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## 16 Pend Oreille Subbasin Assessment – Terrestrial

### 16.1 Focal Habitats: Current Distribution, Limiting Factors, and Condition

Vegetation in the Pend Oreille Subbasin is dominated by interior mixed conifer forest, with montane mixed conifer and lodgepole forests in the high elevations and small areas of montane coniferous wetlands and alpine habitats. Timber management is the primary land use in the Subbasin on National Forest System, BLM, Idaho Department of Lands, Washington Department of Natural Resources, Tribal, and private timberlands. Agriculture, grazing, and urban and rural residential development are other land uses. The largest urban areas within the Subbasin include Newport, Cusick, and Metaline, Washington, and Sandpoint, Priest River, and Clark Fork, Idaho.

Figure 13.2 (Section 13) shows the current distribution of wildlife-habitat types in the Pend Oreille Subbasin based on IBIS (2003). Table 16.1 presents the acres of habitats by wildlife-habitat type and by subbasin focal habitat. Five focal habitats were selected for the IMP: wetlands, riparian, steppe and shrub-steppe, upland forest, and cliff/rock outcrops. Four of the province-level focal habitats were selected as focal habitats for the Pend Oreille Subbasin: wetlands, riparian, upland forest, and cliff/rock outcrop (Ad Hoc Terrestrial Resources Tech Team May 5, 2003). Focal habitats comprise about 89 percent of the Subbasin, including upland forests (87 percent) and wetlands and riparian habitats (two percent, excluding open water). Developed habitats, including agricultural and urban lands, currently comprise approximately three percent of the Subbasin. Cliff/rock outcrop habitats are not mapped in the IBIS system.

The IBIS data is based on satellite imagery at a scale that tends to under-represent habitats that are small in size or narrow in shape. Additional information on habitats and wildlife within the Pend Oreille Subbasin is available for selected ownerships and/or jurisdictions; these sources include the WDFW, Washington Priority Habitats and Species database, USFWS and IDFG Conservation Data Center. Data from these sources has been used where available to provide more specific information on habitat distribution within the Subbasin.

Historical vegetation data for the Subbasin is not available at a scale similar to the current condition IBIS data. Native vegetated habitats in the Subbasin have been converted to developed habitats and have also been modified through changes to vegetation type and structure. Refer to Section 4 for a discussion of historical vs. current habitat types in the IMP and factors influencing the distribution and quality of those habitats.

Table 16.1. Current wildlife-habitat types in the Pend Oreille Subbasin

Wildlife-Habitat Type	Pend Oreille Current Acres	Percent of Total
<b>Wetlands (Focal Habitat)</b>		
Lakes, Rivers, Ponds, and Reservoirs	139,569	6.7%
Herbaceous Wetlands	2,580	0.1%
Montane Coniferous Wetlands	26,969	1.3%
<b>Riparian and Riparian Wetlands (Focal Habitat)</b>		
Eastside (Interior) Riparian Wetlands	11,566	0.6%
<b>Steppe and Shrub-Steppe</b>		

<b>Wildlife-Habitat Type</b>	<b>Pend Oreille Current Acres</b>	<b>Percent of Total</b>
Eastside (Interior) Grasslands	80,927	3.9%
Shrub-Steppe	1,442	0.1%
<b>Upland Forest (Focal Habitat)</b>		
Westside Lowland Conifer-Hardwood Forest	23,210	1.1%
Montane Mixed Conifer Forest	143,240	6.9%
Eastside (Interior) Mixed Conifer Forest	1,381,574	66.6%
Lodgepole Pine Forest and Woodlands	37,230	1.8%
Ponderosa Pine Forest and Woodland	112,147	5.4%
Upland Aspen Forest	4,772	0.2%
<b>Alpine and Subalpine</b>		
Subalpine Parklands	204	0.0%
Alpine Grasslands and Shrublands	50,772	2.4%
<b>Developed</b>		
Agriculture, Pasture, and Mixed Environs	52,327	2.5%
Urban and Mixed Environs	5,861	0.3%
<b>Total</b>	<b>2,074,390</b>	<b>100.0%</b>

(Source: IBIS 2003)

### **16.1.1 Open Water, Wetlands, and Riparian Areas**

The IBIS wildlife-habitat map (Figure 13.2) is based in part on National Wetlands Inventory (NWI) mapping, but does not utilize all of the wetland categories or show the full extent of very small mapped areas. Information provided below on wetlands and riparian areas is based on IBIS (2003) and the Pend Oreille Subbasin Summary (Entz and Maroney 2001), unless otherwise cited. Other sources of information include a report on the conservation status of northern Idaho wetlands by Jankovsky-Jones (1997).

#### **16.1.1.1 Open Water**

Open water habitats of natural and human origin comprise almost seven percent of land cover in the Pend Oreille Subbasin. Lake Pend Oreille is the largest lake in the Subbasin, located in the Upper Pend Oreille watershed. The Clark Fork River is the primary tributary to Lake Pend Oreille, which is drained by the Pend Oreille River. Priest Lake and Upper Priest Lake are located in the Priest River watershed, which drains via the Priest River into the Pend Oreille River above Albeni Falls Dam. The Lower Pend Oreille watershed includes the Pend Oreille River between Albeni Falls Dam and the Canadian border. Sullivan Creek is the largest tributary. The watershed supports numerous small and medium-sized lakes including Bead, Sullivan, and Calispell lakes.

The Upper Pend Oreille watershed is bounded by hydroelectric facilities at its upstream and downstream boundaries. Cabinet Gorge Dam is located on the Clark Fork River at the upstream boundary and Albeni Falls Dam is located on the Pend Oreille River at the downstream end, about 23 miles downstream of Lake Pend Oreille. Water level in Priest and Upper Priest lakes and the Thorofare is controlled by a dam at the outlet of Priest Lake. In the Lower Pend Oreille watershed, the Box Canyon Reservoir extends almost 56 miles from the Box Canyon Dam upstream to the Albeni Falls Dam, occupying about 7,370 acres at full pool. Boundary Dam, located about a mile upstream of the Canadian border, creates a 17.5

mile-long reservoir with a full pool surface area of about 1,640 acres. Water level in Sullivan Lake is controlled by a dam at the outlet.

The federal hydrosystem project at Albeni Falls, along with other water resources projects, has strongly influenced the major rivers and lakes in the Pend Oreille Subbasin. Commercial and residential development, timber management, agricultural practices, and grazing also have influenced the Subbasin’s waterbodies.

### 16.1.1.2 Wetlands and Riparian Areas

Wetland habitats in the northern Idaho panhandle were evaluated by Jankovsky-Jones (1997). The study area included most of Boundary and Bonner counties, and a small portion of Kootenai County. The analysis is based on NWI mapping for about 1.4 million acres in the northern Idaho, a portion of which are located in the Pend Oreille Subbasin; the remainder in the adjacent Kootenai Subbasin. Information on land ownership and management direction to retain natural resource values was used to identify lands with “protected” status. Table 16.2 shows the wetland habitats by NWI category and protected status.

