

**MANAGEMENT PLAN**

**DEER PARKS COMPLEX**

**WIDLIFE MITIGATION UNITS**

**Idaho Department Of Fish and Game**  
**and**  
**The Shoshone-Bannock Tribes**

**Prepared By:**  
**Edward Bottum, IDFG**  
**and**  
**David Anderson, IDFG**  
**Jeffrey Gardetto, BLM**  
**Don Kemner, IDFG**  
**Anders Mikkelsen, Shoshone-Bannock Tribes**  
**Kim Ragotzkie, IDFG**  
**Steve Schmidt, IDFG**

**June 2001**

# TABLE OF CONTENTS

TABLE OF CONTENTS.....	i
LIST OF TABLES .....	iii
LIST OF FIGURES .....	iii
MISSION STATEMENT .....	1
CHAPTER ONE - PLANNING PROCESS, PURPOSE, AND MANAGEMENT REQUIREMENTS.....	2
INTRODUCTION .....	2
BACKGROUND .....	2
MANAGEMENT GOALS AND TARGET SPECIES .....	2
DESIRED FUTURE CONDITION.....	3
PURPOSE.....	3
PLANNING PROCESS.....	5
MANAGEMENT REQUIREMENTS AND AGREEMENTS .....	6
FEDERAL AND STATE LAW REQUIREMENTS .....	7
CHAPTER TWO - EXISTING MANAGEMENT CONDITIONS .....	8
LAND USE.....	8
GEOLOGY .....	8
SOILS .....	9
CLIMATE.....	9
GEOGRAPHIC LOCATION .....	9
VEGETATION.....	12
WILDLIFE.....	12
FISHERIES.....	13
THREATENED, ENDANGERED AND SENSITIVE SPECIES .....	13
WATER RIGHTS.....	13
CHAPTER THREE - ISSUE IDENTIFICATION.....	14
PUBLIC SCOPING MEETINGS .....	14
ISSUES IDENTIFIED PREVIOUSLY AT PUBLIC MEETINGS .....	14
ISSUES IDENTIFIED BY THE PALISADES INTERAGENCY WORK GROUP.....	15
CHAPTER FOUR - MANAGEMENT GOALS .....	16
MANAGEMENT OBJECTIVES AND STRATEGIES, BY GOAL.....	16
GOAL 1: ..... PROTECT, MAINTAIN AND ENHANCE WILDLIFE HABITAT CONSISTENT WITH THE DEER PARKS COMPLEX MISSION.....	16
GOAL 2: ..... PROVIDE FOR A DIVERSITY OF PUBLIC RECREATIONAL OPPORTUNITIES ON THE DEER PARKS COMPLEX CONSISTENT WITH THE MISSION. ....	17
GOAL 3: ..... STRIVE TO MAINTAIN GOOD WORKING RELATIONSHIPS WITH NEIGHBORS. ....	19

REFERENCES .....	20
APPENDIX I - WILDLIFE AND FISH INVENTORY.....	22
MAMMALS .....	22
REPTILES AND AMPHIBIANS.....	23
BIRDS.....	23
FISHES .....	28
APPENDIX II - HABITAT EVALUATION PROCEDURE (HEP).....	29
HABITAT EVALUATION PROCEDURE .....	29
COVER TYPES.....	30
MENAN UNIT .....	31
BEAVER DICK UNIT .....	32
DEER PARKS UNIT.....	33
ACKNOWLEDGEMENTS.....	34

## LIST OF TABLES

Table 1.	HEP Cover Types. ....	12
----------	-----------------------	----

## LIST OF FIGURES

Figure 1.	Location Guide – Deer Parks Complex.....	4
Figure 2.	Deer Parks and Menan Wildlife Mitigation Units.....	10
Figure 3.	Beaver Dick Wildlife Mitigation Unit.....	11

## **MISSION STATEMENT**

The mission of the Deer Parks Complex is to sustain an ecosystem that supports an abundant, productive and diverse community of naturally reproducing fish and wildlife by protecting and restoring natural ecological functions, habitats and biological diversity.

# **CHAPTER ONE - PLANNING PROCESS, PURPOSE, AND MANAGEMENT REQUIREMENTS**

## **INTRODUCTION**

The network of rivers that feeds into the Pacific Northwest's Columbia River Basin has been altered by dams built to generate power, as well as to control flooding and to provide navigation, irrigation, and recreation services. Twenty-nine Federal hydroelectric dams, including the Palisades Project, and numerous other dams now regulate the flows of many of these rivers. The Northwest Power Act of 1980 recognized that development and operation of the Federal hydroelectric dams of the Columbia River and its tributaries have affected fish and wildlife resources (See Pacific Northwest Electric Power Planning and Conservation Act [Northwest Power Act], 16 U.S.C. 839 *et seq.*, Section 4.[h][10][A]). The act created the Northwest Power Planning Council (Council), in part, to develop a program to protect, mitigate and enhance fish and wildlife, including related habitat, within the Columbia River Basin (section 4[h][1][A]).

The Palisades Project, located on the South Fork Snake River in Bonneville County, Idaho and Lincoln County, Wyoming, was completed in 1959 for irrigation, flood control, and electric power production. The dam created a reservoir with over a million acre-feet of water storage capacity. Approximately 16,000 acres of floodplain and riparian habitats important to wildlife were inundated when the reservoir filled. The natural flow regime in the Snake River downstream from the dam has been changed by operation of the project resulting in continuing alteration or elimination of wildlife habitat.

## **BACKGROUND**

The properties that comprise the Deer Parks Complex (Figure 1) were acquired for the purpose of partial mitigation for the loss of wildlife habitat caused by construction of the Palisades Project dam and reservoir. Using Bonneville Power Administration (BPA) funding, the wildlife mitigation units were acquired from willing sellers by U.S.D.I. Bureau of Land Management (BLM), with the agreement that the Idaho Department of Fish and Game (IDFG) and The Shoshone-Bannock Tribes (SBT) would cooperatively manage them.

## **MANAGEMENT GOALS AND TARGET SPECIES**

Management of wildlife mitigation units is guided by general principles outlined in the Wildlife Mitigation Program Final EIS (1997). Wildlife mitigation units are managed for long-term protection or improvement of natural ecosystems and species diversity. A guiding principle is that mitigation for losses should be accomplished in the same place the losses occurred and for the same species that were damaged (called 'in place-in kind' mitigation). Target species for the Palisades project are Bald Eagle, mule deer, Canada goose, Mallard, mink, Ruffed Grouse, Yellow Warbler and Black-capped Chickadee. Mitigation unit management is directed toward a

future condition that is self-sustaining after initial improvements have been completed. Managers may allow sustainable revenue generation to reduce initial or long-term Federal costs only if consistent with biological objectives.

### **DESIRED FUTURE CONDITION**

The desired future condition of the Deer Parks Complex is described as follows:

1. Vegetation is characterized by plant communities composed of native and desirable non-native plant species in a variety of successional stages. Plant communities exist in a complex mosaic of types providing wildlife habitats and habitat connectivity necessary to fulfill wildlife management objectives. Noxious and undesirable weeds are eliminated or controlled, and native plant communities are restored to their inherent biological diversity.
2. Rivers and streams are characterized by riparian corridors in functional condition providing habitat and habitat connectivity for fish and wildlife populations.
3. Soil erosion is minimized by using proper land management practices such as Best Management Practices (BMPs).
4. Wildlife populations are managed to ensure that mitigation target species and other wildlife species are restored to desirable population status, and game species maintained at levels that provide hunting, fishing, and trapping opportunity.
5. Opportunities for wildlife-associated recreation are provided for present and future generations to the extent consistent with the necessity for BLM, IDFG and SBT to fulfill wildlife and vegetation management requirements.
6. Cultural and historic values are protected.
7. The Deer Parks Complex is a significant Idaho resource, a good neighbor to adjoining landowners, and an outstanding example of excellence in wildlife and habitat management through Federal, State and Tribal cooperation.

### **PURPOSE**

The purpose of this plan is to document public resources and management issues and to guide future management activities on the Deer Parks Complex. This plan establishes management direction and will be supplemented by specific programmatic and annual implementation plans.

