Section III

Developing the Conservation Strategy

Introduction

This habitat conservation plan presents a conservation strategy for the northern spotted owl and marbled murrelet on the Elliott State Forest. The conservation strategy's objective is to reconcile long-term timber management with protection of the northern spotted owl and marbled murrelet. To meet this goal, the following objectives were addressed during development of the conservation strategy.

- The plan will cover the entire forest.
- The plan will be goal-driven.
- The plan will address northern spotted owl and marbled murrelet conservation within a regional context.
- The plan will represent a long-term strategy.
- The plan will include currently available information on northern spotted owl and marbled murrelet population and habitat for the Elliott State Forest.
- The plan will address limitations and opportunities resulting from current forest habitat conditions.
- A range of alternatives will be evaluated.

This section describes the elements considered in planning this conservation strategy. These elements are listed below, and then discussed in detail in the following pages.

1. Identification of goals for fish, wildlife, timber, and other resources.
2. Identification of other species of concern.
3. Description of current forest conditions.
4. Consideration of alternative approaches and conservation strategies.

Goals for Fish, Wildlife, and Timber

The goals for fish, wildlife, and timber are identified in the Elliott State Forest Management Plan. The forest plan also has goals for a wide range of other resources on the Elliott.

Goals for Fish and Wildlife

1. The Elliott will contribute to maintaining fish and wildlife populations in a regional context. This goal recognizes that for some species (e.g., salmon, spotted owls), self-sustaining populations require connection to adjacent or off-forest lands and waters.
2. Manage fish and wildlife populations using a forest ecosystem approach, using strategies that are compatible with the primary use of the land. Management of special status species (e.g., threatened and endangered) may require specific habitat considerations, but will be linked to multiple species conservation.
3. Maintain healthy fish and wildlife populations to allow recreational and commercial opportunities, including fishing, hunting and wildlife viewing.
4. Meet long-term fish and wildlife habitat needs as much as possible without reserves. Short-term reserves will be considered. When possible, lands classified as Conservancy or other withdrawn lands will be used to meet fish and wildlife goals.
5. Threatened and endangered species
   - State-listed — Meet objectives and goals of the state ESA within the constraints of the Constitutional mandate for Common School Forest Lands.
   - Federally listed — For spotted owls and murrelets, manage using a Habitat Conservation Plan. For other species, manage the Forest to avoid "take" under the Federal Endangered Species Act. Meet objectives and goals of federal recovery plan.
   - Federal candidate category 2 species — prevent declines in population numbers on the forest.

Goals for Timber

1. Grow and harvest timber on all lands suitable for such activities, with the following exceptions:
   - Lands designated in the forest inventory and approved by the State Land Board (Common School Land) and the Deputy State Forester (Board of Forestry Land) as having a land use that precludes the harvest of timber.
   - Lands that will produce another commodity with a higher contribution than timber to the long-term production of revenue. If production of the other commodity is compatible with timber production, both will occur.

- Lands where harvest of timber would conflict with legal requirements for the protection of non-timber resources.
- Lands that are temporarily withdrawn from the production land base in order to preserve future management options or to help prevent future listings of species as threatened or endangered.

2. Produce a sustained yield of timber from the Elliott State Forest. This does not imply a non-declining even flow of timber volume. Harvest volume levels may fluctuate from decade to decade to achieve other goals such as meeting legal requirements for maintenance of habitat for threatened and endangered species, or increasing revenue by managing harvest for optimal market conditions.
3. Promote the growth of forest trees and stands through the use of appropriate silvicultural techniques.
4. Maintain commercial tree species in a healthy condition, with insect populations and disease infestations at or near endemic levels. Protect the forest from wildfire.

Identification of Other Species of Concern

The "Background Information" box on page II-2 defines the various classifications of wildlife species that are made under the federal and state Endangered Species Acts.

All threatened, endangered, or candidate species that are found or are likely to be found on the Elliott are listed in the table below. Three threatened species are known to occur on the Elliott: bald eagle, northern spotted owl, and marbled murrelet. The peregrine falcon, an endangered species, has not been documented on the Elliott. The North and South Umpqua River sea-run cutthroat trout is proposed to be listed as endangered by the National Marine Fisheries Service. It is not known what the status is on the Elliott of the federal Category 2 candidate species.

The status of the spotted owl and marbled murrelet on the Elliott has been discussed in detail in Section II. The status of bald eagles, peregrine falcons, and North and South Umpqua River sea-run cutthroat trout on the Elliott is discussed on the following pages.

No rare, threatened, or endangered plants are known to be on the Elliott. Some state sensitive plant species may occur on the Elliott. Appendix D has a complete list of rare, threatened, or endangered plants that could potentially occur on the Elliott.

