



**FISH
CONSERVATION
AND
MANAGEMENT
STRATEGY FOR
ALBERTA**



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MINISTER'S MESSAGE

I am pleased to introduce the Fish Conservation and Management Strategy for Alberta, which will help guide the wise use of our fisheries resource. I also thank the many Albertans who contributed to the consultation for this document.

Alberta faces considerable challenges in managing our fisheries. More people and more activity on the landscape will place increasing pressure on our water bodies and the fisheries resource. The new strategy provides a framework and direction about how to continue to meet these challenges. Our goal is to ensure the conservation of healthy, productive fish habitats and sustainable fish populations for Albertan's enjoyment.

What's new about the Fish Conservation and Management Strategy is a focus on how and why Environment and Sustainable Resource Development intends to achieve our objectives. To be more open and transparent, the updated strategy includes detailed information about specific priorities and the indicators that demonstrate success. For the first time, sections have been added to explain how the department gathers and assesses information to manage fisheries.

With the updated strategy in place, our department plans to engage Albertans more in defining what they want specific fisheries to provide. I encourage you to read the strategy, including the new chapter on Alberta's Fisheries Management Basics, to learn more about the decision-making process to manage our fish resource.

Albertans have high expectations about continuing to enjoy the many benefits of our province's fish resource. I invite you to get involved to help ensure our fisheries remain healthy for future generations. Everyone shares the responsibility to make this happen.

Robin Campbell

Minister of Environment
and Sustainable Resource Development



INTRODUCTION

Fundamental to Alberta's ecosystems, history, culture and economy, Alberta's fisheries are a significantly valuable resource.

Used for recreational, commercial and Aboriginal sustenance purposes, and forming an essential component of healthy and robust ecosystems, Alberta's fisheries are accorded the study, management and stewardship of the Government of Alberta to both preserve and improve their status and to ensure their continued use and enjoyment by Albertans.

Over the years, the Government of Alberta has built a solid foundation for its fisheries management decisions and processes. The Government of Alberta employs a fulsome set of data and analytics to make sound and reasoned decisions based on measurable objectives. These data are guided by strong science, regular data collection, and an extensive archive.

However, to be successful in the management and conservation of the fisheries resource, the Government of Alberta recognizes the importance and necessity of working with communities across the province to meet its allocation objectives. To aid Albertans in understanding the decision-making process around how government allocates this valuable resource for competing uses of Albertans, the Alberta Environment and Sustainable Resource Development (ESRD) produces a long-range Fish Conservation and Management Strategy (also referred to as "this strategy or the strategy").

It is reviewed and renewed every few years.

This strategy is used to guide the decisions of the department dedicated to managing fish populations on behalf of Albertans. It also allows Albertans the opportunity to understand how data is collected, science is used, and decisions are made in relation to this important resource.

Stewardship is the responsibility of all Albertans. Everyone is responsible for the health and quality of the environment and the benefits derived from healthy ecosystems.¹ This strategy is designed to enable Albertans to work with the government to ensure the appropriate stewardship of the fisheries resource.

Properly managed, Alberta's fisheries will continue to meet the needs of Albertans and will form part of a healthy ecosystem for years to come. Properly developed and recorded, Alberta's fisheries management decisions will form a legacy of successful stewardship for the reference of future generations.

The Government of Alberta is committed to working with Albertans to ensure a strong and prosperous fishery through the use of this Strategy.

1. Government of Alberta (2014), ESRD website, Biodiversity & Stewardship, <http://srd.alberta.ca/AboutESRD/BiodiversityStewardship/Default.aspx> (accessed May 22, 2013)

*to provide
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ENVIRONMENT AND SUSTAINABLE RESOURCE DEVELOPMENT

The Government of Alberta has exclusive jurisdiction over the management and allocation of Alberta's fisheries resources. Assigned to a key ministry within government, Alberta Environment and Sustainable Resource Development has responsibility for the conservation and management of this resource.