## Deer Parks Complex Vicinity Map

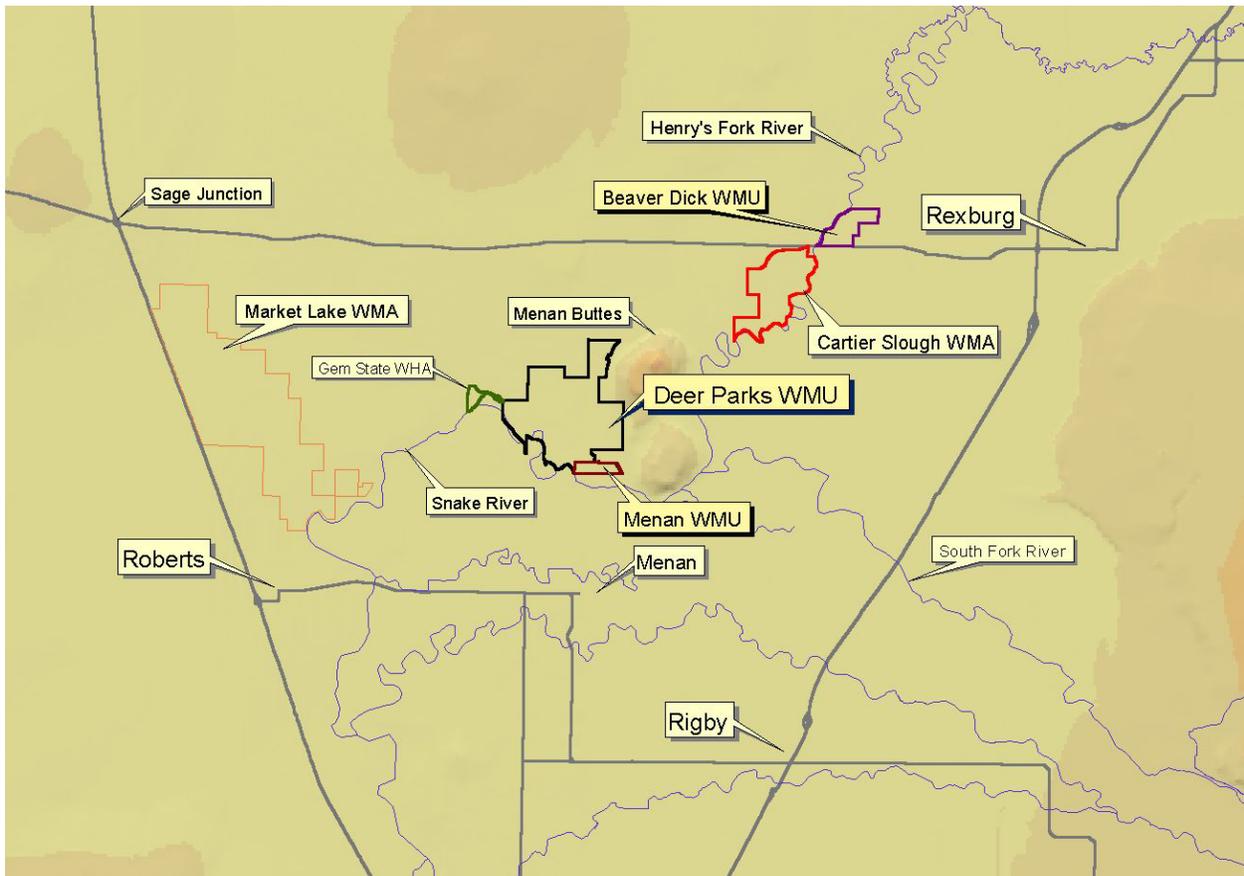


Figure 1. Location Guide – Deer Parks Complex.

## PLANNING PROCESS

The Deer Parks Complex management plan has been developed using the following process:

1. Inventory of baseline resource conditions.

A loss assessment was completed for the Palisades Project in 1984. The Habitat Evaluation Procedure (HEP) method was used to estimate the quantity of target wildlife species habitat that was impacted by construction of the project. HEP's were used again to estimate the quantity of habitat for the target wildlife species on mitigation units. (See Appendix II for information about HEP.) Botanical, wildlife and fish species known or suspected to occur on the Deer Parks Complex have been recorded and these lists are continually being updated. Other resources inventoried include physical features such as roads, fence lines, canals and buildings; hazardous materials; cultural resources and weeds. A real estate appraisal was completed prior to acquisition of mitigation units.

2. Issue scoping.

A major effort was undertaken to involve the public in issue identification (scoping) during preparation of the South Fork Snake River/Palisades Wildlife Mitigation Project Final Environmental Assessment (BPA 1995) and the Wildlife Mitigation Program Final Environmental Impact Statement (BPA 1997). Public testimony and written comments were requested at public meetings. A DRAFT version of this plan will be presented to the public for review and comment in an 'open house' forum.

The Palisades Interagency Work Group also identified issues. The work group includes representatives from BPA, BLM, Bureau of Reclamation, IDFG, The Nature Conservancy, SBT, Teton Regional Land Trust, U.S. Fish and Wildlife Service, U.S Forest Service, and Wyoming Game and Fish Department. BLM, IDFG and SBT will continue to seek information and expertise from others to foster a landscape approach to natural resource management.

3. Prepare the management plan and provide opportunities for public review.

A draft management plan will be presented for public review as well as review by tribes, local, state and federal agencies, and others. The Palisades Interagency Work Group will consider all comments, complete the final plan and will, through approval of the final plan, establish direction for management of the Deer Parks Complex.

4. Implement the management plan; develop and implement a monitoring plan.

5. Long-term monitoring of results.

A monitoring plan will be developed that will allow the IDFG and SBT to assess progress toward the desired future condition and other goals identified in this plan.

6. Adaptive management based on results of monitoring.

Adaptive management as defined here is the process of developing a management plan using the best, current information, then implementing that plan along with a monitoring plan. Monitoring data will be used to evaluate and periodically modify management activities based on results. The purpose of adaptive management is to 'hone' the management of the Deer Parks Complex to an optimal state.

## **MANAGEMENT REQUIREMENTS AND AGREEMENTS**

Wildlife mitigation units are developed and managed within the framework of the Northwest Power Planning Council's Fish and Wildlife Program. Funding for wildlife mitigation units is provided by BPA. Several specific agreements also provide direction about how mitigation units are managed including the following:

1. Memorandum of Agreement between the State of Idaho and the Shoshone-Bannock Tribes, 1996.
2. South Fork Snake/Palisades Wildlife Mitigation Agreement between BPA and IDFG, 1997.
3. Southern Idaho Wildlife Mitigation Agreement between BPA and Shoshone-Bannock Tribes of the Fort Hall Indian Reservation, 1997.
4. Memorandum of Agreement (ID-030-97-01) between BLM and BPA, 1997.
5. Cooperative Management Agreement between BLM and IDFG, 1998.

The Idaho Department of Fish and Game, representing the State of Idaho, has an obligation to meet certain requirements and objectives in the management of wildlife mitigation lands. The 1997 South Fork Snake/Palisades Wildlife Mitigation Agreement between BPA and IDFG obligates wildlife mitigation project managers to protect the properties as wildlife habitat permanently, preventing any and all uses of the properties that are inconsistent with the Agreement, the Council's Program and the Management Plans.

BLM is obligated by the 1997 Memorandum of Agreement with BPA to manage properties for the primary benefit of wildlife and wildlife habitat in perpetuity, following the prescriptions and proscriptions in the South Fork Snake River/Palisades Wildlife Mitigation Project Final Environmental Assessment (BPA 1995) to ensure the properties retain at least their baseline HEP values. The Agreement also obligates BLM to provide public and tribal access when access does not adversely affect the purpose of the mitigation project. Public access to wildlife mitigation units and use compatible with protection and enhancement of wildlife and wildlife habitat is encouraged, but is not required. All of the Deer Parks Complex mitigation units are within the area covered by the Snake River Activity/Operations Plan (February 1991) which directs management activities on all BLM and U.S. Forest Service lands along the river corridor.

## **FEDERAL AND STATE LAW REQUIREMENTS**

The Deer Parks Complex managers will comply with all pertinent state and federal regulations as they apply.

