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FISH AND WILDLIFE
COMPENSATION PROGRAM

ASH RIVER WATERSHED *WATERSHED PLAN* FINAL DRAFT

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Ash River Watershed Plan

1 INTRODUCTION

This Ash River Watershed Plan sets forth the strategic direction for the Fish and Wildlife Compensation Program: Coastal Region.

It begins by briefly outlining the vision, principles, policy context and strategic objectives that form the foundation of the FWCP. A description of the Ash River setting includes an overview of the hydro-electric facilities and footprint impacts created by those facilities.

The priority setting process is described, followed by a short direction-setting synopsis of a set of priority Action Plans. Taken together, this Watershed Plan and the accompanying Action Plans present the FWCP: Coastal priorities for investments in compensation activities within the Ash River Watershed.

1.1 FISH AND WILDLIFE COMPENSATION PROGRAM

The Fish and Wildlife Compensation Program (FWCP): Coastal Region evolved from its origin as the Bridge-Coastal Restoration Program (BCRP), a program initiated voluntarily by BC Hydro in 1999 to restore fish and wildlife resources that were adversely affected by the original footprint of the development of hydroelectric facilities in the Bridge-Coastal generation area. Footprint impacts include historical effects on fish and wildlife that have occurred as a result of reservoir creation, watercourse diversions and the construction of dam structures.

In 2009, the program developed a strategic framework that guides overall planning for compensation investments (MacDonald, 2009). The framework has guided the development of strategic plans for each watershed within the FWCP program area, which are in turn informing action plans that focus on specific priorities within each watershed (Figure 1).

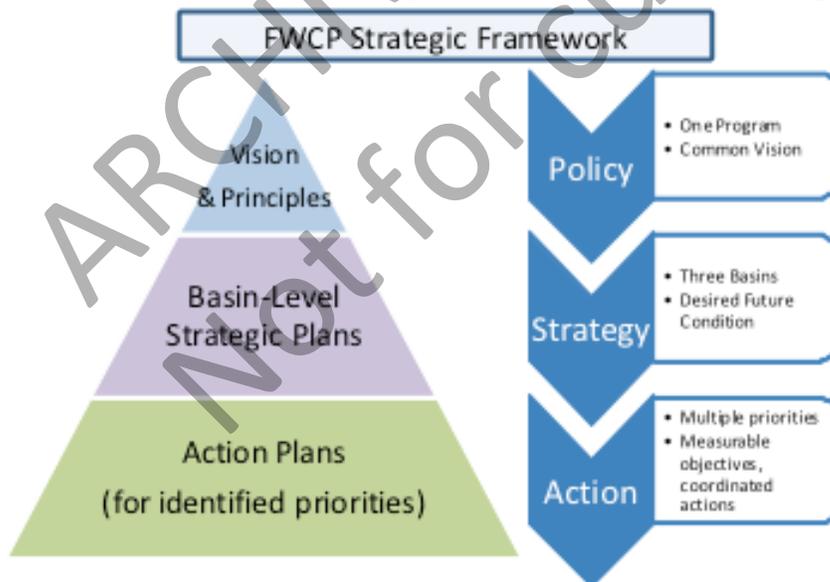


Figure 1: Relationship between the FWCP Strategic Framework, basin strategic plans and action plans.

Delivery of the program as a whole is guided by a vision, set of principles and policy priorities as developed by the program's partners.

VISION

Thriving fish and wildlife populations in watersheds that are functioning and sustainable.

An effective program will support the maintenance of healthy fish and wildlife populations in basins significantly altered by hydroelectric development. Actions taken should satisfy both the conservation and sustainable use objectives and, where possible, restore ecosystem function, making species more resistant to emerging pressures such as climate change.

PRINCIPLES

Approach - The program has a forward-looking, ecosystem-based approach that defines the desired outcomes and takes actions to restore, enhance and conserve priority species and their habitats.

Decision Making - The program efficiently uses its resources and works with its partners to make informed and consensus-built decisions that enable the delivery of effective, meaningful and measurable projects that are supported by the impacted communities.

Geographic Scope - Within the watersheds, basins and ranges of the populations of species affected by generation facilities owned and operated by BC Hydro.

Objectives - The program defines and delivers on compensation objectives that reflect the partnership's collective goals, and that align with local provincial and federal fish and wildlife conservation and management objectives in the areas where we work.

