



FOR REFERENCE ONLY
Version from 2014 now archived.
Updated 2020 Peace
Region Action
Plans available at:
fwcp.ca/region/peace-region/

FISH AND WILDLIFE
COMPENSATION PROGRAM

PEACE BASIN

SPECIES OF INTEREST ACTION PLAN

March 31, 2014

BChydro 
FOR GENERATIONS


BRITISH
COLUMBIA
The Best Place on Earth

Canada



Fisheries and Oceans
Canada

Pêches et Océans
Canada

ARCHIVED
Not for current use

Table of Contents

1. Introduction	1
2. Overview Context.....	5
2.1. Purpose and Scope.....	5
2.2. Focal Areas.....	5
2.3. Impacts and Threats	5
2.4. Limiting Factors.....	6
2.5. Trends and Knowledge Status.....	6
3. Action Plan Objectives, Measures and Targets	8
3.1. Objective Setting	8
3.2. Objectives and Sub-objectives.....	8
4. Action Plan.....	12
4.1. Overview	12
4.1.1. Cross-Plan Actions.....	12
4.2. Actions	13
5. Conclusions.....	21
6. References.....	22

ARCHIVED
Not for current use

Peace Basin Species-of-Interest Action Plan

1. Introduction

The Fish and Wildlife Compensation Program (FWCP) is a partnership between BC Hydro, the Province of British Columbia and Fisheries and Oceans Canada, First Nations and local communities and groups to conserve and enhance fish, wildlife and their supporting habitats affected by the creation of BC Hydro owned and operated generation facilities in the Coastal, Columbia and Peace regions of British Columbia. The FWCP program in the Peace region (see Figure 1) was initiated in 1988 and has been investing in fish and wildlife initiatives ever since.

ARCHIVED
Not for current use

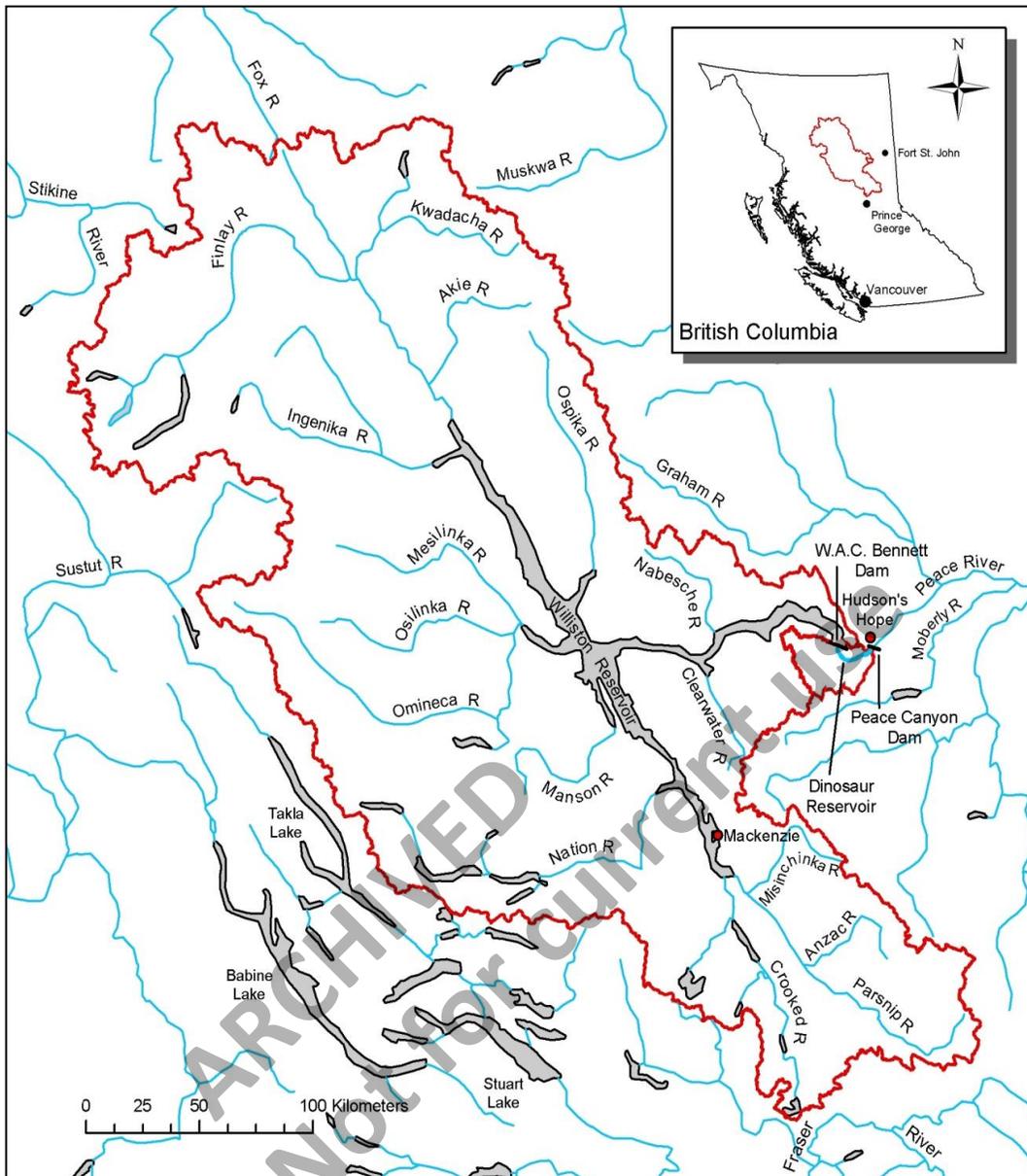


Figure 1. The Upper Peace Basin and the FWCP-Peace Program Area

The FWCP developed a strategic framework that guides overall planning for compensation investments (MacDonald 2009). The framework has guided the development of strategic plans for each basin within the FWCP program area, which in turn inform the development of action plans that focus on specific priorities within each basin (Figure 2).