## **CHAPTER TWO - EXISTING MANAGEMENT CONDITIONS**

### **LAND USE**

This area has a rich history of human occupation. There is evidence of human occupation as early as the Paleo-Indian era (ca. 12,000-10,500 BP). The Menan Buttes were important landmarks for many early travelers in the area. Based on trapper diaries from the early 1800's, the area abounded with bison, elk, antelope, beaver, and other wildlife. The site of the Beaver Dick mitigation unit is simply shown as the 'Beaver Swamp' on early maps. The area northwest of Menan was called Deer Parks because the thick willows and cottonwoods supported large numbers of deer. White-tailed deer were abundant along the river bottoms, while mule deer were more common on the Buttes.

The first settlers arrived in the Menan area in the 1870's. A portion of the Deer Parks mitigation unit was originally homesteaded in 1910 and used mainly for livestock pasture. Portions of the property around Butte Slough were used as a muskrat farm in the 1920's. It was acquired by the Boyle family in the 1930's and managed for crops and livestock. The Menan mitigation unit was homesteaded in 1917 and managed for pasture and crops. The Beaver Dick mitigation unit on the Henrys Fork has a slightly different history, tied closely to a trapper and hunting guide named 'Beaver' Dick Leigh. He lived on or very near this property in the 1870's. His Shoshone wife, Jenny Leigh (for whom Jenny Lake in Grand Teton National Park is named), and their six children all died in late 1876 of smallpox and are buried just north of this property. The land was used as livestock pasture for many years.

The Teton Dam failure and flood in 1976 had a significant effect on all the Deer Parks Complex mitigation units. The floodwaters, which split and flowed both north and south of the Menan Buttes, completely inundated all the lands below the lava rims. Many shallow sloughs were filled with sediment, buildings destroyed, and the old railroad line was permanently damaged. The river also reached a very high flood stage in 1997, damaging portions of the Butte-Market Lake Canal, but otherwise causing little damage to the Deer Parks Complex properties.

### **GEOLOGY**

The eastern Snake River Plain is a northeast trending lowland underlain by rhyolitic volcanic rock with a thin layer of basalt less than 2 million years old covering the surface. The confluence of the South and Henry's Fork of the Snake River is dominated by the presence of the twin cones of the Menan Buttes. The buttes were formed as basaltic lava erupted through water-saturated fluvial gravel of the Snake River during late Pleistocene time. The larger North Menan Butte rises nearly 800 feet above the river, while the South butte rises nearly 450 feet. Both buttes are elongate to the northeast suggestive of the prevailing wind direction (Hughes and others, 1999).

## **SOILS**

Soils found on the Deer Parks Complex include loams, clay loams, sandy loams, rock outcrop complexes and xeric torrfluvents. They range from coarse to fine textured and from very poorly to very well drained. They are generally found on level to nearly level terrain. The soils range from moderately to highly productive, especially when irrigated.

## **CLIMATE**

Jefferson and Madison Counties have a typical mid-latitude, semiarid climate. Summers are warm and dry and winters are cold with periods of warmer weather. Winds persistently blow from the southwest, especially in the spring. The mean temperature ranges from 16.1 degrees F in January to 68.3 degrees F in July. The growing season averages 119 days but ranges from 80 to 160 days. During the growing season, nights are cool, days are warm and relative humidity is often only 25 to 30 percent by late afternoon. The first frosts often occur by mid-September. Annual precipitation averages about 8 inches with the greatest amount of precipitation usually occurring in May and June. Seasonal snowfall is highly variable.

## **GEOGRAPHIC LOCATION**

The Deer Parks Complex is located along and near the Snake River and Henry's Fork Snake River about 20 miles north of Idaho Falls, Idaho in Jefferson and Madison counties. The mitigation units lie in the Snake River Plain at an elevation of 4,790 feet on the Snake River. Most of the terrain has gentle relief and slopes gradually away from the river, rising to about 4,830 feet. An exception to the otherwise gentle topography is the North Menan Butte, which rises nearly 800 feet above the surrounding landscape and is partially within the Deer Parks mitigation unit.

The Deer Parks Complex currently includes three Wildlife Mitigation Units (Figures 2 and 3). The Menan and Beaver Dick properties were acquired in 1997 and the Deer Parks (Boyle Ranch) property was acquired in 1999. The Bonneville Power Administration provided funds to BLM to purchase the lands. The Deer Parks Complex is managed cooperatively by BLM, IDFG, and SBT.

The Deer Parks Wildlife Mitigation Unit is located along the mainstem Snake River in Jefferson County about three miles north of Menan, Idaho. The 2,556-acre property includes about two miles of river frontage, wetlands, shrub-steppe uplands, pasture and cropland. It abuts BLM land on three sides. A paved county road is adjacent to the property. There is no levee system along the river in this reach and the low-lying portions of the property flood most years.

The Menan Wildlife Mitigation Unit is located along the mainstem Snake River in Jefferson County adjacent to the Deer Parks unit. The 142-acre property includes river frontage, wetlands, former pasture and former cropland and floods most years.

**Deer Parks (yellow) and Menan (red) Wildlife Mitigation Units**

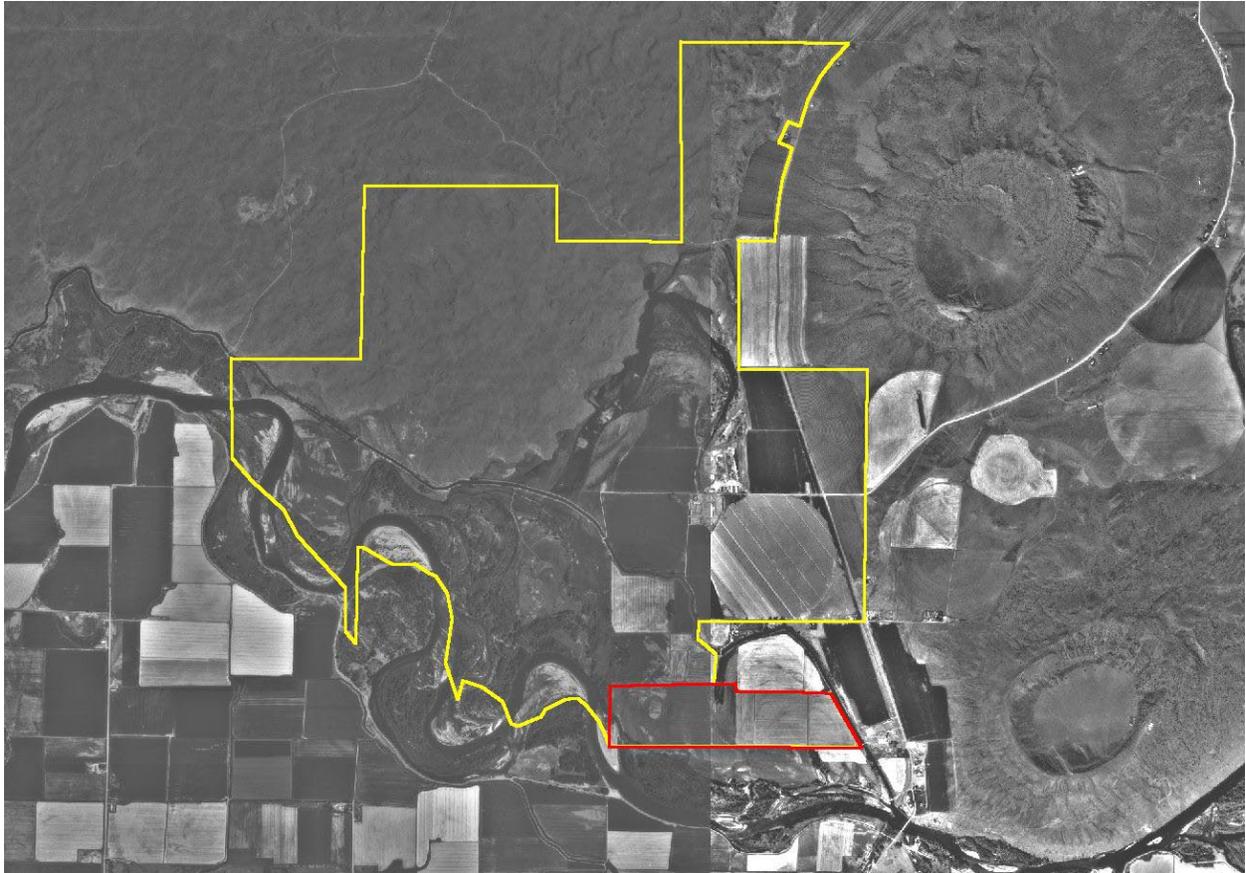


Figure 2. Deer Parks and Menan Wildlife Mitigation Units.