ESRD's core business is to manage Alberta's public lands, air, water, forests, fish, and wildlife to provide economic and biodiversity benefits and to enrich the quality of life of Albertans.² With such a diverse portfolio, ESRD must integrate and consider of a web of policies, data points, competing objectives and stakeholder interests to make the best possible decisions within the parameters assigned to ESRD. The Fisheries Branch of ESRD works within this framework to manage and conserve Alberta's fish populations.

ESRD'S VISION

ESRD, as a proud steward of air, land, water and biodiversity, will lead the achievement of desired environmental outcomes and sustainable development of natural resources for Albertans.

ESRD'S MANDATE

ESRD has a mandate to develop an integrated resource management system. This system identifies and achieves the environmental, economic and social outcomes that Albertans expect from resource development and maintains the government's social licence to develop resources throughout the province.

2. Government of Alberta (2014), ESRD website, Biodiversity & Stewardship , <http://srd.alberta.ca/AboutESRD/BiodiversityStewardship/Default.aspx> (accessed May 22, 2013)

ROLE OF FISHERIES MANAGEMENT IN ESRD

Alberta owns the fisheries resource and the waters within Alberta and has the right to allocate and license the fisheries resource. The Natural Resources Transfer Agreement (1930) transferred “all rights of fishery” from the Government of Canada to the province subject only to the federal government’s legislative jurisdiction. ESRD has the mandate and responsibility within the provincial government to oversee the management of fish populations, and advocate for the conservation of fish and fisheries. The Ministry is also solely responsible for regulating and managing the use of Alberta’s fisheries. ESRD is responsible for fish population and use assessments, allocation of fish resources and setting regulations in consultation with the public and First Nations. These responsibilities are delivered through ESRD’s Fisheries Management branch.

Fisheries Management is also mandated to provide information to the public for educational purposes and to encourage public participation in the wise management of the fisheries resource. This inclusive and comprehensive approach to fisheries management can best be described as stewardship:

Stewardship requires that individuals and organizations take voluntary actions to mitigate the impacts of their activities, such that fisheries resources are passed on to succeeding generations in as good or a better state of health than when they were received. This involves a commitment to ethical behaviour and a sound environmental conscience on the part of all participants in stewardship of the resources.



FACT

The world-record lake trout was caught in Lake Athabasca in 1961. It weighed just over 46 kg (102 lbs.) and when examined, was determined to have never matured. This meant that it was able to direct more energy towards body growth.



OTHER MANDATES WITH ESRD

Within ESRD, a broader scope of responsibilities is mandated, forming a community of resource managers with the following roles:

- **Biodiversity Management:** Under the Wildlife Act, this involves identifying and assessing the status of species at risk in Alberta and developing recovery plans, as well as providing a formal link to the national Species at Risk programs, through which fish species at risk receive protection.
- **Public Land Management:** Via the Public Lands Act, this involves managing activities on public lands and industrial, commercial and recreational access to public lands, including the bed and shore of waterbodies. This includes working with industry, users and the public to encourage responsible action and foster a stewardship ethic. From an aquatics perspective, it is important for management to ensure that users consider and protect riparian and fisheries values when conducting activities affecting waters. Wise land-use planning is key to determining the future state of Alberta's aquatic ecosystems, as is building awareness of land-use issues –the primary goal of Alberta's Land-use Framework. To regulate activities on public lands, ESRD issues licences, permits, and dispositions with accompanying operating conditions that provide aquatic protection. ESRD also monitors, enforces and sets reclamation standards where required.