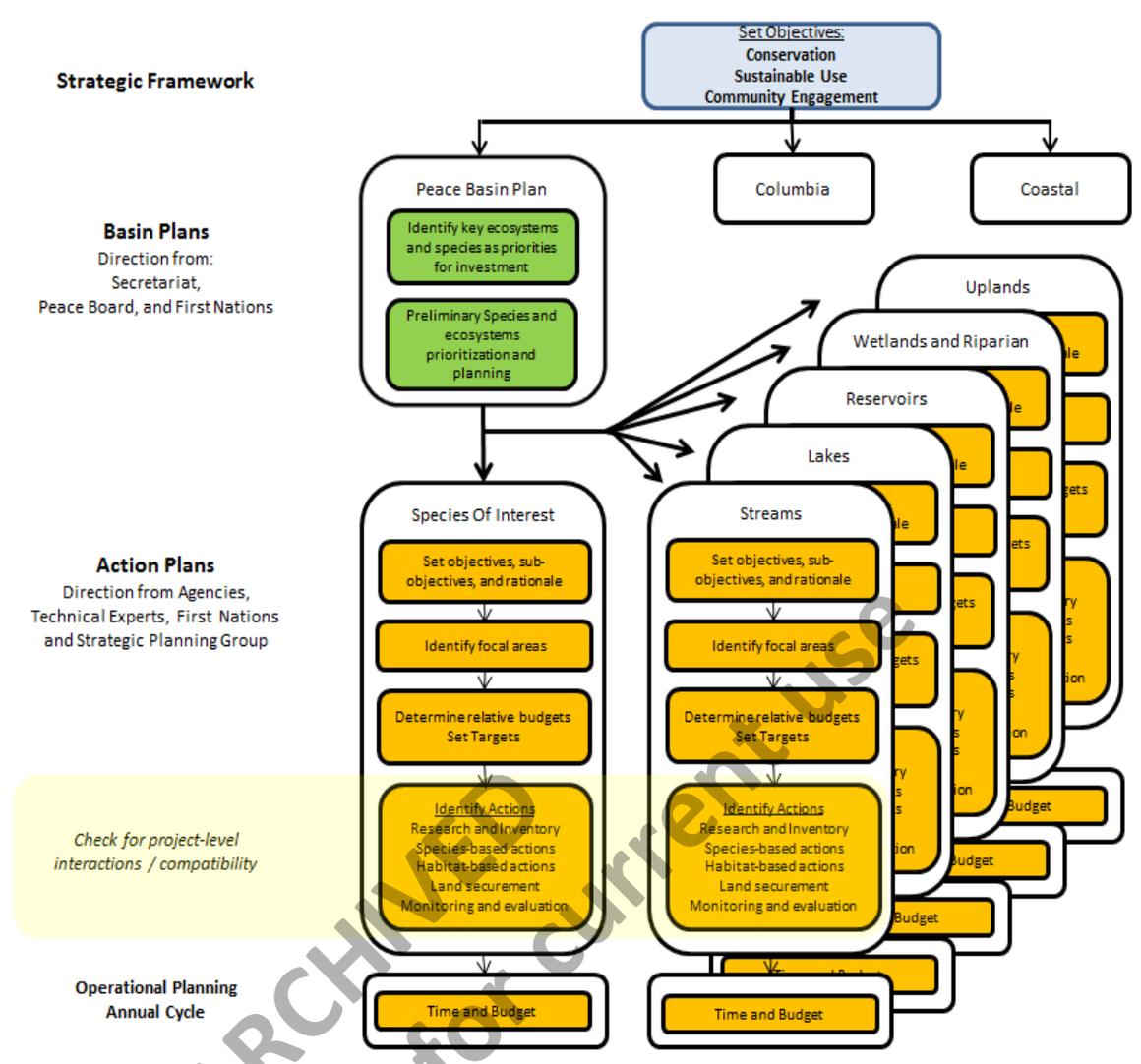


Figure 2. Relationship between the Species of Interest Action Plan and higher level planning and objectives

This Species of Interest Action Plan sets out priorities for the FWCP to guide projects within the Peace region program area (Figure 1). The plan builds on the FWCP’s strategic objectives and the FWCP-Peace Basin Plan (FWCP 2013). Action Plans have also been developed for Riparian and Wetlands, Uplands, Streams, Lakes, and Reservoirs¹. While the habitat and species focus among plans differ, some actions are complementary across the different plans.

“Species of interest” are defined as terrestrial species or guilds that are important to communities or are of particular conservation concern, but are not adequately addressed by ecosystem-based management. These include some species-at-risk or some plants and animals used for food or cultural purposes.

