



PEACE/WILLISTON
FISH & WILDLIFE
COMPENSATION
PROGRAM

BChydro 



Peace/Williston Fish and Wildlife Compensation Program Annual Report 2005/06

M.D. Wood and B.G. Blackman
June 2006

The Peace/Williston Fish & Wildlife Compensation Program is a co-operative 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.

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PEACE /WILLISTON FISH AND WILDLIFE COMPENSATION PROGRAM

ANNUAL REPORT 2005/06

STEERING COMMITTEE:

Ted Down (MoE) – Chair
Uli Bergmann (BC Hydro)
Don Cadden (MoE)
Kevin Conlin (BC Hydro)

FISH TECHNICAL COMMITTEE

Cynthia Powell (BC Hydro) - Chair
Alan Laidlaw (BC Hydro)
Gerry Leering (MoE)
Ray Pillipow (MoE)

WILDLIFE TECHNICAL COMMITTEE

Doug Heard (MoE) - Chair
Rod Backmeyer (MoE)
Alan Chan-McLeod (BC Hydro)
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)
Jeremy Ayotte (BC Hydro)

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PROGRAM ADMINISTRATION

Membership on the Steering Committee (SC) remained the same as the previous fiscal, with Ted Down (MoE) serving his third year as SC chair. Membership on the Wildlife Technical Committee (WTC) remained the same as the previous fiscal, with Doug Heard (MoE, Prince George) serving his second consecutive year as Chair. Several membership changes occurred on the Fish Technical Committee (FTC). Gerry Leering replaced Nick Baccante as the representative from MoE, Fort St. John, while Ray Pillipow replaced Ted Zimmerman from MoE, Prince George. Al Laidlaw (BCH, Hudson's Hope) transferred to a different position with BCH; his position at GMS in Hudson's Hope has yet to be replaced. Cindy Powell (BCH, Burnaby) served as Chair for the FTC. BC Hydro's Environmental and Social Issues Manager (ESIM) position at GMS in Hudson's Hope (previously held by Uli Bergmann) was filled in October by Deb Bisson. The ESIM is the administrative supervisor for the PFWWCP staff.

Fish biologists Brian Blackman, Arne Langston, and Randy Zemplak, and wildlife biologists Mari Wood and Fraser Corbould, continued as full-time staff responsible for administering, managing, and conducting program projects and activities. Jeremy Ayotte was hired for a 2-year full-time temporary term to assist the Wildlife Program with the Ospika Goat Project.

Administrative activities included preparation of the 2004/05 Annual Report (Wood and Blackman 2005), tracking program expenditures, managing contracts, preparing quarterly reports on program activities, preparing performance review plans, and updating staff safety training. Program staff participated in monthly safety meetings and developed hazard identification and safe work procedures for various program activities. A number of consulting firms and contractors were employed to undertake work on a variety of projects.

PROGRAM PLANNING

The Fish Program (Technical Committee members and staff biologists) held its annual "technical" session in May and 2 additional budget meetings in October and November to discuss the current year's projects and finances, and prepare the 06/07 budget for submission to the SC. The Wildlife Program (Technical Committee members and staff biologists) held two conference calls (April and September) and 4 in-person meetings (June, October, November, and January) to discuss 05/06 Wildlife Program issues and to develop the 06/07 budget.

All program biologists and some TC members attended the annual fall Steering Committee meeting in Prince George, at which the proposed Strategic Implementation Plan (SIP's) were discussed in detail. Senior biologists and TC chairs from the Fish and Wildlife programs attended the SC's annual January meeting in Vancouver to present their respective 2005/06 budgets. Informal meetings were held with individuals, consultants, and stakeholder representatives to discuss current and potential projects for the future.

Brian Blackman was invited to Montana as part of a three member expert team along with R. Clark (Alaska Department of Fish and Game) and J. O'Neil (Golder and Associates, Alberta) to provide input and advice on Montana's Arctic Grayling Recovery Program. Brian gave 3 presentations and provided a written report and recommendations on the Montana Arctic grayling recovery program. He also provided a written review of the final recovery plan to the U.S. Fish and Wildlife Service. Randy Zemplak gave a presentation on diel movements, habitat use and distribution of Pygmy Whitefish at an international whitefish conference held in Olstzyn, Poland in August 2005. This weeklong conference was attended by representatives from 14 different countries. Fraser Corbould attended the Western Forest Carnivore Committee and SNVB/TWS conferences in March 2006 in Olympia, WA.

PUBLIC CONSULTATION

Program Staff

Wildlife Biologist Mari Wood attended a display booth at the BC Wildlife Federation in Nanaimo in May. Fish Biologist Brian Blackman represented the program at the BCWF's 50th AGM the subsequent March. Program fish staff coordinated the second in a series of annual lectures at UNBC. Dr. Dave Schindler (Killam Memorial Chair, University of Alberta) lectured on "The cumulative effects of climate warming and other human stressors of freshwater quality and quantity in the western prairies of Canada". The lecture was preceded by a brief overview of the PFWWCP, and followed by a "meet and greet session" with PFWWCP biologists at their display booth.

The PFWWCP and specific fish and wildlife projects were discussed through informal meetings and talks with industry representatives, club members, guide outfitters, trappers, contractors, students, tourists, and other government agencies. Detailed project information and technical reports were also discussed with, and disseminated to consultants, biologists, and researchers.

Program biologists also contributed to PFWWCP public consultation activities handled by BC Hydro's Public Affairs department (see below) including drafting and editing project articles for *Natureline* (the PFWWCP's official newsletter), providing input to the development of program awareness and wildlife viewing signs, and providing input to the development of the 2005/06 Public Consultation Plan.

BC Hydro Public Affairs

Additional program reports were posted to the PFWWCP website and general maintenance continued (<http://www.bchydro.com/pwcp/>). Advertisements for the PFWWCP were placed in the 2005/06 Freshwater Fishing Regulations Synopsis, and the 2005/06 Hunting and Trapping Regulations Synopsis. The 14th issue of *Natureline* was drafted published and disseminated. Two news releases were produced on climate change and freshwater fish protection. Sponsorship dollars were provided to the NRES/CSSM Colloquium Series for the presentation by Dr. David Schindler of the University of Alberta. Sponsorship was also provided to the BC Wildlife Federation's 50th AGM, the Wild Sheep Society of BC's AGM, the Guide-Outfitters Association of BC's AGM, and the upcoming Moose Conference scheduled for June 2007 in Prince George. Initial funding was provided for completion of the "Fish Species of BC" book. Additional promotional items were produced (toques etc.) and display materials were updated. Public Consultation expenditures for 05/06 amounted to \$32,144.

