PACIFIC BALD EAGLE

RECOVERY PLAN

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RECOVERY PLAN EXECUTIVE SUMMARY

1. Point or condition when the species can be considered recovered?

   The primary objective of the recovery process is to provide secure habitat for bald eagles within the 7-state Pacific recovery area and to increase population levels in specific geographic areas to the extent that the species can be delisted.

   Delisting should occur on a regionwide basis and should be based on 4 criteria: 1) a minimum of 800 nesting pairs in the Pacific recovery area; 2) average reproductive rate of 1.0 fledged young per pair, with an average success rate per occupied site of not less than 65%; 3) attainment of breeding population goals in at least 80% of the management zones with nesting potential; and 4) stable or increasing wintering populations.

   In the 5 states where the bald eagle is listed as endangered, reclassification from endangered to threatened could be considered if nesting populations continue to increase for the next 5 years.

2. What must be done to reach recovery?

   In 1985, at least 527 pairs nested in the 7-state recovery area. Delisting, therefore, would require an increase in the number of nesting pairs of approximately 52%.

3. What specifically must be done to meet the needs of #2?

   Main steps to recovery are habitat protection and management, augmentation of populations, increased law enforcement and public awareness, and continued research on eagle requirements to provide future management direction.

   The key to attaining recovery goals is management of habitat important to the species' survival. Key occupied areas and potential nesting areas have been identified. Land management agencies should provide for eagle requirements in both key areas and potential nesting areas, and eagle habitat management must be a primary consideration in key occupied areas.

4. What management/maintenance needs have been identified to keep the species recovered?

   Habitat occupied by bald eagles must continue to be protected and managed after eagles have attained recovery levels. Forest stands used by eagles must be managed to maintain the long-term availability of nest sites, roosts, and foraging habitat

   Another critical element of post-recovery efforts will be the continued frequent monitoring of populations and productivity. Such monitoring will be the only means by which managers will be alerted to population declines.

TABLE OF CONTENTS

		Page
I.	INTRODUCTION	1
	Brief Overview.	1
	Species Abundance and Distribution.	1
	Historical Distribution.	5
	Nesting Distribution	6
	Productivity	7
	Winter Distribution.	7
	Movements of Bald Eagle Populations	9
	Bald Eagle Habitat Characteristics.	13
	Nesting Habitat.	13
	Winter Habitat Requirements.	15
	Food Habits.	18
	Threats to Bald Eagle Populations	20
	Management Progress to Date	23
II.	RECOVERY	
	Objectives.	27
	Stepdown Outline.	33
	Narrative	40
	Literature Cited.	73
III.	IMPLEMENTATION SCHEDULE	83
IV.	APPENDIXES	
	A. Management Zone Descriptions.	107
	B. Agencies Requested to Provide Comments During Agency Review.	159

LIST OF TABLES

		Page
Table 1.	Productivity of bald eagles in the Pacific Recovery Area.....	2
Table 2.	Results of National Wildlife Federation Midwinter bald eagle counts in the Pacific Recovery Area.....	4
Table 3.	Number of existing territories and pairs, and habitat and population goals by zone.....	30

LIST OF FIGURES

Figure 1.	Location of management zones in the seven-state Pacific recovery area.....	29

PART I. INTRODUCTION

BRIEF OVERVIEW

On February 14, 1978 the bald eagle was federally listed as endangered in all of the conterminous United States except Minnesota, Wisconsin, Michigan, Oregon, and Washington, where it was classified as threatened. No critical habitat was designated at the time of listing.

This recovery plan, one of five such plans, outlines the steps needed for recovery and maintenance of bald eagle populations in the 7-state Pacific recovery area. Other recovery plans exist for bald eagle populations in the Southeast, Southwest, Northern States, and Chesapeake Bay. Delisting/reclassification of bald eagles in the Pacific recovery area is not dependent on progress of bald eagle populations covered by these other plans. This plan was prepared by the Pacific States Bald Eagle Recovery Team, appointed by the U.S. Department of the Interior under authority of the Endangered Species Act of 1973, as amended. It concerns populations of bald eagles in Idaho, Nevada, California, Oregon, Washington, Montana, and Wyoming. The plan is based primarily on biological considerations and does not attempt to resolve socio-economic and political issues. Population and habitat goals, however, were established with the understanding that spatial and political constraints exist and will limit the extent to which populations can increase.

SPECIES ABUNDANCE AND DISTRIBUTION

The bald eagle (Haliaeetus leucocephalus) is the only North American representative of the fish or sea eagles (Grossman and Hamlet 1964, Brown and Amadon 1968), and is endemic to North America. Steller's (H. pelagicus) and the white-tailed sea eagle (H. albicilla), however, occur as vagrants to Bering Strait islands and the Alaska coast, and H. albicilla occurs in coastal southwest Greenland. The breeding range of bald eagles formerly included most of the continent, but eagles now nest mainly in Alaska, Canada, the Pacific Northwest states, the Great Lake states, Florida, and Chesapeake Bay. The winter range includes most of the breeding range but extends mainly from southern Alaska and southern Canada southward (American Ornithologists' Union 1983).

Bald eagles occur throughout the 7-state Pacific recovery area, but nesting distribution is more restricted than wintering distribution. In 1985, 527 of 635 nesting territories surveyed were occupied by breeding pairs, for an occupancy rate of 83% (Table 1). More than 25% of all wintering bald eagles in the lower 48 states occur in the Pacific recovery area. As many as 4,588 birds have been counted during recent midwinter surveys (Table 2).

Table 1. Productivity of bald eagles in the Pacific Recovery Area, 1975 to 1985[1].

	Breeding Territories Surveyed	Number of Territories Occupied[2]	Percent of Territories Occupied	Percent of Occupied Territories Failing	Young Produced	Young Per Occupied Territory	Young Per Successful Territory
Washington[3]							
1975	145	113	78	45	82	0.75	1.34
1980	138	99	72	38	88	0.87	1.40
1981	153	121	79	49	82	0.69	1.37
1982	183	137	75	48	101	0.70	1.34
1983	217	166	76	44	139	0.83	1.48
1984	254	207	81	35	189	0.93	1.42
1985	280	227	81	37	215	0.95	1.52
Mean			77	42		0.82	1.41
Oregon[4]							
1978	54	35	65	21	39	1.18	1.50
1979	97	72	74	35	72	1.00	1.53
1980	106	81	76	44	69	0.86	1.53
1981	118	97	82	34	98	1.04	1.58
1982	125	100	80	49	72	0.72	1.41
1983	131	109	83	42	92	0.87	1.48
1984	137	114	83	35	109	0.97	1.49
1985	149	132	89	38	113	0.93	1.49
Mean			79	37		0.95	1.50
California[5]							
1977	57	40	70	50	31	0.78	1.55
1978	56	45	80	71	17	0.38	1.31
1979	64	50	78	50	34	0.68	1.36
1980	70	52	74	33	57	1.10	1.63
1981	71	51	77	22	60	1.20	1.54
1982	71	48	71	26	49	1.17	1.54
1983	78	58	81	30	59	1.05	1.51
1984	79	65	82	33	69	1.08	1.60
1985	75	59	79	39	58	0.98	1.61
Mean			77	39		0.94	1.52
Montana[6]							
1978	9	9	100	—	11	1.22	1.83
1979	16	16	100	—	18	1.29	1.80
1980	23	22	96	—	28	1.56	2.00
1981	25	24	96	21	38	1.58	2.00
1982	38	37	97	32	44	1.19	1.76
1983	51	40	78	30	59	1.48	2.11
1984	64	51	80	36	50	1.09	1.71
1985	59	51	86	27	51	1.07	1.47
Mean			92	29		1.31	1.84

Table 1. Productivity of bald eagles in the Pacific States Region, 1975 to 1985 (continued).

	Breeding Territories Surveyed	Number of Territories Occupied[2]	Percent of Territories Occupied	Percent of Occupied Territories Failing	Young Produced	Young Per Occupied Territory	Young Per Successful Territory
Wyoming[7]							
1978	24	20	83	46	13	0.65	1.44
1979	26	23	88	46	13	0.70	1.45
1980	27	19	70	33	20	1.05	2.00
1981	31	26	84	35	25	0.96	1.67
1982	35	23	66	65	12	0.55	1.50
1983	18	16	89	38	19	1.19	1.90
1984	26	23	88	35	28	1.22	1.87
1985	44	35	80	51	28	0.80	1.75
Mean			81	44		0.89	1.70
Idaho[8]							
1979	14	11	79	—	10	0.91	
1980	14	12	86	—	13	1.08	
1981	14	13	93	24	18	1.38	1.80
1982	16	15	94	46	15	1.00	1.90
1983	15	13	87	15	17	1.31	1.54
1984	22	20	95	45	21	1.05	1.91
1985	27	22	81	32	23	1.05	1.53
Mean			88	32		1.11	1.74
Nevada[9]							
1985	1	1	100	100	0	0.00	0.00
GRAND MEAN (WEIGHTED)			83	39		0.93	1.53

[1] In some cases, calculations of % occupancy, % failures, and young per occupied and successful territories are based on a sample of occupied sites where complete information was available.

[2] Indicates the minimum number of breeding pairs.

[3] 1975 data from Grubb (1976) 1980-1985 from Washington State Nongame data system.

[4] Data from Isaacs and Anthony (1985)

[5] Unpublished data from Jurek (Calif. Dept. of Fish and Game), and Lehman and Detrich (Bureau of Land Management, Sacramento)

[6] Unpublished data from Montana Bald Eagle Working Group

[7] Unpublished data from Greater Yellowstone Working Group: 1983 and 1984 data are incomplete because of no surveys in Yellowstone Park.

[8] Unpublished data from Howard (U.S. Fish and Wildlife Service, Boise).

[9] Unpublished data from Herron (Nevada Dept. of Wildlife, Reno).

Table 2

Results of National Wildlife Federation Midwinter

Bald Eagle Counts in the Pacific Recovery Area

	1979	1980	1981	1982	1983	1984
California	862	758	710	787	--[1]	1
Idaho	404	433	735	668	644	542
Montana	257	461	413	470	495	420
Nevada	42	53	92	74	114	96
Oregon	494	653	547	480	388[2]	1
Washington	1126	1624	1611	1378	1158	1542
Wyoming	400	456	480	362	506	482
TOTALS	3585	4438	4588	4219	3305	3082

1 Did not participate in the annual midwinter survey.

2 The 1983 count in Oregon was incomplete.

Historical Distribution

The status and distribution of bald eagle populations in the decades before World War II are poorly understood. Declines probably began in some populations in the 19th century; other declines were probably not underway until the 1940's. Between 1947 and 1970, reproduction in most bald eagle populations declined drastically (Broley 1958, Sprunt et al. 1973), and the species disappeared from many parts of its breeding range. Research in the late 1950's and throughout the 1960's indicated that certain organochlorine pesticides, primarily DDE (the environmental metabolite of DDT), interfered with bald eagle productivity by causing excessive thinning of eggshells (Krantz et al. 1970, Wiemeyer et al. 1972). Direct mortality apparently resulting from lethal levels of DDT and dieldrin, another organochlorine pesticide, also contributed to losses of birds in some populations during this period (Mulhern et al. 1970, Belisle et al. 1972, Cromartie et al. 1975, Prouty et al. 1977, Kaiser et al. 1980).

Historical records provide evidence for the decline of bald eagles in the Pacific Northwest. Accounts by Baird (1858), Evermann (1886), Merrill (1888, 1897), Belding (1890), Bendire (1892), Woodcock (1902), Hall (1933a, 1933b), and Buechner (1953) document the abundance of bald eagles in the region during the late 19th century. Later records suggest that a population decline may have occurred at the beginning of the twentieth century (Bowles 1906, Dawson and Bowles 1909, Kitchin 1939). These suspected declines are difficult to quantify, however, because no intensive surveys were conducted until the latter part of the twentieth century.

In some cases, historical records have confirmed the disappearance of breeding eagles from parts of their former range. For example, Kiff (1980) and Detrich (1982) have summarized numerous accounts of nesting bald eagles in central, southern, and coastal California where the species no longer breeds. Bald eagles formerly nested in at least 16 California counties where nesting no longer occurs, and they used a variety of habitat types and nesting substrates (Detrich 1981a). By 1950, direct persecution and habitat destruction had resulted in the extirpation of much of the southern and central nesting population. All remaining pairs disappeared from the Channel Islands and the mainland of southern California in the 1950's, apparently because of DDT contamination which resulted in reproductive failure (Detrich 1981a).

Bald eagles also formerly nested at Pyramid Lake in Nevada (Linsdale 1936), but no eagles have been found breeding at that lake in this century. At least one breeding territory on the Boise River in Idaho has been lost since the turn of the century (Anonymous 1978), and declines are also suspected in the less accessible portions of central Idaho.

Breeding populations of bald eagles in Oregon and Washington are still widely distributed, but historical information suggests significant declines and changes in distribution. At the turn of the century, 10 breeding pairs nested on Yaquina Bay in Lincoln County, Oregon (Woodcock 1902), and only one pair nests there presently. Records of at least 8

breeding sites are available for northeastern Oregon, but only 1 nesting attempt has been documented during the last 6 years (Isaacs and Anthony 1985).

Historical data from Montana are too sketchy to indicate early population numbers. Known historical territories number far fewer than those known to exist at present because of inadequate surveys prior to 1980. Five territories on the Missouri River system and 2 on the Yellowstone River system were abandoned between 1953 and 1975 (Flath, unpubl. data).

The most severe declines in Wyoming probably occurred in the late 1800's and early 1900's, before historical records were available. Homesteading along major rivers and extensive poisoning and shooting of all predators occurred during this period and undoubtedly affected eagle populations. In addition, at least 3 sites have been destroyed by development activities during the last 15 years (Oakleaf, Wyoming Department of Game and Fish, Lander, pers. comm.).

Nesting Distribution

The largest nesting population of bald eagles in the 7-state recovery area is in Washington. Most nesting habitat in Washington is located in the San Juan Islands and on the Olympic Peninsula coastline (Grubb 1976). Fewer nesting territories are found along Hood Canal, on the Kitsap Peninsula, in Island County, and in southwestern Washington. Of 290 nesting territories identified in Washington, 161 are in the Puget Sound area, including the San Juan Islands; 68 are on the Washington coastline; 10 are on the Columbia River; 10 occur in the Cascade Mountains; 8 occur on the Olympic Peninsula; and the remainder are in the eastern part of the state. Of the 280 territories surveyed in 1985, 227 were occupied (Table 1). The high percentage of nest territories on private lands represents a potential threat to eagles in Washington, since private land owners are not legally mandated to manage and protect bald eagle habitat.

Oregon has the second highest population of nesting bald eagles in the recovery area. Breeding pairs occupied 132 of the 149 traditional nesting territories surveyed in 1985 (Table 1). Approximately 60% of eagle pairs in Oregon nest on public land. The Klamath Basin contains the highest concentration in Oregon (60 pairs), but significant numbers (24 pairs) nest near high Cascade lakes. The Oregon coastline and lower Columbia River Basin have most of the remaining pairs in the state (Isaacs et al. 1983).

Of 75 traditional nesting territories surveyed in California in 1985, 59 were occupied (Table 1). Occupied territories are located in 10 northern counties, with almost 45% occurring in Shasta County alone. Most California nests are in publicly owned mixed coniferous forests adjacent to reservoirs. Seventy percent of nests surveyed in 1979 were associated with reservoirs (Lehman 1979).

Montana contains at least 66 bald eagle nesting territories. The majority of the territories occupied in 1985 occurred in western Montana.

Over 50% of the nest stands in Montana are publicly owned, and most of these are on federal lands (Wright and Escano 1986).

Forty-four nest territories have been documented in Wyoming; 35 of these were occupied in 1985 (Table 1). Most of the known nesting territories are in the northwestern part of the state. Yellowstone National Park has 15 documented nesting territories, 6 occur in Grand Teton National Park, and 11 are located near the parks in Teton and Lincoln Counties. Other nesting pairs occur in widely scattered areas of the state, including the Bighorn River and Tongue Rivers in northern Wyoming and the North Platte River in southern Wyoming. An additional pair nests just south of the Wyoming state line along the Little Snake River in Colorado.

The majority of the 27 known bald eagle nest territories in Idaho are in the eastern part of the state, primarily along the Henry's Fork and South Fork of the Snake River. Other pairs nest near reservoirs in western and northern Idaho (Howard and Van Daele 1980). Twenty-two territories were occupied in 1985 (Table 1).

Prior to 1985, the last documented nesting activity in Nevada was in 1866 at Pyramid Lake (Linsdale 1936). During 1985 a nesting attempt occurred on BLM land along Salmon Falls Creek in Elko County. Although the pair was unsuccessful, the site presently offers the best potential for nesting in the state.

Productivity

Available statistics on eagle productivity in the 7-state recovery area are difficult to compare because survey procedures and terminology have varied among years and among states. Assembled data (Table 1) show considerable variation among states. In general, productivity for the 7-state Pacific recovery area has been comparable with that in Alaska and the Great Lake States (Sprunt et al. 1973, Leach 1982) where populations have apparently been stable during the last 10 years.

Average productivity in the recovery area for all years surveyed and all states is approximately 0.93 young per occupied territory. Productivity in a single year and state has ranged from 0.38 to 1.58 young per occupied territory. Nesting failure rates (percent of occupied territories failing) have averaged 39% and have ranged from 15 to 71% per year for individual states (Table 1).

Winter Distribution

During the winter, eagles in the Pacific recovery area are primarily associated with open water. Recent midwinter counts (Table 2) indicate that all states except Nevada regularly have more than 400 wintering birds. Washington consistently has the most wintering eagles in the recovery area with 1126 to 1624 individuals counted in recent years (Knight et al. 1979, 1980a, 1981; Dobler and Dobler 1982; Dobler 1983; McAllister 1984). Most eagles wintering in Washington are found along the Skagit, Nooksack, and Sauk River systems, in the Puget Trough, on the Olympic Peninsula, and in the Columbia Basin.

In Oregon, most wintering eagles are found in the Klamath and Harney Basins and on the Snake and Columbia Rivers. Approximately 600 eagles regularly winter within the Lower Klamath Basin in Oregon and California. This population includes both resident and migrant eagles. The Klamath population is very dynamic in that considerable exchange and shifting occurs among communal night roosts (Keister 1981).

Nearly half of California's wintering bald eagle population occurs in the Klamath Basin (Detrich 1981b, 1982). Smaller concentrations are found at most of the large lakes and man-made reservoirs in the mountainous interior of the north half of the state and at scattered reservoirs in central and southwestern California. Some of the state's breeding birds winter near their nesting territories.

In Idaho, wintering bald eagles occur near open water throughout the state. The largest concentrations are in northern Idaho at Coeur D'Alene and Pend Oreille Lakes, in eastern Idaho along the Henry's and South Forks of the Snake River, and at American Falls Reservoir. As many as 40 eagles have been counted during the winter at Lake Lowell in southwestern Idaho. Several communal night roosts have been identified in eastern Idaho along reservoirs and in mountain valleys.

In Montana, wintering bald eagles are widely scattered, and occur in association with major rivers, lakes, and reservoirs. Areas of highest densities include Flathead Lake, the Yellowstone River, and the upper Missouri River. A significant fall concentration occurs at McDonald Creek in Glacier National Park, and large numbers of eagles apparently follow spring migration routes along the Yellowstone and Shields Rivers.

Wintering eagles in Wyoming are distributed throughout the state. A major wintering concentration is associated with the North Platte River within a 97-km (60-mi) radius of Casper. Other important wintering concentrations occur annually near Woodruff Narrows (north of Evanston) and along the Green, Snake, and Bighorn Rivers.

In Nevada, bald eagles occur in small groups at isolated water bodies throughout the state. Several eagles winter in the north end of Antelope Valley (west of the Goshute Mountains) in northeastern Nevada. This valley has very little water, and jack rabbits (Lepus spp.) are the eagles' main prey. Approximately 60% of the state's wintering eagles occur in western Nevada, 35% are observed in eastern Nevada, and 5% occur in the southern end of the state.

MOVEMENTS OF BALD EAGLE POPULATIONS

Until recently, little was known about the the migration patterns of bald eagles in the western states. Recent studies indicate that the Pacific recovery area contains important migration and wintering habitat for a large part of the continental breeding population. Many of the nesting eagles from the Pacific recovery area remain in the region throughout the year.

Radio-tracking studies of eagles captured in Glacier National Park, Montana, indicate that some of the bald eagles that winter in Montana, Wyoming, Idaho, Oregon, Nevada, and California come from breeding populations in northeastern Alberta and the MacKenzie District, Northwest Territories, Canada (Young 1983). These birds pass through Alberta and stop at Glacier National Park in autumn to feed on spawning kokanee salmon (Oncorhynchus nerka kennerlyi). From Glacier, they follow 2 general routes. Most move south to eastern Idaho where many associate with waterfowl concentrations at American Falls Reservoir on the Snake River. Some of the eagles remain in this region most of the winter while others move south into Utah or southeast into southwestern Wyoming and western Colorado. Other Glacier eagles follow, roughly, the Salmon and Payette River drainages from western Montana to western Idaho. From here, they move to the Snake River, the Harney and Klamath Basins, and valleys in western Nevada (Young 1983).

A small part of the Glacier National Park autumn concentration consists of eagles that nest and winter further east. An eagle marked in southern Colorado during its first winter has been seen during 5 consecutive autumns at Glacier, and a bird banded at Glacier was later re-trapped near a nesting area at Besnard Lake, Saskatchewan (Harmata 1984).

Banding, colormarking, and telemetry studies have also identified important migration corridors in eastern Montana and Wyoming. Of 7 sightings of wing-marked adult bald eagles banded in southern Colorado in winter and seen outside of Colorado in spring, 5 have been reported from Wyoming and Montana. Telemetry studies indicate an almost direct north-south movement of eagles between breeding areas in central and northeastern Saskatchewan and wintering areas in southern Colorado (Harmata 1984). Of 7 adult eagles tracked during spring migration from their wintering area in the San Luis Valley, Colorado, 6 and probably 7 passed through Wyoming and Montana. Four of these 7 eagles were subsequently found summering in northeastern Saskatchewan. Autumn recoveries of 2 dead adults in west central Saskatchewan suggest that they follow similar migration routes in autumn and spring (Harmata 1984).

The routes taken by radioed eagles through eastern Wyoming and incidental sightings of other adults fall along a relatively narrow migration corridor through Wyoming. Physiographic features seem to direct birds along the east front of the Medicine Bow Range west of Laramie. Then, the birds move into the Casper vicinity, east of Midwest, and through the Powder River Basin to the Yellowstone River, Montana. A major "staging" area occurs between the mouth of the Bighorn River and Miles

City on the Yellowstone River. Fort Peck Reservoir (in eastern Montana) is used as another major staging area. A potentially important migration route appears to exist in the Shields River Valley in southcentral Montana in spring; up to 70 eagles have been observed moving through this valley in a 2-hour period.

Radio-tracking studies of eagles wintering in western Washington indicate that the Washington wintering population consists of both resident and migrant eagles (Hunt and Johnson 1981). Two adult eagles that wintered on the Skagit River summered in the nearby San Juan Islands. However, some eagles moved north in the spring: 2 marked subadult eagles were found at the head of Knight Inlet in British Columbia, and another subadult was observed in southeast Alaska. In January 1982, a subadult eagle marked in Alaska was found washed ashore north of Gray's Harbor on the Washington Coast. Telemetry studies also indicate that the Washington wintering areas are an intermediate stop for some migrant eagles (Hunt, Biosystems Analysis Inc, Santa Cruz, California, pers. comm.). An adult eagle marked on the Skagit moved to the Klamath Basin and then returned to the Skagit later in the same winter. The movements of several rehabilitated eagles also suggest that birds wintering on the Skagit River may come from nesting areas in interior British Columbia and coastal areas in Puget Sound and the Strait of Georgia (Servheen and English 1979).

In northern California, many pairs seem to be year-round residents (Detrich, Bureau of Land Management, Ukiah, California, pers. comm.). Studies conducted in the Klamath Basin of southern Oregon have shown that many breeding pairs do not leave their territories during fall and winter (Frenzel and Anthony, Oregon State University, Corvallis, pers. comms.). There is both northward and southward dispersal of juveniles raised in northern California and southern Oregon. In 1979, a rehabilitated juvenile bald eagle from Shasta Lake, California, moved to Tillamook, Oregon. Juveniles from Klamath County, Oregon, have moved to British Columbia, northern California, and Sonora, Mexico, during winter months (Frenzel and Anthony, Oregon State University, Corvallis, pers. comms.).

Swenson (Montana Department of Fish and Game, Livingston, pers. comm.) believes that breeding adults from the Greater Yellowstone region probably winter within the region, although it is likely that birds that breed at high elevations winter at lower elevations. Winter distribution of adults along the lower Snake River in Wyoming indicates that nesting pairs there are year round residents, and isolated pairs in other parts of Wyoming also appear to winter in the vicinity of nesting territories.

Seasonal movements of juveniles and subadults from the Yellowstone region appear to be more long-range. Recoveries and sightings of color-banded juvenile and subadult bald eagles banded in the Greater Yellowstone region of Idaho, Wyoming, and Montana indicate a general west-southwest movement to the Pacific coast during the fall (Harmata, Montana State University, Bozeman, pers. comm.). A juvenile banded as a nestling along the Snake River in Grand Teton National Park was recovered the following October on the Owyhee River in southeastern Oregon. Color-banded eagles from the Greater Yellowstone area have been seen in northern California at the Crescent City dump. During early spring and mid-summer subadult eagles reared in the Greater Yellowstone area have

been sighted in the Yellowstone region. Eagles from nesting sites in eastern Wyoming seem to follow different migration routes. A bird banded as a nestling near Saratoga, Wyoming was found dead in winter on the Gila River in New Mexico (Jenkins, Sutton Avian Research Center, Bartlesville, Oklahoma, pers. comm.).

In summary, most eagles that breed in the Pacific recovery area probably winter in the vicinity of their nests. Some move relatively short distances to lower elevations or inland food sources. Dispersal of juvenile eagles from nests in the Pacific recovery area differs from movements of adults and is much less well defined. Juvenile eagles wander substantially in a variety of directions. Many of the eagles that winter in the Pacific recovery area have migrated from breeding grounds in northwest interior Canada. Others have come from coastal regions of British Columbia and southeast Alaska.

BALD EAGLE HABITAT CHARACTERISTICS

Nesting Habitat

Bald eagle nests in the Pacific recovery area are usually located in uneven-aged (multi-storied) stands with old-growth components (Anthony et al. 1982) and are near water bodies which support an adequate food supply. Most nests in Oregon, Washington, and California are located in predominantly coniferous stands. Factors such as relative tree height, diameter, species, form, position on the surrounding topography, distance from water, and distance from disturbance also appear to influence nest site selection (Grubb 1976, Lehman et al. 1980, Anthony and Isaacs 1981).

Bald eagles usually nest in the same territories each year and often use the same nests repeatedly. When a nest is re-used, eagles repair it and add new materials. Consequently, nests may become very large. Nests in the Pacific recovery area are typically 0.6 to 0.9 m (2-3 ft) deep and 1.5 m (5 ft) in diameter (Grubb 1976, Anderson and Bruce 1980, Lehman et al. 1980). Nest trees usually have stout upper branches to support the large structures, and flight windows that accommodate the birds' large wingspan are often present. Tree species does not seem to be as important as tree size, branch form, and location, although certain tree species meet nesting requirements to a larger degree than others (Anthony et al. 1982).

The tree selected for nesting is characteristically one of the largest in the stand or is at least co-dominant with the overstory. Nest trees usually provide an unobstructed view of an associated water body and are often in prominent locations on the topography. Live, mature trees with deformed tops are occasionally selected for nesting. Live canopies usually cover the nest to varying degrees. Nests are typically within the top 6 m (20 feet) of the tree. Forbis et al. (1977) illustrate typical nest placement in ponderosa pines (Pinus ponderosa) in California.