¹ All of the FWCP Plans are available at:

http://www.bchydro.com/about/sustainability/environmental_responsibility/compensation_programs.html

While the FWCP is not responsible for population management, this plan proposes objectives and actions to improve our understanding of limiting factors, and to support other planning and management initiatives aimed at improving conditions and/or increasing populations of species-at-risk, ungulates, furbearers, or other culturally important species, within the constraints of regional ecosystems. Public feedback received during the planning process indicated that actions directed towards improving conditions for Species of Interest were more important to stakeholders than actions addressed in the other terrestrial action plans.

The actions and priorities described in this action plan have been developed with input from the BC Ministry of Environment (MOE), BC Ministry of Forests, Lands and Natural Resource Operations (FLNRO), BC Hydro, First Nations and local stakeholders. The planning priorities within Action Plans may not translate immediately into funded projects because limited program funding requires priority-setting across the program as a whole. The process of selecting which actions will be implemented in any given year will occur during the annual implementation planning cycle.

ARCHIVED
Not for current use

2. Overview Context

2.1. Purpose and Scope

The Species of Interest Action Plan aims to benefit specific terrestrial species that are of particular interest to First Nations and stakeholders by improving habitat conditions and addressing information needs. Because other agencies have direct responsibility for management of these ecosystems and associated species, the emphasis in this plan is on coordination with other organizations and supporting feasible management actions.

2.2. Focal Areas

The Peace Basin is home to hundreds of terrestrial species, including many species-at-risk and species considered regionally or culturally important. Notably, woodland caribou (*Rangifer tarandus caribou*) herds inhabit both the Omineca Mountains on the west side of the basin (Chase and Wolverine herds) and the Muskwa Ranges of the Rocky Mountains on the east side (Finlay, Scott, Moberly, Kennedy Siding and Hart Ranges herds).

Local First Nations are heavily dependent on the local moose (*Alces americanus*) population for sustenance, and have significant cultural interests in other species such as grizzly bears (*Ursus arctos*), furbearers, and many species of plants used for medicinal or food purposes.

The Peace Arm is generally the southernmost limit of Stone's sheep (*Ovis dalli stonei*) in BC, and mountain goats (*Oreamnos americanus*) are common at higher elevations throughout the basin.

2.3. Impacts and Threats

Terrestrial species-of-interest can occupy upland, riparian or wetland ecosystems in the Peace Basin. Most of the basin is comprised of forested ecosystems rising to subalpine and alpine habitats. Riparian and wetland ecosystems are found in river valleys above the full pool elevations of the Williston and Dinosaur reservoirs. Construction of the reservoirs affected terrestrial wildlife species by:

- Altering the distribution and abundance of lowland riparian, wetland and forested habitats;
- Creating barriers to seasonal migrations and movements; and,
- Possibly introducing contaminants into the terrestrial food chain (e.g., mercury methylation).

Although not studied specifically in the Peace Basin, the species most affected by inundation in the Columbia Basin were those dependent on wetland and riparian habitats such as amphibians, water birds, waders, songbirds, aerial insectivorous birds and bats (Utzig and Schmidt 2011). Impacts in the Peace Basin were likely similar.

Since construction of the reservoirs there have been continuing pressures on wildlife and their habitats in the Peace Basin. New transportation routes have contributed to industrial and recreational access that have altered habitats and increased hunting pressure in previously remote areas. Forest harvesting (including accelerated activity due to the recent mountain pine beetle outbreak), mineral exploration and petroleum natural gas exploration and development are the principle industrial activities in the basin.

There are other, poorly understood factors that are creating pressures on some wildlife populations. For example, First Nations are concerned about local declines in the abundance of moose, and some woodland caribou herds are nearing extirpation (Seip and Jones 2012). These

pressures are likely due in part to changes in the broader predator-prey system, including increasing populations of elk (*Cervus canadensis*), white-tailed deer (*Odocoileus virginianus*), wolves (*Canis lupus*; BC Ministry of Forests, Lands and Natural Resource Operations 2012) and, anecdotally, grizzly bears. These broader trends are likely related to long-term changes in weather/climate and land use.

2.4. Limiting Factors

Factors limiting the abundance and distribution of terrestrial species-of-interest are related to three broad categories:

Habitat Extent

The carrying capacity of habitat for any species is ultimately determined by the extent of suitable habitat. As mentioned above, inundation and other stressors have altered the extent of habitats available. Compensating for this loss requires either the creation of new habitat or treatments that increase the carrying capacity of remaining habitat.

Distribution

Connectivity among habitats is important for dispersal of plants and animals and for seasonal movements of some species. Populations in suitable but isolated habitats are often at higher risk of extirpation because immigration and emigration are disrupted, making these populations more susceptible to stochastic events. Management actions that can address habitat fragmentation and barriers include re-establishing connectivity where practical, and/or transplanting individuals into unoccupied or under-occupied habitats.

Productivity

The productivity of an ecosystem is defined as its ability to grow or yield native plants and animals. Even where the extent and distribution of habitats is relatively intact, the productivity of ecosystems can be eroded by a variety of pressures such as invasive species, soil erosion, changes in drainage patterns, as well as forest harvesting, livestock grazing and other extractive activities. Addressing these factors can increase the productivity of habitats in general and can provide more suitable habitat for native species.

