SECTION 8 – Table of Contents

8 Coeur d' Alene Subbasin Assessment – Terrestrial

8.1 Focal Habitats: Current Distribution, Limiting Factors, and Condition

Vegetation in the Coeur d' Alene Subbasin is dominated by interior mixed conifer forest, with small amounts of montane mixed conifer and lodgepole forests in the highest elevations and interior grasslands along the western boundary. Timber management is a primary land use in the Subbasin on National Forest System, Bureau of Land Management, State of Idaho, Coeur d' Alene Reservation, and private timberlands. Agriculture is largely confined to the valley bottoms along the lower Coeur d' Alene, St. Joe, and St. Maries rivers, and to the Palouse regions to the southwest of Coeur d' Alene Lake. The largest urban areas included within the Subbasin boundary include the eastern portion of the City of Coeur d' Alene and the towns of Kellogg, Harrison, and St. Maries.

Figure 5.4 (Section 5) shows the current distribution of wildlife-habitat types in the Coeur d' Alene Subbasin based on IBIS (2003). Table 8.1 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. Three of the province-level focal habitats were selected as focal habitats for the Coeur d' Alene Subbasin: wetlands, riparian, and upland forest (Ad Hoc Terrestrial Resources Tech Team May 5, 2003). Focal habitats comprise about 93 percent of the Subbasin, including upland forests (91 percent) and wetlands and riparian habitats (2 percent, excluding open water). Developed habitats, including agricultural and urban lands, currently comprise approximately 1.5 percent of the Subbasin.

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 within the Coeur d' Alene Subbasin is available for selected ownerships and/or jurisdictions within the Subbasin; these sources include the Coeur d' Alene Tribe, WDFW, NRCS, USFWS, and IDFG. 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 the Section 4 for a discussion of historic vs. current wildlife-habitat types in the IMP and factors influencing the distribution and quality of those habitats.

Table 8.1. Current Wildlife-Habitat Types in the Coeur d' Alene Subbasin

Wildlife-Habitat Type	Coeur d'Alene Current Acres	Percent of Total
Wetlands (Focal Habitat)		
Lakes, Rivers, Ponds, and Reservoirs	42,443	1.8%
Herbaceous Wetlands	3,975	0.2%
Montane Coniferous Wetlands	29	0.0%
Riparian and Riparian Wetlands (Focal Habitat)		
Eastside (Interior) Riparian Wetlands	6,187	0.3%
Steppe and Shrub-Steppe		
Eastside (Interior) Grasslands	86,352	3.7%
Shrub-Steppe	78	0.0%
Upland Forest (Focal Habitat)		
Westside Lowland Conifer-Hardwood Forest	79,369	3.4%
Montane Mixed Conifer Forest	153,208	6.5%
Eastside (Interior) Mixed Conifer Forest	1,687,760	71.5%
Lodgepole Pine Forest and Woodlands	98,742	4.2%
Ponderosa Pine Forest and Woodlands	128,472	5.4%
Upland Aspen Forest	852	0.0%
Alpine and Subalpine		
Subalpine Parklands	11,219	0.5%
Alpine Grasslands and Shrublands	27,031	1.1%
Developed		
Agriculture, Pasture, and Mixed Environs	25,375	1.1%
Urban and Mixed Environs	8,604	0.4%
Total	**2,359,696**	100.0%

(*Source*: IBIS 2003)

8.1.1 Open Water, Wetlands, and Riparian Areas

The IBIS wildlife-habitat map (Figure 5.4) is based in part on National Wetland Inventory (NWI) mapping, but does not represent all of the wetland categories or show the full extent of very small mapped areas. Information provided below on wetlands and riparian areas in the Subbasin is based on the Coeur d' Alene Subbasin Summary (2001) unless otherwise noted. Additional sources of information include a report on wetland habitats of the Spokane River system by Jankovsky-Jones (1999) and re-licensing reports by Avista (2003).

8.1.1.1 Open Water

Coeur d' Alene Lake is the largest lake in the Subbasin, formed by a natural constriction along the Spokane River but currently controlled by the Post Falls Dam nine miles downstream of the natural dam. Other large lakes include Rose Lake and other lateral lakes along the Coeur d' Alene River. Major tributaries to Coeur d' Alene Lake include the Coeur d' Alene and St. Joe rivers, and the St. Maries River, a major tributary to the St. Joe.

Coeur d' Alene Lake has been affected by the Post Falls Dam hydropower development which raised the lake level 7.5 feet and modified the seasonal hydrology of the lake and its shoreline. The current surface area of the lake is approximately 48,000 acres at full pool. The lake is typically maintained at or near full pool during the summer months and drawdown beginning in September dependent upon precipitation, energy production, and flood control needs (Avista 2003). Commercial and residential development, shoreline development, timber and agricultural practices, and livestock grazing have also influenced the lake and its tributaries.