Delivery - The program strives to be a high performing organization with skilled and motivated staff and partners delivering efficient, effective and accountable projects.

PARTNERS

The program is a partnership between BC Hydro, the BC Ministry of Environment, Fisheries and Oceans Canada, First Nations and public stakeholders. Our goal is to have engagement and participation of all the partners in priority setting, approval, review and delivery of the program.

POLICY CONTEXT

The FWCP addresses the policy requirements and social commitments to compensate for impacts to fish and wildlife associated with the development of BCH's generating facilities. The core responsibilities of the agencies are:

Ministry of Environment

The Ministry of Environment manages and delivers a wide range of programs and services that support the Province's environmental and economic goals¹. The Ministry encourages environmental stewardship, develops innovative partnerships, engages First Nations, stakeholders and the public and actively promotes the sustainable use of British Columbia's environmental resources. Within this broader context, the Ministry has a number of responsibilities that are particularly relevant to the development and implementation of actions under the FWCP including:

¹ <http://www.bcbudget.gov.bc.ca/2010/sp/pdf/ministry/env.pdf> (MOE Service Plan)

- Management and conservation of the province's biodiversity;
- Protection of fish, wildlife, species-at-risk and their habitats;
- Protection and restoration of BC's watersheds; and,
- Provision and management of fish and wildlife-based recreation.

A number of policies and plans guide the Ministry in delivering on these goals and objectives. The **Conservation Framework**² is British Columbia's approach for maintaining the rich biodiversity of the province, providing a set of science-based tools and prioritized actions for conserving species and ecosystems in B.C. **Program Plans for Freshwater Fisheries, Wildlife and Ecosystems**³ articulate a clear set of strategies supported by actions to achieve both conservation-based outcomes and the provision of recreational opportunity. **Recovery Strategies and Management Plans** have been developed to guide the maintenance, recovery and/or use of specific species and ecosystems. These plans may include specific performance measures and targets.

Fisheries and Oceans Canada

Under the **Fisheries Act**, DFO is the primary agency responsible for conserving and managing Canada's fisheries, including pacific salmon. It does so through management and monitoring of fisheries, protection of fish habitat, and pollution prevention. The **Policy for the Management of Fish Habitat** (1986) has an overall objective of 'net gain' of fish habitat and helps guide the implementation of fish habitat protection through collaboration with relevant provincial agencies. The **Species at Risk Act** mandates protection of geographically and genetically distinct populations. The principle goal of the **Wild Salmon Policy**⁴ is "to restore and maintain healthy and diverse salmon populations and their habitats for the benefit and enjoyment of the people of Canada in perpetuity". This achieved through safeguarding genetic diversity, maintaining ecosystem integrity and managing for sustainable fisheries.

BC Hydro

As a Crown Corporation, BC Hydro is committed to producing, acquiring and delivering electricity in an environmentally, socially and financially responsible manner,⁵ through managing impacts from its operations, and weighing environmental values with social and economic interests. Where negative impacts cannot be avoided, it will work to mitigate or offset them, enhance affected habitat and sustain resources over the long term. As part of its water licenses to operate its facilities, BC Hydro is required to undertake compensation programs in different regions of the province. Through the compensation program, it is committed to developing positive projects, such as investments to improve fish stocks, and building relationships to encourage stakeholder and aboriginal community engagement, particularly where their input can contribute to better decisions.

PROGRAM DELIVERY

The overall vision and common principles drive the FWCP program and projects, and provide a foundation for determining strategic priorities at the watershed level (Watershed Plans) which are developed into Action Plans. The bulk of projects undertaken by the FWCP will be delivered under Action Plans that lay out a suite of key actions to achieve specific goals associated with species and ecosystems. Actions could include research, implementation activities, monitoring and evaluation activities, and communication mechanisms. Applicants are encouraged to use the Watershed Plans and Action Plans to develop projects that meet the overall objectives of the FWCP program. Technical Committees, staff and the management board will reference the plans to ensure that the highest priority projects are invested in.

² <http://www.env.gov.bc.ca/conservationframework/>

³ <http://www.env.gov.bc.ca/esd/>

⁴ Canada's Policy for Conservation of Wild Pacific Salmon, 2005.

