

PEND OREILLE
Wildlife Management Area

Management Plan
July 1999

Idaho Department of Fish and Game
Panhandle Region
2750 Kathleen Avenue
Coeur d'Alene, Idaho 83815

Prepared By:
Patrick Cole, Regional Habitat Biologist
Paul Hanna, Regional Habitat Manager

TABLE OF CONTENTS

TABLE OF CONTENTS	i
LIST OF TABLES	ii
LIST OF FIGURES.....	ii
FOREWORD	1
INTRODUCTION.....	2
LOCATION	2
PURPOSE AND MANAGEMENT APPROACH.....	2
HISTORICAL PERSPECTIVE	2
HISTORY	2
ACQUISITION.....	2
DESCRIPTION OF RESOURCES	4
GEOGRAPHIC FEATURES.....	4
VEGETATION	4
WATERFOWL.....	5
BIG GAME.....	6
OTHER GAME SPECIES	6
FURBEARERS.....	6
NON-GAME WILDLIFE	6
FISHERIES	7
PUBLIC USE.....	8
MANAGEMENT GOALS AND ONGOING ACTIVITIES.....	8
ISSUES, OBJECTIVES AND STRATEGIES	9
APPENDIX A.....	16
LAND AND WATER CONTROL.....	16
APPENDIX B	17
DEVELOPMENT HISTORY.....	17

LIST OF TABLES

Table 1. Canada goose nests observed on the Pend Oreille WMA since 1989. 13

Table 2. Use of nesting boxes by cavity-nesting ducks in the Clark Fork River Delta since 1989. 13

Table 3. Status of the Fisherman Island and Clark Fork River Delta bald eagle nests since 1989..... 14

Table 4. Public use estimates on the Pend Oreille WMA since 1989..... 15

Table 5. Opening weekend waterfowl check station results in the Clark Fork River Delta since 1994. 15

LIST OF FIGURES

Figure 1. Map of Pend Oreille Wildlife Management Area..... 3

FOREWORD

A key element of wildlife management in Idaho involves managing land and water - the habitat base required for all fish and wildlife species. Providing public access for hunting, fishing, trapping or simply viewing wildlife is also an integral part of this state's wildlife management program.

In order to provide habitat for fish and wildlife species and public access, the Idaho Department of Fish and Game (Department) has developed a system of Wildlife Management Areas on Department-owned or managed lands throughout the state.

This document is the plan for the Pend Oreille Wildlife Management Area (WMA) in Bonner County and replaces the previous plan adopted in 1985. The plan supplements the Department's Policy Plan 1990-2005: A Vision For The Future.

The reason for this planning effort is to ensure long-term protection and management of fish and wildlife resources on Department property within biological limits, economic, social and manpower constraints.

Management goals have been identified as well as those issues the Department believes could affect achieving the stated goals and ongoing management activities. Finally, objectives and strategies are proposed to deal with these issues.

Data used in this plan were those available through the summer of 1998. This plan should be viewed as a guideline for land and resource management decisions that will periodically be subject to change as new data regarding fish and wildlife resources, hunters, anglers, and other segments of the public become available.

Open house scoping sessions were held in Sandpoint on March 21, 1996 and Bonners Ferry on March 27, 1996 asking the public to assist the Department in identifying issues that needed to be discussed in formulating the Pend Oreille WMA Plan. Another series of open houses were held in Sandpoint on October 29, 1996, and Bonners Ferry on October 30, 1996, asking the public to assist the Department in formulating objectives and strategies to address issues previously identified. Public participation was invited by paid advertisements in local newspapers, flyers were posted at local businesses and the post office, and 100 personal letters were mailed to individuals, groups, government entities and elected officials with a stake in the future of the WMA.

INTRODUCTION

Location

The Pend Oreille WMA is located in Bonner County and consists of three separate parcels of land adjacent to Lake Pend Oreille and ten separate parcels along the Pend Oreille River (Figure 1). The property is scattered from the mouth of the Clark Fork River west to the city of Priest River a distance of 40 airline miles.

