

# Protecting Wild Salmon Habitat

## The Province needs to be more active in protecting salmon habitat

“Fish habitat” is defined in both the federal Fisheries Act and the provincial Fish Protection Act, as “spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes.” Other provincial legislation, such as the *Forest and Range Practices Act* and the *Water Act*, include broader environmental characteristics such as water supply, water quality and habitat availability.

A British Columbia court, in its decision described fish habitat as “composed of physical, chemical and biological components and includes such diverse, but interdependent factors as gravel beds, streamside vegetation, water turbidity, aquatic insects and benthic organisms.”

Fish habitat, then, consists of more than instream water flow. It includes components such as streamside vegetation, or riparian areas, over which both the federal government and the provincial government have decision-making authority, as well as water quantity and water quality. Much of the legislation developed by the Province for managing freshwater fish species focuses on riparian areas.



*Mature fish habitat*

Courtesy of B.C. Ministry of Forests

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As noted earlier, although responsibility for fish habitat resides with the Department of Fisheries and Oceans Canada, the Province has a mandate to regulate land and water use. Through acts and regulations linked to this mandate, the Province can greatly influence the extent to which fish habitat is affected.

The administration of activities that impact wild salmon habitat falls under a variety of provincial statutes, which are managed by various ministries and agencies that often have different, and sometimes competing, priorities. In this audit, we examined the nature of existing legislation and regulations to protect and restore salmon habitat, and the extent to which existing programs are addressing concerns over habitat protection, maintenance and restoration.

What we found was that the provincial government has no formal legislation in place outlining its role in regulating wild salmon issues. Several current Acts do include provisions beneficial to wild salmon (Exhibit 6).

### The Fish Protection Act does not provide adequate protection for salmon habitat

The provincial Fish Protection Act provides incomplete protection for wild salmon. The Fish Protection Act focuses on four major objectives: ensuring sufficient water for fish; protecting and restoring fish habitat; improving riparian habitat protection and enhancement; and strengthening local and urban areas government powers in environmental planning. It was implemented to recognize that fish need a minimum flow of fresh water to survive and should be adequately acknowledged in the decision-making process.

Responsibilities for the Act are split between the Ministry of Sustainable Resource Management and the Ministry of Water, Land and Air Protection. The areas where particular concern relating to protection of fish habitat has been raised include: designation of sensitive streams and recovery plans; directives for streamside protection setbacks and buffers; and instream flow protection. Regulations or standards have been, or are being developed to address each of these, but we noted that actions have been slow to follow. This is particularly the case with designation



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## Exhibit 6

### Status of key provincial legislation that affects salmon habitat protection, restoration and management

Ministry Responsible	Legislation	Area of Habitat Covered						Management Status
		Riparian Habitat Classification	Area Protection	Waterway Water Flow Protection	Water Damage Prevention	Activities Quality Protection	Development Planning and Impact	
Water, Land and Air Protection	Fish Protection Act	✓	✓	✓		✓	✓	Not fully in force
Forests	Forest Practices Code Act	✓	✓		✓	✓	✓	Replaced by Forest and Range Practices Act
Forests	Forest and Range Practices Act	✓	✓		✓	✓	✓	New legislation takes effect on January 1, 2006
Water, Land and Air Protection	Environment Management Act					✓	✓	Replaced Waste Management Act in October 2003
Sustainable Resource Management/ Water, Land and Air Protection	Water Act			✓	✓	✓	✓	Recently amended

Source: Compiled by the Office of the Auditor General of British Columbia

of sensitive streams, and those sections of the Fish Protection Act with provisions linked to water licensing and instream flow protection under the Water Act.

The Fish Protection Act includes a number of positive features for protecting fish and fish habitat. For example, section 7 provides for recovery plans for sensitive streams and section 10 addresses fish and fish habitat considerations in water management planning.

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Courtesy of B.C. Ministry of Water, Land and Air Protection

*Water impoundment obstructing fish passage*

Section 4 addresses dam construction to protect fish habitat. Historically, dams have cut off salmon from their spawning areas and have led to the extinction of a number of salmon runs. The Act names 17 rivers on which dam construction is prohibited.

Overall, we found that, while the Fish Protection Act provides a sound basis for improving the level of protection for salmon habitat, the lack of implementation of several important provisions significantly weakens its value. For example:

Section 8 provides for greater consideration of fish needs when decisions about water allocations or changes to stream flows are made. However, the section is not in force.

Section 5 provides for managers to use discretionary power when making decisions about water allocations under the Water Act. But again the section is not in force.