⁵ BC Hydro Social Responsibility Policy.

A portion of the FWCP program activities will include small-scale, short-duration strategic projects that target specific issues identified by program partners or others (e.g., community members). These could include projects not yet identified in any action plans, as well as lower priority Action Plan items that require timely response in order to take advantage of a investment or partnership opportunity.

PROJECT INVESTMENT CRITERIA

At the level of individual project investment and implementation decisions, the FWCP applies the following criteria to further define its role and actions within defined program areas:

- FWCP does:
 - Fund actions to create, restore, or otherwise improve the function of ecosystems that have been impacted by BC Hydro activities;
 - Fund actions to create, restore, or otherwise improve the function of alternate ecosystems that provide a better opportunity for investment;
 - Participate as a team member in species of interest planning;
 - Fund specific management actions for species of interest as identified by recovery teams and action/implementation groups;
 - Fund baseline inventory that contributes to the development of habitat or species based actions within Action Plans;
 - Fund monitoring programs designed to measure the effectiveness of FWCP funded habitat and species actions; and,
 - Contribute to all aspects of managing co-operatively managed conservation lands.
- FWCP does not:
 - Fund core activities of government or non-government agencies or programs;
 - Lead the development of species recovery goals;
 - Fund, co-ordinate or lead National Recovery Teams for species at risk;
 - Develop policy related to land or wildlife management;
 - Administer government regulations;
 - Engage in enforcement and compliance activities, except in relation to co-operatively managed conservation lands; and,
 - Fund programs designed exclusively to address government harvest objectives.

2 ASH RIVER WATERSHED⁶

2.1 SETTING

The Ash River watershed is situated about 40 km northwest of Port Alberni in central Vancouver Island, between the Beaufort Range and Strathcona Provincial Park. The upper Ash watershed is dominated by mountains up to 2000 m, which form the boundary between the Ash, Campbell and Puntledge watersheds, and small areas of permanent snowpack exist there. From Oshinow Lake at elevation 410 m, the Ash River drops a further 80 m in 13 km to Elsie Lake Reservoir. The lower parts of the watershed have lower relief than the upper basin. Below Elsie Lake Reservoir the lower Ash River flows into the Stamp River and from there into the Somass River before meeting the ocean at Port Alberni. There are three lakes on the Ash River mainstem, Oshinow, Elsie and Dickson Lakes, and several smaller lakes on tributaries.

The Ash River basin is in the transition zone between the wet west coast and drier east coast climates of Vancouver Island. The basin is affected by frontal storms arriving from the southwest off the Pacific Ocean with strong, moist winds that bring heavy precipitation for durations of a few hours to a few days. Monthly rainfall can be as high as 800-900 mm between November and March. Peak inflow, however, occurs from May to July from snow melt, whereas August and September are low flow months.

The Ash River watershed is in the traditional territories of the Hupcasath First Nation and Tseshaht First Nation.

The Ash River project, completed in 1958 by the B.C. Power Commission, consists of Elsie Dam at the outlet of Elsie Lake Reservoir and four saddle dams. Water is diverted from Elsie Lake Reservoir through a 7.8 km tunnel and penstock to a powerhouse on the shoreline of Great Central Lake (Figure 2). The plant usually operates at maximum capacity (10.7 m³/s), except in late summer when inflows are low and during a 1-2 week annual maintenance period, usually scheduled for August. Flows are released down the Ash River from Elsie Dam to support fish and other objectives, according to operations described in the Ash River Project Water Use Plan (BC Hydro 2004). Updated minimum flows agreed to in the WUP are 3.5 m³/s from May 1 to October 31; 5 m³/s from November 1 to April 30; and two separate pulse flows for adult steelhead migration, of 10 m³/s for two days between August 1 and September 30.

⁶ More details of the watershed can be found at: <http://www.bchydro.com/bcrp/projects/watersheds.html>



Figure 2. The Ash River hydropower project.

2.2 FOOTPRINT ISSUES

Fish and Wildlife habitat and species have been significantly altered due to the construction of the dams, the development of hydro-power, and alterations in the hydraulic regimes of the systems. The following section deals with impacts throughout the Ash River Area and is based on:

- Bridge-Coastal Restoration Program: Strategic Plan, Volume2: Watershed Plans, Chapter 4: Ash River (December 2000),
- the WUP Consultative Committee Report (October 2003), and
- findings in the Community Workshop (Port Alberni, 18 June, 2010).

