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Columbia River Basin
Fish and Wildlife Program

Prepared By

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INTRODUCTION

This annual report addresses the status of wildlife projects Bonneville Power Administration (BPA) has implemented from September 1985 to April 1986 under the Columbia River Basin Fish and Wildlife Program (Program) established pursuant to the Northwest Power Act (P.L. 96-501). Wildlife projects implemented prior to September 1985 are discussed in BPA's September 1985 Annual Report on Wildlife Activities. This report provides a brief synopsis, review, and discussion of wildlife activities BPA has undertaken. When available, annual and final reports are listed for each project.

The wildlife section of the Program establishes a process intended to achieve two objectives: wildlife protection, mitigation, and enhancement planning; and implementation of actions to protect, **mitigate**, and enhance wildlife affected by development and operation of hydroelectric facilities in the Columbia River Basin. The wildlife mitigation planning process developed by the Northwest Power Planning Council (Council) is a stepwise process that proceeds through the review of the status of wildlife mitigation at Columbia River Basin hydroelectric facilities [Measure 1004 (b)(1)]; **estimates** wildlife losses from hydroelectric development and operation [Measure 1004 (b)(2)]; and recommends actions for the protection, mitigation, or enhancement of wildlife [Measure 1004 (b)(3), Mitigation Plans]. Implementation of wildlife protection, mitigation, and enhancement will occur upon amendment of wildlife actions into the Program by the Council.

The majority of BPA's effort to date has gone towards coordinating and implementing wildlife protection, mitigation, and enhancement planning projects.

MEASURES 1004 (B)(2)&(3)
WILDLIFE STUDIES, LOSS ASSESSMENTS, AND MITIGATION PLANS

Project: Impacts of Water Levels on Canada Geese. BPA 83-2.

Contractor: Confederated Salish and Kootenai Tribes.

BPA Project Manager: Jim Meyer.

Project Status: Ongoing; initiated January 1983, completion is scheduled for July 1987.

Project Summary

Scope:

The purpose of the project is to identify and evaluate the effects of hydroelectric operation on the production and survival of Canada geese (Branta canadensis) in the southern Flathead Valley in Montana. Both Hungry Horse and Kerr Dams influence the water regimes of the Flathead system. The study includes an evaluation of the effects of water level fluctuations on Canada goose nesting success, gosling survival, and on nesting and brooding habitat. The area being evaluated includes the southern half of Flathead Lake and the Lower Flathead River within the Confederated Salish and Kootenai Tribes' Reservation. The project is being coordinated with a similar study being conducted on the Upper Flathead River by Montana Department of Fish, Wildlife and Parks (BPA 83-498).

Objectives:

1. Assess the effects of water level fluctuation on goose nesting success and nesting habitat.
2. Assess the effects of water level fluctuation on gosling survival and brooding habitat.
3. Determine the population impacts of providing artificial nest sites secure from water level fluctuations.
4. Formulate mitigation/management recommendations to protect and/or enhance Canada goose populations under current and potential future hydroelectric operations.

Results/Discussion:

Results for the first three field seasons of the study are available and can be found in the 1983 annual report (Gregory, et al., 1984), the 1984 annual report (Mackey, et al., 1985) and in the 1985 annual report (Matthews, et al., 1986). Fluctuating water levels resulting from the operation of Kerr Dam can impact goose reproductive output in several ways. On the lake, access to preferred brood habitat is restricted during the critical early brood period by extensive mudflats. When water levels are low on the river, some nesting islands become attached to the mainland, promoting nest destruction by mammalian predators. In addition, nest flooding occurs on the river during periods of high water since many geese nest below the high water mark. Artificial nest structures were installed on the river and the

use of the structures has increased dramatically from 13% in 1984 to 50% in 1985. Nest structures on the river in 1985 appear to have resulted in more nests and a higher nesting success rate than would have been observed if structures were unavailable to nesting geese. The success of using bark nest material versus shale in the structures was compared. Geese appear to prefer using bark nest material, but will use shale, and are highly successful at hatching on both materials. Three different methods of artificially establishing brood habitat were tried with wheat seed on the rocky beaches and mudflats of the lake. All methods of planting the seed resulted in some germination and evidence of use by goose broods was observed. The potential for larger scale plantings in appropriate areas looks promising as a way to create brood habitat on the barren mudflats.

Following completion of this final field season, the project will provide information on the influence of water levels of the lower Flathead system on the Canada goose population. More importantly it will enable managers to make informed decisions regarding changes in the hydro system and potential effects on geese, such as nest flooding. The data gained from this study and from the upper Flathead River goose study (BPA project 83-498) will provide information to protect and enhance a valuable wildlife resource of the Flathead Valley.

Project: Impacts of Water Levels on Productivity of Canada Geese in the Northern Flathead Valley, BPA 83-498,

Contractor: Montana Department of Fish, Wildlife, and Parks.

BPA Project Manager: Jim Meyer

Project Status: Ongoing; initiated March 1984, completion is scheduled for August 1987.

Project Summary

Scope:

The purpose of the project is to identify and evaluate the effects of hydroelectric operation on the production and survival of Canada geese in the northern Flathead Valley in Montana. Both Hungry Horse and Kerr Dams influence the water regimes of the Flathead system. The study includes an evaluation of the effects of water level fluctuations on Canada goose nesting success, gosling survival, and on nesting and brooding habitat. The area being evaluated includes the upper Flathead River from the confluence of the South Fork Flathead River to Flathead Lake and the North end of Flathead Lake. The project is being coordinated with a similar study being conducted on the Lower Flathead River by the Confederated Salish and Kootenai Tribes of the Flathead Reservation (BPA 83-2).

Objectives:

1. Assess the effects of water level fluctuation on goose nesting success and nesting habitat.
2. Assess the effects of water level fluctuation on gosling survival and brooding habitat.
3. Formulate mitigation/management recommendations to protect and/or enhance Canada goose populations under current and potential future hydroelectric operations.

