PEACE/WILLISTON
FISH & WILDLIFE
COMPENSATION
PROGRAM

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Peace/williston Fish and Wildlife Compensation Program Annual Report 1999/2000

M. D. Wood and B. G. Blackman
July 2000

PWFWCP Report No. 227

The Peace/Williston Fish & Wildlife Compensation Program is a cooperative venture of BC Hydro and the provincial fish and wildlife management agencies, supported by funding from BC Hydro. The Program was established to enhance and protect fish and wildlife resources affected by the construction of the W.A.C. Bennett and Peace Canyon dams on the Peace River, and the subsequent creation of the Williston and Dinosaur Reservoirs.

Peace/Williston Fish and Wildlife Compensation Program, 1011 Fourth Ave. 3rd Floor, Prince George B.C. V2L 3H9

Website: *www.bchydro.bc.ca/environment/initiatives/pwcp/*

This report has been approved by the Peace/Williston Fish and Wildlife Compensation Program Fish Technical Committee.

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PEACE/WILLISTON FISH AND WILDLIFE COMPENSATION PROGRAM

ANNUAL REPORT
1999/2000

STEERING COMMITTEE:

John Metcalfe (BC Environment) - Chairman
Dave Cattanach (BC Hydro)
Ted Down (BC Fisheries)
Ron Fernandes (BC Hydro)

FISH TECHNICAL COMMITTEE:

Nick Baccante (BC Environment) - Chairman
Allister McLean (BC Hydro)
Bob Westcott (BC Hydro)
Ted Zimmerman (BC Environment)
Ken Ashley (BC Fisheries) - Technical Advisor

WILDLIFE TECHNICAL COMMITTEE

John Elliott (BC Environment) - Chairman
Alan Chan-McLeod (BC Hydro)
Doug Heard (BC Environment)
Ed Hill (BC Hydro)

FISH BIOLOGISTS:

Brian Blackman (BC Hydro) - Senior Biologist
Arne Langston (BC Hydro)
Randy Zemlak (BC Hydro)

WILDLIFE BIOLOGISTS:

Mari Wood (BC Hydro) - Senior Biologist
Fraser Corbould (BC Hydro)
Pamela Hengeveld (BC Hydro)

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PROGRAM ADMINISTRATION

Membership on the Steering Committee (SC) changed this year with Dave Cattanach replacing Colin Gurnsey as the BC Hydro (BCH) representative from Power Supply in Burnaby. Chairmanship was turned over to BC Environment (BCE) member John Metcalfe from Colin Gurnsey (BCH). Membership on the Wildlife Technical Committee (WTC) remained the same as the previous fiscal, with John Elliott (BCE) remaining as chair for his second year. Both membership and chairmanship changed on the Fish Technical Committee (FTC). Ted Zimmerman replaced Don Cadden as the BCE Omineca representative, while Allister McLean replaced Carol Lamont from BCH's Power Supply department in Burnaby. The Fish chair position rotated from Bob Westcott (BCH) to Nick Baccante (BCE).

Fish biologists Brian Blackman, Arne Langston, and Randy Zemlak, and wildlife biologists Mari Wood and Fraser Corbould, continued as full-time staff responsible for administering, managing, and conducting fish and wildlife research and enhancement projects. Pamela Hengeveld provided technical support to the Wildlife Program between April and December 1999.

Administrative activities included preparation of the 1998/99 Annual Report (Wood and Blackman 1999), tracking program expenditures, managing contracts, preparing quarterly reports on program activities, preparing performance review plans, and updating staff safety training. A number of consulting firms and contractors were employed to undertake work on a variety of projects.

PROGRAM PLANNING

One in-person meeting and two conference calls were held between Fish program biologists and the FTC to discuss the current year's projects and finances, and prepare a budget for 2000/01. Wildlife program biologists and the WTC held 3 in-person meetings and periodic conference calls to do the same. Senior biologists from both the Fish and Wildlife programs attended the annual Steering Committee meeting to assist with 00/01 budget presentations. Two 2-day Strategic Planning Workshops were held in Prince George to develop a Strategic Plan for the PWFWCP. Consultants were retained to assist TC members, SC members, and program biologists with development of the Plan. The basic plan was completed and implementation details, such as geographic boundaries, footprint vs operation issues, roles and responsibilities, etc are being worked out and should be completed during the next year. The FTC and fish biologists, with the assistance of Harvey Andrusak (Redfish Consulting Ltd.), completed both Fish Strategic and Operational Plans. Two meetings and a conference call were required to complete the plans. The Fish Strategic Plan was approved by the SC; the Operational Plan is pending approval. An Arctic Grayling Workshop hosted by the PWFWCP was held in Prince George in January 2000. Biologists from BC, Alberta, Northwest Territories, and Montana attended the workshop to discuss current Arctic grayling research and management. Funding was received from the Environmental Crown Counsel (from charges laid against Donahue Forest Industries) through the Habitat Conservation Trust Fund, and used for the Mesilinka River Fertilization Project. Wildlife project funding proposals were prepared and submitted to the Habitat Conservation Trust Fund (HCTF) - Ingenika Prescribed Burn, and Forest Renewal B.C. (FRBC) - Fisher Habitat Use, for financial assistance for 00/01. Informal meetings were held with individuals, consultants, and stakeholder representatives to discuss current and potential future projects.

PUBLIC CONSULTATION

Program Staff

Three radio interviews highlighting Fish Program activities were conducted by Arne Langston and Randy Zemlak (radio-stations CKMK, CBC, and CJCT). Brian Blackman participated in three radio interviews (CBC, CJCT and CKPG) to discuss the status of Arctic grayling. The PWFWCP also hosted a workshop in Prince George on Arctic grayling, which was attended by biologists from Alberta, BC, NWT, and Montana. Brian Blackman made a presentation at the BCE Provincial Habitat Meeting on habitat protection issues of Arctic grayling. As a result of this presentation, he was asked to write the species account for Arctic grayling and make habitat management recommendations for the Forest Practices Code Guidelines. Information on various fish projects was provided to and published in newspapers in Mackenzie and Prince George.

Wildlife biologists delivered slide-show presentations at UNBC's Wildlife Research Symposium. Mari Wood presented details on her 20 Mile Point Stone's Sheep research, Fraser Corbould reviewed the Fisher Habitat Use project, and Pamela Hengeveld discussed the program's Amphibian Surveys in the Williston watershed. Mari Wood also delivered a lab session on wildlife capture and radio-telemetry techniques to UNBC Wildlife Ecology students. Fraser Corbould delivered a slide presentation on the Fisher Habitat Use project to the PG Naturalists Club. Mari Wood manned the PWFWCP display booth at both the BC Trappers Association annual general meeting in Prince George, and the Guide-Outfitters Association annual general meeting in Victoria.

A news release was prepared on Rocky Marsh wetlands enhancements activities, and an article on the Fisher Habitat Use project appeared in FRBC's newsletter. A Fish and Wildlife Species List for the Williston Reservoir Watershed was also drafted. Film footage of the capture and detailed examination of Stone's sheep at 20 Mile Point was obtained in March. The PWFWCP and specific fish and wildlife projects were discussed (through informal meetings and talks) with industry representatives, club members, guide-outfitters, trappers, contractors, students, and tourists. Detailed project information and technical reports were also discussed with and disseminated to consultants, biologists, and researchers throughout western North America.