Inundation: Reservoir impoundment expanded the existing Elsie Lake (271ha) to 672ha. The reservoir shoreline length is now 22.5 km.

Habitat loss: The reservoir flooded 401ha of hemlock-Douglas fir woodlands; as well as 5km of mainstem and 4.6km of tributaries and associated channel (30ha), riparian (30ha) and wetland areas (72ha). Elsie Dam has restricted large woody debris downstream (but has not changed the gravel recruitment). There is also nutrient loss downstream of Elsie Dam.

Migration barriers: Anadromous fish were not considered present in the original Elsie Lake as they were inhibited by Lanterman and Dickson Falls. Reduced flows may have a positive effect for summer steelhead to access areas above Lanterman and potentially Dickson Falls.

New Habitat: Rearing habitat 25 km of downstream of the Elsie dam have benefited from fish flow releases. FWCP (through BCRP) has invested in the creation of small wetlands near the Ash River.

Fluctuating Reservoir: The reservoir fluctuates some 15m reducing littoral productivity, and may affect access to tributaries.

Altered Flow Regime. Reduced summer flows may affect resident fish, but may have a positive impact for summer steelhead to by-pass falls.

Diversions. 10.7m²/s are diverted from the Ash to the Great Central Lake. The Ash is generally cooler water and has a positive effect as it mixes with Stomp and Somas. Diverted water reduces this amount of beneficial cool water mixing. There is potential for short-term elevated TGP events, magnitude is unknown.

Entrainment. The magnitude is unknown.

2.3 FWCP ACCOMPLISHMENTS TO DATE

Over the past decade the Bridge Coastal Restoration Program has invested approximately \$490,000 in the Ash watershed between 1999 and 2010.

Restoration work includes:

- Wetland construction.

Conservation and enhancement work includes:

- Ash River nutrient enhancement.

Research work includes:

- Lower Ash River restoration opportunities study.
- Ash River fish passage feasibility study
- Study of historic distribution of Salmonids.
- Elsie Lake production study.
- Raptor (Northern goshawk) habitat enhancement study.
- Small wetland inventory and assessment for opportunities.

3 STRATEGIC OBJECTIVES FOR FWCP

Strategic objectives for the Fish and Wildlife Compensation Program reflect a synthesis of the core objectives and mandates of the partner agencies as they relate to mitigating impacts associated with hydro-power generation in British Columbia.

Conservation and sustainable use are core objectives for both the Ministry of Environment and Fisheries and Oceans. Conservation is addressed in terms of maintaining specific species or habitats both in terms of their importance for diversity (including genetic diversity), as well as their importance for ecosystem functions, integrity and productivity. For example, a species such as White Sturgeon may be important in terms of species diversity, while Pileated Woodpeckers may be important for maintaining ecosystem functioning and integrity by creating habitat for other species. Sustainable use incorporates the human interest in utilizing species for sustenance, commercial, recreational, or cultural purposes. Consequently, species such as coho, moose or bald eagles (wildlife viewing) could be considered important from a sustainable use perspective.

Community engagement is a core objective for BC Hydro under the compensation program and is driven by its social responsibility policy. It also reflects the 'shared stewardship' goal of the Ministry of Environment and those of Fisheries and Oceans' Stewardship and Community Involvement program. It reflects the importance of incorporating local values and interests in determining and implementing projects.

The FWCP strategic objectives are therefore:

Conservation

- **Maintain or improve the status of species or ecosystems of concern.**
This focuses on the conservation goals for ecosystems, habitats or ecological communities, and specific species. Priorities may be identified through the provincial Conservation Framework, or at the Conservation Unit level under the federal Wild Salmon Policy. Conservation priorities may also be identified at the watershed level based on local conditions.
- **Maintain or improve the integrity and productivity of ecosystems and habitats.**
This addresses the concept of ecosystem integrity, resiliency and the functional elements of ecosystems, including efforts to optimize productive capacity.

Sustainable Use

- **Maintain or improve opportunities for sustainable use, including harvesting and other uses.**
This objective focuses on the program's role in restoring or enhancing the abundance of priority species and in providing information to resource management decision makers related to providing opportunities for harvesting and other uses. Harvesting includes First Nations, recreational, sport and commercial harvests. Other uses may include cultural, medicinal, or non-consumptive uses.