- **Forest Management:** Under the Forests Act and the Forest and Prairies Protection Act, this involves managing the forest industry and protecting Alberta's public forests. In collaboration with industry and stakeholders, ESRD develops Forest Management Plans and operating ground rules, which include measures to maintain and protect watersheds, riparian areas, fish habitat and the aquatic environment.
- **Water Management:** Alberta owns the water resource and maintaining healthy aquatic ecosystems is a fundamental goal of Alberta's Water for Life strategy. Pursuant to the Water Act and the Environmental Protection and Enhancement Act, ESRD protects and manages the use of Alberta's water resources. This involves reviewing plans and applications and issuing licenses and permits to work in water or to extract water, ensuring that these activities are approved in consideration of fisheries' protection. Water quality information produced by this Ministry is key to healthy aquatic ecosystems and lakes and is incorporated into fisheries management processes and protections. A comprehensive assessment of resources necessary to maintaining the high quality of Alberta lakes is also undertaken, helping to ensure sustainable fisheries.
- **Enforcement of Fishing Regulations:** Enforcement of Alberta's Fishing Regulations and regulations under the Wildlife Act is primarily delivered by Alberta Justice and Solicitor General, in consultation with ESRD. Some ESRD staff are designated as Fishery Guardians and also have the authority to enforce fishing regulations.
- **Environmental Monitoring:** Alberta has built an arm's length agency to oversee environmental monitoring across the province³ in an integrated fashion, including the monitoring, evaluation and reporting of fish resources. Through collaboration in defining aquatic monitoring needs and the development of protocols and standards for data collection work completed at Alberta's lakes and streams, the Alberta Environmental Monitoring and Reporting Agency (AEMERA) is supported by Fisheries Management.

3. Government of Alberta (2014), ESRD Environmental Monitoring in Alberta, <http://environment.alberta.ca/03379.html> (accessed September 29, 2013)



PLANS AND PLANNING

ESRD BUSINESS PLAN

ESRD is committed to three-year business planning cycles. The ESRD Business Plan states the Ministry's goals for the next three-year period and includes performance measures used to assess the Ministry's success in achieving its goals. The Business Plan includes spending targets for the key activities over the three-year period that it covers.⁴ The Ministry's Business Plan also provides overarching direction to guide fisheries management and aquatic ecosystem conservation.

FISH CONSERVATION AND MANAGEMENT STRATEGY

This Strategy was developed to integrate the complex framework of policies, plans, commitments and mandates that guide resource management decisions in relation to provincial fisheries resources and their conservation. It sets out ESRD's vision and mission statements, guiding principles, and goals and objectives for fisheries management. It guides staff and describes to stakeholders, industry, and other provincial and federal government departments what ESRD will do to manage Alberta's fisheries resources for conservation and sustainable use. This Strategy also supports the development and implementation of Regional Plans, another important provincial planning mechanism.

4. Government of Alberta (2014), ESRD Corporate Documents, Business Plan not available, <http://srd.alberta.ca/Newsroom/MinistersOffice/CorporateDocuments.aspx> (accessed May 7, 2013)

It guides staff and describes to stakeholders, industry, and other provincial and federal government departments what ESRD will do

The Fish Conservation and Management Strategy is designed to reflect and utilize the scientific understanding of the health of fish populations and fish habitat across all provincial watersheds and the conservation and protection measures needed to sustain them. The Strategy incorporates decision making processes that place importance on the fisheries values of Aboriginal groups, stakeholders and the angling public across the province, gathered through ongoing consultation and collaboration. Consultation with stakeholder organizations in the development of this Strategy typically occurs at regional and provincial levels.

Additionally, this Strategy explains to Albertans how ESRD staff will manage fish populations and habitat in a manner that achieves biodiversity targets established by the government on behalf of Albertans.

Ultimately, this document provides a framework to ensure Alberta's fish populations benefit present and future Albertans.

FISHERIES MANAGEMENT OBJECTIVES

Fisheries Management Objectives are the most basic planning units, which convey current fishery status, the desired future condition of the fishery (objectives and indicators), the management approach for achieving objectives (fisheries regulations, habitat protection recommendations) and challenges or limitations to achieving objectives. Consultation with stakeholders for setting Fisheries Management Objectives typically occurs at the area or local level.

SPECIES MANAGEMENT PLANS

In support of the Fish Conservation and Management Strategy, Species Management plans provide the overarching framework for the management of a fish species. Species Management Plans set out the current status of a fish species and fisheries at a provincial scale, and outline desired status, with overall goals and objectives for that species. General management approaches (i.e., angling regulations) are described in these plans. Consultation with stakeholders in the development of Species Management Plans typically occurs at the area and provincial levels.