Individual parcels adjacent to Lake Pend Oreille are located at the Clark Fork River Delta, the Pack River Delta and Oden Bay. Parcels along the Pend Oreille River are located near Hornby Creek, Carr Creek, Muskrat Lake, Mallard Bay, Morton Slough, Hoodoo Creek, Riley Creek, Carey Creek, Priest River, and Strong's Island.

Purpose and Management Approach

This WMA is managed by the Department to protect wildlife habitat and provide public access for hunting, fishing, and other outdoor recreational pursuits. Habitat management emphasis has primarily been for waterfowl production and protection of wetland areas used by migrating birds in the spring and fall.

HISTORICAL PERSPECTIVE

History

Prior to the construction of Albeni Falls Dam, Lake Pend Oreille fluctuated naturally. Each spring, runoff from the large watershed raised the level of the lake an average of 12 feet, normally peaking in May. By late summer the lake would recede to its normal level and remain there for approximately eight months. Lowlying areas adjacent to the lake and Pend Oreille River were seasonally flooded and supported a diverse array of vegetation and associated wildlife.

Construction of Albeni Falls Dam by the U.S. Army, Corps of Engineers (USACE) began in January 1951, and regulation of the lake began in June 1952. Power generation began in 1955. The dam stabilized the summer pool elevation at a higher level. Areas that were historically flooded for a short period were inundated during the growing season. The higher summer pool inhibited most plant growth and converted these areas to seasonally exposed mud flats.

Acquisition

Most of the land included in the Pend Oreille WMA was licensed to the Department by the USACE in 1956 as partial mitigation for wildlife habitat impacted by the construction of Albeni Falls Dam. The Department purchased additional land in fee title in the Clark Fork and Pack River deltas in 1974. In 1996 the USACE licensed three additional parcels to the Department.

PEND OREILLE WMA MAP

Figure 1. Map of Pend Oreille Wildlife Management Area

In 1997, the Department began receiving wildlife mitigation funds from the Bonneville Power Administration for the acquisition of wildlife habitat to mitigate for the remaining impacts of the construction of Albeni Falls Dam. Three acquisitions were completed in 1997. Future acquisitions in the impact zone of Albeni Falls Dam will also be included as part of the Pend Oreille WMA.

The Pend Oreille WMA presently consists of 4,017 acres of USACE property licensed to the Department and 891 acres purchased from private landowners for a total of 4,908 acres.

Appendix A outlines the Department's acquisition of the WMA. Appendix B contains a brief listing of developments and management actions on the WMA undertaken by the Department and the USACE.

DESCRIPTION OF RESOURCES

Geographic Features

The most prominent features on the WMA are Lake Pend Oreille, the Clark Fork River, and the Pend Oreille River. Lake Pend Oreille encompasses 94,600 surface acres at full pool and is one of the largest and deepest natural lakes in the western United States.

The lake is fed primarily by the Clark Fork River (86% of the inflow) which enters the eastern end of the lake. The lake is also the source of the Pend Oreille River which flows out of the northwestern end of the lake at Sandpoint. The Pend Oreille River ultimately flows into the Columbia River just north of the international boundary in British Columbia, Canada.

Lake Pend Oreille lies in the Purcell Trench, a deep glacially carved, u-shaped valley separating the Selkirk Mountains on the northwest, the Cabinet Mountains on the north and east, and the Coeur d'Alene Mountains on the south. Much of the lake's shoreline is steep rock cliffs. The remainder of the lake's perimeter is a combination of shifting river deltas, flood plains, and relict glacial deposits.

Albeni Falls Dam was constructed on the Pend Oreille River in Idaho 25 miles downstream from the original outlet of the lake at Sandpoint and 2.5 miles east of the Idaho-Washington border. The Pend Oreille River at Albeni Falls Dam drains a watershed of 24,200 square miles that extends east to the continental divide at Butte, Montana and supplies an average stream flow of 25,930 cubic feet per second.

Vegetation

The construction of Albeni Falls Dam raised the average level of Lake Pend Oreille. It eliminated seasonal spring flooding and stabilized the summer pool level. Each year water levels fluctuate an average of 11.5 feet. Most of the WMA is inundated for four to five months each year. Less than 25 percent of the property licensed from the USACE is above the high water line.