Results/Discussion:

The project's third and final field season of work is presently being conducted. Results for the first two field seasons are found in the 1984 and 1985 annual reports (Casey and Wood, 1985; 1986). Seasonal water level fluctuations may impact goose populations through flooding or erosion of nesting and brood-rearing habitats and increase susceptibility of nests and young to predation. Most ground nests were located on island landforms where low water levels allow accessibility of the nests to mammalian predators. Predation was the predominant cause of ground nesting failure, although some of the nest failures were due to flooding. In both 1984 and 1985, 85% of all ground nests were located within 1 m above or below the seasonal high water mark. Over 50% of all nests, however, are found on elevated sites. This indicates the strong likelihood of geese adapting to elevated artificial structures which will reduce or prevent conflicts between nesting geese and regulation of the hydro system.

Analysis of aerial photographs taken prior to construction of Kerr Dam indicates a loss of 1,859 acres of habitat along the north shore of Flathead Lake. Habitat losses are the result of inundation and continuing erosion attributed largely to the operation of Kerr Dam. Preliminary findings in these reports and in the counterpart Salish/Kootenai study reports are similar. When completed these studies will provide a basin perspective on Canada geese in the Flathead Valley, the influence of hydroelectric operations on them, and information to protect and enhance this resource.

Project: Wildlife and Wildlife Habitat Loss Assessments for the Willamette River Basin Federal Hydroelectric Facilities. BPA 84-36.

Contractor: Oregon Department of Fish and Wildlife.

BPA Project Manager: Jim Meyer.

Project Status: Completed.

Project Summary

Scope:

The purpose of the project was to estimate net losses of wildlife and wildlife habitat resulting from development and operation of Federal hydroelectric facilities in the Willamette River Basin in Oregon. Loss estimates were developed using a habitat based evaluation procedure, and addressed both positive and negative effects resulting from the projects. The study was divided into two phases, where each phase carried out loss assessments for a portion of the Willamette Basin Federal hydroelectric facilities. Phase I facilities were Lookout Point, Hills Creek, Dexter, and Cougar dams, while phase II facilities included Green Peter/Foster, and Detroit/Big Cliff dams.

Objectives:

1. Identify effects of past development and operation to wildlife and wildlife habitat from the Federal hydroelectric facilities in the Willamette River Basin.
2. Determine the hydroelectric portion of the wildlife/wildlife habitat losses for the facilities.

Results/Discussion:

Loss assessments for phase I facilities are found in the following reports: Lookout Point (Bedrossian, et al., 1985a); Hills Creek (Bedrossian, et al., 1985b); Dexter (Bedrossian, et al., 1985c); and Cougar (Bedrossian, et al., 1985d). Loss evaluations for phase II facilities are found in the following reports: Green Peter/Foster (Potter, et al., 1986) and Detroit/Big Cliff (Noyes, et al., 1986). The report by Noyes and Potter (1986) summarizes the results for the Willamette Basin Federal hydroelectric facilities.

The loss assessments for the Willamette Basin determined acreages of vegetation/land types lost or altered by the projects. It was estimated that approximately 33,400 acres were inundated, altered, or affected by the Willamette projects. Estimates of the value (habitat units) of these vegetation types to target species were derived. Habitat units (HU's) were based on how the potential of the affected area to support the target wildlife species was altered and were developed using a subjective approach. Twenty-four wildlife species or species groups were selected as target species for the loss assessments at the 8 Willamette Projects. Between 8 and 17 of the selected target species were used at each project and each species was evaluated separately. The target species that experienced the greatest change in HU's at all 8 Willamette Projects was the black-tailed deer (-17,254 HU's). Ruffed grouse showed a reduction of 11,145 HU's, and

Roosevelt elk 15,295 HU's. Other target species that were identified as experiencing losses of HU's as a result of the Willamette Projects include black bear (Ursus americanus), cougar (Felis concolor), river otter (Lutra canadensis), mink (Mustela vison), red fox (Vulpes vulpes), California quail (**Lophortyx californicus**), ring-necked pheasant (Phasianus colchicus), band-tailed pigeon (Columba fasciata), pileated woodpecker (Campephilus principalis), western gray squirrel (Sciurus griseus), harlequin duck (Histrionicus histrionicus), wood duck (Aix sponsa), northern spotted owl (Strix occidentalis), American dipper (Cinclus mexicanus), and yellow warbler (Dendroica petechia). Bald eagles (Haliaeetus leucocephalus) (+5,693 HU's), ospreys (Pandion haliaetus) (+6,169 HU's), common mergansers (Mergus merganser) and greater scaup (Aythya marila) experienced gains in HU's, primarily because of increases in foraging habitat.

The wildlife losses identified in these reports can only be considered as an index of the magnitude of wildlife habitat changes in the project areas. It should be noted that evaluations of habitat areas did overlap in that the same areas were evaluated for several target species. Values of the estimated habitat units for the target species were influenced by a number of factors such as human disturbance from activities like recreational use of the project areas. Losses for the projects were totally attributed to hydroelectric development and operation. The Willamette facilities are multipurpose projects and wildlife losses need to be allocated among project purposes. The U.S. Army Corps of Engineers' benefits allocations for the Willamette projects range from 12 to 30% hydro for these facilities. The wildlife losses identified should not be used as absolutes in selecting target wildlife species for mitigation or in establishing protection, mitigation, and enhancement goals. Consideration needs to be given to species overlap, biological significance of the wildlife habitat lost, and hydro allocation.

Project: Wildlife Protection, Mitigation, and Enhancement Plan for
Willamette River Basin Federal Hydroelectric Facilities, BPA
86-64.

Contractor: Oregon Department of Fish and Wildlife (ODFW).

BPA Project Manager: Jim Meyer.

Project Status: Ongoing; initiated March 1986, completion is scheduled for
March 1987.

Project Summary

Scope:

The purpose of the project is to develop and recommend a wildlife plan for the protection, mitigation, and enhancement of target wildlife species associated with the Federal hydroelectric facilities in the Willamette River Basin in the state of Oregon (Cougar, Lookout Point, Dexter, Hills Creek, Green Peter/Foster, and Detroit/Big Cliff Dams). The plan is to take into consideration affects to wildlife from hydroelectric development and operation; biological needs of the target species in the hydroelectric project areas and in the Willamette Basin; and management goals and plans for the target wildlife. The wildlife plan will identify how it complies with section 4(h)(5),(6), and (10A) of the Northwest Power Act.