Table III-1. Other Species of Concern on the Elliott State Forest [1]

Federal endangered species	Peregrine falcon
Federal threatened species	Bald eagle, marbled murrelet, northern spotted owl
Proposed for listing as a federal endangered species	North and South Umpqua River sea-run cutthroat trout
Federal candidate species, Category 2	White-footed vole, harlequin duck, mountain quail, red-legged frog, western pond turtle
State endangered species	Peregrine falcon
State threatened species	Bald eagle, marbled murrelet, northern spotted owl

1. Not all species in the table have been documented on the Elliott.

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) was listed as endangered in 1978 (USDI Fish and Wildlife Service 1986). Its status in Oregon and many other states was changed to threatened on July 12, 1994 (USDI Fish and Wildlife Service 1994a). The bald eagle is also listed as threatened under the Oregon Endangered Species Act. No critical habitat has been designated.

Approximately 40% of the bald eagle nest sites in Oregon are on national forest lands; another 29% are on private land. The Oregon Department of Forestry has 9 nest sites, or about 3%, on all state forest lands. The recovery goal for the Oregon Coast, one of 10 recovery zones in Oregon, is 45 nesting pairs. In 1993, there were 39 occupied territories in this recovery zone (Isaacs and Anthony 1993).

Bald eagles are considered year-round residents of the Elliott and vicinity. One active bald eagle nest has been located on the Elliott, in the Big Creek drainage. Nesting was first confirmed in 1985. Young eagles have been produced in 4 of the past 8 years. The nest was active in 1993. Eight additional bald eagle nesting territories are located within 5 miles of the Elliott, 5 of which were active in 1992, with 3 producing young.

Eagles have a diverse diet, depending on prey availability. Near the coast, they forage year-round on waterfowl and several species of fish. Bald eagles are highly territorial. They usually nest in the same territory and often use the same nest year after year (Anthony and Isaacs 1989, Garrett et al. 1993).

Nest trees are usually located in uneven-aged, multi-storied stands with some old growth components, within one mile of permanent water. They typically provide an unobstructed view of a river, lake, or ocean (Anthony and Isaacs 1989). The trees are usually live, and have stout upper branches to support the large nests and the eagles. Along the Oregon coast, commonly used species include Douglas-fir, Sitka spruce, and western hemlock. Eagles also need tall, open trees nearby for perching and fledging, and a forested buffer around the nest tree (Smith 1991). Eagles are easily disturbed by human activities, and do not readily habituate to repeated intrusions (Watson and Anthony 1986). The availability of nesting habitat is most critical for recovery and maintenance of bald eagle populations.

Replacement nest trees are also important. Bald eagles are very strongly attached to their mates and territories, and when a nest tree is lost, they may remain in the same territory even if the lack of replacement nest platforms makes it impossible to nest. Eagle pairs frequently construct more than one nest in a territory, and alternate their use from year to year (Garrett et al. 1993, USDI Fish and Wildlife Service 1986).

The state will protect the active bald eagle nest on the Elliott, and any new eagle nests, with a site-specific management plan. The critical components for a nesting site, as described above, will be protected from damage, including wind damage. The conservation strategy does not propose any incidental take of bald eagles. Through reserves and long rotations, it will provide potential nesting habitat for bald eagles. Wildlife biologists from the Oregon Department of Fish and Wildlife have recommended the development of bald eagle nest trees along the Umpqua River, and this area is designated as a conservancy area under the Elliott State Forest Plan.

Peregrine Falcon

The American peregrine falcon (*Falco peregrinus anatum*) is an endangered species under both state and federal Endangered Species Acts. It has never been a common breeding species in Oregon (Puchy and Marshall 1993). No peregrine falcon nests have been documented on the Elliott. The forest does have some habitat suitable for the falcons. The peregrine falcon prefers to nest on tall cliffs with ledges, potholes, or small caves where it can build nest scrapes. It likes areas near water, where it can find its prey of shorebirds, waterfowl, and pigeons (Craig 1986).

After World War II, peregrine falcon populations declined precipitously worldwide, due to interference with breeding caused by DDT and other organochlorine pesticides (USDI Fish and Wildlife Service 1982). By 1964, the peregrine falcon was considered extirpated in Oregon, and throughout most of the United States. Since the 1972 ban on DDT, populations have begun to recover.

In 1985, a pair of peregrine falcons was observed at a nest in Crater Lake National Park. Additional nesting pairs have since been documented throughout the state, or have been established artificially by the Oregon Department of Fish and Wildlife (Puchy and Marshall 1993). In 1992 there were 26 occupied sites in Oregon, of which 15 fledged young. The sites were mostly on the coast, Siskiyou Mountains, Cascades, and Columbia Gorge. Artificially-reared falcons were established at four additional sites. Migrant peregrines have also been observed statewide. The minimum Recovery Plan objective for Oregon is 30 wild nesting pairs (USDI Fish and Wildlife Service 1982).