Size of nest tree depends on tree species, forest type, and geographic area (Anthony et al. 1982). Mean height of nest trees in the Douglas-fir (Psuedotsuga menziesii) zone of western Oregon is 58 m (191 ft), but nest tree height in western Washington averages 35 m (116 ft) (Anthony et al. 1982). Nest trees in Wyoming are considerably smaller (Alt 1980), with heights averaging only 27 m (89 ft) and diameters averaging 0.7 m (28 in). Mean diameter of nest trees in Washington and western Oregon is approximately 1.8 m (70 in) at breast height. Mean diameter values for nest trees in California and in Oregon east of the Cascades are between 1.0 and 1.2 m (41 to 46 in) at breast height (Lehman et al. 1980, Anthony et al. 1982). Heights and diameters of nest trees are typically larger than minimum specifications set for old growth by the U.S. Forest Service (Anthony et al. 1982).

Nest tree species vary by region. In Idaho, large cottonwoods (Populus spp.), ponderosa pines, and Douglas-fir are used. In Washington, 70% of the known nests are in Douglas-fir, with Sitka spruce (Picea sitchensis) being the next most frequently utilized species (Grubb 1976). Along the coast and lower Columbia River in Oregon, more than 70% of the

nests are in Douglas-fir, but approximately 80% of the nests in the Cascade Mountains and Klamath River Basin are in ponderosa pine, with Douglas-fir utilized as a secondary species (Anthony et al. 1982). In California, 74% of inventoried nests occur in ponderosa pine, with sugar pine (Pinus lambertiana) comprising 14% of the nest trees (Lehman 1979). In western Wyoming eagles nest in a variety of trees (Alt 1980), with 44% of the nests in lodgepole pine (Pinus contorta), 23% in blue and Engelmann spruce (Picea pungens, P. engelmannii), 16% in Douglas-fir, 7% in narrowleaf cottonwoods (Populus angustifolia), and 2% in limber pine (Pinus flexilus). Montana nests occur primarily in ponderosa pine and occasionally in Douglas-fir.

Cliffs were formerly used for nesting on the California coast (Detrich 1982), and historical records indicate bald eagle nesting activity in Nevada occurred on a rocky island near Pyramid lake (Linsdale 1936). In 1985, a pair in Nevada became the first to nest on a cliff within the 7-state recovery area in more than 25 years.

In 1984, a pair of bald eagles nested on a power line structure in Montana (Flath, Montana Department of Fish and Game, Bozeman, pers. comm.). Artificial nests and nest structures may be useful in the management of bald eagles in some areas (Dunstan and Borth 1970; Nelson 1978; Postupalsky 1978b, 1979; Conrad 1979; Grubb 1980b; Bertram 1981; Hawks 1982; Lehman 1983). For example, artificial nest structures may be useful to replace or support structurally inadequate or collapsed nests, especially when nest trees have been damaged, or when alternate nest trees are unavailable. In one case, bald eagles nested in previously unoccupied habitat because of the presence of an artificial nest structure (Bohm 1977). The use of artificial nests and nest structures, however, should be limited to unusual and special cases, and should not be considered as an alternative to effective habitat management and protection.

Distances of nests from water averaged 86 m (282 ft) in western Washington (Grubb 1976), and 484 m (1584 ft) in California (Lehman et al. 1980). In Oregon, distances of nests to water bodies are variable, but the majority of nests are located within 805 m (0.5 mi) of the shoreline. Mean distances of Oregon nests from water vary from 430 m (470 yds) in the Cascade Mountains, to 1130 m (1236 yds) in the Klamath Basin, to 1260 m (1378 yds) in the Columbia River Basin and coastal regions (Anthony and Isaacs 1981). In Wyoming, 83% of the nests are within 200 m of water; the range is 5 m to 1.5 km (Alt 1980).

Bald eagles often construct alternate nests within a territory and vary use between them from year to year. Up to 5 alternate nests may be constructed within a single territory. In western Washington, 38% of the nesting territories contained alternate nests (Grubb 1980a). These nests were an average of 320 m (1050 ft) from the occupied nest. Oregon nesting territories average 1.6 nests per territory with 51% of the territories having alternate nests (Anthony and Isaacs 1981). In California 56% of territories have alternate nests (Lehman 1983). Unused nests may be alternate nests and are important components of the territory. The reason for multiple nest construction is not fully understood. Alternate nests may facilitate successful reproduction if the primary nest is blown from the tree or otherwise destroyed; the time and energy required to build a

new nest might preclude nesting in the same season (Newton 1979). Alternate nests may also serve as visual territory markers (Newton 1979).

Snags, trees with exposed lateral limbs, or with dead tops are often present in nesting territories and are used for perching or as access points to and from the nest. Such trees also provide vantage points from which territories can be guarded and defended.

Forests with suitable nest and perch trees are critical to bald eagle populations. Perpetuation of timber stands both within occupied and unoccupied habitats will be necessary to maintain current populations and to reach recovery goals. Potential conflicts between timber management and bald eagle habitat management efforts exist, but such activities may be compatible in appropriate multiple-use frameworks (Lehman et al. 1980, Goold 1981). In some cases, timber stand manipulation by carefully designed harvest or prescribed burning may be required to maintain preferred nest and perch tree species. For example, the understories in about 60% of the timber stands inventoried in California were poorly stocked with ponderosa pine, the species in which bald eagles usually nest (Lehman 1979).

Distribution and spacing of bald eagle nesting pairs is thought to be a function of interspecific territoriality and the capability of the foraging habitat to support nesting pairs of eagles. In southcentral Oregon, Frenzel (1983) found that mean distance between nesting territories was 3.2 km with a range of 0.93 to 10.6 km. Grubb (1980a) found the average territory radius in western Washington to be 2.6 km (1.6 mi). In the area of highest nesting density in California (Lake Britton, Shasta County), distances between concurrently occupied nesting territories averaged 2.4 km (1.5 mi) and ranged from 1.8 km (1.1 mi) to 3.7 km (2.3 mi) (Detrich 1980). A better understanding of territoriality and spacing among nesting territories is important to provide and plan for potential habitat to meet recovery objectives. For example, recent analyses have revealed depressed nesting success when occupied nests are less than 3.2 km apart (Anthony, Oregon Cooperative Wildlife Research Unit, Corvallis, pers. comm.).

Bald eagles are particularly intolerant of human disturbance during the breeding season. Human activities have caused abandonment of nests and have resulted in reproductive failures (Detrich 1980, Bogener 1980, Lehman 1983). In some cases, eagles may have relocated their nests to avoid excessive disturbance (Thelander 1973, Anthony and Isaacs 1981). Eagle tolerance of human activity varies between individuals. In general, adult eagles are more sensitive to disturbance during courtship, egg-laying and incubation, and their sensitivity decreases as young develop (Mathisen 1968, Fraser 1981). Anthony and Isaacs (1981) found nesting productivity in Oregon to be inversely correlated with past years' logging activity and road use. Productive nests in Washington are further from permanent human activity than are unproductive sites (Grubb 1980a).

Winter Habitat Requirements

Wintering eagles in the Pacific recovery area perch on a variety of substrates; proximity to a food source is probably the most important

factor influencing perch selection by bald eagles (Steenhof et al. 1980). Favored perch trees are invariably located near feeding areas, and eagles consistently use preferred branches (Stalmaster 1976). Most tree perches selected by eagles provide a good view of the surrounding area (Servheen 1975, Stalmaster 1976), and eagles tend to use the highest perch sites available (Stalmaster 1976).

Eagles use a variety of tree species as perch sites, depending on regional forest types and stand structures. The structural characteristics of some species make them especially suitable as eagle perches. On the Nooksack River in Washington eagles use bigleaf maple (Acer macrophyllum) because of its large size and growth form. Sitka spruce is often used by eagles because of its proximity to water and its height. Other conifers in this area are avoided by eagles presumably because the foliage obscures vision. Red alder (Alnus rubra) is utilized statistically less than expected because of its relatively low height, while eagles use black cottonwood (Populus trichocarpa) more than expected because of its relative tallness (Stalmaster 1976). Dead trees are used by eagles in some areas because they provide unobstructed views and are often taller than surrounding vegetation (Stalmaster 1976).

Artificial perches may be important to wintering bald eagles in situations where natural perches are lacking. Along the Columbia River in Washington, where perch trees are not available, eagles regularly use artificial perches, including both crossarm perches and a tripod perch (Fielder, Washington Public Utility District, Wenatchee, pers. comm.). These perches may have made previously unsuitable foraging areas available to eagles (Knight, University of Wisconsin, Madison, pers. comm.). Elsewhere, however, artificial perches have been less successful. A tripod perch, designed as a substitute for cottonwoods, was constructed near an eagle feeding area on the bank of Lake Ewana (Klamath River) in Oregon. Although eagles did not use the perch during the first winter, as many as seven utilized it the second year. The number of eagles using the artificial perch, however, has been lower than the number using the original cottonwoods. Eagles have since shifted use to smaller trees and snags near the artificial perch (Opp, Oregon Department of Fish and Wildlife, Klamath Falls, pers. comm.).

Habitat requirements for communal night roosting are different from those for diurnal perching. Communal roosts are invariably near a rich food resource (i.e., runs of anadromous fish, high concentrations of waterfowl) and in forest stands that are uneven-aged and have at least a remnant of the old-growth forest component (Anthony et al. 1982). Close proximity to a feeding area is not the only requirement for night roosting sites, as there are minimum requirements for forest stand structure. For example, Keister and Anthony (1983) found that bald eagles used old-growth forest stands as far as 15 km from the food source in the Klamath Basin even though closer stands of juniper and young ponderosa pine were available. Some resident California pairs roost near their nests during the fall and winter, but others roost in groves 1-3 km (1-2 mi) from their nests (Detrich, Bureau of Land Management, Ukiah, California, pers. comm.). In open areas, bald eagles also use cottonwoods and willows for night roosting (Isaacs and Anthony 1983).

Most communal winter roosts used by bald eagles throughout the recovery area offer considerably more protection from the weather than diurnal habitat. Roosts in western Washington provide protection from chilling weather both because they are sheltered by landforms and because their coniferous foliage insulates eagles from wind and rain (Stalmaster 1976, Hansen 1977). Roosts in the Klamath Basin offer protection from inclement weather because they consist of dense, old-growth timber in bowl-shaped depressions (Krauss 1977, Keister 1981). One roost in the Klamath Basin, however, is located in old-growth timber near the top of a mountain. Keister (1981) and Stalmaster (1981) demonstrated that communal roosts have more favorable microclimates for eagles than surrounding areas and thereby facilitate energy conservation.

Roost tree species and stand characteristics vary considerably throughout the recovery area (Anthony et al. 1982). Eagles in northern Idaho roost in western white pine (Pinus monticola) and western larch (Larix occidentalis) (Lint 1975), and Klamath Basin eagles roost in ponderosa pine and Douglas-fir (Krauss 1977, Keister 1981). In eastern Washington, eagles utilize mixed stands of Douglas-fir and ponderosa pine as well as stands of black locusts (Robinia psuedoacacia) and black cottonwood (Knight, Washington Department of Game, unpubl. data). In Nevada, eagles roost in limber pine and narrowleaf cottonwoods (Page and Miller 1981). Eagles prefer older trees that have an open branching pattern in the top half of the tree and usually use the largest trees in the roost (Keister 1981, Anthony et al. 1982). Snags and spike-top trees are frequently used at roosts in Klamath Basin and eastern Idaho.

Isolation is an important feature of bald eagle wintering habitat. In the Klamath Basin all four major communal roosts are in remote areas (Keister 1981). On the Nooksack and Skagit Rivers, eagles consistently use the bank of the river with the least human activity (Servheen 1975, Stalmaster 1976). Excessive human activity may be the reason that some suitable wintering habitats are not used by eagles (Detrich 1978, Fitzner and Hanson 1979).

In Washington, 98% of wintering bald eagles tolerated human activities at a distance of 300 m (328 yds) (Stalmaster and Newman 1978). However, only 50% of eagles tolerated disturbances at distances of 150 m (164 yds). Skagen (1980) found that eagles flushed at shorter distances and returned more quickly to perches when food was scarce than when food was abundant.

Automobile traffic seems to be one of the least disturbing human activities in wintering habitat; eagles apparently become conditioned to vehicles on and near roads (Stalmaster 1976). Airplanes flying at altitudes of 30 to 90 m (100-300 ft) above wintering sites rarely disturb eagles (Krauss 1977), but motorboats, drift boats and fishermen on the shore and ice can disrupt eagle activity patterns (Stalmaster 1976). On some wintering areas, pedestrians are more disturbing than cars but less disturbing than boats. A screening of heavy vegetation may reduce the disturbing effect of foot traffic, because eagles are more readily flushed by hikers who are clearly visible (Stalmaster 1976). Minor auditory disturbances without associated visual cues do not appear to disrupt the activity of wintering eagles.

Food Habits

Adequate forage sources are perhaps the most critical components of bald eagle breeding and wintering habitat. Fish, waterfowl, jack rabbits, and various types of carrion comprise the most common food sources for eagles in the Pacific recovery area. The presence of a food source does not always ensure its attractiveness to bald eagles; eagles often depend on prey that are dead, dying, or otherwise vulnerable. As a result, considerable local and seasonal variation occurs in the diet.

Anadromous fisheries are important to eagles in the fall and winter, especially on the Nooksack and Skagit Rivers in Washington. Wide, braided river stretches with numerous gravel bars which retain spawned salmon carcasses provide ideal foraging habitat (Stalmaster 1976). Gravel bars with heavy foliage are not as attractive to eagles even when salmon carcasses are present (Servheen 1975, Stalmaster 1976). Salmon which are reared and which spawn in hatcheries are usually not available to eagles, because the carcasses are disposed of or are used by humans. Commercial over fishing of anadromous runs may represent a future threat to bald eagles wintering in the Pacific recovery area.

Wintering eagles also rely extensively on non-anadromous fish throughout the 7-state recovery area, and the relative importance of fish species varies among water bodies. Land-locked kokanee salmon are especially important in Oregon, California, Idaho, and Montana. Other species utilized include whitefish (Prosopium sp.), squawfish (Ptychocheilus sp.), carp (Cyprinus carpio), suckers (Catostomus sp.), tui chub (Gila bicolor), and trout (Salmo sp.).

Coots (Fulica americana), mallards (Anas platyrhynchos), and chukars (Alectoris chukar) are the most important food items for eagles wintering at reservoirs on the Columbia River (Fielder 1982). In the Klamath Basin, wintering eagles feed on crippled waterfowl and waterfowl weakened or killed by fowl cholera and lead poisoning (Keister 1981). Birds comprise over 82% of the prey taken by eagles on Upper Klamath Lake from October through February, and only 20% of the avian prey are scavenged (Frenzel 1984). Gulls (Larus spp.) and coots are important at reservoirs throughout California.

Mammalian carrion is an important alternate winter food source for bald eagles in Washington (Servheen 1975, Stalmaster 1976), Montana (Flath, Montana Department of Fish and Game, Bozeman, pers. comm.), central Oregon (Opp, Oregon Department of Fish and Wildlife, Klamath Falls, pers. comm.), and parts of California (Detrich 1978). Eagles feed extensively on voles (Microtus montanus) displaced by spring flooding of fields in the Klamath Basin (Opp 1980, Keister 1981). Snowshoe hare (Lepus americanus) and scavenged deer may be important to eagles in Oregon's Cascade Lakes during winter (Frenzel 1984).

Eagles nesting in southcentral Oregon have a diverse diet that includes 16 species of fish, 36 species of birds, 15 species of mammals, and 2 invertebrate species (Frenzel 1984). Fish comprise 62% of the diet during the breeding season, and mammals comprise less than 10% of the total prey items. Trout and whitefish are the principal fish species

taken by eagles nesting on the Cascade Lakes; chubs, suckers, centrarchids, and bullheads (Ictalurus spp.) are more important in the Klamath Basin. Grebes, ducks, and coots are the principal avian prey of eagles nesting in southcentral Oregon. On some southcentral Oregon reservoirs, eagles obtain up to 28% of their prey by pirating, but most breeding adult eagles are efficient hunters of live prey (Frenzel 1984).

In Idaho, eagles use big game carrion from nearby winter ranges, along with waterfowl and jack rabbits in the early part of the nesting season. By late spring, a fish diet predominates (Jones, Bureau of Land Management, Idaho Falls, Idaho, pers. comm.).

At many California reservoirs, warm water and nongame fish species are the most important items in the diet of breeding bald eagles. Prey collected at California nests has included bass (Micropterus spp.), crappie (Pomoxis spp.), catfish (Ictalurus spp.), sucker (Catostomus spp.), carp (Cyprinus carpio), trout, hardhead (Mylopharodon conocephalus), Sacramento squawfish (Ptychocheilus grandis), western grebe (Aechmophorus occidentalis), pied-billed grebe (Podilymbus podiceps), white-fronted goose (Anser albifrons), snow goose (Chen caerulescens), mallard, American wigeon (Anas americana), gadwall (Anas strepera), Green-winged teal (Anas crecca), shoveler (Anas clypeata), ring-necked pheasant (Phasianus colchicus), common crow (Corvus brachyrhynchos), muskrat (Ondatra zibethica), jack rabbit (Lepus spp.), and ground squirrel (Spermophilus spp.) (Detrich, Bureau of Land Management, Ukiah, California, and Jackman, Biosystems Analysis Inc., Santa Cruz, pers. comms.).

THREATS TO BALD EAGLE POPULATIONS

Habitat loss continues to be and will probably continue as the most significant long-term threat to all bald eagle populations in the recovery area. Urban and recreational development, logging, mineral exploration and extraction, and all other forms of human activities are adversely affecting the suitability of breeding, wintering, and foraging areas. While individual and small scale actions may not appear to jeopardize the species as a whole, the cumulative long-term effect throughout the recovery area poses the single most important threat to the species recovery. Only through aggressive habitat management and protection, land acquisition, land planning, and public education can the threat of habitat destruction be offset.

Shooting continues to be the most frequently recorded single cause of bald eagle mortality, though the rate seems to be declining. Of 1429 eagles examined between 1963 and 1984, 23% succumbed to gunshot. Coon et al. (1970) reported that more than half of all eagles examined at the Patuxent Wildlife Research Laboratory between 1960 and 1965 had died of gunshot wounds. However between 1978 and 1981, less than 20% of eagles necropsied had been shot (Reichel et al. 1984). In 1981, 2 marked eagles that were part of movement and reintroduction studies were shot in Oregon and California, and in Washington, Federal investigators arrested 22 people for killing more than 100 eagles (Clark and LeFranc 1981). Of 40 bald eagles from the 7-state recovery area examined since 1976 (Wiemeyer, Patuxent Wildlife Research Center, Laurel, Maryland, pers. comm.), 9 had been shot (the remaining 31 birds died of miscellaneous causes including impact injuries, electrocution, poisoning, diseases, and drowning).

Bald eagle reproduction throughout the species' range seems to have improved since registration of DDT and other organochlorine pesticides was cancelled for most uses in the early 1970's (Postupalsky 1978a). Moderate increases in some breeding populations in the Pacific recovery area have recently become apparent and are probably associated in part with decreasing environmental levels of DDE. However, DDE and PCB's are present in bald eagles on the lower Columbia River and are associated with severe eggshell thinning and low breeding success (Anthony, Oregon Cooperative Wildlife Research Unit, Corvallis, pers. comm). In addition, DDE is still present at significant levels in some pairs in Oregon (Frenzel 1984) and California (Risebrough and Jarman 1985). Wiemeyer (Patuxent Wildlife Research Center, Laurel, Maryland, pers. comm.) found that 20% of the injured and dead eagles sent recently from the Pacific Northwest to the USDI, Fish and Wildlife Service's Patuxent Wildlife Research Center, Laurel, Maryland, contained levels of DDE high enough to hinder reproduction. An adult female found near Bend, Oregon contained higher levels of DDE in the brain than all other 292 eagles analyzed between 1978 and 1981 (Reichel et al. 1984). These facts, along with recent applications of Kelthane (dicofol), a pesticide containing DDT as a manufacturing by-product (Hunt et al. in press, Risebrough et al. in press) suggest that DDT-related problems may continue to threaten bald eagle populations in the Pacific recovery area (Risebrough and Jarman 1985).

Secondary lead poisoning is a significant problem where eagles feed on crippled and poisoned waterfowl (Mulhern et al. 1970, Jacobson et al. 1977, and Kaiser et al. 1980). Eagles succumb to lead poisoning after ingesting lead pellets in the gizzards and/or flesh of dead and crippled waterfowl (Feierabend and Myers 1984). Between 1975 and 1977, lead poisoning was the 4th most frequent cause of bald eagle mortality (Kaiser et al. 1980). Between 1978 and 1981, 6% of dead bald eagles turned into the U.S Fish and Wildlife Service from throughout the country died of lead poisoning (Reichel et al. 1984). Most bald eagle lead poisoning cases have been diagnosed since 1979, and the frequency of lead poisoning has increased since that time (National Wildlife Health Laboratory 1985). In 1984, 15.2% of all bald eagle mortalities diagnosed by the U.S. Fish and Wildlife Service were attributed to lead poisoning (Feierabend, National Wildlife Federation, Washington, D.C., pers. comm.). Sublethal lead contamination may contribute to additional mortality (Feierabend and Myers 1984). Eagles are most susceptible to lead poisoning in areas like the Klamath Basin, where waterfowl serve as a primary food for wintering eagles. Four bald eagle deaths from lead poisoning have been recorded in the Klamath Basin since 1975 (Feierabend and Myers 1984). Lead poisoned eagles have been documented in California (5 cases), Oregon (5 cases), Montana (3 cases), Wyoming (3 cases), Idaho (1 case), and Washington (1 case). The National Wildlife Federation recently listed 6 counties (including 2 in California and 1 in Washington) where the risk of lead poisoning in bald eagles appears to be high (Feierabend and Myers 1984). In addition, the Federation's report identified "lead poisoning problem areas" in California (2 additional counties), Idaho, Montana, Oregon, and Nevada (3 counties each). The long range impact of lead on bald eagle populations in the Pacific recovery area can only be assessed through a great deal of new research. However, establishment of nontoxic shot zones in areas with wintering eagles and waterfowl would be a significant step in alleviating the problem.

Many other environmental contaminants represent potentially significant threats to bald eagles. For example, two immature bald eagles were confirmed to have died recently in California from ingestion of an organophosphate insecticide used for systemic treatment of warble fly in cattle. Dioxin, endrin, heptachlor epoxide, mercury, and polychlorinated biphenyls (PCB's) still occur in eagle food supplies; however, their overall effects on eagle populations are poorly understood.

Eagles are sometimes exposed to lethal poisons from vertebrate pest control programs. Eagles become exposed to such poisons during scavenging activities, mainly by feeding on contaminated carcasses. Eagles are known to have died from thallium, cyanide, strychnine, and 1080. At least 11 eagles died in Wyoming in 1971 from thallium poisoning (National Wildlife Health Laboratory 1985). Strychnine has caused bald eagle mortalities in recent years, as well. The death of at least one bald eagle in California has been attributed to strychnine poisoning associated with control of ground squirrels on rangelands (Detrich, Bureau of Land Management, Ukiah, California, pers. comm.). Use of strychnine for Richardson's ground squirrel control coincides with the most active part of the spring bald eagle migration in Montana. Eagles moving through the state tend to prey heavily on the recently emerged ground squirrels. Consequently, the risk

of secondary poisoning is greater than at other times of the year. The same concerns exist for northern California bald eagles.

Recent reauthorization for very limited use of the predator control agent, 1080, on public lands--in sheep collars and drop baits--may represent an occasional risk to bald eagles. One eagle death has been documented in Utah as a result of 1080 poisoning (National Wildlife Health Laboratory 1985). Additional bald eagle injuries and mortalities associated with animal damage control programs may occur when eagles are accidentally trapped on rangelands during predator control activities.

Although electrocutions of raptors have decreased in recent years, electrocutions may continue to be a problem on specific electrical distribution lines which do not meet suggested standards for raptor protection (Olendorff et al. 1981). Between 1963 and 1984, approximately 20% of eagle mortalities from California and Oregon were due to electrocution (National Wildlife Health Laboratory 1985). Electrocutions may occur on any unsafe lines in eagle use areas, and young birds whose flight skills are not fully developed are most vulnerable. In general, collisions with power lines seem to occur with less frequency than electrocutions; Olendorff and Lehman (in press) documented only 15 confirmed cases of bald eagle collisions with utility lines. However, in certain areas where bald eagles concentrate, transmission lines can represent a threat. In the Klamath Basin for example, collisions with transmission lines may cause more injuries and mortalities than electrocutions on distribution lines.

MANAGEMENT PROGRESS TO DATE

Conservation efforts by the Federal government, state agencies, private organizations, and individuals have accelerated in the Pacific recovery area since the 1960's. Although bald eagles were fully protected as individuals under the 1940 Bald Eagle Protection Act (16 U.S.C. 668-668d), populations and habitats have received additional protection under the Endangered Species Act of 1973 (16 U.S.C., 1531 et seq.), as amended. Eagles are also protected by many state laws, and Federal agencies now consult with Fish and Wildlife Service representatives about any agency actions that may affect bald eagles. Five regional recovery teams have been established to outline the actions needed to effect the species' recovery throughout its range.

Interagency working teams have also been established in some states to coordinate management and research activities in specific areas. In California, Oregon, and Washington, bald eagle working teams were formed in the 1970's to identify and mitigate threats to bald eagles and to establish priorities and recommendations for management of the species in those areas. A Greater Yellowstone working group with similar responsibilities for portions of Idaho, Wyoming, and Montana was established in 1981, and a Montana working group was established in early 1982. Local groups have been active in defining management needs for specific areas, as in the Nooksack and Skagit River areas in Washington, and in writing management plans for specific nest sites.

Many steps have been taken to reduce eagle shooting in the Pacific recovery area and throughout the country. The National Wildlife Federation offers a $500 reward for information leading to the conviction of persons who have shot eagles. In 1981, one man in Oregon (Young 1983), and two in California (Jurek, California Department of Fish and Game, Sacramento, pers. comm.), were convicted of shooting radioed eagles and were heavily fined and given suspended jail sentences. The Glacier Natural History Association, Incorporated recently initiated a crime stopper program to help reduce poaching and prosecute violators.

Electric companies in the Pacific recovery area have taken steps since the mid-1970's to resolve many of the problems associated with raptors and power lines. The Idaho Power Company, for example, sponsored extensive work in design changes and modifications of its power lines and poles to reduce raptor electrocutions, and the Edison Electric Institute and Raptor Research Foundation cooperated to publicize guidelines for power line modifications (Olendorff et al. 1981). In California, several power companies are supporting current efforts to assess the impacts of power line collisions on raptor populations. The Pacific Gas and Electric Company recently sponsored a major bald eagle and fish study to assess water and power management plans in an important eagle nesting and wintering area in California.

Rehabilitation facilities in several states are becoming more numerous, and increasing numbers of eagles which otherwise would have been lost are being returned to wild populations.

Annual midwinter counts, coordinated by the National Wildlife Federation, have identified key wintering habitat in the recovery area, and annual breeding activity surveys are conducted for known nest sites in the 7-state recovery area. Coordinated spring surveys began in 1985 in an effort to locate habitats used by migrating eagles. Federal, state, and private organizations have cooperated to make both the winter and spring surveys successful.

Management guidelines for nesting habitat have been written by the California Region of the U.S. Forest Service (USFS) (Forbis et al. 1977), and by the U.S. Fish and Wildlife Service (FWS) for Oregon and Washington. These guidelines have been implemented by government agencies and some private timber companies in their timber management activities. The Bureau of Land Management (BLM) and the USFS are now identifying bald eagle habitat in their planning processes (Peterson and Johnston 1980, Hawks 1982), and have recognized important habitat in special plans such as the Klamath National Forest's "Three Sisters Bald Eagle Winter Roost Management Plan" (Camarena 1978), the Winema National Forest's "Klamath Bald Eagle Habitat Management Plan" (Goold 1981), the Fremont National Forest's "Bald Eagle Management Plan" (Isaacs and Silovsky 1981), and the BLM's "Bowen Canyon Habitat Plan" (Bird 1981). Regional interagency plans have been developed for the Greater Yellowstone Ecosystem (GYE Bald Eagle Working Team 1983) and the Lake Britton area in California (Burke 1983).

The California Board of Forestry adopted new forest practice rules in 1983 to guide timber harvest management and protection measures for bald eagle nesting sites on private timberlands. Although most large commercial timberland owners have been cooperative in protecting nesting sites, the rules do not provide the framework needed to ensure long-term maintenance of breeding territory characteristics.