Table 16.2. Idaho Panhandle wetland summary

<b>Idaho Panhandle: Wetland and Deepwater Habitat and Protected Status</b>			
<b>System Classification</b>	<b>Acres Protected</b>	<b>Total Acres</b>	<b>Percent of Type Protected</b>
<b>Palustrine</b>			
Emergent	1,598	22,443	7.1%
Scrub-Shrub	441	9,920	4.4%
Forested	471	8,011	5.8%
Aquatic Bed	40	643	6.2%
Unconsolidated Bottom	49	1,099	4.4%
Unconsolidated Shore	0	11	0.0%
<b>Total Palustrine</b>	<b>2,599</b>	<b>42,127</b>	<b>6.2%</b>
<b>Lacustrine</b>			
Limnetic	2,010	102,655	1.9%
Littoral	414	11,430	3.6%
<b>Total Lacustrine</b>	<b>2,424</b>	<b>114,085</b>	<b>2.1%</b>
<b>Riverine</b>			
Upper Perennial	339	8,367	4.1%
<b>Total Riverine</b>	<b>339</b>	<b>8,367</b>	<b>4.1%</b>
<b>Total All Types</b>	<b>5,362</b>	<b>164,579</b>	<b>3.2%</b>

(Source: Jankovsky-Jones 1997)

Approximately 12 percent of the study area is classified as wetlands; lacustrine systems (primarily deepwater habitats) make up over 69 percent of this area. The dominant vegetated wetland types in the Subbasin include palustrine emergent (14 percent), palustrine scrub-shrub (six percent), and palustrine forested (five percent). Most of the wetlands are open water habitats on state lands, about 2.9 percent of wetlands are on National Forest System lands, and less than 1 percent is on USFWS lands. About 23 percent of the wetlands in the study area are located on private lands. Approximately 5,362 acres of wetland habitats are protected in the study area, representing less than four percent of all wetland types. The largest category of vegetated wetlands under protection is the palustrine emergent type, with

about seven percent of the acres within the type protected, or about one percent of the total wetland area. The Jankovsky-Jones study includes analysis of wetland habitat quality and ranks sites for future protection. Several Class I and II wetland sites on private land are located within the Pend Oreille Subbasin, including sites at the Clark Fork Delta and Upper Priest Lake. The study provides a good reference for evaluation of wetland parcels for acquisition.

Riparian vegetation surrounding Lake Pend Oreille currently includes emergent wetlands, deciduous forested wetlands, and small quantities of deciduous scrub-shrub wetlands. Operation of Albeni Falls Dam results in drawdown of Lake Pend Oreille by as much as eleven feet during the winter months, primarily for flood control purposes. During the summer, water levels are held at or near full pool. This operation pattern results in a band of unvegetated habitat along the reservoir margin. Pioneering species are unable to successfully establish in this zone due to the combined effects of the seasonal prolonged drawdown and inundation periods, as well as short-term water level fluctuations of up to several meters. Wave action also affects the stability of shoreline soils and the ability of plants to colonize the fluctuation zones. Prior to construction of the dam, wetlands surrounding the lake were typically flooded in the late winter and spring months, with water receding gradually to a late summer low. As a result of the project's construction and operation, large areas of emergent and deciduous forested wetlands have been converted to open water (at full pool) and exposed mudflats (during drawdown) (Martin et al. 1988). Very small quantities of scrub-shrub wetlands (73 acres) were created as a result of raising the lake's water level. The species diversity of emergent wetland habitats, and their forage value to wildlife, appears to have shifted over time. Sedges, spikerushes, arrowheads, bulrushes and smartweeds, which are valuable wildlife foods, are reduced in abundance and the occurrence of reed canarygrass and cattails has increased (Martin et al. 1988). The latter two species tolerate long drawdown periods, but are of relatively low value for most waterfowl and wildlife.

Martin, et al. (1988) also noted changes to the aquatic macrophyte communities in the shallow water zones of Lake Pend Oreille. The abundance of various species of *Potamogeton* has been reduced, apparently in favor of less valuable waterfowl forage species such as *Chara* and *Nitella* that tolerate deeper water levels.

Wetlands also are associated with the mouths of streams and rivers in Lake Pend Oreille where sediments accumulate in deltas. Due to the effects of water regulation, vegetation is lacking within the fluctuation zone which is inundated by higher summer water levels, and exposed during the winter drawdown period. Erosion that has resulted from wave action and undercutting of the unvegetated banks also inhibits the establishment of vegetation. Erosion of habitat is of special concern at the Clark Fork River delta, Pack River delta, Strong's Island, and the mouths of Priest River, Hoodoo Creek, Hornby Creek, and Carr Creek. Annual erosion of surface area as a result of the Albeni Falls Project was estimated at about 30 acres per year, with half occurring in the Clark Fork River delta (Martin et al. 1988). Loss of sediment input from upstream hydroelectric projects on the Clark Fork River may contribute to this effect.

Regulated flows have been shown to affect the ability of colonizing species, such as black cottonwood and willow, to become established within riparian zones (Braatne and Jamieson 2001; Scott et al. 1997). A potential effect of the operation of the Albeni Falls Project is a

lack of recruitment of woody riparian trees and shrubs along affected reaches of the Pend Oreille and Clark Fork rivers and Lake Pend Oreille. Historical photos show cottonwoods and red cedar forests along the Clark Fork delta and portions of the Lake Pend Oreille shoreline (Martin et al. 1988). Currently, deciduous and coniferous-forested wetlands are limited in these areas.

Along the Lower Pend Oreille River, the floodplain is well developed and includes a variety of wetland and riparian habitats. Remnant cottonwood galleries are present in some areas, but are decadent, fragmented, and limited in distribution (Entz and Maroney 2001). Within the 55-mile reach affected by the Box Canyon Hydroelectric Project, stage pattern and reservoir inundation affect the recruitment of cottonwood, through hydrology and through lack of active channel processes that create sediment bars and islands suitable for colonization (Rood and Braatne 2002). Seasonally flooded wetlands, including agricultural lands, are extensive. Scrub-shrub and forested wetlands, seasonally flooded fields, persistently flooded emergent wetlands, shallow riverine sloughs, and ponds are present within and adjacent to the floodplain. Riparian habitats are greatly modified from historic conditions through timber harvest, residential development, and agricultural land uses. Bank sloughing has also reduced the extent of riparian vegetation along some river reaches. A major contiguous reach of floodplain, riparian, and wetland habitat (over 1,700 acres) is protected along the Lower Pend Oreille at the mouths of Tacoma and Trimble creeks. This area consists of property acquired by the Kalispel Tribe as mitigation for the Albeni Falls Project, combined with USFWS and Pend Oreille Public Utility District properties.

Riparian and riparian wetlands throughout the Subbasin have been affected by water regulation, natural and human-caused fire events, draining of agricultural and grazing lands, timber management, roads, and residential development.

### **16.1.2 Upland Forests**

Upland forests in the Pend Oreille Subbasin are dominated by interior mixed conifer forests (67 percent of Subbasin, Table 16.1). Montane mixed conifer forests (seven percent) are present in the high elevations of the Selkirk and Cabinet mountains. Ponderosa pine forests (five percent) are present primarily in the lower elevations in the southern part of the Subbasin. Lodgepole pine dominated forests (two percent) are present on a variety of higher elevation sites disturbed by timber harvest or fire, particularly to the southwest of Priest Lake.

Timber harvest has been a primary land use in the Pend Oreille Subbasin for over a century. Timber harvest has resulted in the elimination of most mature and old growth stands and their replacement with stands of younger age and less complex structure. With timber management and increased population of the area, fire suppression became a standard practice. Effects of fire suppression include changes in seral stages and species composition of the forest stands. In general, early seral-stage forests of western larch, lodgepole pine, ponderosa pine, and western white pine have decreased while shade tolerant species such as Douglas fir and grand fir have increased. This general effect of timber management is seen at all elevations on the Idaho Panhandle National Forest, where the gradual replacement of species requiring high levels of sunlight with those more tolerant of shaded, dense stand conditions has been documented in detail (USFS 2003a).

Construction and operation of the Albeni Falls Project did not directly affect upland forests.

### **16.1.3 Other Terrestrial Resource Limiting Factors**

As noted in Section 4, numerous specific habitat elements (called key environmental correlates, or KECs, in IBIS terminology) influence the value of wildlife-habitat types to individual wildlife species. Habitat elements may include natural attributes, such as snags, downed wood, soil types, and also include anthropogenic features such as buildings, chemical contaminants, and roads. Information on site-specific habitat elements is critical to determination of habitat suitability for wildlife; however, data is not available at a subbasin-wide level for most habitat elements. Information on selected habitat elements that have important influences on habitat quality and wildlife use has been compiled for this assessment, including road density and salmonid nutrients lost to the IMP.