Program biologists also contributed to PWFWCP public consultation activities handled by BC Hydro's Public Affairs department (see below), including drafting and editing project articles for *NatureLine* #11 (the PWFWCP's official newsletter), and a Project Update sheet. Biologists also provided input to the activities proposed in the Public Consultation Plan for 2000/01.

BC Hydro Public Affairs

A PWFWCP advertisement was placed in the 1999/2000 Freshwater Fishing Regulations Synopsis, and an article on the program was published in Outdoor Edge Magazine. *NatureLine* #10 was produced, in addition to one Program Fax Update. A wildlife photo contest through the nlocal newspapers was held in Prince George, Mackenzie, Chetwynd, and Fort St. John. The proposals solicited in 98/99 to develop a multi-media video on the PWFWCP were reveiwed, and a consultant was selected. Production of the video was deferred to 00/01, as were 4 First Nations meetings, a newspaper supplement, an art/essay contest, and a story in BCH's Current Directions. Production of a program brochure, which was deferred to 99/00, was deferred again for another year.

FISH PROGRAM

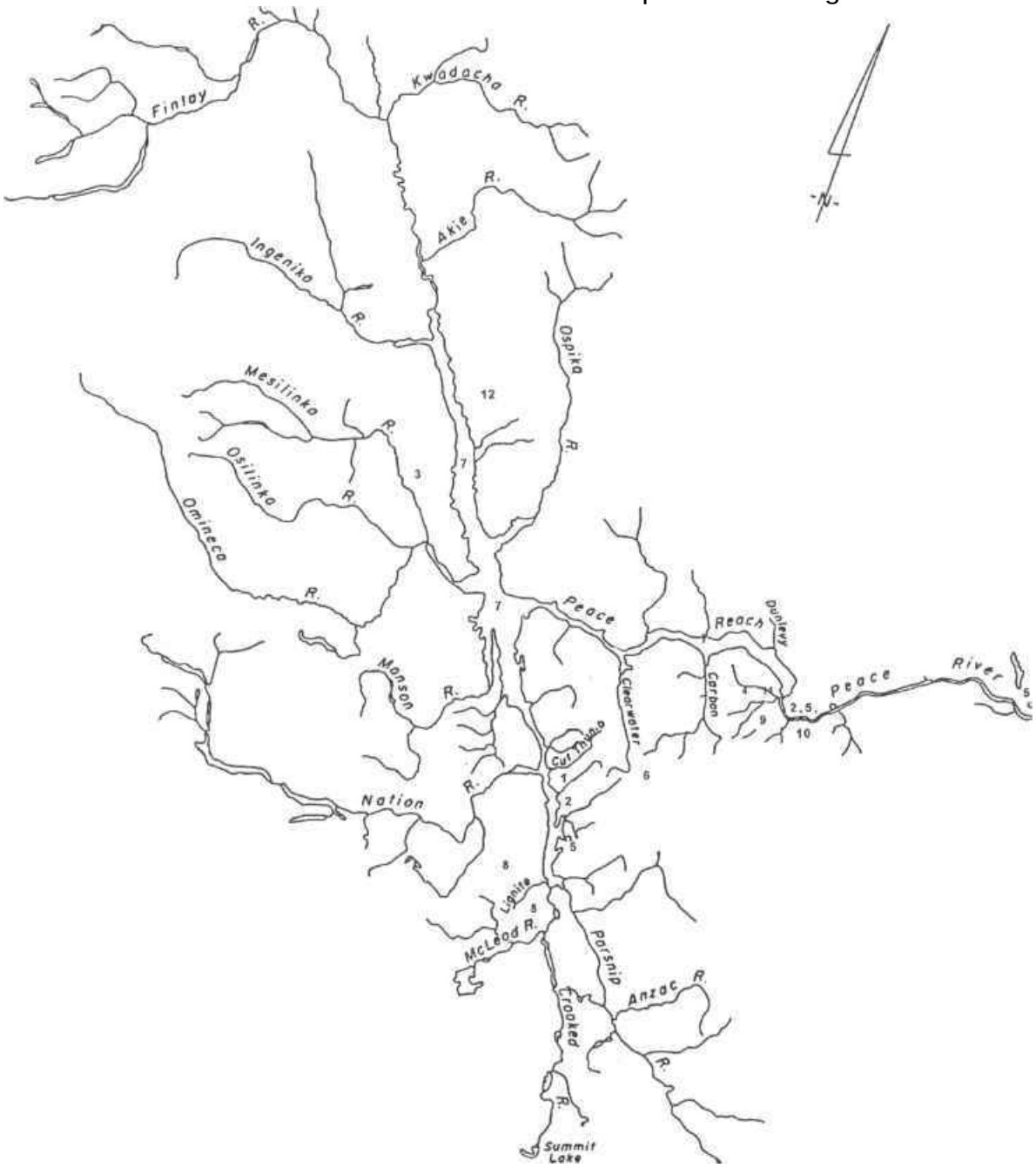
Brian Blackman

1999/2000 PROJECT LIST

Map	Task #	Project	Location
	00-01	Strategic Plan - Program	Office
	00-02	Strategic Plan - Fish	Office
1	00-03	Project Maintenance	Parsnip
2	00-04	Stocking Program	Watershed
3	00-05	Mesilinka Fertilisation (Min of Fish)	Finlay
	00-06	Report Writing - Previous Years	Office
4	00-07	Gething Bull Trout Evaluation	Dinosaur
5	00-08	Classroom Kokanee (*)	Parsnip / Peace
6	00-09	Simpson Lake Rainbow Trout Transplant Evaluation	Peace
7	00-10	Williston Reservoir Limnology	Reservoir
	00-11	Hydroacoustic/Trawl Survey of Williston Res (Min of Fish)	Office
8	00-13	Small Lake Evaluation	Parsnip
	00-14	Arctic Grayling Workshop **	Prince George
9	00-15	Dinosaur Reservoir Aquatic Plant Transplant	Dinosaur
10	00-16	Dinosaur Reservoir Creel Survey	Dinosaur
11	00-17	Gething Bull Trout Transplant	Dinosaur
	00-18	Arctic Grayling Genetic Study (UBC)	Office (UBC)
12	00-27	Davis River Bull Trout Utilisation Study (MELP)	Finlay

(Co operative projects with:)

Min of Fish: Ministry of Fisheries - joint project funded by PWFWCP
UBC: University of British Columbia - graduate student funded by PWFWCP
MELP: Ministry of Environment Lands and Parks - funded by PWFWCP
*Dept of Fisheries and Oceans, Habitat Conservation Trust Fund, Donahue Forest Products, Fletcher Challenge Canada, Mackenzie Fish and Game Association, Canfor Ltd., BC Hydro office at the W.A.C. Bennett Dam, Lions Club of Hudson's Hope, Hudson's Hope Rod and Gun Club
**BC Hydro, Environmental Dynamics, Ministry of Environment Lands and Parks, Ministry of Fisheries, Pacific Brewing Company, Qualstar Solutions Inc



1999/2000 Fish Project Locations

1.	Project Maintenance	2.	Stocking
3.	Mesilinka Fertilisation	4.	Gething Bull Trout Evaluation
5.	Classroom Kokanee	6.	Simpson Lake Transplant Evaluation
7.	Williston Reservoir Limnology	8.	Small Lake Evaluation
9	Dinosaur Aquatic Plant Transplant	10.	Dinosaur Reservoir Creel Survey
11	Gething Bull Trout Transplant	12.	Davis R. Bull Trout Utilisation Study

PROJECT SUMMARIES

1. PROGRAM STRATEGIC PLAN (#00-01)

Objective: To provide staff time to support the creation of a broad based "Strategic Plan" to define the direction of the Peace Williston Fish and Wildlife Compensation Program

1999/00 Year 2 of 2: Two, 2-day workshops were held in Prince George with Steering, and Technical Committee members and program staff, to develop a program Strategic Plan. This plan has been completed and the details of implementation issues are being worked out and all should be completed during the next year.