In addition, specific habitat features can limit the distribution and abundance of species; for example, nest cavities or mineral licks. Projects designed to increase the availability of limiting habitat features can increase the productivity of habitats for specific species.

2.5. Trends and Knowledge Status

Long-term monitoring data are generally unavailable for terrestrial species; as a result, our knowledge of pre-dam populations is limited to anecdotal accounts or inferences made from general habitat impacts. Trend information for some species (e.g., ungulates) has become more available over the past 25 years. More recently, a focus on threatened and endangered wildlife has improved our knowledge of the distribution and abundance of these species; however, there remain significant gaps in the Peace Basin.

The FWCP has invested in a variety of projects related to various species-of-interest:

- Ungulate inventories (e.g., Hatler 1990, Backmeyer 1991, Wood 1998a, Hengeveld and Corbould 2000)

-
- Cavity nesting bird studies (e.g., Murray 1992, Wood 1994a, Hentze and Cooper 2006)
 - Woodland caribou habitat use (e.g., Wood 1994b, Terry and Wood 1999, Backmeyer 2000a)
 - Woodland caribou predation risk (e.g., McNay 2009, Gillingham et al. 2010)
 - Stone's sheep transplant (Wood 1995)
 - Stone's sheep ecology and health (e.g., Wood et al. 2010)
 - Prescribed burning to improve habitat value for ungulates (e.g., Wood 1996)
 - Furbearer inventory and habitat use (e.g., Corbould and Hengeveld 1998, Weir 1998, Weir and Corbould 2008)
 - Rocky Mountain elk transplant (Wood 1998b)
 - Rocky Mountain elk habitat use (Backmeyer 2000b)
 - Osprey (*Pandion haliaetus*) and Bald Eagle (*Haliaeetus leucocephalus*) productivity and habitat use (Merkens et al. 1999)
 - Mountain goat habitat supply modelling (e.g., Hengeveld et al. 2003)
 - Evaluation of logging impacts on mineral lick use by mountain goats (Corbould et al. 2010)

ARCHIVED
Not for current use

3. Action Plan Objectives, Measures and Targets

Clear and realistic management objectives are necessary to guide information acquisition and prioritize restoration actions. Priority actions and information needs will change as both improvements to the system are realized and information is gained. The current plan reflects the current information and opinion collected through:

- Interviews with BC Hydro staff, First Nations community members, agency biologists and FWCP board members;
- FWCP strategic planning meetings: Strategic Planning Group, Wildlife Technical Working Group, First Nations Working Group;
- Public feedback received during three public sessions held in June 2013 and through an on-line public survey carried out through most of June; and,
- Survey of past FWCP reports and Water Use Plan program reports.

3.1. Objective Setting

The following definitions are used for setting objectives in this report:

Objectives:	Objectives are high-level statements of desired future conditions (outcomes), consistent with FWCP partner mandates and policies.
Sub-objectives:	Sub-objectives are detailed statements of desired future conditions within objectives, from which performance measures can be derived and alternative management actions evaluated. They may be arranged hierarchically within objectives, and usually indicate conditions necessary to attain the objective to which they refer.
Performance Measures:	Measures are specific metrics that indicate the degree to which desired future conditions have been achieved.
Targets:	Targets are the value of the performance measure that indicates the attainment of a desired condition.
Actions:	Actions are management activities, plans or policies for achieving the objectives.

Objectives are the “ends” or the outcomes we ultimately care about. Actions are the “means,” or the things we do to achieve them. This report focuses on describing the actions required to achieve the objectives in relation to highlighted species of interests and their supporting habitats.

Current information was insufficient to establish performance measures and targets as part of the Action Plans; however, implementation of proposed actions could lead to the development of clear performance measures and targets in future iterations of the plans.

3.2. Objectives and Sub-objectives

The FWCP program has the following over-arching strategic objectives:

-
1. **Conservation** - Maintain or improve the status of species or ecosystems of concern
 2. **Conservation** - Maintain or improve integrity and productivity of ecosystems and habitats
 3. **Sustainable Use** - Maintain or improve opportunities for sustainable use, including harvesting and other uses
 4. **Community Engagement** - Build and maintain relationships with stakeholders and aboriginal communities

Interviews with First Nations and stakeholders identified interest in a large number of species and guilds. Most commonly, interest was directed towards understanding the abundance, distribution and trend of various populations in the basin. Community interests did not always align with FWCP's interest in compensating for direct impacts of BC Hydro's generation facilities. As a result, setting objectives for species-of-interest was based on balancing:

- First Nations interests in maintaining or increasing plants and animals for food and cultural purposes;
- Recreational and general biodiversity interests expressed by stakeholders;
- Relevance to the FWCP's strategic objectives;
- Relationship of impact in relation to reservoir construction; and,
- Ability of the FWCP to effect change within its mandate.

Based on these factors the following objectives and sub-objectives were identified for species-of-interest in the Peace Basin:

OBJECTIVE 1: SUPPORT CONSERVATION OF SPECIES-AT-RISK

Sub-objective 1a: Improve understanding of the abundance, distribution, trend and ecological relationships of populations of species at risk.

Rationale – There are 70 species found in the Peace Basin that are classified by the BC Conservation Data Centre as either blue- (i.e., special concern) or red-listed (extirpated, endangered or threatened). The current abundance, distribution and trend of most of these species within the basin are unknown.