#### **16.1.3.1 Road Density**

Figure 13.3 shows road density, by density class, for each sixth order watershed in the Pend Oreille Subbasin. The majority of the Subbasin is ranked as high road density (1.7 to 4.7 miles of road per square mile). Several areas surrounding Lake Pend Oreille and Priest Lake, a reach of the Pend Oreille River west of Newport, and an area near Metaline Falls, are ranked moderate (0.7 to 1.7 miles of road per square mile). The far northern portion of the Subbasin is ranked as low road density (0.1 to 0.7 miles of road per square mile).

High road densities are indicative of human land uses and activities. In the Pend Oreille Subbasin, high road densities are typically associated with managed timberlands. Road density values in excess of 1.5 miles per square mile are considered sub-optimal for mule deer and Rocky Mountain elk summer range; values greater than 0.5 miles per square mile (mule deer) and 1.0 miles per square mile (elk) are suboptimal for the same species on their winter ranges (WDFW 1991). Most of the Pend Oreille Subbasin currently supports road density levels considered suboptimal for these game species.

#### **16.1.3.2 Loss of Salmonid Nutrient Base**

Construction and operation of the Chief Joseph and Grand Coulee dams on the Columbia River eliminated the potential for salmon to return to areas traditionally and culturally used by the Kalispel, Coeur d'Alene, and other native American Tribes, including portions of the Pend Oreille River Subbasin. The loss of anadromous fish affected not only Tribal and recreational use of the fisheries resource, but also affected salmon-dependent wildlife and modified the nutrient input to the overall ecosystem.

Appendix E of the 1987 Columbia Basin Fish and Wildlife Program (Council 1987) presents the results of several alternative calculations to determine the loss of salmon within the Columbia River system due to hydropower development. Based on the pre-1850 run size, with no dams in place, the number of adults at spawning grounds in reaches above Chief Joseph Dam would total 3,175,000 fish, with sockeye comprising greater than 55 percent, summer Chinook 19 percent, and fall Chinook, spring Chinook, coho, and steelhead the remaining 26 percent. Although the analysis does not break out the returns by major river and stream systems, it can be assumed that a significant number of fish would have returned to Metaline Falls on the lower Pend Oreille River in the absence of other human-induced barriers.

Scholz, et al. (1985) compiled information on salmon and steelhead run size and harvest above Grand Coulee Dam. The results of four different techniques to estimate adult run size of the total Columbia River were summarized, showing a range of 1.2 million to 35 million fish. The authors selected the catch-based estimation technique as the most reasonable estimate of total Columbia River run size, equaling 13.1 million fish. The percentage of the total run migrating to the Upper Columbia River was estimated at 5 percent Chinook, 8 percent sockeye, 3 percent coho, and 41 percent steelhead. Using the catch-based total run size, an estimate of run size into the Upper Columbia Basin, prior to major development, was calculated at 1.1 million fish. Minimum annual catch was estimated at 644,000 fish.

The impact of the loss of salmon to focal wildlife is discussed in Section 4.5.2 (Key Wildlife Species of the Intermountain Province).

#### **16.1.4 Land Ownership and Gap Status**

Land ownership in the Pend Oreille Subbasin is summarized in Table 16.3 (IBIS 2003). A map of ownership categories across the IMP is presented in Section 4, Figure 4.3. The Pend Oreille Subbasin is dominated by federal ownership (45 percent), with the majority of this in National Forest System lands on the Colville and Idaho Panhandle National Forests. Private ownership totals approximately 36 percent, state ownership is estimated at 13 percent, and Tribal ownership is less than 1 percent.

Relative protection levels of native habitats in the Pend Oreille Subbasin based on the Gap Analysis Program (GAP) are shown in Table 16.4. Approximately four percent of lands within the Subbasin are categorized as Status 1, High Protection. These lands are located primarily in three relatively large blocks in the Salmo-Priest Wilderness Area of northeastern Washington, and on National Forest System lands around Upper Priest Lake and east of Priest Lake. Within the Status 1 designation, over 87 percent of the protected land is the focal habitat upland forest and less than one percent is wetlands. Habitats protected under Status 2, Medium Protection (less than 1 percent of total), include upland forest and less than 100 acres of wetlands at two primary locations: Mt. Spokane State Park and just west of Lake Pend Oreille. Lands under Status 3, Low Protection levels, total almost 54 percent of the Subbasin, reflecting the multiple use mandate of the USFS allowing both resource extraction and wildlife-habitat protection. The low protection category includes USFS inventoried roadless areas on National Forest System lands. Private lands with a Status 4 ranking total about 36 percent of the Subbasin. Due to the scale of mapping, small parcels may be incorrectly categorized in this analysis.



Table 16.3. Land ownership in the Pend Oreille Subbasin by wildlife-habitat type

Wildlife-Habitat Type (acres)	Federal Lands	Native American Lands	State Lands	Local Gov't. Lands	Non-Gov't. Org. Lands	Private Lands	Water	Total
<b>Wetlands (Focal Habitat)</b>								
Lakes, Rivers, Ponds, and Reservoirs	4,438	119	3,922	0	0	22,876	115,262	146,618
Herbaceous Wetlands	111	0	36	0	0	2,326	22	2,495
Montane Coniferous Wetlands	3,987	1,265	980	0	0	21,687	3	27,922
<b>Riparian and Riparian Wetlands (Focal Habitat)</b>								
Interior Riparian Wetlands	3,022	0	929	0	0	6,591	71	10,613
<b>Steppe and Shrub-Steppe</b>								
Interior Grasslands	14,248	0	6,336	0	0	67,399	0	87,983
Shrub-steppe	2	0	656	0	0	994	0	1,651
<b>Upland Forest (Focal Habitat)</b>								
Mesic Lowland Conifer-Hardwood Forest	12,064	0	4,622	0	0	6,469	0	23,155
Montane Mixed Conifer Forest	91,171	0	38,604	0	0	15,724	0	145,498
Interior Mixed Conifer Forest	743,084	1,922	176,516	0	112	430,565	0	1,352,200
Lodgepole Pine Forest & Woodlands	20,768	21	8,358	0	2	10,294	0	39,443
Ponderosa Pine Forest & Woodlands	17,129	695	10,638	0	0	91,946	0	120,408
Upland Aspen Forest	5,144	38	175	0	0	3,713	0	9,070
<b>Alpine and Subalpine</b>								
Subalpine Parkland	395	0	3	0	0	17	0	415
Alpine Grasslands and Shrublands	23,959	0	15,321	0	0	11,603	0	50,883
<b>Developed</b>								
Agriculture, Pasture, and Mixed Environs	1,722	476	1,153	0	0	47,158	0	50,509
Urban and Mixed Environs	57	0	22	0	0	5,465	0	5,544
<b>Total Acres</b>	<b>941,302</b>	<b>4,537</b>	<b>268,271</b>	<b>0</b>	<b>113</b>	<b>744,826</b>	<b>115,358</b>	<b>2,074,407</b>

(Source: IBIS 2003)

Table 16.4. GAP status of lands in the Pend Oreille Subbasin by wildlife-habitat type