FISH PROGRAM

Brian Blackman

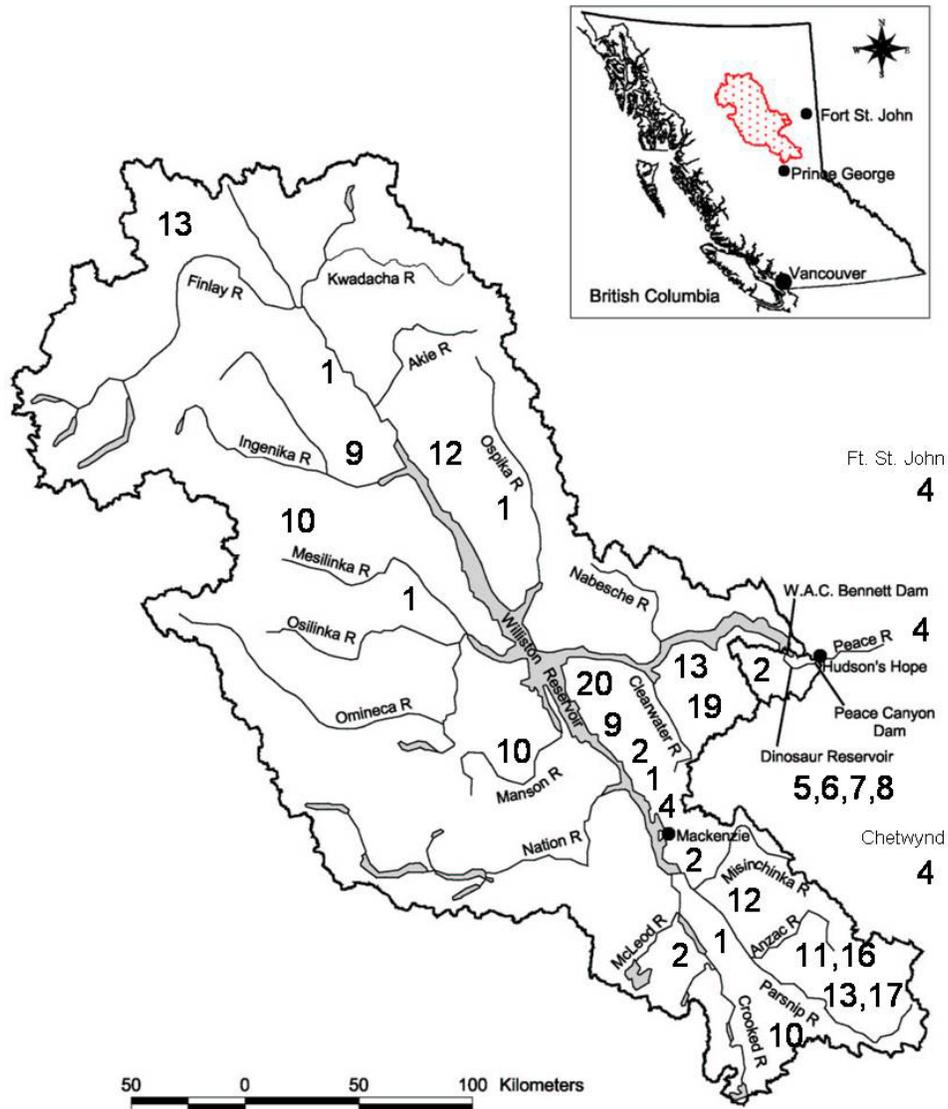
2005/2006 PROJECT LIST

| Map | Task # | Project | Location |
|-----|--------|--|----------------|
| 1 | 05-01 | Project Maintenance (WSC) | Parsnip |
| 2 | 05-02 | Stocking Program | Watershed |
| | 05-03 | Report Writing Previous Years | Office |
| 4 | 05-04 | Classroom Kokanee * (DFO) | Watershed |
| 5 | 05-05 | Dinosaur Reservoir Habitat Improvements | Dinosaur |
| 6 | 05-06 | Dinosaur Reservoir Fish Assessment | Dinosaur |
| 7 | 05-07 | Dinosaur Reservoir Creel Survey | Dinosaur |
| 8 | 05-089 | Dinosaur Reservoir Spawning Habitat Assessment | Dinosaur |
| 9 | 05-09 | Small Lake Stocking Evaluations | Watershed |
| 10 | 05-10 | Evolution and Distribution of Pygmy Whitefish (UBC) | Parsnip/Finlay |
| 11 | 05-11 | Parsnip Arctic grayling Population Index | Parsnip |
| 12 | 05-12 | Bull Trout Redd Count Index | Finlay/Parsnip |
| 13 | 05-13 | Kokanee Spawner Distribution Survey | Watershed |
| 14 | 05-14 | Grayling Management and Recovery Plan (MOE) | Office |
| | 05-15 | UNBC Research Lecture Series(UNBC) | UNBC |
| 16 | 05-16 | Grayling Fry Distribution in the Parsnip Watershed | Parsnip |
| 17 | 05-175 | Brassy Minnow Distribution Study | Parsnip |
| 18 | 05-18 | Freshwater Fishes of BC – Book Publication (UBC, HCTF) | Office (UBC) |
| 19 | 05-19 | Gething Creek Bull Trout Translocation Evaluation | Dinosaur |
| 20 | 05-20 | Foreshore Enhancement Project | Parsnip |

(Co-operative projects with:)

| | |
|------|---|
| WSC | Water survey of Canada |
| DFO | Dept of Fisheries and Oceans, Habitat Conservation Trust Fund, Mackenzie Nature Observatory, 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. |
| UBC | University of British Columbia – Dr. E Taylor- Pygmy Whitefish Genetics & DR. D. McPhail co author book.. |
| MOE | Ministry of Environment - funded by PFWWCP |
| UNBC | University of Northern B.C. graduate student funded by PFWWCP |
| BCH | B.C. Hydro |
| HCTF | Habitat Conservation Trust Fund, BC Hydro, Freshwater Fisheries Society |

2005/2006 Fish Field Project Locations



- | | |
|--|---------------------------------------|
| 1. Project Maintenance | 10. Pygmy Whitefish Genetics |
| 2. Stocking Program | 11. Parsnip. Arctic Grayling Index |
| 4. Classroom Kokanee | 12. Bull Trout Redd Indexing |
| 5. Dinosaur Reservoir Habitat Improvements | 13. Kokanee Spawner Dist. Survey |
| 6. Dinosaur Reservoir Fish Assessment | 16. Grayling Fry Dis. Parsnip Waters. |
| 7. Dinosaur Reservoir Creel Survey | 17. Brassy Minnow Study |
| 8. Dinosaur Spawning Assessment | 19. Getting Cr. Bull Trout Evaluation |
| 9. Small Lake Stocking Evaluations | 20. Foreshore Enhancement Project |

PROJECT SUMMARY

1. PROJECT MAINTENANCE (#05-01)

Objectives: To provide maintenance of the Dina Creek and Dina Lake #3 inlet spawning habitat improvement projects. (Maintenance costs for water temperature sensors maintained by Water Survey of Canada.)

2005/06 (Year 11 of ongoing): Annual maintenance was completed to prepare the spawning channels for rainbow trout. Habitat complexing, spawning gravel addition and removal of beaver dams obstructing passage on Dina #3 inlet and at the culvert on Dina Creek were completed. Project biologists participated in the Dina Creek Field Day, where local students learn about stream ecology. Additional sensors have been installed at the Pack River Water Survey Canada site to understand the influence of a tributary stream located 75m upstream from the station. Quality assurance checks on all 10 stations were undertaken in the fall and all were within accuracy specifications. Raw water temperature data from the 10 stations for 2005 was received from Water Survey of Canada and the data has been corrected and added to the water temperature data base. This project meets the Program Strategic Objectives of monitoring global warming, and public awareness and appreciation of northern ecosystems.

2. STOCKING PROGRAM (#05-02)

Objective: To provide funds to cover the costs, to the Freshwater Fisheries Society for the rearing and release of fish into PFWWCP stocked lakes.

2005/06 (Year 17 of ongoing): This year a total of 7,000 rainbow trout were released into Wright, Butternut, and 43 Mile Pothole lakes and 3000 brook trout were released into Lost Lake. Brood requests for 2006 were submitted. R. Zemplak attended the Provincial Small Lakes Committee meeting and showed the committee the final Fish Resource CD-Rom created by Dr, McPhail and explained its potential use for other Regions.