Objectives:

1. Develop wildlife protection, mitigation, and enhancement goals for target wildlife species
2. Recommend actions for the protection, mitigation, and enhancement of target wildlife species

Results/Discussion:

No results are available at this time as the wildlife protection, mitigation, and enhancement plan is presently being prepared.

Project: Wildlife and Wildlife Habitat Loss Assessments for the Anderson Ranch, Black Canyon, and Boise Diversion Hydroelectric Facilities in Idaho, BPA85-1,

Contractor: Idaho Department of Fish and Game.

BPA Project Manager: Jim Meyer.

Project Status: Ongoing; initiated May 1985, completion scheduled for May 1986.

Project Summary

Scope:

The purpose of the project is to evaluate impacts of hydroelectric development and operation of Anderson Ranch, Black Canyon, and Boise Diversion Facilities on wildlife. The project will estimate of net losses of wildlife and wildlife habitat associated with the construction and operation of these hydroelectric facilities. Loss estimates are being developed using a habitat based evaluation procedure, and will address both positive and negative effects resulting from the projects.

Objectives:

1. Identify effects of past development and operation of the hydro facilities to wildlife and wildlife habitat.
2. Determine the hydroelectric portion of the wildlife/wildlife habitat losses.

Results/Discussion:

Results of the project are in a draft stage and are found in the report by Martin and Ablin-Stone (1986). The project used, the U.S. Fish and Wildlife Service's (FWS) Habitat Evaluation Procedures which is based on Habitat Suitability Index Models for target wildlife species. Each target species was chosen because it either was of high priority to state or federal programs, or because it was an indicator species used to describe habitat conditions for other species with similar habitat needs. Specific habitat parameters from the models were measured in the field and habitat values or habitat units (HU) were calculated for the habitat types inundated by the project. One HU is equivalent to 1 acre of prime wildlife habitat. The study used the assumption that the habitat quality of vegetative communities currently in or near the study area were representative of corresponding vegetative communities inundated by the project. The study's assumption is reasonable in view of the limited preconstruction information available.

Anderson Ranch - A total of 5,220 acres of wildlife habitat was inundated or affected by the project. HU changes derived for the target species were : -2,960 HU's for mule deer (Odocoileus hemionus); -1,197 HU's for mink (Mustela vison); -1,048 HU's for mallards (Anas platyrhynchos); -919 HU's for ruffed grouse (Bonasa umbellus) -2,274 HU's for blue grouse (Dendragapus obscurus) -900 HU's for black-capped chickadee (Parus atricapillus) and -375 HU's for yellow warblers.

Black Canyon/Deadwood - Black Canyon inundated 1,104 acres of wildlife habitat and Deadwood 3,094 acres. HU changes at Black Canyon were: -216 HU's for mule deer; -311 HU's for mink; -225 HU's for ring-necked pheasants; -286 HU's for mallards; -229 HU's for canada geese; -68 HU's for black-capped chickadees; and an increase of 8 HU's for yellow warblers. For Deadwood the estimates were: -2,080 HU's for mule deer; -359 HU's for mink; -1,411 HU's for spruce grouse (Canachites canadensis); -334 HU's for yellow warblers; and -2,626 HU's for yellow-rumped warblers (Dendroica coronata).

Boise Diversion Dam - The Boise Diversion project created a reservoir 1.6 miles by 115 yards. HU changes for the target species were: -9 HU's for Mule deer, -8 HU's for mallards, -20 HU's for mink, and -5 HU'S for yellow warblers.

In reviewing the data, it is important to take into consideration both the number of HU's lost and the total number of acres of inundated wildlife habitat. The calculated HU's for the different target species overlap to some degree as the same habitat types were evaluated under several species models. HU's however, do provide an index of the quality of habitat lost to target species, while acreage inundated provides an **estimate** of the magnitude of the change caused by the projects. The major problem with the findings is that the losses identified were totally attributed to hydroelectric development. Losses need **to** be allocated among the project purposes. Information provide by the Bureau of Reclamation indicates that the Congressional authorization for hydro at these projects are 8% for Anderson Ranch, 62% for Black Canyon, and 54% for Boise Diversion. The 10s-assessment evaluated Deadwood Dam as a storage reservoir for hydropower, however; the relationship of Deadwood to hydropower needs to be clarified.

A formal consultation meeting with interested parties will be held on these facilities in the near future to discuss the findings of the loss assessment.

Project: Wildlife protection, Mitigation, and Enhancement Plans for Upper Snake River Federal Hydroelectric Facilities in Idaho, BPA 86-73,

Contractor: Idaho Department of Fish and Game.

BPA Project Manager: Jim Meyer.

Project Status: Phase I - Palisades dam; initiation is scheduled for May 1986 with completion scheduled for November 1986.
Phase II - Anderson Ranch, Black Canyon, and Boise Diversion; initiation is dependent upon the results of the LOSS assessments (Project 85-1) and the formal consultation to be held on these facilities.

Project Summary

Scope:

The purpose of the project is to develop and recommend wildlife plans for the protection, mitigation, and enhancement of target wildlife species associated with Federal hydroelectric facilities in the Upper Snake River drainage in the state of Idaho. Phase I of the project is to develop a wildlife plan for Palisades dam located on the South Fork of the Snake River. Phase II is to include Black Canyon dam on the Payette River, Anderson Ranch dam on the South Fork of the Boise River, and Boise Diversion on the Boise River. These plans are take into consideration affects to wildlife from hydroelectric development and operation; biological needs of the target wildlife species; and management goals and plans for the target wildlife. The wildlife plans will identify how they comply with section 4(h)(5),(6) and (10A) of the Northwest Power Act.

Objectives:

1. Develop protection, mitigation, and enhancement goals for target wildlife species.
2. Recommend actions for the protection, mitigation, and enhancement of target wildlife species.

Results/Discussion:

Development of a wildlife protection, mitigation, and enhancement plan for Palisades dam is scheduled to begin May 1986.

Project: Wildlife Protection, Mitigation, and Enhancement Planning for Grand Coulee Dam, Washington, BPA 86-74,

Contractor: Washington Department of Game.

BPA Project Manager: Jim Meyer.

Project Status: Ongoing; initiated November 1985, completion scheduled for August 1986.

