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A Fish Conservation Strategy for Alberta



Minister's Message

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*A Fish Conservation Strategy
for Alberta*, prepared in 1990,
and its companion document,
*The Fish and Fisheries of
Alberta: Facts and Figures*.



I am pleased to introduce *A Fish Conservation Strategy for Alberta*. This document reflects the public support for fish conservation generated during the development of recent fish species management plans. Alberta Environment is the proud steward of Alberta's fish resources.

Alberta is blessed with diversity, in landscape and beauty. We have a variety of fishing opportunities available from the mountains to the prairies, and parklands to the boreal forests. However, the abundance of our fish resources is limited by the amount of water. Alberta has only about 800 lakes that support natural game fish populations and more than 350

000 anglers that fish them. The past 50 years has been a period of heavy use resulting in declines in the number and in the size of fish in many of our fish populations.

A Fish Conservation Strategy for Alberta is our guide for the management of fish resources in Alberta as we enter the new millennium. Alberta Environment is committed to sustaining the quality of Alberta's fisheries, and to ensuring the provision of societal benefits now and for future generations. Increasing public awareness and the involvement of a knowledgeable public in fish management are necessary to achieve the objectives, goals and mission of our conservation strategy for Alberta.

Gary G. Mar
Minister
Alberta Environment

The following partners in conservation are gratefully acknowledged for their contributions to assist with the printing and distribution of this public document:

Alberta Conservation Association
Alberta Fish and Game Association
Walleye Unlimited Foundation

W.I.S.E. Foundation
Western Walleye Council

Introduction

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Alberta has a wide range of aquatic habitats, including small streams in the mountains and foothills, large rivers extending through the prairie, parkland and boreal regions; alpine lakes, prairie potholes and reservoirs, and large lakes of the northern boreal forest. These aquatic systems contain a diverse fish fauna made up of 60 species, of which 51 are native and 9 have been introduced. Eighteen species are important in recreational, commercial or domestic fisheries. The remaining 42 species, the majority of which are small in size, are indices of biodiversity and play an important role in the food chain for predatory fish and fish-eating birds and mammals. Brook trout, brown trout and golden trout, although introduced species, have established self-reproducing populations and have become integral components of the game fish fauna of Alberta. The distributions of native species such as rainbow trout, cutthroat trout, walleye, lake whitefish, yellow perch and northern pike have been expanded through stocking and transfers, and the subsequent development of self-reproducing populations in new areas.

The fish resources of Alberta are limited in abundance by the small amount of suitable habitat. Alberta does not have a large amount of surface water, having only 2.5 per cent of its area as freshwater. Surveys conducted on over 2100 lakes have shown that only about 1030 have game fish producing capabilities. The other lakes are too shallow and either freeze to the bottom during winter or are too warm for fish during summer.

Approximately 3/4 of the lake area in Alberta is located north of a line through Lac La Biche and Valleyview, whereas about 3/4 of the human population lives in the area south of that line. This results in very high demand placed on the fish resources in the settled part of the province. Fish populations in Alberta have declined as a result of overharvest and habitat alteration.

Public interest in fish, their habits and their aquatic environments, in viewing fish, and in simply knowing that fish exist and are managed, is growing with increasing environmental awareness. Furthermore, healthy, uncontaminated fish are indicators of a healthy aquatic environment.

By comparison, Saskatchewan has an estimated 94 000, Manitoba has 110 000 and Ontario has 250 000 fish-bearing lakes. While Saskatchewan, Manitoba and Ontario each have a ratio of about two anglers per lake, Alberta's ratio is nearly 400 anglers per lake.

Resource Stewardship

Inherent in the stewardship of the resource is the responsibility to conserve fish populations to maintain the natural biodiversity and health of aquatic ecosystems. This responsibility is reflected in the business plans of the department of Alberta Environment and of Natural Resources Service.

Conservation includes two components:

1. protection which ensures the perpetuation of abundant fish populations, and
2. the appropriate use of only the surplus that is not required for population maintenance.

Satisfying present demand and meeting future needs will require careful management of fish resources to ensure optimal reproduction of fish populations.



Mission Statement of Alberta Environment

As proud stewards of Alberta's renewable natural resources, we will protect, enhance and ensure the wise use of our environment. We are a dedicated and committed team, responsible for managing those resources with Albertans. We are guided by a shared commitment to the environment and are accountable to our partners, the people of Alberta.

Vision Statement of Natural Resources Service

The vision of Natural Resources Service is a healthy environment and sustainable resources supporting a healthy economy and a high quality of life.