Habitat conditions range from unproductive mud flats exposed during the reservoir drawdown in the winter to submerged lands with rooted aquatic plants to forested uplands. At full pool, most of the WMA is classed as a shallow marsh with an average water depth of two - four feet surrounded by a narrow riparian zone of sedges, cottonwoods, and willows. Next to the riparian zone is a fringe of conifers. Prior to dam construction, much of the WMA consisted of extensive cottonwood stands and hay fields.

Typical aquatic vegetation includes pondweed, elodea, milfoil, and chara. The abundance of aquatic macrophytes is limited to areas below the winter drawdown zone due to deep inundation during the growing season followed by exposure to freezing and desiccation during winter. Emergent plant species primarily include cattail, bulrush, spike rush and sedges. However, shorelines are typified by a stark contrast from poorly vegetated mudflats to dense stands of reed canarygrass. Shrub habitats include red alder, red-osier dogwood, and willows. Hardwood stands are dominated by cottonwood and typically include an understory of snowberry. Conifer stands include Douglas fir, grand fir, western red cedar, western white pine, ponderosa pine, lodgepole pine, western hemlock, and western larch, and are often mixed with cottonwood. Most of the conifers occur in the Clark Fork River Delta where some stands approach an old-growth condition.

Waterfowl

The Pend Oreille WMA provides important habitat for migrating and wintering waterfowl. Sites that typically support over two thousand waterfowl during migration include Morton Slough, Oden Bay, the Pack River Delta, Denton Slough, and the Clark Fork River Delta. Other portions of the WMA are also important but typically support fewer waterfowl numbers. Common migrants include tundra swans, Canada geese, American widgeon, redheads, lesser scaup, mallards, common mergansers, common goldeneye, buffleheads, and ring-necked ducks.

The greatest waterfowl use of the WMA occurs in the fall. Maximum waterfowl counts usually occur in November and December. Waterfowl numbers have been as high as 60,000 ducks, 15,000 Canada geese, and 2,000 tundra swans. Diving ducks are especially numerous on the deeper bays, primarily redheads, scaup, and ringnecks. A large portion of the Pacific Flyway's redhead duck population winters on Lake Pend Oreille and redhead counts have reached 20,000.

The WMA also provides important breeding and nesting habitat for waterfowl. Natural Canada goose nesting sites include nests built by ospreys, and islands such as at the Priest River portion of the WMA where up to 41 ground nests have been counted. Numbers of nesting Canada geese have also been increased through placement and maintenance of 180 man-made nesting platforms designed to protect nests from flooding and mammalian predators. The number of Canada goose nests counted on the WMA has ranged from 56 to 104 since 1989 (Table 1).

Cavity-nesting ducks, including wood ducks, common goldeneye and hooded mergansers also nest on the WMA. These species are dependent on naturally occurring cavities or woodpecker excavated holes in large trees for nest sites. Old stands of cottonwoods or conifers such as those in the Clark Fork River Delta are particularly important. Artificial nesting boxes have also been placed in the Clark Fork River Delta for cavity-nesting ducks (Table 2).

Other ducks known to nest on the WMA include mallards, American widgeons, gadwalls, shovelers, ring-necked ducks, and green-winged, blue-winged, and cinnamon teal. Uncommon nesters include pintails, redheads, and buffleheads.

A significant portion of the waterfowl hunting in northern Idaho takes place on the WMA each fall. Hunting is excellent for ducks and geese early in the season, before Lake Pend Oreille has been drawn down significantly. As the lake is lowered, near-shore areas are dewatered, mudflats appear, and hunting becomes more difficult. Extensive beds of rooted, aquatic plants also become available, providing migrating waterfowl a much-needed food source before they move further south.

Big Game

White-tailed deer occur on most WMA sites and are the most abundant big game species utilizing the WMA. Moose, elk, and black bear are found sporadically, but most often in the Pack River and Clark Fork River deltas. Mountain lions occur infrequently.

Big game hunting is limited on most of the WMA parcels except on the Clark Fork River Delta where hunting is very popular with local residents.

Other Game Species

Snowshoe hare and ruffed grouse are abundant year-round residents of the WMA. Mourning doves and common snipe migrate through and nest on the WMA. American coots breed and nest in small numbers on the WMA. However, thousands of coots utilize WMA sites during migration, and up to 25,000 may be counted on Lake Pend Oreille during mid-winter.