In a few cases where specific habitats have been threatened, private organizations have intervened. The Nature Conservancy and the Washington Department of Game cooperated to purchase more than 1,200 acres of wintering habitat along the Skagit River. In the Klamath Basin, the Nature Conservancy and the National Wildlife Federation have cooperated to acquire important roosting areas. These agencies are also procuring conservation easements to protect nest sites on private lands.

County land-use and zoning agencies are becoming more involved in eagle management (Lincer 1981). In Washington, San Juan County officials are accepting responsibility for bald eagle habitat protection on private lands and have restricted some building permits near known nest sites. County land use plans in Shasta County, California; Teton County, Wyoming; and Coos and Klamath Counties in Oregon, have included eagle nests in land planning processes.

From 1980 to 1985, David Garcelon, Institute for Wildlife Studies, Arcata, California, with the cooperation of the FWS, the USFS, the California Department of Fish and Game, and the Washington Department of Game, released 25 fledgling-aged eagles on Santa Catalina Island off the coast of southern California, in an effort to re-establish a breeding population. In the winter of 1985, 11 of the birds released remained

on the island.

Research on eagles in the recovery area has increased dramatically in recent years. Research at the Oregon Cooperative Wildlife Research Unit is focusing on breeding surveys, nest territory characteristics, and winter roosting habitat. In addition, the Unit's research is yielding valuable data on the influences of movements, foraging behavior, and diets of eagles on uptake of environmental contaminants. The USFS Pacific Southwest Forest and Range Experiment Station in California is analyzing voice recordings of individual eagles and evaluating their potential management application (Verner and Lehman 1982). Recognition of individuals through this means may aid in monitoring movements and may provide valuable insight into eagle behavior, nest site tenacity, pair bonding, and dispersal.

Efforts to inform the public about bald eagle conservation and biology have been initiated throughout the 7-state recovery area. The Washington Department of Game has produced four 30-second television messages on eagles, and important eagle concentrations in the Klamath Basin and northern Idaho have received both local and national news coverage. The Greater Yellowstone Working Group has prepared posters, brochures, and public service announcements for television stations in Montana, Wyoming, and Idaho. The Idaho Department of Fish and Game has recently developed two leaflets that include information on bald eagles, and a short slide tape program with script has been developed for speaking engagements by the Montana Bald Eagle Working Group. Private industry has also been an important disseminator of information on eagles. General Wine and Spirits Company, producers of Eagle Rare Bourbon, published a brochure on bald eagles and financed efforts to encourage media coverage of eagle management and protection projects.

Information exchange among professional biologists in the west has also been stimulated in recent years. In Oregon, the National Audubon Society, FWS, and Oregon Department of Fish and Wildlife have sponsored an annual Klamath Basin Bald Eagle Conference to discuss regional problems facing the bald eagle and their possible solutions. In 1980, several conservation agencies sponsored a 2-day symposium in Seattle, Washington on bald eagle management and ecology in the Pacific Northwest (Knight et al. 1980b). In 1983, the Cooperative Wildlife Research Unit at Oregon State University, Corvallis, hosted a workshop on habitat management for nesting and roosting bald eagles in the western United States (Anthony et al. 1983).

State agencies have become increasingly involved in bald eagle protection and management activities through use of tax check-off money earmarked for nongame wildlife. The California Department of Fish and Game, for example, has expended funds from its first year's check-off for the bald eagle reintroduction program in the Channel Islands. This reintroduction program has focused additional public attention on the plight of the eagle.

By presidential declaration and a joint resolution of the Congress, June 20, 1982, was proclaimed as "National Bald Eagle Day" (the bald eagle was designated as the National symbol on June 20, 1782), and the year 1982 as the "Bicentennial Year of the American Bald Eagle." This was in recognition of efforts to conserve our national heritage, as symbolized by the bald eagle.

These actions mark the beginning of the bald eagle's recovery in the Pacific recovery area. This recovery plan is meant to continue, expand, and focus these efforts to achieve recovery goals.

PART II. RECOVERY

OBJECTIVE

The primary objective of this recovery plan is to outline steps that will provide secure habitat for bald eagles in the 7-state Pacific recovery area and increase populations in specific geographic areas to levels where it is possible to delist the species. These goals can be achieved through protection and management of habitat, direct augmentation of populations, increased law enforcement, public awareness, and continued research on the biological requirements of eagles that will provide direction to managers and land planners.

Bald eagles are now classified as "threatened" in Oregon and Washington. Reclassification from endangered to threatened could be considered in the remaining 5 states if the number of nesting pairs continues to increase annually from 1985 to 1990. Reclassification could occur in each of the 5 states separately.

Delisting should occur on a regionwide basis and should be based on 4 criteria. First, there should be a minimum of 800 pairs nesting in the 7-state recovery area. Second, these pairs should be producing an annual average of at least 1.0 fledged young per pair, with an average success rate per occupied site of not less than 65% over a 5-year period. Third, to ensure an acceptable distribution of nesting pairs, population recovery goals must be met in at least 80% of the management zones with nesting potential (see below). Finally, a persistent, long term decline in any sizeable (greater than 100 birds) wintering aggregation would provide evidence for not delisting the species.

The status of the breeding population is the most important criterion for delisting. Goals for wintering populations cannot be established as easily because of year-to-year fluctuations in migration and habitat use. If the breeding population goal is reached, we can assume that adequate breeding habitat has been secured. Wintering habitat (both roosting and foraging) must also be managed to support existing populations and to allow for the proposed increases in populations.

An important element of the recovery goal is the reproductive rate. High populations alone will not ensure the species' recovery if pairs are producing young at a low rate. Unfortunately, we do not have information on mortality rates or minimum recruitment necessary for population stability. Studies of other eagle populations (see Sprunt et al. 1973) indicate that from 0.8 to 1.1 young per pair (occupied site) are produced yearly in populations that appear to be stable in Alaska, the Great Lake States, and Florida. In the Pacific recovery area , productivity has averaged just less than 1.0 per pair over the last 10 years (Table 1). There has been a close correlation between number of young produced per pair and percentage of occupied sites that successfully produce young (Table 1; Anthony, unpubl. data). A productivity rate of 1.0 young per pair has been correlated with 65% of occupied territories being successful. Because this latter measure may be easier to obtain from

extensive surveys, it has been included in the recovery objective.

The zone approach is central to the recovery process because establishment of well-distributed eagle populations and habitats is important to recovery of the species in the Pacific recovery area. With breeding populations distributed throughout the recovery area, gene flow betweeen subpopulations will be possible, and the risk of species extinction from disease outbreaks or other catastrophic events will be reduced. Another justification for the zone approach is that populations, threats, potentials for increase, and management strategies differ greatly throughout the recovery area. Forty-seven management zones (Figure 1) have been designated in the 7-state Pacific recovery area based on physiographic features, seasonal use by eagles, major land uses, and land ownership. Thirty-seven of these zones are believed to have nesting potential.

The overall population goal of 800 pairs is equivalent to a minimum nucleus of nesting pairs which, if self-sustaining over the long-term, will be capable of maintaining the genetic variability in the breeding population. The Habitat Management Goal (1178 territories) is the minimum number of territories needed to provide secure habitat for this recovered population. It is higher than the goal for number of breeding pairs because not all territories can be expected to be occupied in any given year. In each of the zones with nesting potential, recovery goals have been expressed as both a "Habitat Management Goal" and a "Population Goal" (Table 3). The Population Goal for each zone took into consideration the number of existing pairs and the estimated availability of suitable habitat within the zone. Habitat Management Goals for each zone are based on 1983 information on local occupancy rates or the best estimated approximation of occupancy rates (Habitat Management goal = Population Goal / Occupancy Rate). Each zone's Habitat Management Goal is far below the amount of potential habitat that is now available, just as the Population Goal is far short of what might be considered the biological potential or highest possible population. Throughout the Pacific recovery area, recovery goals are still probably only a fraction of historical population levels.

To reach the recovery goals, eagles will have to occupy existing nesting territories as well as areas that are presently not used by eagles. Areas that contain important habitat for eagles have been identified in Appendix A as "key areas." Many of the key areas appear capable of supporting more nesting pairs than they now do. In addition, some areas not now used by eagles appear capable of supporting nesting pairs. The areas most likely to be occupied by nesting pairs in the next 5-10 years are identified as "target recovery territories" in Appendix A. Areas apparently suitable but not presently used for nesting were identified with the assistance of local, state, and federal biologists. Designation of these areas was aided by the existence of historical nesting records, repeated sightings of adult bald eagles in an area during spring and summer, and/or the presence of forests with large trees within 1.6 km (1 mi) of a permanent body of water that possesses a good supply of fish and/or waterfowl. Assessment of suitability took social and political constraints into account with the assumption that no major habitat alterations would be undertaken for the sole purpose of benefiting bald eagles.

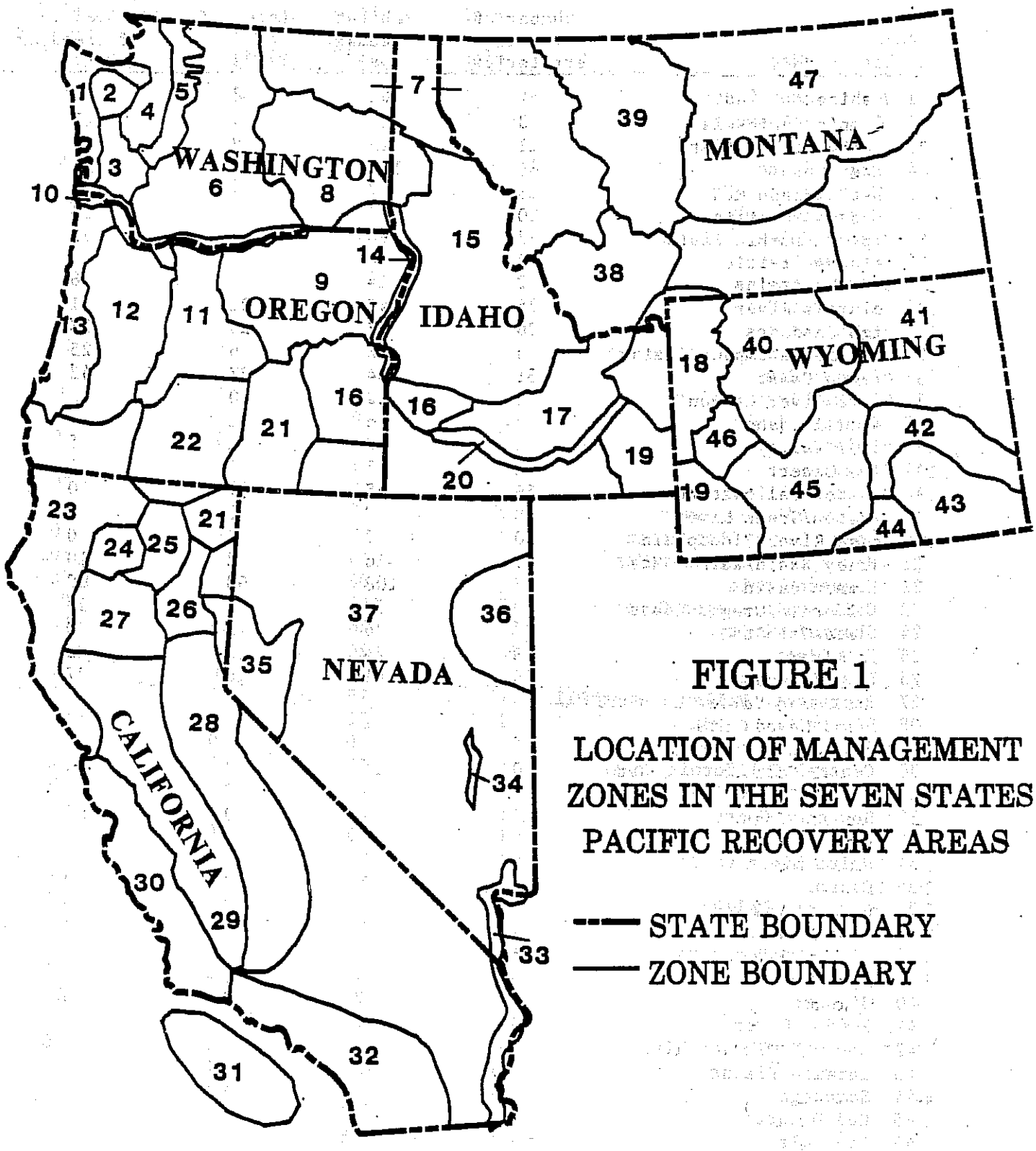

FIGURE 1

LOCATION OF MANAGEMENT ZONES IN THE SEVEN STATES PACIFIC RECOVERY AREAS

---- STATE BOUNDARY

—— ZONE BOUNDARY

TABLE 3. Number of existing territories and pairs, and habitat and population goals, by zone. Additional summaries are in Appendix A.

Zone Number - Name	Number of Existing Territories[1]	Habitat Management Goal[2]	Number of Current Pairs[3]	Recovery Population Goal (Number of Breeding Pairs)[4]
1 Washington Coast	68	101	48	74
2 Olympic Peninsula	8	23	4	17
3 Southwest Washington	11	11	8	8
4 Puget Sound	161	156	130	115
5 West Cascade Mts.	16	17	16	13
6 Cascade Mountains	10	27	7	20
7 Upper Columbia Basin	47	98	40	69
8 Palouse Prairie	2	4	1	3
9 Blue Mountains	2	14	1	8
10 Columbia River	25	47	21	31
11 High Cascades	26	47	24	33
12 Willamette/Umpqua Basins	6	42	6	25
13 Oregon Coast	31	64	27	42
14 Snake River Canyon	1	12	0	6
15 Central Idaho	2	6	1	4
16 Boise Valley	1	9	1	5
17 High Desert	1	1	1	1
18 Greater Yellowstone	56	65	49	50
19 Caribou/Green River	0	3	0	1
20 Snake River Floodplain	0	2	0	0
21 Harney Basin/Warner Mts.	2	16	2	10
22 Klamath Basin	77	108	68	80
23 California/Oregon Coast	9	52	7	28
24 Shasta/Trinity	20	26	13	20
25 Pit River	18	24	13	21
26 Lassen/Plumas	26	41	16	27
27 Sacramento Valley & Foothills	4	15	3	8
28 Sierra Nevada Mts.	1	32	0	15
29 San Joaquin Valley	0	0	0	0
30 Central California Coast	0	11	0	4
31 Channel Islands	0	16	0	6
32 Southern Coast	0	4	0	0
33 Colorado River	0	1	0	0
34 White River Valley	0	0	0	0
35 Carson	0	0	0	0
36 Antelope Valley	0	0	0	0
37 Great Basin	1	3	1	2
38 Missouri Headwaters	6	8	3	6
39 Upper Missouri	4	13	2	10
40 Bighorn	7	23	2	14
41 Powder River	8	14	7	9
42 Lower N. Platte River	0	0	0	0
43 Laramie Plains	0	0	0	0
44 Saratoga	6	8	5	5
45 Red Desert	0	0	0	0
46 Pinedale	2	5	0	4
47 Missouri Basin	0	9	0	6
Grand Total	665	1178	527	800

Footnotes to Table 3

1 Includes all territories occupied at any time between 1970 and 1985 where habitat remains suitable.

2 Habitat management goal = the minimum number of territories needed to provide secure habitat for the recovered population.

3 Includes all territories occupied in the most recent complete survey of a particular area.

4 Recovery population goal = the minimum nucleus of nesting pairs which, if self-sustaining over the long-term, will be capable of maintaining the genetic variability in the breeding population.

Recovery goals are not intended to be tied to specific distributions within zones. Specific areas are listed in Appendix A only to provide guidance on how recovery goals might be achieved in each zone.

Although the criteria for setting goals were similar in all zones, potential habitat is not distributed uniformly over the 7-state recovery area. Furthermore, populations in some zones are nearer recovery levels than those in other zones. Consequently, the goals and the magnitudes of increase vary among zones. In most zones, the sum of all existing territories and target recovery territories is equal to the Habitat Management Goal for that zone. However in other zones, the Habitat Management Goal may be less than that summation.

Eagle habitat protection and management must be a primary consideration in habitats that currently support breeding or wintering populations of eagles both until and after the zone's recovery goal has been attained. Eagles should also receive consideration in areas that are unused but appear capable of supporting nesting pairs. Unused areas will provide habitat for increased populations as well as replacement habitat for existing sites that become unusable.

All tasks needed to achieve recovery throughout the Pacific recovery area are in the stepdown portion of the plan. Certain tasks, including habitat protection, will be implemented at a local level, while others, including research, will take place on a regionwide basis. In the implementation schedule, the team has distinguished the two types of tasks, and has listed the zones in which the more site-specific tasks need to be undertaken. Appendix A outlines the main threats, recommended management direction, responsible agencies, and most urgent site-specific stepdown tasks for each zone.

STEPDOWN OUTLINE

1. PROVIDE SECURE HABITAT

   1.1 IDENTIFY BREEDING AND NONBREEDING HABITAT

      1.11 LOCATE AND DESCRIBE ALL EXISTING NEST SITES, COMMUNAL ROOSTS, FORAGING AREAS, AND AREAS USED DURING MIGRATION.

      1.12 ASSESS THE SUITABILITY OF HABITAT NOT PRESENTLY USED BY BALD EAGLES

   1.2 SECURE BREEDING AND NONBREEDING HABITAT

      1.21 SECURE SPECIFIC SIGNIFICANT HABITAT THROUGH LEASE, TRADE, EASEMENT, COOPERATIVE AGREEMENTS OR PURCHASE

      1.22 ESTABLISH RESERVES AND MANAGEMENT AREAS WHERE NECESSARY

      1.23 INCORPORATE EAGLE HABITAT GUIDELINES IN AGENCY LAND USE PLANS

      1.24 INCORPORATE EAGLE HABITAT GUIDELINES IN DEVELOPMENT COVENANTS AND REGIONAL AND COUNTY LAND USE AND ZONING POLICIES

      1.25 DESIGN AND IMPLEMENT PLANS TO SECURE INDIVIDUAL NEST SITES, ROOSTS, AND FORAGING AREAS

      1.26 ESTABLISH A FRAMEWORK FOR RECOVERY PLAN IMPLEMENTATION WHEREBY MANAGEMENT AND RESEARCH ACTIVITIES ARE COORDINATED.

      1.27 SUPPORT CHANGES IN LOCAL AND FEDERAL TAX PROGRAMS THAT ENCOURAGE LANDOWNERS TO MAINTAIN BALD EAGLE HABITAT

   1.3 MANAGE BREEDING AND NONBREEDING HABITAT

      1.31 MAINTAIN AND IMPROVE QUANTITY, QUALITY, AND AVAILABILITY OF FOOD SUPPLIES

         1.311 MANAGE INLAND AND ANADROMOUS FISH POPULATIONS AND HABITATS TO MAINTAIN AND ENHANCE ADEQUATE FOOD FOR EAGLES

            1.3111 MANAGE WATER LEVELS TO MAINTAIN AND ENHANCE EAGLE FOOD SOURCES

            1.3112 ENCOURAGE STOCKING OF FISH IN IMPOUNDMENTS THAT SUPPORT INADEQUATE FISH POPULATIONS

            1.3113 DISCOURAGE STREAM CHANNELIZATION AND LEVEE PROJECTS: PRESERVE WINDING, BRAIDED RIVER STRETCHES

1.3114 PLAN FOR ARTIFICIAL FEEDING PROGRAMS USING HATCHERY FISH DURING EMERGENCY FOOD SHORTAGES

1.3115 REVIEW PROGRAMS TO CONTROL NON-SPORT FISH IN KNOWN EAGLE FORAGING AREAS

1.3116 DISCOURAGE CHEMICAL CONTROL OF AQUATIC INSECTS IN EAGLE USE AREAS

1.3117 PROTECT AND ENHANCE NATURAL SPAWNING POPULATIONS AND SPAWNING GROUNDS OF SALMON AND OTHER IMPORTANT FISH SPAWNERS TO INCREASE AVAILABILITY TO EAGLES

1.3118 MAINTAIN AND IMPROVE HABITAT FOR FISH BY REDUCING SILTATION FROM LOGGING, ROADS, AND OVERGRAZING

1.312 MAINTAIN AND ENHANCE AVIAN AND MAMMALIAN FOOD SOURCES

1.3121 MAINTAIN AND ENHANCE WETLAND AREAS FOR WATERFOWL PRODUCTION

1.3122 ENHANCE WATERFOWL HABITAT ON BALD EAGLE WINTERING AREAS

1.3123 LEAVE AVIAN AND MAMMALIAN CARCASSES ON SITES FOR FUTURE USE BY EAGLES

1.3124 ENCOURAGE FLOODING OF FIELDS DURING WINTER, WHERE APPROPRIATE, TO MAKE RODENTS AVAILABLE TO EAGLES

1.32 MAINTAIN AND IMPROVE FORESTED HABITAT IN BOTH THE BREEDING AND WINTERING RANGE

1.321 MAINTAIN FORESTED HABITAT THAT IS PRESENTLY USED BY EAGLES

1.3211 PROHIBIT LOGGING OF KNOWN NEST TREES, PERCH TREES, AND WINTER ROOST TREES

1.3212 MANAGE TIMBER STANDS USED BY EAGLES TO PREVENT INSECT INFESTATIONS WHERE APPROPRIATE

1.3213 WHERE SUITABLE, STABILIZE SOIL AND STREAMBANKS TO PROTECT NESTING, PERCHING, AND ROOSTING TREES

1.3214 DEVELOP CONTINGENCY PLANS TO PROTECT NESTING AND WINTERING HABITAT IN EMERGENCIES, E.G. WILDFIRE PRE-ATTACK OR PREVENTION PLANNING

1.3215 PRESERVE SNAGS IN EAGLE USE AREAS

1.322 MAINTAIN AND DEVELOP NESTING AND ROOSTING HABITAT FOR FUTURE USE BY EAGLES

1.3221 MANAGE YOUNG TREE STANDS TO MEET DESIRED PHYSICAL CHARACTERISTICS

1.3222 PLANT NEW TREES IN POTENTIAL BALD EAGLE USE AREAS DEVOID OF TREE REPRODUCTION

1.3223 PROVIDE ARTIFICIAL PERCHES AND NEST STRUCTURES WHERE NATURAL SITES ARE NOT AVAILABLE

1.3224 CREATE SNAGS WHERE SUITABLE PERCH TREES ARE NOT AVAILABLE

1.33 RESTRICT HUMAN DISTURBANCE AT EAGLE USE AREAS

1.331 ESTABLISH BUFFER ZONES AROUND NEST SITES

1.332 EXCLUDE LOGGING, CONSTRUCTION, HABITAT IMPROVEMENT, AND OTHER ACTIVITIES DURING CRITICAL PERIODS OF EAGLE USE

1.333 PROHIBIT BUILDING CONSTRUCTION NEAR KEY BALD EAGLE NESTING AND WINTERING HABITATS

1.334 PROHIBIT VEHICLE TRAFFIC AT SENSITIVE KEY AREAS DURING PERIODS OF EAGLE USE

2. INVENTORY, MONITOR, AND RESEARCH BALD EAGLE HABITAT AND POPULATIONS TO OBTAIN ADEQUATE KNOWLEDGE FOR DEVELOPING AND EVALUATING MANAGEMENT PROGRAMS

2.1 COLLECT INFORMATION NECESSARY TO MANAGE AND SECURE HABITAT

2.11 MONITOR THREATS AND CHANGES TO HABITAT

2.111 MONITOR THREATS AND CHANGES TO NESTING TERRITORIES

2.112 MONITOR THREATS AND CHANGES TO FORAGING AREAS

2.113 MONITOR THREATS AND CHANGES TO COMMUNAL ROOSTS AND ASSOCIATED WINTER HABITAT

2.114 MONITOR THREATS AND CHANGES TO HABITAT FOR MIGRATING AND NONBREEDING EAGLES

2.12 DETERMINE HABITAT FACTORS THAT INFLUENCE NUMBERS AND PRODUCTIVITY OF EAGLES

2.121 COMPLETE THE IDENTIFICATION OF IMPORTANT CHARACTERISTICS FOR NESTING TERRITORIES

2.122 COMPLETE THE IDENTIFICATION OF IMPORTANT CHARACTERISTICS FOR COMMUNAL ROOSTS

2.123 DOCUMENT DIETS AND FORAGING REQUIREMENTS OF BALD EAGLES AND REQUIREMENTS OF THEIR MAIN PREY SPECIES

2.1231 DOCUMENT DIETS, MOVEMENTS, TERRITORY SIZE, AND FORAGING BEHAVIOR OF BREEDING BALD EAGLES

2.1232 DOCUMENT MOVEMENTS, DIETS, AND HABITAT USE OF JUVENILE BALD EAGLES

2.124 IDENTIFY MIGRATORY PATHWAYS AND HABITAT REQUIREMENTS OF MIGRATING AND NONBREEDING BALD EAGLES

2.125 INVESTIGATE THE INFLUENCE OF HUMAN DISTURBANCE ON BALD EAGLES

2.2 ASSESS THE POPULATION STATUS OF BALD EAGLES AND FACTORS INFLUENCING POPULATION STABILITY AND EXPANSION IN THE RECOVERY AREA

2.21 COLLECT INFORMATION TO ASSESS POPULATIONS AND PRODUCTIVITY

2.211 INVENTORY THE BREEDING POPULATION AND DETERMINE ANNUAL PRODUCTIVITY

2.212 IDENTIFY AND MONITOR THE SIZE AND DISTRIBUTION OF WINTERING POPULATIONS

2.213 LOCATE AND STUDY POPULATIONS OF NONBREEDING BALD EAGLES DURING THE BREEDING SEASON

2.214 DOCUMENT MORTALITY RATES OF ADULT AND SUBADULT EAGLES

2.22 DETERMINE FACTORS INFLUENCING BALD EAGLE POPULATION STABILITY AND EXPANSION

2.221 DETERMINE THE MAIN CAUSES OF EAGLE MORTALITY

2.222 MONITOR LEVELS OF POLLUTANTS AND THE EFFECTS THEY HAVE ON EAGLES

2.223 IDENTIFY BEHAVIORAL AND GENETIC CONSTRAINTS THAT MAY INFLUENCE RATES OF RE-POPULATION AND THE SUCCESS OF REINTRODUCTION EFFORTS

3. DEVELOP AND MAINTAIN PUBLIC AWARENESS AND LAW ENFORCEMENT PROGRAMS

3.1 DEVELOP PUBLIC INFORMATION PROGRAMS

3.11 MAINTAIN AND DEVELOP GENERAL INFORMATION PROGRAMS FOR BROAD PUBLIC DISTRIBUTION

3.12 DEVELOP SPECIFIC INFORMATION PROGRAMS FOR COMMUNITIES AND GROUPS IN EAGLE AREAS

3.13 PUBLICIZE REWARD PROGRAMS AND CONVICTIONS OF EAGLE LAW VIOLATORS

3.14 DISSEMINATE INFORMATION ON THE HANDLING OF DEAD AND INJURED EAGLES

3.15 ESTABLISH PUBLIC INFORMATION PROGRAMS DESIGNED TO REDUCE BALD EAGLE MORTALITY

3.16 DEVELOP A "LAND ETHIC" AMONG LANDOWNERS OF BALD EAGLE HABITAT

3.2 PROVIDE FOR ADEQUATE STATE AND FEDERAL EAGLE PROTECTION EFFORTS

3.21 PROMOTE AND ENFORCE REGULATIONS WHICH PROVIDE CIVIL PENALTIES FOR SHOOTING BALD EAGLES

3.22 PROMOTE AND ENFORCE REGULATIONS INTENDED TO PREVENT ACCIDENTAL TRAPPING OF BALD EAGLES

3.23 ENCOURAGE SPECIAL LAW ENFORCEMENT PROGRAMS TO END THE ILLEGAL TRADE IN EAGLE PARTS

3.24 PROMOTE AND SUPPORT IMPROVED ENFORCEMENT OF EAGLE PROTECTION LAWS

3.25 EXPAND AND ENCOURAGE REWARD PROGRAMS TO ASSIST IN IDENTIFYING AND PROSECUTING EAGLE LAW VIOLATIONS

3.26 DEVELOP CONSISTENT AND ENFORCEABLE INTERPRETATIONS OF LAWS AND REGULATIONS PROTECTING BALD EAGLE HABITAT

3.3 PROVIDE SEASONAL SURVEILLANCE AT SELECTED HABITATS WHERE EAGLES ARE VULNERABLE TO HUMAN DISTURBANCE OR HARASSMENT

4. AUGMENT BALD EAGLE POPULATION LEVELS THROUGH MANAGEMENT AND PROTECTION

4.1 REDUCE BALD EAGLE MORTALITY

4.11 REDUCE BALD EAGLE MORTALITY ASSOCIATED WITH SHOOTING AND TRAPPING

4.12 REDUCE EXPOSURE OF BALD EAGLES TO CONTAMINANTS

4.121 RESTRICT USE OF POISONS DETRIMENTAL TO EAGLES IN PREDATOR AND RODENT CONTROL PROGRAMS WITHIN IMPORTANT BALD EAGLE NESTING AND WINTERING HABITAT

4.122 PROMOTE THE USE OF NONTOXIC SHOT FOR WATERFOWL HUNTING

4.123 DEVELOP CONTINGENCY PLANS TO DEAL WITH DISEASE AND CONTAMINANT EMERGENCIES

4.13 REDUCE IMPACT AND ELECTROCUTION MORTALITY ASSOCIATED WITH POWER LINES

4.131 REPLACE OR MODIFY PROBLEM POWER LINE STRUCTURES, USING ACCEPTED DESIGNS

4.132 RESTRICT POWER LINE CONSTRUCTION WITHIN IDENTIFIED FLIGHT LANES NEAR WINTER ROOSTS

4.14 REHABILITATE SICK, INJURED, AND ORPHAN BALD EAGLES FOR RELEASE INTO THE WILD

4.2 AUGMENT BALD EAGLE POPULATIONS IN SPECIFIC GEOGRAPHIC AREAS USING TESTED MANAGEMENT TECHNIQUES

4.21 ENHANCE PRODUCTIVITY OF PAIRS NESTING IN THE WILD

4.22 ESTABLISH NEW BREEDING POPULATIONS IN SUITABLE HABITAT BY TRANSLOCATION

4.23 DEVELOP CAPTIVE BREEDING PROGRAMS TO SUPPLEMENT NATURAL POPULATIONS WHEN NEEDED

1. PROVIDE SECURE HABITAT

Providing secure habitat for eagles involves identifying important habitat, arranging for its long-term protection, and managing it to ensure that its components (e.g., food, nest sites, roost trees) are maintained and enhanced.