Sub-objective 1b: Protect and enhance species at risk (resident red- and blue-listed wildlife and plant species).

Rationale – The vulnerability of species-at-risk, their unusual life history traits, and/or their association with rare habitat features or microclimates often requires special protection and/or management in addition to a more general ecosystem-based approach. For these reasons, terrestrial species-at-risk are addressed in this Action Plan rather than in the Uplands or Riparian and Wetland Action Plans.

OBJECTIVE 2: PROTECT AND ENHANCE POPULATIONS OF IMPORTANT FURBEARERS.

Sub-objective 2a: Improve understanding of the abundance, distribution, trend and ecological relationships of important furbearer populations.

Rationale – Furbearers are an important guild of species for First Nations, who have expressed concern about observed declines in several populations; however, additional inventory is required to determine the status of populations in areas of interest.

Sub-objective 2b: Restore, protect or enhance important populations and habitats for furbearers.

Rationale – Although there are significant knowledge gaps related to some furbearer populations, information is sufficient to implement actions for some species. For example, Fishers (*Martes pennanti*) were a focus of a long-term study in the basin, which generated recommendations for habitat management (Weir and Corbould 2008).

OBJECTIVE 3: PROTECT AND ENHANCE POPULATIONS OF IMPORTANT UNGULATES.

Sub-objective 3a: Improve understanding of the abundance, distribution, trend and ecological relationships of important ungulate populations.

Rationale – Ungulates provide sustenance, cultural and recreational opportunities for First Nations and the broader public. No other guild of species generated such strong interest during the planning process. Because ungulates are subject to regulated and unregulated harvest, their populations can in part vary independently from the condition of their habitats. As a result, they are addressed in this plan rather than in the Uplands Action Plan, although ecosystem restoration or enhancement actions are feasible and in some cases can be effective in improving conditions for ungulates.

Managing ungulate populations is the responsibility of provincial government agencies; however, investing in projects that improves our understanding of status and limiting factors is within the scope of the FWCP.

Sub-objective 3b: Restore or enhance priority ungulate populations and habitats, where appropriate.

Rationale – First Nations feedback identified declining moose populations as a top concern because of their critical importance as a food source. Other ungulate species are hunted by First Nations, resident and non-resident hunters. Improving seasonal ranges, and winter range in particular, can benefit ungulate populations by increasing the abundance and distribution of available winter forage.

Stone's sheep and mountain goats are important symbols of BC's wildlife heritage and are of interest to First Nations and public stakeholders. As residents of mostly higher elevation areas, dam construction had little direct impact on their habitat, but flooding likely reduced movements and genetic exchange among local populations. Notably, the movement of Stone's sheep across the Peace River was likely disrupted by flooding and the species is now very rare south of the Peace Arm. FWCP sponsored a transplant of Stone's sheep into previously occupied range on Mount Frank Roy but the project met with limited success (Wood 1995).

OBJECTIVE 4. PROTECT AND ENHANCE PLANTS AND ANIMALS THAT ARE CULTURALLY IMPORTANT.

Sub-objective 4a. Improve understanding of the abundance, distribution, trend and ecological relationships of culturally important plants and animals.

Rationale – In addition to species-at-risk, furbearers and ungulates, there are species used by First Nations for food, medicine and cultural purposes. Maintaining or improving the distribution and abundance of these species is seen as critically important by First Nations using the Peace Basin. Most of these species can likely be addressed through ecosystem-based management, but because they are subject to harvesting, additional actions could be considered.

Information is required on the particular species-of-interest and associated concerns before additional action can be developed.

ARCHIVED
Not for current use

4. Action Plan

4.1. Overview

The Action Plan outlines individual actions by objective and sub-objective. Actions are assigned priorities from 1-3, based on their estimated feasibility, cost-effectiveness, and alignment with FWCP strategic objectives. The priority ratings are provided to guide investment planning efforts, but it should be noted that low priority actions are not included in the plan. A proposal method is also identified for each action, and includes either 'open' proposal invitations, 'directed' contracts, or 'either'. Proponents are encouraged to develop proposals to address some or all components of 'open' projects; whereas, directed proposals will be developed by FWCP staff and partners and released as RFPs for proponents to bid on.

Actions are stratified by different action categories:

1. **Research and information acquisition** - actions to inventory resources or research critical effect pathways and relationships;
2. **Habitat-based actions** - activities focused on improving general habitat conditions or ecosystem function;
3. **Species-based actions** - activities that improve conditions or address specific life requisites for particular species;
4. **Land securement** - contributing to the establishment of easements or covenants or the purchase of private land for conservation purposes; or,
5. **Monitoring and adaptive management** – activities focused on assessing the outcomes of management actions.

Action categories (along with the action rationale text) provide a general guide for the sequencing of actions. In general, research and information acquisition actions will occur first in sequence. Habitat- and species-based actions typically occur following prioritization and recommendations from research- and/or monitoring-based actions, and monitoring and adaptive management may occur before, during and/or after the implementation of on-the-ground actions. Land securement actions are mostly independent of other action categories, although post-securement monitoring activities may occur within an acquired area. In the tables below, the 'pre-requisite' column highlights those actions that should not be carried out until the identified preceding actions have been completed.

It should be noted that community involvement and education activities are encouraged where there are opportunities in the identified actions outlined in the Action Plans. In addition, there is a separate Stewardship and Education category (described in Section 4.3 of the Peace Basin Plan) that provides another avenue for interested proponents.