Section 6 calls for the designation of “sensitive streams.” These are bodies of water with specified fish populations, whose sustainability is deemed at risk because of inadequate water flows or degradation to fish habitat (see sidebar). A set of criteria was developed to assist in designating sensitive streams. Fifteen streams were so designated in 1997. To date, that list has not been

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expanded, even though many other streams would likely qualify. The Act also provides for the development of “recovery plans” for sensitive streams (see sidebar), but no current provincial efforts are underway to develop these plans.

Section 12 allows the Province to require local government to undertake streamside protection and enhancement of riparian areas. Under the provision, the Province passed the *Streamside Protection Regulation* in 2001, calling for municipalities to establish minimum streamside setbacks by 2006 and to enforce for protection through bylaws. While this is a strong provision, it lacks any compliance or enforcement provisions under which the provincial government will hold local governments accountable for streamside protection and enhancement areas. The absence of a provision that will allow verification compliance with the regulatory regime is a significant weakness. Of more concern however, is that this important regulation has been put on hold pending further review of its implications.

### Designation of sensitive streams under the Fish Protection Act

To help identify candidate streams for designation as sensitive, fisheries managers use the following criteria.

The streams must:

- be located in a watershed containing a significant population of salmon (e.g. coho as an indicator species);
- be a high priority for designation because of its precarious nature and the value of its fish stocks at risk, and because of its potential for high productivity given the nature of existing fish habitats;
- be located in an area with sensitive yearly flows and significant human populations or industrial water users;
- have water flow limitations that are keeping fish production from achieving historic levels;
- have water abstraction and associated weirs and intakes that are adversely affecting stream flows and fish migration;
- offer good potential for recovery of fish populations, either with or without a recovery plans; and
- not be otherwise being addressed under the water use planning licence review process.

In total, 15 rivers and streams have been designated sensitive streams in three regions of the province:

Vancouver Island

- Black Creek, Goldstream Creek, Englishman River, Little Qualicum River, French Creek, Little River and Fulford Creek

Lower Mainland

- Chapman Creek, Silverdale Creek, Kanaka Creek, West Creek, Lang Creek, Whonnock Creek and Nathan Creek

Omenica/Peace

- Salmon River

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### Recovery strategies and plans for sensitive streams

Recovery planning is the process undertaken to ensure the survival and recovery of species and ecosystems at risk. Recovery strategies represent the best available scientific, traditional and community knowledge about a species or ecosystem and what is required to achieve recovery. Recovery plans consist of two parts, a recovery strategy and a recovery plan. The recovery strategy outlines:

- current knowledge about the species or ecosystem;
- known threats to the species or ecosystem and mitigation activities to address those threats;
- for a species, its critical habitat;
- the goals, objectives and approaches for recovery of the species or ecosystem; and
- the date recovery plan is expected to be completed

Recovery plans are more detailed studies providing information about what needs to be done to meet the objectives of the strategy, and an evaluation of the socio-economic costs associated with recovery efforts. Recovery plans are usually prepared by a recovery team made up of agencies responsible for the management of the species or ecosystem, as well as species or ecosystem experts from other agencies, universities, conservation, aboriginal and stakeholder groups. According to the Ministry of Water, Land and Air Protection, recovery plans have been completed for Black Creek and Englishman River.

## The provincial Water Act does not adequately value fish

The provincial Water Act also contains provisions beneficial to wild salmon, but has not been used as an effective tool for protecting fish habitat. One weakness we see is that the Act does not require fish water needs be considered in a rigorous or consistent manner. In a number of areas around the province, licensing of water for agriculture and other uses has led to lower water flows and increased water temperatures. Another weakness is that the Province does not monitor water use and the degree to which licensees comply with licence requirements. This concern was also raised by the Pacific Fisheries Resource Conservation Council in its 2003 report on water use conflicts between people and fish.

As British Columbia's population expands and economic development initiatives require more water to meet demand, meeting fish needs is becoming increasingly difficult. Abnormal drought conditions could exacerbate the situation even further. For example, in the summer of 2003, a drought in the Okanagan forced the town of Summerland to declare a local emergency and the local council voted to cut off all water for fish flows and divert the water to community use. As a result, many fish, including kokanee and rainbow trout were impacted. Even normal drought conditions can impede the water requirements of fish being met, as

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Courtesy: Office of the Auditor General of British Columbia, 2004

*Residential development encroaching on salmon habitat in the Fraser Valley*

can changing weather conditions particularly in dry, semi-arid areas like the Okanagan where water shortages are an ongoing concern.