Community Engagement

- **Build and maintain relationships with stakeholders and aboriginal communities.**
This objective stems from BCH's social responsibility policy, MOE's shared stewardship goal and the approach of DFO's Stewardship and Community Involvement Program. This recognizes the importance of engaging aboriginal communities, local stakeholders, and other interest groups to contribute toward making good decisions and delivering effective projects.

4 PRIORITIES

4.1 INTRODUCTION

Across all watersheds where the FWCP operates, the general process of identifying priority action plans involves three steps:

Step 1 – Identification (Candidate Priority Species and Ecosystems)

The first step involves identifying and prioritizing the species and ecosystems against the core strategic objectives, and how they have been impacted by footprint issues associated with hydro-power generation.

Step 2 – Preliminary Planning

This step consists of reviewing the identified priorities with consideration to identifying candidate action plans. It may involve grouping species or ecosystems together for coordinated action. Key considerations include: addressing limiting factors, exploring the opportunity for multiple benefits, addressing any specific local threats, the practicality of implementing actions, and the plan's consistency with existing agency programs.

Step 3 - Prioritization

This step consists of a final prioritization of candidate action plans (and their priority areas) according to cost effectiveness and technical feasibility criteria:

- **Technical Feasibility.** – The program should generally seek out investments that are the most technically feasible. Considerations generally include the use of proven methods and availability of technical resources. Innovative approaches should be considered but they must have a credible technical foundation and reasonable expectation of success. The potential interrelationship with system operations and programs being implemented by the Water License Requirements program must also be considered.
- **Cost Effectiveness.** – The program should generally seek out investments that are the most cost effective. This includes issues or actions which may benefit multiple species, areas where there is an opportunity to leverage additional funds for activities, issues where previous work has been conducted and incremental expenditure may have substantive benefits, actions that are closely related to on the ground actions with measurable impacts, amongst others.

4.2 PRIORITY SETTING IN THE COASTAL REGION AND ASH RIVER WATERSHED

In the Coastal region of the FWCP, Step 1 involved a review of existing Watershed Restoration Plans, interviews with agency staff, a series of community workshops and a final evaluation.

In 2000, specific restoration objectives were originally articulated in the Watershed Restoration Plans.⁷ These plans contain details of the major footprint impacts, objectives and limiting factors for productivity and have guided the work of the FWCP Coastal for the past decade.

Priorities for FWCP Coastal region were reviewed in 2009 through a multi-stage process involving BC Hydro, Fisheries and Oceans Canada (DFO), Canadian Wildlife Service (CWS), Ministry of Environment (MOE), local First Nations, and local communities. Initial priorities were developed

⁷ Watershed Restoration Plans: <http://www.bchydro.com/bcrp/projects/watersheds.html>

through consultation with agency staff. These priorities were then reviewed and discussed at a series of workshops to allow First Nations, public stakeholders, and interested parties to comment and elaborate on the priorities.

The results from the Ash River Watershed workshop are summarized in Appendix A, highlighting the species, habitats, and specific activities as priorities for further work. On the aquatic side, the key focus is on summer steelhead and the importance which the Ash River plays in terms of maintaining diversity, abundance and distribution of the species on Vancouver Island. Coho salmon are also recognised as a species of interest, particularly from a First Nations perspective. DFO, however, indicated that they currently do not consider coho in the Ash one of their priorities, as they have other outstanding priorities in the Stomp, Sproat and Somass systems. Moreover, there is concern regarding the impact that improving coho may have on the steelhead run. Overall, the issue of improved fish passage has been identified as an important element in fisheries work.

Riparian and wetlands improvement along with old growth conservation are the most important actions related to ecosystems. In particular, the issue of connectivity between riparian areas as well as the linkage between wetlands and forest cover should be emphasised. Many species depend on both for their survival, for example those nesting in the forest may forage in the wetlands. Several species are priorities including Western Screech and Northern Pygmy owls, bat species, Band-tailed pigeons, Northern goshawk, as well as Red-legged frogs, Western toads and Western Painted turtles. Vancouver Island marmot, while a high priority in terms of conservation in general, is not seen as a high priority in the Ash River as there is little habitat for them. Roosevelt elk are acknowledged as a very high priority for MOE, First Nations and the community in terms of sustainable use. However, elk are known to eat tree seedlings, so increasing their productivity would likely be unwelcomed by Island Timberland, the private logging company.