WATERBODY MANAGEMENT PLANS

These plans outline the management of the fisheries in a water body. They provide a comprehensive view of the current and desired status of fisheries and fish populations, the objectives for management and the means by which the objectives are to be met (e.g., sport fishery regulations, regulations on other users, fish stocking plans, etc.). Interactions between fish populations and fisheries are considered within Water Body Management Plans, as are linkages to habitat (such as habitat-based limitations to fish populations and the needs for habitat management) and consultation needs. Consultation with stakeholders for Water Body Management planning typically occurs at the area or local level.

ALBERTA'S LAND-USE FRAMEWORK AND REGIONAL PLANS

Under ESRD's mandate to develop an integrated resource system, land-use must be considered and balanced against aquatic resource needs. To accomplish this, an integrated system of resource planning in the form of Regional Plans is employed by the Province of Alberta. Legislatively authorized under the Alberta Land Stewardship Act, which provides for "the co-ordination of decisions by decision-makers concerning land,



FACT

Lake sturgeon in the Saskatchewan River system can travel great distances. Adult sturgeon tracked with radio transmitters have been observed to migrate from the Edmonton area to the forks near Prince Albert, Saskatchewan, where the North and South Saskatchewan rivers join.

species, human settlement, natural resources and the environment”, regional planning is also enabled under Alberta’s Land-use Framework. The Land-use Framework uses an integrated, cumulative effects-based approach to balance the social, economic, and environmental values desired by Albertans within various regions and sub-regions of the province. Under the Framework, Alberta is divided into seven Regions based on major watersheds, with boundaries aligned to best fit with municipal boundaries and natural regions.⁵ Regional Plans particular to each Region are in development for approval by Cabinet for implementation.

The Land-use Framework also champions environmental values, including the conservation and protection of air, land, water, and biodiversity, which are featured within each Regional Plan.

Using this approach, the Government of Alberta is able to identify and collectively manage the resources of each region based on identifiable objectives while recognizing that decisions made in one region will impact resources and resource users in another region.

A world-class monitoring system designed to provide transparent, reliable information relevant to the achievement of outcomes has also been developed to measure outcomes.

5. Government of Alberta (2014), Land-use Framework at page 24 <https://landuse.alberta.ca/LandUse%20Documents/Land-use%20Framework%20-%20202008-12.pdf>

ALBERTA'S BIODIVERSITY STRATEGY

Biological Diversity, or Biodiversity, refers to the variety of all living things, including plants, animals and microorganisms, interacting in all types of environments, whether on land, in air or in the water, and the ecological processes of which they are a part.⁶

The threat to biodiversity is considered to be one of the world's most critical concerns, as biodiversity reflects the health of land and water ecosystems⁷, and ultimately, the health and well-being of society. Due to concern over the decline of biodiversity worldwide, in 1992, the United Nations Convention on Biological Diversity was negotiated. With the support of the provinces and territories, Canada ratified the Convention in December 1992. As required under the Convention, Canada developed the Canadian Biodiversity Strategy (1995) to guide the conservation of Canada's biodiversity and sustainable use of biological resources.

Actively participating in its development, in 1995, the Government of Alberta signed a Statement of Commitment to support the strategy and developed its own biodiversity policy to guide the work of government when making natural resource management decisions. The policy recognizes the challenges associated with developing and using land and natural resources in a way that reduces impacts on biodiversity.

Recognizing that fish and other aquatic organisms are important components of biodiversity, ESRD is committed to maintaining biodiversity with respect to fish populations, including species diversity, genetic diversity, and ecosystem diversity through the implementation of the Strategy.

FISH AND WILDLIFE POLICY FOR ALBERTA (1982)

There have been substantial changes in the management and conservation of fish in Alberta since 1982. A priority of ESRD is to update the Fish and Wildlife Policy for Alberta (1982) in support of current fish and wildlife management objectives and the mandate of the ministry. This Strategy guides the vision and mission of fisheries management during this policy renewal.