The Coeur d' Alene River subwatershed has been severely affected by mining and timber harvest practices. Construction of roads and railroads on steep slopes and adjacent to waterways has resulted in erosion and habitat degradation. Increased concentrations of heavy metals from mining activities have been detected in floodplain and riparian soils throughout a large portion of the subwatershed.

The St. Joe River subwatershed has also experienced a high degree of disturbance and alteration due to timber harvest and associated road and railroad construction. Residential development and agricultural land uses also affect this subwatershed.

8.1.1.2 Wetlands and Riparian Areas

Jankovsky-Jones (1999) evaluated wetland habitats within a large portion of the Coeur d' Alene Subbasin in Kootenai, Shoshone, and Benewah counties. The analysis is based on NWI mapping for about 1.9 million acres in the Subbasin (about 460,000 acres of the Subbasin were not analyzed, primarily in the far eastern portion). Information on land ownership and management direction to retain natural resource values was used to identify lands with "protected" status. Table 8.2 shows the wetland habitats by NWI category and protected status.

Table 8.2. Coeur d' Alene Subbasin Wetland Summary

Coeur d' Alene Subbasin: Wetland and Deepwater Habitat and Protected Status				
System Classification		**Acres Protected**	**Total Acres**	**% of Type Protected**
Palustrine				
	Emergent	2,496	20,658	12.1%
	Scrub-Shrub	281	8,373	3.4%
	Forested	181	5,577	3.2%
	Aquatic Bed	85	436	19.5%
	Open Water	5	370	1.4%
	Unconsolidated Bottom	3	166	1.8%
	Unconsolidated Shore	0	6	0.0%
	Total Palustrine	**3,051**	**35,586**	**8.6%**
Lacustrine				
	Limnetic	246	41,302	0.6%
	Littoral	599	2099	28.5%
	Total Lacustrine	**845**	**43,401**	**1.9%**
Riverine				
	Lower Perennial	68	226	30.1%
	Upper Perennial	35	2,501	1.4%
	Total Riverine	**103**	**2,727**	**3.8%**
Total All Types		**3,999**	**81,714**	**4.9%**

(*Source*: Coeur d' Alene Tribe (2001), as modified from Jankovsky-Jones 1999)

Approximately four percent of the land in the study area is classified as wetlands; lacustrine systems (primarily deepwater habitats) make up over half of this area. The dominant vegetated wetland types in the Subbasin include palustrine emergent (25 percent), palustrine scrub-shrub (10 percent), and palustrine forested (7 percent). Approximately 3,999 acres of wetland habitats are protected in the study area, representing less than 5 percent of all wetland types. Most of the protected wetlands are located on National Forest System lands. About 62 percent of the protected wetlands are palustrine emergent.

Wetlands occur intermittently along the shoreline of Coeur d' Alene Lake, primarily at the outlets of tributary streams and rivers. Black cottonwood, willow, Douglas spirea, and red-osier dogwood are the dominant tree and shrub species. Extensive wetlands occur where broad floodplains are present. Shoreline and floodplain zones, as well as emergent wetlands, along Coeur d' Alene Lake were affected by the construction of Post Falls Dam and continue to be influenced by its ongoing operation. Operation of the Post Falls Project currently maintains full pool during the summer months, preventing the summer exposure of shoreline soils as would occur under natural hydrologic conditions. Significant amounts of historically vegetated lowlands and riparian areas have been converted to mudflats and other unvegetated habitats due to the extended summer inundation period. This operational pattern also may inhibit establishment of cottonwood, willow, and other native floodplain/shoreline species along the margins of the lake (Avista 2003). Docks, boat launches, and recreation sites have caused the removal of shoreline vegetation along many portions of Coeur d' Alene Lake.

Riparian habitats along streams in the Coeur d' Alene Lake subwatershed have been altered by development, agriculture, timber harvest, and livestock grazing. The Coeur d' Alene Tribe analyzed riparian habitats on Coeur d' Alene Indian Reservation lands within the Coeur d' Alene Lake subwatershed (Coeur d' Alene Tribe 2001). Almost 50 percent of Reservation riparian zones are currently in agricultural land uses and another 4 percent are developed. Riparian zones with the highest level of conversion to agricultural habitats include those along the St. Joe River (75 percent), Little Plummer Creek (61 percent), Lake Creek (60 percent), and Cottonwood Creek (47 percent).

The Coeur d' Alene River subwatershed includes an estimated 654 miles of streams which have been greatly affected by mining and timber harvest for over 100 years. Although altered by human activity, the riparian zones along the lower Coeur d' Alene River support extensive wetlands at several locations. The shallow area at the outlet of the river at Coeur d' Alene Lake supports aquatic vegetation, emergent vegetation in Harrison Slough, and forested wetlands in the uppermost floodplain zone. Upstream at the confluence of Fourth of July Creek emergent wetlands line both sides of the river. Rose Lake and other lateral lakes adjacent to the river support emergent and scrub-shrub wetlands. Narrow, higher gradient tributary streams with limited floodplains generally do not support extensive wetlands. Post Falls Dam causes impoundment of as much as 25 miles of the Coeur d' Alene River during the summer months, which has resulted in some unvegetated "drawdown" zones along the shoreline.