Furbearers

Because of the annual drawdown of Lake Pend Oreille, the WMA does not provide optimum habitat for aquatic furbearing mammals. Populations of muskrat, beaver, and mink would be much higher if water levels fluctuated naturally.

Occupancy of the WMA by beaver and muskrat is inhibited by the annual winter drawdown that reduces the occurrence of emergent and aquatic vegetation, and exposes any lodges that may have been established. However, beaver, muskrat, raccoon, mink, and otter tracks are frequently noted. Many of these animals likely come from nearby wetlands and streams that support better year-round habitat.

Non-Game Wildlife

Bald eagles currently nest on the WMA in the Clark Fork River Delta and on Fisherman Island. These nests have been active for over ten years (Table 3). The WMA also provides important foraging habitat for other nesting eagles on Lake Pend Oreille. Other bald eagle nests are located within one half mile of the Carey Creek, Morton Slough, Oden Bay, and Clark Fork River Delta portions of the WMA.

Lake Pend Oreille is an important wintering area for bald eagles migrating south from Canada. Many of these birds use WMA lands for foraging and perching. Migrating eagles begin arriving in

late October to take advantage of spawned out kokanee as a food source. Eagle numbers normally peak in late November - early December and decline through the end of March. Peak numbers can exceed 300 birds.

Lake Pend Oreille is also an important nesting area for ospreys. Ospreys nest on or near all WMA parcels with the greatest densities occurring in the Clark Fork River Delta and near Morton Slough on the Pend Oreille River.

Other common raptors using WMA lands include red-tailed hawks during summer, and rough-legged hawks during winter. Goshawks, sharp-shinned hawks, and Cooper's hawks are infrequently observed, mainly in spring and fall.

Great blue herons are frequent year-round visitors to WMA wetlands. One of three Lake Pend Oreille heron rookeries occurs on WMA land in the Clark Fork River Delta. WMA wetlands support a second heron rookery located near Morton Slough where up to ten herons may be observed during the nesting period.

Western grebes are abundant on WMA sites, particularly in Denton Slough where one of only a few north Idaho nesting colonies occurs. Courtship displays are common in spring and early summer when up to 100 western grebes have been noted. Up to 30 nests constructed from aquatic vegetation have been counted in Denton Slough in July. This nesting colony was established sometime in the last 15-20 years. Pied-billed grebes are also common during spring and summer. Large mixed groups of western, eared, and horned grebes (up to 350) have been noted on Lake Pend Oreille in mid-winter.

Common loons are often observed at WMA sites during spring and fall migrations. Smaller numbers of common loons occur on Lake Pend Oreille in the winter. While no nests have been observed on Lake Pend Oreille for many decades, adult common loons with young were observed in the Clark Fork River Delta in 1995.

Virginia and sora rails use WMA land during spring, summer, and fall. Common shorebirds include killdeer, greater yellowlegs, spotted sandpipers, and western sandpipers. A wide variety of other resident and migrant birds, small mammals, reptiles, and amphibians utilize WMA lands, reflecting the diverse array of habitats.

Fisheries

When Lake Pend Oreille is at full pool, fishing opportunity is at its peak on the WMA. Bullheads, crappies, perch, largemouth bass, smallmouth bass, and cutthroat trout provide a popular fishery in the near-shore sloughs and deep-water bays. The public boat launching sites on the WMA provide access for many fishermen whose ultimate destination is Lake Pend Oreille.

Lake Pend Oreille is well-known for its kokanee fishing and large Gerrard rainbows, bull trout and lake trout. The lake and its tributaries provide important habitat for bull trout, a federally threatened species. Johnson Creek flows into the Clark Fork River within the WMA. The lower end of this stream is an important spawning and staging area for bull trout.

Fish habitat in the Pend Oreille River is limited due to the impacts from current water level management. The river goes from a warm slack water reservoir in the summer to a cold flowing river in the winter. Proposed higher winter pool levels would create more overwintering habitat for largemouth and smallmouth bass and black crappie. The existing fishery is dominated by northern squawfish, suckers, tench, and stunted perch. Rainbow, cutthroat, brown and bull trout use the river seasonally when the river is cold and flowing.