2. FISH STRATEGIC PLAN (#00-02)

Objective: To create a Strategic Plan to direct of the Fish component of the Compensation Program.

1999/00 (Year 2 of 2): The Fish Program Strategic plan has been completed and approved by the Steering Committee, and an Operational Plan has been completed and presented to the Steering Committee but has not yet been officially approved.

3. PROJECT MAINTENANCE (#00-03)

Objective: To provide maintenance of the Dina Creek and Dina Lake #3 inlet spawning habitat improvement projects and to remove the Windy point upwelling facility.

1999/00 (Year 4 of ongoing): Dina Lake #3 inlet stream mouth was channellized and the gravel was cleaned. Students from the Mackenzie High School assisted in the stream maintenance on Dina Creek. Project biologists assisted with the Dina Creek Field day where local students learn about stream ecology.

4. STOCKING PROGRAM (#00-04)

Objective: To provide funds to cover the costs, to the Ministry of Fisheries for the rearing and release of fish for PWFWCP projects.

1999/00 (Year 10 of ongoing: This year approximately 27,500 rainbow trout were released into six lakes and 2500 brook trout were released into one lake. Marked rainbow trout were released into Dinosaur Reservoir (7,522 right ventral clip fingerlings at 65g, and 5,100 adipose clipped catchables at 158g.) in order to assess the effectiveness of the stocking program in the reservoir

5. MESILINKA RIVER FERTILISATION (MAINTENANCE PHASE) (#00-05)

Objective: To determine the effectiveness of low level inorganic fertilisation (N and P) as a techniques to increase the size at age and standing biomass of rainbow trout, Arctic grayling, bull trout, and mountain whitefish in an oligotrophic northern river.

1999/00 (Year 2 of 5): Eight years of baseline inventory, fertilisation, and evaluation have been completed on this project which began in 1990. The project is now in year two of a maintenance program, which consists of continued fertilisation with minimal evaluations. It will be necessary to continue this project for several more years in order to assess the effects of fertilisation on all the species present. Underwater counts conducted in 1999, indicated a continued strong response from rainbow trout and mountain whitefish but the responses from bull trout and Arctic grayling, although positive were not as strong. A detailed summary report of the fertilisation program will be completed early in the 2000/01 cycle.

6. REPORT WRITING PREVIOUS YEARS (#00-06)

Objective: To provide staff time and funds for the completion and distributions of reports from previous years.

1999/00 (Year 3 of Ongoing): Report completion status:
a) annual reports 1992-1997 have been completed; b) the Radio Telemetry report has been reviewed, revised and is under final review; (c) the 1998 Arctic grayling report has undergone multiple reviews and revisions and will require one more revision; (d) the Arctic grayling management plan has been revised and is in final review; (e) the Arctic grayling summary (a summary of information from Williston Watershed and from the literature)is in review; (f) the 1988-97 Fisheries summary (a summary of Compensation Program Projects since 1988) has been re written and is in final review.

7. GETHING BULL TROUT EVALUATION (#00-07)

Objective: To evaluate the success of the Gething Bull Trout Transplant Project

1999/00 (Year 1 of 2): The evaluations (electrofishing of Gething, Gaylard, and Downing creeks) found one year old bull trout in Gething Creek, which indicated that the adults transplanted in 1997 have successfully reproduced and that the fry were able to overwinter in the stream. Young of the year bull trout were captured in Dowling Creek. Since no bull trout were transplanted in 1998 this indicates that fry resulting from previous transplants have reached sexual maturity and reproduced in the system. No bull trout were found in Gaylard Creek, but this stream has only received one transplant in 1994. Rainbow trout were captured in all three streams and high numbers were observed in the upper reaches of Gething Creek. This suggests that the rainbow trout have moved out of Wright Lake (headwaters of Gething) into Gething and Dowling Creeks. The rainbow trout in Gaylard are probably a result of stocking from the Peace Canyon Hatchery in the 1980's. The transplanted bull trout have also moved upstream into Wright Lake.

8. CLASSROOM KOKANEE (#00-08)

Objective: To assist with a program to raise kokanee in a classroom environment, as an educational tool, in Mackenzie, Hudson's Hope, and Ft. St. schools.

1999/00 (Year 4 of ongoing): This project was conducted in conjunction with the local School District, Department of Fisheries and Oceans, Habitat Conservation Trust Fund, Donahue Forest Products, Fletcher Challenge Canada, Mackenzie Fish and Game Association, Canfor Ltd., BC Hydro office at the W.A.C. Bennett Dam, Lions Club of Hudson's Hope, and the Hudson's Hope Rod and Gun Club. In 1999 program staff obtained the necessary permits, collected 50 eggs per school from Ministry of Environment, delivered the eggs to the schools and helped set up the aquariums. Talks were given to three classes in Mackenzie and two in Hudson's Hope and one in Ft. St John. Program staff acted as judges for class art contests and obtained and presented prizes to the winners.

9. SIMPSON LAKE RAINBOW TROUT TRANSPLANT EVALUATION (#00-09)

Objective: To determine if a self reproducing population of rainbow trout has become established in Simpson Lake as a result of four years of stocking with wild rainbow trout, that were captured in the intake towers at W.A.C. Bennett Dam.

1999/00 Year 1 of 1: Evaluations of the transplant were conducted in September with the assistance of local volunteers. Natural recruitment was occurring in both the outlet and inlet streams and there appeared to be several year classes of fish that were "born" in the system. Some of the fish captured weighed up to 2 kg, indicating excellent growth rates.

10. WILLISTON RESERVOIR LIMNOLOGY (#00-10)

Objective: To provide baseline data to determine the current trophic state of the reservoir and to gather new information on nutrient status in order to estimate the productive capability of the reservoir.

1999/00 (Year 1 of ongoing): Monthly samples were collected for zooplankton, phytoplankton and water chemistry assays. Primary productivity examination was conducted in July and September. Data analysis is well underway and a report will be completed early next year.

11. HYDROACOUSTIC AND TRAWL SURVEY OF WILLISTON RESERVOIR (#00-11)

Objective: To determine of the current species composition and relative abundance of forage fish in the limnetic zone of the reservoir.

1999/00 (Year 1 of 2): In the first year the program provided funds to lease and calibrate the hydroacoustic equipment.

12. SMALL LAKE EVALUATION (#00-13)

Objective: To evaluate the effectiveness of previous fish stocking activities in six small lakes, and determine if additional enhancement opportunities are available.

1999/00 (Year 2 of ongoing): Evaluations have been conducted on Sabi and Butternut lakes. Recommendations have been made to terminate the stocking program in Sabi Lake and to stock Butternut with sterile stocks to avoid a spawn bound problem. Evaluations on the other lakes were deferred because of time constraints.

13. ARCTIC GRAYLING WORKSHOP (#00-14)

Objective: To host a workshop on Arctic grayling research and management in order to gather input and exchange ideas with other biologists from the United States and Canada.