Wildlife-Habitat Type (acres)	1 - High Protection	2 - Medium Protection	3 - Low Protection	4 - No Protection	Water	Total
<b>Wetlands (Focal Habitat)</b>						
Lakes, Rivers, Ponds, and Reservoirs	486	429	4,548	22,858	120,640	148,961
Herbaceous Wetlands	-	27	117	2,327	24	2,495
Montane Coniferous Wetlands	39	12	5,298	22,514	16	27,880
<b>Riparian and Riparian Wetlands (Focal Habitat)</b>						
Interior Riparian Wetlands	92	51	3,788	6,591	99	10,621
<b>Steppe and Shrub-Steppe</b>						
Interior Grasslands	243	216	21,385	66,146	0	87,990
Shrub-steppe	0	623	34	992	0	1,649
<b>Upland Forest (Focal Habitat)</b>						
Mesic Lowland Conifer-Hardwood Forest	524	0	16,133	6,470	0	23,127
Montane Mixed Conifer Forest	33,598	0	95,460	16,390	0	145,448
Interior Mixed Conifer Forest	34,042	6,211	875,036	434,797	0	1,350,087
Lodgepole Pine Forest & Woodlands	1,552	8	27,497	10,257	0	39,315
Ponderosa Pine Forest & Woodlands	46	240	28,577	91,556	0	120,419
Upland Aspen Forest	80	4	5,427	3,528	0	9,039
<b>Alpine and Subalpine</b>						
Subalpine Parkland	134	0	264	17	0	415
Alpine Grasslands and Shrublands	9,608	0	29,425	11,878	0	50,912

Wildlife-Habitat Type (acres)	1 - High Protection	2 - Medium Protection	3 - Low Protection	4 - No Protection	Water	Total
<b>Developed</b>						
Agriculture, Pasture, and Mixed Environs	0	50	4,023	46,432	0	50,505
Urban and Mixed Environs	0	9	57	5,480	0	5,546
<b>Total Acres</b>	<b>80,443</b>	<b>7,879</b>	<b>1,117,073</b>	<b>748,234</b>	<b>120,779</b>	<b>2,074,409</b>

(Source: IBIS 2003)

**GAP Status Definitions** (*Source: USGS 2000*):

**Status 1 – High Protection:** An area having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a natural state within which disturbance events (of natural type, frequency, intensity, and legacy) are allowed to proceed without interference or are mimicked through management.

**Status 2 – Medium Protection:** An area having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a primarily natural state, but which may receive uses or management practices that degrade the quality of existing natural communities, including suppression of natural disturbance.

**Status 3 – Low Protection:** An area having permanent protection from conversion of natural land cover for the majority of the area, but subject to extractive uses of either a broad, low-intensity type (e.g., logging) or localized intense type (e.g., mining). It also confers protection to federally-listed endangered and threatened species throughout the area.

**Status 4 – No or Unknown Protection:** There are no known public or private institutional mandates or legally recognized easements or deed restrictions held by the managing entity to prevent conversion of natural habitat types to anthropogenic habitat types. The area generally allows conversion to unnatural land cover throughout.

## 16.2 Wildlife of the Pend Oreille Subbasin

### 16.2.1 Wildlife Occurring in the Pend Oreille Subbasin

The Pend Oreille Subbasin provides a wide range of wildlife-habitat types dominated by interior mixed conifer forest, with montane mixed conifer and lodgepole forests in the high elevations, and small areas of montane coniferous wetlands and alpine habitats.

There are approximately 335 terrestrial vertebrate wildlife species using these habitats, many of which are important for ecological, cultural, and/or economic reasons. Table 16.5 presents the terrestrial vertebrate wildlife species occurring within the Pend Oreille Subbasin (IBIS 2003). Due to the large number of wildlife species in the Subbasin, the following discussion focuses on wildlife species that are important indicators of habitat quality, those that represent other wildlife species, and those with special management status. For further information on the broader spectrum of wildlife species in the Subbasin, refer to the Pend Oreille Subbasin Summary (Entz and Maroney 2001).

Table 16.5. Number of wildlife species (and percent of province total) in the Pend Oreille Subbasin

	Occurring Species (Percent of Province Total)	HEP/Priority Species	HEP/Priority Species Closely Associated With Herbaceous Wetlands	HEP/Priority Species Closely Associated With Riparian Wetlands	HEP/Priority Species That Feed Upon Salmon	Occurring Species That Feed Upon Salmon
Amphibians	12 (71%)	2	2	2	0	1
Birds	231 (84%)	14	4	4	7	56
Mammals	80 (79%)	12	1	2	5	22
Reptiles	12 (67%)	0	0	0	0	2
<b>Total</b>	<b>335 (81%)</b>	<b>28</b>	<b>7</b>	<b>8</b>	<b>12</b>	<b>81</b>

(Source: IBIS 2003)

### 16.2.2 HEP and Priority Species of the Pend Oreille Subbasin

Subbasin planners selected a group of wildlife species to represent the focal habitats and wildlife of the Pend Oreille Subbasin. Species used in the Albeni Falls Project Habitat Evaluation Procedures (HEP) study (Martin et al. 1988) were selected because they were used to assess the construction and inundation losses for the federal hydrosystem project, and because they will be used in the future to evaluate mitigation for the project.

Additional wildlife species were selected due to their management, cultural, and/or economic values in the Subbasin; these species also represent specific focal habitats. The list of HEP and priority species for the Subbasin, including federal and state-listed threatened and endangered species, is presented in Table 16.6. The Pend Oreille Subbasin also identified four wildlife guilds as high priority for their ecological, cultural, and/or game value: bats, cavity nesters, migratory birds, and waterfowl.

Table 16.6. Federal and state endangered/threatened, HEP, and priority wildlife species of the Pend Oreille Subbasin and degree of association<sup>1</sup> with focal habitats during breeding

Common & Scientific Names	Federal/ID/WA Listing Status <sup>2</sup>	HEP/Priority Status <sup>3</sup>	Focal Habitats				
			Cliff/Rock Outcrop	Wetland	Riparian	Steppe/Shrub-Steppe	Upland Forest
American white pelican <i>Pelecanus erythrorhynchos</i>	- / - / e	P(4)	-	Close	-	-	-
Bald eagle <i>Haliaeetus leucocephalus</i>	T / e / t	HEP	-	-	<u>General</u>	-	<u>General</u>
Black bear <i>Ursus americanus</i>	-	P(1,2)	-	<u>General</u>	<u>General</u>	-	<u>General</u>
Black-capped chickadee <i>Poecile atricapillus</i>	-	HEP	-	-	<u>General</u>	-	<u>General</u>
Canada goose <i>Branta canadensis</i>	-	HEP	<u>General</u>	<u>Close</u>	-	<u>General</u>	-
Canada lynx <i>Lynx canadensis</i>	T / - / t	P(1,4)	-	-	-	-	<u>Close</u>
Fisher <i>Martes penanti</i>	- / - / e	P(4)	-	<u>General</u>	-	-	<u>Close</u>
Gray wolf <i>Canis lupus</i>	T / e / e	P(1,3,4)	-	-	<u>General</u>	<u>General</u>	<u>General</u>
Great blue heron <i>Ardea herodias</i>	-	P(1)	-	-	<u>Close</u>	-	<u>General</u>
Grizzly bear <i>Ursus arctos</i>	T / t / e	P(1,3,4)	-	-	-	-	<u>General</u>
Harlequin duck <i>Histrionicus histrionicus</i>	-	P(1)	-	-	<u>Close</u>	-	-
Long-toed salamander <i>Ambystoma macrodactylum</i>	-	P(1)	-	<u>Close</u>	<u>Close</u>	<u>General</u>	<u>General</u>
Mallard <i>Anas platyrhynchos</i>	-	HEP	-	<u>Close</u>	<u>Close</u>	<u>General</u>	-
Moose <i>Alces alces</i>	-	P(1,2)	-	<u>General</u>	<u>General</u>	-	<u>General</u>
Mule deer <i>Odocoileus hemionus hemionus</i>	-	P(1,2,3)	-	<u>General</u>	<u>General</u>	<u>General</u>	<u>General</u>
Muskrat <i>Ondatra zibethica</i>	-	HEP	-	<u>Close</u>	<u>Close</u>	-	-
Northern goshawk <i>Accipiter gentilis</i>	-	P(1)	-	<u>General</u>	<u>General</u>	-	<u>Close</u>
Northern leopard frog <i>Rana pipiens</i>	- / - / e	P(1)	-	<u>Close</u>	<u>Close</u>	-	-
Osprey <i>Pandion haliaetus</i>	-	P(1)	-	<u>Close</u>	<u>General</u>	<u>General</u>	<u>General</u>
Peregrine falcon <i>Falco peregrinus</i>	- / e / -	P(1,4)	<u>Close</u>	-	<u>General</u>	<u>General</u>	<u>General</u>
Pileated woodpecker <i>Dryocopus pileatus</i>	-	P(1)	-	<u>General</u>	<u>General</u>	-	<u>General</u>
Redhead <i>Aythya americana</i>	-	HEP	-	<u>Close</u>	-	-	-
Rocky Mountain elk	-	P(1,2,3)	-	<u>General</u>	<u>General</u>	<u>General</u>	<u>General</u>