## Beaver Dick Wildlife Mitigation Unit



Figure 3. Beaver Dick Wildlife Mitigation Unit.

The Beaver Dick Wildlife Mitigation Unit is located along the Henry’s Fork Snake River in Madison County about 5 miles west of Rexburg, Idaho. The 310-acre property includes one mile of river frontage, wetlands and former pasture. It also floods most years.

## VEGETATION

Mitigation units are acquired to provide habitat for the target wildlife species identified in the original loss assessment. Vegetation cover types that were lost due to construction of the Palisades project are the kinds that are sought for mitigation. Most of the mitigation units lie in the floodplain of the Snake River and Henry’s Fork Snake River. Floodplain vegetation along these rivers is characterized by cottonwood forest, willows and emergent wetlands. Some upland vegetation is also found on the mitigation units such as sagebrush grasslands and old pastures planted with non-native species. See Table 1. A more complete description of the vegetation of the Deer Parks Complex can be found in Appendix II.

**Table 1. HEP Cover Types.**

<b>Acres by Mitigation Unit</b>				
<b>Cover Type</b>	<b>Menan</b>	<b>Beaver Dick</b>	<b>Deer Parks</b>	<b>Total</b>
Open Water			100	100
Emergent Wetland	45	245	150	440
Scrub-shrub Wetland	25	50	89	164
Forested Wetland	5	15	425	445
Sagebrush-Grassland			1,097	1,097
Agricultural (pasture/cropland)	67		668	735
Built-up Areas (facilities/roads)			27	27
Subtotal	142	310	2,556	3,008

## WILDLIFE

Wildlife inventory on the Deer Park Complex is a continuing process that began in 1997. At least 289 wildlife species, consisting of 204 birds, 63 mammals, 15 reptiles, and 7 amphibians use the Deer Parks Complex at some time of year. See Appendix I.

## **FISHERIES**

Aquatic habitats abound along the Snake River and in Butte Slough. The fishery of the lower Henrys Fork and mainstem Snake was severely degraded by the failure of the Teton Dam. Floodwaters from that failure deposited sediment in the reach of the Henry's Fork below the Teton River and in the mainstem Snake River. Sediment deposition changed the stream bottom from highly productive fish habitat to very poor habitat composed of shifting sand and silt. Game fish in the rivers include cutthroat trout, brown trout, rainbow trout, and mountain whitefish (Appendix I). Presently it is unknown what fish species may occur in Butte Slough. A survey for fish species in Butte Slough will be conducted in the future.

## **THREATENED, ENDANGERED AND SENSITIVE SPECIES**

Bald eagles, a threatened species, are known to nest within the Deer Parks Complex. The eagles use cottonwood trees along the rivers as perches year round and a significant bald eagle winter roost area is located about one mile downstream from the Deer Parks Wildlife Mitigation Unit. Ute ladies tresses (*Spiranthes diluvialis*), a threatened species, is found along the South Fork Snake River but the species was not found when the Deer Parks Complex area was surveyed (Moseley 1998). Trumpeter swans, a sensitive species, winter in the area and the yellow-billed cuckoo, another sensitive species, probably nests in the area. The peregrine falcon, a sensitive species that was delisted in 1999, has been observed on the Deer Parks Complex. No other threatened, endangered or sensitive species are recorded for the Deer Parks Complex by the Conservation Data Center as of February 2001.

## **WATER RIGHTS**

Water rights are held by BLM in the Butte-Market Lake Canal to facilitate management of the property.

## **CHAPTER THREE - ISSUE IDENTIFICATION**

### **PUBLIC SCOPING MEETINGS**

Public meetings were held to identify issues throughout the development of the Northwest Power Planning Council's wildlife mitigation program. Issues specifically associated with wildlife mitigation for the Palisades Dam and Reservoir Project were identified at the following public meetings:

- A public meeting held in July 1991 in Idaho Falls, Idaho during preparation of the South Fork Snake River Programmatic Management Plan.
- Public meetings held in Swan Valley, Idaho and Ririe, Idaho in February 1995 during preparation of the South Fork Snake River/Palisades Wildlife Mitigation Project Environmental Assessment.
- Public meetings held in Boise and Fort Hall, Idaho in 1995 during preparation of the Wildlife Mitigation Program Final Environmental Impact Statement.

### **ISSUES IDENTIFIED PREVIOUSLY AT PUBLIC MEETINGS**

1. Threatened, endangered and sensitive species (TES species)
2. Noxious weeds
3. Coordination with local planning efforts and compliance with zoning codes
4. Opposition by adjacent land users
5. Status of prime farmland
6. Native subsistence uses
7. Increased public access on acquired lands
8. Changes to lifestyles and community structure
9. Tax base reductions resulting from land acquisition
10. Effects on cultural resources
11. Water quality impacts related to erosion and siltation
12. Effects on visual resources

## **ISSUES IDENTIFIED BY THE PALISADES INTERAGENCY WORK GROUP**

The Work Group met several times between 1999 and 2001 to develop a management plan for the Deer Parks Complex. A DRAFT management plan will be presented to the public for review and comment in an 'open house' forum and any new issues that are raised will be addressed in the FINAL plan. Issues identified by the Palisades Interagency Work Group include:

1. Public access to wildlife mitigation units must be consistent with the mission.
2. The presence of noxious weeds on the Deer Parks Complex could reduce the ability of the Deer Parks Complex to provide habitat for target species.
3. Undesirable non-native vegetation does not produce optimal habitat for some target wildlife species.
4. Russian olive is an undesirable tree species occurring on the Deer Parks Complex. The Russian olive tree's fast growth and ability to spread quickly allows it to reduce or eliminate desirable plant species. Russian olives also create nesting habitat for magpies which can lead to a decrease in nesting success of mallards.
5. Target species habitat that is enhanced and developed on the Deer Parks Complex will attract wildlife that may damage agricultural crops on adjacent private lands.
6. Management activities may increase the risk of wildfire spreading to adjacent private land.
7. There is potential for numerous recreational activities to be allowed on the Deer Parks Complex. These activities must be compatible with the mission.

## **ISSUES IDENTIFIED DURING THE APRIL 18, 2001 OPEN HOUSE**

1. Management of public access will effect resource values, neighboring land owners and public use opportunities. Opinions about the appropriate type and level of public access vary.
2. Management activities on the Deer Parks wildlife mitigation unit could attract wildlife that could damage agricultural crops on neighboring lands.
3. Signs are needed at public access points to prevent trespass on adjacent private land.
4. Wildlife mitigation unit visitors may trespass on adjacent private land and damage field crops and fences.
5. Managers of the Deer Parks unit should involve Butte-Market Lake Canal managers in planning activities associated with access, water management and drainage.
6. Is there a need for "Special Activities Permits" to allow for uses such as horse riding, hay rides, or to retrieve game (using a motorized vehicle in an otherwise non-motorized area)?

## CHAPTER FOUR - MANAGEMENT GOALS

### MANAGEMENT OBJECTIVES AND STRATEGIES, BY GOAL

#### **Goal 1: Protect, maintain and enhance wildlife habitat consistent with the Deer Parks Complex mission.**

Objective A. Maintain or increase baseline habitat units for wildlife mitigation target species.

Strategy 1. Favor passive methods of restoration and rehabilitation of wildlife habitat over active methods.

a. Allow restoration to occur through successional habitat recovery as opposed to active intervention.

b. Promote the restoration of natural ecological processes.

Strategy 2. Focus management on actions that will benefit habitat for wildlife mitigation target species. Target wildlife species and species with similar habitat needs would benefit most from wildlife mitigation management activities.

a. Implement management actions which, as much as possible, result in permanent, self-maintaining vegetation communities that provide habitat for wildlife mitigation target species and other wildlife.

b. Maintain or improve high-quality native or other habitat for wildlife mitigation target species.

c. Manage habitats for a biologically diverse mix of fish and wildlife species including TES species.