Fisheries Mandate

Fisheries are a replenishable Crown resource; it is incumbent upon the Government, as the resource steward, to ensure that appropriate use is made of the fisheries resource and that it is passed on to succeeding generations as it was received. The primary consideration of the Government is to ensure that fisheries populations are protected from severe decline and that viable populations are maintained. By virtue of the fact that all fish and wildlife resources and relevant legislation are the responsibility of Alberta Environment, it is to function as the advocate within government in the pursuit of this goal.



What is our **Mission**

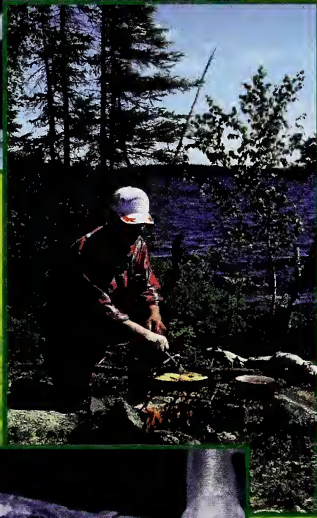
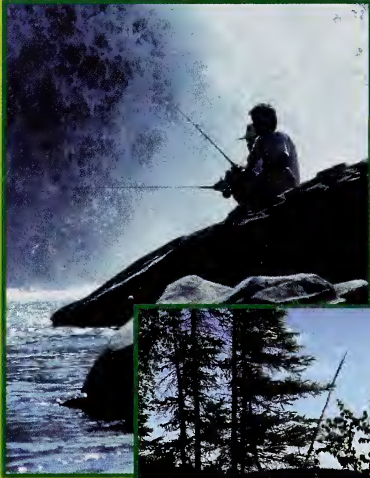
The mission for fisheries management is to sustain the abundance, distribution and diversity of fish populations at the carrying capacity of their habitats. Biodiverse and productive ecosystems maintain healthy fish populations and support social and economic benefits for Albertans.

Three primary components are involved:

- **HABITAT MAINTENANCE**—sustain, or achieve a net gain in, the quality and quantity of fish habitat;
- **FISH CONSERVATION**—regulate fish harvest in line with, and not exceeding, the productive capacity of fish populations; and
- **FISH-USE ALLOCATION**—manage fish populations in a manner that meets the present expectations of Albertans without compromising the ability of future generations to meet their expectations.



What Benefits Can We Expect from Fish Resources?



The benefits Albertans expect from their fish resources are diverse and include both consumptive and non-consumptive values. These include:

- **An indicator of the quality of the aquatic environment.**
Fish populations are sensitive. Healthy, uncontaminated fish populations are indicators of a healthy aquatic environment. The quality of the water and aquatic habitat are important to anglers and non-anglers.
- **A source of recreational opportunities.**
The sportfishery, which includes many techniques, philosophies and interests, is a significant form of outdoor recreation and a major user of fish resources. However, the overall recreational experience of sportfishing is strongly related to healthy aquatic environments. Anglers responding to surveys consistently indicate the water quality and natural beauty of the area and the lack of pollutants in fish, as the most important factors when choosing a fishing destination.
- **A source of food.**
Fish are still an important source of food for participants in the domestic and recreational fisheries, and for people who purchase fish from the commercial fishery. There is a continuing concern about the level of contamination by various metals and chemicals, and about the quality of fish for food.
- **A source of economic opportunities.**
Annual expenditures associated with the recreational fishery generally exceed \$350 million for goods, services and major investments, and annual sales of commercially caught fish exceed \$3 million.
- **A source of natural history interests.**
Public interest in fish, their habits and their aquatic environments, in viewing fish, and in simply knowing they exist and are managed, is growing with increasing environmental awareness.
- **A source of scientific and research opportunities.**
Research provides methods to achieve a better understanding of the nature of fish, the production capabilities of their habitats, and ways to protect fish populations and their habitats from human activities.

Who has jurisdiction over the management of fish resources?

The *Constitution Act* (1982) [*British North American Act* (1867)], in establishing the authority of parliament, gave the federal government the responsibility for all seacoast and inland fisheries. This responsibility involves control of how many fish may be harvested, when fish may be harvested, what type of fishing gear may be used, and the protection of habitat to ensure fish production in perpetuity.

When the *Natural Resources Transfer Agreement* (1930) transferred resource management to the province, stewardship became a shared responsibility. Under British common law, fish are considered a product of the land under the water. With few exceptions, land under water in Alberta is owned by the province. This ownership of (or proprietary right to) fish gives the province the authority and responsibility to determine who can take fish, as well as where and when they can fish, and what disposition is made of the fish after they have been caught.