3. REPORT WRITING PREVIOUS YEARS (#05-03)

Objective: To provide staff time and funds for the completion of reports from previous years and to have them placed on the Program website.

2005/06 (Year 8 of Ongoing): Reports completed and incorporated into the report series this year include:

- No. 300 Population structure and habitat use by Arctic grayling (*Thymallus arcticus*) in tributaries of the Williston Reservoir using natural elemental signatures. Clarke, A.D., K. Telmer, and J. M. Shrimpton March 2005. 61pp
- No. 303 Peace/Williston Fish and Wildlife Compensation Program Annual Report 2004/05. M.D. Wood and B.G. Blackman. June 2005. 23pp.
- No. 304 Fish stocking assessment of Butternut Lake, 2004. R.J. Zemplak and D.M. Cowie. December 2005. 17pp plus appendices.
- No. 305 A limnological assessment of four Williston Reservoir embayments, 2004. S. L. Harris, A. R. Langston, J. G. Stockner and L. Vidmanic. March 2006. 48pp plus appendices.
- No. 306 2005 Dinosaur Reservoir Creel Survey Report. R. Stiemer. April 2006. 14pp plus appendices.

This project meets the Program Strategic Objective of sharing information.

4. CLASSROOM KOKANEE (#05-04)

Objective: To coordinate an educational program to raise kokanee in a classroom environment, as an educational tool, in Mackenzie (3 schools), Hudson's Hope, Chetwynd (two schools) and Ft. St. John schools.

2005/06 (Year 10 of ongoing): This project was conducted in conjunction with the local School District, the Department of Fisheries and Oceans and the Freshwater Fisheries Society of B.C. The Habitat Conservation Trust Fund, Mackenzie Nature Observatory, 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 were all partners in the initiation of the project. In May and June of 2005, kokanee reared in classrooms the previous winter were released into local streams. The release of the fry coincided with a one day field trip, to learn about field ecology, and the event was covered by the local media. Art contest winners were selected and prizes awarded. Clearwater Trout Hatchery (Freshwater Fisheries Society) provided 50 kokanee eggs per school this year. Program staff delivered the eggs to seven schools in Ft. St. John, Hudson's Hope, Chetwynd and Mackenzie and provided a one hour (age appropriate) scientific presentations to 300 students this year. This project meets the Program Strategic Objective of encouraging the public to participate in program activities to increase public awareness of the program and general fisheries issues.

5. DINOSAUR RESERVOIR HABITAT IMPROVEMENTS (#05-05)

Objective: To provide improved habitat in Dinosaur Reservoir through the addition of cover in the form of woody structures.

2005/06 (Year 7 of ongoing): 2005 was the fourth year of habitat improvement through the addition of woody structures along the shoreline. Three structures from previous years required repairs (boom logs broke) and additional wood was added to all existing structures. Additional structures were added to existing sites, which enhanced an additional 500 m of shoreline. And one new site covering about 100m of shoreline was added. BC Hydro donated the old log boom from Dinosaur Reservoir, which they towed to a site and anchored for us. We also conducted a survey of the available littoral habitat and found over 7 km of shoreline that could be considered for enhancement. This project meets the Program Strategic Objective to maintain biodiversity and recreational opportunities and to improve fish populations through the enhancement of existing habitat, particularly where potential losses can be attributed to the construction of the dams.



New woody structures along the shoreline.



Woody debris site- including log boom which was provided by BCH.

6. DINOSAUR RESERVOIR FISH ASSESSMENT (#05-06)

Objective: To assess the status of the fish species in Dinosaur Reservoir and in particular to document and changes that may be the result of habitat enhancement or management actions.

2005/06 (Year 3 of ongoing): There were significant technical problems with the electrofishing program and as a result the data is not comparable to previous surveys. The program will need to be repeated in 2006. However, at some of the sites where woody structures had been added up to five times more fish were captured than were captured prior to the addition of the wood. This project addresses the Program Objectives of evaluating habitat improvement projects and monitoring fish populations.

7. DINOSAUR RESERVOIR CREEL SURVEY (#05-07)

Objective: To determine angler effort, catch success, and gather biological data from the Dinosaur Reservoir Fishery. This data can be compared to previous surveys to document changes and will be used as a benchmark in order to assess the affects of habitat improvement and management actions on the recreational fishery.

2005/06 (Year 1 of 2). As per the Dinosaur Reservoir Action Plan, 2005 was the first of two consecutive years of creel surveys planned in this five year period. The last surveys were conducted in 1999 and 2000. The 2005 survey was particularly important because of the termination of the stocking program in 2004. Anger effort in 2005 was roughly half of that recorded during the previous surveys but angler success may actually have improved. 2005 was a particularly wet summer which may explain the low use. Lake trout numbers have increased from 4% of the catch in 2000 to 29% in 2005, and some anglers reported consistent angling success around the woody debris structures. This project meets the project objectives of addressing potential losses of recreational activities and evaluating the results of enhancement and management activities.

8. DINOSAUR RESERVOIR TRIBUTARY SPAWNING HABITAT ASSESSMENT

Objective: To document availability and use of critical tributary stream spawning and rearing habitat in order to identify possible habitat enhancement opportunities and provide baseline data to evaluate future habitat enhancement or management actions.

2005/06 (Year 1 of 1): The accessible habitats of both Johnson and Gething Creeks were surveyed and we found more habitat was available than documented in previous surveys. However, the habitat quality is low. Johnson Creek has very high silt loads and a slide had temporarily blocked the channel in Gething Creek. Both streams are entrenched No young of the year rainbow or bull trout were captured from either stream. We are uncertain if the lack of young of the year fish was a result of no fish spawning in the stream, or if egg survival rates are extremely poor. This project is looking at critical habitat limitations, which are a direct result of the construction of the dams.

9. SMALL LAKE STOCKING EVALUATIONS (#05-09)

Objective: To evaluate the fish populations in small lakes that PFWFSCP stocks and ensure the goals of the stocking program are met. The 2004 objective was to evaluate the fish populations (native and introduced) of Dina Lakes # 3 & 7 and seek out potential enhancement opportunities.

2005/06 (Year 7 of ongoing): Dina lakes #'s 3 and 7 were evaluated in June and the reports were completed and submitted for review before year end. The survey noted fish access to the inlet stream of Dina #3 was

critical to alleviate spawnbound problems and provide some recruitment. However, spawnbound fish are still present in the system and the report recommends stocking with a triploid stock which should eliminate the spawnbound problem. Results of the Dina #7 survey indicated that the current stocking of 1,500 fish biannually was providing a good fishery and will continue at this rate. This project meets the Program Strategic Objective of evaluating enhancement projects.

10. EVOLUTION AND DISTRIBUTION OF WILLISTON PYGMY WHITEFISH POPULATIONS (#05-10)

Objective: To verify the presence of Pygmy whitefish in systems located along the west side of the watershed; To document the uniqueness of PW populations relative to those across North America and; To learn more about other populations of Pygmy whitefish and their possible migration patterns between systems.

2005/06 (Year 1 of 2): Pygmy Whitefish samples were collected from Upper and Lower Manson, Tutizzi, Aiken, and the Tacheeda lakes this summer. Tissue samples were given to Dr Eric Taylor and Dr. Jon Witt of UBC for analysis to determine the genetic status of the populations. North American pygmy whitefish are clustered into two major groups. Preliminary results indicate that Williston populations belong to a single group at the mitochondrial DNA sequence level. This work has identified 20 haplotypes from a sample of 119 individuals. This project meets the strategic objective of promoting biodiversity and information sharing.