A habitat assessment will be done on the Elliott by 1995 to determine if there are any peregrine falcon eyries on the forest. If any are found, a site management plan will be developed to provide protection to the eyrie. The conservation strategy does not propose any incidental take of peregrine falcons.

North and South Umpqua River Sea-Run Cutthroat Trout

Sea-run cutthroat trout (*Oncorhynchus clarki clarki*, anadromous form) in the North and South Umpqua Rivers are currently proposed to be listed as endangered (U.S. Department of Commerce 1994a). Final rules, including a rule proposing critical habitat for the population, are expected to be published by April 1995.

Like other salmonids, cutthroat trout spawn in freshwater streams. They spend one or more years in freshwater after emergence, before entering the ocean where they mature. Adults return to streams to spawn, after several months at sea. Unlike the salmon species, cutthroat often survive after spawning, to spawn again (Pearcy 1992).

The number of adult cutthroat returning to the Umpqua dropped to ten fish in 1991 and none in 1992. The official count of cutthroat in 1993 was 29 (Johnson et al. 1994). Factors affecting survival of anadromous fish such as the cutthroat are not well known. Historically, numbers of returning adults vary greatly from year to year (Johnson et al. 1994). Ocean conditions, especially strength of upwelling related to El Ninos, have been hypothesized to account for much of this variation (Botkin et al. 1994, Pearcy 1992). Excessive harvest from recreational fishing and changes in stream habitat have also been cited.

Stream habitat decline in the North and South Umpqua Rivers has resulted from a number of factors. These include increased sedimentation from roads and clearcuts, and increased peak flows during storm events, due to clearcuts, narrow stream buffers, and loss of large woody debris in the streams. Large debris torrents have resulted in loss of pools and spawning gravels, simplified stream channels, wider streams, and decreased invertebrate populations.

The Lower Umpqua River flows along the north and east edges of the Elliott State Forest. Streams draining into the Lower Umpqua are short and have steep gradients. The forest bordering the river has a primary land use classification of protective conservancy. (See

pages I-10-16.) The adjacent management basins are long rotation basins under the habitat conservation plan.

The riparian strategy of the habitat conservation plan will retain late successional forests between 50 and 100 feet in width along both sides of fish-bearing and perennial non-fish-bearing streams. Where fires, storms, road building, and past practices have reduced the numbers of large conifers in riparian zones, specific habitat enhancement projects may be undertaken, in consultation with ODFW, to restore conifers. In the long term, the creation of large woody debris in the streams from fallen conifers will enhance fish habitat by creating pools, slowing the flow of the stream, trapping sediment, and increasing macroinvertebrate populations.

Other anadromous fish species of concern found on the Elliott State Forest, and that will benefit from the conservation plan, are coastal steelhead (*Oncorhynchus mykiss*), coastal coho salmon (*Oncorhynchus kisutch*), chinook salmon (*Oncorhynchus tshawytscha*), and Pacific lamprey (*Lampetra tridentata*), which is a non-salmonid anadromous fish (U.S. Department of Commerce 1994b, Oregon Department of Fish and Wildlife 1993). Petitions have been filed to list coastal steelhead, coastal coho, and chinook as threatened and endangered species. A coastwide coho salmon and steelhead assessment will be published in early 1995 by the National Marine Fisheries Service.

Federal Category 2 Species

Under the forest plan, population assessments will be done for each Category 2 species that is likely to be found on the forest, and the habitat needs of Category 2 species will be factored into planning at the project and basin level.

Threatened, and Endangered Plants

No threatened or endangered plant species are known to occur on the Elliott. Under the forest plan, management strategies will be implemented to protect any rare, threatened, or endangered plant species that are found. Elliott State Forest field personnel will be trained to recognize listed plant species that may occur on the forest and the habitats in which they are found. The Department of Forestry will continue to consult with the Oregon Department of Agriculture and the Oregon Natural Heritage Program to check for new information on T&E plant locations. This approach will provide legally required protection for T&E plants.

Description of Current Forest Conditions

The forest conditions on the Elliott today are the result of a combination of natural events and past forest management. These events have created the forest's current age class distribution, which is shown in Figure III-1 on the next page. As the figure shows, two age groups predominate on the Elliott. Stands that are 1-35 years old were created by the last 35 years of forest management. Stands 76-125 years old are stands that generated naturally after the 1868 fire. Stands more than 125 years old survived the 1868 fire. A history of the forest is found in Section I of the Elliott State Forest Management Plan, and a recent history of timber harvest and silvicultural activities is shown in Appendix N of the plan.