6. Government of Alberta (2014), ESRD website, "About Biodiversity" from <http://srd.alberta.ca/AboutESRD/BiodiversityStewardship/AboutBiodiversity/Default.aspx>; (accessed May 17, 2012)

7. Government of Alberta (2014), ESRD website, Biodiversity, from <http://environment.alberta.ca/02221.html> (accessed September 18, 2013)



ALBERTA'S FISHERIES

Alberta's aquatic habitats are unique and varied with its many ecosystems, ranging from rocky mountain streams and alpine lakes, to prairie potholes and reservoirs, to large boreal lakes and rivers. There are 65 species of fish in Alberta, of which 51 are native to the province, 4 were introduced intentionally by government agencies, and 10 were introduced illegally or accidentally. Despite the diversity of habitats, because of limited number of fish bearing lakes and reservoirs in Alberta, the total production of fish in the province is limited. A strong fisheries management regime is necessary for the conservation of this resource.



FACT

The Athabasca rainbow trout is the only sub-species of rainbow trout native to Alberta. They are uniquely adapted to the headwater portions of the Athabasca and McLeod river systems.

ESRD's primary goal in relation to Alberta's fisheries is to ensure the conservation of healthy, productive fish habitats and sustainable fish populations. Fish that are available beyond those required to sustain populations are allocated to domestic fisheries (aboriginal food fishery), recreational anglers and commercial fisheries. While native fish resources are limited by the lack of abundance of lakes and streams, Alberta augments angling opportunities through its provincial stocking program by stocking trout into an additional 300 ponds, annually.

*Sound
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The ever-increasing human population in Alberta coupled with the limited number of fish bearing waters leads to restrictive regulations and limits on sizes and numbers of fish available for harvest. ESRD works with Albertans to find and support the management tools needed to sustain viable angling opportunities. For example, a lottery system for Walleye has been implemented on a number of waters. This controlled harvest allows for the conservation of valued Walleye fisheries in high use lakes while ensuring a fair and unbiased allocation system amongst fishers.

Healthy water bodies and sustainable fish management practices are critical to achieving provincial aquatic ecosystem objectives. Healthy water bodies also provide a broad spectrum of opportunities for citizens. From the economic benefits that a community can realize, to the social, educational and recreational enjoyment of these natural areas, healthy water bodies enhance the quality of life of Albertans. This Strategy takes an integrated approach to managing Alberta fisheries in support of realizing the full potential of Alberta's aquatic resources. This Strategy is also designed to integrate with the provincial Lake Management Framework, which is in development.

A province-wide approach is needed to ensure that all provincial lakes are managed effectively and consistently to maintain and improve their health⁸. Healthy lakes means healthy and productive fisheries, which leads to healthy and prosperous local communities.

Sound decision making based upon strong science is the foundation upon which Alberta fisheries are managed. Good science supports sustainable fish management practices and promotes the recovery and sustainability of Alberta's fisheries resources. By working with Albertans within their communities and promoting ecological awareness and support for well informed decision making, sound management practices can be used to strengthen local fisheries and meet provincial objectives.

8. Government of Alberta (2014), ESRD Website, Healthy Lakes <http://environment.alberta.ca/04129.html> (accessed September 29, 2013)



ASSESSING FISH POPULATIONS AND FISHERIES:

HOW WE GATHER INFORMATION ABOUT ALBERTA'S FISH

Assessment of fish populations and fisheries is a fundamentally important part of the work we do. It's the basis for making decisions about how to best conserve and manage our provincial fisheries resources. Assessment is generally aimed at measuring the 'health' of fish populations, important aspects of fish biology and our use of fisheries. Fisheries are assessed at intervals based on departmental resources and priority. This priority is largely based on our understanding of the status of the fish population and the pressures or threats against it.

Because fish are not readily observed (countable), assessing them is a challenge. A variety of tools is used in Alberta to collect information from fish populations and fisheries. Each has its own specialized application. The needs of a particular situation determine which method of data collection is used. In some situations, the use of a combination of data collection tools is best. Also, assessment tools need to be sound and applied correctly,



to ensure the information provided is of good quality. In Alberta, a Fisheries Standards Committee is tasked with developing and reviewing data collection protocols.