11. PARSNIP RIVER ARCTIC GRAYLING POPULATION INDEX (#05-11)

Objective: To monitor Parsnip River Arctic grayling populations in order to determine population trends and provide a baseline on which to evaluate enhancement or management actions.

2005/06 (Ongoing- alternate years since 1998): There was no significant change in the young of the year or one year old grayling populations in the Parsnip River in comparison to the previous years. We were only able to complete 10 of 18 underwater counts for adult grayling in the Table and Anzac Rivers because a severe storm event resulted in high stream flows and poor underwater visibility. Compared to previous surveys, the counts we were able to complete showed lower numbers in the upper reaches but higher numbers in the lower reaches. We have not seen a noticeable change in these grayling populations over the last 10 years even with the implementation of catch release regulations. However, we are seeing much older individuals in the population now. The report for this project has been completed, and is awaiting review. This project meets the Program Strategic Objective to evaluate the status of fish, particularly those that may have been negatively impacted by the reservoir.

12. BULL TROUT REDD COUNT INDEXING (#05-12)

Objective: To monitor and compare bull trout redd counts at strategic index sites for a five year period to determine population trends with the intent of enabling input into management, protection and enhancement plans for Williston Reservoir bull trout.

2005/06 (Year 3 of 5) Radio telemetry studies were conducted to determine if the Misinchinka River bull trout population uses the reservoir for part of their life history and are therefore appropriate to include in the index program. Twenty nine Misinchinka River bull trout were implanted with radio tags by MoE staff (15 in 2004 and 14 in 2005) and a telemetry base station was set up to monitor movements of the tagged fish out of the Misinchinka River. On September 7th a telemetry flight was conducted to locate the bull trout spawning in the Misinchinka River. Subsequent ground surveys identified 13 redds in an eight km section of the river and an additional 18 km section of the river was surveyed from the air. As a result a potential long

term redd count survey site was selected. A report on this project has been completed and is under review by the Technical Committee. On September 20th the index area of Davis River was surveyed and 43 redds were identified. During the kokanee spawner surveys (#05-13) six bull trout redds were identified in Point Creek. This stream will be examined in 2006 as a potential index stream for the Peace Reach. . This project meets the Program Strategic Objective to evaluate the status of fish and their habitat.

13. KOKANEE SPAWNER DISTRIBUTION SURVEY (#05-13)

Objective: To determine if a viable kokanee populations has been established in Williston Reservoir from the stocking program. Document current spawner distribution and identify high use spawning areas

2005/06 (Year 4 of 5): The kokanee spawner estimate for 2005 was 193,000 fish. This number is comparable to the 234,000 kokanee observed in 2004, 199,000 in 2003, and 81,000 in 2002. The streams with the most kokanee in 2005 were Osilinka (65,000), Germansen (41,000), Ingenika (30,000) and Russel (15,000). The number of kokanee observed in the streams where they were originally stocked was very low. It appears kokanee are continuing to colonize new systems and that the population may continue to expand for a number of years to come. This project meets the Program Strategic Objective to evaluate the status of fish and their habitat and to evaluate enhancement projects.

14. GRAYLING MANAGEMENT AND RECOVERY PLAN (#05-14)

Objective: To provide an acceptable framework for a “recovery” plan for Arctic grayling in the watershed, aimed at protecting and enhancing the remaining stocks or habitats, and conceivably reintroducing stocks back into areas where they have been extirpated..

2005/06 (Year 3 of continuing): A workshop was held in December with the objectives to discuss or define conservation units, identify goals for each unit and outline objectives to meet those goals. Six units were identified and overall Strategic Objectives were defined as: (1.) Evaluate status and threats;(2.) Manage the recreational fishery for suitability and opportunity; (3.) Develop guidelines for resource development; and (4.) Improve knowledge. The specific Objectives for the Williston Watershed populations were to conduct long term population monitoring and develop synoptic surveys to parameterize watersheds based on landscape units. Adrian Clarke (MoE) has been assigned to put together a first draft based on this outline. This project meets the strategic objective to evaluate the status of fish and their habitat.

15. UNBC RESEARCH LECTURE SERIES (#05-15)

Objective: This project will support an annual lecture at UNBC to promote research on Northern Aquatic ecosystems as provided in the PFWWCP Legacy Fund Agreement.

2005/6. (Year 3 of ongoing): Dr. Dave Schindler (Killam Memorial Chair, University of Alberta) presented the lecture “The cumulative effects of climate warming and other human stressors of freshwater quality and quantity in the western prairies of Canada”. The lecture was preceded by a brief overview of the PFWWCP and was followed by a “meet and greet session” with a Program display and biologists available to answer questions. This project meets the Program Strategic Objective of sharing information and creating public and scientific community awareness of PFWWCP.

16. DISTRIBUTION OF GRAYLING FRY IN THE PARSNIP RIVER (#05-16)

Objective: (1) To determine the distribution and relative abundance of Arctic grayling fry in Williston Reservoir tributary streams; (2) To map potential spawning areas for possible future study based on the distribution of 0+ grayling; (3) and To compare habitats used with those described in the Table/Anzac studies. Surveys were conducted in the Omineca in 2001, Osilinka in 2002, Ingenika in 2003, and Nation in 2004 and the Parsnip Tributaries 2005.

2005/06 (Year 1 of 1 Parsnip River): One hundred and one open electrofishing sites, which covered 10.4 km of shoreline were sampled and 78 Arctic grayling fry were captured from 22 of the sites. We did not survey the lower mainstem of the Parsnip River nor the Table and Anzac rivers because previous surveys have documented the distribution and abundance of grayling in these areas. Grayling are found in 8 of the 14 tributary streams surveyed in the Parsnip Watershed. This is much higher use of tributaries than in other watersheds we have surveyed. As well, we captured nearly four times as many rainbow trout and three times as many bull trout as grayling in the Parsnip Watershed. Grayling outnumbered both bull and rainbow trout in the Omineca, Osilinka, and Ingenika watershed surveys. Adult grayling are found in Reynolds, Anzac, Table, Hominka, and Missinka tributaries. Historically (1970's) they were also abundant in Misinchinka and Colbourne creeks. This project meets the strategic objective to evaluate the status of fish and their habitat.

17. BRASSY MINNOW DISTRIBUTION STUDY (#05-17)

Objective: To document the distribution of brassy minnow in the Williston watershed

2005/06 (Year 1 of 3): Brassy minnows are on the provincial blue list with a ranking of S-3 which is defined as rare or uncommon occurrences. This species moved into the Williston Watershed by traveling up the Peace R after the last ice age. Only one occurrence is recorded in the Provincial Fisheries data bases within the watershed, although UBC records suggest four other locations. Brassy minnow are not known to occur north of Davie Lake until the Alberta border. They are typically found in warm shallow wetland habitats. This summer brassy minnows were captured from Thorpe's Creek (Summit Lake Tributary) and Bear Lake but none were captured from Enquist Ck., Caine Ck., Crooked R, or near the causeway at the mouth of the Parsnip River. This project meets the Program Strategic Objective to evaluate the status of fish and their habitat.

18. FRESHWATER FISHES OF B.C. BOOK (#05-18)

Objective: To contribute to the production of a book, which will be the most up to date and detailed reference for the identification of fish species of British Columbia. This book should become the standard for all professional biologists, field workers, and students. Coordinate the contributing partners involvement (funds), develop terms of reference for publications to three academic presses, and award the contract. Work with the authors to complete the book.