Project Summary

Scope:

Effects to wildlife from hydroelectric development and operation will be estimated and target wildlife species selected for Grand Coulee Dam on the Columbia River in the state of Washington. Goals and objectives for the protection, mitigation, and/or enhancement of target species will be developed taking into consideration wildlife management goals and objectives, current biological needs of the target species, and the effects of hydroelectric development and operation on the target species. The project will result in recommended actions for the protection, mitigation, and enhancement of target species.

Objectives:

1. Estimate the effects on wildlife resulting from hydroelectric development and operation.
2. Select target species.
3. Develop protection, mitigation, and enhancement goals and objectives for the target wildlife species.
4. Develop recommendations (actions) for the protection, mitigation, and enhancement of the target wildlife species.

Results/Discussion:

Preliminary results of the project indicate that approximately 70,000 acres of land were inundated by Grand Coulee Dam, causing the river environment to be converted to a lake environment. Wide fluctuations in water level have created an unstable shoreline environment that has largely precluded the re-establishment of riparian communities. Approximately 328 wildlife species occur within the project area. Estimates of the loss in wildlife potential of the inundated lands are being derived based upon habitat acreages inundated, multiplied by estimates of population densities reported in the literature for similar habitats. Habitat losses are being divided into 6 categories: loss of land and vegetation due to inundation, loss of shoreline due to inundation and slope failure, loss of special habitats, loss of structure and diversity, loss of anadromous fish runs, and loss of river (flowing water) environment. The loss of anadromous fish runs were included in the wildlife loss assessments because of their value as a prey base. The following species were selected as indicator species to estimate the wildlife potential of the habitats

inundated: canada goose, bald eagle, sage grouse (Centrocercus urophasianus), sharp-tailed grouse (Pedioecetes phasianellus), ruffed grouse, mourning dove (Zenaidura macroura), long-eared owl (Asio otus), common flicker (Colaptes auratus), beaver (Castor canadensis), mule deer, and white-tailed deer (Odocoileus virginianus). It appears that the estimated losses will be totally attributed to hydro development. Grand Coulee is a multipurpose facility and losses need to be allocated among project purposes. The U.S. Army Corps of Engineers hydro benefit allocation is 36% for Grand Coulee. Wildlife protection, mitigation, and enhancement goals and recommendations for this facility have yet to be developed. The final results of the project are to be available in August 1986.

Project: Bonneville Dam Wildlife Protection, Mitigation, and Enhancement Planning.

BPA Project Manager: Jim Meyer

Project Status: Proposed.

BPA has received a proposal to fund wildlife protection, mitigation, and enhancement planning for Bonneville Dam. This proposal is currently under review.

Wildlife and wildlife habitats of the Bonneville project area were extensively studied before the construction of the second powerhouse. BPA is presently reviewing this information. It is likely much of the information needed to recommend actions for wildlife protection, mitigation, and enhancement presently exists. Further consultation is necessary between the fish and wildlife agencies, project operator, and other interest parties such as the Pacific Northwest Utilities Conference Committee (PNUCC) to coordinate any needed wildlife planning effort. Currently there is no agreement among these parties as to the need and direction for wildlife planning. The U.S. Army Corps of Engineers (COE) and PNUCC oppose development of a wildlife loss statement, while the wildlife agencies contend the information is needed to support development of wildlife mitigation recommendations for Bonneville Dam. Both PNUCC and COE feel that more would be accomplished for the Bonneville project area if the wildlife agencies would identify target species and management objectives they want implemented. BPA has placed this project on hold until the scope of the project has been adequately defined, evaluated, and coordinated among the necessary parties.

Project: Dworshak Wildlife Protection, Mitigation, and Enhancement Planning,

BPA Project Manager: Jim Meyer

Project Status: Proposed.

A Workgroup consisting of Idaho Department of Fish and Game (IDFG), U.S. Fish and Wildlife Service, Nez Perce Tribe (Tribe), Idaho Department of Lands, Clearwater National Forest, and U.S. Army Corps of Engineers was formed to outline a direction for wildlife protection, mitigation, and enhancement at Dworshak. The following objectives were outlined for Dworshak:

1. Identify and review past, current, and presently proposed studies, programs, and mitigation actions for Dworshak to avoid overlap and duplication of efforts;
2. Formulate a list of target wildlife species;
3. Review existing information on the target wildlife species and identify effects to these species from hydroelectric development and operation;
4. Develop goals for the protection, mitigation, and enhancement of target species, along with identifying how these goals relate to existing management plans or programs;
5. Identify those target species for which additional information or studies are needed and the type of information needed;
6. Recommend actions to protect, mitigate, and enhance the target species.

The project is currently on hold pending resolution of IDFG and tribal differences. IDFG and the Tribe have differences regarding their roles and responsibilities for wildlife protection, mitigation, and enhancement planning at Dworshak. These differences are the result of a larger issue regarding co-management of fish and wildlife resources between the state and Tribe. BPA has indicated that in order to move forward and have a successful project, IDFG and the Tribe need to reach an understanding and be able to work in a cooperative manner. The Council's wildlife coordinator has met with both parties in attempt to facilitate a resolution.

MEASURE 1004 (B)(4)
WILDLIFE PROTECTION, MITIGATION, AND ENHANCEMENT PROJECTS

Project: Ural-Tweed Bighorn Sheep Mitigation/Enhancement, BPA 84-38 & 84-39,

Contractors: U.S. Forest Service.
Montana Department of Fish, Wildlife, and Parks.

BPA Project Manager: Jim Meyer.

Project Status: Ongoing; initiated January 1985, completion is scheduled for December 1988.

Project Summary

Scope:

The Ural-Tweed bighorn sheep (*Ovis canadensis*) herd is one of the few remaining native bighorn sheep populations in northwestern Montana. The current population status of the herd is approximately 25 percent of that of the early 1960's population **estimate** of 150 to 200 animals. Important segments of the Ural-Tweed bighorn sheep spring and winter range were lost due to flooding from impoundment of the Kootenai River by Libby Dam. The formation of Lake Koocanusa inundated approximately 4,350 acres of crucial winter and spring ranges. The primary objectives of these projects are to improve existing habitat conditions by developing new grass stands and rejuvenating existing grass and shrub stands that are in poor condition; and to monitor treatment and herd response to habitat changes. The project is expected to increase the capacity of spring and winter ranges to support bighorn sheep.