4.1.1 Cross-Plan Actions

Several broad 'cross plan' actions are relevant to all terrestrial and aquatic Action Plans, but are not readily nested under any particular sub-objective:

1. **Conduct a high-level review of past FWCP-Peace projects.** Existing data consolidation and summarization is a top priority across all Action Plans. An understanding of the work that has been done in the past, results, recommendations, and information gaps are necessary for developing new actions and avoiding repetition of ineffective past actions. Capturing "institutional memory" from published reports and past program staff will be an

important exercise for ensuring that historical information is retained in a concise and accessible format for informing future projects.

2. **Evaluate success of FWCP projects.** An independent performance audit will serve to evaluate the success of each FWCP-Peace project. This action is designed to assess the effectiveness of the program in meeting its objectives.

There are several 'cross-plan' actions that are relevant to two or more Action Plans and will require the consideration of multiple ecosystems. The details of such actions are presented in other Action Plans, but those that address objectives and sub-objectives defined for species of interest are summarized below:

1. **Partner with other organizations to assess cumulative effects (Uplands Action Plan).** The construction of reservoirs enabled incremental industrial development in the reservoirs by improving access to formerly remote areas. Subsequent development has likely led to unintended cumulative impacts. FWCP cannot influence the tenuring or permitting of crown land, but can partner with other organizations to understand cumulative effects in the Peace Basin in order to more clearly define future priorities that would be eligible for funding through the FWCP. This will be an open proposal invitation.

4.2. Actions

Actions for species-of-interest in the Peace Basin are presented in the following tables. Proposals will be sought through either an open call for proposals or through a directed call for quote to pre-qualified bidders. Separate tables are provided for each objective and sub-objective.

Objective 1: Support conservation of species-at-risk.

Sub-objective 1a: Improve understanding of the abundance, distribution, trend and ecological relationships of populations of species at risk.

ID	Action	Rationale	Priority	Proposal Method	Pre-requisite
Research and information acquisition					
1a-1	Evaluate the abundance, distribution and trend of grizzly bears.	Grizzly bears are a symbolic species of wilderness in BC and are used extensively by First Nations, are hunted by residents and are important to guide-outfitters. First Nations noted changed in grizzly bear behaviour following the flooding of the Williston reservoir as traditional travel routes and home ranges were inundated. Gaining a better	2	Direct	na

ID	Action	Rationale	Priority	Proposal Method	Pre-requisite
		understanding of the current distribution of grizzly bears and their habitat use of the Peace Basin was raised consistently as a priority by First Nations and during stakeholder consultation.			

Objective 1: Support conservation of species-at-risk.

Sub-objective 1b: Protect and enhance species at risk (resident red- and blue-listed wildlife and plant species).

ID	Action	Rationale	Priority	Proposal Method	Pre-requisite
Habitat-base actions					
1b -1	Restore function of ungulate winter range for woodland caribou herds occupying the west side the Peace Basin.	Legacy forest harvesting activity in woodland caribou winter range has created an unproductive patchwork of habitat conditions that is impacting the effectiveness of areas managed for caribou on the west side of the reservoir. There is currently no plan in place but FWCP could support the development of a habitat management plan in cooperation with local forest licensees that would optimize harvest and improve mid- to long-term habitat conditions for caribou.	3	Open	na
Species-based actions					

ID	Action	Rationale	Priority	Proposal Method	Pre-requisite
1b-2	Implement projects identified through approved recovery strategies, action plans and management plans.	There is an existing planning process for species-at-risk that involves provincial and federal agencies, as well as First Nations and stakeholders. Resulting recovery strategies, action plans and management plans generate recommendations to achieve recovery goals. The FWCP can leverage this work to identify suitable actions to undertake in the Peace Basin.	1	Open	na
1b-3	Implement projects identified through approved recovery strategies, action plans and management plans developed for woodland caribou.	A management plan for woodland caribou in the south Peace (BC Ministry of Environment 2013) has been developed and identifies management direction that could be supported by the FWCP.	1	Open	na
1b-4	Implement actions recommended by past projects related to woodland caribou, where appropriate.	The FWCP has conducted several projects focused on woodland caribou and some recommendations may be appropriate for future investment through the program.	1	Open	na
1b-5	Use newly acquired knowledge to identify and address risks, limiting factors and opportunities for protecting species at risk.	Additional actions can be defined as additional information becomes available.	3	Open	na
Monitoring and adaptive management					

ID	Action	Rationale	Priority	Proposal Method	Pre-requisite
1b-6	Support the protection and recovery of woodland caribou.	Community engagement is critical to the success of woodland caribou management efforts. This is recognized through the implementation of management actions for south Peace caribou herds; however, however, further support for caribou protection and recovery could be achieved through education related to herds on the west side of the reservoir has lapsed.	1	Open	na

Objective 2: Protect and enhance populations of important furbearers.

Sub-objective 2a: Improve understanding of the abundance, distribution, trend and ecological relationships of important furbearer populations.

ID	Action	Rationale	Priority	Proposal Method	Pre-requisite
Research and information acquisition					
2a-1	Conduct inventory and research to improve the understanding of important furbearers including abundance, distribution, trend, threats, and ecological relationships.	There are significant gaps in our understanding of the status of important furbearers in the Peace Basin.	3	Open	na

Objective 2: Protect and enhance populations of important furbearers.