PUBLIC USE

Developed access sites are heavily used by the public seeking access to Lake Pend Oreille for fishing, hunting, sight-seeing, or other recreation. According to USACE estimates, the number of visits to WMA sites varies from 32,000 to 49,000 annually (Table 5). The two most heavily used sites according to these estimates are Morton Slough and Johnson Creek.

The greatest use of WMA boat access facilities is by fishermen, followed by waterfowl hunters. Over 80 hunters have been checked during the opening weekend of the duck hunting season at the Clark Fork River Delta (Table 4). Wildlife viewing appears to be increasing on WMA sites. Areas of particular interest include Denton Slough for western grebe courtship displays, and the Clark Fork River Delta for common loon watching.

MANAGEMENT GOALS AND ONGOING ACTIVITIES

The following goals have been developed to guide management on the Pend Oreille WMA. The goals are responsive to the identified issues, the purpose for which the WMA was originally acquired, and the Department's 1991-95 Waterfowl Management Plan.

1. Manage wetland habitats for waterfowl production.

Canada Goose Management:

- Maintain approximately 180 nesting structures annually.
- Replace, relocate and add new nest structures.
- Continue Adopt-A-Wetland agreements with interested groups such as the Bonner County Sportsmen's Association (Pack River Delta) and the North Idaho Gun Dog Association (Clark Fork River Delta) and encourage others.
- Maintain the share-crop agreement to produce 15 acres of goose pasture in the Clark Fork River Delta and hay bales for goose nesting structures.
- Monitor nesting Canada geese through an annual nest census. The goal for the Pend Oreille WMA is 100 nesting pair.
- Continue annual noxious weed control program.

Duck Management:

- Maintain 25 wood duck nest boxes and inspect them for nesting success.
 - Document duck productivity and total production through breeding pair counts and brood counts in Morton Slough. The statewide objective is 30 broods per 100 pairs.
 - Band locally produced ducks at Morton Slough to estimate harvest rate and determine wintering habitat.
 - Monitor the perched culvert at Morton Slough to ensure continued function in retaining elevated winter water levels.
2. Provide wildlife-related recreation access, particularly for public hunting, fishing, and wildlife observation.
- Maintain access sites facilities - parking areas, outdoor restrooms, fishing docks, and boat ramps.
 - Conduct a waterfowl check station at the Clark Fork River Delta during opening weekend of the duck hunting season.
3. Manage wetland and upland habitats for a variety of nongame wildlife species.
- Maintain secure nesting conditions for bald eagles and ospreys.
 - Monitor bald eagle nesting success.
 - Initiate monitoring of the Denton Slough western grebe nesting colony for colony size and nesting success.
 - Encourage volunteer participation in assessment of nongame resources.
4. Provide habitat for migrating and wintering waterfowl.
- Conduct an annual aerial mid-winter waterfowl survey.

ISSUES, OBJECTIVES AND STRATEGIES

The following management issues were identified jointly by the Department, USACE and the public. Objectives and strategies were then developed in an attempt to address these issues while still meeting the goals driving management on the WMA. Wherever possible strategies are quantified to assist the Department and public evaluate plan accomplishments.

Issue 1: Additional land purchases may be required to protect important wildlife habitat that is threatened by residential development.

Objective: Protect important wildlife habitat through land acquisition or conservation easements.

Strategy: The human population in Bonner County is growing at an accelerating pace. More and more undeveloped sites are being subdivided and developed as home sites. Home site development often degrades important habitat, displaces wildlife, and displaces sportsmen. Currently, important habitat is being identified for protection and enhancement to mitigate for impacts to wildlife habitats associated with the operation of Albeni Falls Dam and the lower Clark Fork projects built by Washington Water Power Company (WWP). Protection measures may include purchase of conservation easements or land acquisition from willing landowners by the Department using funding provided by the Bonneville Power Administration and WWP.

Issue 2: Department land management practices at the Clark Fork River Driftyard such as grazing and the production of hay using fertilizer and herbicide may add nutrients or chemicals to nearby wetlands or Lake Pend Oreille.

Objective: Ensure that WMA management activities do not degrade water quality.