Objectives:

1. Enhance approximately 1300 acres of sheep range by developing new grass stands and rejuvenating existing grass and shrub stands that are in poor condition.
2. Evaluate the effectiveness of the habitat improvement projects in enhancing bighorn sheep and their habitat.
3. Outline a program to maintain a viable Ural-Tweed bighorn sheep population.

Results/Discussion:

Results of the first year of implementation are found in the 1985 annual report (Yde, et al., 1986). Activities concentrated on obtaining baseline information on habitat conditions, sheep population dynamics and behavior, and design and initiation of habitat treatments. Habitat treatments were initiated on 7 areas. The treatments included selective slashing of vegetation, prescribed burning, and fertilization. The project is a cooperative effort between MDFWP, the Forest Service, and BPA. It is an example of the type of wildlife mitigation/enhancement efforts that should be undertaken as part of the Columbia River Basin Fish and Wildlife Program. The project deals with current biological needs of the sheep population, and the loss of critical habitat from Libby Dam appears to have been one of the factors leading to the decline in their population.

Project: Hungry Horse Wildlife Protection, Mitigation, and Enhancement.

BPA Project Manager: Jim Meyer.

Project Status: Proposed.

Wildlife protection, mitigation, and enhancement for Hungry Horse Dam in Western Montana is expected to be initiated following amendment of actions from Montana Department of Fish, Wildlife, and Parks' (MDFWP) mitigation plans for Hungry Horse into the Columbia River Basin Fish and Wildlife Program (Program) by the Northwest Power Planning Council (Council). Amendment of actions into the Program is scheduled for February 1987.

MDFWP prepared a wildlife protection, mitigation, and enhancement plan for wildlife losses associated with the development of Hungry Horse Dam (Bissell and Yde, 1984). MDFWP subsequently revised this plan based upon Council direction. In April 1986, the Council made a preliminary decision regarding wildlife mitigation at Hungry Horse. The preliminary decision includes the following projects:

Elk Project	Improve habitat on Flathead National Forest lands to support an additional 133 elk.
Grizzly Bear Project	Protect 8,590 acres of riparian habitat through the acquisition of conservation easements.
Waterfowl Project	Protect/Enhance 1146 acres of wetland habitat in the Flathead Basin.
Terrestrial Furbearer Project	Protect 11,050 acres of old growth forests through the negotiation of long-term protection/management plans on state and private timber lands.

This preliminary decision will be included in the Council's draft amendment document which will undergo further public review and comment. The Council's final decision on Hungry Horse is to occur February 1987.

Project: Libby Wildlife Protection, Mitigation, and Enhancement.

BPA Project Manager: Jim Meyer.

Project Status: Proposed.

Wildlife protection, mitigation, and enhancement for Libby Dam in Western Montana is expected to be initiated following amendment of actions from MDFWP mitigation plans for Libby into the Columbia River Basin Fish and Wildlife Program (Program) by the Northwest Power Planning Council (Council). Amendment of actions into the Program is scheduled for February 1987.

MDFWP prepared a wildlife protection, mitigation, and enhancement plan for wildlife losses associated with the development of Libby Dam (Yde and Olsen, 1984). MDFWP has subsequently revised this plan based upon Council direction. Currently the revised plan is scheduled to go through a public review process prior to the Council's decision in February 1987.

NON MEASURE PROJECTS

Project: Effects of the Cabinet Gorge Hatchery on Wintering Bald Eagles in the Lower Clark Fork River and Lake Pend Orielle. BPA 86-14.

Contractor: Idaho Department of Fish and Game.

BPA Project Manager: Jim Meyer.

Project Status: Ongoing; initiated November 1985, completion is scheduled for July 1987.

Project Summary

Scope:

The project is a 2-year evaluation of wintering bald eagles along the lower **26 miles** of the Clark Fork River and Lake Pend Orielle in the state of Idaho. The purpose of the project is to obtain baseline data on bald eagle use of the area in order to assess the effects to bald eagles from enhancement of the kokanee salmon (Onchorhynchus nerka) fishery from the operation of the Cabinet Gorge Hatchery. BPA in cooperation with Washington Water and Power (WWP) and Idaho Department of Fish and Game (IDFG) built the Cabinet Gorge hatchery as mitigation for fishery losses resulting from hydroelectric development and operation of Albeni Falls and Cabinet Gorge Dams. Enhancement of the kokanee fishery has the potential to create a major wintering area for bald eagles. The project will provide information from which management decisions can be based for the protection and/or enhancement of eagle habitat. Funding for this project is the result of formal consultations with the U.S. Fish and Wildlife Service (FWS) pursuant to Section 7 of the Endangered Species Act. This project was recommended as a conservation measure by the FWS in their biological opinion on the Cabinet Gorge Hatchery.

Objectives:

1. Determine the seasonal number and distribution of bald eagles in the study area.
2. Identify those areas intensively and extensively used by bald eagles.
3. Determine daily behavioral activities of bald eagles.
4. Determine prey species utilized by wintering bald eagles
5. Develop recommendations for the protection and/or enhancement of bald eagle habitat surrounding the lower Clark Fork River and Lake Pend Oreille.

Results/Discussion:

No results are available as the project is in its first year of data collection.

CONSULTATIONS

Both Measures 1004 (b)(2)&(3) call for BPA to consult with the appropriate fish and wildlife agencies, Tribes, and project operators. BPA understands that the purpose of the 1004 (b)(2) consultations is to discuss the need for and direction of further studies (loss assessments). The 1004 (b)(3) consultations are to review and discuss the loss assessments and the development of actions for the protection, mitigation, and enhancement of wildlife. What follows is a brief discussion of consultation meetings BPA convened during the period September 1985 to April 1986. In each case, we have identified participants, summarized the conclusions of such consultations, and identified any resulting action BPA has taken.

1004 (B)(2) CONSULTATIONS

No 1004 (B)(2) consultations were held between September 1985 and April 1986.

1004 (B)(3) CONSULTATIONS

Facilities: Willamette Basin Federal Hydroelectric Facilities (Lookout Point, Hills Creek, Dexter, Cougar, Green Peter/Foster, and Detroit/Big Cliff Dams, Oregon)

Date of Consultation: December 17, 1985.