We did note, however, that the Province, through the ministries of Water, Land and Air Protection and Sustainable Resource Management, is developing instream flow guidelines to protect fish and fish habitat. These are intended to help resource managers in determining the amount of water that can be extracted from a river without adversely affecting fish and their habitat. However, historically, guidelines have proven to be less effective than legislation as they are generally not enforceable.

At the time of our audit, we also noted that B.C. has no groundwater legislation. Groundwater extraction can affect water flows in streams and rivers, thereby indirectly affecting the quality of fish habitat.

### Recommendation

**We recommend that the Province coordinate a review of how recent legislative changes have effected wild salmon and examine the outcomes of provisions not being put into force.**



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### The Forest Practices Code and related guidebooks provide good direction on best practices

Streamside trees and other vegetation provide shade that cools a stream's temperature, attract insects that are food for fish, allow root structures to stabilize stream and river banks, and provide cover from predators. These riparian areas (also often referred to as set backs or buffers) are protected in some degree in forest-related legislation.

One area where the Province's efforts to protect salmon habitat have proven beneficial is in the preparation of guidebooks covering fish habitat identification, management and restoration activities (Appendix A). Over the last decade, several provincial ministries have developed numerous guidebooks to assist natural resource users manage their land use practices around fish habitat. These guidebooks consist of standards and management practices explicitly designed to protect, prevent, manage and mitigate environmental impacts, in support of habitat management legislation. Some of these documents were considered best practice guides and were "voluntary," while others became legally-cited, and hence formed part of various regulations.

For example, a number of guidebooks were legally cited and associated with the Forest Practices Code. They dealt with prevention of damage to fish habitat through appropriate planning and practices. Compliance with these guidebooks became mandatory. However, no guidebooks will be cited in the new Forest and Range Practices Act. Forest licensees will be expected to achieve the same management objectives as those associated with the Forest Practices Code, but will be given more latitude to implement innovative practices to achieve environmental objectives. The guidebooks will serve as examples of minimum best practices.

A key provision in the Forest Practices Code affecting habitat—one continued in the Forest and Range Practices Act—is the requirement for the establishment of riparian reserves and riparian management zones. Riparian reserves are areas around streams, wetlands and lakes that meet the management area standards for receiving some added degree of protection. They cannot be

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Courtesy of B.C. Ministry of Forests

*A riparian buffer zone surrounding a fish-bearing stream in the interior*

harvested unless government specifically approves it for certain circumstances. Riparian management zones constitute the larger area surrounding a riparian reserve zone, in which some harvesting of trees is permitted.

A classification system based on stream characteristics related to riparian habitat was developed in the early 1990s for better managing the capacity of streams to produce freshwater fish, including salmonids. All class S1 to S4 are fish-bearing streams, for example, while S5 and S6 are streams without fish. The Province maintains setbacks around fish-bearing streams according to riparian management area standards set in the Forest and Range Practices Act and the Forest Practices Code (Exhibit 7).

Under sections 12 and 13 of the *Government Actions Regulation* in the Forest and Range Practices Act, provisions exist for the Minister of Water, Land and Air Protection to protect significant downstream fisheries values by designating a river, stream or creek as a fisheries-sensitive watershed or a temperature-sensitive stream. These designations trigger special management functions to protect fish values depending on the water body in question.

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## Exhibit 7

### Forest and Range Practices Act Riparian Management Standards

Riparian Class	Average Channel Width (metres)	Riparian Management Area (metres)	Riparian Reserve Zone (metres)	Riparian Management Zone (metres)
S1-A	>100	100	0	100
S1-B	>20 but not S1-A	70	50	20
S2	>5 to = 20	50	30	20
S3	1.5 to = 5	40	20	20
S4	< 1.5	30	0	30
S5	> 3	30	0	30
S6	= 3	20	0	20

Source: B.C. Ministry of Forests

## Guidelines for agricultural operations are under development

Similar guidelines have also been developed to address impacts to fish habitat in the agriculture industry. Several years ago, the Partnership Committee on the Environment and Agriculture was established to review agricultural guidelines to determine whether setbacks similar to those in the Streamside Protection Regulation could be adopted for use by producers. More recently, the Resource Management Branch of the Ministry of Agriculture, Food and Fisheries' has published environmental guidelines for producer groups, to help them minimize impacts on fish habitat. Today under the auspices of the Agricultural Policy Framework, the Agricultural Environmental Partnership Committee is working to encourage industry best practices including manure management, riparian habitat protection, water quality, erosion, and bank and gully stabilization.