1.1 IDENTIFY BREEDING AND NONBREEDING HABITAT

Each year, more eagle nests and roosts have been located in the Pacific recovery area. Based on the coverage of recent surveys, approximately 10% of the nests and major roosts may not have been located. The identification of main use areas is the first step in recovery and management.

1.11 LOCATE AND DESCRIBE ALL EXISTING NEST SITES, COMMUNAL ROOSTS, FORAGING AREAS, AND AREAS USED DURING MIGRATION

Nesting and winter inventories should continue, and all suitable habitat should be searched. Historical records may help to identify areas that are currently used.

In the wintering areas, communal roosts are usually the most difficult habitat component to locate. Any stand of large, old trees located near a food source should be considered a potential roost site. Precise locations and land ownership of all use areas must be documented for future reference.

1.12 ASSESS THE SUITABILITY OF HABITAT NOT PRESENTLY USED BY BALD EAGLES

Recovery of eagles hinges on availability of currently unused but suitable habitat throughout the recovery area. Procedures must be developed to enable land managers to identify these areas. This step is essential in providing the basis for managing suitable but unused habitat: i.e. the habitats that will meet future needs of recovered populations. In addition, it is critical for identifying areas in which translocation (Part 4.22) should be considered.

Several Habitat Suitability Index (H.S.I.) models have been developed, but most remain untested. Occupied habitats, habitats formerly used by bald eagles, and unused areas that appear similar to areas now being used should be described. Analysis should include assessment of disturbance factors, food availability, potential nest, roost, and perch substrates, foraging habitat characteristics, and any other factors that may be limiting to eagles. Features of

potential habitat should be compared with the characteristics of occupied habitat to identify missing elements. The data compiled should be used to verify proposed relationships in habitat suitability models.

1.2 SECURE BREEDING AND NONBREEDING HABITAT

Much of the bald eagle habitat in the Pacific recovery area is threatened by development and is not adequately protected by legal statutes. Land use and zoning policies can provide protection in some situations. In others, transfer from private to public ownership must be considered. Habitats in public ownership should be recognized and given priority consideration by agencies. Local working teams (see step 1.26) should play a strong role in all efforts to secure habitat.

1.21 SECURE SPECIFIC SIGNIFICANT HABITAT THROUGH LEASE, TRADE, EASEMENT, COOPERATIVE AGREEMENTS OR PURCHASE

Nest sites and communal roosting sites should be high priorities for preservation, especially those areas that are threatened by development or logging. The National Wildlife Federation, the Nature Conservancy, the National Audubon Society, and appropriate government agencies should be alerted to high priority preservation needs and should be encouraged to participate and cooperate in securing habitat. The U.S. Fish and Wildlife Service should develop land protection plans (LPP's) for specific habitats that need protection. A protective easement can be an effective way to protect habitat on private land. Exchange should be considered and encouraged, especially if the private land adjoins land administered by a federal or state agency.

1.22 ESTABLISH RESERVES AND MANAGEMENT AREAS WHERE NECESSARY

This approach may be most suitable where human disturbance is a limiting factor for eagles; where intensive, long-term management activities are needed; or where eagle management is being featured over other land management options.

1.23 INCORPORATE EAGLE HABITAT GUIDELINES IN AGENCY LAND USE PLANS

The National Forest Management Act (N.F.M.A.) of 1976 directs that Forest plans insure that habitat for threatened or endangered species is maintained or improved in order to accomplish recovery of the species. Forest plans should address habitat needs for present and recovery levels of eagles. The N.F.M.A. also directs special attention be given to land and vegetation approximately 30 m (100 ft) from edges of all perennial streams, lakes and water bodies, in order to prevent degradation of water quality and fish

habitat. Adherence to these riparian objectives will provide indirect benefits to eagles.

The Bureau of Land Management (BLM) should retain and manage habitat on BLM-administered public lands to benefit bald eagles and compatible uses in accordance with the Federal Land Policy and Management Act (FLPMA). These lands should be identified as important eagle habitat in the Resource Management Planning (RMP) process. The BLM should seriously consider designating all or parts of these areas as "Areas of Critical Enviromental Concern".

State agencies (such as Departments of Lands, Forestry, Parks, and Wildlife) and other Federal agencies (such as the Bureau of Reclamation, Bureau of Indian Affairs, and Army Corps of Engineers) should also adopt eagle habitat management guidelines. These guidelines should ensure that activities conducted, permitted, or monitored by agencies will not adversely affect bald eagles. Timber harvest review teams, such as now exist in California and Oregon, are effective in implementing such guidelines.

1.24 INCORPORATE EAGLE HABITAT GUIDELINES IN DEVELOPMENT COVENANTS AND REGIONAL AND COUNTY LAND USE AND ZONING POLICIES

Land management, zoning, and planning for bald eagle protection on private lands have been successful in some areas and can help landowners develop a sense of stewardship for bald eagles and their habitat (see 3.16). Ordinances should include many of the habitat protection guidelines outlined in this plan (including regulation of disturbance and habitat management recommendations). Coastal and floodplain zoning are especially important for bald eagle habitat protection. Subdivision developers should be encouraged to adopt restrictive covenants that protect bald eagle habitat.

1.25 DESIGN AND IMPLEMENT PLANS TO SECURE INDIVIDUAL NEST SITES, ROOSTS, AND FORAGING AREAS

Plans must be developed on a site-specific basis throughout the recovery area. Plans should describe the human activities that can be permitted as well as those that must be prohibited. They should also describe the steps needed to protect and secure key habitat such as nests, roosting trees and food resources. Each plan should include a map outlining the important eagle use areas and a list of appropriate methods for protecting suitable nesting, foraging, and roosting habitat over time.

1.26 ESTABLISH A FRAMEWORK FOR RECOVERY PLAN IMPLEMENTATION WHEREBY MANAGEMENT AND RESEARCH ACTIVITIES ARE COORDINATED.

The U.S. Fish and Wildlife Service should coordinate recovery efforts and monitor implementation of the recovery plan at the regional level. At the local level, working teams should have a strong role in implementing the plan. Bald eagle working teams have been effective in Oregon, Washington, California, Montana, and the Greater Yellowstone area. These teams have helped to set priorities, have responded to specific problems, and have coordinated the activities of several groups. Teams usually consist of representatives of agencies, organizations, and private companies responsible for management as well as interested individuals. Each working team should be responsible for developing a local implementation plan that addresses more specific issues than the recovery plan. Where working groups do not exist, either a recovery team representative or an appointed representative of a state wildlife agency should take the lead in notifying local agencies about responsibilities for implementing the plan and in monitoring recovery progress. All work related to the recovery effort (including expenditures, accomplishments, and research results) should be reported to the U.S. Fish and Wildlife Service Regional Office, Portland by 30 September of each year.

1.27 SUPPORT CHANGES IN LOCAL AND FEDERAL TAX PROGRAMS THAT ENCOURAGE LANDOWNERS TO MAINTAIN BALD EAGLE HABITAT.

In the past, various tax programs such as the Federal inheritance tax and county property taxes have encouraged the sale of bald eagle habitat for development. The effects of existing tax programs in each key area with potential for development should be evaluated. Changes in tax structure that encourage retention of bald eagle habitat should be proposed.

1.3 MANAGE BREEDING AND NONBREEDING HABITAT

Habitat management is one of the most important steps in the recovery process and must occur in nesting habitat, habitat used by non-nesters during the breeding season, wintering habitat, and habitat used by eagles during migration. Habitat management must also occur at all levels. At the zone level, management should consist of coordinating the efforts of resource managers from various agencies. The key areas should be the primary focus of habitat management within each zone. At the site-specific level, managers should identify and manage for the specific needs of individual territorial pairs and groups of roosting eagles.

1.31 MAINTAIN AND IMPROVE QUANTITY, QUALITY, AND AVAILABILITY OF FOOD SUPPLIES

Food is probably the single most important component of eagle habitat. Without an uncontaminated and readily available food source, both nesting and wintering populations would diminish. Because the diet is varied and depends on several migratory species, management is complex.

1.311 MANAGE INLAND AND ANADROMOUS FISH POPULATIONS AND HABITATS TO MAINTAIN AND ENHANCE ADEQUATE FOOD FOR EAGLES

Maintenance of a fish supply for eagles involves both basic fisheries management and a conscious effort to ensure that fish are available to eagles. It is essential, of course, to ensure adequate reproduction of fish populations that are now used by eagles. This may entail fish habitat protection measures such as preventing siltation, maintaining natural stream channels, and regulation of water levels and flow rates. It is also important to ensure that fish are available to eagles. Recreation may need to be restricted on some rivers and reservoirs to allow eagles full access to foraging areas during certain critical seasons (see 1.334). Eagles that customarily feed on salmon must have access to the carcasses.

1.3111 MANAGE WATER LEVELS TO MAINTAIN AND ENHANCE EAGLE FOOD SOURCES

Water level management is an important factor influencing the bald eagle's food supply, and existing dams provide numerous opportunities for fisheries management that will benefit eagles. Flow augmentation during periods of salmon migration may be a key to maintenance and restoration of anadromous fish runs on which eagles depend. Generally, minimum stream flows and reservoir conservation pools are essential for maintaining fisheries that are important to eagles. Temporarily low levels at certain times can either enhance foraging opportunities for eagles or decrease survival of important fish populations. The benefits and drawbacks of water level management must be considered in individual situations.

1.3112 ENCOURAGE STOCKING OF FISH IN IMPOUNDMENTS THAT SUPPORT INADEQUATE FISH POPULATIONS

Priority areas for stocking should be locations where stocking will benefit both recreation and eagles. For example, annual stocking of waters that freeze in the winter will provide a source of winter-killed fish for eagles in the early spring and recreational opportunities in the summer.

1.3113 DISCOURAGE STREAM CHANNELIZATION AND LEVEE PROJECTS: PRESERVE WINDING, BRAIDED RIVER STRETCHES

The presence of gravel bars interspersed with deep pools is critical for reproduction of many riverine fish species. Winding, braided river stretches also facilitate stranding of fish during the spawning season, thus making them available to eagles. Stream channel preservation is especially important for salmon spawning areas.

1.3114 PLAN FOR ARTIFICIAL FEEDING PROGRAMS USING HATCHERY FISH DURING EMERGENCY FOOD SHORTAGES

Artificial feeding programs should be initiated in a few unusual situations where natural food sources have been depleted. Techniques have already been implemented on the Skagit and Nooksack Rivers in Washington; dead fish were released into river systems from hatchery holding ponds, and stored frozen carcasses were deposited on open shorelines. This technique will be most appropriate at salmon spawning areas during floods and serious fish population declines. It may also be applicable in situations where fish escapement is inadequate to support eagle populations.

1.3115 REVIEW PROGRAMS TO CONTROL NON-SPORT FISH IN KNOWN EAGLE FORAGING AREAS

Although salmonids are major food sources for eagles in some areas, rough fish, such as carp, chubs and suckers are the primary food in other areas. Programs to control non-sport fish in eagle foraging areas should be carefully reviewed and restricted if necessary to insure that fish populations are sufficient to support the eagles that forage in the area.

1.3116 DISCOURAGE CHEMICAL CONTROL OF AQUATIC INSECTS IN EAGLE USE AREAS

Control of insects with insecticides may threaten eagle populations directly by contamination of food resources or indirectly by decreasing the food supply for fish and ultimately eagles. These programs should be evaluated in key eagle use areas and discouraged where necessary.

1.3117 PROTECT AND ENHANCE NATURAL SPAWNING POPULATIONS AND SPAWNING GROUNDS OF SALMON AND OTHER IMPORTANT FISH SPAWNERS TO INCREASE AVAILABILITY TO EAGLES

In many situations, spawning salmon are intercepted at hatcheries, stripped of eggs, and processed for human use. Fewer fish spawn naturally to become available to eagles. Eagles rely on the spawned-out salmon carcasses, and naturally spawning populations must be maintained.

1.3118 MAINTAIN AND IMPROVE HABITAT FOR FISH BY REDUCING SILTATION FROM LOGGING, ROADS, AND OVERGRAZING

Excessive siltation that often results from poorly planned logging, road building, and grazing operations can interfere with fish reproduction and also make fish unavailable to eagles. Managers should address this problem in all drainages associated with existing or potential bald eagle habitat.

1.312 MAINTAIN AND ENHANCE AVIAN AND MAMMALIAN FOOD SOURCES

Avian and mammalian prey are a primary food of eagles in some areas and a secondary prey in most others. It is important that alternate prey be available to eagles in the event of serious fish die-offs or contaminations.

1.3121 MAINTAIN AND ENHANCE WETLAND AREAS FOR WATERFOWL PRODUCTION

Waterfowl comprise a significant portion of the eagle diet throughout the west; their reproduction must be maintained at eagle breeding areas in the Pacific recovery area as well as further north. Waterfowl produced in Canada are important to wintering eagle populations in the Pacific recovery area.

1.3122 ENHANCE WATERFOWL HABITAT ON BALD EAGLE WINTERING AREAS

Because of their importance both as a primary and secondary eagle food source, waterfowl populations should be encouraged to use areas of open water where bald eagles winter. A small population of waterfowl can support many wintering eagles. Waterfowl habitat management can include water level management and establishment of food plots, such as fields of unharvested corn.

1.3123 LEAVE AVIAN AND MAMMALIAN CARCASSES ON SITES FOR FUTURE USE BY EAGLES

Dead birds and mammals provide important food for eagles in the winter and early spring. Livestock and game carcasses should be removed from eagle use areas only if contaminants or disease agents are present, human health is endangered, or the location of the carcasses (e.g. on roads or railroad tracks) could cause eagle injuries or mortalities. In emergency weather situations, it may be desirable to deposit carcasses at eagle use areas. State conservation officers should develop plans for distributing road-killed game during emergency situations.

1.3124 ENCOURAGE FLOODING OF FIELDS DURING WINTER, WHERE APPROPRIATE, TO MAKE RODENTS AVAILABLE TO EAGLES

Flooding of agricultural fields for the purpose of rodent control provides an important food source for wintering eagles in the Klamath Basin. As many as 4,400 bald eagle use-days were recorded on one ranch during December 1981. Many farmers use flooding as an alternative to poisoning and thereby do not contaminate potential eagle food sources (see 4.121).

1.32 MAINTAIN AND IMPROVE FORESTED HABITAT IN BOTH THE BREEDING AND WINTERING RANGE

Timber stands should be managed to promote habitat characteristics required by eagles for long-term nesting and roosting. In most cases, this requires management for old-growth stands. Silvicultural techniques, such as thinning or selective harvest, can help to create proper tree species composition and stand structure. The important element of any silvicultural plan should be to maintain an old growth overstory in the vicinity of nest sites and communal roosts. Development and maintenance of potential eagle habitat is as important as protection and maintenance of habitat currently used by eagles.

1.321 MAINTAIN FORESTED HABITAT THAT IS PRESENTLY USED BY EAGLES

Habitat loss is currently the most significant threat to bald eagle populations in the 7-state recovery area. The increasing disappearance of old growth stands makes it imperative that existing habitat be protected. In some cases special actions must be taken to maintain existing habitat.

1.3211 PROHIBIT LOGGING OF KNOWN NEST TREES, PERCH TREES, AND WINTER ROOST TREES

Trees used by eagles should be clearly identified and protected from logging. In addition, trees that provide wind breaks, that visually shield eagles from disturbances, or that are needed for long-term viability of eagle use areas must be maintained. Trees with unoccupied nests in suitable habitat and trees which formerly had nests should also be protected because these sites are sometimes used after several years of abandonment and will be important in providing habitat for expanding populations.

1.3212 MANAGE TIMBER STANDS USED BY EAGLES TO PREVENT INSECT INFESTATIONS WHERE APPROPRIATE

Pine beetles (Dendroctonus spp.) are a possible threat to eagle habitat in certain areas within the Pacific recovery area. Control of stocking level is perhaps the best method available to prolong the life and health of currently suitable nesting, roosting, and perch trees. Removal of true firs and other understory species in pine forests can reduce stress and susceptibility of pines to bark beetle infestation. Old growth Douglas-fir trees are not necessarily high risk, they often survive for centuries on extremely limited branch systems (J. Franklin, pers. comm.). Caution should be used in salvaging bark beetle infested stands which have value to eagles.

1.3213 WHERE APPROPRIATE, STABILIZE STREAMBANKS AND SOILS TO PROTECT NESTING, PERCHING AND ROOSTING TREES

Erosion may eliminate suitable nesting, roosting, and perching trees along some rivers. Riprap and other forms of streambank stabilization should be considered if water level manipulations cannot reduce erosion.

Soil stabilization may be an effective tool to prolong the life of traditional nest sites in areas with severe erosion. Revegetation of disturbed areas should be initiated immediately, and where warranted brush check dams should be installed in gully situations. If supporting soil for a nest tree's root system is being lost to erosion, any practical method that will halt the action should be used.

1.3214 DEVELOP CONTINGENCY PLANS TO PROTECT NESTING AND WINTERING HABITAT IN EMERGENCIES, E.G., WILDFIRE PRE-ATTACK OR PREVENTION PLANNING

Fire management plans should contain 2 types of recommendations regarding important bald eagle habitat. First, the plan should identify nests, roosts, and important perch trees that should be priorities for fire suppression. Second, the plan should include guidelines for minimizing disturbance to eagles and their habitat during fire suppression efforts.

1.3215 PRESERVE SNAGS IN EAGLE USE AREAS

All snags that are potential eagle perches within 500 m (1650 ft) of nests or roosts should be preserved. In addition, all snags utilized for roosting or foraging within nesting territories or communal roosts should be protected.

1.322 MAINTAIN AND DEVELOP NESTING AND ROOSTING HABITAT FOR FUTURE USE BY EAGLES

Recovery of the bald eagle in the Pacific recovery area depends on the availability of habitat for an expanding breeding population. Suitable (see 1.12) but currently unused habitat must be protected and maintained in a favorable condition, especially in the Target Recovery Territories (Appendix A) but also at other appropriate locations. In addition, managers should maintain and develop replacement habitat near currently used habitat, especially if existing perches, nesting trees, roosting stands, or foraging opportunities are in a precarious or deteriorating condition. Managers should plan to develop potential nesting and roosting stands at eagle use areas in a series of successional stages to ensure the presence of suitable habitats for many years. In some cases, active steps should be taken to ensure the long term suitability of such habitats.

1.3221 MANAGE YOUNG TREE STANDS TO MEET DESIRED PHYSICAL CHARACTERISTICS

Eagles prefer large trees with an open branching pattern. This growth form cannot be produced in extremely dense stands. Control of stocking levels can be used to promote growth of trees with the desired open branching pattern, to create openness around potential nest and perch trees, and to stimulate large tree growth.

Silvicultural prescriptions should be developed for maintaining or accelerating growth of suitably formed nest, perch, and roost trees to ensure their long term availability.

1.3222 PLANT NEW TREES IN POTENTIAL BALD EAGLE USE AREAS DEVOID OF TREE REPRODUCTION

The lack of suitable perches, nesting sites, and roost sites may be a factor limiting the abundance of eagles in some areas. Establishment of new perches can not only increase the amount of suitable habitat but also attract eagles away from potentially hazardous situations (power lines, roads, shooting).

Tree planting is especially suitable along the shorelines of newly established reservoirs. Most new plantings should be within 0.5 km (0.3 mi) of a shoreline. It may also be advisable to establish windbreaks near new stands intended to be roosts. Cottonwoods, sycamores, maples, and ponderosa pine would be the best species to plant because of their rapid growth rates and suitable physiognomy.

1.3223 PROVIDE ARTIFICIAL PERCHES AND NEST STRUCTURES WHERE NATURAL SITES ARE NOT AVAILABLE

Do not depend on artificial perches to be effective replacements for natural wooded habitat. Artificial perches on bald eagle wintering areas have been only occasionally successful. Experiment with unique perch designs, especially near feeding sites in treeless areas. Artificial structures should be considered when awaiting growth of tree perches. Artificial structures for nesting sites have had mixed success. They may be useful to reinforce existing natural nests with inadequate support or to provide a replacement nest in a territory where a nest has blown out. They are of limited use in areas where no natural nests have existed.

1.3224 CREATE SNAGS WHERE SUITABLE PERCH TREES ARE NOT AVAILABLE

Interspersed snags in coniferous stands seem to provide the openness that eagles prefer. Where snags number less than 5 per acre within a nesting territory, the territory management plan (see 1.25) should consider creating large snags close to eagle use areas. It is probably not necessary to deliberately create snags in deciduous stands because eagles readily use live trees when dead trees are not available. It is best to allow trees to attain maximum size before girdling, blasting, torching, or inoculating. Girdling is probably the most economical and effective technique, but topping and limbing have also proven effective in creating desired perch sites. Cull trees, which do not have commerical value, can be selected for girdling.

1.33 RESTRICT HUMAN DISTURBANCE AT EAGLE USE AREAS

Human activities are known to disrupt eagle activity patterns and in some cases cause reproductive failure. In spite of this, many eagles nest and winter near human population centers. Many types of human disturbances at the right distances are compatible with eagles. Regulation of human activity is a critical part of eagle habitat management.

1.331 ESTABLISH BUFFER ZONES AROUND NEST SITES

Buffer zones should be established for individual nest territories based on the location of nest trees, perch trees, and flight paths, as well as stand characteristics, known individual tolerances, and weather patterns.

Until site specific plans are available or until guidelines can be developed by local groups or agencies, guidelines prepared by the U.S. Fish and Wildlife Service Region I should serve as minimum protective measures.

1.332 EXCLUDE LOGGING, CONSTRUCTION, HABITAT IMPROVEMENT, AND OTHER ACTIVITIES DURING CRITICAL PERIODS OF EAGLE USE

Picnicking, camping, blasting, firearm use, timber harvest, and low level aircraft operations should not be allowed within 400 m of nests and roosts during periods of eagle use. These activities should also be regulated up to 800 m from nests and roosts where eagles have line-of-sight vision. Critical nesting periods vary throughout the recovery area but generally fall between 1 January and 31 August. Key wintering areas, need protection from disturbance from approximately 15 November to 15 March.

1.333 PROHIBIT BUILDING CONSTRUCTION NEAR KEY BALD EAGLE NESTING AND WINTERING HABITATS

Permanent structures that are occupied during periods of eagle use should not be constructed near nesting or winter use areas. Buildings should be no closer than 400 m from the shorelines of feeding waters. Wooded summer campgrounds and small farming operations are probably compatible with winter eagle use, but campgrounds in most wintering areas should be closed from November to March.

1.334 PROHIBIT VEHICLE TRAFFIC AT SENSITIVE KEY AREAS DURING PERIODS OF EAGLE USE

Snowmobile, boat, and automobile traffic can disturb eagles in some areas. Roads should be closed to protect nesting areas, when appropriate, and snowmobiles should be prohibited from traveling near nesting and wintering habitat during periods of eagle use.

Land use plans should guide human activity away from important feeding perches and prevent human disturbance in nesting and roosting areas.

Buoys and booms can be used to channel boat traffic away from sensitive eagle use areas. At Shasta Lake, California, this approach, in combination with shoreline signing and recreational maps, has reduced conflicts between eagles and recreationists (Detrich pers. comm.).

The impacts of automobile traffic can be lessened if people remain in their vehicles. In addition, eagles may grow accustomed to the presence of humans at certain locations. Appropriate signs at these viewing points could educate the viewing public about bald eagle ecology and management.

2. INVENTORY, MONITOR, AND RESEARCH BALD EAGLE HABITAT AND POPULATIONS TO OBTAIN ADEQUATE KNOWLEDGE FOR DEVELOPING AND EVALUATING MANAGEMENT PROGRAMS

Effective implementation of many tasks in this recovery plan is contingent upon gathering additional information about bald eagle populations, habitat, and behavior. Some information gaps can be filled by continuing agency inventory and monitoring programs, whereas others will require specially designed research projects

2.1 COLLECT INFORMATION NECESSARY TO MANAGE AND SECURE HABITAT

Information needed to manage and secure bald eagle habitat includes data on the habitat itself as well as how bald eagles use and are affected by its components.

2.11 MONITOR THREATS AND CHANGES TO HABITAT

All of the habitats used by eagles in the Pacific recovery area are subject to change. Changes can be natural or human-caused, and they can be beneficial or detrimental. Habitats must be monitored regularly and frequently so that effective action can be taken to counteract changes that will threaten the suitability of habitat for eagles.

2.111 MONITOR THREATS AND CHANGES TO NESTING TERRITORIES

Successful nest site management requires information on factors (e.g. human disturbance, habitat alteration) that might threaten successful reproduction. These threats should be evaluated at least annually so that appropriate and timely management actions can be taken.

2.112 MONITOR THREATS AND CHANGES TO FORAGING AREAS

Food sources are important components of bald eagle habitat. Many factors influence food sources, but their relationship to bald eagles is not always immediately apparent. For example, the availability of waterfowl in a wintering area may be related to rainfall in Canada the previous year. Similarly, salmon availability may be related to water development projects more than 1000 km away or to factors affecting salmon reproduction more than 3 years previously. Because of these subtle but important influences, it is important that food supplies be monitored regularly to detect changes that may adversely affect bald eagles.

2.113 MONITOR THREATS AND CHANGES TO COMMUNAL ROOSTS AND ASSOCIATED WINTER HABITAT

The physiological condition of eagles and their subsequent reproductive potential depend greatly on habitat conditions during winter, the most stressful period of the year. The effects of all changes in winter habitat must be closely monitored and evaluated.

2.114 MONITOR THREATS AND CHANGES TO HABITAT FOR MIGRATING AND NONBREEDING EAGLES

Presently less is known about the habitat requirements of migrating bald eagles and summering subadults than any other components of the population. Obviously, survival of subadults is crucial to future reproduction of the species, and the condition of birds during migration is an important element in survival. Habitat requirements of subadults and migrating eagles must be identified (see 2.124) and monitored to enhance survival during all stages of their lives.

2.12 DETERMINE HABITAT FACTORS THAT INFLUENCE NUMBERS AND PRODUCTIVITY OF EAGLES

The relationships of bald eagles with their habitat are only beginning to be understood. More information is needed on what habitats are used, and more intensive analyses are needed to understand the relative importance of specific habitat components.