Participants: Oregon Department of Fish and Wildlife, U.S. Fish and Wildlife Service, Forest Service, Bureau of Land Management, Corps of Engineers, Pacific Northwest Utilities Conference Committee, Northwest Power Planning Council, and BPA.

Summary: There was considerable discussion on the value of the loss assessments for the Willamette Basin Federal hydroelectric facilities, with no consensus being reached. Agencies feel loss assessments were necessary to support their mitigation requests, while utility representatives question the need and value of them. Development of a wildlife protection, mitigation, and enhancement plan for the Willamette Basin facilities was also discussed. Utility representatives believe wildlife protection, mitigation, and enhancement should be undertaken primarily through good stewardship of project lands, with wildlife management plans forming the basis for wildlife goals at the hydro facilities. Agencies believe, however, that the goal of the program is to replace all the wildlife losses they identified at each of the hydroelectric facilities.

Action: BPA funded Oregon Department of Fish and Wildlife (ODFW) to develop a wildlife plan for the Willamette Basin Federal hydroelectric facilities. The project was initiated in March 1986. For more information see BPA project 86-64.

WILDLIFE PROGRAM EXPENDITURES

The following table shows the level of funding committed to implementing the wildlife section of the Program during FY 1986 and prior fiscal years. To date, only a small portion of the obligated funds have gone towards projects that provide wildlife protection, mitigation, and enhancement [1004 (b)(4) activities]. In the future, the focus of the wildlife section of the Program will be on projects that protect and enhance existing wildlife resources of the Columbia River Basin.

<u>Measure a/</u>	<u>FY 1986 b/</u>	<u>Total c/</u>
1004 (b)(1)	\$ 0	\$ 393,920
1004 (b)(2)&(3)	747,122	2,158,052
1004 (b)(4)	123,340	248,180
Non Measure	115,165	115,165
	<hr/>	<hr/>
Total	\$985,627	\$2,915,317

c/ 1004 (b)(1) - Wildlife mitigation status review.
 1004 (b)(2)&(3) - Wildlife studies, loss assessments, and mitigation plans.
 1004 (b)(4) - Wildlife protection, mitigation, and enhancement.

b1 Period from October 1985 to April 1986.

c1 Total funds obligated from October 1982 to April 1986.

WILDLIFE PROGRAM DISCUSSION

The Columbia River Basin Fish and Wildlife Program (Program) sets out a process in Section 1000 (wildlife) for developing and recommending actions to protect, mitigate, and enhance wildlife affected by hydroelectric development and operation in the Columbia River Basin (Basin). The process involves identification of wildlife losses (loss assessments) and the development of recommendations for wildlife protection, mitigation, and enhancement (mitigation plans).

Loss assessments completed to date deal with impacts resulting from the development of Columbia River Basin hydroelectric dams. Most of these facilities were built during or prior to the 1960's. Limited information concerning wildlife and wildlife habitat is available for the project areas at the time of their construction. The primary impact identified in these assessments has been the loss of wildlife habitat from inundation. Habitats inundated were identified using aerial photographs and an attempt was made to place a wildlife value on the habitats lost. This was done either by estimating the carrying capacity in animal numbers or deriving Habitat Units (HU's) for target wildlife species. One HU is equivalent to one acre of prime habitat for the target species. Figures derived estimate the potential of the lost habitat to support the target wildlife species and do not necessarily represent the actual loss of wildlife at the time of construction.

Several weaknesses affect the accuracy of the loss assessments. Availability and quality of aerial photos and biological data for older facilities limit the reliability of the information developed for the target wildlife species and the habitat types inundated. Habitat values derived in the loss assessments overlap for several species. This is due to habitat values being calculated for species which use similar habitats. The assessments also do not provide any indication of the biological importance or significance (ie. population effects) of the lost habitat to the target wildlife species.

A major concern with the loss assessment findings is that the wildlife agencies totally attribute estimated wildlife losses to hydroelectric development. The Federal hydro facilities of the Columbia River Basin are multipurpose facilities and wildlife losses and any mitigation responsibility needs to be allocated among the project purposes or benefits.

The loss assessments provide information which can be used in the development of wildlife mitigation plans. The estimated wildlife losses, however, should not be used as the sole criteria in selecting target wildlife species for mitigation, or in establishing protection, mitigation, and enhancement goals. The figures developed in the loss assessments should be used only as an indication of the general type, quality, and amount of habitat lost for the target wildlife species.

BPA believes the focus of wildlife mitigation plans should be on protecting or maintaining existing wildlife populations or providing mitigation for those wildlife species where there is a demonstrated biological and/or social need. The wildlife agencies and tribes need to identify target wildlife species of importance for the Columbia River Basin and for the hydroelectric project areas. Management plans and goals along with biological requirements, particularly limiting factors, have to be identified for these species. Based on this information and estimates of the impact of hydroelectric development and operation on wildlife, the appropriate role and responsibility for the protection and enhancement of existing wildlife populations of the Columbia River Basin can be established for the hydroelectric system. Fully mitigating all historic or cumulative wildlife or wildlife habitat changes resulting from the development of the Columbia River Basin hydroelectric facilities is neither practical nor reasonable.

Actions developed to protect, mitigate, and enhance wildlife under the Program, need to complement existing and future activities of the Federal and the region's state wildlife agencies and appropriate Indian tribes. It needs to be stressed that if protection, mitigation, and enhancement of the Columbia River Basin wildlife resources is to be successful under the Northwest Power Act and the Fish and Wildlife Program, a reasonable and cooperative effort to resolve differences must be made by involved parties.

WILDLIFE PROGRAM SUMMARY

BPA's effort in the wildlife section of the Program has gone towards implementing wildlife planning. This includes measure 1004 (b)(2), loss statements and measure 1004 (b)(3), mitigation plans. The following table summarizes the status of wildlife planning at Columbia River Basin hydroelectric facilities.

Loss statements have been completed for 14 facilities in the Basin with 4 additional ones to be completed shortly. Mitigation plans have been completed for 5 hydroelectric facilities in Montana. The Northwest Power Planning Council (Council) is presently considering two mitigation plans (Hungry Horse and Libby) for amendment into the Program. Currently, mitigation plans are being prepared for the 8 Federal hydroelectric facilities in the Willamette River Basin in Oregon, Grand Coulee Dam in the state of Washington, and Palisades Dam on the Snake River in Idaho.