From a landscape perspective, past management has led to a forest habitat that is highly fragmented between these two principal age class groups. The map "Production Lands — Stand Characteristics" in Section I shows how the age classes are distributed geographically across the forest. In general, there is somewhat less fragmentation of older stands in the western and northern portions of the forest than in the southern and eastern portions. Northern spotted owls and marbled murrelets generally prefer to associate with larger blocks of suitable habitat (Hamer and Cummins 1990, Interagency Marbled Murrelet Committee 1991, USDI Fish and Wildlife Service 1990b & 1992b). In most cases, the continuation of forest management activities that address only incidental take of spotted owls and marbled murrelets will increase the fragmentation of the forest and reduce the remaining suitable habitat for owls and murrelets in the future. (USDA Forest Service et al. 1994a, Appendix G). At the stand level, past management has resulted in reduced complexity through salvage harvest of dead, dying, and commercially unsuitable trees. Stand complexity has been associated with characteristics of suitable habitat for northern spotted owls and marbled murrelets. If current management continued, it would lead to reductions in these habitat elements in the future.

Background Information

Forests are naturally divided into stands — areas of a few to several hundred acres occupied by trees or other vegetation similar in age, stocking, size, and species.

Forest stands can be described by ten year age classes. The age classes are identified by the year in the middle of the ten years. For example, the 70 year age class represents ages 66-75 years.

Figure III-1. Current Age Classes on the Elliott State Forest
(note at bottom — current as of December 1993)

Consideration of Alternative Strategies

Based upon an evaluation of current forest conditions, the planning team developed and evaluated a range of alternative conservation strategies to be submitted as part of the Habitat Conservation Plan. Alternatives A-E were developed and analyzed in the environmental assessment (EA) that was done on the habitat conservation plan. This subsection summarizes the alternative descriptions from the EA. It also includes some discussion of why Alternatives B through E were not selected; and why Alternative A is the preferred alternative, and the basis for the conservation strategy.

Each alternative is a comprehensive strategy for managing northern spotted owls, marbled murrelets, and their habitat on the Elliott State Forest, while maintaining the ability to manage the forest for timber production. The range of alternatives is designed to represent the range of reasonable responses to the issues.

Many people helped to develop these alternatives. A variety of resource specialists from the Oregon Department of Forestry worked on alternative development. In addition, the Department worked closely with the Oregon Department of Fish and Wildlife and their resource specialists. The public also contributed to alternative development, through the public involvement process described in Appendix D of the EA, "Consultation With Others."

Table III-2 on the next page lists the alternatives and shows which riparian strategy each alternative would use. The table also cross-references the alternatives to the alternative management strategies in the Elliott State Forest Management Plan, a draft plan published by the Oregon Department of Forestry in December 1993. The EA has complete alternative descriptions, maps of the alternatives, descriptions of the two riparian strategies, and brief descriptions of several alternatives that were eliminated from detailed analysis. The EA has detailed information on the effects of the alternatives, including the amount of potential incidental take of owls and murrelets.

Alternative A is the preferred alternative, and the basis for the conservation strategy. Alternatives B and C present two different strategies for management. Alternative D, the modified interim plan, is based on the interim management approach used on the Elliott in 1993 and 1994. Alternative E, the no action alternative, would avoid any incidental take of spotted owls or marbled murrelets.

The summaries of the alternatives begin on page III-13, after the table and the "Key Terms" box.

Table III-2. Key to the Alternatives

Alternative		Riparian Strategy[1]	Corresponding Alternative Management Strategy in the Elliott Forest Plan [2]
A.	**Preferred**	**2**	**Strategy 6. Balanced Landscape**
B.		1	Strategy 1. Conservation Biology
C.		2	Strategy 7. Intermediate Rotation
D.		1	Strategy 4. Modified Interim Plan
E.	No Action	2	No corresponding alternative in the Forest Management Plan.

1. The riparian strategies are described in Section II of the EA.
2. The Elliott State Forest Management Plan (Oregon Department of Forestry 1993). Alternative management strategies 2, 3, and 5 from the forest plan are also included in Section II of the EA, under the heading "Alternatives Considered, But Eliminated from Detailed Analysis."

Key Terms

Dispersal habitat — Habitat used by juvenile spotted owls to disperse, or by any spotted owls moving from one area of nesting-roosting-foraging habitat to another.

Habitat Conservancy Areas (HCAs) — Reserves established to protect sensitive wildlife habitat areas, such as T&E species sites or fisheries areas. HCAs are proposed for Elliott State Forest under some alternatives in this EA; these areas are not the same as Habitat Conservation Areas, also known as HCAs, proposed under the 1990 ISC Report (Thomas 1990).