2.121 COMPLETE THE IDENTIFICATION OF IMPORTANT CHARACTERISTICS FOR NESTING TERRITORIES

Physical and biological characteristics of bald eagle nesting habitat should be measured to determine the suitable conditions for breeding eagles. This information will allow managers to maintain existing habitat, identify and manage potential habitat (see 1.12), and identify threats to such habitat.

2.122 COMPLETE THE IDENTIFICATION OF IMPORTANT CHARACTERISTICS FOR COMMUNAL ROOSTS

Physical and biological characteristics of communal night roosts should be measured so that both existing and potential habitats can be managed for the appropriate characteristics. Recent studies (Stalmaster and Gessaman 1984, Keister et al. 1985) have indicated that favorable microclimate is an important factor in making roosts suitable for eagle use. However, the specific habitat characteristics associated with these conditions have not been identified.

2.123 DOCUMENT DIETS AND FORAGING REQUIREMENTS OF BALD EAGLES AND REQUIREMENTS OF THEIR MAIN PREY SPECIES

Successful recovery and management of eagles requires a knowledge of their food habits and the factors influencing the abundance and availability of their prey. Because eagle diets vary considerably throughout the 7-state recovery area, this information must be gathered for several different situations. Characteristics of foraging areas must be identified, and the conditions and timing of prey availability must be documented.

2.1231 DOCUMENT DIETS, MOVEMENTS, TERRITORY SIZE, AND FORAGING BEHAVIOR OF BREEDING EAGLES

More information is needed on the basic requirements of breeding eagles including size of territories and foraging areas, daily movements, time budgets, and foraging behavior. Such information can be obtained through radio-telemetry studies of breeding adults.

2.1232 DOCUMENT MOVEMENTS, DIETS, AND HABITAT USE OF JUVENILE BALD EAGLES

The first year of life for long-lived species of animals is usually the most critical time for survival, and survival of juvenile bald eagles may be a critical factor in the status of populations. Documentation of movements, foraging behavior, and habitat utilization of these birds through telemetry studies is important to determine the requirements of this segment of the population.

2.124 IDENTIFY MIGRATORY PATHWAYS AND HABITAT REQUIREMENTS OF MIGRATING BALD EAGLES

Only a few migratory pathways used by bald eagles in the Pacific recovery area are well understood. More information is needed on the nesting locations of eagles that winter in the Pacific recovery area and the wintering locations of eagles that nest in the 7 Pacific states. Very little information is available on diets, habitat use, and foraging requirements of migrating eagles, yet information on such factors is prerequisite to successful protection and management. Intensive banding programs, satellite telemetry, conventional telemetry, and trace element analysis of feathers are possible ways to acquire information on migratory pathways.

2.125 INVESTIGATE THE INFLUENCE OF HUMAN DISTURBANCE ON BALD EAGLES

Human disturbance has been suggested as a major factor in the welfare of breeding and wintering populations. Information is available on the influence of humans on flight behavior of wintering bald eagles but not on the long term behavior and general condition of the birds. The influence of humans on breeding birds has been noted but is poorly understood. The tolerance levels of eagles for various human activities must be ascertained so that agencies can restrict certain activities to specified distances from eagle use areas. Case histories that provide information on eagle responses to various types of perturbations should be compiled and analyzed, and the results should be disseminated to managers. Radio-telemetry studies of heart rate changes during various levels and types of disturbances may provide additional valuable information.

2.2 ASSESS THE POPULATION STATUS OF BALD EAGLES AND FACTORS INFLUENCING POPULATION STABILITY AND EXPANSION IN THE RECOVERY AREA

A better understanding of bald eagle population dynamics is a prerequisite to evaluating whether the species has attained the recovery goal and ascertaining whether the recovery goal should be refined. A clear understanding of population processes is also necessary to identify the actions needed to prevent further population declines and to prioritize approaches that will most effectively promote population increases.

2.21 COLLECT INFORMATION TO ASSESS POPULATIONS AND PRODUCTIVITY

The status of populations must be monitored both during and after the recovery process in order to track progress towards recovery and to identify population declines before it is too late to identify and correct factors responsible for them.

2.211 INVENTORY THE BREEDING POPULATION AND DETERMINE ANNUAL PRODUCTIVITY

Annual surveys of all known nesting territories in each state should be conducted to determine occupancy, activity, success, and productivity of these sites. Such information collected over several years will establish trends in the number of breeding pairs, nest success, and overall productivity in each state. Surveys should be conducted consistently and similarly in each state to properly assess the status of the breeding population. Because population and productivity estimates from these surveys will be used to evaluate whether or not the eagle should be delisted, complete annual surveys are crucial to the recovery process.

2.212 IDENTIFY AND MONITOR THE SIZE AND DISTRIBUTION OF WINTERING POPULATIONS

Numbers of eagles should be monitored periodically by coordinated counts. Significant assemblages of wintering eagles should be censused at least annually. States should be encouraged to conduct complete statewide counts as frequently as budgets will allow. Coordinated counts should be conducted simultaneously in all states within the recovery area every 3rd year beginning in 1986. Systematic count routes should be established in all states to allow assessment of population trends. In addition, new areas should continue to be surveyed to identify additional eagle use areas. It is important that surveys for new areas be conducted at various times throughout the winter because some areas are intensively used for only a short time period.

2.213 LOCATE AND STUDY NONBREEDING BALD EAGLES DURING THE BREEDING SEASON

Little is known about the nonbreeding segment of the population during the breeding season. Few subadults are ever observed during the spring and summer months. Information about the numbers and habitat use of nonterritorial eagles, both adult and subadult will be essential for determining the status of the species.

2.214 DOCUMENT MORTALITY RATES OF ADULT AND SUBADULT EAGLES

One of the most critical missing links in the establishment of recovery goals is our lack of information on eagle survival and mortality rates. Hypothetical modeling of eagle populations (Grier 1980) has shown that survival rates are possibly the most critical component of eagle population dynamics. They are essential to assess the status and trends of eagle populations. Banding and band recovery programs may be a means to acquire data on mortality rates.

2.22 DETERMINE FACTORS INFLUENCING BALD EAGLE POPULATION STABILITY AND EXPANSION

Further investigations are needed to identify factors that depress eagle populations or inhibit them from increasing. Expanded monitoring programs are needed to assess the relative importance of mortality factors and to ascertain levels of contaminants known to be hazardous to eagles. In addition, research on genetics and behavior is needed to more fully understand the requirements and potential for recovery.

2.221 DETERMINE THE MAIN CAUSES OF EAGLE MORTALITY

An understanding of the factors causing eagle deaths is essential if managers are to reduce mortality. Causes of mortality should be identified for each population in the Pacific recovery area. All dead eagles found in the 7 states should be collected, necropsied at the National Wildlife Health Laboratory, and analyzed at the Patuxent Wildlife Research Station or other qualified institution. Existing data suggest that illegal shooting continues to be a major cause of eagle mortality. More information is needed on the type of individuals that shoot eagles, where they shoot them, why they shoot them, and what steps can be taken to reduce shooting.

2.222 MONITOR LEVELS OF POLLUTANTS AND THE EFFECTS THEY MAY HAVE ON EAGLES

Environmental pollutants can have severe effects on bald eagle populations by causing mortality or, more subtly, by hindering reproduction or behavior.

Lead poisoning is a potentially significant cause of bald eagle mortality in the Pacific recovery area. Areas where wintering eagles depend on waterfowl for food should be monitored closely for instances of eagle lead poisoning. Specific studies should be designed to further document the impact of lead on eagle populations as well as to identify the areas where use of lead shot needs to be restricted.

Recent research has documented levels of organochlorine pesticides that may have caused eggshell thinning and reduced reproduction in pairs nesting on the Lower Columbia River (Anthony, Oregon Cooperative Wildlife Research Unit, Corvallis, pers. comm.). In addition, pairs nesting in the Klamath Basin may be adversely affected by elevated levels of chlorinated hydrocarbons (Frenzel 1984). The extent and severity of such hazards in other parts of the Pacific recovery area are unknown. Eagle carcasses, prey, and eggs should be analyzed for pollutants, and blood of both nestling and adult eagles should be collected and analyzed. Collection of blood samples for contaminant analysis should be coordinated with sampling for genetic information (see 2.223). In areas where reproductive failure is high, studies should be funded to determine if pollutants are the major problem.

2.223 IDENTIFY BEHAVIORAL AND GENETIC CONSTRAINTS THAT MAY INFLUENCE RATES OF RE-POPULATION AND THE SUCCESS OF REINTRODUCTION EFFORTS

A better understanding of intraspecific and interspecific behavior is needed to understand the carrying capacity of eagle habitat as well as the potential for population expansion. Philopatry, pair bond duration, and nest site affinity have not been adequately documented. Knowledge of these aspects of eagle behavior will provide insight into why certain nests are used annually and others only sporadically.

Much of our inability to understand eagle behavior stems from our inability to recognize individual birds. Voice prints (sonograms) may be one means of identifying individuals and investigating eagle behavior. The feasibility of this technique and its application to the field should be further investigated.

The genetic relationships of bald eagles inhabiting the Pacific states are also unknown. Such relationships influence if and how translocations (see step 4.2) should be conducted. Blood samples should be acquired from various breeding populations for electrophoretic analyses to delineate any possible genetic differences among bald eagle populations. This sampling sould be carried out in conjunction with sampling for contaminants (see 2.222).

3. DEVELOP AND MAINTAIN PUBLIC AWARENESS AND LAW ENFORCEMENT PROGRAMS

Eagle populations cannot be sustained without cooperation from members of the public. Education is an important tool to promote cooperation from the majority of citizens, but laws and regulations must be adopted and enforced to effect compliance by the more reluctant individuals.

3.1 DEVELOP PUBLIC INFORMATION PROGRAMS

Successful recovery of the bald eagle hinges on the public's awareness of the problems faced by the species and their commitment to solve them. Strong educational programs will help to foster that commitment and awareness.

It is important that citizens develop an appreciation for eagles and their habitat. Advising people not to kill eagles is the first step; providing an understanding of eagle habitat needs and food relationships is the second step.

3.11 MAINTAIN AND DEVELOP GENERAL INFORMATION PROGRAMS FOR BROAD PUBLIC DISTRIBUTION

Brochures, posters, slide programs, press release kits and news releases can be used to promote interest and support for bald eagle management programs. A general brochure and poster describing key points about bald eagle biology could be distributed to schools throughout the recovery area.

Television spots have been effectively used to draw attention to management efforts and needs. Radio and television stations are required by FCC regulations to air public service information. Taped one-minute spots should be prepared for this purpose. Non-government groups (e.g., Anheuser-Busch, Seagram's, General Wine and Spirits Company, Southland Corporation, and Eagle Valley Environmentalists) have been active in this area, and should be encouraged to continue their efforts. A clearinghouse should be established to make these materials available to the media and groups that will use them. Any public affairs materials developed by a single agency or organization should be distributed to all other interested organizations in the Pacific recovery area.

3.12 DEVELOP SPECIFIC INFORMATION PROGRAMS FOR COMMUNITIES AND GROUPS IN EAGLE AREAS

Eagle management programs cannot succeed without local support. Public information programs geared for specific areas can help elicit awareness and support for eagle management efforts. Local bald eagle conferences have been successful in developing a community's appreciation for eagles. Such meetings can serve to bring citizens, county, state, and federal agencies together to highlight problems and to discuss solutions. Eagle viewing and interpretive areas can provide a unique experience for school children and the general public. Opportunities should be sought for viewing areas where access can be controlled and disturbance risks minimized. Audio visual packages for schools and posters for general community viewing are helpful information aids. Communities in some areas should be informed of the economic advantages of encouraging "eagle watching".

3.13 PUBLICIZE REWARD PROGRAMS AND CONVICTIONS OF EAGLE LAW VIOLATORS

The National Wildlife Federation offers a reward for information leading to the conviction of persons who have shot eagles. Additional reward programs have been established in several of the 7 states in an effort to arrest and prosecute poachers of both endangered species and game animals.

Convictions of those who shoot eagles can serve as deterrents for other such incidents only if there is adequate publicity. The media should be contacted about any convictions to ensure maximum coverage. Special interest stories should be written for state wildlife magazines describing any such incidents.

3.14 DISSEMINATE INFORMATION ON THE HANDLING OF DEAD AND INJURED EAGLES

Proper treatment of injured eagles can save the lives of many birds and provide managers important information about mortality causes. It is important that persons know the location of nearest authorized rehabilitation centers. Proper disposition of dead eagles can allow biologists to identify mortality causes and potentially hazardous situations.

3.15 ESTABLISH PUBLIC INFORMATION PROGRAMS DESIGNED TO REDUCE BALD EAGLE MORTALITY

Educational programs and news releases should identify the reasons behind protective regulations and laws. The public should be informed about the plight of our National Symbol and ways they can help reduce bald eagle mortality. All hunter-safety education programs should include information on bald eagle biology and laws relating to eagles. Public education programs can also be presented to conservation-oriented clubs and at public meetings.

3.16 DEVELOP A "LAND ETHIC" AMONG LANDOWNERS OF BALD EAGLE HABITAT

Most landowners value eagles that occur on their lands. Many of these landowners would cooperate in efforts to maintain adequate eagle habitat, if they were informed of the needs and significance of eagles that occur on their lands. Special information packets and programs should be developed to promote maintenance of eagle habitat on private lands.

3.2 PROVIDE FOR ADEQUATE STATE AND FEDERAL EAGLE PROTECTION EFFORTS

Eagles are now protected by a variety of state and federal laws including the Migratory Bird Treaty Act of 1918, the Lacey Act, the 1940 Bald and Golden Eagle Protection Act, and the Endangered Species Act of 1973, as amended. Law enforcement agents and agency lawyers must have latitude to prosecute specific cases under the most appropriate law. The Division of Law Enforcement, U.S. Fish and Wildlife Service, and individual state enforcement agencies should work in close cooperation while investigating and prosecuting illegal activity involving bald eagles.

3.21 PROMOTE AND ENFORCE REGULATIONS WHICH PROVIDE CIVIL PENALTIES FOR SHOOTING BALD EAGLES

Regulations must clearly identify civil penalties. Supplemental enforcement manpower may be needed where eagle concentrations occur near human population centers. Both state and federal wildlife enforcement personnel should make judges and prosecutors aware of the significance of eagle mortality from shooting and should promote penalties which recognize the value of the bald eagle so as to deter future violations of laws involving eagles.

3.22 PROMOTE AND ENFORCE REGULATIONS INTENDED TO PREVENT ACCIDENTAL TRAPPING OF BALD EAGLES

Eagles are occasionally caught in traps set for furbearers and/or predators when a trapper has used exposed bait as a lure. Trapping regulations should prohibit exposed baits, lack of spacers between trap jaws, and other trapping methods that contribute to accidental capture and mortality of eagles. Stronger enforcement of existing trapping regulations is also needed to reduce this mortality factor.

3.23 ENCOURAGE SPECIAL LAW ENFORCEMENT PROGRAMS TO END THE ILLEGAL TRADE IN EAGLE PARTS

The high commercial black market value of eagle parts has contributed to considerable eagle mortality in recent years. Several sophisticated operations involving a large number of dead eagles and/or parts of eagles have been uncovered in recent years. A continuing plan should be developed by both federal and state enforcement agencies to combat these illegal activities. Enforcement should include appropriate undercover or "sting-type" operations.

3.24 PROMOTE AND SUPPORT IMPROVED ENFORCEMENT OF EAGLE PROTECTION LAWS

Law enforcement and judicial personnel should be aware of the significance of bald eagles and any illegal activity involving them. Biologists should keep law enforcement personnel informed of nest locations, roosts, and eagle foraging areas as well as potential threats in these areas.

Feather and blood identification keys should be developed and distributed to appropriate personnel to facilitate apprehension of persons involved in illegal feather sales. Raptor identification classes, like those developed by the National Wildlife Federation's Raptor Information Center, should be offered to all state and federal law enforcement officers.

3.25 EXPAND AND ENCOURAGE REWARD PROGRAMS TO ASSIST IN IDENTIFYING AND PROSECUTING EAGLE LAW VIOLATIONS

Programs like the National Wildlife Federation's reward system should be continued and expanded. State reward programs to encourage citizens to report violatons of wildlife laws have been successful in California and Idaho and should be expanded to discourage shooting of birds of prey, especially bald eagles.

3.26 DEVELOP CONSISTENT AND ENFORCEABLE INTERPRETATIONS OF LAWS AND REGULATIONS PROTECTING BALD EAGLE HABITAT

Inconsistent interpretations of habitat regulations have resulted in a lack of guidance for resource managers responsible for eagle habitat protection. Standardized management guidelines should be developed to assist federal, state, and local officials in making decisions regarding proposed alterations of eagle habitat, such as commercial logging and development.

3.3 PROVIDE SEASONAL SURVEILLANCE AT SELECTED HABITATS WHERE EAGLES ARE VULNERABLE TO HUMAN DISTURBANCE OR HARASSMENT

At some nest sites, roosting areas and other use areas, bald eagles may be vulnerable to detrimental disturbances by people walking, in land vehicles, or in boats. Assigning guards to nest or roost areas at critical times of the year may be necessary to avert disturbances that could result in birds being killed or abandoning a nest or roost site. Responsibilities of site attendants might include: identifying sources of disturbance, providing local public relations, discouraging people from entering especially sensitive areas, summoning law enforcement aid in emergencies, and collecting biological data.

4. AUGMENT BALD EAGLE POPULATION LEVELS THROUGH MANAGEMENT AND PROTECTION

Direct manipulation of population levels involves both reduction of mortality and population augmentation. Reduction of unnatural (human related) mortality should be the main thrust of recovery efforts. Population augmentation programs should be a low priority at this time.

4.1 REDUCE BALD EAGLE MORTALITY

Perhaps the most important element necessary to reduce human-related mortality is a well-executed public education program that identifies protective laws pertaining to the bald eagle and ecological reasons for maintaining viable populations (see Part 3.1).

4.11 REDUCE BALD EAGLE MORTALITY ASSOCIATED WITH SHOOTING AND TRAPPING

Shooting continues to be the most common cause of bald eagle mortality. Uncontrolled shooting could easily lead to the decimation of nesting and/or wintering populations in local areas. Aggressive law enforcement and public information and education programs (see Sec. 3.2) will be the most effective way to reduce shooting and trapping mortality. It also may be necessary to control or regulate public access in areas where shooting or trapping problems have been identified. Roads should be closed in some areas during critical periods of eagle use. Nest wardens may be required at nests near human population or recreation centers (see 3.3). Habitat management techniques (see 1.32) should also be used in these cases to keep eagles away from hazardous situations.

4.12 REDUCE EXPOSURE OF BALD EAGLES TO CONTAMINANTS

The ban on DDT in the early 1970's may have been the most significant step taken to date to halt the decline of bald eagle populations. Unfortunately, however, other life-threatening chemicals continue to be used. There is increasing evidence that organochlorines are depressing eagle productivity in some areas to the extent that local nesting populations may be unable to replace themselves over the long term. The presence of other harmful contaminants (e.g., lead, organophosphates) could lead to the extirpation of eagles from local areas. Pesticide application and toxic waste disposal should be monitored closely by the appropriate regulatory agencies to assure that these contaminants are not released into bald eagle use areas. All recovered eagle carcasses should be analyzed to ascertain contaminant levels and the actual contribution that contaminants made to the death.

4.121 RESTRICT USE OF POISONS DETRIMENTAL TO EAGLES IN PREDATOR AND RODENT CONTROL PROGRAMS WITHIN IMPORTANT BALD EAGLE NESTING AND WINTERING HABITAT

Rodent and jack rabbit control with strychnine has been identified as a recurring cause of bald eagle mortality, and compound 1080 has been responsible for at least one bald eagle death in the West (National Wildlife Health Laboratory 1985). Extreme caution should be taken whenever control programs are initiated in traditional eagle use areas. If it is determined that bald eagles feed in the area, the control program should be disallowed or structured in such a way as to have no effect on eagles. Safer, alternative chemicals should be considered. If existing regulations are inadequate to protect the bald eagle, new legislation or regulations should be encouraged.

4.122 PROMOTE THE USE OF NONTOXIC SHOT FOR WATERFOWL HUNTING.

Studies have shown that bald eagles are very susceptible to lead poisoning. It is most likely to be a problem in crowded hunting areas where concentrations of waterfowl occur. Nontoxic shot zones have been identified (51 FR 409, Jan. 6, 1986), and efforts should be continued toward their implementation as soon as possible.. Agencies should cooperate with user groups to develop nontoxic shot programs regionwide.

4.123 DEVELOP CONTINGENCY PLANS TO DEAL WITH DISEASE AND CONTAMINANT EMERGENCIES

Even the best regulations will not avert sudden disease outbreaks, oil spills, or other contaminant emergencies that may threaten eagles. Plans should be developed that outline steps to detoxify the environment, prevent eagles from becoming exposed to contaminants, and care for sick birds in the event that they do.

4.13 REDUCE IMPACT AND ELECTROCUTION MORTALITY ASSOCIATED WITH POWER LINES

Significant steps have been taken by power companies in the Pacific recovery area to prevent raptor electrocution by using innovative construction techniques. Power companies should be encouraged to continue policies for distribution line and transformer construction that will minimize impact and electrocution of raptors. Such approaches should also apply to wind-energy developments in bald eagle habitat. A good working relationship should be cultivated between wildlife agencies and power companies. News releases should be encouraged identifying any positive action taken by power companies to prevent raptor electrocutions and collisions.

4.131 REPLACE OR MODIFY PROBLEM POWER LINE STRUCTURES, USING ACCEPTED DESIGNS

Individual power line structures that have electrocuted eagles should be modified or replaced following accepted guidelines to prevent raptor electrocutions. Any other similar structures in areas used by bald eagles should also be modified. State agencies should establish an information exchange system concerning poles that have been associated with raptor mortalities as well as poles that are regularly used by eagles. All information on electrocutions and pole use should be forwarded to these state agencies, and they, in turn, should regularly make this information available to the power companies and agencies responsible for administering rights-of-way.

New lines in areas used by eagles should consist entirely of electrocution-proof structures, and electrocution-proof structures should be used to replace old deteriorating structures in existing lines. These guidelines should be followed by land management agencies in issuing new rights-of-way or in renewing existing permits.

4.132 RESTRICT POWER LINE CONSTRUCTION WITHIN IDENTIFIED FLIGHT LANES NEAR WINTER ROOSTS

Power lines should not be constructed within 1.5 km (1 mi) of communal roosts. Eagles use these areas during fog, strong winds, and poor light conditions; and the potential for collision is high. Corrective measures should be implemented in any areas where repeated collisions (more than 1) are documented.

4.14 REHABILITATE SICK, INJURED, AND ORPHAN BALD EAGLES FOR RELEASE INTO THE WILD

Rehabilitation efforts are a low priority in the overall recovery effort. However they can serve an important role in identifying mortality factors and in educating the public. Some rehabilitated eagles can be released back into the wild, and others can be used in captive breeding programs. Although rehabilitation can reduce individual mortality, rehabilitation efforts may have negligible effects on overall population levels.

Rehabilitation should be authorized at a few well-qualified centers instead of numerous small facilities. The public and agency personnel should be made aware of the existence and purpose of approved rehabilitation centers. Through a coordinated information program, rehabilitation personnel should be kept informed of recent technical advances. Bald eagles that are fully rehabilitated should be released into suitable areas using appropriate methods. Success of the rehabilitation efforts should be assessed through banding, color marking or telemetry. Close cooperation with other bald eagle workers and active public education programs should be encouraged to evaluate rehabilitation efforts.

4.2 AUGMENT BALD EAGLE POPULATIONS IN SPECIFIC GEOGRAPHIC AREAS USING TESTED MANAGEMENT TECHNIQUES

Habitat management and protection should be the main focus of recovery efforts. However, if it is determined that the natural productivity of selected bald eagle populations is below the potential or when suitable habitat is unoccupied, manipulatory techniques should be implemented. In both of these cases, the guidelines in the U.S. Fish and Wildlife Service Bald Eagle Translocation Policy should be followed.

4.21 ENHANCE PRODUCTIVITY OF PAIRS NESTING IN THE WILD

Foster-parent programs can increase production of some pairs, depending on the factors responsible for reproductive failure. These techniques are usually costly and should only be used in situations where enhanced reproduction is critical for recovery of a remnant population.

Fostering can be appropriate if a nesting pair historically has failed to hatch eggs, or if eggs hatch but nestlings die. Young of an appropriate age can be transplanted into nests of nonproductive pairs from captive sources or from healthy populations. Nesting attempts in which one member of a pair has died or in which fratricide is likely to occur should be priority sources of foster nestlings. Fostering can also be used to assist nesting attempts where fratricide limits production. In these cases the weakest eaglet from a nest with two or more nestlings could be removed, raised in captivity, and returned to its own nest at an appropriate age.

4.22 ESTABLISH NEW BREEDING POPULATIONS IN SUITABLE HABITAT BY TRANSLOCATION

Areas with potential bald eagle nesting habitat should be evaluated for re-introduction potential (see 1.12). If it is determined that establishment of a nesting population is feasible and will benefit the species, captive-produced young or nestlings from healthy breeding populations should be "hacked" using acceptable techniques (Engel and Isaacs 1981).

4.23 DEVELOP CAPTIVE BREEDING PROGRAMS TO SUPPLEMENT NATURAL POPULATIONS WHEN NEEDED

Wild populations may not be capable of supplying birds for all hacking and fostering efforts indefinitely. If shortages of birds occur in the future, captive-bred young could be used in hacking programs to augment or restore some eagle populations in the Pacific recovery area.

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PART III

IMPLEMENTATION SCHEDULE

The table that follows is a summary of scheduled actions and costs for the Pacific bald eagle recovery program. It is a guide to meet the objectives of this plan, as specified in Part II, Narrative. This table indicates the priority in scheduling tasks to meet the objectives, agencies responsible to perform these tasks, a time-table for accomplishing these tasks, and the estimated costs to perform them. Implementing Part III is the action part of the recovery plan, that, when accomplished, will satisfy the primary objective. Initiation of these actions is subject to the availability of funds.

GENERAL CATEGORIES FOR IMPLEMENTATION SCHEDULES

Information Gathering - I
Research - R

1. Population status
2. Habitat status
3. Habitat requirements
4. Management techniques
5. Taxonomic studies
6. Demographic studies
7. Propagation
8. Migration
9. Predation
10. Competition
11. Disease
12. Environmental contaminant
13. Reintroduction
14. Other information

Acquisition - A

1. Lease
2. Easement
3. Management agreement
4. Exchange
5. Withdrawal
6. Fee title
7. Other

Management - M

1. Propagation
2. Reintroduction
3. Habitat maintenance and manipulation
4. Predator and competitor control
5. Depredation
6. Disease control
7. Other management

Other - O

1. Information and education
2. Law Enforcement
3. Regulations
4. Administration

RECOVERY ACTION PRIORITIES

1 = An action that must be taken to prevent extinction or to prevent the species from declining irreversibly.
2 = An action that must be taken to prevent a significant decline in species population/habitat quality, or some other significant negative impact short of extinction.
3 = All other actions necessary to provide for full recovery of the species.

Ongoing = Presently being funded and operational by at least one agency.
Continuing = Once funded, will be operational for undetermined time.