Two regulation-making processes exist to fulfill provincial responsibilities for managing fish resources. Most fishery regulations are implemented through the federal *Fisheries Act* (Canada) and the pursuant Alberta Fishery Regulations. The province manages the fish resources and the federal government facilitates legislative changes as recommended by the province. The proclamation of the *Fisheries (Alberta) Act* and pursuant regulations in 1997 gave a provincial basis for the licensing system and increased ability to implement regulation changes in a shorter time frame than through the federal amendment process. Greater provincial responsibility for the fish resource occurred through this shift in regulation-making authority from federal to provincial jurisdiction.

Goals and Objectives of the Conservation Strategies for Alberta

Achieving the mission for fisheries management involves three goals: habitat maintenance, fish conservation, and fish-use allocation. These goals are interrelated. In order for Albertans to enjoy the benefits that fish and fishing provide, there must be a sufficient fish resource available. Fish are a product of their habitat, and to produce fish there must be sufficient habitat available. Therefore, the habitat goal is the foundation of the fish conservation strategy and the provision of societal benefits such as recreation, economic returns and fish as wholesome food.



Goal 1: Habitat Maintenance

Restore and maintain the natural productive capacity of fish habitat, and where possible and appropriate, increase the amount of productive fish habitat.

The fish conservation strategy for Alberta endorses, as a working guideline, the federal *Policy for the Management of Fish Habitat*. The objective of that policy is to achieve a net gain of habitat for fish resources. However, there is limited potential to increase the productive capacity of habitats. Fish resources and fish habitats are finite, and every effort to avoid habitat loss or damage must be made. Alberta Environment subscribes to the objective of no-net-loss of productive fish habitat. Protection of fish habitat is particularly important in Alberta because there is a shortage of fish-producing habitat, especially in the settled areas of the province. Demand for fish exceeds the supply of fish. Sustaining the supply of fish through maintenance of habitat and habitat productivity is essential to balance the supply-demand relationship.

Fish habitat is defined in the *Fisheries 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." Equally important is the year-round need for an adequate supply of good-quality water. Formal authority for the fish habitat provisions of the Act continues to reside with the Minister of Fisheries and Oceans Canada.

How Do We Achieve Our Habitat Maintenance Goal?

Objective 1: Fish Habitat Protection

Maintain the productive capacity of aquatic habitats to support healthy and diverse fish resources.

Resource stewardship—conserving the living spaces of our environment—is the responsibility of the general public and proponents of resource use, as well as government. In Alberta, the habitat program of the Fisheries and Wildlife Management Division uses the federal policy of no-net-loss of productive fish habitat as a working guideline for decision-making. Proponents of work in and around water bodies are expected to incorporate mitigative measures in their development plans to meet the no-net-loss expectation. Where normal mitigative procedures can not eliminate fish habitat losses, then habitat compensation will be necessary to satisfy the objective of no-net-loss of productive fish habitat. Critical habitats for all life stages should be identified and protected. Physical damage to spawning sites and shoreline vegetation has to be minimized. Changes to watersheds that affect lake levels, stream flows, stream sedimentation, nutrient loading and contaminant levels in fish should be minimized. It is important to maintain unobstructed migration routes so fish have access to all their habitat requirements to sustain healthy populations.



The term “habitat” as used in the context of the habitat maintenance goal also includes instream flow needs, water quality, fish health and ecosystem integrity. Sufficient year-round stream flows are essential for the maintenance of all life stages of fish populations. Contaminants can be carried in water and accumulate in fish without necessarily being lethal to the fish. However, these contaminants may have toxic effects on people or animals that consume the fish, and may impair fish reproduction. The Fisheries and Wildlife Management Division, in conjunction with Alberta Health, requires the development of a fish-quality monitoring strategy to measure fish contaminants and provide information to the public.

The introduction of parasites or disease can contribute directly to fish mortality, or render fish unhealthy and vulnerable to mortality from natural environmental stresses or predation. Although fish parasites and diseases are seldom harmful to humans, infected fish are generally undesirable as food, or may affect animals that consume them. Introduction of undesirable aquatic species or the loss of desirable aquatic species can upset ecosystems and, among other things, result in the loss of fish production.

“Resource stewardship, although a mandate of government, is the responsibility of everyone... the general public and proponents of resource use.”

The proponents of natural resource development, industrial development, recreational development, shoreline development, and instream work need to rehabilitate the habitat they alter to restore productive capacity. Proponents should determine the extent and type of fish use and habitat base, incorporate appropriate habitat protection and compensation measures into development plans, monitor results of compensation actions and maintain habitat compensation features.