1999/2000 (Year 1 of 1): The workshop was held in Prince George, and was attended by approximately 70 biologists from British Columbia, Alberta, the Northwest Territories and Montana. Seventeen papers were presented and discussions were held on, habitat requirements, restoration techniques, harvest regulations, population dynamics, genetics, and fish community interactions.

14. DINOSAUR RESERVOIR AQUATIC PLANT TRANSPLANT (#00-15)

Objective: To examine the potential of establishing aquatic plants in Dinosaur Reservoir. The establishment of aquatic plants should reduce entrainment problems, increase littoral productivity and benefit most fish species found in the reservoir.

1999/00 (Year 1 of 3): Surveys were conducted and a report has been produced outlining recommendations for vegetative trials in Dinosaur Reservoir. Small test plots of cattails, sedges and grasses were planted in the drawdown zone of Johnson Creek embayment in early July. Water levels were held at a high elevation and it was impossible to evaluate the survival of the plants until late October. At that time, some of the plants (sedges) at higher elevations were visible and appeared to be established.

15. DINOSAUR RESERVOIR CREEL SURVEY (#00-16)

Objective: To gather angler effort, catch success, and fish growth information from the Dinosaur Reservoir fishery in order to determine the effectiveness of the present stocking program and to provide baseline data to evaluate enhancement activities planned for the reservoir.

1999/2000 (Year 1 of 2): Anger effort and catch rates were similar to those recorded during the surveys conducted in the 1980's. The marked rainbow trout released into the reservoir to evaluate the stocking program were too small this year, to make a significant contribution to the creel. A final report has been completed.

16. GETHING BULL TROUT TRANSPLANT (#00-17)

Objective: To transplant adult bull trout into habitat upstream from a series of impassable waterfalls in order to establish a self perpetuating population above the falls. This provides adult access to improved spawning habitat and additional rearing habitat for this species in Gething Creek. Fish are expected to move out to Dinosaur Reservoir and provide a contribution to the sport fishery in the Reservoir.

1999 Year 5 of 6: Twenty one bull trout were captured from Gething Creek and released into the spawning and rearing area upstream from the waterfalls. After spawning, these fish were recaptured in a fish trap located downstream from the spawning area, and returned to the reservoir.

17. ARCTIC GRAYLING GENETICS STUDY (#00-18)

Objective: To examine the genetic structure and degree of genetic similarity of grayling populations within the Williston watershed, and to attempt to determine if populations within the watershed are genetically distinct from each other or if all the stocks are similar.

1999/00 Year (4 of 3): Analysis of the data has been completed and was presented at the Arctic grayling workshop. The resolution of the data is insufficient to distinguish individual stocks, but the Nation River population displayed much less genetic variation than the other watershed populations that have been examined.

18. DAVIS RIVER BULL TROUT UTILISATION STUDY (#00-27)

Objective: To gather biological data on the bull trout population spawning in Davis River and to determine biophysical factors that affect redd site selection.

1999/00 (Year 1 of 2): Twenty eight bull trout were implanted with radio transmitters and tracked throughout the spawning season. Snorkel counts were used to determine the number and distribution of spawners and verify redd density. Water temperatures are being recorded at eight sites and a draft report has been completed.

FISH PROGRAM - FINANCIAL SUMMARY

The Fish Program budget for 1999/2000 was $642,300, which included $58,000 carry over from 1998/99. Add additional $23,450 was added for public consultation, resulting in a total budget of $665,750. Expenditures during the fiscal year totalled $579,253 and projects accounted for $377,341 or 65.1 % of the expenditures and 46% of staff time. This was lower than expected because it was necessary to drop projects because of staff time commitments. Administration costs were $75,997, (13.1%) which was higher than expected because of increased staff time commitments (22%). Planning costs were $96,495 (16.7%) also slightly higher because of increased staff time (29.5%). Public consultation costs were $29,420 or *5.1%* of expenditures. The unspent funds will be carried over to the next fiscal year.

Table 1. Detailed Fish Program budget expenditures for the 1999/2000 fiscal

COST CATEGORY	TASK #	SPECIFIC PROJECT	PROJECT COSTS	TOTAL EXPENDED	% Expended	% Budgeted
Administration	00 B01	Administration	75,996	$75,997	13.1%	8.4%
Planning	00 B02	Planning	61,505	$96,495	16.7%	13.2%
	00-02	Strategic Plan (Fish)	13,613			
	00-14	Arctic grayling Workshop	21,376			
Public	00 B03	Public Consultation - Staff	15,442	$29,420	5.1%	5.7%
Consultation		BC Hydro	13,978			
Projects	00-03	Project Maintenance	11,991	$377,341	65.1%	72.7%
	00-04	Stocking Program	35,502			
	00-05	Mesilinka Fertilisation	38,267			
	00-06	Report Writing Previous Years	21,850			
	00-07	Gething Bull Trout Evaluation	5,834			
	00-08	Class Room Kokanee	8,016			
	00-09	Simpson Lake Evaluation	6,191			
	00-10	Reservoir Limnology	118,345			
	00-11	Hydroacoustic Survey	10,383			
	00-13	Small Lake Evaluation	9,580			
	00-15	Dinosaur Aquatic Plants	10,223			
	00-16	Dinosaur Creel Survey	17,286			
	00-17	Gething Bull Trout Transplant	21,828			
	00-18	Arctic grayling Genetic Study	9,763			
	00-27	Bull Trout Telemetry	52,282			
		Total		$579,253		$670,600

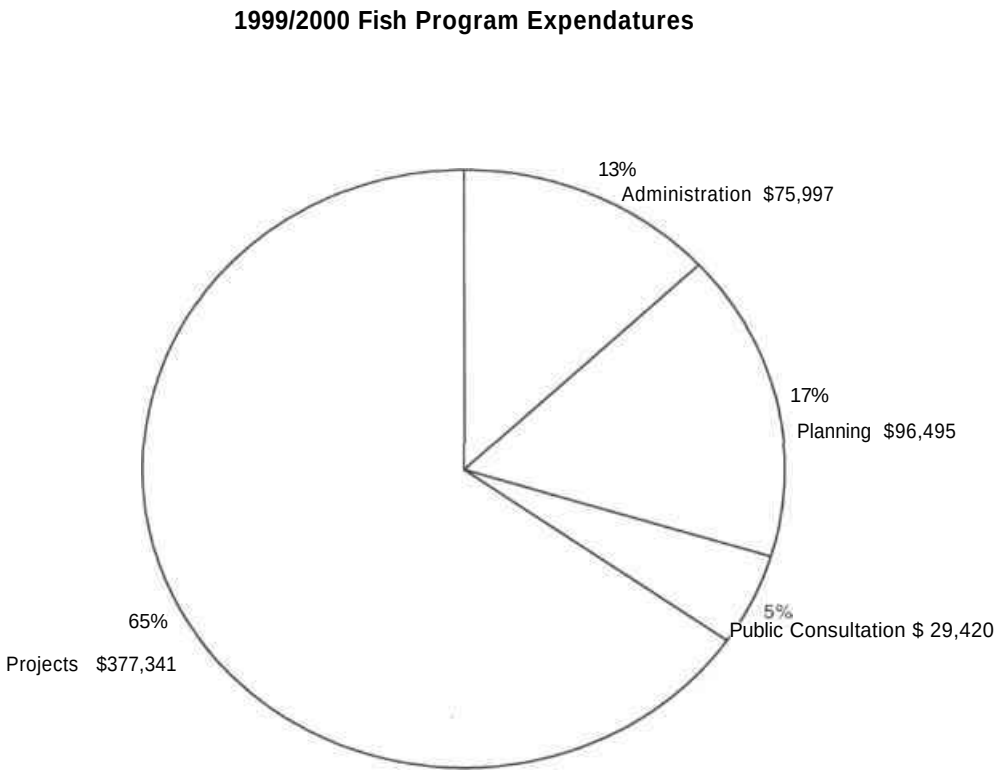


Figure 1. Fish Program expenditures for the 1999/2000 fiscal year.