New environmental farm plans are being developed in conjunction with the Ministry of Water, Land and Air Protection's Environment Stewardship Division, the Agriculture Council of British Columbia, the Department of Fisheries and Oceans Canada

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and other interested producer groups. Program funding has been approved by federal and provincial governments, with the emphasis now being focussed on what aspects of environmental farm plans will receive priority in 2004. The Resource Management Branch also provides extension education assistance to farming communities for water management and other best practices. Most of these measures are voluntary. Similar to the shift to best management practices in the forest industry, they allow licensees and operators more flexibility to employ or propose best practices based on expert or professional judgements.

### Recommendation

**We recommend that the Province ensure that initiatives aimed at preventing impacts to salmon habitat incorporate best management practices with measurable indicators and results which are linked to appropriate regulations.**

## Changing business processes in government are creating uncertainty around due diligence requirements

Under the current government, considerable policy change has occurred in how ministries and agencies deliver and account for their responsibilities and program activities. In the organizations responsible for managing the province's natural resources, this change has created challenges for regulators, licensees and users alike.

Government has shifted its business processes from the historical command-and-control functions of reviewing, approving and authorizing resource extraction, land use development plans and projects, to the task of setting environmental management and protection objectives and standards. Under the more prescriptive approach, development plans and projects had to be submitted either directly by proponents or indirectly by other provincial and federal agencies to regulating agencies (such as the ministries of Forests or Water, Land and Air Protection, or the federal departments) for approvals.

The new results-based regime now requires the private sector to share more direct responsibility for habitat protection and stewardship functions by taking on some of the planning,

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Courtesy of B.C. Ministry of Water, Land and Air Protection

*Agricultural practices can create bank instability, erosion and sedimentation in fish-bearing streams*

information collection and monitoring activities previously performed by government agencies. No requirement to submit operational plans for review and approval is generally expected, except for forest stewardship plans. The Province is focussing on monitoring impacts, measuring performance, and putting greater onus on licensed users to meet provincial environmental and sustainability goals through the results-based approach. At the same time, qualified professionals will be relied on to provide assurance by certifying compliance with results-based requirements.

In examining this issue, we were informed that dealing with project referrals has become an extremely onerous task for ministries to handle efficiently on a timely basis. Some of these referrals require many employees and many hours to complete. As a result, the traditional format of reviewing, approving and authorizing project approvals is being phased out.

Our concern is that this new approach may increase the risk to fish habitat since it eliminates many of the previously required planning and due diligence requirements undertaken by government agencies. Before, government was in the position of being able to identify and prevent potential problems and assign mitigating actions. In the future, government will only be in the position of trying to fix problems after they have occurred.



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## Environmental compliance and enforcement programs are being redesigned

Compliance is the state of having satisfactorily or fully implemented environmental requirements. Enforcement refers to the set of actions that regulators take to achieve compliance.

The Province has stated it is maintaining diligence on compliance and enforcement activities through a new framework that strives to minimize paperwork, while supporting science-based, results-oriented legislation through a strict enforcement regime. This new framework will focus on monitoring:

- compliance with set standards on-the-ground
- effectiveness of standards to ensure desired results are achieved
- and validation on-the-ground results are directly tied to actions and standards implemented

The current framework being used in British Columbia reflects a recent trend of governments towards an integrated approach of incentive-based measures and regulatory mechanisms. This new trend builds on the strengths of the traditional regulation model to emphasize continuous improvement over all forms of pollution abatement, cumulative impact assessment, broader public participation and access to information (see sidebar).

### Trends in Compliance and Enforcement Policy Development

Credible programs with good compliance monitoring and enforcement components can be important for achieving government objectives of good environmental stewardship. An independent survey of corporate environmental managers conducted by KPMG assessed why companies implement best environmental management practices. The findings suggested that, by far, the most important reason was the legal duty to comply with regulations, followed by the potential for board of director's liability. A recent report by the Organisation for Economic Co-operation and Development suggested that inadequate compliance underlies the failure of many regulatory policies. To ensure policy effectiveness, the report suggests governments should employ many kinds of policy instruments "backed up with a variety of enforcement activities such as inspections and sanctions." Writings by the Economics of Industrial Pollution Control research team from the World Bank Group also suggest that "environmental regulators must have a battery of tools at their disposal to address the wide range of pollution problems facing nation states." Such tools should include "a credible threat of real punishment" or "walk softly, but carry a big stick." In Canada, a 2001 report by the government of Ontario entitled *Managing the Environment: A Review of Best Practices*, stated that "while emphasizing flexibility, to be effective, an integrated environmental compliance assurance strategy must maintain a strong abatement and enforcement presence."