The priorities emerging from the workshops were subsequently reviewed by BCH and Agency staff in relation to how well they addressed the strategic objectives, the extent to which species were impacted by footprint impacts, and what activities could provide multiple benefits to multiple species. The resulting direction for the Ash River Watershed is to focus the next five year period on the development and implementation of three priority *Action Plans* for priority topic areas: Salmonids, Riparian / Wetlands and Species of Interest.

4.3 PRIORITY ACTION PLAN SUMMARIES

The Salmonid and Riparian / Wetlands Action Plans focus on overall ecosystems in support of multiple fish and wildlife species. The objectives and sub-objectives within these two plans reflect the overall ecosystem focus, and the plans include primarily habitat-based actions, supported as required by research/information acquisition, assessments and monitoring/evaluation actions.

The Species of Interest Action Plan focuses on species of conservation concern (including species-at-risk) or other regionally important species for management planning process. The objectives, sub-objectives and actions within this plan reflect this focus on individual species.

All three priority action plans in the Ash River Watershed provide broad support to the FWCP strategic sustainable use objective.

The three priority action plans for the Ash River system are summarized below. The full plans can be accessed on the FWCP website ([provide](#)).

SALMONID ACTION PLAN

Rationale

Salmonid species have been heavily impacted by the creation of dams and hydroelectric facilities in the Ash system. Limiting factors for salmonids in the watershed vary among species and include useable habitat, access to habitats (e.g., passage), and altered flows. This overall action plan for salmonids includes integrated habitat restoration planning and analysis to determine actions that provide the most benefit to multiple resident and anadromous species.

Priorities for anadromous salmonids focus on conservation actions for Chinook, steelhead, cutthroat, pink, and coho. Inventory and priority setting, primarily in the reservoirs, is the near term priority for resident salmonid species.

The bulk of money spent in the Ash system to-date has been towards habitat restoration and conservation activities for salmonid species. Given the extent of these prior investments, the plan incorporates effectiveness monitoring that will help inform future implementation activities. The plan directs new habitat and restoration activities toward opportunities in off channel habitats in the Salmon and Quinsam Rivers, and in nearby systems such as the Tsitika River. These locations represent the highest potential for cost effective gains in compensation habitat.

Focus

1. Assessment of the effectiveness of existing habitat enhancements in terms of adult returns and escapement.
2. Undertake and assessment of the fertilization program in the lower and upper Ash, and continue program in the middle Ash River.
3. Develop a fish passage action plan for the Ash River.

Expected outcome

- Improved habitat capacity and productivity in Ash system.
- Sustained abundance of anadromous and resident salmonid populations at target levels over time.
- Improved targets for both habitat capacity (pre-development) and abundance for all salmonid species.
- Improved understanding of the implications of increased fish passage.

RIPARIAN AND WETLANDS ACTION PLAN

Rationale

Riparian and wetland areas have been heavily impacted by the creation of dams, and continue to be under threat in many remaining areas. These areas are the limiting factor for critical life stages of many species, both aquatic and terrestrial. Riparian and wetland areas are both diverse and biologically rich and thus considered as highly valuable from an overall ecological standpoint.

To date, FWCP has already undertaken some restoration projects for small wetlands in the Ash River; however, further opportunities likely exist. At this point it is a priority to assess opportunities in conjunction with Islands Timberland forestry and implement restoration actions in areas with high restoration or conservation potential. Note that 'protection' of wetlands and riparian areas will be challenging as the majority of the area is under a private forestry operations.

Focus

1. Mapping of current wetlands and riparian areas, and categorization of areas into healthy and functioning systems (Category 1), and degraded or sub-optimal areas that would benefit from restoration (Category 2).
2. Assessment of opportunities for securement (conservation) and protection (from potential degradation) of Category 1 areas. This includes assessment of legal status, ownership, land use, etc.
3. Assessment of opportunities to enhance and restore Category 2 areas, with a subsequent view to conserve and protect them.