WILDLIFE PROGRAM

Mari D. Wood

1999/2000 PROJECT LIST

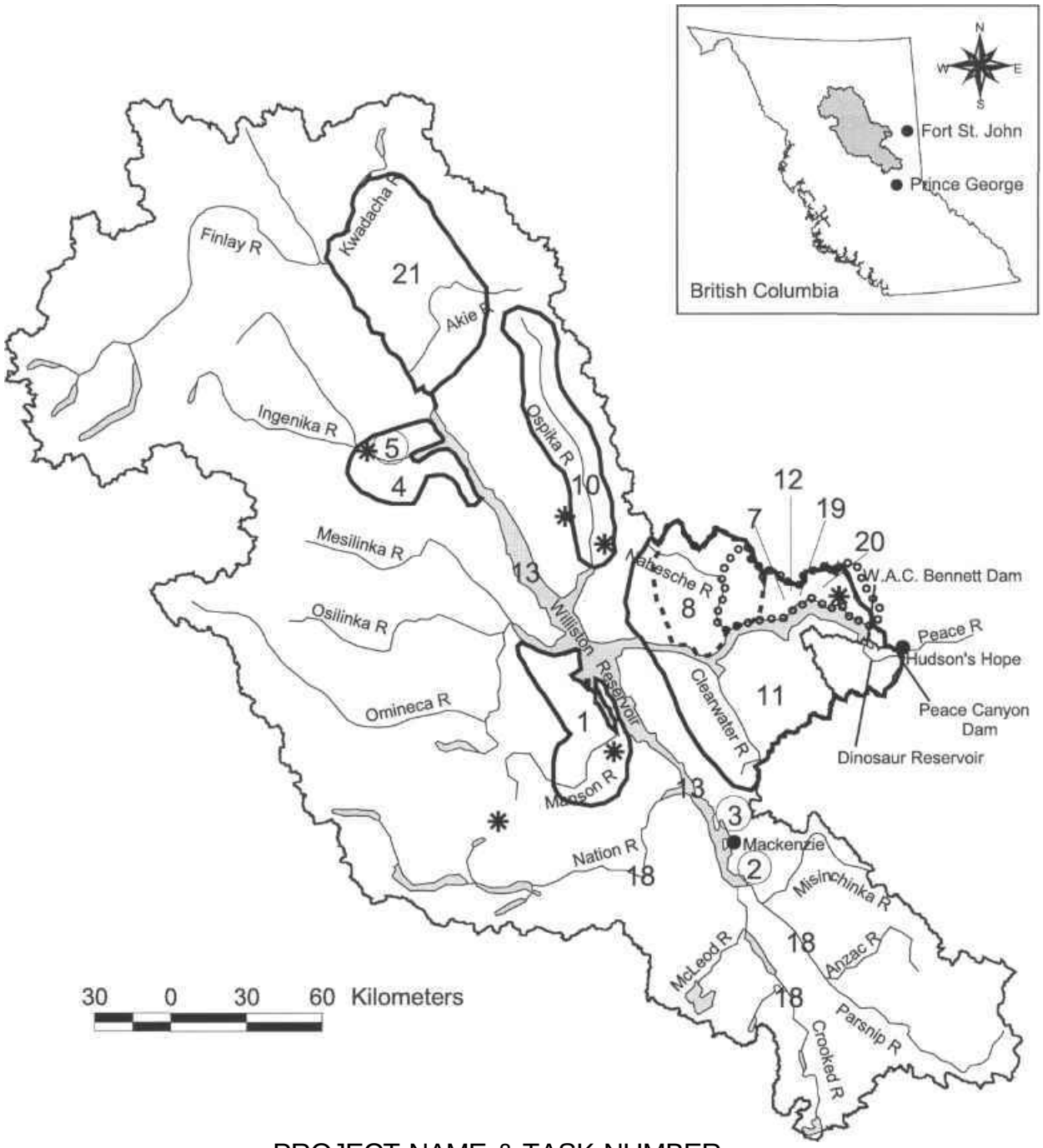
	PROJECT	TASK#	LOCATION
PROJECTS			
\	Fisher Habitat Use Project	99-01	Omineca
2	Rocky Marsh Wetland Enhancement	99-02	Mackenzie
3	Mackenzie Migratory Songbird Monitoring (Co-op Project[1])	98-03	Mackenzie
4	Ingenika River Elk Transplant Monitoring	99-04	Finlay
5	Ingenika Prescribed Burn	99-05	Finlay
6	Snow Depth Monitoring Stations	99-06	Watershed
7	20 Mile Point Stone's Sheep (previously "Rainbow Rocks")	99-07	Peace
8	Nabesche Mtn Goat and Licks	99-08	Peace
9	Ducks Unliimited Wetlands Initiatives	99-09	Peace
10	Ospika Goat Mineral Lick Use	99-10	Ospika
11	Peace Elk Status	99-11	Peace
12	Neonatal Ungulate Selection	99-12	Peace
13	Waterfowl Moulting Surveys	99-13	Watershed
14	Data Analyses/Report Writing	99-14	Office
15	Amphibian Distribution and Habitat Use	Supp99-16	Watershed
CARRY-OVER PROJECTS FROM 98/99			
16	Omineca Mountains Caribou Project Brochure	98-B3	Omineca
17	Williston Watershed Fish and Wildlife Species List	98-B3	Watershed
18	Winter Waterfowl Inventory	98-11	Watershed
19	East Peace Arm Sheep Inventory	98-14	Peace
20	Peace Arm Five Year Burn Plan	98-16	Peace
21	Western Muskwa Ranges Ungulate Inventory	98-17	Finlay

[1] "Co-operative Projects" are administered by other agencies. PWFWCP co-operates on these projects by contributing funding and/or technical expertise.

Abbreviations used for Agencies/Clubs;

Agencies and clubs that are partners on PWFWCP projects are listed in brackets [ ] at the end of each project's objective.