Strategy: Since 1960 the Department has maintained a cost-share agreement involving grazing and hay production near the Clark Fork River Driftyard. Grazing and haying creates low, green forage that is attractive and nutritious to Canada geese and their broods. Grazing diversifies and opens habitats that would otherwise grow excessively dense with reed canarygrass. It is important to note that most of the land area in the Clark Fork River Delta is left in this dense, undisturbed condition. Other species likely to benefit from grazing include breeding ducks, killdeer, common snipe, Wilson's phalarope, mourning dove, and common nighthawk. Further, a third of the hay produced is used by the Department in artificial Canada goose nesting structures located throughout northern Idaho. The current license agreement specifies that no more than 150 pounds of ammonium sulfate fertilizer may be applied per acre, and that phosphates cannot be included. The current permittee has been very conscientious in both use of fertilizer and herbicide. Herbicide use is directed away from wetland areas, and only herbicides with low environmental persistence (such as 2,4-D) are used. The Department will work with the permittee to ensure that fertilizer is not applied in excess of that specified in the license agreement, and that herbicide is applied in compliance with label restrictions.

Issue 3: Public access to Lake Pend Oreille and the Pend Oreille River is limited to only a few sites. Access is further reduced in winter due to low water, making some boat ramps unusable by large boats.

Objective: Maintain or improve existing boat access sites and acquire additional sites if funding is available.

Strategy: Public access sites with potential for improvement will be identified and improvements implemented. Additional sites will be purchased from willing sellers if Department funds are available.

Issue 4: Public access sites may cause conflict with adjacent landowners due to trespass, public hunting, or boundary disputes.

Objective: Prevent conflicts with adjacent landowners.

Strategy: The Pend Oreille WMA includes many scattered parcels. Some boundaries are not clearly marked, particularly in smaller units. An effort will be made to coordinate clear boundary marking in conjunction with the USACE.

One of the main functions of the Pend Oreille WMA is to provide public access to wildlife resources including fishing, viewing, and hunting. The Department will continue to encourage the safe conduct of these activities at public access sites.

Issue 5: Litter accumulation and noncompliance with the 10-day camping limit are chronic problems at public access sites.

Objective: Improve compliance with regulations at public access sites.

Strategy: The Department will employ a temporary person to systematically clean access sites and record campers' vehicle license numbers. If a camper is documented as over the 10-day limit, Department enforcement personnel will be contacted to ask the camper(s) to leave or be cited.

Issue 6: Cultural resource sites on the Pend Oreille WMA require legal protection.

Objective: Protect cultural resource sites on WMA lands.

Strategy: The Pend Oreille WMA contains many sites used by Native Americans through the past several thousand years. There are also many historically important Euro- and Asian-American settlement sites. The Department will work to protect the long-term integrity of these sites by conducting cultural resource assessments prior to ground disturbing activities. Further, public access facilities will be developed away from cultural resource sites to reduce the potential for vandalism.

Issue 7: Concern has been expressed about unauthorized grazing on portions of the WMA.

Objective: Eliminate unauthorized grazing on WMA lands.

Strategy: The Department will work with local sportsman's groups to construct and maintain fences to prevent trespass grazing on WMA lands.

Issue 8: Concern has been expressed for the protection of the western grebe nesting colony in Denton Slough.

Objective: Determine the status of the western grebe colony, and recommend protective measures if warranted.

Strategy: The western grebe nesting colony in Denton Slough may be one of only two colonies in north Idaho. In 1996, 30 nests were counted with approximately 100 individual grebes. In Denton Slough, western grebes use aquatic vegetation as nest material. The nests are floating, and are susceptible to destruction due to wave action. Colonial nesting western grebes may all leave their nests at once in response to disturbance; leaving eggs or chicks exposed to predators

and chilling. The nesting colony is relatively recent; being established sometime within the last 15-20 years.

While recreational boating is an obvious concern regarding wave action and disturbance, the colony was established and has apparently grown without boating restrictions. One advantage the grebes may have is that Denton Slough supports a thick mat of aquatic vegetation that physically restricts most boating activity during the nesting period. However, recreational boating may increase in the future, and the impact of boats on the western grebe colony should be monitored.