Common & Scientific Names	Federal/ID/WA Listing Status <sup>2</sup>	HEP/Priority Status <sup>3</sup>	Focal Habitats				
			Cliff/Rock Outcrop	Wetland	Riparian	Steppe/Shrub-Steppe	Upland Forest
<i>Cervus elaphus nelsoni</i>							
White-headed woodpecker <i>Picoides albolarvatus</i>	-	P(1)	-	-	General	-	<u>Close</u>
White-tailed deer <i>Odocoileus virginianus</i>	-	HEP	-	-	<u>Close</u>	General	<u>General</u>
Wolverine <i>Gulo gulo</i>	-	P(1)	General	General	-	-	<u>General</u>
Woodland caribou <i>Rangifer tarandus</i>	E / e / e	P(1,3,4)	-	<u>General</u>	<u>General</u>	-	<u>General</u>
Yellow warbler <i>Dendroica petechia</i>	-	P(1)	-	-	<u>Close</u>	-	-
Bat guild	-	P(1)	<u>Close</u>	<u>General</u>	<u>General</u>	General	<u>General</u>
Cavity-nester guild	-	P(1)	-	General	General	-	<u>Close</u>
Neo-tropical migrant bird guild	-	P(1)	-	<u>General</u>	<u>General</u>	General	<u>General</u>
Waterfowl guild	-	P(1)	-	<u>Close</u>	General	-	-

(Sources: IBIS 2003 and Pend Oreille Subbasin Work Team)

<sup>1</sup> **Close** = Animal dependent on the habitat for part or all of its life history requirements. **General** = Animal adaptive and supported by numerous habitats.

<sup>2</sup> **E** = Federal Endangered. **T** = Federal Threatened. **e** = State Endangered. **t** = State Threatened. State listings for Idaho and Washington shown in that order.

<sup>3</sup> **HEP** = Species evaluated via Habitat Evaluation Procedures loss assessment for Albeni Falls Dam (Martin et al. 1988)  
**P** = Priority species designated as important because it is (1) ecological indicator for habitat or other animals, (2) game animal, (3) highly culturally prized, or (4) special status for management. Many priority species were selected to represent one or more focal habitat types; the habitat(s) a species represents is(are) indicated by underlined degree of association (e.g., close).

The province-wide status and trends of federal and state threatened and endangered species are discussed in Section 4, Terrestrial Resources in the Intermountain Province. Subbasin-level information on occurrence and management of threatened and endangered species is provided in this section. The occurrence of HEP and priority species in the Subbasin also is discussed briefly below. Some species were selected primarily as indicators of wildlife guilds or of a focal habitat; for many of these species detailed information on status in the Subbasin is not available.

### 16.2.2.1 Federal and State Threatened and Endangered Species

**American white pelican.** Breeding populations of pelican are not documented in the Pend Oreille Subbasin. A single observation is recorded for the Washington portion of the Subbasin, consisting of ten pelicans foraging on the Pend Oreille River just north of Newport (WDFW 2003b). For the Idaho portion of the Subbasin, Sibley (2003) notes this species could be present during migration or post-breeding dispersal; however, the Idaho Conservation Data Center (IDFG 2003) has no data because it does not monitor the pelican.

**Bald eagle.** The Idaho side of this Subbasin contains 18 historic nests at locations near Priest Lake, the Priest River, Lake Pend Oreille, the Pend Oreille River, Blanchard Lake, and Little Sand Creek (IDFG 2003). There is one wintering site near the Pend Oreille River. In Washington, there are approximately 12 nesting territories along the Pend Oreille River — nearly all using large cottonwood trees to nest — and three territories near Calispell Lake, Mountain Meadows Lake, and Sullivan Lake (WDFW 2003b). The Subbasin has the highest number of documented nesting territories in the IMP, with a total of up to 30 nesting territories. Lake Pend Oreille supports up to several hundred bald eagles during the winter when spawned-out kokanee and waterfowl are available as food sources (Martin et al. 1988). The Albeni Falls Project construction resulted in a loss of 4,508 Habitat Units for breeding bald eagles and 4,365 Habitat Units for wintering bald eagles.

**Canada lynx.** The Idaho portion of the Pend Oreille Subbasin has numerous sightings of lynx in the Priest River drainage during the 1990s, and a few sightings in the Pend Oreille River drainage (IDFG 2003). On the Washington side of the Subbasin, evidence of lynx presence was plentiful in the north half of the Subbasin from dozens of records into the 1990s (WDFW 2003b). Limited surveys and track sighting confirmation efforts by the WDFW have yielded lynx observations in 4 LAUs in the Pend Oreille River drainage since 1997 (Base and Zender 2003). The Little Pend Oreille Lynx Management Zone (LMZ) includes the Calispell Mountain Range and consists of ten lynx analysis units (LAUs), seven of which are located within the Pend Oreille River Subbasin. The Salmo-Priest LMZ includes the Selkirk Mountain Range and the Lower Pend Oreille and Priest River areas.

**Fisher.** The Washington portion of the Subbasin has more sightings of fisher (11 of 14 total) than any other Subbasin in the IMP (WDFW 2003b). Most sightings occurred in the 1990s, and none occurred after 1997. Except for two sightings, all are north of Township 36. Many fisher sightings are reported to the WDFW but cannot be confirmed by biologists. Department efforts to confirm fisher sightings in the northern Selkirk Mountains using baited camera stations in the mid- to late-1990s produced no fisher observations (S. Zender, WDFW Biologist, personal communication, April 2, 2004). In Idaho, the Subbasin has eight fisher records for the Priest Lake and Priest River drainage during the 1990s; none occurred after 1999 (IDFG 2003). No records are known for the area around Lake Pend Oreille.

**Gray wolf.** On the Washington side of the Subbasin, at least 15 wolf sightings or howlings were reported between 1990 and 2002 (WDFW 2003b). Thirteen occurred east of the Pend Oreille River, and 11 were in the northern half of the Subbasin. No known wolf packs are established in Washington and sightings in the last decade are based primarily on interviews with credible observers. Generally, observations have not been confirmed (S. Zender, WDFW Biologist, personal communication, April 2, 2004). In Idaho, wolves pass through the Priest River basin, but no resident packs are currently established (Entz and Maroney 2001).

**Grizzly bear.** Approximately 75 percent of all grizzly sightings on the Washington side of the IMP have occurred in the Pend Oreille Subbasin (WDFW 2003b). Since 1980, all but one of those 23 sightings occurred in the northern half of the Subbasin; that one exception was in the Calispell Peak Creek drainage in 2002. In Idaho, the grizzly may be present in Bonner and Boundary counties.