BCE: B.C. Environment
CWS: Canadian Wildlife Service
DFI: Donohue Forest Products
DU: Ducks Unlimited
FRBC: Forest Renewal B.C.
HCTF: Habitat Conservation Trust Fund
MNO: Mackenzie Nature Observatory
MOF: Ministry of Forests
PWFWCP: Peace/Williston Program
SG: Slocan Mackenzie Operations



PROJECT NAME & TASK NUMBER

1 Fisher Habitat Use Project
2 Rocky Marsh Wetland Enhancement
3 Mackenzie Migratory Songbird Monitoring
4 Ingenika River Elk Transplant Monitoring
5 Ingenika Prescribed Burn
6 Snow Depth Monitoring Stations (✱)
7 20 Mile Point Stone's Sheep Project
8 Nabesche Mtn. Goat and Licks
10 Ospika Goat Mineral Lick Use
11 Peace Elk Status
12 Neonatal Ungulate Selection
13 Waterfowl Moulting Surveys
15 Amphibian Distribution Surveys
18 Winter Waterfowl Inventory
19 East Peace Arm Sheep Inventory
20 Peace Arm 5 Year Burn Plans
21 Muskwa Ranges Ungulate Inventory

PROJECT SUMMARIES

1. FISHER HABITAT USE PROJECT (#99-01)

Project Objective: To obtain an understanding of fisher ecology and population dynamics in the sub-boreal forests that will lead to the design and implementation of future enhancement and protection activities. [PWFWCP, FRBC, BCE, SG, DFI]

1999/00 (Year 5 of 5): Primary project funding was received from FRBC, and a contractor was hired to conduct fieldwork and project reporting. Up to 8 fishers were monitored by air and ground during the year to determine movements and seasonal habitat use. Natal and maternal den sites were investigated in spring, and habitat assessments were conducted throughout the summer. The last live-trapping sessions of the project were conducted in fall 1999 and winter 2000: 3 previously tagged fishers were caught in the fall, and 2 tagged and one new fisher were captured in the winter. Seven fishers were being actively monitored at the end of the year. A report on the 1998/99 activities was prepared by contractor, and continued project funding from FRBC was pursued for the 2000/01 fiscal year.

2. ROCKY MARSH WETLAND ENHANCEMENT (#99-02)

Project Objectives: To conserve and enhance the Rocky Marsh wetland area near Mackenzie for waterfowl, aquatic furbearers, and other wildlife species that rely on wetland habitats, by providing secure water levels and increasing waterfowl breeding and rearing habitat. [PWFWCP, DU, numerous Mackenzie community groups]

1999/00 (Yr 4 of 4): Additional project funding requested from HCTF in 98/99 was denied, thus the project was deferred to 99/00 and was funded entirely by PWFWCP. A meeting was held with DU and Mackenzie community groups to discuss activity scheduling and responsibilities for 99/00. Construction of the earthen dam and parking area was completed, and an observation platform was built by the Mackenzie Boy Scouts. A nature trail was cleared to the platform, and additional trails for clearing in 00/01 were also marked out.

3. MACKENZIE MIGRATORY BIRD MONITORING (Co-op PROJECT) (#99-03)

Project Objectives: To determine the population status and trends of neotropical migratory songbird populations in the northern Rocky Mountain Trench, and to identify those species that may be at risk from habitat loss and degradation. This is a long-term initiative of the Canadian Wildlife Service to monitor trends of songbird populations throughout North America, to which the PWFWCP contributes annual funding support. [CWS, MNO, PWFWCP, SG, DFI]

1998/99 (Yr 5 of ongoing): The mist-nets and banding station at Mugaha Marsh were re-established, and a master bander was hired for the fall migration season. Volunteers from the Mackenzie Nature Observatory provided assistance on a full-time basis. Capture and banding took place between mid-July and mid-September, with 2,536 individuals of 63 species banded. The catch was lower than last year, possibly due in part to the low water levels at the marsh throughout

the banding season this year, and the vegetation succession which caused birds to fly overtop of the nets. Habitat associations for birds banded between 1996 and 1999 were analysed. The PWFWCP provided funding support for this co-operative project, and arranged for electrical power to be supplied to the site.

4. INGENIKA RIVER ELK TRANSPLANT MONITORING (#99-04)

Project Objective: To supplement the small existing herd of Rocky Mountain elk in the Ingenika River drainage through the transplant of 50 elk in February 1996, and establish a viable population of elk in the area. [PWFWCP]

1999/00 (Yr 5 of 5): A total count inventory using collared animals for sightability correction was conducted in Februrary 2000. Thirty-four elk were seen in 6 groups on the survey, 2 of 5 collared animals were sighted without the use of radio-telemetry equipment. A report on the survey and the previous 2 years of radio-telemetry monitoring was drafted.

5. INGENIKA PRESCRIBED BURN (#99-05)

Project Objectives: To enhance forage for ungulates and bears, and to provide foraging and breeding habitat for many wildlife species that require early seral habitats. [PWFWCP, HCTF, BCE, MoF]

1999/00 (ongoing): Pre-burn planning meetings were held with MoF and BCE, and site inspections were conducted. The burn was postponed again for the fourth consecutive year due to a new forest service requirement for a machinery-created firebreak, and late spring conditions that offered only a very narrow burning window. Creation of the fire-break was attempted, however, the machinery broke down and alternative machinery was not available. A proposal for contingency mop-up funding was re-submitted to HCTF for in the 2000/01 fiscal.

6. SNOW DEPTH MONITORING (#99-06)

Project Objectives: To monitor snow depth trends at representative sites within the Williston Reservoir watershed that will provide baseline snow depth data and aid in the identification of important ungulate winter ranges. [PWFWCP]

1999/00 (Year 2 of ongoing): Dataloggers from 6 remote weather stations throughout the watershed were collected and downloaded.. Dataloggers were re-established at the same 6 sites in fall 1999: Squawfish Lake, Manson River, Ingenika River, Ospika River (low elevation), Ospika River (high elevation), and Aylard Creek. Data from the winter of 99/00 will be retrieved and downloaded in the summer of 2000.

7. 20 MILE POINT STONE'S SHEEP (formerly "Rainbow Rocks") (#99-07)

Project Objectives: To define the winter tick infestation in Stone's sheep wintering at low elevation on 20 Mile Point, north side of the Peace Arm. [PWFWCP, BCE Victoria]

1999/00 (Year 2 of 4): A contract to monitor the movements of 3 radio-collared Stone's sheep captured in March 1999 was awarded; aerial telemetry was conducted throughout the year with a focus on range and habitat use during spring and fall. Four of 6 Stone's sheep captured the previous winter, along with 7 new sheep, were captured on low elevation 20 Mile Point in March 2000 and examined for winter tick loads. Eight of the 11 sheep had low to moderate numbers of winter ticks and associated hair loss, 2 had high numbers, and 1 had no ticks or hair loss. Two additional ewes were radio-collared bringing the collared sample up to 5 animals. Six sheep from high elevation alpine ranges were also captured and examined; 5 ewes were radio-collared for subsequent monitoring. None of the alpine wintering sheep had winter ticks or associated hair loss.

8. NABESCHE MTN GOAT AND LICKS (#99-08)

Project Objectives: To improve the distribution of mineral licks on the summer range of mountain goats in the Nabesche River drainage. [PWFWCP]

1999/00 (Year 2 of 4): Artificial mineral licks were established in July 1999. Salt blocks were purchased, and barged to Bear Valley at the mouth of the Nabesche River in early June. Establishment of the artificial mineral licks was postponed due to persistence of snow pack in higher elevations. Sites were selected and salt blocks were deposited at 3 control and 10 treatment sites in early August. Monitoring of the effectiveness of the salt blocks in altering goat distribution in the drainage will be conducted in 2001. A Wildlife Habitat Area proposal was developed for the well-used natural mineral lick at the base of Mt. Brewster. The proposal was the first in the province to be submitted to BCE, and was accepted early in 2000.