Within the St. Joe River subwatershed, riparian wetlands are located primarily along the lower St. Joe and St. Maries rivers. The subwatershed includes an estimated 740 miles of stream, many of which have been subjected to timber harvest, road building, agriculture, grazing, and development. The lower reaches of the St. Joe River support extensive pasturelands and hayfields. The riverbanks are vegetated with black cottonwood, quaking aspen, and willow, with shrubs and emergent vegetation along broader floodplains and in backwater sloughs. Along the lower St. Maries River, riparian deciduous forests, scrub-shrub, and occasional emergent wetland communities are also present. Post Falls Dam causes impoundment of as much as 25 miles of the lower St. Joe River, including a few miles of the St. Maries River, during the full pool summer months. Avista (2003) describes individual wetland communities along these two rivers.

8.1.2 Upland Forests

Upland forests in the Coeur d' Alene Subbasin are dominated by interior mixed conifer forests (72 percent; Table 8.1). Ponderosa pine occurs at lower elevations in the Subbasin, primarily in the western portion. Montane mixed conifer (7 percent) and lodgepole pine (4 percent) forests occur at higher elevations, primarily in the mountainous terrain of the central and eastern portions of the Subbasin. Lodgepole, along with western hemlock, western red cedar, western white pine, and western larch, tend to occur more often on north and east facing slopes, which are cooler and more moist. South and west-facing slopes tend to be dominated by more open forests of Douglas fir, grand fir, and ponderosa pine with significant understory shrub and grass/forb components.

Timber harvest has been a primary land use in the Coeur d' Alene Subbasin for over 100 years. Early logging was conducted primarily in the major river valleys, using the river to transport the logs to downstream mills. Rail logging was used in both the Coeur d' Alene River and St. Maries watersheds. Effects of timber management include changes in seral stages and species composition of the forest stands, with resultant changes in the drought and fire tolerance of current stands. In general, early seral white pine, larch, and ponderosa pine forests have decreased in area while Douglas fir and grand fir/western hemlock dominated stands have increased in area. Mature and old-growth stands have been largely replaced by younger seral, single aged stands.

8.1.3 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, chemical contaminants, and salmonid nutrients lost to the IMP.

8.1.3.1 Road Density

Refer to Section 5, Figure 5.6 Road Density in the Coeur d' Alene Subbasin for a map of road density by density class. Most of the Subbasin is ranked as high (1.7 to 4.7 miles of road per square mile) or very high (4.7 to 16.6 miles of road per square mile). A few areas in the St. Joe subwatershed were ranked as moderate (0.7 to 1.7 miles per square mile), and no areas were ranked as low or very low road density.

High road densities are indicative of human land uses and activities, and in the Coeur d' Alene Subbasin are often associated with heavily managed timberlands. Road density values in excess of 1.5 miles per square mile are considered suboptimal 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 Coeur d' Alene Subbasin currently supports road density levels considered suboptimal for these game species.

8.1.3.2 Chemical Contaminants

The lower Coeur d' Alene River basin is of special concern in the IMP due to high chemical contaminant levels resulting from mining operations. The lower Coeur d' Alene River shows significantly elevated concentrations of metals; lead, zinc and cadmium are of particular concern due to their high levels of toxicity to animals (Avista 2003). Contaminants are located in bank and bed sediments and are transported as sediment to the lower river valley, its floodplains and wetlands, and into Coeur d' Alene Lake. Avista (2003) provides a summary of contaminant studies performed to date on soils, water, wildlife, and plants in the lower Coeur d' Alene River and Coeur d' Alene Lake. Birds,

mammals, amphibians, and plants have been shown to be at risk from contaminants in portions of the lower Coeur d' Alene River basin.

8.1.3.3 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 Spokane, Coeur d' Alene, and other native American Tribes, including portions of the Spokane and Pend Oreille subbasins. 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 accessible portions of the Spokane River.

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 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.

8.1.4 Land Ownership and GAP Status

Land ownership in the Coeur d' Alene Subbasin is summarized in Table 8.3 (IBIS 2003). A map of ownership categories across the IMP is presented in Section 4, Figure 4.3. Due to the scale of mapping, small parcels of Tribal lands within the Coeur d' Alene Reservation appear to be incorrectly categorized in the IBIS analysis. The Coeur d' Alene Subbasin Summary (2001) presents land ownership information by subwatershed. The total acreages and distribution by ownership type are similar to the IBIS figures with the exception of state lands, which are reduced by about one percent, and Tribal lands, which are increased to just under one percent in the Subbasin Summary analysis. The following discussion reflects consideration of the more detailed mapping of state and Tribal lands provided in the Coeur d' Alene Subbasin Summary.