(2005/06 year 2 of 3): A RFP was developed with the assistance of BCH legal department and Accenture business services. The RFP was sent out to three Academic University Presses and the University of Alberta Press was selected. A number of modifications have been required in order to meet the printing requirements and keep the project on budget. The publishing process will extend into 2007/08. This project addresses the strategic objectives of sharing information and developing partnerships.

19. GETHING CREEK BULL TROUT TRANSLOCATION EVALUATION (05-19)

Objective: To determine if a stream resident population of bull trout in Gething Creek has resulted from the bull trout translocations project initiated in 1993.

2005/06 (Year 9 of 9 years of activities): Gething, Dowling and Gaylard Creeks were electrofished and no juvenile bull trout were captured. One 27 cm bull trout was captured 150m downstream from Wright Lake (Gething Creek). No stream resident bull trout population has been established in Gething Creel but some bull trout appear to be established in Wright Lake. A project summary report (first draft) which also provides recommendations for future projects is under review. This project addresses the Program Strategic Objective of evaluating enhancements.

20. FORESHORE/EMBAYMENT ENHANCEMENT PILOT PROJECT (# 05-20)

Objective: To provide richer more complex habitat for native fish species by promoting more vigorous plant growth in the foreshore areas of embayments. This pilot project will test the effects of fertilizer on the development of vegetation in the drawdown zone.

2005/06 (1 of 5): Test plots were set up in Tony Creek embayment (10 km north of Mackenzie) to test the effects of fertilizer on plant development in the foreshore area. Two concentrations of standard fertilizer (21-7-7), and one concentration of struvite (provided by K Ashley) were set up in four different (based on elevation) vegetation bands. Vegetation within the plots (including controls) was documented. However, immediately after the plots were established and fertilizer applied the operating regime at the dam was changed and water levels rose and covered all the sites approximately two months earlier than normal. All plots remained under water until late October. This project addresses the Program Mandate to enhance critical habitats to compensate for negative impacts resulting from the creation of the reservoir.

FISH PROGRAM – FINANCIAL SUMMARY

Funds available for the Fish Program in 2005/06 were \$636,928 and expenditures during the fiscal year totalled \$624,275. Projects accounted for \$393,432 or 63% of the expenditures and 44% of staff time. Administration costs were \$136,088, (22%), which was slightly lower than budgeted because contingency costs were included in the original budget. Planning costs were \$91,701 or 13% of expenditures. Public Consultation costs were \$13,054 (2%).

Staff time commitments were 29% (220 days) for Administration, 23% (175 days) for Planning, 4% (32 days) for Public Consultation and 44% (341 days) for Projects. Entrenchment fund status was recalculated and based on a projection of the Fish Program spending \$630,000 in 2005/6 the Fish component should have \$186,981 in additional funds available for 2006/7.

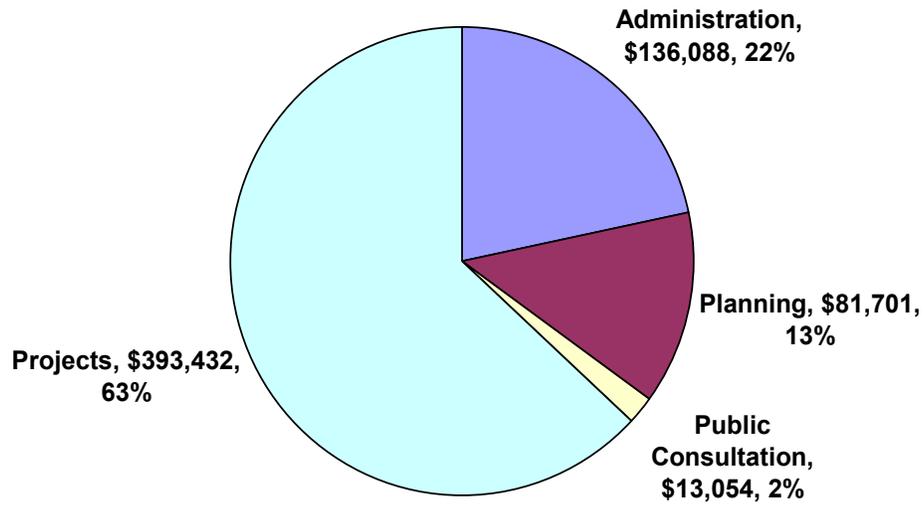


Figure 2. Fish Program expenditures for the 2005/06 fiscal year¹.

¹ Does not include additional monies spent from separate Public Consultation Program budget delivered directly through BC Hydro.

Table 1. Detailed Fish Program budget expenditures for the 2005/2006 fiscal

| Cost Category | Task | Specific Project | Project Cost | Total Expended | % Expended | % Budgeted |
|---------------------------------|--------|--|--------------|----------------|------------|------------|
| Administration | Base 1 | | | \$136,088 | 22% | 30% |
| Planning | Base 2 | | | \$81,701 | 13% | 11% |
| Public Consultation | Base 3 | | | \$13,054 | 2% | 1% |
| Projects | | | | \$393,432 | 63% | 58% |
| | 05-01 | Project Maintenance | \$16,468 | | | |
| | 05-02 | Stocking Program | \$12,727 | | | |
| | 05-03 | Report Writing (Previous Years) | \$20,438 | | | |
| | 05-04 | Classroom Kokanee | \$14,892 | | | |
| | 05-05 | Dinosaur Reservoir Habitat Improvements | \$36,152 | | | |
| | 05-06 | Dinosaur Reservoir Fish Assessment | \$8,410 | | | |
| | 05-07 | Dinosaur Reservoir Creel Survey | \$18,792 | | | |
| | 05-08 | Dinosaur Tributary Spawning Habitat Assessment | \$3,171 | | | |
| | 05-09 | Small Lake Stocking Evaluations | \$10,429 | | | |
| | 05-10 | Evolution and Distribution of Pygmy Whitefish | \$41,192 | | | |
| | 05-11 | Parsnip Artic Grayling Population Index | \$57,863 | | | |
| | 05-12 | Bull Trout Redd Count Indexing | \$32,547 | | | |
| | 05-13 | Kokanee Spawner Distribution Survey | \$43,428 | | | |
| | 05-14 | Grayling Management and Recovery Plan | \$940 | | | |
| | 05-15 | UNBC Research Lecture Series | \$4,411 | | | |
| | 05-16 | Grayling Fry Distribution in the Parsnip Watershed | \$45,388 | | | |
| | 05-17 | Brassy Minnow Distribution Study | \$4,151 | | | |
| | 05-18 | Freshwater Fishes of BC Book | \$4,825 | | | |
| | 05-19 | Gething Creek Bull Trout Translocation Evaluation | \$9,426 | | | |
| | 05-20 | Foreshore Enhancement Project | \$7,783 | | | |
| PROGRAM TOTAL COSTS FOR 2005/06 | | | | \$624,275 | | |

Administration: Includes staff wages and development, office rent, MOE administrative support equipment and supplies and vehicle costs

Planning : staff wages, Technical Committee travel equipment supplies and vehicle costs

Public Consultation : staff wages travel vehicle and equipment costs. BC Hydro activities such as Natureline, web site maintenance etc were, , and come directly from the base fund and are not included here.

Project Costs: operational costs staff wages and travel, equipment supplies and vehicle costs.