9. DUCKS UNLIMITED WETLANDS INITIATIVES (#99-09)

Project Objectives: To provide wildlife and habitat data that will allow for the better management of wetlands and their associated upland habitats in boreal forest landscapes *(Western Boreal Forest Initiative).* [DU, PWFWCP]

1999/00 (Year 1 of 1): Funding for this project was contingent upon BCH Environment and Safety Department's involvement in the project which did not develop this year.

10. OSPIKA GOAT MINERAL LICK USE (#99-10)

Project Objectives: To determine use of low elevation mineral licks by mountain goats including: timing, duration, and extent of use, use by different age/sex classes, and habitat characteristics of mineral licks. To provide input to local land use planning processes and FPC guidelines, and to direct future enhancement and protection activities. [PWFWCP]

1999/00 (Year 1 of 1): Clay banks along the Ospika River and its tributaries were identified on forest cover maps, then visually evaluated from a helicopter. Clay banks exhibiting some sign of ungulate use (tracks, trails) were subjected to thorough ground investigations. Data were collected on ungulate species using the lick, degree of use of the lick as evidenced by tracks, fecal material, and hair, and presence and direction of a primary forested access trail. Sixteen mineral licks used by mountain goats were identified in the Ospika River drainage.

11. PEACE ELK STATUS (#99-11)

Objectives: To determine the population status of elk in the Peace Arm area. [PWFWCP]

1999/00 (Year 1 of 1): A stratified random block count of elk along the Peace Arm was conducted in February 2000. Pre-stratification was completed in the office, and was based on habitat and local knowledge of elk distribution. Four of 4 "high" blocks and 5 of 15 "low" blocks were surveyed: 448 elk were sighted. The majority of elk (405) were found between the west side of Branham Ridge and Gravel Hill Creek on the north side of the Peace Arm. This herd resulted from a transplant of 135 animals into the Dunlevy area in 1985, and has expanded rapidly in both numbers and area colonized.

12. NEONATAL UNGULATE SELECTION (#99-12)

Objectives: To identify neonatal ungulate selection by wolves in the north Peace Arm multi-prey system. [PWFWCP]

1999/00 (Year 1 of 3): A contract to trap and radio-collar wolves was prepared, and logistics for winter trapping were initiated. One wolf was trapped in the Dunlevy area in January. Access to the remainder of the Peace Arm west of Dunlevy was hampered by the lack of roads/trails, and the late freeze-up of the reservoir. Four wolves were captured on the reservoir ice by net-gunning in early March: 2 near Aylard Creek, and 2 near Schooler Creek. All wolves were radio-collared.

13. WATERFOWL MOULTING SURVEY (#99-13)

Objectives: To identify sites along the foreshore of the Williston Reservoir used by moulting and brood-rearing Canada geese in order to direct future enhancement and protection activities. [PWFWCP]

1999/00 (Year 1 of 2): The foreshore of the Finlay and Parsnip Reaches of the Williston Reservoir was surveyed on July 5/6 and again on July 18. The first survey recorded 943 Canada geese (465 of which were adults), 210 mallards, 136, common mergansers, 25 common loons, 11 sandhill cranes, and smaller numbers of other waterfowl species. The second survey focused primarily on geese, counting 996 Canada geese (478 adults); 11 sandhill cranes were also sighted on this survey.

14. DATA ANALYSES/REPORT WRITING (#99-14)

Objectives: To analyse data and complete reports from winter 98/99 projects.

1999/00 (Year 1 of 1): A number of reports from *previous* projects or inventories were drafted and/or completed in 99/00 (reports on *current* projects are discussed under project summaries elsewhere in this document):

- Phase 1 and 2 Omineca Mtns. Caribou Project reports *(completed)*
- 1995 and 1997 Raptor Survey reports *(completed)*
- Peace ungulate reports (Graham Caribou, Dunlevy Elk, Frank Roy Sheep) *(completed)*
- 1998 Amphibian Survey report *(completed)*
- 1994 Butler Burn Status report *(completed)*
- 1999 Winter Moose Inventory *(drafted)*
- 1999 Wolverine Caribou Inventory *(drafted)*
- Ingenika Elk Monitoring (1996-99) and Inventory (2000) report *(drafted)*

15. AMPHIBIAN RECONNAISSANCE SURVEYS (#Supp99-16)

Objectives: To collect reconnaissance-level information on species composition, distribution, and relative abundance of amphibians within the Williston Reservoir watershed. [PWFWCP]

1999/00 *(*Year 2 of 2): Backyard Amphibian and Reptile Survey volunteers (Emily and Nerida Muller, Ron Steffey) monitored spring and summer amphibian activity at Germansen Landing and Moose Valley. Ninety-three (93) surveys were conducted at 84 sites in the SBS, BWBS, ESSF, and SWB zones. Ten BEC subunits were surveyed, including 6 in the Parsnip region, 4 in the Peace region, and 2 in the Finlay region; the SBS wk2 and the ESSF wk2 were surveyed in both the Parsnip and Peace regions. Wood frogs and spotted frogs were detected in all 3 geographic regions, western toads were detected in the Parsnip and Peace regions, long-toed salamanders were detected only in the Parsnip region and striped chorus frogs were detected only in the Peace region. An extension to the long-toed salamander's northern distribution was identified. Data from the 1998 and 1999 PWFWCP amphibian surveys and the 1999 Backyard Surveys, and unpublished data collected from 1995 to 1997 by Slocan Group, Mackenzie Operations, were compiled to provide a summary of amphibian presence and distribution within the Williston and Dinosaur Reservoir watersheds.

CARRY-OVER PROJECTS FROM 98/99

16. OMINECA MOUNTAINS CARIBOU PROJECT BROCHURE (#98-B3)

Objectives: To design and develop a brochure detailing the PWFWCP's six-year study of woodland caribou in the Chase and Wolverine Caribou Herds, west of the Williston Reservoir. [PWFWCP]

1999/00 (Yr 1 of 1): The brochure detailing the Omineca Mountains Caribou Study was drafted. Review and production of the brochure will take place early in the 2000/01 fiscal.

17. WILLISTON WATERSHED FISH AND WILDLIFE SPECIES LIST (#98-B3)

Objectives: To design and develop a pamphlet/booklet listing all the fish and wildlife species found in the Williston Reservoir watershed. [PWFWCP]

1999/00 (Yr 2 of 2): Final reviews of the layout and the material included in the fish and wildlife species list were completed. The front and back covers were given to BC Hydro to design, but were returned due to lack of time to complete. Cover design and printing is therefore scheduled for completion early in 2000/01.

18. WINTER WATERFOWL INVENTORY (#98-11)

Objectives: To determine the distribution, species composition and abundance of winter waterfowl communities in the Parsnip and Peace drainages, and to identify and map critical open-water sites available to wintering waterfowl. [PWFWCP]

1999/00 (Year 1 of 1): Two helicopter surveys were conducted in mid-winter after an extended cold period. Open-water areas along the Crooked, Pack, Parsnip, and Nation Rivers were surveyed in late January, and revealed 135 trumpeter swans, 180 goldeneyes, 40 mallards, 19 common mergansers, 1 bufflehead, and 68 American dippers. The early February survey of the Crooked River, Pack River, and Tacheeda Lake outlet found 116 trumpeter swans, 136 goldeneyes, 35 mallards, 4 common mergansers, 2 buffleheads, and 41 American dippers. The Crooked River had the most suitable open-water areas, and was the most heavily used system by trumpeter swans. A project report will be prepared in 00/01.