Sub-objective 2b: Restore, protect, or enhance important populations and habitats for furbearers.

ID	Action	Rationale	Priority	Proposal Method	Pre-requisite
Research and information acquisition					
2b-1	Use newly acquired knowledge to identify and address risks, limiting factors and opportunities for protecting and enhancing important furbearer populations.	Additional actions can be defined as additional information becomes available.	3	Open	na
Species-based actions					
2b-2	Facilitate adoption and implementation of Fisher Habitat Extension Program.	Significant work related to Fisher has been completed in the Peace Basin and there are feasible actions identified for implementation.	1	Open	na
2b-3	Implement actions recommended by past projects, where appropriate.	The FWCP has conducted several projects focused on furbearers.	1	Open	na

Objective 3: Protect and enhance populations of important ungulates.

Sub-objective 3a: Improve understanding of the abundance, distribution, trend and ecological relationships of important ungulate populations.

ID	Action	Rationale	Priority	Proposal Method	Pre-requisite
Research and information acquisition					
3a-1	Identify limiting factors affecting moose populations, including predation.	First Nations have expressed concerns about declining moose populations. Understanding the factors contributing to the current population status	1	Direct	na

ID	Action	Rationale	Priority	Proposal Method	Pre-requisite
		of moose in the Peace Basin requires a research project to monitor moose and analyze regional predator-prey relationships.			
3a-2	Identify limiting factors affecting other important ungulate populations, including predation.	Like moose, there are concerns about some other ungulate populations and research is required to understand limiting factors.	3	Open	na
3a-3	Conduct research and inventory to improve the understanding of important ungulates including abundance, distribution, trend, threats and ecological relationships.	There are significant gaps in our understanding of the status of important ungulate populations in the Peace Basin.	3	Open	na

Objective 3: Protect and enhance populations of important ungulates.

Sub-objective 3b: Restore or enhance priority ungulate populations and habitats, where appropriate.

ID	Action	Rationale	Priority	Proposal Method	Pre-requisite
Habitat-base actions					
3b-1	Conduct habitat enhancement to benefit moose, elk and deer populations, where appropriate.	The FWCP intends to support the enhancement, restoration and creation of habitat for identified species. The FWCP has invested in prescribed burning projects in the past.	1	Open	na
3b-2	Conduct habitat enhancement to benefit sheep and goat	The FWCP intends to support the enhancement, restoration and creation of	2	Open	na

ID	Action	Rationale	Priority	Proposal Method	Pre-requisite
	populations, where appropriate.	habitat for identified species. Sheep and goats make extensive use of open habitats with abundant grasses and forbes (Shackleton 1999).			
Species-based actions					
3b-3	Implement species-based actions for important ungulates, where appropriate.	The FWCP-Peace has prepared more than 350 project study reports, some of which provide recommendations for future priority work (e.g., Backmeyer 2000b) that may still be relevant to the program's new strategic priorities. Where possible, future program work should build on existing studies and recommendations.	1	Open	na
Monitoring and adaptive management					
3b-4	Monitor habitat and population response to habitat enhancement activities for important ungulate populations.	The outcomes of habitat enhancement activities should be monitored to determine vegetation and species response. This can help to measure returns on investment and to foster continuous improvement.	1	Open	3b-1, 3b-2

Objective 4: Protect and enhance plants and animals that are culturally important.

Sub-objective 4a: Improve understanding of the abundance, distribution, trend and ecological relationships of culturally important plants and animals.

ID	Action	Rationale	Priority	Proposal Method	Pre-requisite
Research and information acquisition					
4a-1	Conduct a Traditional Ecological Knowledge Study.	First Nations make use of a variety of plant and animal species that are neither species-at-risk nor ungulates or furbearers. Understanding whether current flora and fauna management is supporting the food and medicinal requirements of First Nations requires a better understanding of traditional use.	1	Open	na
4a-2	Conduct research and inventory to improve the understanding of culturally important plants and animals, including abundance, distribution, trend, threats and ecological relationships.	There are significant gaps in our understanding of the status of culturally important plants and animals in the Peace Basin.	3	Open	4a-1
4a-3	Assess contamination levels in medicinal and food plants.	The issue of mercury methylation in aquatic habitat is well understood; however, the impact of this and other contaminants on terrestrial species is unknown. The likelihood that this is a serious health concern is relatively low, but the issue could be assessed once mercury contamination in aquatic species and associated human health risks are reassessed.	3	Open	na

5. Conclusions

This Action Plan for species-of-interest in the Peace Basin identifies objectives, sub-objectives and actions that address the goal of compensating for reservoir construction impacts in the context of FWCP's strategic objectives and the interests of First Nations and stakeholder communities. Objectives balance several factors, including the scope of the program and its ability to effect change with respect to species populations. The Action Plan leverages existing planning processes to better ensure efficient and effective delivery of actions.

FWCP has invested heavily in specific species and guilds and consultation with First Nations and the public generally supported the intent of these past investments. This plan attempts to focus efforts on a few, key areas and consequently generate the following outcomes:

1. Improve our understanding of the current abundance, distribution and trend of species-at-risk, furbearers, ungulates, and other species of cultural importance;
2. Improve habitat conditions for priority species of risk and ungulate populations, where appropriate; and,
3. Improve coordination between FWCP objectives and other existing planning and management activities in the Peace Basin.