Fish production can be increased by restructuring habitat, or altering fish species composition, in some situations and through the development of small reservoirs in areas where natural fish production is limited. However, careful planning and risk assessments are required as part of the decision-making process for the approval of such projects.



Objective 2: Fish Habitat Rehabilitation

Alleviate or reverse adverse impacts on the productive capacity of habitats and repair damaged habitats to restore their productive capacity.

Objective 3: Fish Habitat Development

Enhance fish habitats in areas where the production of fish resources can be increased, but maintain the aesthetic qualities of these sites.

Integrated Resource Management

Conservation of the fish resources can not be achieved through control of fish harvest alone--habitat maintenance is essential. Many aspects of habitat maintenance are not within the direct control of the Fisheries and Wildlife Management Division; therefore, the Division must act as an advocate to have the habitat maintenance goal of the fish conservation strategy integrated into the goals of other natural resource users. To fully achieve the fish conservation strategy, water-use legislation and policy has to recognize fish as a user of water and incorporate the needs of fish into water resource management. Habitat protection, habitat mitigation and water quality need to be treated by all resource users as essential components of resource management planning; e.g., by proponents of recreational development, timber harvest, agriculture and cattle grazing, petroleum and mineral exploration and extraction, and in particular, those involved with the use and control of the water resource and water quality.

Goal 2: Fish Conservation

Restore and maintain the abundance, distribution and diversity of fish through natural reproduction.



Fish resources must be managed to meet the requirements of present users without compromising the ability of future generations to meet their needs.

The fish resources of Alberta have declined because of habitat losses and the overharvest of fish to the extent that it is not possible to fully satisfy current demand and meet future needs. As a consequence, managing for conservation first is necessary. In this context, conservation focuses on sufficient protection to ensure abundant fish populations and the appropriate use of only the surplus that is not required for population maintenance.

Water body management of the whole fish community (ecosystem management) is a priority; however, species specific management is required to address concerns of endangered and threatened species or collapsed and vulnerable populations. Natural reproduction provides the most biologically-sound and cost-effective supply of fish. Fish stocking should only be used as a management tool in appropriate circumstances.

"Reduced fish production results from the alteration or loss of habitat and the overharvest of fish."

How Do We Achieve Our Fish Conservation Goal?

Objective 1: Fish Production

Maintain the abundance and diversity of fish at the carrying capacity of the habitat.

Objective 2: Fish Production Restoration

Restore diminished fish production to full production wherever possible.

Objective 3: Fish Production Enhancement and Development

Enhance or develop new fish production wherever appropriate and possible.

Beyond habitat conservation, objective one involves managing fish harvest by managing human activities through regulations, and changing public attitude through information and education.

Objectives two and three involve bringing all publicly accessible waters with fish-producing capabilities into production where demand warrants it and it does not damage or compromise a sensitive species or ecosystem. In some cases, fish culture and fish stocking programs, with priority given to indigenous native species, are required.

Fish Production Management

Fish production is primarily controlled by the productive capacity of the habitat, the biological characteristics of the species and the species composition of the water body. However, fish harvest has historically been a major limiting factor on fish production. A high harvest level reduces population density, particularly by removing the older fish, which subsequently reduces a population's spawning capability. Wherever possible, recruitment of fish to the population will be accomplished through natural reproduction. Closure of spawning and rearing areas is often required to protect spawners, to reduce the disturbance of spawning fish, and to protect developing eggs and young fish.

Fish stocking has been and will continue to be considered in plans to re-establish fish where populations have collapsed, to establish new populations in suitable lakes, to provide trout fishing in areas where few other angling opportunities exist, and to provide diversity in angling experiences where appropriate. The primary intent of walleye stocking is to achieve self-sustaining populations, rather than maintenance of populations through continuous stocking. Fish introductions are guided by decision-making and fish stocking processes.

Goal 3: Fish-Use Allocation

Allocate, through a public involvement process, the appropriate use or combination of uses of fish resources to achieve a range of optimal benefits that support the fish conservation goal.



Sportfishing in Alberta operates under an open-access policy and no limitation is placed on the number of licences issued. At present, youths under the age of 16 and Alberta residents aged 65 and older are not required to hold a licence. Dr. P. Pearse, in his review of sportfishing in Canada entitled *Rising to the Challenge* (Pearse 1988), suggests that demand management [in contrast to open access] should be considered as a tool to maintain a balanced supply-demand relationship. Restricting access, such as a limit to the number of Sportfishing Licences available, will be used as a last resort in Alberta. In the future, however, special licensing systems that would limit the number of anglers at some water bodies may become necessary to sustain fish populations, or to maintain the quality of fishing or wilderness experiences.