19. EAST PEACE ARM SHEEP INVENTORY (#98-14)

Objectives: To determine the numbers, population composition (age/sex ratios), and distribution of Stone's sheep wintering on the north side of the Peace Arm of Williston Reservoir. [PWFWCP]

1999/00 (Year 1 of 1): The area between the Nabesche River and Butler Ridge on the north side of the Peace Arm was surveyed in early March 2000. Ten sheep radio-collared for the 20 Mile Point Stone's Sheep Project (#99-07) were used to correct for sightability bias during the survey. Five collared sheep were wintering on low elevation 20 Mile Point, and 5 on alpine ranges. Fifty-eight sheep were observed during the survey, including all of the collared sheep on 20 Mile Point. None of the 5 alpine wintering sheep were observed during the survey, and were located with the use of telemetry equipment. Lambs comprised 19% of the sheep observed. The poor sightability of collared alpine sheep resulted in a population estimate of 107 $\pm$ 51 sheep; the minimum estimate equals the total number of sheep observed (including collared animals located with telemetry equipment) which was 65.

20. PEACE ARM FIVE YEAR BURN PLAN (#98-16)

Objectives: To develop prescribed burn site plans for the Dawson Creek Forest District portion of the Peace Arm, that will enhance forage for ungulates and bears, and provide foraging and breeding habitat for many wildlife species that require early successional stages. [PWFWCP]

1999/00 (Year 1 of 1): Sites were surveyed from the air in July 1999, and individual prescribed burn site plans were completed for 6 priority sites along the north side of the Peace Arm. The plans are "shelf-ready" for future submission to the Forest Service.

21. WESTERN MUSKWA RANGES UNGULATE INVENTORY (#98-17)

Objectives: To determine presence/absence, population size, distribution, and population composition (age/sex ratios) of ungulates (woodland caribou, mountain goats, Stone's sheep) wintering on high elevation ranges east of the Finlay River, between Pesika Creek and the northern boundary of the Williston Reservoir watershed. [PWFWCP, Slocan]

1999/00 (Year 1 of 1): A total count of alpine ranges between the Pesika and Kwadacha Rivers east of the Finlay River (the "Akie" caribou herd) was completed in March 2000. Only 18 caribou were observed during the survey which had revealed 111 caribou in March 1994. Caribou were likely using forested rather than alpine habitats this winter, as confirmed by the locations of radio-collared animals monitored by Slocan Forest Products. Thirty-four goats were also sighted on the survey; 27 goats were recorded in the same area in 1994. This survey was completed in cooperation with Slocan who surveyed the Wolverine and Chase caribou herds in order to obtain comparable data between the herds in the same year.

WILDLIFE PROGRAM - FINANCIAL SUMMARY

The annual Wildlife Program budget in 1999/00 was $477,935, plus $127,400 in carry-over funds from the previous 1998/99 fiscal. An additional $23,450 was budgeted for Public Consultation activities, resulting in a total fiscal budget of $628,785. Expenditures in the 1999/00 fiscal year amounted to $560,973 of which 77% ($431,507) was used to conduct wildlife research, enhancement, and evaluation projects, while 23% ($129,466) covered administrative, planning and public consultation costs (Figure 2, Table 2). The underexpenditure of $68,938 in the 1999/00 fiscal resulted from cost savings in several projects, and the deferment of other projects to 2000/01.

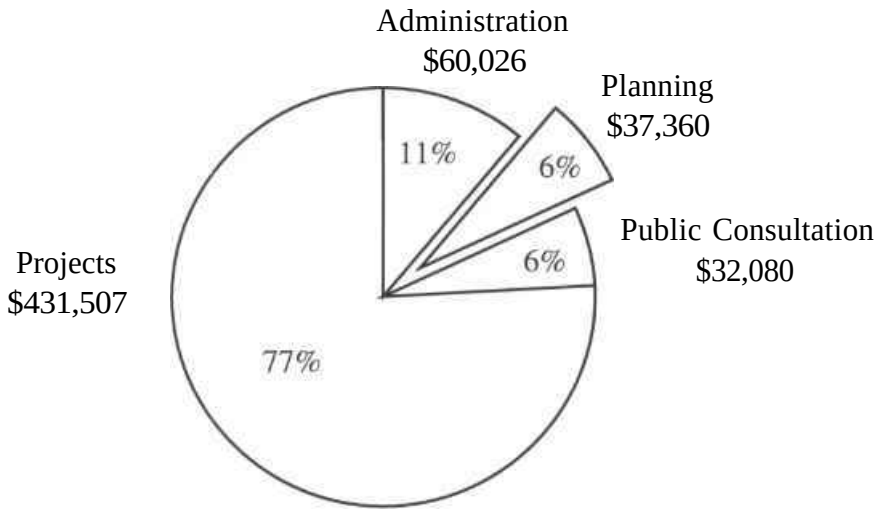


Figure 2. Wildlife Program expenditures in the 1999/00 fiscal

Table 2. Detailed Wildlife Program budget expenditures for the 1999/00 fiscal.

COST CATEGORY	TASK #	SPECIFIC PROJECT	PROJECT COSTS[1]	TOTAL EXPENDED	% Expended	% Budgeted
Administration[2]	99-B1	Base Costs	60,026	$60,026	11%	11%
Planning[3]	99-B2	Base Costs	32,651			
		McLeod Lake Grizzly Project	4,709	$37,360	6%	6%
Public	99-B3	Base Costs[4]	27,683			
Consultation	98-B3	Omineca Caribou Brochure[5]	0			
	98-B3	Fish and Wildlife Species List[5]	4,397	$32,080	6%	6%
Projects	99-01	Fisher Habitat Use Project	72,893			
	99-02	Rocky Marsh Wetland Enhance	72,193			
	99-03	Mackenzie Migratory Bird (Co-op)	14,249			
	99-04	Ingenika Elk Transplant Monitor	19,140			
	99-05	Ingenika Prescribed Burn	12,899			
	99-06	Snow Depth Monitoring	11,288			
	99-07	20 Mile Point Stone's Sheep	47,878			
	99-08	Nabesche Mtn Goat and Licks	14,126			
	99-09	Ducks Unlimited Wetlands	0			
	99-10	Ospika Goat Mineral Lick Use	13,854			
	99-11	Peace Elk Status	19,508			
	99-12	Neonatal Ungulate Status	20,618			
	99-13	Waterfowl Moulting Survey	17,982			
	99-14	Data Analyses/Report Writing	20,173			
	99-16	Amphibian Surveys	27,509			
	98-11	Winter Waterfowl Inventory[5]	9,862			
	98-14	East Peace Arm Sheep Inventory[5]	9,954			
	98-16	Peace Arm 5-Year Burn Plan[5]	5,580			
	98-17	Muskwa Ungulate Inventory[5]	11,615			
	n/a	Other[6]	10,186	$431,507	77%	77%
TOTAL				**$560,973**	**100%**	**100%**

[1] Project Costs: includes operational costs, staff wages and travel, equipment & supplies, and vehicle costs.
[2] Administration: includes staff wages, office rent, BCE administrative support, office supplies, vehicle costs.
[3] Planning: includes staff wages & travel, Technical Committee travel, vehicle costs.
[4] Base Costs - Public Consultation: includes staff wages & travel, vehicle costs, BCH activities (Natureline etc.)
[5] Carry-over: projects carried-over from the previous 98/99 fiscal year.
[6] Other: includes input to protection/management activities, maintenance of collar database, and non-PW projects.