ARCHIVED
Not for current use

6. References

- Backmeyer, R. J. 1991. Wildlife distribution and habitat use south of the Peace reach of Williston reservoir, February 1991. PFWWCP Report No. 7.
- Backmeyer, R. J. 2000a. Seasonal habitat use and movements of woodland caribou in the Graham River drainage, 1998-1994. PFWWCP Report No. 225.
- Backmeyer, R. J. 2000b. Habitat use and movements of Rocky Mountain elk on the Peace Arm of Williston reservoir, 1991-1994. PFWWCP Report No. 224.
- BC Ministry of Environment. 2013. Implementation plan for the ongoing management of south Peace northern caribou (*Rangifer tarandus caribou* pop. 15) in British Columbia. Victoria, BC.
- BC Ministry of Forests, Lands and Natural Resource Operations. 2012. Draft management plan for the Grey Wolf (*Canis lupus*) in British Columbia. Victoria, BC.
- Corbould, F. B., and P. E. Hengeveld. 1998. Donna Creek winter furbearer surveys. PFWWCP Report No. 179.
- Corbould, F. B., J. B. Ayotte, M. D. Wood, and G. W. Blackburn. Experimental evaluation of logging impacts on mineral-lick use by mountain goats, north-central British Columbia. PFWWCP Report No. 343.
- Gillingham, M. P., R. W. Steenweg, and D. C. Heard. 2010. Parsnip caribou recovery trial – report on activities during 2009-2010. PFWWCP Report no. 339.
- Hatler, D. F. 1990. Wildlife distribution and habitat use in the northern Williston reservoir area, British Columbia, winter 1990. PFWWCP Report No. 3.
- Hengeveld, P. E., and F. B. Corbould. 2000. Winter moose surveys of the Omineca, Nation, and Ospika River drainages, 1999. PFWWCP Report No. 232.
- Hengeveld, P. E., M. D. Wood, R. Ellis, and R. Lennox. 2003. Mountain goat habitat supply modeling in the Mackenzie Timber Supply Area, north-central British Columbia. Version 1.0 – December 2003. PFWWCP Report No. 271.
- Hentze, N. T., and J. M. Cooper. 2006. Donna Creek forestry/biodiversity project (phase II): breeding-bird and cavity-nest monitoring 2006 interim report. PFWWCP Report No. 309.
- MacDonald, A.D. 2009. Fish & wildlife compensation program: executive summary.
- McNay, R. S. 2009. Spatial and temporal patterns of predation risk on woodland caribou in the Wolverine and Chase herds, north-central British Columbia 1991-2006. PFWWCP Report No. 323.
- Merkens, M., B. Booth, and M. D. Wood. 1999. Osprey and Bald Eagle productivity and habitat use in the Williston reservoir watershed, north-central BC, 1997. PFWWCP Report No. 202.
- Murray, L. J. 1992. Cavity nester habitat selection project, phase 1 report: snag deterioration. PFWWCP Report No. 13.
- Seip, D., and E. Jones. 2012. Population status of caribou herds in the Central Mountains Designable Unit within British Columbia. BC Ministry of Environment, Prince George.
- Shackleton, D. M. 1999. Hoofed mammals of British Columbia. UBC Press, Vancouver, BC and the Royal British Columbia Museum, Victoria.
- Terry, E. L., and M. D. Wood. 1999. Seasonal movements and habitat selection by woodland caribou in the Wolverine herd, north-central British Columbia phase 2: 194-1997. PFWWCP Report No. 204.

Utzig, G. and D. Schmidt. 2011. BC Hydro dam footprint impact summary. Draft. Prepared for: Fish and Wildlife Compensation Program: Columbia Basin, Nelson, BC.

Weir, R. D. 1998. Inventory of fishers in the sub-boreal forests of north-central British Columbia year II (1997/98): capture and radiotelemetry monitoring. PFWWCP Report No. 186.

Weir, R. D., and F. B. Corbould. 2008. Ecology of fishers in the sub-boreal forests of north-central British Columbia final report. PFWWCP Report No. 315.

Wood, M. D. 1994a. Donna Creek biodiversity project: progress report, 1993/94 and 1994/5. PFWWCP Report No. 37.

Wood, M. D. 1994b. Seasonal habitat use and movements of woodland caribou in the Omineca mountains, north central British Columbia, 1991-1993. PFWWCP Report No. 39.

Wood, M. D. 1995. Mount Frank Roy Stone's sheep transplant, March 1993. PFWWCP Report No. 47.

Wood, M. D. 1996. Branham Slide 1993 prescribed burn. PFWWCP Report No. 50.

Wood, M. D. 1998a. Inventory of woodland caribou on the Wolverine mountain range, March 1996. PFWWCP Report No. 128.

Wood, M. D. 1998b. Translocation of Rocky Mountain elk to the Ingenika River, north-central British Columbia, 1996. PFWWCP Report No. 185.

Wood, M. D., B. A. Culling, D. E. Culling, and H. M. Schwantje. 2010. Ecology and health of Stone's sheep (*Ovis dalli stonei*) in the Dunlevy/Schooler area, north-eastern British Columbia. FWCP-P Report No. 342.

ARCHIVED
Not for current use