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One of the main risks to salmon habitat is from logging operations. The Forest Practices Board has been conducting compliance audits of licensees and logging practices, as well as reviews of provincial agencies' regulatory activities on forests practices since 1996. In its reports it has proposed that the ministries develop a joint strategy to ensure that compliance and enforcement activities fully consider water, fish and wildlife. It has also suggested that enforcement of the new results-based regime will likely be more difficult, expensive and uncertain than before. The board points to the lack of operational planning, lack of clear and measurable results and the introduction of a due diligence defence as being its reasons for this concern. The Forest Practices Board has reported that, on occasion, government managers do not give sufficient weight to environmental values when setting penalties.

At the time of our audit, the Ministry of Water, Land and Air Protection had approximately 120 conservation officers stationed throughout the Province, while the Ministry of Forests had approximately 300 staff assigned to its compliance and enforcement branch. The staff levels were lower than prior years. This has resulted in fewer inspections being carried out on an annual basis and greater emphasis being placed on the use of risk assessment tools as a method to determine where and how infractions will be weighted and pursued.

We observed that ministries are adopting more stringent administrative penalties and more severe fines in their legislation, although the Province has yet to establish a clear policy in this regard. In fact, the Ministry of Water, Land and Air Protection has been reviewing its compliance and enforcement approaches due to the significant changes to its core business, legislation and business models. Some interagency compliance and enforcement service agreements have been established, but are still being finalized.

In British Columbia, violations to fish habitat represent only a small percentage of infractions levied by provincial compliance and enforcement officials. Infractions to wild salmon are not treated any differently than those violations to other freshwater fish species. The Ministry of Forests, for example, uses a risk ranking system to determine where to concentrate its compliance and enforcement efforts to minimize impacts to forest biodiversity, of which fish and fish habitat are one area considered. Most other ministries also require risk assessments to determine potential

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Courtesy: Office of the Auditor General of British Columbia, 2004

*The Campbell River, just west of its estuary*

impacts to fish habitat, although it is common for these agencies to defer to the Department of Fisheries and Oceans Canada as the senior decision-maker.

### Recommendation

**We recommend that the Province review its compliance and enforcement programs within various resource management agencies to ensure sufficient resources for creating deterrents are maintained, and establish a clear policy and decision framework for identifying and approving escalating compliance and enforcement actions.**

### Evaluation of program effectiveness has been limited

In British Columbia, there have been limited evaluations carried out to assess the effectiveness of legislation or prescribed standards in protecting fish and fish habitat. Concerns have been expressed about the adequacy of the requirements for smaller creeks and streams and whether they adequately protect these water bodies. For example, petitions submitted to Canada's Commissioner of the Environment and Sustainable Development over logging impacts around fish-bearing streams in British Columbia have drawn questions over the effectiveness and timeliness of provincial

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measures to protect salmon habitat. However, the Department of Fisheries and Oceans Canada, and the British Columbia ministries of Forests and Water, Land and Air Protection in 2000, carried out a review of riparian area practices on small streams (S4) in the interior of the province. The review concluded that practices were consistent with guidebook policy. Further, the audit found that the Forest Practices Code's objectives for small streams were effective and the overall impact to designated stream channels and fish habitat was considered as low.

Some staff we interviewed also raised concerns over the uncertainties and complex nature of applying results-based principles to the diverse range of habitat ecosystems throughout the province. Many personnel are finding the new processes demanding and suggested that methodologies need to be developed to guide staff. Some suggested it could be difficult to make the transition from an output or checklist based compliance and enforcement process, to one in which professional judgement calls for assessing the quality and effectiveness of results achieved.

In an effort to assist employees, ministries have developed, or are in the process of developing, employee development and performance plans in which staff will be provided with focused training relevant to their job function. Efforts to develop methodologies are also underway. For example, the Ministry of Forests has endorsed a formal effectiveness evaluation program to assess riparian and watershed management activities. The framework will act as an accountability measure to ensure that the goals of the program are being met. However, we found that most indicators, methodologies and programs being employed for monitoring outcome and effectiveness values were still at a developmental or pilot testing stage making it difficult to evaluate their utility. Consequently, risks to wild salmon habitat may increase.

### Recommendation

**We recommend that the Province ensure provincial agencies work together to develop methodology and indicators to enable periodic assessment of the effectiveness of habitat protection legislative provisions in meeting goals to sustain wild salmon.**