Greater than half of the Coeur d' Alene Subbasin is in federal ownership (58 percent), with the majority of that in National Forest System lands. Private lands comprise about

35 percent of the Subbasin, state lands just under 5 percent, and water about 1.6 percent. Tribal lands total about 15,417 acres, or 0.7 percent of the total Subbasin (Coeur d' Alene Subbasin Summary). A large portion of the Coeur d' Alene Reservation is located within the Subbasin (approximately 187,793 acres), including private, state, federal, and Tribal ownership.

Relative protection levels of native habitats in the Coeur d' Alene Subbasin based on the Gap Analysis Program (GAP) are shown in Table 8.4. A map displaying GAP Status for the IMP is presented in Section 4, Figure 4.4. Less than 4,000 acres of lands are categorized as GAP Status 4, High Protection. These lands are located primarily on National Forest System lands in the northeastern portion of the Coeur d' Alene River subwatershed. Approximately 23,480 acres (1 percent) are Status 3, Medium Protection, including various parcels along the lower Coeur d' Alene River, state lands south of St. Maries, and federal lands in the uppermost St. Joe River watershed. The majority of land within the basin is categorized as Status 2, Low Protection, reflecting the multiple use mandate of the USFS allowing both resource extraction and wildlife-habitat protection. Private lands, which receive the lowest protection status, comprise about 35 percent of the Subbasin.

Of the lands under Status 4 protection, the majority are the focal habitats upland forest (95 percent) and herbaceous and riparian wetlands (2 percent). Focal habitats under Status 3 protection include upland forests (91 percent), interior grasslands (3 percent), and herbaceous and riparian wetlands (2 percent).

Table 8.3. Land ownership in the Coeur d' Alene 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
Wetlands (Focal Habitat)								
Lakes, Rivers, Ponds, and Reservoirs	358	0	2,013	0	0	7,979	38,240	48,589
Herbaceous Wetlands	521	0	92	0	0	2,898	99	3,610
Montane Coniferous Wetlands	0	0	15	0	0	7	0	21
Riparian and Riparian Wetlands (Focal Habitat)								
Interior Riparian Wetlands	6,396	0	512	0	0	3,294	155	10,357
Steppe and Shrub-Steppe								
Interior Grasslands	4,106	0	2,436	0	0	80,709	0	87,252
Shrub-steppe	0	0	117	0	0	119	0	235
Upland Forest (Focal Habitat)								
Mesic Lowland Conifer-Hardwood Forest	47,142	0	9,853	0	0	22,329	0	79,324
Montane Mixed Conifer Forest	125,874	0	2,230	0	0	24,944	0	153,049
Interior Mixed Conifer Forest	1,043,861	0	98,989	74	0	532,510	0	1,675,434
Lodgepole Pine Forest & Woodlands	79,388	0	3,045	0	0	17,571	0	100,005
Ponderosa Pine Forest & Woodlands	33,983	0	4,074	71	0	91,688	0	129,816
Upland Aspen Forest	990	0	0	0	0	1	0	991
Alpine and Subalpine								
Subalpine Parkland	11,283	0	0	0	0	1,024	0	12,307
Alpine Grasslands and Shrublands	20,071	0	348	0	0	7,499	0	27,918
Developed								
Agriculture, Pasture, and Mixed Environs	0	0	259	56	0	22,674	0	22,989
Urban and Mixed Environs	249	0	0	0	0	7,551	0	7,800
Total Acres	**1,374,223**	**0**	**123,984**	**201**	**0**	**822,796**	**38,494**	**2,359,698**

(*Source*: IBIS 2003)

Table 8.4. GAP Status of Lands in the Coeur d' Alene Subbasin by Wildlife-Habitat Type

Wildlife-Habitat Type (acres)	1 - High Protection	2 - Medium Protection	3 - Low Protection	4 - No Protection	Water	Total
Wetlands (Focal Habitat)						
Lakes, Rivers, Ponds, and Reservoirs	0	778	870	7,979	39,613	49,240
Herbaceous Wetlands	23	34	557	2,898	103	3,616
Montane Coniferous Wetlands	0	0	15	2	4	21
Riparian and Riparian Wetlands (Focal Habitat)						
Interior Riparian Wetlands	40	350	6,493	3,291	185	10,358
Steppe and Shrub-Steppe						
Interior Grasslands	0	771	5,692	80,702	0	87,165
Shrub-steppe	0	0	119	116	0	235
Upland Forest (Focal Habitat)						
Mesic Lowland Conifer-Hardwood Forest	204	1,882	55,020	22,333	0	79,438
Montane Mixed Conifer Forest	1,236	335	126,529	24,938	0	153,038
Interior Mixed Conifer Forest	2,016	17,941	1,122,331	532,562	0	1,674,850
Lodgepole Pine Forest & Woodlands	148	313	81,988	17,571	0	100,020
Ponderosa Pine Forest & Woodlands	96	708	37,412	91,547	0	129,764
Upland Aspen Forest	0	70	920	1	0	991
Alpine and Subalpine						
Subalpine Parkland	0	61	11,225	1,022	0	12,307
Alpine Grasslands and Shrublands	126	157	20,125	7,496	0	27,904
Developed						
Agriculture, Pasture, and Mixed Environs	0	82	323	22,545	0	22,951
Urban and Mixed Environs	0	0	249	7,551	0	7,800
Total Acres	**3,890**	**23,481**	**1,469,868**	**822,554**	**39,905**	**2,359,697**