Strategy 3. Prevent or control wildfires.

a. Follow established BLM fire management plan for the area.

b. Mow roadways and parking areas.

c. Prohibit camping, campfires and fireworks.

Objective B. Monitor and evaluate wildlife habitat and species populations to determine effects of management actions.

Strategy 1. Develop and implement a monitoring plan to evaluate habitat.

a. Conduct a HEP every five years to monitor changes in vegetation and habitat quality, and to provide updated crediting to BPA.

b. Establish a series of permanent photo points to monitor changes in plant communities over time.

- c. Use monitoring information to guide annual management priorities and activity planning.

Strategy 2. Develop and implement a monitoring plan to assess wildlife populations.

Objective C. Prevent, control or eradicate noxious weeds and other undesirable vegetation.

Strategy 1. Develop and implement a noxious weed control plan.

- a. Use chemical, biological, mechanical and cultural methods to prevent, control or eradicate weed infestations.
- b. Map current weed infestations and prepare an annual report of weed control activities including recommendations for improving control.
- c. Continue participation in the Upper Snake Cooperative Weed Management Area.
- d. Train staff in noxious weed identification and control.

Strategy 2. Develop and implement a plan to control undesirable vegetation.

Objective D. Manage for native plant communities where appropriate.

Strategy 1. Permanent habitat restoration or enhancement shall be composed primarily of native plant species.

Strategy 2. Prohibit the harvest or removal of plants, rocks, and minerals by the public on the Deer Parks Complex.

Objective E. Provide wildlife habitat and implement wildlife habitat enhancements by using sharecropping, livestock grazing agreements, or other techniques.

Strategy 1. Provide for the use of share cropping to create wildlife habitat in croplands and facilitate permanent wildlife habitat enhancements.

Strategy 2. Provide for the use of livestock grazing agreements on an occasional basis as a vegetation management tool.

Strategy 3. Remove all non-essential fences.

**Goal 2: Provide for a diversity of public recreational opportunities on the Deer Parks Complex consistent with the mission.**

Objective A. Develop and implement an access management plan.

Strategy 1. Allow foot access only.

Strategy 2. Provide a brochure and map for the public about access to the Deer Parks Complex.

Strategy 3. Provide designated access sites.

- Strategy 4. Provide a handicapped access with toilet at the Deer Parks Complex headquarters.
- Strategy 5. Allow for boat-in access from the Snake River and Henry's Fork without developing boating facilities on the Deer Parks Complex.
- Strategy 6. Maintain tribal treaty rights and protection of cultural resources.
- Strategy 7. Apply consistent access restrictions to all groups.

Objective B. Provide for diverse public recreational activities which do not harm wildlife or reduce the value of wildlife habitat.

- Strategy 1. Protect bald eagles and their habitat.
  - a. Post signs indicating that it is unlawful to approach within ¼ mile of the bald eagle nest between February 1 – July 31.
  - b. Prohibit harvest of wood and wood products on the Deer Parks Complex to protect bald eagle perch and nest trees and other wildlife trees.
- Strategy 2. Prohibit camping, campfires and fireworks on the Deer Parks Complex to protect wildlife and wildlife habitat and to prevent wildfires.
- Strategy 3. Manage Butte Slough to maintain or increase habitat units for wildlife mitigation target species.
  - a. Prohibit open water fishing in Butte Slough to protect nesting and brood rearing waterfowl and other wildlife between February 1 and August 15.
  - b. Evaluate the potential to allow fishing on Butte Slough.
  - c. On Butte Slough allow non-motorized watercraft only. Use is allowed from August 15 through freeze up only.
- Strategy 4. Require all trappers to register at the IDFG Regional office at 1515 Lincoln Road, Idaho Falls, Idaho.
- Strategy 5. Consider requests and require permits for special use activities.
  - a. Permits will be approved only with the consensus of the IDFG Regional Habitat Manager and the SBT Wildlife Mitigation Program Manager.

Objective C. Inform and educate Deer Parks Complex visitors.

- Strategy 1. Install and maintain informational signs.
  - a. Promote general public awareness of the BPA wildlife mitigation program.
  - b. Promote general public awareness of the importance of protecting and managing wildlife habitat.
  - c. Develop a brochure with map of the Deer Parks Complex.

Objective D. Monitor and evaluate the affects of public use on the Deer Parks Complex.

- Strategy 1. Conduct annual incidental and stratified public use surveys.
- Strategy 2. Solicit voluntary comments from public visitors using various means.
- Strategy 3. Modify the Deer Parks Complex plan to reflect impacts of public use where appropriate.

**Goal 3: Strive to maintain good working relationships with neighbors.**

**Objective A. Manage the Deer Parks Complex to be a responsible neighbor.**

- Strategy 1. Clearly mark Deer Parks Complex boundaries.
- Strategy 2. Cooperatively maintain common fences to regulate livestock.
- Strategy 3. Actively promote the IDFG “Ask First” campaign to encourage hunters, anglers, trappers and other visitors to obtain permission before entering private land.
- Strategy 4. Attend and participate in local meetings where appropriate.
- Strategy 5. Coordinate with adjacent private landowners to control noxious weeds.

**Objective B. Minimize wildlife depredation damage on nearby privately owned land.**

- Strategy 1. Monitor and evaluate local wildlife depredations on private land near the Deer Parks Complex.
- Strategy 2. IDFG will address complaints of wildlife depredations on private land near the Deer Parks Complex in a timely manner consistent with IDFG policy.
- Strategy 3. Manage cropland on the Deer Parks Complex with consideration for the impacts it may have on adjacent private land and crops.

## REFERENCES

- Blair, C. 1997. C. J. Strike habitat evaluation procedure study. Technical Report Appendix E.3.2-N. FERC No. 2055. CH2Mhill, Boise, Idaho.
- Bonneville Power Administration. 1997. Wildlife mitigation program final environmental impact statement. DOE/EIS – 0246. U.S. Department of Energy, Bonneville Power Administration, Portland, Oregon.
- Bonneville Power Administration. 1995. South Fork Snake River/Palisades wildlife mitigation project environmental assessment. DOE/EA – 0956. U.S. Department of Energy, Bonneville Power Administration, Portland, Oregon.
- Bureau of Land Management. 1991. Snake River activity/operations plan final. U.S. Department of the Interior, Bureau of Land Management, Idaho Falls District, Medicine Lodge Resource Area; U.S. Department of Agriculture, Forest Service, Targhee National Forest, Palisades Ranger District.
- Bureau of Land Management. 1991. Snake River activity/operations environmental assessment. BLM EA Number ID-030-0-36. U.S. Department of the Interior, Bureau of Land Management, Idaho Falls District, Medicine Lodge Resource Area; U.S. Department of Agriculture, Forest Service, Targhee National Forest, Palisades Ranger District.
- Chaney, E., and S. Sather-Blair. 1985c. Wildlife mitigation status report: Palisades Dam and Reservoir. Pages 11-17 *in* Martin, R. C., L. A. Mehrhoff, J. E. Chaney, and S. Sather-Blair. 1985. Status review of wildlife mitigation at 14 of 27 major hydroelectric projects in Idaho. Project 83-478. Bonneville Power Administration, Division of Wildlife, Portland, Oregon.
- Columbia Basin Fish and Wildlife Authority. 1998. Guidelines for enhancement, operation, and maintenance activities for wildlife mitigation projects. Wildlife Caucus, CBFWA, Portland, Oregon.
- Conservation Data Center. 1994. Rare, threatened and endangered plants and animals of Idaho. Third Edition. Idaho Department of Fish and Game, Boise, Idaho.
- Hitchcock, C. L. and A. Cronquist. 1973. Flora of the Pacific Northwest. University of Washington Press. Seattle, WA. 730 p.
- Hughes, S.S., Smith, R.P., Hackett, W.R., and Anderson, S.R. 1999. Mafic volcanism and environmental geology of the eastern Snake River Plain, Idaho, *in* Hughes, S.S., and Thackray, G.D., eds., Guidebook to the geology of eastern Idaho: Idaho Museum of Natural History, p. 143-168.