"Fish harvest must be regulated to match and not exceed the productive capacity of the habitat."

Fisheries regulations pursuant to the *Fisheries Act* (Canada) and the *Fisheries (Alberta) Act* operate as sets of rules restricting or prohibiting various fishing activities (restrictive code). A restrictive code means that all activities are legal until restricted or prohibited by regulations. Except as restricted by fishing regulations, fishermen may do the following: harvest any number of fish, and any species of fish; fish any waters; fish at all times of the year; and fish by any method. For the benefit of the resource and to ensure the primacy of conservation, fisheries management should operate under a *permissive code*— meaning no activity should be legal until made legal.

"The management of fisheries must follow a policy that allows harvest only when a supply of fish, beyond conservation needs, has been proven available."

Resource conservation under an open-access policy and restrictive code is difficult and slow to be achieved. Resource overuse has to be demonstrated before support and public acceptance are gained for the establishment of new regulations. The time required to demonstrate overuse, gain public support and implement new regulations can result in further damage to fish populations. Because of the above, past management practices fell short of conservation needs by allowing activities that overharvested fish.

How Do We Achieve Our Fish-Use Allocation Goal?

Objective 1: Fish-Use Allocation Process

Allocate fish production, beyond conservation needs, to achieve the greatest overall benefits, using a fair process that involves stakeholders, identifies users' expectations, and provides a basis for setting benefit priorities.

Each water body, and its fish resources, is examined from two perspectives:

1. the capability of the water body to produce fish, and
2. the public's expectations for the fish and fisheries at the water body.

Bringing both perspectives into harmony is a challenge in fisheries management that requires management of human activities for the benefit of the public, and more importantly, for the benefit of the resource. The development of water body management plans is necessary for all major water bodies, particularly for commercially fished lakes, to address allocation issues. This involves lake-by-lake management. Different fish-use priorities for the harvestable supply may be established through the allocation process, within the constraints concerning conservation and subsistence fishing. An optimal allocation process has not been finalized and progress in this direction must continue. The first step in this process is the appropriate determination of the harvestable surplus that can be allocated to various uses. Fish harvest must be regulated to match and not exceed the productive capacity of the habitat.

The *Fish and Wildlife Policy for Alberta* (1982) stipulates that the interim allocation priorities will be in the following descending order, until supply and demand issues are addressed on a site-specific basis through the allocation process:

- Conservation of fish stocks,
- Subsistence fishing for Alberta's aboriginal people,
- Resident recreational use, and
- Commercial fishing and tourist angling.

In 1985, a statement of purpose was added to the *Fisheries Act* (Canada)--to provide for the conservation and protection of fish and the waters frequented by fish. Arrangements for subsistence fishing by Alberta's aboriginal people were included in treaties and affirmed in the *Constitution Act* (1982). More recently, the *Sparrow Decision* of the Supreme Court of Canada (*Regina v. Sparrow* 1990), affirmed the limits that can be applied to subsistence fishing rights and established the primacy of conservation needs over all other uses. *The Fish and Wildlife Policy for Alberta* recognizes fish conservation as the first priority, and recognizes subsistence fishing by Alberta's aboriginal people as the next priority.

Resident anglers may fish anywhere they are entitled by their licences. The *Fish and Wildlife Policy for Alberta* promotes recreational fishing as a legitimate activity from both recreational and ecological perspectives, and in addition to promoting rules to regulate activities, encourages the ethical conduct of anglers. The policy also supports a viable commercial fishing industry.



Objective 2: Domestic Use

Provide for subsistence fishing within the constraints of fish conservation and legislative obligations.

In general, the priority for fish use after conservation is subsistence fishing for food by Alberta's aboriginal people. Management options concerning domestic fishing must be developed, with Native consultation, to conserve fish populations, to sustain subsistence fishing, and to maintain recreational and commercial fisheries.



Objective 3: Recreational Use

Provide for recreational fishing under an open-access policy and place no limitation on the number of general licences issued, within the constraints of fish conservation and subsistence fishing.

Recreational fishing is managed in consultation with sportfishing organizations and the general public to:

- Maintain optimal recreational opportunities, and where some harvest can be permitted, place limits on harvest through selective regulations (size and catch limits) or catch-and-release regulations (zero limit);
- Ensure low mortality of released fish by using gear or capture method restrictions;
- Protect fish concentrated in critical habitats such as those used for spawning, wintering or migration by using gear or capture method restrictions, harvest regulations, or season closures; and
- Minimize impacts of competitive fishing events (tournaments and derbies) on fish populations and traditional recreational fishing through the development of policy, standards and controls regarding competitive fishing.