Habitat enhancement — Management activities that speed up the development of late successional forest structure.

Harvest regulation method — Under a volume regulation method of timber harvest, an equal amount of timber volume is harvested each year. Since timber stands vary in their volume per acre, the harvest acreage fluctuates from year to year. Under an acreage control method, an equal number of acres is harvested each year, and the amount of timber volume fluctuates from year to year.

Late successional forest — A mature and/or old growth forest stand. Typical characteristics are moderate to high canopy closure; a multi-layered, multi-species canopy dominated by large overstory trees; numerous large snags; and abundant large woody debris (such as fallen trees) on the ground. In this document, refers to stands 156 years or older (160 year age class and up).

Management basin — An area used for forest planning. The Elliott is divided into 17 management basins averaging 5,500 acres of state forest land each. The basin size approximates estimates of the median home range size for spotted owls in the Oregon coast range, and is also about the size of a quarter township (5,760 acres). Most basins contain the drainage of one or two primary streams; boundaries are located on recognizable features such as ridge lines or roads.

Matrix — State forest lands outside reserves and other areas withdrawn from timber management.

Nesting-roosting-foraging habitat (NRF habitat) — Habitat with the forest structure, sufficient area, and adequate food source to meet the need of a nesting pair of spotted owls. The desired forest structure is stands at least 80 years old with a three-layer canopy, that include very large diameter (200+ years) trees from the previous stand, large diameter (80+ years) trees, and small understory trees, along with snags and large woody debris.

Partial cutting — Removal of selected trees from a forest stand.

Reserve — Lands with a primary purpose other than timber production; purpose may be to provide habitat for a threatened or endangered species, or to protect streams and riparian areas, or various other purposes.

Riparian management area — An area bordering a stream whose primary purpose is to protect the stream and its riparian area. Protected stream resources include water quality and temperature, fish, stream structure, and other resources.

Alternative A — Preferred Alternative

Discussion

This alternative would use an ecosystem-based landscape management approach that recognizes both the coarse and fine filter components as described by Malcolm Hunter (Hunter 1990). Ecosystems on the Elliott would be managed to provide a range of habitat types and structural conditions at both the forest and stand level, through the manipulation of stand age, management of unit rotation length, species composition, and development of stand heterogeneity through creation of snags and retention of green trees.

At the forest landscape level, management goals would be accomplished by creating management basins representing three different age classes: late successional, mid-successional, and early successional. Additional consideration would be given to the relationship of these basins to existing forest conditions and the current locations of northern spotted owls and marbled murrelets. Management basins and individual stand attributes would be linked through a combination of riparian protection corridors and Habitat Conservancy Areas (HCAs). The HCAs are described below.

The forest landscape as a whole would be designed under this alternative to represent a transition between the existing and planned older, late successional federal forests to the north and the intensively managed private forests to the south and west. Alternative A is described in more detail in Section IV.

Threatened and Endangered Species Reserves

This alternative would provide T&E reserves through HCAs and long rotation basins. It would establish HCAs on the Elliott in each management basin. In some cases, these HCAs would be part of or next to existing protective or scenic conservancy lands, but in other cases would be new areas apart from current conservancy areas. The HCAs would act as permanent refuges for T&E species and overall biodiversity within each management basin. They would total approximately 6,961 acres and represent from 3-25% of each management basin. (These areas are not the same as Habitat Conservation Areas, also known as HCAs, proposed under the 1990 ISC Report.)

Under this alternative, the contiguous portion of the Elliott (about 93,000 acres) would be divided into 17 management basins, which would average about 5,500 acres each. Out of the 17 basins, 9 basins would be managed on long rotations. The rotations would be: 3 basins on 240 year rotations, 3 basins on 200 year rotations, and 3 basins on 160 year rotations. Over time, in these basins the amount of fragmentation would decrease, and the percentage of owl and murrelet habitat increase to 50-66% of the basin.

Alternative B

Discussion

This alternative would provide the greatest contribution toward northern spotted owl and marbled murrelet populations, while providing management predictability. It would protect 28 of the 29 owl pair sites identified in 1993 by including the 17 sites on the Elliott in T&E reserves, and providing habitat on the Elliott for the 11 sites located within 1.5 miles of the Elliott. Resident singles and non-resident owl sites would not be provided habitat.

Threatened and Endangered Species Reserves

Northern spotted owl reserves would be established that would include 28 of the 29 owl pair sites identified in 1993. The reserve boundaries would be designed to minimize edge-to-area ratio. Marbled murrelet reserves would be established that would include all known murrelet-occupied sites outside spotted owl reserves. Murrelet reserves would average 500 acres each. As additional occupied sites are found, they would be protected with additional 500 acre reserves.