INDEX-NETTING

Index-netting can provide fish population information from a broad range of fish species and sizes. It is a very cost and time-efficient means to sample a fish population. The most common index-netting protocol used in Alberta lakes is Fall Walleye Index Netting (FWIN). FWIN uses standardized nets, with a range of mesh sizes, set during a specific water temperature range in the fall (when fish are spread most evenly in the lake) for a 24-hour period at sites selected according to a depth-based, randomized approach. Although initially designed for Walleye assessment, FWIN is being tested as a means to assess Northern Pike populations and other fish species.

FWIN results provide unbiased information directly used for stock assessment, including:

- a catch rate that is correlated to density in Alberta lakes;
- size and age structure of the fish population, by gender;
- age at maturity;
- growth rate and condition;
- disease and contaminant monitoring;
- estimates of production; and
- mortality and recruitment estimates.

FWIN does not directly measure fisheries use (e.g., numbers of fishers, harvest), although the relative amount of pressure on fish stocks is indirectly assessed by the health of the fish population.

ELECTROFISHING

This is a method of capturing fish that is favoured when working on flowing waters of a variety of sizes, although it is also used in lakes and ponds. Electrofishing involves the safe use of appropriate forms of electricity which are directed to the water, creating an electrical field. Fish within the electrical field are held by it, oriented towards the source (the anode) and are either immobilized or involuntarily swim towards it. In this condition, they are easily captured with dip nets and transferred to a holding tank where, once out of the electrical field, they recover. Captured fish are sampled and may also be tagged before being released back to the water.

TRAPPING

Traps are used to catch fish alive in situations where they are concentrated and readily-catchable, such as in spawning areas. Traps are often used to capture fish for tagging and tracking studies. The downside to using traps is that they generally don't provide useful estimates of fish abundance (e.g., fish per hectare) because they don't sample a representative area, but rather a concentration of fish at a place in time, and they typically don't provide a sample of immature fish.

ANGLER SURVEYS

In some situations, it is necessary to know the 'vital statistics' of a fishery, such as the number of fishers, the time they spent fishing and the results of their efforts, to determine catch and harvest rates and provide

other user-based information. Angler surveys, often referred to as 'creel surveys' are used to obtain this information. In a creel survey, anglers are commonly interviewed during or at the conclusion of their fishing trip. Questions are asked about time spent fishing, and fish caught, kept and released, in addition to other questions that may provide answers to questions of management concern.

SAMPLE ANGLING

Sometimes, the best way to catch fish for studies is to use a hook and line, particularly for capture of live fish in remote locations where transporting nets or electrofishing gear is not practical. Sample angling, sometimes called test-fishing, is occasionally used to capture and sample fish above or below size limits in a fishery, where otherwise only those fish kept by anglers would be available for sampling.

POPULATION ESTIMATES

The numbers of fish in a population can be estimated using many methods. Typically, fish population estimates are done using a mark and recapture approach. This involves capturing and marking a sample of fish, releasing them back to the water, and subsequently repeating the sampling effort to count the number of marked versus unmarked fish in this second sample. The ratio of marked to unmarked fish is then used to generate an estimate of the entire population. In a mark-recapture survey, different methods of fish capture can be used or combined. For example, it is often

efficient to capture spawning fish in traps where they are congregating and mark them. Marked fish will be recaptured by anglers and may be counted by survey attendants during a creel survey.

MOVEMENT STUDIES

In order to answer important questions about the biology of fish, it is often necessary to know where they are at certain times of the year. Movement studies of fish can inform biologists about the locations of important habitats and critical times for protection. Although fish can be captured and tagged in a location and recaptured either in the same or a different location at a later time, this approach doesn't provide information about the journey or time between the two events. The best information is provided by telemetry studies, involving the use of radio transmitters which emit a unique signal detectable by electronic receivers. Quite often, aircraft are used to track fish moving in river systems. Fish like Lake Sturgeon have been observed to travel hundreds of kilometres up and down rivers in the Saskatchewan River system, telling us much about their biology and habitat needs.

GENETIC STUDIES

The collection of genetic information from fish has a number of uses. Similar to movement studies, genetic information can be used to define the boundaries, and extent and size of fish populations, as well as to identify ecologically-significant strains, races and species of fish. Genetic relationships between individual fish and populations can be important for the development of fish conservation and management plans. For example, knowledge of stock origin and genetic compatibility is important when forming plans for restorative stocking strategies. In most cases, genetic information is collected from fish using non-lethal means.