Tournaments and derbies combine sportfishing with commercial ventures and use fish resources for recreation and economic benefits. Tournaments and derbies tend to attract more anglers, than might otherwise visit, to the water bodies where they are held. These anglers can take a large portion of the total annual harvest of some species in just a few days. Most tournament organizers have adopted catch-and-release formats and implemented a variety of rules and practices to aid survival of released fish. Despite these efforts, high hooking mortalities can occur at some events. It may become necessary to restrict tournament activities at lakes where tournament loss of fish is excessive or where allocation issues arise.

At present, the Fisheries and Wildlife Management Division neither supports nor opposes competitive fishing and no controls are in place to restrict tournaments beyond the existing sportfishing regulations. Policies, standards and controls regarding tournaments and derbies are being developed.



Objective 4: Commercial Use

Provide for commercial fishing opportunities within the constraints of fish conservation, subsistence fishing and recreational fishing.

At commercially fished lakes, setting minimal tolerance limits for species such as walleye, northern pike and lake trout in the commercial harvest will be the practice, and achieving compliance with these limits will be the objective. Restrictions, such as the timing of seasons, closed fishing zones and mesh size of gill nets, will be maintained to ensure that harvests are within limits. The use of selective gear types, such as trap nets, will be encouraged. Target species in commercial fisheries are generally lake whitefish and cisco (tullibee), and reasonable access to these species will be maintained. Commercial use of fish resources will be managed on a lake-by-lake basis in consultation with commercial fishermen and recreational users to:

- Recognize commercial fishing as a viable industry and a valid user of fish resources to meet the food-fish needs of the public, and where appropriate, the bait fish needs of anglers;
- Minimize harvest of species such as walleye, northern pike and lake trout below tolerance limits, while attempting to harvest the allocations of lake whitefish and cisco;
- Minimize commercial use of lakes having significant conservation concerns, marginal economic returns for target species or continued overharvest of species with tolerance limits; and
- Minimize fish-use conflicts that arise at various water bodies through frequent reviews using the allocation process.

What are the **Guiding Principles** in Fisheries Management

1. No net loss of the productive capacity of habitats.

Every effort should be made to avoid habitat losses. If habitat losses are unavoidable, they should be balanced with habitat replacement. The fish conservation strategy for Alberta uses, as a working guideline for decision-making, the federal policy of no-net-loss of the productive habitat outlined in the document, *Policy for the Management of Fish Habitat* (Fisheries and Oceans Canada 1986). Formal authority for the fish habitat provisions continues to reside with the Minister of Fisheries and Oceans Canada.

The role of proponents of development involves:

- Determining the extent and type of fish use and habitat base at sites of proposed development; and
- Incorporating appropriate habitat protection, mitigation and compensation measures, monitoring results of these measures and maintaining habitat mitigation and compensation features.

The role of the Fisheries and Wildlife Management Division involves:

- Identifying and maintaining adequate habitat protection guidelines to minimize impacts from physical disturbances of shoreline vegetation or disturbances within watersheds that may result in increased sediment loading, flood events, increased water temperatures, reduced stream flows, reduced lake levels, reduced water quality, reduced fish health, and disruption of ecosystems;
- Limiting instream and lake shore work in critical habitat areas to appropriate activities that can be fully mitigated;
- Acting as an advocate of habitat maintenance and fish conservation, and working with proponents of resource development to integrate fish habitat needs into their resource management planning; and
- Providing public information/education concerning fish habitat needs and encouraging public involvement in habitat rehabilitation and development projects.

The role of the public involves:

- Implementing, in conjunction with the Fisheries and Wildlife Management Division, habitat enhancement projects to improve spawning and rearing areas, to remove or reduce the impacts of stream blockages, to improve stream bank cover and stability, and to maintain adequate lake level with natural water-level fluctuations;
- Developing, in conjunction with the Fisheries and Wildlife Management Division, guidelines for the identification of water bodies that have wilderness values and characteristics that should be retained to ensure the quality of the wilderness experience; and
- Acting as an advocate of habitat maintenance and fish conservation, and encouraging the incorporation of fish habitat needs into resource development planning and water management.

2. Fish populations are to be maintained by natural reproduction wherever possible.

Natural reproduction is the most biologically sound and cost-effective way of maintaining fish populations and fish production. Fish are self-reproducing if sufficient mature fish and suitable spawning and rearing habitat are present. Fish stocking can assist natural reproduction in some cases, and can maintain fish populations in others, but fish stocking is not an effective replacement for natural reproduction.