(*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.

8.2 Wildlife of the Coeur d' Alene Subbasin

8.2.1 Wildlife Occurring in the Coeur d' Alene Subbasin

The Coeur d' Alene River Subbasin provides a wide range of wildlife-habitat types dominated by interior mixed conifer forest, with small amounts of montane mixed conifer and lodgepole forests in the highest elevations, and interior grasslands along the western boundary. There are approximately 376 terrestrial vertebrate wildlife species using these habitats, many of which are important for ecological, cultural, and/or economic reasons. Table 8.5 presents the terrestrial vertebrate wildlife species occurring within the Coeur d' Alene 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 Coeur d' Alene Subbasin Summary (Coeur d' Alene Tribe 2001).

Table 8.5. Number of wildlife species (and percent of Province total) in the Coeur d' Alene 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	13 (76%)	0	0	0	0	1
Birds	268 (97%)	9	3	3	4	63
Mammals	81 (80%)	10	1	1	4	22
Reptiles	14 (78%)	0	0	0	0	3
Total	376 (91%)	19	4	4	8	89

(*Source*: IBIS 2003)

8.2.2 HEP and Priority Species of the Coeur d' Alene Subbasin

Subbasin planners selected a group of wildlife species to represent the focal habitats and wildlife of the Coeur d' Alene Subbasin. Species used in the Albeni Falls Habitat Evaluation Procedures (HEP) study (Martin et al. 1988) were selected because they were used in the construction and inundation loss assessment 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, as well as federal and state-listed threatened and endangered species, is presented in Table 8.6. The Coeur d' Alene Subbasin also identified four wildlife guilds as high priority for their ecological, cultural, and/or game value: bats, cavity nesters, neo-tropical migratory birds, and waterfowl.

Table 8.6. Federal and state Endangered/Threatened, HEP, and Priority Wildlife Species of the Coeur d' Alene Subbasin and Degree of Association[1] with focal habitats during breeding

Common & Scientific Names	Federal/ ID / WA Listing Status [2]	HEP/ Priority Status[3]	Focal Habitats				
			Cliff/ Rock Outcrop	Wetland	Riparian	Steppe/ Shrub-Steppe	Upland Forest
Bald eagle *Haliaeetus leucocephalus*	T / e / t	HEP	-	-	General	-	General
Black bear *Ursus americanus*	-	P(1,2)	-	General	General	-	General
Black-capped chickadee *Poecile atricapillus*	-	HEP	-	-	General	-	General
Canada goose *Branta canadensis*	-	HEP	General	Close	-	General	-
Canada lynx *Lynx canadensis*	T / - / t	P(1,4)	-	-	-	-	Close
Gray wolf *Canis lupus*	T / e / e	P(1,3,4)	-	-	General	General	General
Grizzly bear *Ursus arctos*	T / t / e	P(1,3,4)	-	-	-	-	General
Harlequin duck *Histrionicus histrionicus*	-	P(1)	-	-	Close	-	-
Mallard *Anas platyrhyncos*	-	HEP	-	Close	Close	General	-
Mule deer *Odocoileus hemionus hemionus*	-	P(1,2,3)	-	General	General	General	General
Muskrat *Ondatra zibethica*	-	HEP	-	Close	Close	-	-
Northern goshawk *Accipiter gentilis*	-	P(1)	-	General	General	-	Close
Peregrine falcon *Falco peregrinus*	- / e / -	P(1)	Close	-	General	General	General
Redhead *Aythya americana*	-	HEP	-	Close	-	-	-
Rocky Mountain elk *Cervus elaphus nelsoni*	-	P(1,2,3)	-	General	General	General	General
White-tailed deer *Odocoileus virginianus*	-	HEP	-	-	Close	General	General
Wolverine *Gulo gulo*	-	P(1)	General	General	-	-	General
Woodland caribou *Rangifer tarandus*	E / e / e	P(1,3,4)	-	General	General	-	General
Yellow warbler *Dendroica petechia*	-	P(1)	-	-	Close	-	-
Bat guild	-	P(1)	Close	General	General	General	General
Cavity-nester guild	-	P(1)	-	General	General	-	Close
Neo-tropical migrant bird guild	-	P(1)	-	General	General	General	General
Waterfowl guild	-	P(1,2)	-	Close	General	-	-

(*Sources:* IBIS 2003 and Coeur d'Alene Subbasin Work Team)

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

[2] **E** = Federal Endangered. **T** = Federal Threatened. **e** = State Endangered. **t** = State Threatened. State listings for Idaho and Washington shown in that order.