- Luttrell, C.T. and S. Emerson. 1995. A Cultural Resources Literature Search for the Bonneville Power Administration's South Fork Snake River Wildlife Mitigation Project, Bonneville, Madison, and Jefferson Counties, Idaho. Short Report 476, Archaeological and Historical Services, Eastern Washington University. 18pp.
- Martin, R. C., and H. J. Hansen. 1993. South Fork Snake River programmatic management plan, implementation phase I. Project 91-063. Bonneville Power Administration, Division of Wildlife, Portland, Oregon.
- Martin, R. C., and H. J. Hansen. 1986. Wildlife protection, mitigation, and enhancement plan: Palisades Project. Project 91-063. Bonneville Power Administration, Division of Fish and Wildlife, Portland, Oregon.
- Merigliano, M. 1996. Ecology and management of the South Fork Snake River cottonwood forest. Montana Riparian-Wetland Research Program, University of Montana School of Forestry, Missoula, Montana. Idaho BLM Technical Bulletin 96-9.
- Mosley, R. K. 1998. Ute ladies tresses (*Spiranthes diluvialis*) in Idaho: 1997 and 1998 status report. Conservation Data Center, Idaho Department of Fish and Game, Boise, Idaho.
- Northwest Power Planning Council. 2000. Columbia River Basin fish and wildlife program, 2000 amendments. NWPPC, Portland, Oregon.
- Saab, V. A. 1998. Effects of recreational activity and livestock grazing on habitat use by breeding birds in cottonwood forests along the South Fork Snake River. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Boise, Idaho.
- Sather-Blair, S., and S. Preston. 1985. Wildlife impact assessment: Palisades Project. Project 84-37. Bonneville Power Administration, Division of Wildlife, Portland, Oregon.
- Soil Survey of Jefferson County Area, Idaho. 1979. National Cooperative Soil Survey.
- Soil Survey of Madison County Area, Idaho. 1981. National Cooperative Soil Survey.
- U.S. Fish and Wildlife Service. 1980. Habitat evaluation procedures. Ecological Services Manual 102. U.S. Department of the Interior, Fish and Wildlife Service, Division of Ecological Services, Washington, D.C.
- U.S. Forest Service. 1996. Status of the Interior Columbia Basin: summary of scientific findings. General Technical Report PNW-GTR-385. Portland, Oregon: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station; U.S. Department of the Interior, Bureau of Land Management.

## APPENDIX I - WILDLIFE AND FISH INVENTORY

The species listed below use the Deer Parks Complex to meet part or all of their life cycle.

### MAMMALS

<u>Common Name</u>	<u>Scientific Name</u>
moose	<i>Alces alces</i>
elk	<i>Cervus elaphus</i>
white-tailed deer	<i>Odocoileus virginianus</i>
mule deer	<i>Odocoileus hemionus</i>
bighorn sheep	<i>Ovis canadensis</i>
bobcat	<i>Felis rufus</i>
mountain lion	<i>Felis concolor</i>
cottontail rabbit	<i>Sylvilagus nuttallii</i>
black-tailed jackrabbit	<i>Lepus californicus</i>
white-tailed jackrabbit	<i>Lepus californicus</i>
porcupine	<i>Erethizon dorsatum</i>
beaver	<i>Castor canadensis</i>
muskrat	<i>Ondatra zibethicus</i>
raccoon	<i>Procyon lotor</i>
yellow-bellied marmot	<i>Marmota flaviventris</i>
bushy-tail woodrat	<i>Neotoma cinerea</i>
fox squirrel	<i>Sciurus niger</i>
Townsend's ground squirrel	<i>Citellus elegans</i>
mink	<i>Mustela vison</i>
river otter	<i>Lutra canadensis</i>
badger	<i>Taxidea taxus</i>
striped skunk	<i>Mephitis mephitis</i>
spotted skunk	<i>Spilogale gracilis</i>
red fox	<i>Vulpes vulpes</i>
coyote	<i>Canis latrans</i>
ermine	<i>Mustela erminea</i>
long-tailed weasel	<i>Mustela frenata</i>
house mouse	<i>Mus musculus</i>
white-footed deer mouse	<i>Peromyscus maniculatus</i>
meadow vole	<i>Microtus pennsylvanicus</i>
least chipmunk	<i>Tamias minimus</i>

## REPTILES AND AMPHIBIANS

### Common Name

tiger salamander  
long-toed salamander  
western chorus frog  
northern leopard frog  
western toad  
great basin spadefoot toad  
painted turtle  
rubber boa  
racer  
western rattlesnake  
bull snake  
common garter snake  
western terrestrial garter snake  
short-horned lizard  
sagebrush lizard  
western skink

### Scientific Name

*Ambystoma tigrinum*  
*Ambystoma macrodactylum*  
*Pseudacris triseriata*  
*Rana pipiens*  
*Bufo boreas*  
*Scaphiopus intermontanus*  
*Chrysemys picta*  
*Charina bottae*  
*Coluber constrictor*  
*Crotalus viridis*  
*Pituophis catenifer*  
*Thamnophis sirtalis*  
*Thamnophis elegans*  
*Phrynosoma douglasii*  
*Phrynosoma platyrhinos*  
*Eumeces skitonianus*

## BIRDS

### Common Name

Common Loon  
Horned Grebe  
Eared Grebe  
Clark's Grebe  
Western Grebe  
Pied-billed Grebe  
American White Pelican  
Double-crested Cormorant  
Green Heron  
Great Blue Heron  
Great Egret  
Cattle Egret  
Snowy Egret  
Black-crowned Night-Heron  
American Bittern  
White-faced Ibis  
Tundra Swan  
Trumpeter Swan

### Scientific Name

*Gavia immer*  
*Podiceps auritus*  
*Podiceps nigricollis*  
*Aechmophorus clarkii*  
*Aechmophorus occidentalis*  
*Podilymbus podiceps*  
*Pelecanus erythrorhynchos*  
*Phalacrocorax auritus*  
*Butorides virescens*  
*Ardea herodias*  
*Ardea alba*  
*Bubulcus ibis*  
*Egretta thula*  
*Nycticorax nycticorax*  
*Botaurus lentiginosus*  
*Plegadis chihi*  
*Cygnus columbianus*  
*Cygnus buccinator*

Canada Goose	<i>Branta canadensis</i>
Greater White-fronted Goose	<i>Anser albifrons</i>
Snow Goose	<i>Chen caerulescens</i>
Mallard	<i>Anas platyrhynchos</i>
Gadwall	<i>Anas strepera</i>
Northern Pintail	<i>Anas acuta</i>
Green-winged Teal	<i>Anas crecca</i>
Cinnamon Teal	<i>Anas cyanoptera</i>
Blue-winged Teal	<i>Anas discors</i>
American Widgeon	<i>Anas americana</i>
Northern Shoveler	<i>Anas clypeata</i>
Wood Duck	<i>Aix sponsa</i>
Redhead	<i>Aythya americana</i>
Ring-necked Duck	<i>Aythya collaris</i>
Canvasback	<i>Aythya valisineria</i>
Lesser Scaup	<i>Aythya affinis</i>
Greater Scaup	<i>Aythya marila</i>
Common Goldeneye	<i>Bucephala clangula</i>
Barrow's Goldeneye	<i>Bucephala islandica</i>
Bufflehead	<i>Bucephala albeola</i>
White-Winged Scoter	<i>Melanitta fusca</i>
Ruddy Duck	<i>Oxyura jamaicensis</i>
Hooded Merganser	<i>Lophodytes cucullatus</i>
Common Merganser	<i>Mergus merganser</i>
Red-breasted Merganser	<i>Mergus serrator</i>
Turkey Vulture	<i>Cathartes aura</i>
Northern Goshawk	<i>Accipiter gentilis</i>
Cooper's Hawk	<i>Accipiter cooperii</i>
Sharp-shinned Hawk	<i>Accipiter striatus</i>
Red-Tailed Hawk	<i>Buteo jamaicensis</i>
Swainson's Hawk	<i>Buteo swainsoni</i>
Rough-legged Hawk	<i>Buteo lagopus</i>
Ferruginous Hawk	<i>Buteo regalis</i>
Golden Eagle	<i>Aquila chrysaetos</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Northern Harrier	<i>Circus cyaneus</i>
Osprey	<i>Pandion haliaetus</i>
Prairie Falcon	<i>Falco mexicanus</i>
Peregrine Falcon	<i>Falco peregrinus</i>
American Kestrel	<i>Falco sparverius</i>
Sage Grouse	<i>Centrocercus urophasianus</i>
Gray Partridge	<i>Perdix perdix</i>
Ring-necked Pheasant	<i>Phasianus colchicus</i>