Agency Abbreviations Used in the Implementation Schedule

USFS	U.S. Forest Service
BLM	U.S. Bureau of Land Management
FWS	U.S. Fish and Wildlife Service
	Programs:
	AWR - Wildlife Resources
	SE - Endangered Species
	ECE - Environmental Contamination Evaluation
	LE - Law Enforcement
	RD - Research and Development
	R - Refuges
	AFR - Fisheries Resources
CDFG	California Department of Fish and Game
WDG	Washington Department of Game
ODFW	Oregon Department of Fish and Wildlife
NDOW	Nevada Department Wildlife
IDFG	Idaho Department of Fish and Game
WGF	Wyoming Game and Fish
MFWP	Montana Fish, Wildlife, Parks
NPS	National Park Service
BOR	Bureau of Reclamation
ACE	Army Corps of Engineers
BIA	Bureau of Indian Affairs
LOC	Counties and Local Governments
EPA	Environmental Protection Agency
BPA	Bonneville Power Administration
HWY	State and Federal Highway Departments
NSP	Nevada State Parks
NDF	Nevada Division of Forestry
WFD	Wyoming State Forestry Department
NWF	National Wildlife Federation
AUD	National Audubon Society
ODF	Oregon Department of Forestry
WDNR	Washington Department of Natural Resources
WDF	Washington Department of Fisheries
ODEQ	Oregon Department of Environmental Quality
TNC	The Nature Conservancy

PART III
IMPLEMENTATION SCHEDULE

General Category	Plan Task	Task No.	Priority	Duration (years)	Responsible Agency FWS Region	FWS Program	Other	Fiscal Year ($1,000) FY1	FY2	FY3	Comments (Numbers refer to zones in which tasks should be implemented)
I1	Locate and describe nests, roosts, foraging and migrating areas.	1.11	2	Ongoing			USFS	50	50	50	1-3, 5-7, 9-16, 18, 19, 21-26, 28, 30, 32, 35-41, 44, 46
							BLM	29	26	25	7, 11-28, 30, 32, 34-46, 47
							FWS				7, 9, 11-13, 16-19, 21-24, 27, 33-37, 41-47
					1	AWR		10	10	10	
					1	SE		10	10	10	
					6	AWR		5	5	5	
					6	SE		5	5	5	
							CDFG	5	5	5	21-33, 35, 37
							WDG	7.5	7.5	7.5	1-10, 14
							ODFW	1	2	2	9-13, 16, 21-23, 37
							NDOW	.5	.5	.5	33-37
							IDFG	1	1	1	7, 14-20, 37
							WGF	5	5	5	18, 19, 40-46
							MFWP	6	8	8	7, 18, 38-41, 47
							NPS	9	9	9	1, 2, 7, 11, 18, 22-24, 26, 28, 33, 39
							BOR	1	1	1	10, 14, 15, 18
							ACE	20	20	20	10, 14, 27
							BIA	15	5	5	7, 11, 22, 37, 39, 40
							NSP	.2	.2	.2	35
							ODF	*	*	*	10, 13
I2	Assess suitability of habitat not presently occupied.	1.12	3	5			USFS	23	20	20	1-3, 5-7, 9-19, 21-26, 28, 30, 32, 35-38, 41, 44
							BLM	28	23	23	7, 11-30, 32, 34-38, 41-44, 47
							FWS				9, 11-13, 16, 18, 19, 21-23, 27, 29, 33-37, 41-44, 47
					1	AWR		2	2	2	
					1	SE		2	2	2	
					6	AWR		1	1	1	
					6	AWR		1	1	1	
							CDFG	2	2	2	21-33, 35, 37
							WDG	7.5	7.5	7.5	1-10, 14
							ODFW	0	1	1	9-13, 16, 21-23, 37
							NDOW	*	*	*	33-37

* Costs absorbed by other programs.

General Category	Plan Task	Task No.	Priority	Duration (years)	Responsible Agency FWS Region	FWS Program	Other	Fiscal Year ($1,000) FY1	FY2	FY3	Comments (Numbers refer to zones in which tasks should be implemented)
I2 (cont)							IDFG	0	0	1	7, 15, 18, 37
							WGF	*	*	*	1, 2, 5, 6, 18, 19, 40-46
							MFWP	4	3	3	7, 11, 38-41, 47
							NPS	3	3	3	1, 2, 6, 18, 22, 23, 26, 28, 31, 33
							BOR	5	5	0	7, 10, 14, 15
							ACE	To be determined			10, 14
							BIA	*	*	*	7, 11, 22, 39-40
							NSP	*	*	*	35
							NPS	*	*	*	7, 23, 31
A	Secure significant habitat through lease, trade, easement, cooperative agreement, or purchase.	1.21	1	5			USFS	900	900	900	1, 2, 5-7, 9-15, 18, 19, 21-26, 28, 30, 32, 35-37, 44, 46
							BLM	30	30	30	7, 11-14, 16-19, 21-23, 25-28, 30, 32, 34-37, 40-41, 44, 46
							FWS				1-13, 15-37, 40-41, 44, 46
					1	R		25	25	25	
					1	AWR		25	25	25	
					6	R		10	10	10	
					6	AWR		500	500	500	
							CDFG	100	100	100	21, 23, 25-33, 35, 37
							WDG	10	10	10	1-10, 14
							ODFW	—	10	10	9-13, 16, 21-23, 37
							NDOW	To be determined			34, 35
							IDFG	75	75	75	7, 16-18
							WGF	75	75	75	18, 40, 44, 46
							MFWP	0	10	20	7, 39-41, 47
							NPS	10	10	10	18, 19, 26, 28, 31, 33
							BOR	20	20	20	10, 14, 15, 18, 39
							ACE	35	35	35	10, 14, 39
							BIA	To be determined			11, 22
							BPA	530	530	530	5-10, 12, 14-16, 20
							ODF	1	1	1	10, 13, 22
							NWF	To be determined			4, 18
							AUD	To be determined			4, 18
							TNC	To be determined			

* Costs absorbed by other programs.

General Category	Plan Task	Task No.	Priority	Duration (years)	Responsible Agency FWS Region	FWS Program	Other	Fiscal Year ($1,000) FY1	FY2	FY3	Comments (Numbers refer to zones in which tasks should be implemented)
M3	Establish reserves and management areas.	1.22	3	5			USFS	10	10	10	1, 2, 5-7, 9-16, 18, 19, 21-26, 28, 30, 32, 35, 36, 37, 44
							BLM	6	6	6	7, 11-14, 16-28, 30, 32, 35-38, 40-45, 47
							FWS				1-13, 16-37, 39-45, 47
					1	SE		5	5	5	
					1	R		5	5	5	
					6	SE		3	3	3	
					6	R		3	3	3	
							CDFG	To be determined			21-33, 35, 37
							WDG	To be determined			1-10, 14
							ODFW	0	.5	.5	9-13, 16, 21-23, 37
							IDFG	To be determined			18, 20
							WGF	To be determined			18, 19, 40-46
							MFWP	*	*	*	7, 18, 38-41, 47
							NPS	5	5	5	7, 18, 19, 26, 28, 31, 33
							BOR	To be determined			10, 14, 15
							ACE	15	15	15	10, 14
							BIA	*	*	*	7, 11, 22, 37, 39, 40
							LOC	To be determined			30
							NSP	To be determined			35
							ODF	To be determined			10, 13
M3	Incorporate habitat guidelines in agency land use plans.	1.23	2	Ongoing			USFS	11	11	11	1, 2, 5-19, 21-26, 28, 30, 32, 35, 37-41, 43, 44, 46
							BLM	5	5	5	7, 11-30, 32, 35-47
							FWS				1-13, 16, 18-23, 27, 33-37, 41, 42, 44-47
					1	AWR		2	2	2	
					6	AWR		2	2	2	
							CDFG	1	1	1	21-33, 35, 37
							WDG	*	*	*	1-10, 14
							ODFW	.5	.5	.5	9-13, 16, 21-23, 37
							NDOW	.2	.2	.2	33-37

* Costs absorbed by other programs.

General Category	Plan Task	Task No.	Priority	Duration (years)	Responsible Agency FWS Region	FWS Program	Other	Fiscal Year ($1,000) FY1	FY2	FY3	Comments (Numbers refer to zones in which tasks should be implemented)
M3 (cont)							IDFG	.2	.2	.2	7, 16, 18-20
							WGF	2	2	2	18, 19, 40-46
							NPS	2	2	2	1, 2, 6, 7, 18, 19, 24, 26, 28, 31, 33, 40
							BOR	2	2	2	7, 10, 14, 15
							ACE	2	2	2	10, 14, 27
							LOC	To be determined			9-14, 16, 21-23, 30, 37
							BIA	2	2	2	11, 22, 35, 37, 40
							NSP	*	*	*	35, 37
							ODF	.5	.5	.5	10-13
M3	Incorporate habitat guidelines in development covenants and local land use and zoning policies.	1.24	2	Ongoing			USFS	*	*	*	13, 35-37
							FWS				13, 22, 28, 34
					1	AWR		2	2	2	
					6	AWR		2	2	2	
							CDFG	1	1	1	21-33, 35, 37
							WDG	8	8	8	1-10, 14
							ODFW	1	1	1	9-14, 16, 21-23, 37
							NDOW	*	*	*	33-37
							WGF	*	*	*	18, 19, 40-46
							ACE	2	2	2	10
							LOC	To be determined			4, 9-23, 37
							ODF	*	*	*	13

* Costs absorbed by other programs.

General Category	Plan Task	Task No.	Priority	Duration (years)	Responsible Agency FWS Region	FWS Program	Other	Fiscal Year ($1,000) FY1	FY2	FY3	Comments (Numbers refer to zones in which tasks should be implemented)
M3	Design and implement plans to secure specific nest sites, roosts, and foraging areas.	1.25	2	5			USFS	60	60	60	1, 2, 5-7, 9-15, 18, 19, 21-26, 28, 32, 35-39, 41, 46
							BLM	22	22	17	7, 11-14, 16-19, 21-28, 32, 34-41, 45-47
							FWS				7, 9, 11-13, 16-23, 27, 33-37, 41, 45-47
					1	AWR		3	3	3	
					1	SE		3	3	3	
					6	AWR		2	2	2	
					6	SE		2	2	2	
							CDFG	10	10	10	21-33, 35, 37
							WDG	22	22	22	1-10
							ODFW	To be determined			9-13, 16, 21-23, 37
							NDOW	*	*	*	33-37
							IDFG	5	5	5	7, 15, 18
							WGF	4	4	4	18, 19, 40-46
							MFWP	2	2	2	7, 18, 38-41, 47
							NPS	10	10	10	1, 2, 6, 7, 18, 22, 24, 26, 33
							BOR	3	3	0	10, 14, 15, 18, 20
							ACE	2	2	2	10, 14, 27, 28
							BIA	5	5	5	7, 39, 40
							LOC	5	5	5	9-14, 16, 21-33, 37
							BPA	5	5	5	5-10
							ODF	1	1	1	10, 13, 22

* Costs absorbed by other programs.

General Category	Plan Task	Task No.	Priority	Duration (years)	Responsible Agency FWS Region	FWS Program	Other	Fiscal Year ($1,000) FY1	FY2	FY3	Comments (Numbers refer to zones in which tasks should be implemented)
04	Establish a framework for recovery plan implementation.	1.26	2	Ongoing			USFS	10	10	10	1, 2, 5-7, 9, 10-16, 18, 19, 21-26, 28, 30, 32, 35, 39-41, 46
							BLM	8	8	8	7, 11-16, 18, 19, 21-23, 25-28, 30, 32, 34-37, 39-41, 46
							FWS				1-16, 18, 19, 21-30, 32-35, 37-42, 46
					1	SE	-	5	5	5	
					6	SE		2	2	2	
							CDFG	2	2	2	21-33, 35, 37
							WDG	1	1	1	1-10, 14
							ODFW	.5	.5	.5	9-13, 16, 21-23, 37
							NDOW	*	*	*	33-37
							IDFG	1	1	1	7, 16, 18
							WGF	1	1	1	18, 40-44, 46
							MFWP	3	3	3	7, 18, 38-41, 47
							NPS	1	1	1	1, 2, 6, 7, 18, 23, 26, 39-41
							BOR	1	1	1	7, 10, 14, 15, 18
							ACE	1	1	1	10, 14, 28
							LOC	2	2	2	4, 18, 30
							ODF	.5	.5	.5	10, 13
							CDFG	*	*	*	
03	Support changes in tax laws.	1.27	2	Continuing			WDG	To be determined			
							ODFW	*	*	*	
							NDOW	*	*	*	
							IDFG	*	*	*	
							WGF	*	*	*	
							MFWP	*	*	*	
							NWF	To be determined			
							AUD	To be determined			

* Costs absorbed by other programs.

General Category	Plan Task	Task No.	Priority	Duration (years)	Responsible Agency FWS Region	FWS Program	Other	Fiscal Year ($1,000) FY1	FY2	FY3	Comments (Numbers refer to zones in which tasks should be implemented)
M3	Manage inland and anadromous fish populations and habitats to maintain and enhance adequate food for eagles.	1.311	2	Ongoing			USFS	8	8	8	1, 2, 4-16, 18, 19, 28, 30, 32, 35-44, 46
							BLM	6	6	6	6, 7, 11-19, 21-28, 30, 36, 46-47
							FWS				1-16, 18, 19, 21-29, 33-37, 39-42, 44-47
					1	AFR		20	20	20	
					6	AFR		10	10	10	
							CDFG	*	*	*	21-33, 35, 37
							WDG	7	7	7	1-10, 14
							ODFW	1	1	1	9-14, 16, 21-23, 37
							NDOW	*	*	*	33-37
							IDFG	*	*	*	7, 14-16, 18-20
							WGF	To be determined			18, 19, 40-46
							NFWP	3	4	5	7, 18, 38-41, 47
							NPS	*	*	*	7, 18, 33, 40
							BOR	*	*	*	7, 9-12, 14-16, 18-24, 27, 33, 37, 38, 40-42, 44-46
							ACE	5	5	5	9-12, 14-19, 21-23, 27, 28, 37, 40-42, 44-46
							BIA	*	*	*	7, 35, 39, 40
							LOC	To be determined			16, 37
							BPA	10	10	10	5-10, 12
							ODF	*	*	*	10, 13
							WDNR	5	5	5	1-7, 10
							WDF	4	4	4	1-10, 14

* Costs absorbed by other programs.

General Category	Plan Task	Task No.	Priority	Duration (years)	Responsible Agency FWS Region	FWS Program	Other	Fiscal Year ($1,000) FY1	FY2	FY3	Comments (Numbers refer to zones in which tasks should be implemented)
M3	Maintain and enhance avian and mammalian food sources.	1.312	2	Ongoing			USFS	16	16	16	1, 2, 5-7, 9-10, 12, 18, 21, 24-26, 28, 41, 44
							BLM	*	*	*	7, 12, 16, 25, 26, 36, 37, 39, 41, 44, 47
							FWS				1-14, 16, 18-23, 27, 29, 33-37, 39-42, 47
					1	AWR		10	10	10	
					1	R		10	10	10	
					6	AWR		5	5	5	
					6	R		5	5	5	
							CDFG	*	*	*	21-33, 35, 37
							WDG	10	10	10	1-10, 14
							ODFW	.5	.5	.5	9-14, 16, 21-23, 37
							NDW	*	*	*	33-37
							IDFG	*	*	*	7, 14-16, 18-20
							WGF	*	*	*	18, 19, 40-46
							MFWP	*	*	*	7, 18, 38-41, 47
							NPS	*	*	*	18
							BOR	*	*	*	7, 10, 14, 16, 23
							ACE	10	10	10	10, 14, 28
							BIA	*	*	*	7
							BPA	10	10	10	5-10
M3	Maintain forested habitat that is presently used by eagles.	1.321	1	Ongoing			USFS	70	70	40	1,2, 5-19, 21-26, 28, 30, 32, 35-44, 46
							BLM	14	14	14	7, 8, 11-28, 30, 32, 34-47
							FWS				1-23, 25-27, 33-38, 40, 41, 47
					1	SE		10	10	10	
					6	SE		5	5	5	
							CDFG	*	*	*	21-33, 35, 37
							WDG	14	14	14	1-10, 14
							ODFW	1	1	1	9-14, 16, 21-23, 37
							NDOW	*	*	*	33-37
							WGF	2	1	1	18, 40-42, 44-46
							MFWP	1	1	1	7, 39, 40, 41

* Costs absorbed by other programs.

General Category	Plan Task	Task No.	Priority	Duration (years)	Responsible Agency: FWS Region	FWS Program	Other	Fiscal Year ($1,000): FY1	FY2	FY3	Comments (Numbers refer to zones in which tasks should be implemented)
M3 (cont)		1.321					NPS	5	5	5	1, 2, 6, 7, 18, 22, 24, 26, 28, 33
							BOR	*	*	*	10, 14, 16, 18, 19, 23, 40
							ACE	5	5	5	1-10, 14, 16, 18, 19, 27
							BIA	*	*	*	7, 39, 40
							LOC	*	*	*	15, 30
							HWY	*	*	*	18, 20
							NDF	*	*	*	35
							WFD	To be determined			18, 42, 44
							ODF	.5	.5	.5	10
							WDNR	4	4	4	1-8, 10
							SCS	*	*	*	19, 40, 42, 43, 46
M3	Maintain and develop habitat for future use by eagles.	1.322	3	Ongoing			USFS	0	0	65	1, 2, 5-16, 18, 19, 21-26, 28, 32, 35-39, 41-44, 46
							BLM	0	0	15	7, 8, 11-28, 34-47
							FWS				7, 9, 11, 13, 16, 19, 21-23, 27, 29, 33, 34, 37, 47
					1	SE		0	0	5	
					6	SE		0	0	5	
							CDFG	0	0	5	21-33, 35, 37
							WDG	0	0	6.5	1-10, 14
							ODFW	0	0	1	9-13, 16, 21-23, 37
							NDOW	*	*	*	34
							IDFG	0	0	2	7, 14, 16
							WGF	0	0	1	18, 40, 41, 44-46
							MFWP	0	0	1	7, 39
							NPS	0	0	5	7, 19, 40
							BOR	*	*	*	7, 10, 14, 16, 20, 23
							ACE	0	0	5	10, 14, 16, 27
							BIA	*	*	*	7, 33, 39, 40
							BPA	0	0	15	5-10, 12, 15, 18, 20
							NSP	*	*	*	35, 37
							NDF	*	*	*	35
							WFD	To be determined			18, 42
							WSF	*	*	*	40
							ODF	*	*	*	10
							WDNR	0	0	10	1-6, 10

* Costs absorbed by other programs.

General Category	Plan Task	Task No.	Priority	Duration (years)	Responsible Agency FWS Region	FWS Program	Other	Fiscal Year ($1,000) FY1	FY2	FY3	Comments (Numbers refer to zones in which tasks should be implemented)
M3	Restrict human disturbance at eagle use areas.	1.33	1	Ongoing			USFS	169	169	169	1, 2, 5-19, 21-26, 28, 32, 35-39, 41-44, 46
							BLM	7	7	6	7, 11-14, 16-28, 34-47
							FWS				1-11, 13, 16, 18, 19, 21-23, 27, 29, 33-37, 39, 40, 43, 44, 47
					1	SE		10	10	10	
					1	LE		5	5	5	
					6	SE		7	7	7	
					6	LE		3	3	3	
							CDFG	5	5	5	21-33, 35, 37
							WDG	64	42	25	1-10, 14
							ODFW	1	1	1	9-13, 16, 21-23, 37
							NDOW	*	*	*	33-37
							IDFG	.7	.7	.7	7, 18
							WGF	2	2	2	18, 19, 40-46
							MFWP	3	3	3	7, 18, 38-41, 47
							NPS	5	5	5	1, 2,6, 7, 11, 18, 22, 24, 26, 33
							BOR	1	1	1	7, 10, 14, 15, 23
							ACE	2	2	2	7, 10, 14, 16, 27, 28
							LOC	To be determined			15, 16, 18, 19, 30, 37
							HWY	*	*	*	18, 20
							NSP	.1	.1	.1	35, 37
							ODF	.5	.5	.5	10
							WDNR	5	5	2.5	1-6, 10

* Costs absorbed by other programs.

General Category	Plan Task	Task No.	Priority	Duration (years)	Responsible Agency FWS Region	FWS Program	Other	Fiscal Year ($1,000) FY1	FY2	FY3	Comments (Numbers refer to zones in which tasks should be implemented)
I2	Monitor threats and changes to habitat.	2.11	2	Ongoing			USFS	20	20	20	
							BLM	9	9	9	
							FWS				
					1	AWR		5	5	5	
					1	SE		5	5	5	
					6	AWR		3	3	3	
					6	SE		3	3	3	
							CDFG	5	5	5	
							WDG	7	7	7	
							ODFW	1	1	1	
							NDOW	*	*	*	
							IDFG	1.3	1.3	1.3	
							WGF	*	*	*	
							MFWP	3	3	3	
							NPS	5	5	5	
							BOR	*	*	*	
							ACE	5	5	5	
							BIA	*	*	*	
R3	Complete identification of important characteristics of nesting habitat.	2.121	3	5			USFS	26	21	21	
							BLM	3	2	1	
							FWS				
					1	SE		5	5	5	
					1	RD		5	5	5	
					6	SE		5	5	5	
					6	RD		5	5	5	
							CDFG	3	3	3	
							WDG	15	15	15	
							ODFW	To be determined			
							IDFG	To be determined			
							WGF	3	3	3	
							MFWP	1	1	1	
							NPS	5	5	5	
							ACE	To be determined			
							BIA	1	1	1	

* Costs absorbed by other programs.

General Category	Plan Task	Task No.	Priority	Duration (years)	Responsible Agency FWS Region	FWS Program	Other	Fiscal Year ($1,000) FY1	FY2	FY3	Comments (Numbers refer to zones in which tasks should be implemented)
R3	Complete identification of important characteristics of communal roosting habitat.	2.122	3	5			USFS	18	25	18	
							BLM	10	10	5	
							FWS				
					1	SE		1	1	1	
					1	RD		1	1	1	
					6	SE		1	1	1	
					6	RD		1	1	1	
							CDFG	2	2	2	
							WDG	10	10	10	
							ODFW	.5	.5	.5	
							NDOW	.2	.2	.2	
							IDFG	To be determined			
							WGF	5	5	5	
							MFWP	*	*	*	
							NPS	5	5	5	
							ACE	*	*	*	
							BPA	*	*	*	
R3	Document diets and foraging requirements of bald eagles and require-ments of their main prey species.	2.123	2	Unknown			USFS	*	*	*	
							BLM	10	10	10	
							FWS				
					1	AWR		10	10	10	
					1	RD		10	10	10	
					6	AWR		10	10	10	
					6	RD		10	10	10	
							CDFG	To be determined			
							WDG	50	50	50	
							ODFW	To be determined			
							NDOW	*	*	*	
							IDFG	8	8	8	
							WGF	5	3	3	
							MFWP	5	5	5	
							NPS	To be determined			
							BOR	To be determined			
							ACE	10	10	10	

* Costs absorbed by other programs.

General Category	Plan Task	Task No.	Priority	Duration (years)	Responsible Agency FWS Region	FWS Program	Other	Fiscal Year ($1,000) FY1	FY2	FY3	Comments (Numbers refer to zones in which tasks should be implemented)
R3	Identify migratory pathways and habitat requirements of migrating and non-breeding eagles.	2.124	2	Ongoing			USFS	14	14	14	
							BLM	20	20	20	
							FWS				
					1	AWR		25	25	25	
					1	RD		20	20	20	
					6	AWR		20	20	20	
					6	RD		15	15	15	
							CDFG	To be determined			
							WDG	25	25	25	
							ODFW	1	.5	.5	
							NDOW	*	*	*	
							IDFG	2	—	2	
							WGF	4	4	4	
							MFWP	*	*	*	
							NPS	To be determined			
							BOR	To be determined			
							ACE	2	2	2	
R3	Investigate the influence of human disturbance on bald eagles.	2.125	2	Ongoing			USFS	19	19	19	
							BLM	15	15	15	
							FWS				
					1	SE		10	10	10	
					1	RD		10	10	10	
					6	SE		10	10	10	
					6	RD		10	10	10	
							CDFG	To be determined			
							WDG	12	12	12	
							ODFW	.5	.5	.5	
							NDOW	*	*	*	
							IDFG	To be determined			
							WGF	2	2	2	
							MFWP	1	1	1	
							NPS	8	8	8	
							ACE	5	5	5	

* Costs absorbed by other programs.

General Category	Plan Task	Task No.	Priority	Duration (years)	Responsible Agency FWS Region	FWS Program	Other	Fiscal Year ($1,000) FY1	FY2	FY3	Comments (Numbers refer to zones in which tasks should be implemented)
II	Inventory the breeding population and determine annual productivity.	2.211	2	Ongoing			USFS	18	18	18	
							BLM	15	15	17	
							FWS				
					1	AWR		10	10	10	
					1	SE		10	10	10	
					6	AWR		5	5	5	
					6	SE		5	5	5	
							CDFG	5	5	5	
							WDG	38	38	38	
							ODFW	1	2	2	
							IDFG	2	2	2	
							WGF	3	3	3	
							MFWP	2	3	4	
							NPS	7	8	8	
							BIA	2	2	2	
II	Identify and monitor the size and distribution of wintering populations.	2.212	2	Ongoing			USFS	12	16	12	
							BLM	24	32	24	
							FWS				
					1	AWR		5	5	5	
					1	SE		5	5	5	
					6	AWR		3	3	3	
					6	SE		3	3	3	
							CDFG	4	4	4	
							WDG	8	8	8	
							ODFW	1	2	2	
							NDOW	.5	.5	.5	
							IDFG	*	4	*	
							WGF	3	3	3	
							MFWP	1	1	1	
							NPS	2	2	2	
							ACE	2	2	2	
							BIA	1	1	1	

* Costs absorbed by other programs.

General Category	Plan Task	Task No.	Priority	Duration (years)	Responsible Agency FWS Region	FWS Program	Other	Fiscal Year ($1,000) FY1	FY2	FY3	Comments (Numbers refer to zones in which tasks should be implemented)
R1	Locate and study populations of non-breeding eagles during the breeding season.	2.213	2	Continuing			USFS	5	5	5	
							BLM	10	10	10	
							FWS				
					1	RD		15	15	15	
					6	RD		10	10	10	
							CDFG	To be determined			
							WDG	25	25	25	
							ODFW				
							NDOW	*	*	*	
							IDFG	*	*	*	
							WGF	*	*	*	
							MFWP	*	*	*	
							NPS	*	*	*	
							BOR	*	*	*	
							ACE	5	5	5	
R6	Document mortality rates of eagles.	2.214	2	Ongoing			FWS				
					1	SE		15	15	15	
					1	RD		15	15	15	
					6	SE		10	10	10	
					6	RD		10	10	10	
							BLM	8	8	8	
							CDFG	1	1	1	
							WDG	To be determined			
							ODFW				
							NDOW	*	*	*	
							IDFG	To be determined			
							WGF	2	2	2	
							MFWP	To be determined			

* Costs absorbed by other programs.

General Category	Plan Task	Task No.	Priority	Duration (years)	Responsible Agency FWS Region	FWS Program	Other	Fiscal Year ($1,000) FY1	FY2	FY3	Comments (Numbers refer to zones in which tasks should be implemented)
R1	Determine the main causes of eagle mortality.	2.221	2	Ongoing			FWS				
					1	RD		10	10	10	
					1	ECE		2	2	2	
					6	RD		8	8	8	
					6	ECE		1	1	1	
							BLM	6	6	6	
							CDFG	1	1	1	
							WDG	10	10	10	
							ODFW	*	*	*	
							NDOW	*	*	*	
							IDFG	*	*	*	
							WGF	*	*	*	
							MFWP	*	*	*	
							NPS	*	*	*	
I2	Monitor effects of pollutants in eagles.	2.222	2	Ongoing			FWS				
					1	ECE		20	20	20	
					6	ECE		15	15	15	
							CDFG	2	2	2	
							WDG	10	10	10	
							ODFW	*	*	*	
							NDOW	*	*	*	
							IDFG	.2	.2	.2	
							WGF	*	*	*	
							MFWP	To be determined			

* Costs absorbed by other programs.

General Category	Plan Task	Task No.	Priority	Duration (years)	Responsible Agency FWS Region	FWS Program	Other	Fiscal Year ($1,000) FY1	FY2	FY3	Comments (Numbers refer to zones in which tasks should be implemented)
R6	Identify behavioral and genetic constraints that may influence rates of repopulation and the success of reintroduction efforts.	2.223	3	Unknown			USFS	To be determined			
							BLM	20	20	20	
							FWS				
					1	RD		10	10	10	
					6	RD		5	5	5	
							CDFG	To be determined			
							WDG	To be determined			
							ODFG	To be determined			
							IDFG	To be determined			
							WGF	*	*	*	
							NPS	To be determined			
01	Develop public information programs.	3.1	2	Unknown			USFS	20	12	12	
							BLM	20	11	11	
							FWS				
					1	SE		5	5	5	
					6	SE		5	5	5	
							CDFG	5	5	5	
							WDG	6	6	6	
							ODFW	2	2	2	
							NDOW	.2	.2	.2	
							IDFG	1.4	.9	1.4	
							WGF	2	2	2	
							MFWP	3	2	1	
							NPS	1	1	1	
							BOR	3	3	3	
							BIA	3	2	1	
							LOC	To be determined			
							AUD	1	1	1	
							NWF	1	1	1	

* Costs absorbed by other programs.