Expected outcome

- Identification and prioritization of locations and potential future actions for conservation, protection, restoration and creation of wetland and riparian habitats.

5.3 SPECIES OF INTEREST ACTION PLAN

Rationale

'Species of interest' are defined as species of conservation concern (including species-at-risk) or other regionally important species.

Species of conservation concern are a priority for all agencies and partners. While there is relatively high confidence that some species exist in the Ash River, such as Painted turtles, there is little information regarding which species may potentially exist and what opportunities are available to protect them.

FWCP funding in the past has been directed to the creation of small wetlands in the watershed and some inventory has been conducted. To build on previous efforts, more information is needed regarding how effective past efforts have been. More knowledge is needed regarding which species exist, in which habitats, and the opportunities available for their protection. Also, needed is a strategy for evaluation and monitoring that will support the ongoing process of renewing species plans and priorities in the Ash River system.

Focus

1. Build on the past restoration efforts to assess wetland species
2. Conduct mapping and prioritization of activities for species of concern.

Expected outcome

- Improved knowledge and status of FWCP priority species of concern.
- Improved habitat mapping for species of concern.
- Identification and prioritization of species, locations and potential future actions for conservation and protection.

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APPENDIX A

The following list of species, ecosystems and actions were identified by agencies, First Nations and communities as being the top priorities for activities under the FWCP program. Following initial input from agencies, a multi-stakeholder workshop was held in Port Alberni (28 May, 2009) to identify priorities. Two breakout groups, for fish and wildlife, identified priorities which were reviewed in plenary to allow all participants to comment on the findings.

List of potential opportunities for fish and wildlife

HABITATS

| Habitat | FWCP Rank | Sust. Use | Comments |
|---------------------------|------------|------------|----------------------------------------------------------------------------------------|
| Riparian habitat | v.high (5) | High (4) | Any work should include inventory of rare plants and invertebrates |
| Wetlands | v.high (5) | v. low (1) | Any work should include inventory of rare plants and invertebrates |
| Old growth | v.high (5) | High (4) | There is little left, and it might well be under private ownership. |
| Rare ecological community | Low (2) | v. low (1) | |
| Rare plants | High (4) | Low (2) | Small spike and rush – around lakes Plants can be used often for medicinal purposes |

FISH

| Species | FWCP Rank | Sust. Use | Comments |
|------------------|-----------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Summer steelhead | High (4) | High (4) | This is a relatively strong wild population for this region, therefore it is important to maintain this status. Capacity estimate of 9151 smolts ⁸ or adult population estimates of 182,365 and 547 based 2%, 4% (best estimate) and 6% marine survivals. |

⁸ (A) Based on the report, *Production Capability of Salmonid Habitat in Selected Reaches of the Stamp-Somass River System*, D. Burt (1999), modified to reflect accepted estimates in reach 1 (3 951) and reduced production in reaches 2-6 to 50% of reach estimates of 11 060.

| Species | FWCP Rank | Sust. Use | Comments |
|--------------|-----------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | 200 adults are required saturate the system. |
| | High (4) | | Augment nutrients in river reaches upstream of Lanterman Falls, The Ash River is unique in terms of nutrient restoration requirements since it requires the addition of BOTH phosphorous AND nitrogen. Although the project was generally supported, it was noted that there is little quantitative evidence of the direct benefits of fertilization in the Ash system. |
| | High (4) | | Investigate feasibility of range re-creation/ extension beyond Elsie Lake |
| | Low (2) | | Assess / develop side channel opportunities d/s of Lanterman Falls. It was noted that this would be more of a benefit to coho, and DFO does not put improvements for coho here as a high priority in the greater watershed context that includes Stamp, Sproat Somass |
| Cutthroat | Low (2) | | Should funds be available, the first project would be to undertake basic stock assessment. Such a project would also extend to investigations in Elsie Lake and above. The assumption has been that there is little opportunity for restoration projects targeting cutthroat and other resident species. |
| General fish | | | A broader stock assessment and angler use survey project in small lakes in the area would also be of benefit to MOE. |
| Coho | Not rated | | Related to fish passage |
| Fish Passage | very high | | <p>There was strong support for a project aimed at investigating the potential for fish passage improvements. It was emphasized that the Hupacasath First Nation have long placed a high priority on this topic.</p> <p>Investigation would need to address:</p> <ul style="list-style-type: none"> - The interest by some in facilitating passage of coho to upper parts of the watershed - Concern by some of how competition effects between juvenile coho and steelhead could pose a risk to the latter - The thought that the current limited state of passage availability above Lanterman and Dickson Falls could be the selective means behind the existence of the unique summer steelhead run. Any changes could cause the mixing of stocks with previously unique run timing genetic differences |