FACT

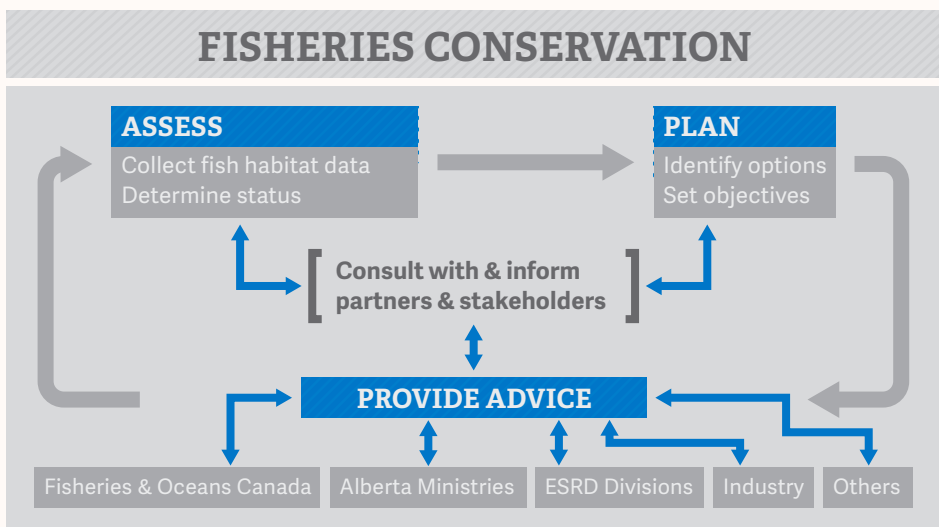
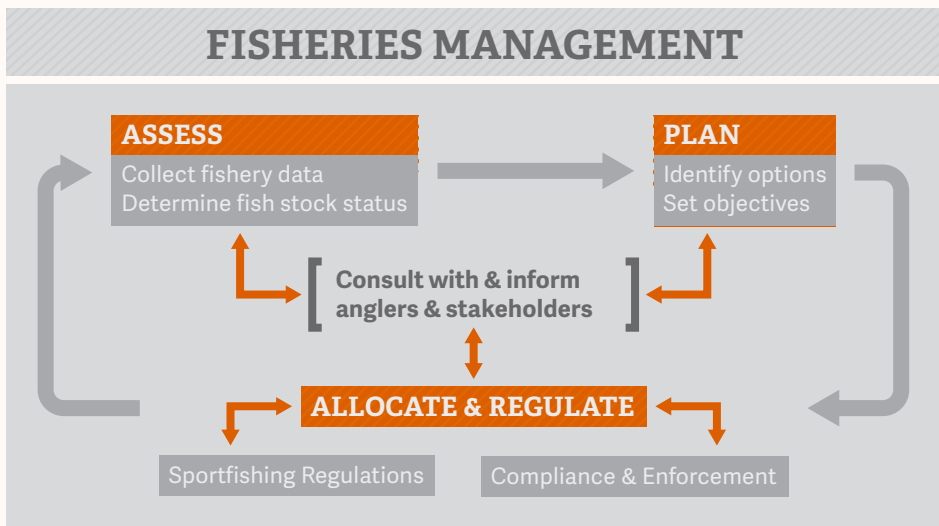
Unlike other vertebrates, fish do not have a skull, but many small closely-joined bones in the head. This makes them more buoyant in water. There are 48 bones in the head of a yellow perch.



**ALBERTA
FISHERIES
MANAGEMENT
BASICS**

ALBERTA FISHERIES MANAGEMENT BASICS

This strategy combines the management of the conservation of fish species, communities and fish habitat, together with the management of recreational, domestic and commercial fisheries. It reflects the distinction between the regulatory role of ESRD in fisheries management (via Alberta Fishery Regulations) and the advisory role of the department's fisheries management staff in guiding the habitat protection and aquatic conservation efforts of others in ESRD, and more broadly, in partner agencies.