General Category	Plan Task	Task No.	Priority	Duration (years)	Responsible Agency FWS Region	FWS Program	Other	Fiscal Year ($1,000) FY1	FY2	FY3	Comments (Numbers refer to zones in which tasks should be implemented)
02	Provide for adequate state and federal eagle protection efforts.	3.2	1	Ongoing			FWS				
					1	LE		20	20	20	
					1	SE		5	5	5	
					6	LE		15	15	15	
					6	SE		2	2	2	
							CDFG	*	*	*	
							WDG	10	10	10	
							ODFW	.5	.5	.5	
							NDOW	*	*	*	
							IDFG	*	*	*	
							WGF	*	*	*	
							MFWP	*	*	*	
							BIA	*	*	*	
							NWF	2	2	2	
							AUD	2	2	2	
M3	Provide surveillance at selected habitats.	3.3	2	Ongoing			USFS	1	1	1	15, 18
							BLM	1	1	1	18
							FWS				1-10, 15, 18, 22, 38
					1	LE		25	25	25	
					1	SE		10	10	10	
					6	LE		15	15	15	
					6	SE		5	5	5	
							BOR	To be determined			15
							NPS	To be determined			7

* Costs absorbed by other programs.

General Category	Plan Task	Task No.	Priority	Duration (years)	Responsible Agency FWS Region	FWS Program	Other	Fiscal Year ($1,000) FY1	FY2	FY3	Comments (Numbers refer to zones in which tasks should be implemented)
H4	Reduce eagle mortality associated with shooting and trapping.	4.11	1	Ongoing			USFS	*	*	*	1, 2, 5-7, 21, 23-26, 28, 35
							BLM	*	*	*	14, 24-28
							FWS				1-37, 39-46
					1	LE		10	10	10	
					1	SE		5	5	5	
					6	LE		8	8	8	
					6	SE		4	4	4	
							CDFG	*	*	*	21-33, 35, 37
							WDG	5	5	5	1-10
							ODFW	.2	.2	.2	9-14, 16, 21-23, 37
							NDOW	*	*	*	33-37
							IDFG	*	*	*	7, 14-20, 37
							WCF	*	*	*	18, 19, 40-46
							MFWP	*	*	*	7, 18, 38-41, 47
							NPS	*	*	*	7, 33
							BIA	*	*	*	7, 39, 40
H4	Reduce exposure of bald eagles to contaminants.	4.12	1	Ongoing			USFS	*	*	*	1, 2, 5-7, 9, 18, 21-26, 28, 32, 35-37, 39, 43, 45
							BLM	*	*	*	7, 17, 22-26, 28, 35-40, 41, 43
							FWS				1-46
					1	ECE		20	20	20	
					6	ECE		15	15	15	
							CDFG	To be determined			21-33, 35, 37
							WDG	5	5	5	1-10
							ODFW	.5	.5	.5	9-14, 16, 21-23, 37
							NDOW	*	*	*	33-37
							IDFG	*	*	*	16, 18, 20, 37
							WCF	*	*	*	18, 19, 40-46
							MFWP	*	*	*	7, 18, 38-41, 47
							NPS	*	*	*	7, 33, 39
							BIA	*	*	*	39, 40
							LOC	To be determined			7, 9-23, 37
							NSP	*	*	*	35
							EPA	10	10	10	1-46
							ODEQ	1	1	1	9-14, 16, 21-23, 37

* Costs absorbed by other programs.

General Category	Plan Task	Task No.	Priority	Duration (years)	Responsible Agency FWS Region	FWS Program	Other	Fiscal Year ($1,000) FY1	FY2	FY3	Comments (Numbers refer to zones in which tasks should be implemented)
M3	Reduce impact and electrocution mortality associated with power lines.	4.13	2	Ongoing			USFS	12	8	8	1, 2, 5-7, 9, 11, 15, 18, 19, 23-26, 28, 30, 35, 39, 43, 45, 46
							BLM	13	6	4	7, 9, 14-20, 23-30, 34-43, 45, 46
							FWS				1-14, 16, 18, 19, 21-27, 29, 33-37, 39-46
					1	SE		15	15	10	
					6	SE		10	10	5	
							CDFG	*	*	*	21-33, 35, 37
							WDG	*	*	*	1-10
							ODFW	To be determined			9-14, 16, 21-23, 37
							NDOW	*	*	*	34-37
							WGF	*	*	*	18, 19, 40-46
							MFWP	*	*	*	7, 40, 41
							NPS	*	*	*	7, 24, 33
							BOR	1	1	1	23
							BIA	*	*	*	7, 39, 40
							BPA	*	*	*	7
M2	Rehabilitate sick, injured, and orphan eagles for release into the wild.	4.14	3	Ongoing							To be started in FY-4 if necessary

* Costs absorbed by other programs.

General Category	Plan Task	Task No.	Priority	Duration (years)	Responsible Agency FWS Region	FWS Program	Other	Fiscal Year ($1,000) FY1	FY2	FY3	Comments (Numbers refer to zones in which tasks should be implemented)
M1	Enhance productivity of pairs nesting in the wild.	4.21	3	5			FWS				To be started in FY-4 if necessary
					1	AWR		0	0	0	
					1	SE		0	0	0	
					6	AWR		0	0	0	
					6	SE		0	0	0	
							CDFG	0	0	0	
							ODFW	0	0	0	
							IDFG	0	0	0	
							WGF	0	0	0	
							NPS	0	0	0	
M2	Establish new breeding populations by translocation.	4.22	3	Ongoing			FWS				To be started in Fy-4 if necessary
					1	AWR		0	0	0	
					1	SE		0	0	0	
							CDFG	10	10	10	31
							ODFW	0	0	0	
							NDOW	0	0	0	
							IDFG	0	0	0	
							WGF	0	0	0	
							NPS	*	*	*	31
M1	Develop captive breeding programs to supplement natural populations.	4.23	3	Ongoing			FWS				
					1	SE		5	5	5	
					6	SE		5	5	5	
							CDFG	0	0	0	
							ODFW	0	0	0	
							IDFG	0	0	0	
							WGF	0	0	0	

* Costs absorbed by other programs.

APPENDIX A

Zone 1. Washington Coast (WA)

Main Threats: Logging, shooting, increase in recreational use, oil spills, housing and industrial development, siltation in spawning tributaries, prey declines.

Proposed Management Direction: Protect nesting, feeding, and roosting areas. Enhance prey populations. Control shooting of eagles. Prevent oil spills. Discourage human disturbance. Increase law enforcement.

Responsible Agencies	Most Urgent Site-specific Tasks
National Park Service Forest Service Fish & Wildlife Service Washington Dept. of Game Army Corps of Engineers Woodland Park Zoo Environ. Protection Agency WA Dept. Natural Resources Washington Dept. Fisheries	1.21, 1.3211, 1.3215, 1.311, 1.332, 1.333

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Naselle & Williapa Rivers	2	1	10
WA. Coastline, Willapa Bay, Gray's Harbor	8	4	20
Copalis, Humptulips, Wishkah, Wyanoochee & Chehalis Rivers	1	7	30
Quinault Indian Reservation	5	5	25
Olympic Natl. Park Shoreline	22	8	30
Makah Indian Reservation	7	2	30
Strait of Juan de Fuca	19	0	30
Clearwater, Hoh, Bogachiel, Calawah, Soleduck, Big & Hoko Rivers	4	6	30
	68	33	

Total Target & Existing Territories - 101
Habitat Management Goal - 101
Recovery Population Goal - 74

Zone 2. Olympic Peninsula (WA)

Main Threats: Logging and increased recreational use.

Proposed Management Direction: Protect nesting, feeding and roosting habitat.

Responsible Agencies	Most Urgent Site-specific Tasks
National Park Sercie	
Forest Service	1.32, 1.3211, 1.3215,
Fish & Wildlife Service	1.331, 1.332, 1.333
Washington Dept. of Game	
National Park Service	
Army Corps of Engineers	
Woodland Park Zoo	
Environ. Protection Agency	
Wash. Dept. Natural Resources	
Washington Dept. Fisheries	

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Olympic National Park	0	7	0
Olympic Natl. Forest (north & west portions)	5	5	10
Olympic Natl. Forest (south & east portions)	3	3	20
	8	15	

Total Target & Existing Territories - 23
Habitat Management Goal - 23
Recovery Population Goal - 17

Zone 3. Southwest Washington (WA)

Main Threats: Logging and shooting.

Proposed Management Direction: Identify and protect nesting, feeding, and roosting habitat.

Responsible Agencies	Most Urgent Site-specific Tasks
Fish & Wildlife Service	1.21, 1.3211, 1.3215,
Washington Dept. of Game	1.331, 1.332, 1.333
Army Corps of Engineers	
Environ. Protection Agency	
Wash. Dept. Natural Resources	
Washington Dept. Fisheries	

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Chehalis R., Oakville, Elma, McCleary & Matlock vicinity	5	0	10
Cowlitz River	3	0	5
Toutle River	1	0	5
Elochman River	1	0	0
W. Fork Grays River	1	0	0
	11	0	

Total Target & Existing Territories - 11
Habitat Management Goal - 11
Recovery Population Goal - 8

Main Threats: Rapidly expanding human growth and recreational use. Housing and industrial development. Increased human disturbance. Overexploitation of fish resources. Logging, shooting, harassment. Loss of habitat. Contaminants in ecosystem. Lead poisoning.

Proposed Management Direction: Protect nesting, feeding, and roosting areas. Enhance prey abundance and availability. Discourage human disturbance. Increase law enforcement.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service Fish & Wildlife Service Washington Dept. of Game Army Corps of Engineers Environ. Protection Agency Wash. Dept. Natural Resources Washington Dept. Fisheries	1.21, 1.3211, 1.3215, 1.331, 1.332, 1.333

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Hood Canal	13	6	70
South Puget Sound	10	0	20
Kitsap Peninsula, Vashon Island	8	1	25
North Puget Sound	37	0	70
San Juan Islands,	83	3	100
Padilla, Samish, Bellingham, Lumi & Birch Bays	10	2	70
	161	12	

Total Target & Existing Territories - 173
Habitat Management Goal - 156
Recovery Population Goal - 115

Main Threats: Logging, increase in human development and recreational use especially on shorelines. Elimination of salmon runs. Over-exploitation of fish resources.

Proposed Management Direction: Protection of nesting, feeding, and roosting areas. Strict enforcement of wildlife laws. Enhancement of salmon runs. Discourage human disturbance in eagle use areas.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service	1.21,
Fish & Wildlife Service	1.321, 1.3215,
Washington Dept. of Game	1.331, 1.332, 1.333
Army Corps of Engineers	
Environ. Protection Agency	
Wash. Dept. Natural Resources	
Washington Dept. Fisheries	

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Thurston-Pierce County Area	4	0	20
Nooksack River	2	0	400
Skagit River & associated drainages	4	1	400
Snohomish, Skyomish & Snoqualmie Rivers	2	2	70
Green & White Rivers	1	1	10
Lake Washington & Sammamish L.	3	0	12
	16	4	

Total Target & Existing Territories - 20
Habitat Management Goal - 17
Recovery Population Goal - 13

Zone 6. Cascade Mountains (WA)

Main Threats: Logging, shooting, increased recreational development. Industrial and housing development.

Proposed Management Direction: Protect nesting, feeding, and roosting sites. Enhance prey populations. Strict enforcement of wildlife laws. Restrict human activity where in conflict with eagle use.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service	1.21,
BLM	1.3211, 1.3215,
Fish & Wildlife Service	1.331, 1.332, 1.333
Washington Dept. of Game	
National Park Service	
Army Corps of Engineers	
Environ. Protection Agency	
Wash. Dept. Natural Resources	
Washington Dept. Fisheries	

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Klickitat River	0	1	5
Rock Creek	0	0	5
Glade Creek	0	0	5
Yakima, Naches, & Tieton Rivers	1	1	25
Lake Chelan	0	5	5
Wenatchee River	0	2	5
West Fork, White River	0	0	5
Green Mountain Range	8	7	25
Skagit River-Bacon Cr. - Border	0	0	25
Upper Skagit Res. & Baker Lake	1	1	25
	10	17	

Total Target & Existing Territories - 27
Habitat Management Goal - 27
Recovery Population Goal - 20

Main Threats: Logging. Loss of perching and roosting trees. Streamside and shoreline development. Recreational use. Shooting. Use of rodenticides. Unstable kokanee populations. Extreme water fluctuations. Dam construction. Mineral exploration and mining. Road realignment and construction.

Proposed Management Direction: Locate nesting and feeding areas. Protect and enhance perching and roosting areas. Stabilize water fluctuations. Maintain and enhance prey populations, especially waterfowl and kokanee salmon. Regulate and monitor human disturbance. Seek landowner cooperation in habitat protection. Acquire threatened habitat, and call for moratorium on development in key eagle use areas. Enforce existing laws.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service	1.21,
BLM	1.3211, 1.3214, 1.3215, 1.331,
Fish & Wildlife Service	1.332, 1.333, 1.334,
Washington Dept. of Game	4.11, 4.123
Bureau of Reclamation	
Idaho Fish and Game	
Montana Fish, Wildlife, Parks	
National Park Service	
Army Corps of Engineers	
Bureau of Indian Affairs	
County	
Environ. Protection Agency	
Bonneville Power	
Wash. Dept. Natural Resources	
Wash Dept. Fisheries	

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Rufus Woods Lake (WA)	1	1	30
Okanogan & Similkameen R. (WA)	1	1	10
Spokane & Little Spokane R. (WA)	0	2	15
Kettle River (WA)	0	1	5
Pend Oreille R.; Calispel & Sullivan Lakes (WA)	1	2	15
Colville River (WA)	0	1	5
Methow & Chewack R. (WA)	0	1	15
Franklin D. Roosevelt & Twin Lakes (WA)	1	2	40
Clark Fork River (ID)	2	0	--
Kootenai River (ID)	2	0	40
Wolf Lodge Bay (ID)	0	1	60
Pend Oreille Lake/River (ID)	2	2	120
Bitterroot River (MT)	2	4	8

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Blackfoot River (MT)	6	1	10
Clearwater/Swan (MT)	2	7	2
Clark Fork (MT)	1	6	32
Upper Flathead (MT)	7	9	14
Flathead Lake (MT)	6	0	32
Lower Flathead (MT)	1	3	33
Whitefish/Stillwater (MT)	4	0	1
Kalispell West (MT)	4	0	0
Fisher River (MT)	0	3	9
Kootenai River (MT)	2	1	32
L. Koocanusa (MT)	1	2	7
Yaak River (MT)	0	1	0
Bull River and Lake (MT)	1	1	2
Priest Lake (ID)	0	1	0
Priest River (ID)	0	1	0
St. Joe River (ID)	0	1	0
Coeur d'Alene River (ID)	0	1	0
	47	56	

Total Target & Existing Territories - 103
Habitat Management Goal - 98
Recovery Population Goal - 69

Zone 8. Palouse Prairie (ID, WA)

Main Threats: Loss of perching and roosting habitat on Columbia River shoreline. Continued water fluctuation extremes with resultant bank erosion and prey declines. Proposed dam. Human disturbance: construction, recreation.

Proposed Management Direction: Protect and enhance roosting and perching areas. Stabilize water fluctuations. Enhance prey populations. Discourage human disturbance. Oppose dam construction.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service	1.21, 1.3211, 1.3215,
BLM	1.331, 1.332, 1.333
Fish & Wildlife Service	
Washington Dept. of Game	
Bureau of Reclamation	
Army Corps of Engineers	
Environ. Protection Agency	
Wash. Dept. Natural Resources	
Washington Dept. Fisheries	
Ag. Stab & Cons Service	

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Hanford Reach (WA)	0	0	20
Rock Island Pool (WA)	0	0	10
Wanapum Pool (WA)	0	0	10
Priest Rapids Pool (WA)	0	0	10
Wells Pool (WA)	1	0	20
Banks, Park, Blue, Lenore & Soap Lakes (WA)	1	1	20
Turnbull NWR (WA)	0	0	5
Crab Creek (WA)	0	1	5
	2	2	

Total Target & Existing Territories - 4
Habitat Management Goal - 4
Recovery Population Goal - 3

Zone 9. Blue Mountains (OR, WA)

Main Threats: Riparian logging. Continued loss of perch and roost trees. Human recreation, shooting, trapping, possible poisoning. Loss of anadromous fish populations.

Proposed Management Direction: Locate and protect nesting, roosting, and feeding areas. Protect roost and perch trees. Enhance prey populations.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service BLM Fish & Wildlife Service Washington Dept. of Game Oregon Dept. Fish & Wildlife Bureau of Reclamation Army Corps of Engineers Environ. Protection Agency Washington Dept. Fisheries	1.21, 1.3211, 1.3215, 1.331, 1.332, 1.333, 4.11

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Unity Reservoir (OR)	1	0	0
Grande Ronde River (WA)	0	2	5
John Day River (OR)	0	2	10
Long Creek (OR)	0	0	5
Ukiah River (OR)	0	0	5
Powder River (OR)	0	1	15
Burnt River (OR)	0	1	15
Grande Ronde River (OR)	0	2	10
Wallowa River (OR)	0	1	15
Minam River (OR)	0	0	15
Wallowa Lake (OR)	1	0	0
Thief Valley Reservoir (OR)	0	1	0
Phillips Reservoir (OR)	0	1	0
Lostine River (OR)	0	1	0
	2	12	

Total Target & Existing Territories - 14
Habitat Management Goal - 14
Recovery Population Goal - 8

Zone 10. Lower Columbia River (OR, WA)

Main Threats: Pesticides. Logging, loss of nesting, perching, and roosting habitat. Declining prey populations. Human disturbance. Shooting, trapping, housing, industrial and recreational development.

Proposed Management Direction: Identify and protect nesting and foraging areas. Enhance perch sites and prey populations and availability. Discourage human disturbance in eagle use areas. Enforce laws. Determine if pesticides are a hazard.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service	1.21, 1.23,
BLM	1.3211, 1.3215,
Fish & Wildlife Service	1.331, 1.332, 1.333, 1.334,
Washington Dept. of Game	4.11
Oregon Dept. Fish & Wildlife	
Bureau of Reclamation	
Army Corps of Engineers	
Environ. Protection Agency	
Oregon Dept. Forestry	
Wash. Dept. Natural Resources	
Washington Dept. Fisheries	
U.S. Dept. Labor	

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Bonneville Pool, Columbia River (WA)	0	3	10
Mouth of Columbia to Bonneville Dam (WA)	10	4	50
Dalles Pool (WA)	0	1	5
John Day Pool (WA)	0	0	5
Lower Columbia River -Portland to Mouth (OR)	15	6	100
Upper Columbia River -above Portland (OR)	0	8	20
	25	22	

Total Target & Existing Territories - 47
Habitat Management Goal - 47
Recovery Population Goal - 31

Zone 11. High Cascades (OR)

Main Threats: Recreation disturbance, logging, shooting, trapping.

Proposed Management Direction: Identify and protect nesting, foraging, and roosting areas. Manage for potential nesting habitat.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service BLM Fish & Wildlife Service Oregon Dept. Fish & Wildlife Bureau of Reclamation Army Corps of Engineers Bureau of Indian Affairs	1.23, 1.24, 1.3118, 1.3211, 1.331, 1.332, 1.333, 1.334

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Diamond Lake	1	1	0
Lemolo Lake	1	0	0
Crescent Lake	1	1	10
Odell Lake	2	0	10
Davis Lake	2	1	10
Wickiup Reservoir	7	1	20
Crane Prairie Reservoir	4	1	15
Deschutes River	3	2	20
Elk Lake	1	0	0
East & Paulina Lakes	1	1	0
Suttle & Blue Lakes	1	0	0
Metolius River	1	1	0
Lake Simtustus	1	0	5
Crooked River	0	0	75
Lake Billy Chinook	0	1	10
Cultus Lake	0	1	0
Hosmer/Sparks Lakes	0	1	0
Lava & Little Lava Lakes	0	1	0
Little Deschutes River	0	1	0
Tygh Creek	0	1	0
Little Cultus Lake	0	1	0
Miller Lake	0	1	0
Prineville Reservoir	0	1	0
Big Summit Prairie Reservoir	0	1	0
Pine Hollow Reservoir	0	1	0
Ochoco Reservoir	0	1	0
	26	21	

Total Target & Existing Territories - 47
Habitat Management Goal - 47
Recovery Population Goal - 33

Main Threats: Logging, human disturbance, shooting.

Proposed Management Direction: Identify and protect nesting and feeding areas. Manage potential nesting habitat for eagles.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service	1.3211,
BLM	1.3215, 1.331, 1.332, 1.333,
Fish and Wildlife Service	1.334, 4.11
Oregon Dept. Fish & Wildlife	
Bureau of Reclamation	
Army Corps of Engineers	

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Lookout Pt. Reservoir	2	1	10
Hills Creek Reservoir	1	1	10
Fern Ridge Reservoir	1	1	15
Dorena Reservoir	1	1	0
Willamette Valley NWR	0	0	5
Upper Calapooya River	0	0	10
Mohawk	0	0	10
North Umpqua River	1	1	0
Willamette River	0	6	30
Clackamas River	0	1	0
North Fork Reservoir	0	1	0
Detroit Reservoir	0	2	0
Foster Reservoir	0	1	0
Green Peter Reservoir	0	2	0
McKenzie River	0	2	0
Cougar Reservoir	0	1	0
Fall Creek Reservoir	0	1	0
North, Middle & So. Santiam Rivers	0	3	0
Dexter Reservoir	0	1	0
Bull Run Lake & Reservoirs	0	2	0
North & South Umpqua River	0	3	0
Blue River Reservoir	0	1	0
Cottage Grove Reservoir	0	1	0
Timothy Lake	0	1	0
Fish/Clear Lake	0	1	0
Waldo Lake	0	1	0
	6	36	

Total Target & Existing Territories - 42
Habitat Management Goal - 42
Recovery Population Goal - 25

Zone 13. Oregon Coast (OR)

Main Threats: Logging, human disturbance, shooting, pollution.

Proposed Management Direction: Identify and protect key nesting and foraging areas. Manage potential nesting habitat.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service BLM Fish & Wildlife Service Oregon Dept. Fish & Wildlife Oregon Dept. Forestry	1.21, 1.3211, 1.3215, 1.331, 1.332, 1.333, 1.334, 4.11

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Tillamook Head	1	1	3
Nehalem Bay & River	1	1	4
Tillamook Bay	1	1	8
Cape Meares	1	0	0
Cape Lookout	1	0	2
Cascade Head	1	1	4
Siletz Bay & River	1	1	2
Yaquina Bay	1	1	2
Alsea Bay	1	1	4
Drift Creek	1	0	0
Siuslaw River/Indian Creek	2	1	6
Siltcoos Lake	1	1	2
Takenitch Lake	0	1	2
Umpqua River	6	3	10
Tenmile Lake	2	1	2
Coos Bay & Inlets	2	1	6
Coquille River	1	1	2
Cape Falcon	1	0	1
Elk Creek/Nestucca River	2	1	5
Little N.F. Wilson River	1	0	2
Smith River	2	1	2
Sand Lake	1	0	0
N. Tenmile Lakes	0	1	0
Yachats River	0	1	0
Alsea River	0	1	0
Kilchis River	0	1	0
Deadwood Creek	0	1	0
Heceta Head	0	1	0
Netarts Bay	0	1	0
Triangle Lake	0	1	0
N. Fork Siuslaw R.	0	1	0
Devil's Lake	0	1	0
Miami River	0	1	0
Loon Lake	0	1	0

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Salmon River	0	1	0
Wilson River	0	1	0
Woahink Lake/Cleawox	0	1	0
	31	33	

Total Target & Existing Territories - 64
Habitat Management Goal - 64
Recovery Population Goal - 42

Zone 14. Snake River Canyon (OR, ID, WA)

Main Threats: Recreation disturbance, shooting, trapping, poisoning, logging of roosting/perching habitat, proposed dam, water manipulation effects on fishery, change in food associated with dams.

Proposed Management Direction: Maintain wintering habitat, establish nesting populations. Identify potential nesting, roosting and foraging areas. Manage water levels on Snake River to enhance prey. Establish new perching habitat.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service	1.3211,
BLM	1.3215,
Fish & Wildlife Service	4.11, 4.121,
Oregon Dept. Fish & Wildlife	
Idaho Fish & Game	
Bureau of Reclamation	
Army Corps of Engineers	
Idaho Power	
County	

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Brownlee Reservoir (ID)	0	1	20
Brownlee Reservoir (OR)	0	0	20
Oxbow/Hells Canyon (ID)	1	1	30
Oxbow/Hells Canyon (OR)	0	3	30
Snake River below Hells Canyon (ID)	0	3	7
Snake River below Hells Canyon (OR)	0	2	7
Snake River (WA)	0	1	10
	1	11	

Total Target & Existing Territories - 12
Habitat Management Goal - 12
Recovery Population Goal - 6

Zone 15. Central Idaho (ID)

Main Threats: Logging, recreation, loss of food supply, indiscriminate shooting, private land development, mining, road construction, water fluctuations at dams.

Proposed Management Direction: Encourage restoration of anadromous fisheries; locate nesting pairs and increase nesting population. Maintain wintering habitat. Protect existing nest sites. Regulate human disturbance.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service	1.21,
BLM	1.3211;,1.3214,
Fish & Wildlife Service	1.331, 1.332, 1.333, 1.334,
Idaho Fish & Game	4.11, 4.121
Bureau of Reclamation	
Army Corps of Engineers	
County	

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Salmon River Drainage	0	1	15
Cascade Reservoir	2	3	0
Garden Valley/Lowman	0	0	10
Clearwater/Dworshak	0	1	80
Deadwood Reservoir	0	1	0
Selway River	0	1	0
Sawtooth Valley	0	1	0
	2	8	

Total Target & Existing Territories - 10
Habitat Management Goal - 6
Recovery Population Goal - 4

Zone 16. Boise Valley (ID, OR)

Main Threats: Urban sprawl, industrial and housing developments, human disturbance, shooting, trapping, logging of roosting habitat, recreation activities, river channelization.

Proposed Management Direction: Identify potential nesting, roosting and foraging areas. Maintain wintering habitat, improve public information, establish nesting population. Maintain food supply, regulate human disturbance.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service BLM Fish and Wildlife Service Oregon Dept. Fish & Wildlife Idaho Fish and Game Bureau of Reclamation Army Corps of Engineers Idaho Power County	1.3211, 1.3214, 1.3215, 1.332, 1.333, 4.11, 4.121, 4.123,

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Malheur River (OR)	0	1	10
Owyhee River (OR)	0	1	10
Cow Lakes (OR)	0	0	15
Lake Lowell (ID)	0	0	35
Boise River/Anderson Ranch (ID)	1	2	25
Snake River (ID)	0	1	10
Payette River (ID)	0	1	20
Lake Owyhee (OR)	0	1	0
Bully Creek Reservoir (OR)	0	1	0
Beulah Reservoir (OR)	0	1	0
	1	9	

Total Target & Existing Territories - 10
Habitat Management Goal - 9
Recovery Population Goal - 5

Zone 17. High Desert (ID)

Main Threats: Strychnine poisoning.

Proposed Management Direction: Identify wintering habitat. Oppose use of strychnine. Protect nesting and roosting habitat on private land through cooperative agreement.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service	1.21, 1.3211,
BLM	4.11, 4.121
Fish & Wildlife Service	
Idaho Fish & Game	
Army Corps of Engineers	
County	

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Silver Creek	1	0	5
Medicine Lodge Creek	0	0	25
Birch Creek	0	0	30
Little Lost River	0	0	40
Big Lost River	0	0	10
Mackay Reservoir	0	1	0
	1	1	

Total Target & Existing Territories – 2
Habitat Management Goal – 1
Recovery Population Goal – 1

Zone 18. Greater Yellowstone (WY, ID, MT)

Main Threats: Housing development on private land, high recreational use, logging, poisoning, proposed dam construction, degradation of fish spawning habitat associated with development, lead poisoning.