Owl and murrelet reserves would total approximately 67,185 acres. Reserve areas would increase if additional murrelet-occupied sites are found.

Alternative C

Discussion

This alternative assumes that federal lands would be adequate to meet the need for protected spotted owl NRF habitat and murrelet nesting habitat. The alternative also assumes that survival and recovery of owls and murrelets would be achieved in a managed landscape by providing riparian reserves and other lands classified as nonproduction; and also by maintaining 50% of the acres on 30% of the forest (50% of the 30%, or about 14,000 acres) in NRF habitat.

In this alternative, management basins would serve as the basis to implement and monitor the management plan, and to control timber harvest. This approach would be different from strategies that focus on single resource criteria such as spotted owl circles or quarter township squares.

Threatened and Endangered Species Reserves

No additional reserves are established for T&E species under this alternative.

Alternative D

Discussion

Alternative D would use the Interim Plan adopted by the State Land Board as followed in 1993 and 1994 on the Elliott State Forest, but with modifications. The details of the Interim Plan, which was designated as the Stewardship Approach, were developed in consultation with the Oregon Department of Fish and Wildlife.

The Interim Plan was developed in 1992 as a short-term measure to provide management certainty for the forest while meeting the requirements of the federal and state Endangered Species Acts. Alternative D would update the Interim Plan in the following ways, to include new information and murrelet protection.

- Reserve boundaries would incorporate spotted owl data and forest stand information that was not available when the Interim Plan was first developed.
- Protection would also be given to a portion of the stands that are marbled murrelet habitat.
- Riparian zone protection would be enhanced.
- Young stands within owl and murrelet reserves would be actively managed to develop into late successional forest, while secondarily producing timber volume.
- Matrix lands would be managed on a 100 year rotation.

Threatened and Endangered Species Reserves

Northern spotted owl reserves would be established that would include 9 owl pair sites. Reserve boundaries would be based on the Interim Plan configuration, but would be expanded to reflect new information on owls and forest stands. A small number of additional sites (about 2-3 pairs) would be given partial protection coincidental with the protection for the 9 pairs.

Marbled murrelet reserves would be established that would include all 10 known murrelet-occupied sites outside spotted owl reserves. Murrelet reserves would average 500 acres each, for a total of 5,000 acres. An additional 5,000 acres of stands with the best potential murrelet habitat would also be reserved. Thus, there would be a total of 10,000 acres in murrelet reserves and murrelet habitat stands: 5,000 acres of occupied sites and 5,000 acres of best potential murrelet habitat.

Owl and murrelet reserves would total approximately 48,202 acres. There would be additional acres in the 300 foot buffers around the individual murrelet habitat stands.

Alternative E — No Action (Take Avoidance)

Discussion

This alternative assumes that USFWS would not issue a Section 10(a)(1)(B) permit for incidental take to the Oregon Department of Forestry. Generally, the Department of Forestry would continued to operate under restrictions resulting from the current regulatory regime. Under federal law, the Oregon Department of Forestry would avoid the take of northern spotted owls, using the USFWS circle guidelines; and marbled murrelets, using the Marbled Murrelet Management Plan for State Forest Lands, as provided to USFWS on August 16, 1994 (Oregon Department of Forestry 1994).

Threatened and Endangered Species Reserves

Forest management under Alternative E would follow the circle guidelines for spotted owls (see Appendix A, Glossary). To avoid take of marbled murrelets, the Department of Forestry would use the Marbled Murrelet Management Plan for State Forest Lands, as mentioned above. Under Alternative E, habitat protection for owls and murrelets would be temporary in nature. If ongoing surveys indicated that an owl nest site or murrelet-occupied stand had become vacant, the temporarily protected habitat would then become available for harvest. Other than the temporary owl circles and murrelet protection already mentioned, no reserves would be established for T&E species under this alternative.

Comparison of Alternatives

The figures and tables on the following pages present several comparisons of Alternatives A-E. Figures in this section are continued beyond the 60 year term of the HCP to illustrate important long term effects of the draft Elliott State Forest management plan, even though the analysis of take and mitigation focus on the 60-year period covered by the permit request. Figure III-2 compares harvest acres per decade for each alternative, beginning with the acres to be harvested from 1993 to 2003. Figures III-3 and III-4 show what the matrix acres and reserve acres would be under each alternative; these acres would stay the same throughout the 100 year analysis period. Finally, Tables III-3 and III-4 compare the alternatives' strategies for maintaining spotted owl NRF (nesting-roosting-foraging) habitat and spotted owl dispersal habitat.