Sandhill Crane  
Virginia Rail  
Sora Rail  
American Coot  
Semipalmated Plover  
Killdeer  
Black-bellied Plover  
Common Snipe  
Long-billed Curlew  
Spotted Sandpiper  
Willet  
Greater Yellowlegs  
Lesser Yellowlegs  
Least Sandpiper  
Western Sandpiper  
Semipalmated Sandpiper  
Dunlin  
Long-billed Dowitcher  
Marbled Godwit  
Sanderling  
American Avocet  
Black-necked Stilt  
Wilson's Phalarope  
Red-necked Phalarope  
Herring Gull  
California Gull  
Ring-Billed Gull  
Franklin's Gull  
Caspian Tern  
Common Tern  
Forster's Tern  
Black Tern  
Rock Dove  
Mourning Dove  
Snowy Owl  
Great Horned Owl  
Long-eared Owl  
Short-eared Owl  
Burrowing Owl  
Barn Owl  
Common Nighthawk  
Common Poorwill  
Broad-tailed Hummingbird

*Grus canadensis*  
*Rallus limicola*  
*Porzana carolina*  
*Fulica americana*  
*Charadrius semipalmatus*  
*Charadrius vociferus*  
*Pluvialis squatarola*  
*Gallinago gallinago*  
*Numenius americanus*  
*Actitis macularia*  
*Catoptrophorus semipalmatus*  
*Tringa melanoleuca*  
*Tringa flavipes*  
*Calidris minutilla*  
*Calidris mauri*  
*Calidris pusilla*  
*Calidris alpina*  
*Limnodromus scolopaceus*  
*Limosa fedoa*  
*Calidris alba*  
*Recurvirostra americana*  
*Himantopus mexicanus*  
*Phalaropus tricolor*  
*Phalaropus lobatus*  
*Larus argentatus*  
*Larus californicus*  
*Larus delawarensis*  
*Larus pipixcan*  
*Sterna maxima*  
*Sterna hirundo*  
*Sterna forsteri*  
*Chlidonias niger*  
*Columba livia*  
*Zenaida macroura*  
*Nyctea scandiaca*  
*Bubo virginianus*  
*Asio otus*  
*Asio flammeus*  
*Athene cunicularia*  
*Tyto alba*  
*Chordeiles minor*  
*Phalaenoptilus nuttallii*  
*Selasphorus platycercus*

Belted Kingfisher	<i>Ceryle alcyon</i>
Northern Flicker	<i>Colaptes auratus</i>
Lewis's Woodpecker	<i>Melanerpes lewis</i>
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>
Downy Woodpecker	<i>Picoides pubescens</i>
Eastern Kingbird	<i>Tyrannus tyrannus</i>
Western Kingbird	<i>Tyrannus verticalis</i>
Willow Flycatcher	<i>Empidonax traillii</i>
Western Flycatcher	<i>Empidonax occidentalis</i>
Western Wood-Pewee	<i>Contopus sordidulus</i>
Horned Lark	<i>Eremophila alpestris</i>
Violet-Green Swallow	<i>Tachycineta thalassina</i>
Tree Swallow	<i>Tachycineta bicolor</i>
Bank Swallow	<i>Riparia riparia</i>
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>
Barn Swallow	<i>Hirundo rustica</i>
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>
Blue Jay	<i>Cyanocitta cristata</i>
Black-billed Magpie	<i>Pica pica</i>
Common Raven	<i>Corvus corax</i>
American Crow	<i>Corvus brachyrhynchos</i>
Black-capped Chickadee	<i>Poecile atricapillus</i>
Bushtit	<i>Psaltriparus minimus</i>
Red-breasted Nuthatch	<i>Sitta canadensis</i>
White-breasted Nuthatch	<i>Sitta carolinensis</i>
House Wren	<i>Troglodytes aedon</i>
Marsh Wren	<i>Cistothorus palustris</i>
Gray Catbird	<i>Dumetella carolinensis</i>
Northern Mockingbird	<i>Mimus polyglottos</i>
Sage Thrasher	<i>Oreoscoptes montanus</i>
American Robin	<i>Turdus migratorius</i>
Hermit Thrush	<i>Catharus guttatus</i>
Mountain Bluebird	<i>Sialia currucoides</i>
Townsend's Solitaire	<i>Myadestes townsendi</i>
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>
Ruby-crowned Kinglet	<i>Regulus calendula</i>
American Pipit	<i>Anthus rubescens</i>

Bohemian Waxwing	<i>Bombycilla garrulus</i>
Cedar Waxwing	<i>Bombycilla cedrorum</i>
Northern Shrike	<i>Lanius excubitor</i>
Loggerhead Shrike	<i>Lanius ludovicianus</i>
European Starling	<i>Sturnus vulgaris</i>
Warbling Vireo	<i>Vireo gilvus</i>
Yellow Warbler	<i>Dendroica petechia</i>
Audubon's Warbler	<i>Dendroica coronata</i>
Wilson's Warbler	<i>Wilsonia pusilla</i>
House Sparrow	<i>Passer domesticus</i>
Bobolink	<i>Dolichonyx oryzivorus</i>
Western Meadowlark	<i>Sturnella neglecta</i>
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>
Baltimore Oriole	<i>Icterus galbula</i>
Brown-Headed Cowbird	<i>Molothrus ater</i>
Western Tanager	<i>Piranga ludoviciana</i>
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>
Evening Grosbeak	<i>Coccothraustes vespertinus</i>
Lazuli Bunting	<i>Passerina amoena</i>
American Goldfinch	<i>Carduelis tristis</i>
Savannah Sparrow	<i>Passerculus sandwichensis</i>
Baird's Sparrow	<i>Ammodramus bairdii</i>
Vesper Sparrow	<i>Pooecetes gramineus</i>
Sage Sparrow	<i>Amphispiza belli</i>
Slate-colored Junco	<i>Junco hyemalis</i>
Oregon Junco	<i>Junco thurberi</i>
Chipping Sparrow	<i>Spizella passerina</i>
Clay-colored Sparrow	<i>Spizella pallida</i>
Brewer's Sparrow	<i>Spizella breweri</i>
Harris' Sparrow	<i>Zonotrichia querula</i>
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>
Song Sparrow	<i>Melospiza melodia</i>
Snow Bunting	<i>Plectrophenax nivalis</i>
Lark Bunting	<i>Calamospiza melanocorys</i>

## FISHES

### Common Name

rainbow trout  
cutthroat trout  
brown trout  
mountain whitefish  
longnose dace  
speckled dace  
Utah sucker  
reidside shiner  
Utah chub

### Scientific Name

*Oncorhynchus mykiss*  
*Oncorhynchus clarki*  
*Salmo trutta*  
*Prosopium williamsoni*  
*Rhinichthys cataractae*  
*Rhinichthys osculus*  
*Catostomus ardens*  
*Richardsonius balteatus*  
*Gila atraria*

## **APPENDIX II - HABITAT EVALUATION PROCEDURE (HEP)**

### **HABITAT EVALUATION PROCEDURE**

The Habitat Evaluation Procedure (HEP) method was developed by the U.S. Fish and Wildlife Service (USFWS 1980) to rate the quality and quantity of habitat in order to quantify the impacts of changes from development projects or management actions. The Northwest Power Planning Council has adopted HEP as the method used to document baseline habitat condition for mitigation crediting and from which to gauge future habitat modifications or enhancements.

HEP is based on concepts firmly rooted in basic ecological principles. These principles include the assumptions that at the species level, habitat value can be described by a set of measurable habitat variables that are important for the species, and further, the value of an area may be influenced by changes in either habitat quantity or quality. For example, it is expected that if the quantity of deer browse in a valley is increased, then the value of the habitat for the deer herd in the valley is increased. This habitat variable (browse quantity) describes habitat in terms of the species needs. The same type of increase in habitat value holds true for an enhanced quality of deer browse.

The HEP methodology utilizes a team of biologists (the HEP team) that designs the HEP study, determines resource goals, selects evaluation species, develops and assesses HEP study assumptions, and subsequently evaluates habitat conditions based on selected species models. Each species model uses measurable physical and biological variables (for example, percent canopy cover and height of herbaceous vegetation) that characterize important habitat features or life requisites (for example, reproduction and winter habitat) for that species.