Proposed Management Direction: Coordinate intensive management planning to maintain and increase nesting populations and their habitat. Regulate recreational use. Protect habitat through exchange, easement, or purchase. Initiate research and locate nesting and feeding areas. Maintain wintering habitat and non-contaminated food source. Insure maximum production. Restock fisheries where necessary.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service	1.21,
BLM	
Fish & Wildlife Service	1.3211, 1.3214,
Idaho Fish & Game	1.3215, 1.331, 1.332, 1.333,
Wyoming Fish and Game	1.334, 4.11, 4.121, 4.123
Montana Fish, Wildlife, Parks	
National Park Service	
Bureau of Reclamation	
Army Corps of Engineers	
Idaho Power	
County	
Wyoming Forestry Division	

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Yellowstone (WY)	15	0	3
Upper Snake (WY)	17	0	40-60
Yellowstone River (MT)	0	1	19
Centennial North (MT)	4	0	2
Madison River (MT)	4	0	5
Island Park/Henrys Fork (ID)	4	3	50
Big Springs (ID)	0	2	10
South Fork (ID)	6	2	50
Palisades (ID)	3	2	0
Henry's Lake (ID)	1	0	0
Mud Lake/Camas (ID)	0	0	10
Deer Parks (ID)	1	0	35
St. Anthony (ID)	1	0	5
	56	10	

Total Target & Existing Territories - 66
Habitat Management Goal - 65
Recovery Population Goal - 50

Main Threats: Housing, energy, and phosphate developments: related disturbance and declines in food supply. Deterioration of riparian habitat, recreational disturbance. Alteration of stream flows, grazing, lack of cottonwood regeneration.

Proposed Management Direction: Initiate and expand surveys to obtain information on numbers, habitat use, and threats. Provide input on proposed development to minimize impact on eagles. Maintain and enhance wintering habitat, establish nesting pairs.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service BLM Fish & Wildlife Service Idaho Fish & Game Wyoming Game & Fish National Park Service Bureau of Reclamation Army Corps of Engineers County Soil Conservation Service	1.3211, 1.3214, 1.332, 1.333, 1.334, 4.11, 4.121, 4.123

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Alexander Reservoir (ID)	0	1	10
Blackfoot Reservoir (ID)	0	1	25
Crow Creek (ID)	0	0	10
Green River (WY)	0	0	30
Woodruff Roost (WY)	0	0	40
Rock Creek Roost (WY)	0	0	40
Bear Lake (ID)	0	1	
	0	3	

Total Target & Existing Territories - 3
Habitat Management Goal - 3
Recovery Population Goal - 1

Zone 20. Snake River Floodplain (ID)

Main Threats: Logging, overgrazing of cottonwood saplings, agricultural development, lowered food supply, pesticide contamination, proposed dams, shooting, recreation disturbance, use of strychnine, possible lead poisoning.

Proposed Management Direction: Maintain wintering population, maintain winter food supply, protect roosting areas from logging and human disturbance. Establish nesting population.

Responsible Agencies	Most Urgent Site-specific Tasks
BLM Fish & Wildlife Service Idaho Fish & Game Bureau of Reclamation Bureau of Indian Affairs Idaho Power County Highway Department Sho-Ban Indian Nation	1.3211, 1.3214, 1.332, 1.333, 4.11, 4.121, 4.123

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Bowen Canyon	0	0	40
Minidoka-Am. Falls	0	0	50
Fort Hall Bottoms	0	2	100
C.J. Strike Reservoir	0	0	20
	0	2	

Total Target & Existing Territories - 2
Habitat Management Goal - 2
Recovery Population Goal - 0

Zone 21. Harney Basin/Warner Mts. (OR, CA)

Main Threats: Human disturbance, trapping, shooting. Strychnine poisoning from rodent control operations. Logging of roosting and perching habitat.

Proposed Management Direction: Identify and secure potential nesting, roosting and foraging areas. Maintain integrity of nest areas and wintering habitat.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service	1.3211, 1.331,
BLM	1.332, 4.11, 4.121
Fish and Wildlife Service	
California Fish & Game	
Oregon Dept. Fish & Wildlife	
Bureau of Reclamation	
Army Corps of Engineers	

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Modoc Plateau (CA)	2	7	1-5
Upper Pit River (CA)	0	4	13
Warner Lake (OR)	0	0	10
Malheur/Harney Lakes (OR)	0	0	200
Rattlesnake/Coffeepot/Miller Creek Roosts (OR)	0	0	120
Silver Creek/Miller Canyon/ Pine Springs Roosts (OR)	0	0	30
Stinking Water Mountains (OR)	0	0	10
Steens Mountains (OR)	0	0	10
Harney Basin Deciduous Roosts (OR)	0	0	30
West Valley Reservoir (CA)	0	1	1-5
Hart Lake (OR)	0	1	0
Crump Lake (OR)	0	1	0
	2	14	

Total Target & Existing Territories - 16
Habitat Management Goal - 16
Recovery Population Goal - 10

Zone 22. Klamath Basin (OR, CA)

Main Threats: Shooting, logging, pesticides, land development, human disturbance. Disturbance on foraging areas, changes in agricultural practices. Fire, power lines, lead poisoning.

Proposed Management Direction: Identify and protect nesting, foraging and roosting areas. Evaluate nesting potential and manage lands for potential nesting habitat. Maintain waterfowl habitat and winter flooding practices; cooperate with landowners to maintain foraging areas. Maintain integrity of roosts; secure them through purchase or cooperative agreement. Continue information and education programs, and evaluate potential disturbance by birders and photographers. Implement existing management plans. Improve perch availability.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service	
BLM	1.3211, 1.3215,
Fish and Wildlife Service	4.11, 4.121
California Fish & Game	
Oregon Dept. Fish & Wildlife	
National Park Service	
Bureau of Reclamation	
Army Corps of Engineers	
Bureau of Indian Affairs	

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population*
Klamath Marsh (OR)	4	2	5
Solomon Lake (OR)	1	0	2
Sycan Marsh (OR)	1	2	5
Thompson Reservoir (OR)	1	0	0
Williamson River (OR)	2	0	0
Sprague River (OR)	1	2	10
Upper Klamath/Agency Lakes (OR)	39	2	90
Swan Lake (OR)	2	0	10
Round Lake (OR)	1	0	0
Klamath River (OR)	3	1	10
Gerber Reservoir (OR)	1	1	0
Campbell Reservoir (OR)	1	0	0
Drew's Reservoir (OR)	1	0	0
Lake of the Woods (OR)	1	0	0
Goose Lake (OR)	0	1	35
Bryant Mountain (OR)	1	0	0
Dog Lake (OR)	1	0	0
Summer Lake (OR)	1	1	15
Silver L./Paulina Marsh (OR)	0	1	30

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population*
Lower Klamath Lake (OR)	0	0	250
Lost River (OR)	0	0	20
Tull Reservoir (OR)	1	0	0
Aspen Lake (OR)	1	1	0
Long Lake (OR)	2	0	0
Wocus Marsh (OR)	0	0	150
Bear Valley Roost (OR)	1	0	350
Klamath/Tule NWR (CA)	0	3	500
Mt. Dome Roost (CA)	1	0	250
Three Sisters Roost (CA)	0	0	75
Caldwell/Cougar Roost (CA)	0	1	300
Clear Lake/Modoc Plateau (CA)	2	2	1-5
Goosenest Area (CA)	5	1	30-50
Goose Lake (CA)	0	3	35
Hyatt Reservoir (OR)	1	0	0
Howard Prairie Reservoir (OR)	1	0	0
Strawberry Reservoir (OR)	0	1	0
Cottonwood Reservoir (OR)	0	1	0
Pothole Lakes (OR)	0	1	0
South Arm/Albertson Reservoir (OR)	0	1	0
Fourmile Lake (OR)	0	1	0
Crater Lake (OR)	0	1	0
Meiss Lake (CA)	0	1	0
	77	31	

* The sum of the wintering population estimates is much higher than the actual total because both day-use areas and night-use areas are shown.

Total Target & Existing Territories - 108
Habitat Management Goal - 108
Recovery Population Goal - 80

Zone 23. California/Oregon Coast (OR, CA)

Main Threats: Shooting, logging, human disturbance. Loss of anadromous fisheries.

Proposed Management Direction: Restore anadromous fishery. Protect nest sites and foraging pairs. Improve searches for existing nesting pairs. Increase the nesting population.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service BLM Fish & Wildlife Service California Fish & Game Oregon Dept. Fish & Wildlife National Park Service Bureau of Reclamation Army Corps of Engineers	1.3211, 1.3215, 1.331, 1.332, 1.333, 1.334, 4.11, 4.121

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Rogue River (OR)	2	4	10
Willow Lake (OR)	1	0	0
Klamath River (CA)	1	4	4
Trinity River (CA)	3	3	5
Ruth Reservoir/Mad River (CA)	1	0	2
Eel River (CA)	1	6	15
Clear Lake/Cache Creek (CA)	0	2	20-50
Lake Berryessa (CA)	0	1	10
Sixes River (OR)	0	1	0
Floras Lake (OR)	0	1	0
Chetco River (OR)	0	1	0
Fish Lake (OR)	0	1	0
Lost Creek Reservoir (OR)	0	1	0
Applegate Reservoir (OR)	0	1	0
Illinois River (OR)	0	1	0
Emigrant Lake (OR)	0	1	0
Pt. Reyes National Seashore (CA)	0	3	0
Mendocino Coast (CA)	0	3	0
Del Norte Coast (CA)	0	3	0
King Range (CA)	0	3	0
Salt Point State Park (CA)	0	1	0
Humboldt Bay (CA)	0	2	0
	9	43	

Total Target & Existing Territories - 52
Habitat Management Goal - 52
Recovery Population Goal - 28

Zone 24. Shasta/Trinity (CA)

Main Threats: Recreational disturbance at nest areas. Shooting.

Proposed Management Direction: Protect nest and wintering areas. Public education. Evaluate nest habitat for long-term.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service BLM Fish & Wildlife Service California Fish & Game National Park Service Bureau of Reclamation	1.3211, 1.331, 1.332, 1.334, 4.11, 4.121

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Shasta Lake	14	2	32
Whiskeytown Lake	2	1	4
Trinity Res./Lewiston Res.	4	3	27
	20	6	

Total Target & Existing Territories - 26
Habitat Management Goal - 26
Recovery Population Goal - 20

Zone 25. Pit River (CA)

Main Threats: Disturbance by recreation, logging, mining.

Proposed Management Direction: Protect nesting and wintering habitat. Complete management plan for Lake Britton area. Public education.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service BLM Fish & Wildlife Service California Fish & Game	1.3211, 1.331, 1.332, 1.333, 1.334, 4.11, 4.121

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Middle Pit River Area	8	3	12
Lake Britton	5	0	14
Lower Pit River Area	5	3	16
	18	6	

Total Target & Existing Territories - 24
Habitat Management Goal - 24
Recovery Population Goal - 21

Zone 26. Lassen/Plumas (CA)

Main Threats: Disturbance of nest territories.

Proposed Management Direction: Maintain nesting and wintering habitat, control disturbance.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service BLM Fish & Wildlife Service California Fish & Game National Park Service California Dept. Water Resources	1.3211, 1.331, 1.332, 1.334, 4.11, 4.121

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Eagle Lake Area	11	2	50
Lake Almanor Area	9	7	30
Plumas Area	6	6	15
	26	15	

Total Target & Existing Territories - 41
Habitat Management Goal - 41
Recovery Population Goal - 27

Zone 27. Sacramento Valley and Foothills (CA)

Main Threats: Loss of anadromous fishery. Loss of riparian habitat. Disturbance of forage areas. Shooting.

Proposed Management Direction: Protect winter habitats, evaluate for introduction of nesting birds.

Responsible Agencies	Most Urgent Site-specific Tasks
BLM Fish & Wildlife Service California Fish and Game Bureau of Reclamation Army Corps of Engineers California Dept. Water Resources	1.3211, 4.11, 4.121

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Sacramento River & tributaries (Anderson-Woodson Bridge)	1	3	25
Payne's Creek/Inks Creek	0	1	5
Mill Creek/Deer Creek	0	1	25
Sacramento River & tributaries (Woodson Bridge-Colusa)	0	3	5
Lake McCumber	1	1	2
Lake Oroville Area	1	4	20
Stony Gorge/East Park Reservoirs	1	2	14
	4	15	

Total Target & Existing Territories - 19
Habitat Management Goal - 15
Recovery Population Goal - 8

Zone 28. Sierra-Nevada Mountains (CA, NV)

Main Threats: Disturbance at wintering grounds. Loss of potential nest habitat to logging, development.

Proposed Management Direction: Maintain winter habitat. Evaluate potential expansion/reintroduction of breeders.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service	1.3211,
BLM	1.331, 1.332, 1.334, 4.11, 4.121
Fish & Wildlife Service	
California Fish & Game	
National Park Service	
Army Corps of Engineers	
California Dept. Water Resources	

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Lake Tahoe (NV)	0	1	0
Lake Tahoe (CA)	1	3	4
Bullard's Bar Reservoir (CA)	0	3	11
Englebright Reservoir (CA)	0	0	10
Camanche/New Hogan Res. Area (CA)	0	4	30
Don Pedro Res./Tuolumne R. (CA)	0	5	23
Stampede Reservoir (CA)	0	1	0
Boca Reservoir (CA)	0	1	0
Jackson Lake (CA)	0	1	0
Hell Hole Reservoir (CA)	0	1	1
Union Valley Reservoir (CA)	0	1	0-6
Bear Reservoir (CA)	0	1	1
Beardsley Res./Stanislaus River (CA)	0	2	2
Cherry Lake (CA)	0	1	0-4
San Joaquin River (CA)	0	1	15-30
Pine Flat Res./Kings River (CA)	0	2	5-15
Kern River Area (So. and No. Forks)	0	2	5-10
Merced River Area (CA)	0	1	2-3
	1	31	

Total Target & Existing Territories - 32
Habitat Management Goal - 32
Recovery Population Goal - 15

Zone 29. San Joaquin Valley (CA)

Main Threats: Agricultural development, shooting, pesticides.

Proposed Management Direction: Very little habitat remains in this zone except rangeland and small reservoirs on east side of valley. Protect this limited wintering habitat.

Responsible Agencies	Most Urgent Site-specific Tasks
BLM	1.3211, 1.332,
Fish & Wildlife Service	4.11, 4.121
California Fish & Game	

Key Areas

None

Total Target & Existing Territories –	0
Habitat Management Goal –	0
Recovery Population Goal –	0

Zone 30. Central California Coast (CA)

Main Threats: Disturbance of winter forage areas, shooting.

Proposed Management Direction: Protect winter habitat. Public education. Evaluate potential for nesting reintroduction.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service BLM Fish & Wildlife Service California Fish & Game Monterey County Parks Dept.	1.332, 1.334, 4.11, 4.121

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
San Antonio/Nacimiento Reservoir	0	3	36
Lake Cachuma	0	1	13
Lopez Lake/Santa Margarita Lake	0	1	1-5
Coastal Areas	0	6	1-5
	0	11	

Total Target & Existing Territories - 11
Habitat Management Goal - 11
Recovery Population Goal - 4

Zone 31. Channel Islands (CA)

Main Threats: Shooting, pesticides.

Proposed Management Direction: Protect existing reintroduced population, potential nest habitat and forage sources.

Responsible Agencies	Most Urgent Site-specific Tasks
Fish & Wildlife Service California Fish & Game National Park Service	1.332, 4.11, 4.121,

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Santa Catalina Island	0	6	10
San Clemente Island	0	3	0
Santa Cruz Island	0	3	0
Santa Rosa Island	0	3	0
San Miguel Island	0	1	0
	0	16	

Total Target & Existing Territories - 16
Habitat Management Goal - 16
Recovery Population Goal - 6

Zone 32. Southern Coast (CA)

Main Threats: Disturbance of winter forage areas, residential development.

Proposed Management Direction: Protect winter habitat. Educate public.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service BLM Fish & Wildlife Service California Fish & Game	1.21, 1.22, 1.3211, 1.332, 1.333, 1.334, 4.11, 4.121

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Big Bear Lake Area	0	1	27
Lakes Mathews & Perris/ San Jacinto Valley	0	1	10-20
San Diego County Reservoirs	0	2	10-20
	0	4	

Total Target & Existing Territories - 4
Habitat Management Goal - 4
Recovery Population Goal - 0

Zone 33. Colorado River (CA, NV)

Main Threats: Loss of riparian habitat. Human disturbance.

Proposed Management Direction: Protect winter habitat and foraging areas. Evaluate potential for introducing nesting birds.

Responsible Agencies	Most Urgent Site-specific Tasks
Fish & Wildlife Service California Fish & Game Nevada Dept. Wildlife National Park Service Bureau of Indian Affairs Bureau of Reclamation	1.3211, 1.333, 4.11, 4.121

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Havasu NWR (CA)	0	1	5
Lake Mead NRA (CA,NV)	0	0	5-10
	0	1	

Total Target & Existing Territories - 1
Habitat Management Goal - 1
Recovery Population Goal - 0

Zone 34. White River Valley (NV)

Main Threats: Shooting. Loss of adequate roost and perch trees.

Proposed Management Direction: Identify and protect winter use areas with emphasis on night roosts and adjacent habitat. Maintain winter food supply.

Responsible Agencies

BLM
Fish & Wildlife Service
Nevada Dept. Wildlife

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Pahranagat NWR	0	0	3
Kirch Wildl. Mgmt. Area	0	0	2

Total Target & Existing Territories - 0
Habitat Management Goal - 0
Recovery Population Goal - 0

Main Threats: Disturbance of winter forage areas. Loss of wetland habitat. No cottonwood replacement in key roosting areas. Multiple demands on water resource. Increased human populations, agricultural development and recreational activity.

Proposed Management Direction: Identify and protect winter use areas with emphasis on protecting roost trees and providing replacement trees. Protect winter foraging habitat; maintain high quality wetlands.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service BLM Fish & Wildlife Service California Fish & Game Nevada Dept. Wildlife Bureau of Indian Affairs Nevada State Parks Nevada Division of Forestry	1.3211, 1.332, 4.11, 4.121

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Carson/Walker River Area (CA)	0	0	8
Honey Lake (CA)	0	0	4
Stillwater NWR (NV)	0	0	6
Lahontan Reservoir (NV)	0	0	7
Carson Valley/Mud Lake (NV)	0	0	11
	0	0	

Total Target & Existing Territories - 0
Habitat Management Goal - 0
Recovery Population Goal - 0

Main Threats: Illegal poisoning for coyotes, illegal trapping with exposed bait, possible shooting.

Proposed Management Direction: Identify and protect wintering areas with emphasis on roost trees. Improve law enforcement.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service	1.3214,
BLM	1.3221, 3.21,
Fish & Wildlife Service	3.22, 4.11, 4.121
Nevada Department Wildlife	

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Antelope Valley	0	0	15
Ruby Lake NWR	0	0	2
Ogder's Pond	0	0	4
	0	0	

Total Target & Existing Territories - 0
Habitat Management Goal - 0
Recovery Population Goal - 0

Zone 37. Great Basin (OR, CA, NV, ID)

Main Threats: Shooting, trapping, poisoning. Human disturbance and water development.

Proposed Management Direction: Identify, protect and enhance potential roosting and foraging areas. Improve law enforcement.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service BLM Fish & Wildlife Service California Fish & Game Nevada Department Wildlife Idaho Fish & Game Bureau of Reclamation Army Corps of Engineers Bureau of Indian Affairs County Nevada State Parks LA Dept. Water & Power	1.3211, 1.332, 4.11, 4.121, 4.123

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Mono Lake/Owens Valley (CA)	0	0	10-20
Upper Owyhee River (OR)	0	2	5
Salmon Falls Creek (NV)	1	0	2
	1	2	

Total Target & Existing Territories - 3
Habitat Management Goal - 3
Recovery Population Goal - 2

Zone 38. Missouri Headwaters (MT)

Main Threats: Shooting, rodent control, human disturbance.

Proposed Management Direction: Protect nesting and feeding areas. Identify migration corridors. Develop I&E program to protect eagles.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service	1.3211, 1.332, 4.121
BLM	
Fish & Wildlife Service	
Montana Fish, Wildlife, Parks	
Bureau of Reclamation	

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Beaverhead River	2	0	5-10
Jefferson River	1	1	6
Madison River	1	1	15
Gallatin River	0	1	7
Big Hole River	1	0	15
Ruby River	1	0	
	6	3	

Total Target & Existing Territories - 9
Habitat Management Goal - 8
Recovery Population Goal - 6

Zone 39. Upper Missouri (MT)

Main Threats: Rodent control via strychnine, shooting, pesticides, logging.

Proposed Management Direction: Resolve problems of environmental contamination. Maintain riparian forests. Reduce strychnine hazards.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service	4.121
BLM	
Fish & Wildlife Service	
Montana Fish, Wildlife, Parks	
Bureau of Reclamation	
Army Corps of Engineers	
Bureau of Indian Affairs	

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Glacier National Park	2	0	0
Sun River	0	2	15
Upper Missouri Reservoirs	1	2	50
Missouri River and tributaries	1	6	15-25
	4	10	

Total Target & Existing Territories - 14
Habitat Management Goal - 13
Recovery Population Goal - 10

Zone 40. Bighorn (WY, MT)

Main Threats: Shooting, housing developments along rivers, degradation of riparian habitat, rodent control, pesticides, lead poisoning, clearing of floodplain forests.

Proposed Management Direction: Develop and implement riparian management programs. Locate and manage potential nesting habitat. Identify key use areas for nest sites and develop management plans. Cooperate with livestock operators to avoid conflicts. Work with landowners to protect cottonwood forests. Resolve rodenticide-pesticide problems. Improve surveys.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service	1.21,
BLM	
Fish & Wildlife Service	1.3211, 1.331, 1.332, 1.333,
Wyoming Game & Fish	4.121
Montana Fish, Wildlife, Parks	
National Park Service	
Bureau of Reclamation	
Army Corps of Engineers	
Bureau of Indian Affairs	
Soil Conservation Service	
Wyoming SF	

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Shoshone (WY)	0	2	25
Bighorn River (WY)	2	1	50
Greybull River (WY)	0	0	20
Wind River (WY)	0	2	10
Yellowstone River (MT)	1	7	40
Bighorn River (MT)	2	3	30
Shields Valley (MT)	0	0	5*
Clark's Fork (MT)	2	0	12
Stillwater River (MT)	0	1	8
	7	16	

* migration corridor

Total Target & Existing Territories - 23
Habitat Management Goal - 23
Recovery Population Goal - 14

Zone 41. Powder River (WY, MT)

Main Threats: Energy development causing disturbance and reduced food supply. Loss of riparian cottonwoods. Conflicts with sheep operations. Shooting, pesticides.

Proposed Management Direction: Identify communal roosts and concentration areas. Minimize negative impacts of energy development. Work with landowners and livestock operators to prevent shooting and poisoning. Develop I&E programs. Maintain riparian cottonwood habitat.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service	4.11,
BLM	4.121, 4.123
Fish & Wildlife Service	
Wyoming Game & Fish	
National Park Service	
Montana Fish, Wildlife, Parks	
Bureau of Reclamation	
Army Corps of Engineers	

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Tongue River (WY)	1	1	5
Crazy Woman (WY)	0	0	20
Powder River (WY)	0	0	25
Belle Fourche Roost (WY)	0	0	20
Other Areas (WY)	1	0	--
Antelope Creek Roost (WY)	0	0	50
Yellowstone River (MT)	5	3	50
Little Missouri River (MT)	0	0	3
Tongue River (MT)	1	1	10
Powder River (MT)	0	1	5
Long Pines (MT)	0	0	10
	8	6	

Total Target & Existing Territories - 14
Habitat Management Goal - 14
Recovery Population Goal - 9

Zone 42. Lower North Platte River (WY)

Main Threats: Housing developments along North Platte River; energy development near communal roosts and increasing human disturbance near roosting sites; loss of snags in foraging habitat.

Proposed Management Direction: Obtain conservation easements along North Platte. Determine key foraging areas. Minimize disturbance at roosting sites. Address eagle needs in BLM land use plans. Monitor potential threats.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service	1.21,
BLM	1.3211, 1.332, 1.333, 1.334
Fish & Wildlife Service	
Wyoming Game & Fish	
Bureau of Reclamation	
Army Corps of Engineers	
Wyoming Forestry Division	
Soil Conservation Service	

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Casper	0	0	100+
Boxelder	0	0	40
Glendo-Gvernsey Reservoirs	0	0	10
	0	0	

Total Target & Existing Territories - 0
Habitat Management Goal - 0
Recovery Population Goal - 0

Zone 43. Laramie Plains (WY)

Main Threats: Unknown.

Proposed Management Direction: Locate wintering areas.

Responsible Agencies

Forest Service
BLM
Fish & Wildlife Service
Wyoming Game & Fish
Soil Conservation Service
County

Key Areas

None

Total Target & Existing Territories - 0
Habitat Management Goal - 0
Recovery Population Goal - 0

Zone 44. Saratoga (WY)

Main Threats: Future development of nesting habitat on state and private land. Degradation of nesting habitat associated with proposed energy and water projects on the Little Snake River. Loss of riparian cottonwoods.

Proposed Management Direction: Locate and protect nesting and foraging habitat. Study to identify major land use conflicts. Identify important habitat associated with each nest site.

Responsible Agencies	Most Urgent Site-specific Tasks
Forest Service BLM Fish & Wildlife Service Wyoming Game & Fish Bureau of Reclamation Army Corps of Engineers	1.21

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Upper North Platte	6	1	20
Little Snake	0	1	10
	6	2	

Total Target & Existing Territories - 8
Habitat Management Goal - 8
Recovery Population Goal - 5

Zone 45. Red Desert (WY)

Main Threats: Unknown.

Proposed Management Direction: Locate important use areas.

Responsible Agencies

Forest Service
BLM
Fish & Wildlife Service
Wyoming Game & Fish
Bureau of Reclamation
Army Corps of Engineers

Key Areas

None

Total Target & Existing Territories - 0
Habitat Management Goal - 0
Recovery Population Goal - 0

Zone 46. Pinedale (WY)

Main Threats: Housing developments and increasing human recreation.

Proposed Management Direction: Evaluate potential nesting habitat and manage to maintain potential habitat. Regulate human use patterns.

Responsible Agencies

Forest Service
BLM
Fish & Wildlife Service
Wyoming Game & Fish
Bureau of Reclamation
Army Corps of Engineers
Soil Conservation Service

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Upper Green River	2	1	10
Pinedale Lakes	0	2	0
	2	3	

Total Target & Existing Territories - 5
Habitat Management Goal - 5
Recovery Population Goal - 4

Zone 47. Missouri Basin (MT)

Main Threats: Pesticides, shooting.

Proposed Management Direction: Public I&E measures. Attempt to resolve environmental problems.

Responsible Agencies	Most Urgent Site-specific Tasks
U.S. Fish & Wildlife Service BLM Montana Fish, Wildlife, Parks Bureau of Indian Affairs	1.3211, 4.121

Key Areas	Existing Territories	Target Recovery Territories	Current Wintering Population
Milk River	0	2	1
Missouri River	0	4	19
Musselshell River	0	1	20-30
Big Dry	0	1	0
Poplar River	0	1	0
	0	9	

Total Target & Existing Territories - 9
Habitat Management Goal - 9
Recovery Population Goal - 6

APPENDIX B

LIST OF AGENICES ASKED TO PROVIDE REVIEW COMMENTS

Chief
U.S. Forest Service
P.O. Box 2417
Washington, D.C. 20013

Regional Forester
U.S. Forest Service
Pacific Southwest Region 5
630 Sansome Street
San Francisco, CA 94111

Regional Forester
U.S. Forest Service
Region 1
Federal Bldg, P.O. Box 7669
Missoula, MT 59807

Regional Forester
U.S. Forest Service
Region 6, Box 3623
319 SW Pine Street
Portland, OR 97208

Regional Forester
U.S. Forest Service
Intermountain Region 4
324 25th Street
Ogden, UT 84401

Army Corps of Engineers
Off of the Chief of Engineers
Pulaski Bldg.
20 Mass Avenue, NW
Washington, D.C. 20314

Division Engineer
Army Corps of Engineers
South Pacific Division
630 Sansome Street
San Francisco, CA 94111

Division Engineer
Army Corps of Engineers
North Pacific Division
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Portland, OR 97208

Bureau of Indian Affairs
1951 Constitution Avenue, NW
Washington, D.C. 20245

Area Director
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Navaho Area Office
Window Rock, AZ 86515

Area Direcctor
Bureau of Indian Affairs
Sacramento Area Office
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Area Director
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Director
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State Director
Bureau of Land Management
2800 Cottage Way
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State Director
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State Director
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State Director
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State Director
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