Figure III- 2. Harvest Levels — Alternative Comparison

Figure III- 3. Matrix Acres — Alternative Comparison

Figure III- 4. Reserve Acres — Alternative Comparison

Table III-3. Comparison of Spotted Owl NRF Habitat Maintenance Strategies	
Alternative	**Spotted Owl NRF Habitat Maintenance Strategy**
A	As shown in the alternative description, the amount of NRF habitat maintained in each management basin would vary from 12-66%. In the long-term, 39,781 acres (43% of the forest) would be maintained in NRF habitat by this alternative. .
B	This strategy would assume that all needed protection for owls and murrelets would be provided by reserves and the 50/11/40 rule. There would be no requirement to maintain a minimum amount of NRF habitat on matrix lands.
C	Harvest would be constrained in management basins 2, 5, 6, and 7 to maintain 50% of each basin in stands that are 80 years or older, which would provide about 14,000 acres of NRF habitat.
D	This strategy would assume that all needed protection for owls and murrelets would be provided by reserves. There would be no requirement to maintain a minimum amount of NRF habitat on matrix lands.
E	This strategy would provide legally mandated protection under the federal ESA, using the USFWS owl circle guidelines. Except for the requirement to maintain 40% of the acres within active owl circles in suitable habitat, potential NRF habitat within and outside of owl circles would be available for timber harvest. It is not possible to predict how much NRF habitat would be maintained in this alternative. The amount of habitat would be expected to decline significantly over time and could be substantially eliminated.

NRF habitat — Habitat with the forest structure, sufficient area, and adequate food source to meet the need of a nesting pair of spotted owls. The desired forest structure is stands at least 80 years old with a three-layer canopy, that include very large diameter (200+ years) trees from the previous stand, large diameter (80+ years) trees, and small understory trees, along with snags and large woody debris.

Table III-4. Comparison of Spotted Owl Dispersal Strategies	
Alternative	**Spotted Owl Dispersal Habitat Strategy**
A	Provided on matrix lands by a variation of the 50/11/40 strategy. The variation would maintain dispersal habitat by management basins instead of quarter townships. All stands meeting the criteria would count toward meeting the acreage requirement.
B	Provided on matrix lands using the 50/11/40 strategy. Stands inside owl reserves would not count toward meeting the acreage requirement.
C	Provided on matrix lands by a variation of the 50/11/40 strategy. The variation would maintain dispersal habitat by management basins instead of quarter townships. All stands meeting the criteria would count toward meeting the acreage requirement.
D	Provided on matrix lands using the 50/11/40 strategy. Stands inside owl reserves would not count toward meeting the acreage requirement.
E	There is no legal requirement to provide dispersal habitat under this alternative.

50/11/40 strategy — The 50/11/40 strategy would constrain harvesting so that at least 50% of the state-owned acres in each quarter-township (9 square miles) would have forest stands where the trees average 11 inches in diameter at breast height (DBH) or larger, and the canopy closure is 40% or greater. The 50/11/40 strategy is designed to protect sufficient dispersal habitat for juvenile spotted owls dispersing from their home nests.

The variation of the 50/11/40 strategy included in Alternatives A and C would maintain dispersal habitat by management basins instead of quarter townships.

Discussion of the Alternatives

To determine the best course of action, the Department of Forestry considered the advantages and disadvantages of the different approaches to habitat conservation. Alternatives B, C, and D are discussed briefly below. After that, the reasons for not selecting Alternative E, the no action alternative, are discussed at greater length, and then followed by the rationale for choosing Alternative A as the preferred alternative.

Reasons for Not Selecting Alternatives B through D

- **Alternative B —** Alternative B would provide the greatest contribution toward northern spotted owl and marbled murrelet recovery, but would allow the least availability for harvest. This alternative is not preferred because it would severely impact the major source of revenue from the Elliott and would not meet the State Land Board's constitutional and statutory obligation for management of the Elliott State Forest. The legal mandates are discussed in detail in Appendix J.
- **Alternative C —** Alternative C would assume that T&E reserves on federal land would be adequate to meet the need for survival and recovery of owls and murrelets, and that no additional reserves would be needed on the Elliott. This alternative would allow the greatest opportunity for harvest. This alternative was not selected because it would support smaller populations of owls and murrelets, and would contribute less to survival and recovery of these species in the region. The USFWS would probably not be able to authorize an ITP for this level of take, especially regarding murrelets. Alternative C would also provide less late successional habitat for other species of concern.
- **Alternative D —** Alternative D would continue to use the interim plan used in 1992 and 1993, with modifications. This alternative was intended as a short term measure only. Revenues from the Elliott would be severely impacted, and this alternative does not meet the direction of the State Land Board or the Board's constitutional and statutory obligations, as described in Appendix J.