WILDLIFE PROGRAM

By: Mari D. Wood

2005/06 PROJECT LIST

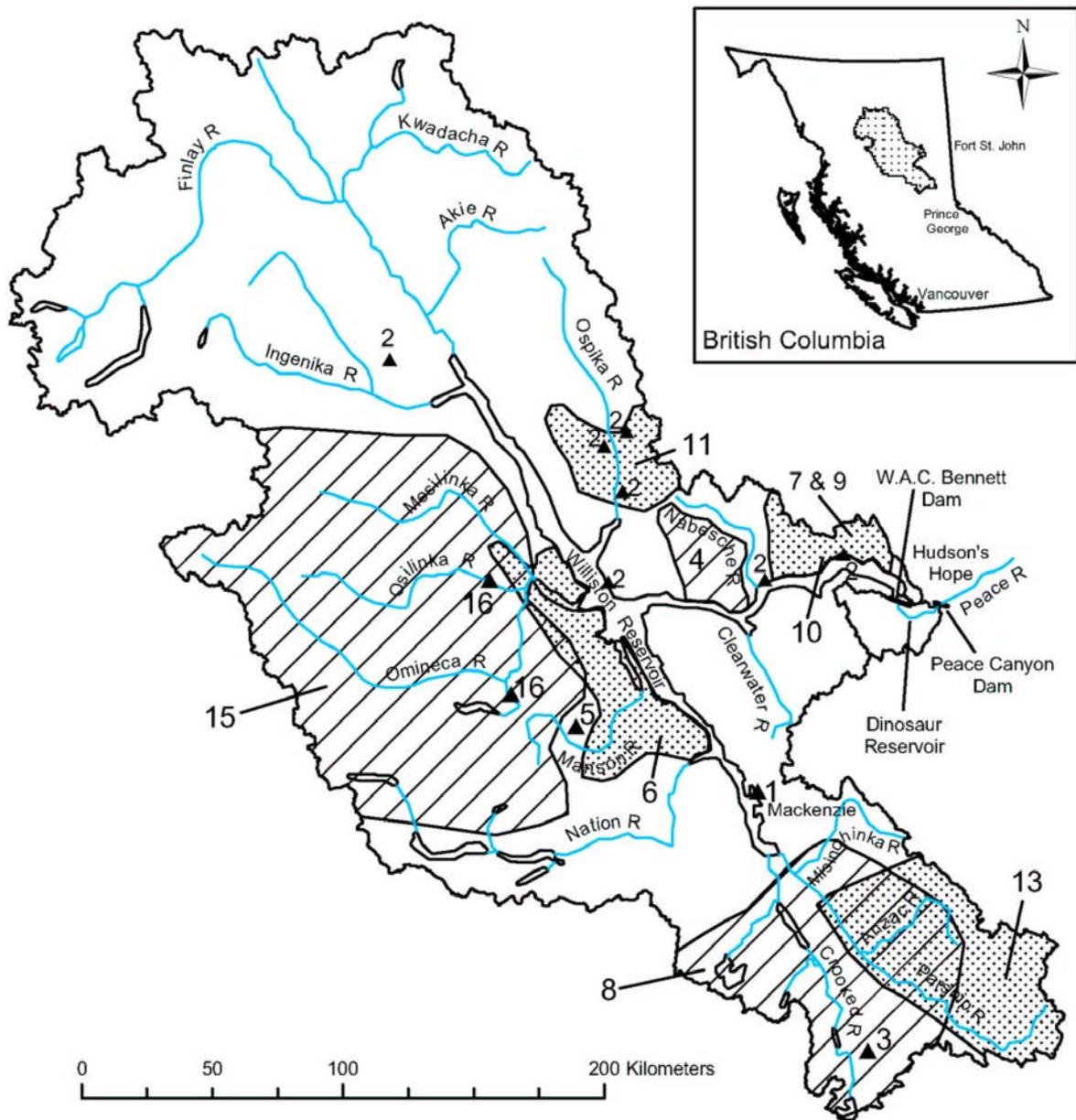
| PROJECT | TASK # | LOCATION |
|--|----------|----------------|
| <i>WILDLIFE BASE PROJECTS</i> | | |
| 1 Mackenzie Migratory Songbird Monitoring (Funded Project ¹) | 05-01 | Parsnip |
| 2 Environmental Monitoring – Climatic | 05-02 | Watershed |
| 3 Cottonwood Tree Enhancement | 05-03 | Parsnip |
| 4 Nabesche Goats & Licks | 05-04 | Peace |
| 5 Donna Creek Forestry/Biodiversity | 05-05 | Parsnip |
| 6 Fisher Habitat Use Project | 05-06 | Parsnip |
| 7 20 Mile/Peace Arm Stone’s Sheep | 05-07/09 | Peace |
| 8 McLeod Lake Grizzly Bear Behaviour | 05-08 | Parsnip |
| 9 North Peace Prescribed Burns | 05-10 | Peace |
| 10 Ospika Goat/Mineral Lick Project | 05-11 | Finlay |
| 11 Project Evaluation – Weather Monitoring | 05-12 | Office |
| 12 Caribou Recovery Planning (Funded Project ¹) | 05-13 | Parsnip/Finlay |
| 13 Data Analyses and Reporting | 05-14 | Office |
| 14 Caribou Recovery – Synthesis of Technical Info (Funded Project ¹) | 05-15 | Omineca |
| 15 Impacts of Kokanee Introduction (Funded Project ¹) | 05-16 | Omineca |
| 16 Project Development (Funded Project ¹) | 05-17 | Watershed |
| 17 Wildlife Extension | n/a | Watershed |

¹“Funded Projects” are projects that are funded by the PFWWCP but administered and conducted by other agencies.

Abbreviations used for Agencies/Clubs:

Agencies and clubs that are partners on PFWWCP projects are listed in brackets at the end of each project’s objective. The following abbreviations are used -

| | |
|--|---|
| ABIT: Abitibi Consolidated (Mackenzie) | MNO: Mackenzie Nature Observatory |
| CWS: Canadian Wildlife Service | MOF: Ministry of Forests |
| CANFOR: Canadian Forest Products | MOE: Ministry of Water, Land & Air Protection |



PROJECT NAME & NUMBER

- | | | | |
|---|-------------------------------------|----|---|
| 1 | Mackenzie Migratory Bird Monitoring | 9 | Peace Sheep Demographics |
| 2 | Weather Station Monitoring | 10 | Peace Prescribed Burns |
| 3 | Cottonwood Tree Enhancement Trial | 11 | Ospika Goat/Mineral Lick Project |
| 4 | Nabesche Goats & Licks | 12 | Project Evaluation – Weather Monitoring |
| 5 | Donna Creek Forestry/Biodiversity | 13 | Caribou Recovery Planning |
| 6 | Fisher Habitat Use | 15 | Caribou Recovery – Synthesis of Info |
| 7 | 20 Mile Point Stone's Sheep | 16 | Impacts of Kokanee Introduction |
| 8 | McLeod Grizzly Bear Behaviour | | |

PROJECT SUMMARIES

1. MACKENZIE MIGRATORY BIRD MONITORING (FUNDED PROJECT) (#05-01) (This project administered and delivered by the Mackenzie Nature Observatory.)

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 PFWWCP contributes annual funding support. [MNO, CWS, PFWWCP, SG, ABIT]

2005/06 (Yr 11 of 11): 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 MNO, other organizations, and the general public provided assistance on a full-time basis. Capture and banding took place between mid-July and mid-September. The PFWWCP once again provided funding support for this co-operative project.