MAMMALS

| Species | FWCP Rank | Sust. Use | Comments |
|----------------------|------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vancouver Isl Marmot | Med (3) | v. low (1) | There is little habitat for marmots in this watershed. There are other priority areas on the island for it. |
| Roosevelt Elk | v.high (5) | v.high (5) | While not hunted now, there is potential to have a small # introduced. It would be very important for First Nations, and for hunting. The timber company would be unlikely to welcome improvement of Roosevelt Elk as they eat seedlings. |
| Bats | High (4) | v. low (1) | There is potential habitat in areas adjacent to the river, however an inventory of this should be done. Many need habitat similar to Western Screech owl |

BIRDS

| Species | FWCP Rank | Sust. Use | Comments |
|---------------------|---------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Western Screech owl | High (4) | v. low (1) | There is not much viewing. There is habitat potential with respect to snags. |
| Northern Pygmy owl | High (4) | v. low (1) | |
| Marbled Murrelet | Low-med (2-3) | v. low (1) | The species is unlikely to exist as there is little old-growth in the watershed. |
| Great Blue Heron | Low (2) | v. low (1) | There are no known colonies, but they are increasingly seen nesting in conifers |
| Band-tailed Pigeon | High (4) | Med (3) | It is a key food for goshawks and therefore important for ecosystem health, identifying key mineral sites and protecting them would be fairly easy with radio collars. So this could be a high priority of funding. |
| Northern goshawk | High (4) | v. low (1) | Potential for habitat, inventory – survey needed to determine extent. |
| Sooty Grouse | Med (3) | Med (3) | This species does relatively well with forestry and is less of a concern than other species in this watershed. It is food for goshawk and is thus of greater importance. |
| Ruffed | Low | Med | This grouse needs riparian habitat and that is lacking in the |

| Species | FWCP Rank | Sust. Use | Comments |
|---------------------------|-----------|-----------|-------------------------------------------------------------------------------------------|
| Grouse | (2) | (3) | watershed. |
| Riparian species of birds | Low (2) | Low (2) | Harequin is high priority (4) There is some bird watching – thus some sustainable use. |

AMPHIBIANS, REPTILES AND TURTLES

| Species | FWCP Rank | Sust. Use | Comments |
|----------------------------------------|-----------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Red-legged Frogs | High (4) | v. low (1) | There is a potential to look at wetlands, small existing or creating ones, to help with rearing. |
| Western Toad | High (4) | v. low (1) | |
| Western Painted turtle | High (4) | v. low (1) | The identification of lakes for restoration or for existing turtles would be relatively easy to undertake. |
| Species at Risk (others not mentioned) | Med (3) | v. low (1) | Most of the important species at risk have been mentioned. However of importance are rare plants and invertebrates which should be assessed when undertaking any project around restoration. |

Wildlife Species at Risk that occur or could occur in the Ash River Watershed

| | COSEWIC | CF Rank |
|---------------------------------------|-----------------|---------|
| Mammals | | |
| Keen's Myotis | Special Concern | 1,6,1 |
| Vancouver Island Marmot | Endangered | 1,6,1 |
| Townsend's Big Eared Bat | | 5,2,3 |
| Ermine | Threatened | 6,6,6 |
| Birds | | |
| Marbled Murrelet | Threatened | 1,6,1 |
| Northern Goshawk (laingi subspecies) | Threatened | 1,6,1 |
| Great Blue Heron (fannini subspecies) | Special Concern | 3,6,1 |

| | | |
|----------------------------------------------|-----------------|-------|
| Sooty Grouse | Extirpated | 5,2,3 |
| Barn Owl | Special Concern | 6,2,3 |
| Short-Eared Owl | Special Concern | 6,2,3 |
| Western Screech Owl (kennicottii subspecies) | Special Concern | 3,1,2 |
| Amphibians | | |
| Red-legged Frog | Special Concern | 3,1,2 |

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