Reasons for Not Selecting the No Action Alternative

Alternative E, the no action alternative, would not result in any incidental take of the northern spotted owl or marbled murrelet. This alternative would provide reserves, use circles to protect owls (see Appendix A, Glossary) and eliminate harvest of occupied marbled murrelet sites. However, it should be understood that Alternative E differs substantially from Alternatives A-D. Alternatives A-D all assume that an Incidental Take Permit would be issued by USFWS. Management activities such as harvesting would therefore occur at predictable times and places. These alternatives would also provide predictable amounts of habitat for listed species in specified locations.

In contrast, the effects of Alternative E would be inherently unpredictable, since it is only designed to meet minimum legal requirements for protecting two highly mobile wildlife species. The only thing that we really know about the effects of Alternative E is that there

would be no "take" of species as legally defined. However, this does not mean that Alternative E would maintain owls and murrelets on the forest. In fact, for reasons explained in Sections II and III & IV of the EA, it is possible that populations of owls and murrelets would decline on the forest under Alternative E.

In addition, the no action alternative was not selected because of the State Land Board's constitutional and statutory obligation for management of the Elliott State Forest, as explained below.

Most of Elliott State Forest (90.5%) is Common School Forest Land. These lands are owned by the State Land Board. By statute, they are managed to secure the greatest permanent value of the lands to the people of Oregon. The primary goal is to maximize long-term revenues for the Common School Fund, an educational trust for the benefit of Oregon school children. The remaining lands, 9.5% of the Elliott, are Board of Forestry Lands. These lands are owned by the Board of Forestry, and managed as a trust for the benefit of counties and local taxing districts.

Oregon Attorney General Charles S. Crookham issued an opinion on July 24, 1992, on the constitutional mandates for managing Common School Forest Lands. In his opinion, he stated that the State Land Board has a constitutional obligation to manage lands under its jurisdiction "with the object of obtaining the greatest benefit for the people of this state, consistent with the conservation of this resource under sound techniques of land management." Crookham noted that the "greatest benefit for the people" standard requires the State Land Board to use the lands for schools and the production of income for the Common School Fund. Crookham's opinion also noted that the resources are not limited to those, such as timber, that are currently recognized as revenue generators for the Common School Fund, but include all features of the land that may be of use to schools. Other resources, such as minerals, water, and plant materials that may offer revenue for the fund should be considered. The legal mandates and Crookham's opinion are discussed in detail in Appendix J.

The Oregon Department of Forestry manages Elliott State Forest to meet the statutory obligations for Common School Forest Land and Board of Forestry Lands. Management includes harvesting timber, selling other forest products, reforesting the land, protecting the land from fire and other hazards, executing mining leases, and permitting the use of the land for other purposes.

In December 1991, the State Land Board passed a motion initiating a new long-range management plan for the Elliott State Forest. The Department of Forestry was directed to work with the Oregon Department of Fish and Wildlife, the Division of State Lands, and other state agencies to develop the plan. It was stipulated that the plan must depart from the circle management of spotted owls (see Section I of the Elliott State Forest Management Plan), address the entire forest ecosystem, and be consistent with the timber management contract between the State Land Board and the Department of Forestry. The result is the Elliott State Forest Management Plan, a comprehensive, integrated forest management plan that takes into account a wide range of forest values, including timber,

threatened and endangered species, wildlife, fish, water quality, recreation, and other resources.

The no action alternative would severely impact the major source of revenue from the Elliott and would not meet the mandate from the State Land Board.

Rationale for the Preferred Alternative

The preferred alternative is Alternative A. This alternative is based upon ecosystem management principles with the objective of providing the greatest contribution to biological diversity while meeting conservation goals for the northern spotted owl and marbled murrelet. It would provide a range of habitat types and structural conditions by varying stand age, density and species composition, and by habitat enhancement such as creation and retention of snags, and retention of green trees. High quality habitat would be created, and linked together through a combination of riparian protection corridors, Habitat Conservancy Areas, and other reserves. The forest landscape as a whole would be designed as a transition between late successional federal reserves and the privately managed younger forests to the south and west. Potential incidental take of owls and murrelets would be minimized and mitigated by a variety of techniques. This alternative would include research and adaptive management to meet goals for the wide range of resources on the Elliott.

While meeting these goals, Alternative A manages the forest in a manner that meets legal mandates and trust obligations. It would maintain timber harvest for the first decade of the permit at about 28 million board feet per year, about half the sustainable level, estimated at 50 million board feet per year (1987 Long-Range Plan for Southern Oregon Region State Forests), with increasing levels in succeeding decades.

Management basins would serve as the basis to implement, monitor, and control timber harvest and habitat protection. This would facilitate planning on a landscape and forest-wide basis to decrease forest fragmentation and minimize disturbance of wildlife.