2. ENVIRONMENTAL MONITORING - CLIMATIC (#05-02)

Project Objectives: To obtain baseline snow depth and other microclimate data from various sites throughout the Williston Reservoir watershed that will supplement current projects, and help assess site suitability for past and future enhancement projects. [PFWWCP]

2005/06 (Year 8 of ongoing): Year-round data were collected from the 8 remote stations located throughout the watershed in the spring and fall. Databases were updated accordingly.

3. COTTONWOOD TREE ENHANCEMENT TRIAL (#05-03)

Project Objectives: To determine if an access route (drilled hole), created through the outer sapwood of mature cottonwood trees, will hasten the establishment of heartrot and result in the creation of internal chambers that are useable by secondary cavity-using wildlife. [PFWWCP]

2005/06 (Year 4 of 6): Assessments of the drilled holes were initially scheduled for Yrs 2 and 3 (02/03 and 03/04). The first assessment was conducted as planned in Year 2; the second assessment was deferred to Year 4 (05/06) resulting in a new bi-annual monitoring schedule (Yr 2, Yr 4, Yr 6). Due to other higher program priorities in 05/06, the second assessment was deferred again to 06/07 (Yr 5).

4. NABESCHE GOATS & LICKS (#05-04)

Project Objectives: To improve the distribution of minerals throughout the range of suitable goat terrain in the Nabesche River drainage through the establishment of artificial mineral licks, and as a result, expand the current range and population of goats in the drainage. [PFWWCP]

2005/06 (Year 8 of 11): Treatment sites were replenished with salt blocks in May 2005 as planned.

5. DONNA CREEK FORESTRY/BIODIVERSITY PROJECT (#05-05)

Project Objectives: To develop alternative forest harvesting techniques designed to benefit wildlife that utilise tree cavities (e.g. woodpeckers, red-breasted nuthatch, marten), and to monitor wildlife use of the harvested treatments at successive seral stages (i.e. approx. every 10 years) over the next 60 to 100 years. [PFWWCP, SG]

2005/06 (Year 14 of ongoing): A Request for Proposals for 2 consecutive years of point count bird surveys in 2006 and 2007 was prepared, and a qualified contractor was selected.

6. FISHER HABITAT USE PROJECT (#05-06)

Project Objective: To obtain a better 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. [PFWWCP, FRBC, MOE, CANFOR, ABIT]

2005/06 (Year 10 of 9): Work on the Final 5-year Project Report was continued with completion scheduled for 06/07. A paper on the study area's fisher density estimate is *in press* with the journal *Northwestern Naturalist*.

7. 20 MILE AND PEACE ARM STONE'S SHEEP PROJECTS (#05-07, #05-09)

Project Objectives:

20 Mile Project: To define the winter tick infestation in Stone's sheep wintering at low elevation on 20 Mile Point, north side of the Peace Arm, including determination of the cause of the problem, and the extent to which it affects herd health and productivity. [PFWWCP, MOE Victoria]

Peace Arm Project: To determine differences in lamb survival rates and mortality causes between low and high elevation-wintering subpopulations of Stone's sheep along the Peace Arm, and to address mortality issues and/or develop management prescriptions based on study findings. [PFWWCP]

2005/06 (Year 7 of 7): All radio-collared sheep were monitored by fixed-wing aircraft between April and June (scheduled end date of fieldwork). A final lamb count/population survey was also conducted in June. Summarization and analysis of the 6 years of combined data from both sheep projects was initiated. The Final 6-year report is scheduled for completion in 2006.

8. MCLEOD LAKE GRIZZLY BEAR BEHAVIOUR (#05-08)

Objectives: To classify the behaviour of individual grizzly bears (and by extension, the behaviour by age, sex, and reproductive status), into bears that become a threat to humans after closure of a landfill, and bears that do not. To assist with improving the decisions made by the Conservation Officer Service (COS) of when and which bears to remove from landfill sites, and which bears to ignore and let live. [PFWWCP, MOE].

2005/06 (Year 5 of 5): Completion of the report was deferred indefinitely due to other higher program priorities.

9. NORTH PEACE ARM PRESCRIBED BURNS (#05-10)

Project Objectives: To enhance forage for ungulates (primarily elk) and bears, and to provide foraging and breeding habitat for many wildlife species that require early seral habitats. [PFWWCP, MOE, MOF]

2005/06 (Ongoing): In spring 2003, a fireguard was cut along the top of East Branham cliffs, and brush was piled in preparation for burning. Burning of the piles was attempted in both 2003 and 2004 but deferred due to unsuitable weather conditions. The piles were burned in fall 2005, though weather conditions still prevented all the brush piles from being completely consumed. Broadcast burning of the standing conifer trees will occur in spring 2006. The objective of this conifer conversion burn adjacent to the cliffs is to expand the grassland area for a wintering Stone's sheep population.

10. OSPIKA GOAT/MINERAL LICK STUDY (#05-11)

Project Objectives: To determine the impacts of different forest harvesting options on mountain goat behaviour related to low-elevation mineral licks and trails. [PFWWCP, SG]

2005/06 (Yr 4 of 6): The use of 4 low-elevation mineral licks by radio-collared goats was monitored again between April and November by remote telemetry and camera stations; all sites were visited and data downloaded on an approximately biweekly basis. Four new goats and 2 previously radio-collared goats were fitted with new collars in June 2005; 2 previously collared goats were also re-collared in October. Interpretation and cross-referencing of 2004 and most of 2005 remote telemetry data were completed. A statistical analysis framework for the remote camera data for the "Buffer" treatment (2002 – 2005) was developed, and analyses were initiated.

11. PROJECT EVALUATION (WEATHER MONITORING) (#05-12)

Project Objectives: To review a project or suite of projects (in this case, ungulate translocations) to ensure achievement of the PFWWCP strategic objectives related to evaluation and accountability, and to ensure that the PFWWCP is effectively addressing strategic priorities identified for the Wildlife Sub-program. [PFWWCP]

2005/06 (Yr 2 of 1): A decision was made to defer evaluation of the PFWWCP's weather monitoring program until 05/06.

12. CARIBOU RECOVERY PLANNING (FUNDED PROJECT) (#05-13)

(This project administered and delivered by the Northern Caribou Recovery Implementation Group.)

Project Objectives: To develop a Recovery Plan for northern-ecotype caribou in the North-central BC area of the Southern Mountains National Ecological Area. [MOE, PFWWCP]

2005/06 (Yr 2 of 2): Funding was again provided to support the regional Northern Caribou Recovery Implementation Group (RIG) tasked with developing a Recovery Plan for north-central BC caribou. The Recovery Plan was drafted.

13. DATA ANALYSES/REPORT WRITING (#05-14)

Project Objectives: To analyse data and complete reports from previous fiscal projects. [PFWWCP]

2005/06 (Ongoing): No backlog reports were completed this fiscal. Reports on *current* projects are discussed under applicable project summaries elsewhere in this document.

14. CARIBOU RECOVERY – SYNTHESIS OF TECHNICAL INFO (FUNDED PROJECT) (#05-15) (This project administered by MoE and conducted by Wildlife Infometrics, Mackenzie.)

Project Objectives: To synthesize existing technical information on the Wolverine, Chase, Takla, and Scott Herds to establish a scientific basis for recovery of threatened caribou populations in the North-central BC portion of the Southern Mountains National Ecological Area. [MOE, WI, PFWWCP]

2005/06 (Yr 1 of 2): This project was deferred until 2006/07.

