing absence of large wood, will slow recovery in the lower reaches. The Elk River Watershed Council and private land owners together are implementing riparian and bank restoration projects. This effort will aid in the long term recovery of the lower Elk River.

Fish Habitat, Distribution and Populations

Fish habitat is in degraded condition in the east fork of Butler Creek, the lower mainstem of Bald Mountain Creek, and the mainstem of Elk River below the Forest boundary.

The temperature in the east fork of Butler Creek will gradually decline as the aggraded stream channel continues to incise and riparian vegetation matures. However, it will be several decades before the stream temperature is reduced enough to improve summer rearing conditions.

In Bald Mountain Creek, continual sediment delivery from timber harvest and roads on private land will delay coho salmon habitat recovery. The reduction of potential large wood supply, another key element for coho habitat, may also slow the recovery rate.

Below the Forest boundary, habitat conditions are expected to remain in critical condition for salmonid rearing potential due to excessive summer temperatures. Despite predicted cooling upstream, the historic loss of riparian vegetation from development will slow recovery efforts. Watershed councils and landowners are working together to address these problems. Numerous conifers and native plants have been planted, but will take years to have beneficial effects.

Juvenile coho salmon require complex habitat for over-wintering before migrating to the ocean. Reduced sediment delivery will help the re-formation of pools, but it is uncertain how much habitat recovery is possible. Restoration practices on private and public lands are starting to initiate recovery processes. Since the lower mainstem contains the bulk of the historic coho habitat, it is critical that riparian management practices be modified to ensure the lower river channel includes functional riparian zones, large wood complexes and other instream features for optimum salmonid rearing habitat.