The value of an area to a given wildlife species is a product of the area's size multiplied by the quality of the area for the species. Mathematically, this is stated as:

$$\text{Habitat Value} = \text{Habitat Quantity} \times \text{Habitat Quality}$$

The quality measurement of the formula is expressed as an index (Habitat Suitability Index, or HSI), that varies from zero to 1.0, with zero representing no habitat value and 1.0 representing optimum habitat value for the evaluation species. HSI indicates how suitable the habitat is for the particular species when compared to optimum habitat. The product of these two measures, which is comparable to "habitat value" in the formula above, is expressed as a Habitat Unit, or HU. In HEP, the measure of habitat value becomes:

$$\text{Habitat Unit} = \text{Area} \times \text{Habitat Suitability Index}$$

or

$$\text{HU} = \text{Area} \times \text{HSI}$$

HEP is a complex of strategies, formulas, and techniques that guide the user through an appraisal of current wildlife habitat value so that the future value of that habitat may be estimated, and both positive and negative impacts of a project on the wildlife community may be gauged (Blair 1997).

## **COVER TYPES**

Cover types identified and used in the original loss assessment for the Palisades Project (Sather-Blair 1985) include: forested wetland, scrub-shrub wetland, emergent wetland, aspen, riverine, rock bottom, shrub-steppe, grass-sagebrush, agricultural, non-irrigated cropland, built up areas, streams and ponds. Not all cover types used in the original loss assessment are found on the Deer Parks Complex. Cover types used for Deer Parks Complex HEPs include:

### **Forested Wetland**

These wetlands occur where moisture is abundant, usually along the river and its tributaries. Woody vegetation is 20 feet or more tall. Narrow-leaved cottonwoods dominate the overstory with willow, dogwoods and many other shrubs in the understory.

### **Scrub-shrub Wetland**

These wetlands occur where moisture is abundant, usually along the river and its tributaries. Woody vegetation is 20 feet or less tall. Willows, red-osier dogwood, chokecherry, snowberry, and young cottonwoods are common plants found in this cover type.

### **Emergent Wetland**

These areas are characterized by erect, rooted, herbaceous hydrophytes. Cattails, bulrushes, sedges, and various grasses may dominate, depending on water regime.

### **Open Water**

This cover type describes the river including its channel and other water bodies too deep for vegetation to emerge from the surface.

### **Shrub-steppe**

This cover type is usually dominated by sagebrush with bitterbrush, rabbitbrush or other shrubs present. It is usually found on south facing slopes or level terrain.

### **Grass-Sagebrush**

Grasses dominate this cover type (wheatgrasses, bromes and blue grasses) with scattered sagebrush plants common. This cover type includes some areas used as non-irrigated pastures, perennial grasslands and dry meadows.

### **Agriculture**

This cover type includes cropland and irrigated pasture used for livestock grazing.

## MENAN UNIT

A baseline HEP was completed for the Menan Unit in September 1996. Cover types found on the unit include: emergent wetland (45 acres), scrub-shrub wetland (25 acres), forested wetland (5 acres), agricultural (cropland, 65 acres).

<b>Target Species</b>	<b>Cover Types</b>	<b>Habitat Suitability Index</b>	<b>Acres</b>	<b>Habitat Units</b>
Breeding bald eagle	All	0.93	140	130
Wintering bald eagle	All	0.97	140	136
Mule deer	FW, SSW	0.17	30	5
Ruffed grouse	Not used			0
Mink	All w/in 100m of water and slough	0.55	17	9
Canada goose	All w/in 100m of water	0.50	10	6
Mallard	All w/in 100m of water	0.70	17	12
Yellow warbler	SSW	0.66	25	16
Black-capped chickadee	FW	0.50	5	3
<b>TOTAL</b>				317

## BEAVER DICK UNIT

A baseline HEP was completed for the Beaver Dick Unit in 1997. Cover types found on the unit include: emergent wetland (245 acres), scrub-shrub wetland (50 acres), and forested wetland (15 acres).

<b>Target Species</b>	<b>Cover Types</b>	<b>Habitat Suitability Index</b>	<b>Acres</b>	<b>Habitat Units</b>
Breeding bald eagle	All	0.91	310	282
Wintering bald eagle	All	0.97	310	301
Mule deer	FW, SSW	0.40	65	26
Ruffed grouse	FW	0.60	15	9
Mink	All w/in 100m of water and slough	0.66	160	106
Canada goose	All w/in 100m of water	0.60	45	27
Mallard	All w/in 100m of water	0.70	160	112
Yellow warbler	SSW	0.45	50	23
Black-capped chickadee	FW	1.0	15	15
<b>TOTAL</b>				<b>901</b>

## DEER PARKS UNIT

A preliminary baseline HEP was completed for the Deer Parks Unit in 1998. The final baseline HEP is in progress. Cover types found on the unit include: open water/riverine (100 acres), emergent wetland (150 acres), scrub-shrub wetland (89 acres), forested wetland (425 acres), sagebrush-grassland (1097 acres), agricultural (pasture and cropland, 668 acres), and built up areas (27 acres).

<b>Target Species</b>	<b>Cover Types</b>	<b>Habitat Suitability Index</b>	<b>Acres</b>	<b>Habitat Units</b>
Breeding bald eagle	All	0.90	2,564	2,308
Wintering bald eagle	All	1.0	2,564	2,564
Mule deer	FW, SSW, S-G	0.30	1,611	483
Ruffed grouse	FW	0.40	425	170
Mink	All w/in 100m of water and slough	0.70	568	398
Canada goose	All w/in 100m of water	0.55	474	261
Mallard	All w/in 100m of water	0.70	474	332
Yellow warbler	SSW	0.70	89	62
Black-capped chickadee	FW	0.8	425	340
<b>TOTAL</b>				<b>6,918</b>

## ACKNOWLEDGEMENTS

Many individuals played key roles in the acquisition of the Deer Parks wildlife mitigation units and in subsequent management planning. The following people contributed their time, talent, support and enthusiasm. The success of this project is due to the combined efforts of everyone involved.

Bud Alford, Wildlife Biologist, Caribou-Targhee National Forest, Palisades Interagency Work Group\*

Dick Bauman, Environmental Specialist, Bureau of Reclamation, Palisades Interagency Work Group

Edward Bottum, Mitigation Staff Biologist, Idaho Department of Fish and Game, Palisades Interagency Work Group

Chad Colter, Fish and Wildlife Coordinator, Shoshone-Bannock Tribes

Jeffery Gardetto, Wildlife Biologist, Bureau of Land Management, Palisades Interagency Work Group

Jerome Hansen, Environmental Staff Biologist, Idaho Department of Fish and Game

Don Kemner, Environmental Staff Biologist, Idaho Department of Fish and Game

Joe Kraayenbrink, Resource Area Manager, Bureau of Land Management

Bob Martin, Environmental Staff Biologist, Idaho Department of Fish and Game

Alan May, Eastern Idaho Area Manager, The Nature Conservancy, Palisades Interagency Work Group

Allyn Meuleman, Contracting Officer Technical Representative, Bonneville Power Administration, Palisades Interagency Work Group

Anders Mikkelsen, Wildlife Mitigation Program Manager, Shoshone-Bannock Tribes, Palisades Interagency Work Group

Kim Ragotzkie, Regional Habitat Biologist, Idaho Department of Fish and Game, Palisades Interagency Work Group

Karen Rice, Ecologist, Bureau of Land Management, Palisades Interagency Work Group

Steve Schmidt, Regional Habitat Manager, Idaho Department of Fish and Game, Palisades Interagency Work Group

Mike Whitfield, Director, Teton Regional Land Trust, Palisades Interagency Work Group

Don Wright, Regional Supervisor, Idaho Department of Fish and Game

\*The Palisades Interagency Work Group includes representatives from the Bonneville Power Administration, Bureau of Land Management, Bureau of Reclamation, Idaho Department of Fish and Game, Shoshone Bannock Tribes, Teton Regional Land Trust, The Nature Conservancy, US Fish and Wildlife Service, US Forest Service, and Wyoming Game and Fish Department.