**Northern leopard frog.** The only reported leopard frog sightings in the entire IMP occurred in this Subbasin. Specifically, they were (1) near Idaho's Lake Pend Oreille between 1892 and 1955 (IDFG 2003), (2) in the vicinity of the lower Pend Oreille River in Washington in the late 1950s (Leonard and McAllister 1996), and (3) along the Pend Oreille River on the Kalispel Indian Reservation in Pend Oreille County during 2001 and 2003 (R. Entz, Wildlife Biologist, Kalispel Tribe, personal communication, April 10, 2004).

**Peregrine falcon.** No sightings are recorded in the Idaho or Washington portions of this Subbasin (IDFG 2003; WDFW 2003b). Department of Fish and Wildlife surveys in the subbasin have not documented peregrine falcon nesting territories (S. Zender, WDFW, personal communication, April 2, 2004). Zender further points out that the Priority Habitats and Species database may not have recorded single birds if those sightings were suspected as migrants passing through.

**Woodland caribou.** Since the 1960s, woodland caribou have been restricted to the Selkirk Mountains in northern Idaho, northeastern Washington, and southeastern British Columbia (USFWS 1994). In the Washington portion of the Subbasin, there were 15 sightings of caribou individuals or tracks between 1981 and 1997 (WDFW 2003b). All were north of approximately the town of Ione, and all except one were east of the Pend Oreille River. The Selkirk Mountains woodland caribou subpopulation was augmented in 1996-1998 with 43 additional caribou placed into Washington and British Columbia, immediately north of the border. Since 1996, caribou have occurred in Washington as far south as Molybdenite Mountain. The Idaho Conservation Data Center does not report distribution of caribou, but anecdotes indicate a presence in the northern half of the Idaho portion of the Subbasin.

A caribou recovery zone covers portions of British Columbia, Washington, and Idaho, including areas within the Pend Oreille Subbasin. As part of the Selkirk Mountains woodland caribou recovery effort, cooperators including the WDFW transplanted a total of 43 caribou from British Columbia into Washington and British Columbia immediately north of the United States border in 1996-1998 (Almack 2001). Since 1996, caribou have occurred in Washington as far south as Molybdenite Mountain.

#### **16.2.2.2 Albeni Falls HEP Species**

**Bald eagle.** Refer to preceding section describing federal and state threatened and endangered species.

**Black-capped chickadee.** General references such as Sibley (2003) show year-round presence for this species throughout the Subbasin. The Albeni Falls Project construction caused the loss of 2,286 Habitat Units for this species.



**Canada goose.** Canada geese breed throughout the Subbasin, but winter presence may depend on mild temperatures limiting ice cover on the larger water bodies. A loss of 4,699 Habitat Units for Canada goose was reported from the construction of the Albeni Falls Project.

**Mallard.** Mallards breed throughout the Subbasin, but winter presence may depend on mild temperatures limiting ice cover on the larger water bodies. The species lost 5,985 Habitat Units as a result of construction of the Albeni Falls hydropower project.

**Muskrat.** The extensive river system of the Pend Oreille Subbasin allowed the muskrat to populate nearly everywhere. In Washington, the muskrat harvest in Pend Oreille County is among the highest of any counties in the state (Appendix G). In Idaho, the muskrat harvest is relatively minor in Bonner and Boundary counties when compared to other counties in the state. Construction of the Albeni Falls hydropower project caused the loss of 1,756 Habitat Units for muskrat.

**Redhead.** General references such as Sibley (2003) indicate breeding season presence across the Subbasin, but the species commonly migrates to warmer latitudes in winter. The Washington GAP Analysis Project (Smith et al. 1997) documented probable evidence of breeding near the Pend Oreille River. The redhead duck lost 3,379 Habitat Units as a result of construction of the Albeni Falls Project.

**White-tailed deer and mule deer.** In this Subbasin, white-tailed deer are much more abundant than mule deer. WDFW management objectives for white-tailed deer harvest are to provide abundant hunting opportunity while not exceeding 75 percent buck mortality. Pre-hunting-season surveys should produce at least 27 bucks per 100 does. The most recent pre-hunting-season data (1998-2001) measured an average white-tailed deer buck:doe ratio of 30.5 (range 29-32), close to the minimum limit (Appendix G). White-tailed deer experienced significant losses from epizootic hemorrhagic disease (EHD) in GMU 117.

WDFW mule deer management objectives are to provide conservative hunting opportunity, improve buck ratios, and increase productivity and populations levels. Mule deer seem to be suffering long-term population declines attributed to habitat change and fragmentation (S. Zender, WDFW, personal communication, April 2, 2004).

The IDFG white-tailed deer management objective is to maintain a harvest of at least 30 percent bucks with 4 or more antler points per side, and at least 7 percent bucks with 5 or more antler points per side. The most recent data (years 2000-02) varied by analysis area from 52 to 53 percent bucks with 4 or more antler points per side, and from 21 to 23 percent bucks with 5 or more antler points per side (Appendix G). These numbers greatly exceed management minimums.

An estimate of deer hunting harvest and recreation within the Subbasin is presented in Table 16.7. It show that the Washington portion of the Subbasin produces between two

and three percent of that state's deer harvest and hunting recreation. The Idaho side accounts for approximately six percent of that state's deer harvest and hunting recreation.

Table 16.7. White-tailed deer and mule deer hunting harvest and recreation within the Pend Oreille Subbasin<sup>1</sup>

Year	Harvest						Hunter-Days					
	Quantity			% of State Total			Quantity			% of State Total		
	ID	WA	Total	ID	WA	Total	ID	WA	Total	ID	WA	Total
1999	2,647	826	3,474	7.3	2.6	5.1	54,191	38,441	92,632	6.6	2.6	4.1
2000	2,046	1,051	3,097	5.6	2.8	4.2	n.d.	25,888	-	-	2.7	-
2001	2,491	843	3,334	5.9	2.3	4.3	35,028	17,669	52,697	6.3	2.1	3.8
2002	1,929	785	2,714	5.1	2.3	3.8	45,358	18,673	64,031	5.9	2.2	4.0
Average	2,278	876	3,155	6.0	2.5	4.3	44,859 <sub>2/</sub>	25,168	69,787 <sub>2/</sub>	6.3 <sub>2/</sub>	2.4	4.0 <sub>2/</sub>

(Source: Appendix G)

<sup>1</sup> Includes all or portions of Idaho Big Game Units 1, 2, and 4A, plus Washington Game Management Units 109, 113, and 117.

<sup>2</sup> Average of 3 years instead of 4.

n.d. = No data.

Construction of the Albeni Falls Project resulted in a loss of 1,680 Habitat Units for white-tailed deer.

### 16.2.2.3 Other Priority Species

**Bat guild.** Little detailed information exists regarding the distribution and occurrence of bats in the Pend Oreille Subbasin, but as many as nine species may be present (Entz and Maroney 2001). The life history and habitat associations of individual species are so diverse as to greatly complicate management if designed for the entire guild. For this reason, further analysis in this plan is omitted.

**Black bear.** The WDFW black bear population management goals are to perpetuate and manage black bear and their habitats to ensure healthy, productive populations. WDFW will minimize threats to public safety and property damage from black bears while managing populations for sustained yield. Acceptable harvest guidelines in Washington include 35-39 percent females in the harvest, median age of females acceptable at 5-6 years, median age of males acceptable at 2-4 years (WDFW 2003c).

The IDFG is striving for less than 30 percent female bears in the total harvest, while the male harvest has greater than 35 percent males aged five years or older. Black bear harvest in the last reporting years (1999-2002) included females averaging 30 percent of the total harvest, and males older than five years averaging 49 percent of the male component.