[3] **HEP** = Species evaluated via Habitat Evaluation Procedures loss assessment for Albeni Falls (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 special management programs for these species is provided in this section. The occurrence of HEP and priority species in the Subbasin is described, based on available data. Some species were selected primarily as indicators of wildlife guilds or of a focal habitat; for many of these species detailed information on occurrence is not recorded.

8.2.3 Federal and State Threatened and Endangered Species

Bald eagle. Wintering bald eagles are known to use the Coeur d' Alene River, St. Joe River, Coeur d' Alene Lake, and Hayden Lake areas. Peak wintering use in the Subbasin is believed to coincide with the peak of kokanee spawning in mid-November (Coeur d' Alene Tribe 2001). Nine historic nest sites and three wintering areas are located along the St. Joe River and Coeur d' Alene Lake (IDFG 2003).

Canada lynx. Lynx have been reported in many locations within the Subbasin, including all major drainages except the North Fork Coeur d' Alene River (IDFG 2003). Several lynx analysis units are located within the Subbasin. Lynx hair snagging surveys and habitat mapping are currently underway in the Subbasin (Coeur d' Alene Tribe 2001; Rust 2002).

Gray wolf. The Idaho Conservation Data Center does not monitor or report on this species; however, wolves are known to use portions of the Coeur d' Alene Subbasin (Coeur d' Alene Tribe 2001). The Central Idaho Non-essential Experimental Population Area includes the portion of the Coeur d' Alene Subbasin located south of Interstate Highway 90. The Rocky Mountain Wolf Recovery 1999 Annual Report (USFWS 1999) documented a pack of eight individual wolves at Snow Peak; the home range of this pack includes portions of the upper St. Joe River Basin. Since 1999, a second wolf pack, the Marble Mountain pack, has been documented in the St. Joe basin on the central border between Benewah and Shoshone counties (Mack and Holyan 2003).

Grizzly bear. The Idaho Conservation Data Center does not monitor or report on this species. The Subbasin is located within the northwestern portion of the Bitterroot Ecosystem. U.S. Fish and Wildlife Service (2000b) determined that there were no grizzly bears remaining in the Bitterroot Ecosystem, and proposed several alternatives for recovery. The preferred alternative is to reintroduce a non-essential experimental

population into a recovery area; each of the recovery area alternatives include portions of the Coeur d' Alene Subbasin.

Peregrine falcon. No sightings are known in the Idaho or Washington portions of this Subbasin (IDFG 2003; WDFW 2003b).

Woodland caribou. Anecdotal accounts suggest that woodland caribou may have once inhabited the Coeur d' Alene Subbasin (Coeur d' Alene Tribe 2001). Since the 1960s, woodland caribou have been restricted to the Selkirk Mountains in northern Idaho, northeastern Washington, and southeastern British Columbia (USFWS 1994). Their specific distribution in Idaho is not reported by the Idaho Conservation Data Center.

8.2.4 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 in the Idaho and Washington portions of the Subbasin.

Canada goose. General references such as Sibley (2003) show that Canada geese breed throughout the Subbasin. Winter presence depends on mild temperatures that limit ice cover on larger water bodies.

Mallard. Mallard ducks breed throughout the Subbasin (Sibley 2003). Winter presence depends on mild temperatures that limit ice cover on larger water bodies.

Muskrat. The extensive river system of the Coeur d' Alene Subbasin has allowed the muskrat to become a widespread resident. Although muskrat are trapped throughout the Subbasin, the majority are taken in Kootenai County (IDFG 2003).

Redhead. General references such as Sibley (2003) show that breeding occurs in the Subbasin, but this species of duck normally migrates to warmer latitudes in winter.

White-tailed deer and mule deer. 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 agency analysis area from 53 to 59 percent bucks with 4 or more points per side, and from 23 to 24 percent bucks with 5 or more points per side, both criteria far exceeding the management minimums (Appendix G). In Big Game Units 2, 3, and 4A, human development has decreased critical winter range. In Units 4, 5, 6, and 7, timber harvest has diminished low elevation, closed canopy forests that are critically important during deep-snow winters.

The IDFG mule deer management objective is to maintain a harvest of at least 30 percent bucks with 4 antler points or better for a 3-year running average. The most recent data

(years 2000-02) averaged 43 percent (range 42 to 45) with 4 points or better, significantly exceeding the minimum (Appendix G).