To monitor grebe nesting success, the breeding population, the number of nests, and the number of broods will be counted. A proposed annual schedule includes one count each in June, July, and early August. Information regarding inclement weather, human activity, etc., will be obtained during counts and from concerned individuals to help in assessing nest fate. Volunteers will be actively encouraged to participate in coordinated nesting colony status assessments. Potential protective measures will be assessed and recommendations made to the appropriate regulatory agency if the integrity of the nesting colony is threatened.

Issue 9: Portions of the WMA continue to erode annually due to the current reservoir operating plan.

Objective: Identify locations with erosion problems and explore potential erosion control methods.

Strategy: The current operation of Albeni Falls Dam has resulted in a loss of wetlands and seasonally flooded areas that effectively limited erosion prior to dam construction. During the drawdown in the fall, steep banks that are saturated slump and fall as water levels recede. Further, poorly vegetated mudflats are exposed to high winter and spring river and stream flows that actively erode banks. Erosion results in a significant loss of land on an annual basis.

In the Clark Fork River Delta, erosion may be compounded by daily fluctuating river flows from Cabinet Gorge Dam. Cabinet Gorge and Noxon Rapids dams may also inhibit sediment transport to the delta, thereby prevent the rebuilding of delta islands.

Few if any feasible options for preventing continuing erosion exist under current dam operations. However, potential erosion control measures will be studied as part of the mitigation for Albeni Falls Dam impacts, and as part of the re-licensing procedure for Cabinet Gorge and Noxon Rapids dams. The Department will actively participate in, and facilitate these activities.

Table 1. Canada goose nests observed on the Pend Oreille WMA since 1989.

Area	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Pack River Delta	10	16	19	12	15	12	11	16	16	15
Clark Fork Delta	16	19	28	8	2	5	14	8	6	10
Morton Slough	12	16	8	4	3	5	3	2	3	5
Hoodoo Creek	11	11	9	7	7	8	3	2	5	3
Muskrat Lake	10	11	11	11	8	11	10	7	4	5
Lower Pend Oreille River	23	21	18	15	22	15	27	69	65	53
Total	82	94	93	57	57	56	68	104	99	91

Table 2. Use of nesting boxes by cavity-nesting ducks in the Clark Fork River Delta since 1989.

Year	Total Boxes	% Used	Total Nests			Hatched Nests (% nesting success)		
			Wood Duck	Common Goldeneye	Hooded Merganser	Wood Duck	Common Goldeneye	Hooded Merganser
1989	ND ^a	ND	ND	ND	ND	ND	ND	ND
1990	ND	ND	ND	ND	ND	ND	ND	ND
1991	38	45%	17	0	0	15(88%)	0	0
1992	32	25%	7	1	0	5(71%)	1(100%)	0
1993	36	22%	7	1	0	1(14%)	0	0
1994	28	14%	2	1	1	1(50%)	1(100%)	1(100%)
1995	24	38%	8	0	1	5(63%)	0	1(100%)
1996	29	41%	10	0	2	3(30%)	0	1(50%)
1997	25	44%	11	0	0	7(64%)	0	0
1998	25	36%	7	1	1	3(43%)	0	0

^aND = No Data

Table 3. Status of the Fisherman Island and Clark Fork River Delta bald eagle nests since 1989.

Year	Fisherman Island Nest			Clark Fork River Delta Nest		
	Nest Occupied	Successful	Number Fledged	Nest Occupied	Successful	Number Fledged
1989	Yes	Yes	3	Yes	Yes	1
1990	Yes	Yes	3	Yes	Yes	1
1991	Yes	Yes	1	Yes	Unknown	Unknown
1992	Yes	Yes	1	No	No	0
1993	Yes	Yes	2	Yes	Yes	2
1994	Yes	Yes	1	Yes	Yes	2
1995	Yes	Yes	1	Yes	Yes	1
1996	Yes	Yes	2	Yes	Yes	1
1997	Yes	Yes	3	Yes	Yes	2
1998	No	No	0	Yes	Yes	2
Total			17			12

Table 4. Public use estimates on the Pend Oreille WMA since 1989.