**Cavity-nester guild.** The cavity nester guild consists of a large number of species of birds and other animals. Many of these species depend on primary excavators, such as the pileated woodpecker, to create suitable cavities in decaying trees. These species are indicative of forested habitats providing a range of sizes of cavities for reproduction and

roosting. Nearly all cavity-nesting birds contribute a valuable ecological function by consuming forest insects, thereby contributing to the control of insect populations. Little detailed information is available on the occurrence and distribution of these species. The life history and habitat associations of individual species in this guild are so diverse as to greatly complicate management if designed for the entire group. For this reason, further analysis in this plan is omitted.

**Great blue heron.** In the Washington portion of the Subbasin, four heronries are known, two along the Pend Oreille River and two others in tributary drainages (WDFW 2003b). The species is also present in Idaho, but specific nesting locations are not reported.

**Harlequin duck.** On the Washington side of the Subbasin, harlequin ducks are observed on several streams with breeding records on Sullivan and Granite creeks (Zender 1995).

**Long-toed salamander.** Long-toed salamander is probably present throughout the Subbasin; however, no occurrence data is available for the species.

**Moose.** WDFW moose population management objectives call for maintaining a healthy population and providing quality hunting opportunity through limited entry permits. Generally, conditions for moose production appear to be optimal for the next few decades. IDFG manages moose on a controlled hunt basis with conservative permit levels. Populations are steadily expanding where timber harvesting and fire have created favorable shrub fields. Illegal kills and vehicle collisions in the Panhandle region during 1999-2002 caused significant moose losses, averaging 14 percent and 12 percent, respectively, of the legal hunting harvest.

Table 16.8 presents an estimate of moose hunting harvest and recreation in the Pend Oreille Subbasin. The Washington portion produces 33 percent of that state's moose harvest and 39 percent of its moose hunting recreation. The Idaho side contributes about 10 percent of Idaho's moose harvest.

Table 16.8. Moose hunting harvest and recreation within the Pend Oreille Subbasin<sup>1</sup>

Year	Harvest						Hunter-Days					
	Quantity			% of State Total			Quantity			% of State Total		
	ID	WA	Total	ID	WA	Total	ID	WA	Total	ID	WA	Total
1999	50	16	66	6.5	37.3	8.1	<sup>2/</sup>	155	-	<sup>2/</sup>	56.4	-
2000	58	22	79	7.4	33.8	9.4	<sup>2/</sup>	165	-	<sup>2/</sup>	42.1	-
2001	107	24	131	11.7	31.7	13.2	<sup>2/</sup>	176	-	<sup>2/</sup>	25.9	-
2002	105	23	128	12.3	28.5	13.7	<sup>2/</sup>	267	-	<sup>2/</sup>	32.6	-
Average	80	21	101	9.5	32.8	11.1	-	191	-	-	39.3	-

(Source: Appendix G)

<sup>1</sup> Includes all or portions of Idaho Big Game Units 1, 2, and 4A, plus Washington Game Management Units 109, 113, and 117.

<sup>2</sup> No data.

***Neo-tropical migratory bird guild.*** The neo-tropical migratory bird guild includes a large number of species with diverse habitat associations and life histories. These species breed within the Subbasin, but migrate south to winter at warmer latitudes in the United States, Mexico, or Central America. Migratory birds are of concern due to recent declines in breeding populations of many species. Many of these species perform an important ecological function by feeding primarily on insects, thereby contributing to control of insect populations. The life history and habitat associations of individual species in this guild are so diverse as to greatly complicate management if designed for the entire group. For this reason, further analysis in this plan is omitted.

***Northern goshawk.*** This forest raptor is a year-round resident across the Subbasin. Specific occurrence data are not available.

***Osprey.*** Osprey are common breeders in the Pend Oreille Subbasin. In 1989, the last year that WDFW conducted a comprehensive survey, approximately 52 active nests and 19 inactive nests were documented in Pend Oreille County (Entz and Maroney 2001).

***Pileated woodpecker.*** In the Washington portion of the Subbasin, a single nesting record for pileated woodpecker was reported just north of the Kalispel Indian Reservation (WDFW 2003b). The species is presumed to be more widespread than this single record would indicate.

***Rocky Mountain elk.*** The WDFW management objectives for the Selkirk Elk Herd are to: (1) increase the 800 animal population in eastern Stevens and Pend Oreille counties to 1,000, possibly by transplants; (2) achieve a post-hunting-season ratio of at least 15 bulls per 100 cows, along with an overall bull mortality under 50 percent.

The IDFG objective for the Idaho Panhandle Elk Management Zone, which incorporates the Coeur d'Alene and Pend Oreille subbasins, is to establish an elk population of 2,900-3,900 cows and 600-800 bulls, including 350-475 adult bulls. In survey year 2002, the management zone population was calculated to be 3,025 cows, 438 bulls, and 318 adult bulls. Until the 1980s and 1990s, habitat conditions in core elk areas had declined from their optimum of 30 years earlier. Since then, however, timber harvest, prescribed fire, and pioneering of elk into new areas have increased elk numbers. Conversely, the accompanying high road densities and loss of large areas for elk security are threats to continued population growth.

Table 16.9 presents an estimate of elk hunting harvest and recreation in the Pend Oreille Subbasin. The Washington portion produces less than one percent of the state's elk harvest and about two percent of its hunting recreation (Appendix G). The Idaho side contributes approximately two percent of its elk harvest and three percent of its elk hunting recreation.

Table 16.9. Rocky Mountain elk hunting harvest and recreation within the Pend Oreille Subbasin<sup>1</sup>

Year	Harvest						Hunter-Days					
	Quantity			% of State Total			Quantity			% of State Total		
	ID	WA	Total	ID	WA	Total	ID	WA	Total	ID	WA	Total
1999	205	46	251	1.9	0.8	1.5	17,394	14,414	31,807	3.2	2.2	2.7
2000	226	37	263	1.9	0.5	1.4	n.d.	9,825	-	-	2.1	-
2001	249	26	275	2.2	0.5	1.6	11,174	5,696	16,870	3.0	1.3	2.1
2002	221	36	257	1.9	0.6	1.4	14,703	5,755	20,457	3.0	1.3	2.2
Average	225	36	261	2.0	0.6	1.5	14,424 <sup>2</sup>	8,922	23,045 <sup>2</sup>	3.1 <sup>2</sup>	1.7	2.3 <sup>2</sup>

(Source: Appendix G)

<sup>1</sup> Includes all or portions of Idaho Big Game Units 1, 2, and 4A, plus Washington Game Management Units 109, 111, 113, and 117.

<sup>2</sup> Average of 3 years instead of 4.

n.d. = No data

**Waterfowl guild.** Waterfowl are important game and cultural species, and are closely tied to emergent wetlands and open water habitats in the Pend Oreille Subbasin. There are approximately 39 species in this guild, including loons, grebes, cormorants, mergansers, ducks, geese, and swans. The life history and habitat associations of individual species in this guild are so diverse as to greatly complicate management if designed for the entire group. For this reason, further analysis in this plan is omitted.

**White-headed woodpecker.** The WDFW (2003b) has no records of this species in the Subbasin. The Washington GAP Analysis Project (Smith et al. 1997) also reports no evidence of breeding. The species is uncommon, but presumed to breed locally within pine-dominated forests in the Subbasin.

**Wolverine.** At least 12 sightings of wolverine individuals or tracks were recorded between 1979 and 1995 in the Washington portion of the Pend Oreille Subbasin (WDFW 2003b). This represents two-thirds of all wolverine sightings in the Washington portion of the IMP. Most sightings were in the northern half of the Subbasin and east of the Pend Oreille River. In Idaho, the Conservation Data Center does not monitor this species so population status is not known.

**Yellow warbler.** This neo-tropical migrant bird is presumed to breed throughout the Subbasin, primarily in interior riparian habitats with significant components of deciduous shrubs and trees.