Maintenance of natural reproduction involves:

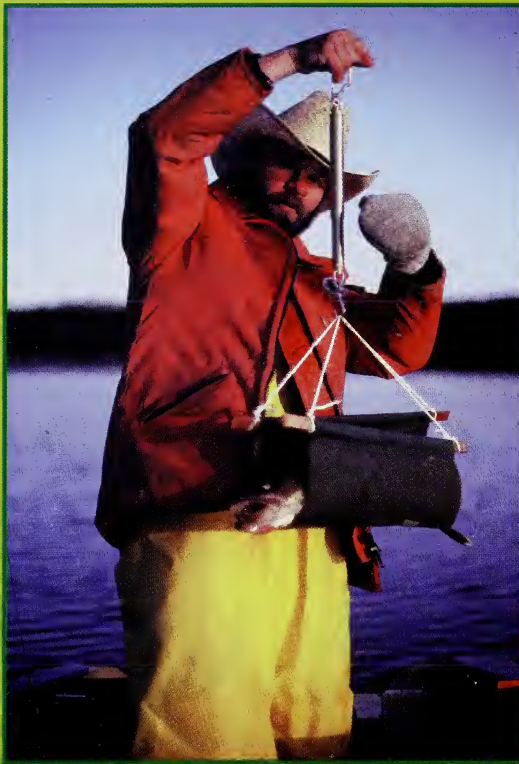
- Maintaining and improving spawning and rearing habitat, and fish access to this habitat;
- Maintaining sufficient numbers of mature adults in each fish population;
- Ensuring genetic integrity of fish populations, sub-populations and unique strains;
- Ensuring all fish introductions conform to approved decision-making and fish stocking processes;
- Continuing to regulate the impact of aquaculture activities to ensure the safety of wild fish populations and fish habitat; and
- Developing a risk-analysis process to be used with the decision-making process for the evaluation of fish introductions, particularly where a proposal involves an exotic species.

3. The biological diversity of the fish fauna is to be maintained, and the depletion or extirpation of species, populations, sub-populations or unique strains must be avoided.

Any maintenance and protection strategy should include all fish species in order to maintain the biological diversity of the fish fauna. This principle affects the habitat maintenance goal and the fish conservation goal. Although the overharvest of fish can quickly deplete a fish stock, habitat loss or damage can more permanently reduce or eliminate a fish population.

Maintenance of natural biodiversity involves:

- Implementing preventative measures to reduce fish harvest or habitat losses before depletion occurs;
- Monitoring fish populations to determine their status, productive capabilities and potential problems;
- Avoiding the introduction of exotic species, including native species or strains not indigenous to the watershed;
- Avoiding the introduction of fish diseases and parasites; and
- Addressing the issue of authority concerning the removal of non-native (exotic) fish, non-indigenous native fish, nuisance fish and fish with diseases or parasites from private dugouts and reservoirs, and from public water bodies, when fish have been introduced illegally, have invaded from adjacent waters, are a risk to indigenous fish production, or are a hindrance to the establishment or maintenance of an important fishery.



4. The management of the fisheries will be conducted on the basis of fundamental ecological principles and factual information.

Good and timely information on fish stocks is fundamental to achieving habitat maintenance, fish conservation and fish-use allocation goals. The capacity of various habitats for fish production, the conservation needs to perpetuate populations and the numbers that constitute a potential harvestable surplus need to be determined. Fish production varies annually and long-term trend information provides the best way to assess production, identify problems, evaluate management and make appropriate adjustments.

Achievement of this principle involves:

- Developing and maintaining adequate programs for gathering relevant information on fish stocks (including their number, growth, production rate, harvest rate and habitat conditions);
- Developing an information management system to handle the information and to provide pertinent and quick analysis in order to make appropriate and timely decisions;
- Allowing for years of low production in the calculation of the harvestable supply of a fish population to prevent overharvest;
- Giving fish conservation precedence over fish use, where adequate information on the harvestable supply is unavailable; and
- Monitoring fish populations for status and fish health, and reporting these results to the public.



5. There should be public involvement and education in the fisheries management process.

Greater public awareness and the involvement of a knowledgeable public are essential to increasing public support for fisheries management. Any attempt to regulate the harvest of fish will be ineffective without adequate compliance with regulations. At the present time a public review of any new or changed fishery legislation is required, by both the provincial and federal governments. Public involvement processes have improved and, at the same time, the public is being made more aware of the need for conservation.