Year	Morton Slough	Johnson Creek	Wildlife Areas	TOTAL
1989	12,869	18,410	8,787	40,066
1990	13,743	14,070	5,913	33,726
1991	15,784	16,624	6,740	39,148
1992	16,588	22,129	5,815	44,532
1993	14,028	18,638	2,507	35,173
1994	18,725	20,962	3,010	42,697
1995	21,673	20,999	3,878	46,550
1996	16,762	18,764	13,191	48,717
1997	12,902	9,429	9,965	32,296
1998	17,860	15,224	ND	33,084
Averages	16,093	17,525	6,645	39,599

Source: USACE, Albeni Falls Dam

ND=No Data

Table 5. Opening weekend waterfowl check station results in the Clark Fork River Delta since 1994.

Year	Number of Hunters	Total Ducks	Hours Hunted	Ducks per Hunter	Ducks Per Hour
1994	68	164	209	2.4	0.8
1995	80	222	300	2.8	0.7
1996	85	148	354	1.7	0.4
1997	82	183	275	2.2	0.7

APPENDIX A
LAND AND WATER CONTROL

LAND ACQUISITIONS:

<i>Year</i>	<i>Funds Used</i>	<i>Acres</i>	<i>Acquired From</i>
<u>Bonner County</u>			
1956	License	3,780.00	U.S. Army, Corps of Engineers
1974	F&G	119.00	Alvin C. Jacobson
1974	F&G	419.25	Compton I. White
1996	License	237.22	U.S. Army, Corps of Engineers
1997	BPA	240.00	David Lewis
1997	BPA	95.90	Mike White et al.
1997	BPA	16.76	Lois and Joseph Wythe
Total WMA		4,908.13	

Lands licensed from the U.S. Army, Corps of Engineers are in thirteen locations adjacent to the Pend Oreille River and Lake Pend Oreille.

1.	River Access, including Strong's Island	53.13 ac
2.	Priest River	115.14 ac
3.	Carey Creek	60.68 ac
4.	Riley Creek	148.10 ac
5.	Hoodoo Creek	81.99 ac
6.	Morton Slough	402.34 ac
7.	Mallard Bay	47.88 ac
8.	Muskrat Lake	2.00 ac
9.	Carr Creek	15.34 ac
10.	Hornby Creek	9.27 ac
11.	Oden Bay	398.19 ac
12.	Pack River Delta	1,373.96 ac
13.	Clark Fork River Delta	1,309.20 ac

APPENDIX B
DEVELOPMENT HISTORY

1956-1960	Denton Slough plowed and planted with cereal grains annually to provide winter food crops for waterfowl.
1960-Present	Sharecrop agreements negotiated every five years for the cooperator to maintain the goose pasture at Denton Slough. The Cooperator keeps a portion of the hay and receives 75 AUMS of grazing in the fall. The Department receives a portion of the hay for maintaining goose platforms.
1970s	Major improvement made to Pack River, Johnson Creek, and Morton Slough access sites. Boat ramps built at Pack River, Johnson Creek, and Morton Slough; concrete breakwater constructed at Pack River boat ramp; and toilet vaults installed at Johnson Creek, Pack River, and Morton Slough.
1970s	Boundary fences to control livestock trespass constructed at Hoodoo Creek, Morton Slough, Denton Slough, Johnson Creek, and Pack River.
1985	Water control structure built at the outlet of the upper end of Morton Slough to retain water when Lake Pend Oreille is drawn down.
1986-1991	Additional improvements made at access sites. Morton Slough boat ramp extended and handicapped-accessible toilet provided; boat ramp re-positioned at Johnson Creek and protected by rock jetty; two concrete ramps poured; new docks and pilings installed; handicapped-accessible toilet provided; and parking area enlarged.
1990-1991	Rock jetty constructed by the USACE at the mouth of the north channel of the Clark Fork River to protect the debris-collection system and prevent the erosion of Department-licensed lands by wind-generated waves from Lake Pend Oreille.
1994-1995	Additional 1,500 feet of rock jetty constructed by the USACE at the mouth of the north channel of the Clark Fork River to protect the debris-collection system.
1997-Present	Funding provided by the Bonneville Power Administration to acquire property to mitigate for impacts to wildlife habitat from the construction of Albeni Falls Dam.