BPA has consistently held that mitigation at non-federal facilities in the Basin is the responsibility of the project operators under the jurisdiction of the Federal Energy Regulatory Commission. Therefore, BPA's current and future efforts in wildlife planning and mitigation are being directed towards Federal Columbia River Basin hydroelectric facilities. Completed wildlife mitigation plans will be submitted to the Council for review and approval. Implementation of wildlife protection, mitigation, and enhancement will occur after wildlife actions have been amended into the Program.

STATUS OF WILDLIFE PLANNING
AT COLUMBIA RIVER BASIN HYDROELECTRIC FACILITIES

<u>Hydro Facility</u>	<u>Location</u>	<u>Loss Statement</u>	<u>Mitigation Plan</u>
Hungry Horse	Montana	Completed	Completed
Libby	Montana	Completed	Completed
Thompson Falls	Montana	Completed	Completed
Noxon Rapids	Montana	Completed	Completed
Cabinet Gorge	Montana	Completed	Completed
Palisades	Idaho	Completed	Initiation May 1986
Anderson Ranch	Idaho	Initiated May 1985	Not Started
Black Canyon	Idaho	Initiated May 1985	Not Started
Boise Diversion	Idaho	Initiated May 1985	Not Started
Grand Coulee	Washington	Initiated Oct. 1985	Initiated Oct. 1985
Cougar	Oregon	Completed	Initiated Mar. 1986
Lookout Point	Oregon	Completed	Initiated Mar. 1986
Dexter	Oregon	Completed	Initiated Mar. 1986
Hills Creek	Oregon	Completed	Initiated Mar. 1986
Green Peter	Oregon	Completed	Initiated Mar. 1986
Foster	Oregon	Completed	Initiated Mar. 1986
Detroit	Oregon	Completed	Initiated Mar. 1986
Big Cliff	Oregon	Completed	Initiated Mar. 1986

Wildlife mitigation planning (loss statements and mitigation plans) has not been initiated for Columbia River Basin hydroelectric facilities not listed above. BPA's current and future efforts in wildlife planning are being directed towards Federal Columbia River Basin hydroelectric facilities.

WILDLIFE REPORTS

The following section lists the various reports summarizing the results of projects implemented by BPA under section 1000 of the Program. Wildlife projects completed prior to September 1985 are discussed in BPA's September 1985 Annual Report on Wildlife Activities. Copies of the following reports can be obtained from: Bonneville Power Administration, Division of Fish and Wildlife - PJ, P.O. Box 3621, Portland, Oregon 97208.

MEASURE 1004(B)(1) - WILDLIFE MITIGATION STATUS REVIEW

Project 83-478

Bedrossian, K.L., R.D. Carleson, J.H. Noyes, and M.S. Potter. 1984. Status Review of Wildlife Mitigation at Columbia Basin Hydroelectric Projects - Oregon Facilities, Final Report. Oregon Dept. Fish & Wildlife. Bonneville Power Admin. Proj. 83-478. (DOE/BP-317)

Howerton, J., D. Hwang, M. Jordan, E. Rybak, D. Sill, R. Starkey, G. Van Lom, and P. Wright. 1984. Status Review of Wildlife Mitigation at Columbia Basin Hydroelectric Projects - Columbia Mainstem & Lower Snake Facilities (83-478), Final Report. Washington Dept. of Game and U.S. Fish and Wildlife Service. Bonneville Power Admin. Proj. 83-478. (DOE/BP-369)

Howerton, J., M. Jordan, D. Kraege, E. Rybak, R. Starkey, and G. Van Lom. 1984. Status Review of Wildlife Mitigation at Columbia Basin Hydroelectric Projects - Washington Facilities, Final Report. Washington Dept. of Game and U.S. Fish and Wildlife Service. Bonneville Power Admin. Proj. 83-478. (DOE/BP-319)

Martin, R.C., L.A. Mehrhoff, J.E. Chaney, and S. Sather-Blair. 1985. Status Review of Wildlife Mitigation at Columbia Basin Hydroelectric Projects - Idaho Facilities, Final Report. Idaho Dept. Fish and Game, and U.S. Fish and Wildlife Service. Bonneville Power Admin. Proj. 83-478. (DOE/BP-12144)

MEASURES 1004(B)(2)&(3) - WILDLIFE STUDIES, LOSS ASSESSMENTS, AND MITIGATION PLANS

Project 83-2

Gregory, S., D. Mackey, J.J. Claar, and I-J. Ball. 1984. Impacts of Water Level Fluctuations on Breeding Canada Geese and the Methodology for Mitigation and Enhancement in the Flathead Drainage, 1983 Annual Report. Confederated Salish & Kootenai Tribes. Bonneville Power Admin. Proj. 83-2. (DOE/BP-203)

Project 83-2 cont.

Mackey, D.L., W.C. Matthews, Jr., S. Gregory, J.J. Claar, and I.J. Ball. 1985. Impacts of Water Level Fluctuations on Breeding Canada Geese and the Methodology for Mitigation and Enhancement in the Flathead Drainage, 1984 Annual Report. Confederated Salish & Kootenai Tribes. Bonneville Power Admin. Proj. 83-2. (DOE/BP-10062).

Matthews W.C., Jr., S.K. Gregory, D.L. Mackey, J.J. Claar, and I.J. Ball. 1986. Impacts of Water Level Fluctuations on Breeding Canada Geese and the Methodology for Mitigation and Enhancement in the Flathead Drainage, 1985 Annual' Report. Confederated Salish & Kootenai Tribes. Bonneville Power Admin. Proj. 83-2. (DOE/BP-10062-1)

Project 83-498

Casey, D. and M. Wood. 1985. Effects of Water Levels on the Productivity of Canada Geese in the Northern Flathead Valley - 1984 Annual Report. Montana Dept. Fish, Wildlife, and Parks. Bonneville Power Admin. Proj. 83-498. (DOE/BP-16687-1)

Casey, D. and M. Wood. 1986. Effects of Water Levels on the Productivity of Canada Geese in the Northern Flathead Valley - 1985. Annual Report. Montana Dept. Fish, Wildlife, and Parks. Bonneville Power Admin. Proj. 83-498. (In Printing)