Public involvement in fisheries management requires:

- Maintaining the Standing Committee on Fisheries and Wildlife Information and Education to provide a coordinated approach to communication activities;
- Developing a range of communications tools to convey information on fish population status, fish biology, species management plans and water body management plans;
- Developing programs for public education about fish biology and resource management to augment the existing fishing education program;
- Including non-government organizations as participants in public information and education programs;
- Encouraging public involvement in fisheries management and habitat development programs;
- Obtaining public input as part of decision-making processes, and in program and project delivery processes; and
- Providing opportunities for public involvement and input to species and water body management plans.



Public involvement in fisheries management is growing quickly. Volunteers have assisted in carrying out many habitat development and restoration projects. Volunteer programs often provide excellent opportunities for educating the public. Project funding from Fisheries Habitat Development and Fisheries Management Enhancement programs (now the Alberta Conservation Association) has provided many volunteer opportunities other than those provided by government programs. There is considerable enthusiasm among sportfishing groups for participating in this type of activity and it is becoming a part of the recreational experience. Many anglers have, through considerable expense and effort, become very knowledgeable about technical aspects of fisheries management and want to assist in fisheries management activities.

6. The “user-pays” philosophy should augment the financing of the stewardship and management of fish resources.

The responsibility for financing the stewardship of fish resources must be shared by all, and supported directly by resource users such as anglers, resource developers and industries. Financial support for the management of fish resources and habitats on behalf of Albertans has to come from government through general revenue. The government is responsible for conserving these resources for all Albertans and for future generations. However, government financing should be augmented by fees and levies paid by users of the resources to help defray costs. The user-pays philosophy should apply to direct resource users such as anglers, and to indirect resource users such as industries that alter habitat. Industrial developers and other natural resource users should provide funding for research and impact-assessment studies, and provide mitigation and compensation for their impacts.

The user-pays philosophy includes:

- Continuing the Alberta Conservation Association levy as part of the cost of the general Sportfishing Licence to finance the Fisheries Habitat Development Program, the Fisheries Management Enhancement Program and the Enhanced Fish Stocking Program;
- Continuing to direct a portion of the Commercial Fishing Licence fee into a fund to help finance commercial fisheries management programs; and
- Investigating additional opportunities, such as funding from industries that impact fish resources, to study problems and to research methods that reduce impacts.



7. Public access to waters producing publicly-owned fish should be provided and maintained.

Unencumbered access to waters producing publicly-owned fish is a prerequisite to maintaining fish resources for public benefits. Although water and the land under the water generally remain in public ownership, the lands surrounding water can be held in private ownership and public access may be limited or denied. In Alberta, there is a limited amount of fish-producing waters, so public access needs to be maintained to the waters containing publicly-owned fish. This will allow a maximum of fish-producing waters to meet demand and allow for maximum benefits. A number of government agencies can provide access development and maintenance within their mandates. The Fisheries Management Enhancement Program of the Alberta Conservation Association also has provisions to purchase land for public access to water bodies.

Conclusion

The Fisheries and Wildlife Management Division is actively working to achieve the objectives, goals and mission of this fish conservation strategy for Alberta. Since the implementation of the discussion paper, *A Fish Conservation Strategy for Alberta*, in 1990, several documents providing policies, guidelines and procedures have been completed. Examples of these documents include guidelines for: regulation development, fish introduction decisions, the fish stocking process, water body management and commercial fishing. Also, a new process for scheduling commercial fishing seasons at the zone level was recently developed. Progress continues on the development of a watershed management system and an information management system. To date, completed species management plans include: Alberta's Bull Trout Management and Recovery Plan, Alberta's Golden Trout Management Plan, Alberta's Walleye Management and Recovery Plan, Alberta's Lake Sturgeon Management Plan, Alberta's Arctic Garryling Management and Recovery Plan and Alberta's Northern Pike Management and Recovery Plan. Work is proceeding with additional species management and water body management plans, with input from the public and sportfishing organizations. The above documents are supported by numerous projects, biological studies and planning initiatives conducted by regional fisheries staff throughout the province.

Public involvement in fisheries management is important. Recent examples include the achievements of the Bull Trout Task Force, Walleye Task Force, Walleye Tournament Workshop, the East Slopes Regulations Review Steering Committee, the Northern Pike Management Advisory Committee; and the ongoing work of the Standing Committee on Fisheries Information and Education, and the Competitive Fishing Events Review Committee. Public involvement and cooperation with government and non-government stakeholders is crucial to the work of the Fisheries and Wildlife Management Division.

Keep fish in our future!

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