15. IMPACTS OF KOKANEE INTRODUCTION (FUNDED PROJECT) (#05-16)
(This project administered and delivered by MoE.)

Project Objectives: To quantify the nutrients transferred from carcasses of dead kokanee to the riparian environment. [MOE, PFWWCP]

2005/06 (Yr 1 of 1): The timing of spawning and the availability of kokanee fish to bears and other wildlife in Discovery Creek, Germansen River and Osilinka River was documented, in addition to the range of species feeding on spawning kokanee. Stable isotopes of C and N in kokanee muscle tissue and eggs were determined. Age and weight of spawning kokanee by sex was determined. Vegetation and invertebrate samples were collected for later nutrient flow analysis to compare spawning and non-spawning streams. Grizzly and black bear hair was captured for later DNA microsite analysis and inferences about kokanee in their diet from stable isotope analysis. DNA analysis will be completed in 06/07.

16. PROJECT DEVELOPMENT (FUNDED PROJECT) (#05-17)
(This project administered and delivered by MoE.)

Project Objectives: To support activities that could be used towards development of a full project proposal such as reconnaissance surveys, preliminary sample collection, or techniques trials/training.

2005/06 (Yr 1 of 1): A short helicopter survey was undertaken in May to determine if winter tick loads on moose could be observed from the air at that time. The survey was deemed unsuccessful as tick loads could not be assessed.

17. WILDLIFE EXTENSION

Project Objectives: To provide data and expertise on wildlife management issues and planning processes in BC. [PFWWCP]

2005/06 (Ongoing): Input to various planning processes and agencies regarding wildlife management issues and other research projects was provided throughout the year including review and comment on: north Peace Arm seismic proposal, heliportable seismic proposal on south side of Peace Arm, draft Carnivores of BC book, draft NE BC Stone's Sheep Problem Analysis, mapping of sheep ranges in Peace Arm for provincial sheep mapping registry, Ungulate Winter Ranges in the upper Finlay drainage, availability of microclimate data in the Williston watershed, BCH's Footprint Study, Site C and downstream issues, ATV and access concerns in the Dunlevy Creek area, and application of and recommendations for remote trail monitoring systems. Feedback was also provided to the National Commission on Science for Sustainable Forestry on the Donna Creek Forestry/Biodiversity Project and the Ospika Goat Mineral Lick Project. Information sheets on all PFWWCP mountain goat projects were prepared for inclusion into the proceedings of the 1st BC Mountain Goat Workshop held in Prince George, March 2005.

WILDLIFE PROGRAM - FINANCIAL SUMMARY

The annual Wildlife Program budget in 2005/06 was \$535,200 plus an additional \$363,800 in carry-over funds from the 2004/05 fiscal, resulting in a fiscal budget totalling \$899,000. Wildlife program expenditures in the 2005/06 fiscal year amounted to \$601,513, of which 77% (\$464,964) was spent on wildlife research, enhancement, and evaluation projects (Figure 2, Table 2). Under-expenditures on some budgeted projects and the deferral of other projects to 05/06 resulted in a cost savings of \$297,487 which was carried over to the 2005/06 fiscal.

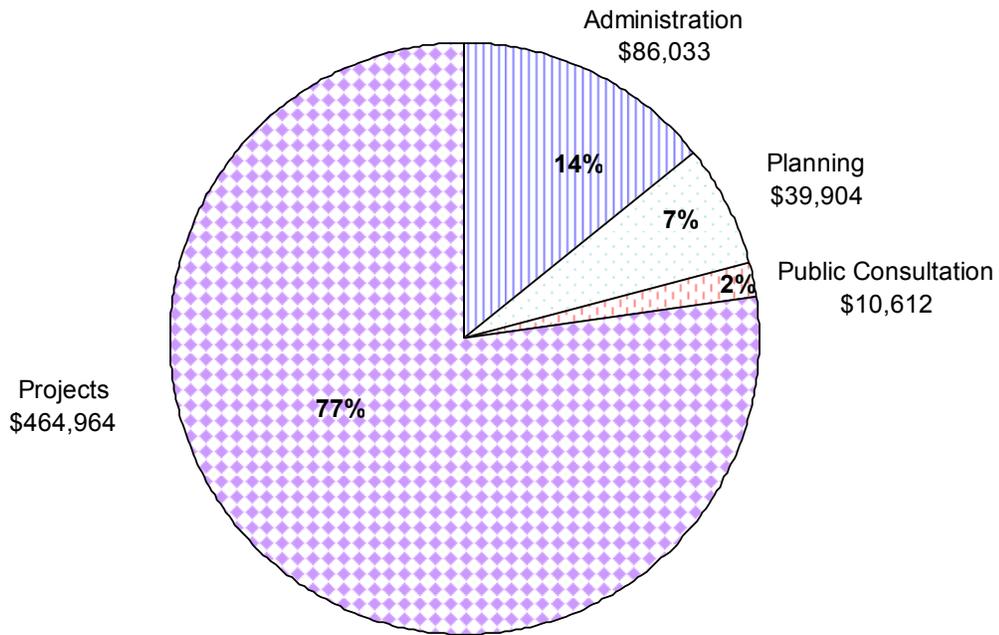


Figure 2. Wildlife Program expenditures in the 2005/06 fiscal year¹.

¹ Does not include additional monies spent from separate Public Consultation Program budget delivered directly through BC Hydro.

Table 2. Detailed Wildlife Program budget expenditures for the 2005/06 fiscal.

| COST CATEGORY | TASK # | SPECIFIC PROJECT | PROJECT COSTS ¹ | SUB-TOTAL | % Expended | % Budgeted |
|-----------------------------|----------|--|----------------------------|------------------|------------------|-------------|
| Administration ² | 05B1 | Base Costs | 86,033 | 86,033 | 14% ^x | 12% |
| Planning ³ | 05-B2 | Base Costs | 39,904 | 39,904 | 7% | 3.5% |
| Public Consult ⁴ | 05-B3 | Base Costs | 10,612 | 10,612 | 2% | 0.5% |
| Projects | 05-01 | Mackenzie Migratory Bird (FP ¹) | 7,000 | 464,964 | 77% | 84% |
| | 05-02 | Weather Monitoring Stations | 16,806 | | | |
| | 05-03 | Cottonwood Tree Enhancement | 759 | | | |
| | 05-04 | Nabesche Goats & Licks | 11,2430 | | | |
| | 05-05 | Donna Creek Forestry/Biodiversity | 3,155 | | | |
| | 05-06 | Fisher Habitat Use | 19,824 | | | |
| | 05-07/09 | 20 Mile/Peace Stone's Sheep | 11,361 | | | |
| | 05-08 | McLeod Grizzly Bear Behaviour | 182 | | | |
| | 05-10 | North Peace Prescribed Burns | 2,723 | | | |
| | 05-11 | Ospika Goat/Mineral Lick Project | 365,776 | | | |
| | 05-12 | Project Evaluation – Weather Stations | 541 | | | |
| | 05-13 | Caribou Recovery Planning (FP ¹) | 4,025 | | | |
| | 05-14 | Data Analyses and Reporting | 0 | | | |
| | 05-15 | Caribou Recovery (Info Synthesis) (FP ¹) | 0 | | | |
| | 05-16 | Impacts of Kokanee Introduction (FP ¹) | 16,750 | | | |
| | 05-17 | Project Development (FP ¹) | 938 | | | |
| | n/a | Wildlife Extension ⁵ | 3,831 | | | |
| TOTAL | | | 601,513 | \$601,513 | 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 Public Consultation: includes operational costs, BCH wages, program staff wages & travel, vehicle costs.

⁵ Wildlife Extension: includes staff wages for input to wildlife species and habitat protection/management activities and assistance on non-PWFWCP projects.