Project 83-464

Mundinger, J. and C.A. Yde. 1984. Wildlife Impact Assessment and Mitigation Summary: Montana Hydroelectric Projects; Volume I - Libby Dam, Final Report. Montana Dept. Fish, Wildlife, and Parks. Bonneville Power Admin. Proj. 83-464. (DOE/BP-314)

Wood, M. and A. Olsen. 1984a. Wildlife Impact Assessment and Mitigation Summary: Montana Hydroelectric Projects; Volume IIA - Thompson Falls (83-464), Final Report: Montana Dept. Fish, Wildlife, and Parks. Bonneville Power Admin. Proj. 83-464. (DOE/BP-316)

Wood, M. and A. Olsen. 1984b. Wildlife Impact Assessment and Mitigation Summary: Montana Hydroelectric Projects; Volume IIB - Cabinet Gorge and Noxon Dams, Final Report. Montana Dept. Fish, Wildlife, and Parks. Bonneville Power Admin. Proj. 831464. (DOE/BP-315)

Casey, D., C.A. Yde and A. Olsen. 1984. Wildlife Impact Assessment and Mitigation Summary: Montana Hydroelectric Projects, Volume III - Hungry Horse Dam, Final Report. Montana Dept. Fish, Wildlife, and Parks. Bonneville Power Admin. Proj. 83-464. (DOE/BP-313)

Yde, C.A. and A. Olsen. 1984 Wildlife and Wildlife Habitat Mitigation Plan, Montana Hydroelectric Projects Volume I - Libby Dam, Final Report. Montana Dept. Fish, Wildlife, and Parks. Bonneville Power Admin. Proj. 83-464. (DOE/BP-367)

Project 83-464 cont.

Bissell, G., C.A. Yde and M. Wood. 1985. Wildlife & Wildlife Habitat Mitigation Plan, Montana Hydroelectric Projects Volume II-Cabinet Gorge 6 Noxon Rapids Dams, Final Report. Montana Dept. Fish, Wildlife, and Parks. Bonneville Power Admin. Proj. 83-464. (DOE/BP-11983)

Bissell, G. and C.A. Yde. 1984. Wildlife and Wildlife Habitat Mitigation Plan, Montana Hydroelectric Projects Volume III - Hungry Horse Dam, Final Report. Montana Dept. Fish, Wildlife, and Parks. Bonneville Power Admin. Proj. 83-464. (DOE/BP-366)

Bissell, G. and M. Wood. 1985. Wildlife and Wildlife Habitat Mitigation Plan for the Thompson Falls Hydroelectric Project, Final Report. Montana Department of Fish, Wildlife, and Parks. Bonneville Power Admin. Proj. 83-464.

Project 84-36

Bedrossian, K.L., J.H. Noyes, and M.S. Potter. 1985a. Wildlife and Wildlife Habitat Loss Assessment at Lookout Point Dam and Reservoir Project, Middle Fork Willamette River, Oregon - Final Report. Oregon Dept. Fish & Wildlife. Bonneville Power Admin. Proj. 84-36. (In Printing)

Bedrossian, K.L., J.H. Noyes, and M.S. Potter. 1985b. Wildlife and Wildlife Habitat Loss Assessment at Hills Creek Dam and Reservoir Project, Middle Fork Willamette River, Oregon - Final Report. Oregon Dept. Fish & Wildlife. Bonneville Power Admin. Proj. 84-36. (In Printing)

Bedrossian, K.L., J.H. Noyes, and M.S. Potter. 1985~. Wildlife and Wildlife Habitat Loss Assessment at Dexter Dam and Reservoir Project, Middle Fork Willamette River, Oregon - Final Report. Oregon Dept. Fish & Wildlife. Bonneville Power Admin. - Proj. 84-36. (In Printing)

Bedrossian, K.L., J.H. Noyes, and M.S. Potter. 1985d. Wildlife and Wildlife Habitat Loss Assessment at Cougar Dam and Reservoir Project, South Fork McKenzie River, Oregon - Final Report. Oregon Dept. Fish & Wildlife. Bonneville Power Admin. - Proj. 84-36. (In Printing)

Noyes, J.H., M.S. Potter. 1986. Wildlife and Wildlife Habitat Loss Assessment Summary at Federal Hydroelectric Facilities Willamette River Basin, Oregon. - Final Report. Oregon Dept. Fish & Wildlife. Bonneville Power Admin. - Proj. 84-36. (In Printing)

Noyes, J.H., M.S. Potter, and K.L. Bedrossian. 1986. Wildlife and Wildlife Habitat Loss Assessment at Detroit/Big Cliff Dam and Reservoir Project North Santiam River, Oregon - Final Report. Oregon Dept. Fish & Wildlife. Bonneville Power Admin. - Proj. 84-36. (In Printing)

Project 84-36 cont.

Potter, M.S., J.H. Noyes, and K.L. Bedrossian. 1986. Wildlife and Wildlife Habitat Loss Assessment at Green Peter/Foster Project Middle Fork Santiam River, Oregon - Final Report. Oregon Dept. Fish & Wildlife. Bonneville Power Admin. - Proj. 84-36. (In Printing)

Project 84-37

Sather-Blair, S. and S. Preston. 1985. Wildlife Impact Assessment; Palisades Project, Idaho - Final Report. U.S. Fish & Wildlife Service. Bonneville Power Admin. - Proj. 84-37. (DOE/BP-189681)

Project 85-1

Meuleman, G.A., B. Martin, and K. Ablin-Stone. 1986. Wildlife Impact Assessment Anderson Ranch, Black Canyon, and Boise Diversion Projects, Idaho - Draft Final Report. Idaho Department of Fish and Game. Bonneville Power Admin. - Proj. 85-1.

MEASURE 1004(B)(4) - WILDLIFE PROTECTION, MITIGATION, AND ENHANCEMENT
PROJECTS

Projects 84-38 and 84-39

Yde, C., A. Christensen, and D. Godtel. 1986. Ural - Tweed Bighorn Sheep Wildlife Mitigation Project. 1985 Annual Report. Kootenai National Forest and Montana Dept. Fish, Wildlife, and Parks. Bonneville Power Admin. Projs. 84-38 and 84-39. (DOE-BP 18966-1)

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