## 16.3 Summary of Terrestrial Resource Limiting Factors

### 16.3.1 Direct Effects of Federal Hydrosystem Projects

Development of the Albeni Falls Project resulted in direct loss of wildlife and wildlife-habitats in the Pend Oreille Subbasin. The habitat losses associated with construction of project facilities and inundation of project reservoirs were assessed in the Albeni Falls Wildlife Protection, Mitigation, and Enhancement Plan Final Report (Martin et al. 1988) through a Habitat Evaluation Procedures (HEP) study. The study provides the number of habitat units to be provided in compensation for the construction losses (Council 2000)

and identifies potential mitigation areas. Mitigation for the construction losses is directed by the Albeni Falls Interagency Work Group, which includes the Coeur d'Alene Tribe, Kalispel Tribe, Kootenai Tribe of Idaho, IDFG, USFWS, USACE, NRCS, and USFS. Priority mitigation focus areas were established with consideration for in-place and in-kind opportunities, threat to wetland habitats in primary impact areas, location relative to other management areas, and availability of protection opportunities (Albeni Falls Interagency Work Group Operating Guidelines and Guiding Principles for Mitigation Implementation 1998).

Habitat losses due to construction of the Albeni Falls Project are summarized in Table 16.10 (Martin et al. 1988).

Table 16.10. Acres of habitat types affected by Albeni Falls project construction and inundation

Project	Habitat Type	Acres of Habitat Inundated
<b>Albeni Falls</b>	Herbaceous wetland	4,376
	Deciduous forested wetland	2,314
	Shallow open water	<b>655</b>
<b>Total</b>		<b>7,345</b>

(Source: Martin et al. 1988)

The loss of wildlife-habitat value for individual species, as determined through the HEP study and expressed in Habitat Units (HUs), is summarized in Table 16.11. The HEP evaluation species were selected based on their use of specific habitat types and structural elements, and to represent other wildlife species that use those habitats. The HEP study results are provided in terms of Habitat Units, which are units of value based on both quality and quantity of habitat. Progress made to date toward implementing the recommended mitigation strategies is summarized below in terms of Habitat Units by species.

The current status of completed mitigation for the Albeni Falls Project also is shown in Table 16.11; approximately 83 percent of the mitigation remains to be implemented. Habitat Units by species were not available at the time of publication for all recently acquired parcels for the Albeni Falls Mitigation Project. Acquisition of mitigation parcels began in earnest in 1992. To date, over 5,000 acres have been acquired and are under management by the Kalispel Tribe, IDFG, or the Coeur d'Alene Tribe (Terra-Burns 2002). These projects are described in the Province Inventory, Section 2, and the Subbasin Inventory, Section 17.

Table 16.11. Status of mitigation for construction and inundation wildlife-habitat losses, Albeni Falls project<sup>1</sup>

Project	Species	Habitat Units lost	Habitat Units acquired	Percent complete
<b>Albeni Falls</b>				
	Bald eagle (breeding)	4,508	313	6.9%
	Bald eagle (wintering)	4,365	329	7.5%
	Black-capped chickadee	2,286	318	13.9%
	Canada goose	4,699	1,229	26.2%
	Mallard	5,985	465	7.8%
	Muskrat	1,756	138	7.9%
	Redhead duck	3,379		0%
	White-tailed deer	1,680	147	8.8%
	Yellow warbler	-	93	
	HU estimates other parcels		1,790	
<b>Total all species</b>		<b>28,658</b>	<b>4,822</b>	<b>16.8%</b>

(Sources: BPA 2002, KT 2004; HUs by species not available for all parcels)

<sup>1</sup> Note: This table shows the total HUs lost at the Albeni Falls Project; mitigation of this loss may occur in part within the Coeur d'Alene Subbasin, with the approval of the Albeni Falls Interagency Work Group.

Mitigation required for the Albeni Falls Project will occur largely within the Pend Oreille Subbasin. However, with the approval of the Albeni Falls Interagency Work Group, mitigation may be provided, in part, within the Coeur d'Alene Subbasin (refer to Section 8, Terrestrial Resources of the Coeur d'Alene Subbasin). The total number of HUs to be acquired as mitigation for the Albeni Falls Project (28,658) is presented in corresponding tables in both subbasin chapters. However, note that this figure represents a single target for the Albeni Falls Project, rather than independent subbasin targets.

### 16.3.2 Operational Effects of Federal Hydrosystem Projects

Assessment and mitigation of operational impacts of the Albeni Falls Project are required under the Northwest Power Act. An assessment of operational impacts has not been undertaken for the Albeni Falls Project. Terrestrial resources issues related to operation of the Albeni Falls Project and downstream FCRPS projects include:

- 1) reduction in area of wetland habitats, and associated loss of primary productivity, wildlife-habitat, and wildlife forage, within the fluctuation zone of Lake Pend Oreille and associated rivers;
- 2) reduction of species diversity in emergent and aquatic bed wetlands within Lake Pend Oreille;
- 3) loss of wildlife-habitat due to erosion of lake and river shorelines;
- 4) loss of wildlife through disturbance/inundation/desiccation of breeding sites within and adjacent to fluctuation zone of Lake Pend Oreille and associated rivers;

- 5) lack of recruitment of black cottonwood and other woody species along the Pend Oreille River, Lake Pend Oreille, and lower Clark Fork River; and
- 6) loss of key food source for wildlife and reduction of nutrient input to the ecosystem due to extirpation of salmon and other anadromous species from the Lower Pend Oreille watershed via downstream FCRPS projects.

### **16.3.3 Secondary Effects of Federal Hydrosystem Projects and Other Limiting Factors**

Human impacts on wildlife have been accelerated in the Subbasin as a result of development of the Albeni Falls Project and other federal hydropower projects in the region. A reliable and affordable power source, irrigation water supply, and employment opportunities provided impetus for development of agriculture and other industry, particularly in the adjacent Spokane Subbasin. This development has led to increased human disturbance of wildlife populations and increased human use of wildlife. Extirpation of anadromous fishes in the Lower Pend Oreille watershed and adjacent subbasins has led to increased harvest pressure on wildlife for subsistence, cultural, and recreational uses. Factors that currently limit terrestrial resources in the Pend Oreille Subbasin are dominated by modification of forested stands through timber management and the combined effects of grazing, agriculture, water resource projects, roads, and residential development. Development, including agriculture, has converted approximately three percent of lands in the Subbasin to non-vegetated habitats.

## **16.4 Interpretation and Synthesis**

The Pend Oreille Subbasin has been substantially modified from historic conditions in terms of native habitats. Timber management has been practiced in the Pend Oreille Subbasin for over 100 years, with notable effects to riparian habitats and upland forest structure. Agriculture and urban/residential development has occurred in the major river valleys and surrounding Pend Oreille and Priest lakes. Approximately three percent of all lands in the Subbasin have been converted from native habitats to agriculture and other developed uses (Table 16.1). Road densities throughout the majority of the Subbasin exceed the levels considered optimal for big game summer and winter habitat security. About four percent of lands in the basin are protected at the high or medium levels, 54 percent are at the low protection level, and 36 percent have no protection (Table 16.4).

Construction of the federal hydrosystem project at Albeni Falls resulted in loss of 6,690 acres of wetland habitats, converted 655 acres of shallow open water habitats to deep water, and also modified the hydrology of more than 26 miles of river. In the lowermost portions of the Subbasin, anadromous fish were extirpated by construction of downstream FCRPS projects lacking fish passage facilities. Operation of the project continues to impact wildlife and wildlife habitats through altered hydrology; detailed assessments of operational effects have not been performed. Secondary effects of the project continue to affect wildlife of the Subbasin through human land uses and disturbance.

Wildlife mitigation related to the federal hydropower project at Albeni Falls is approximately 17 percent complete. Completion of the wildlife mitigation for construction of the FCRPS project is the highest terrestrial resources priority of the



Subbasin Work Team, followed by assessment and mitigation of operational impacts of the project.