Agency data on deer hunting harvest and recreation is combined for mule deer and white-tailed deer. An estimate of deer hunting harvest and recreation within the Subbasin is presented in Table 8.7. The Idaho portion of the Subbasin produces about eight percent of the state's deer harvest and 13 percent of its deer hunting recreation. The Washington side, being very limited in area, contributes very little to Washington's deer harvest or recreation.

Table 8.7. White-tailed deer and mule deer hunting harvest and recreation within the Coeur d' Alene Subbasin[1]

	Harvest						Hunter-Days					
	Quantity			% of State Total			Quantity			% of State Total		
Year	ID	WA	Total	ID	WA	Total	ID	WA	Total	ID	WA	Total
1999	3,296	36	3,332	9.1	0.1	4.9	113,399	1,139	114,538	13.8	0.1	5.0
2000	2,997	51	3,048	8.2	0.1	4.1	n.d.	833	-	-	0.1	-
2001	3,623	36	3,659	8.6	0.1	4.7	66,348	663	67,011	12.0	0.1	4.8
2002	2,683	35	2,717	7.1	0.1	3.8	97,310	671	97,981	12.7	0.1	6.1
Ave.	3,150	39	3,189	8.3	0.1	4.4	92,352[2]	826	93,177[2]	12.8[2]	0.1	5.3[2]

(*Source*: Appendix G)

[1] Includes all or portions of Idaho Big Game Units 2, 3, 4, 4A, 5, 6, and 7, plus a tiny fraction of Washington Game Management Unit 124.
[2] Average of 3 years instead of 4.
n.d.= No data

8.2.5 Other Priority Species

Bat guild. Little detailed information exists regarding the distribution and occurrence of bats in the Coeur d' Alene Subbasin, but as many as eight species may be present (Coeur d' Alene Tribe 2001). The species' life histories and their habitat associations are diverse, further complicating study of their occurrence and distribution.

Black bear. The IDFG estimates black bear population trends via mandatory harvest check and report systems. The state's management goal is to ensure the long-term viability of the population while providing recreational opportunity for hunters and non-hunters. The state is addressing bear depredation on private forestland by striving for at least 40 percent female bears within the total harvest, while the male harvest has less than 25 percent males aged 5 years or older. Black bear harvest in the last reporting years (1999-2002) included females averaging about 30 percent of the total harvest, and males older than 5 years averaging about 9 percent of the male component (IDFG 2003). Neither criterion was satisfied despite efforts to expand the hunting season.

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.

Harlequin duck. General references such as Sibley (2003) indicate that breeding occurs within the Coeur d' Alene Subbasin.

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 Coeur d' Alene 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.

Northern goshawk. General references such as Sibley (2003) indicate yearlong presence of goshawk in this Subbasin. The Idaho Department of Fish and Game (2003) does not monitor or report this species, so detailed information concerning distribution and abundance is not known.

Rocky Mountain elk. The 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 (IDFG 2003). In survey year 2002, the management zone population was estimated 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 8.8 presents an estimate of elk hunting harvest and recreation in the Coeur d' Alene Subbasin. The Idaho portion produces almost 11 percent of that state's elk harvest and nearly 17 percent of its elk hunting recreation. The Washington side, being small in area, contributes very little to Washington's elk harvest or recreation.

Table 8.8. Rocky Mountain elk hunting harvest and recreation within the Coeur d' Alene Subbasin[1]

	Harvest						Hunter-Days					
	Quantity			% of State Total			Quantity			% of State Total		
Year	ID	WA	Total	ID	WA	Total	ID	WA	Total	ID	WA	Total
1999	1,177	1	1,178	10.8	<0.1	7.1	89,480	135	89,615	16.4	<0.1	7.5
2000	1,147	1	1,147	9.6	<0.1	6.1	n.d.	134	-	-	<0.1	-
2001	1,287	0	1,287	11.3	<0.1	7.6	61,575	85	61,660	16.7	<0.1	7.8
2002	1,293	1	1,294	11.3	<0.1	7.3	82,881	81	82,962	17.1	<0.1	8.9
Average	1,226	1	1,227	10.7	<0.1	7.0	77,979[2]	109	78,079[2]	16.7[2]	<0.1	8.1[2]

(*Source*: Appendix G)

[1] Includes all or portions of Idaho Big Game Units 2, 3, 4, 4A, 5, 6, and 7, plus a tiny fraction of Washington Game Management Unit 124.
[2] 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 Coeur d' Alene Subbasin. There are approximately 39 species in this guild, including loons, grebes, cormorants, mergansers, ducks, geese, and swans.

Wolverine. Idaho Conservation Data Center records show wolverine observations in Kootenai and Shoshone counties, portions of which are within the Coeur d' Alene Subbasin. Anecdotal information suggests the wolverine is present yearlong and throughout the Subbasin, but their large home range and solitary nature limit interaction with humans.

Yellow warbler. This neo-tropical migrant species is presumed to breed throughout the Subbasin, primarily in interior riparian habitats with a significant component of deciduous trees or shrubs.

8.3 Summary of Terrestrial Resource Limiting Factors

None of the three federal hydrosystem projects of the IMP is located within the Coeur d' Alene Subbasin. However, the Albeni Falls Project is located on lands within the ceded areas of the Coeur d' Alene Tribe, which extend above Lake Pend Oreille. Mitigation for the hydroelectric project construction and subsequent inundation of wildlife-habitats is required to offset effects to terrestrial resources traditionally used by the Coeur d' Alene Tribes in the Pend Oreille Subbasin. In addition, the federal hydropower projects had a number of secondary effects to terrestrial resources within the Pend Oreille, Coeur d' Alene, and adjacent subbasins. Secondary effects include accelerated rates of industrial, agricultural, and residential development leading to loss of habitat, and increased hunting pressure on wildlife through increased population due to extirpation of anadromous salmon in adjacent subbasins.

8.3.1 Direct Effects of Federal Hydrosystem Projects

Development of the Albeni Falls Hydroelectric Project resulted in direct loss of wildlife and wildlife-habitats in the Pend Oreille Subbasin, north of the Coeur d' Alene 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 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 (HUs), which are units of value based on both quality and quantity of habitat.

The results of this study provide the number of habitat units as compensation for the construction losses (Council's 2000 Fish and Wildlife Program) and identifies potential mitigation areas. Mitigation for the construction of Albeni Falls Dam and the subsequent

inundation of habitats is implemented by the Albeni Falls Interagency Work Group, which includes the Coeur d' Alene Tribe, Kalispel Tribe, Kootenai Tribe of Idaho, IDFG, USFWS, USACOE, 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 8.9 (Martin et al. 1988).

Table 8.9. Acres of Habitat Types affected by Albeni Falls Project construction and inundation

Project	Habitat Type	Acres of Habitat Inundated
Albeni Falls		
	Herbaceous wetland	4,376
	Deciduous forested wetland	2,314
Total		**6,690**

(*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 8.10. Acquisition of mitigation habitat 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 Coeur d'Alene Subbasin Inventory, Section 9. The current status of completed mitigation for the Albeni Falls Project also is shown in Table 8.10; approximately 83 percent of the mitigation remains to be implemented. Habitat Units by species were not available at the time of publication for recently acquired parcels.

Table 8.10. Status of nitigation for construction and inundation wildlife-habitat losses, Albeni Falls Project[1]

Project	Species	Habitat Units lost	Habitat Units acquired	Percent complete
Albeni Falls				
	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**	
Total		**28,658**	**4,822**	**16.8%**

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

[1] 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 16, Terrestrial Resources of the Pend Oreille 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.

8.3.2 Operational Effects of Federal Hydrosystem Projects

Assessment and mitigation of operational impacts of the Albeni Falls Project are required under the Northwest Power Act. These effects occur within the Pend Oreille Subbasin. 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.

8.3.3 Secondary Effects of Federal Hydrosystem Projects and Other Limiting Factors

Human impacts on wildlife have been accelerated in the Coeur d' Alene Subbasin as a result of development of 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 adjacent subbasins has led to increased harvest pressure on wildlife for subsistence, cultural, and recreational uses. Factors that currently limit terrestrial resources in the Coeur d' Alene Subbasin are dominated by modification of forested stands through timber management, plus the combined effects of mining, grazing, agriculture, and residential development, including roads. Development, including agriculture, has converted a total of 1.5 percent of lands in the basin to non-vegetated habitats.

8.4 Interpretation and Synthesis

The Coeur d' Alene Subbasin has supported timber harvest and mining for over 100 years, with substantial effects to riparian habitats and upland forest structure and composition. Agriculture and urban/residential development have occurred in the major river valleys and surrounding Coeur d' Alene Lake, converting approximately 1.5 percent of the land area (Table 8.1). Road densities throughout most of the subbasin exceed the densities optimal for big game summer and winter habitat security. Only one percent of all lands in the Subbasin are protected at the high or medium levels; over half are at low protection levels.

Direct wildlife-habitat loss did not occur within the Subbasin as a result of the federal hydrosystem development; however, the Albeni Falls Project directly affected ceded lands of the Coeur d' Alene Tribe. Construction of the federal hydrosystem project at Albeni Falls resulted in loss of 6,690 acres of wetland habitats, including emergent herbaceous and forested wetlands, and also modified the hydrology of more than 26 miles of river. In the lowermost portions of the Pend Oreille Subbasin, anadromous fish were extirpated by construction of downstream FCRPS projects lacking fish passage facilities. Operational and secondary effects of the FCRPS projects continue to affect wildlife and wildlife-habitats traditionally used by the Coeur d'Alene Tribe.

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 Coeur d'Alene Subbasin Work Team, followed by assessment and mitigation of operational impacts of the project.