ALBERTA FISHERIES MANAGEMENT BASICS: ASSESSING FISH STATUS

Status of fish in Alberta is assessed for both the individual species and for a community of species. Methods and tools are developed to support planning needs for both assessments.

Fish Population Assessment to support:

- Fish Management Plans
- Species Management Plans
- Species Recovery Plans

Using data collected for a species and the **Fish Sustainability Index**

Fish Community Assessment to support:

- Water Body Management Plans
- Watershed Management Plans
- Land-use Framework Regional Plans

Using data collected for multiple species and the Index of **Native Fish Integrity**

The **Fish Sustainability Index (FSI)** is a new approach for assessing, summarizing and communicating the status of fish populations in Alberta. The FSI process is not a new way to collect data, but a new way to organize, use, and present it. It uses information already gathered by standardized fisheries data collection and methods of analysis.

The purpose of the FSI is to:

- provide a landscape-level, provincial overview of the sustainability of fish populations;
- allow for comparisons in changes to population sustainability over time;
- monitor changes in fish sustainability resulting from management actions (e.g., regulations, land-use planning);
- provide information to assist in setting priorities and plans for resource management; and
- provide more effective communication to stakeholders, regulators, and partners about the status of fish populations.

The **Index of Native Fish Integrity (INFI)** is a technique to assess the health of fish communities. This index is used to support the development of regional plans. The INFI provides an overall score of the current health of a fish community, relative to an unaltered state.

The purpose of the INFI is to:

- provide a watershed, landscape-level, and provincial overview of the health of entire fish communities and aquatic ecosystems;
- allow for comparisons in changes to fish community health over time;
- monitor changes in fish community health resulting from human activities and management actions (e.g., regulations, land-use planning);
- provide information to assist in setting priorities and developing plans for conserving fish communities; and
- provide more effective communication to stakeholders about the health of fish communities and aquatic ecosystems.

ALBERTA'S FISHERIES MANAGEMENT BASICS:

ALLOCATING FISH TO USERS

FISH HARVEST IS ABOUT MORE THAN JUST THE FISH THAT ARE TAKEN HOME

Many Albertans use our fisheries resource, whether it's in a consumptive or non-consumptive manner. Sharing this resource requires knowledge of the fisheries, their current and desired state, and the nature of use and users.

Almost any fishery results in some mortality or harvest. While sport anglers are increasingly practicing catch-and-release, a few fish accidentally die from hooking injuries and must be included in harvest calculations. For example, commercial net fisheries targeting Lake Whitefish will unavoidably catch and kill some Walleye and Pike. Tournament organizers carefully design catch and release practices, but the large volumes of fish caught still result in fish being injured or killed at weigh-in, at boat-side, and during pre-fishing. On average, incidental or accidental mortality equates to roughly five percent of the fish caught and released. However, individual angler surveys at specific lakes may identify a more accurate percentage.

At some Alberta lakes, mortality from catch-and-release angling, including sport fishing and tournaments, is large enough to result in clear signs of overfishing (anglers see smaller, younger, and fewer fish). Even though

the percentage of released fish that later die might be very small, when very large numbers of fish are caught and released, this small percentage adds up to a big harvest. The results of too much mortality are reduced quality and sustainability of the fisheries for all users.

Allocating fish harvest amongst all users must therefore consider allocating all sources of fish mortality, such as take-home harvests, but also include commercial fishery by-catch, sport release mortality and tournament accidental mortality. It must also take into account changes in fish habitat that may affect the amount of fish that can be produced.

One of the key responsibilities of ESRD is the allocation of fish that are surplus to conservation needs. Allocation is accomplished through a clearly-defined and transparent process which includes public consultation. Ideally, fish are shared amongst users, thus providing a multitude of benefits while still supporting conservation needs.

In addition, reductions in fish production need to be considered when determining the available supply of fish for other users. ESRD may treat losses of fish and fish habitat attributed to land-use activities as a reduction in fish production. In effect, this is an allocation of the fisheries resource to land use.

ALBERTA'S FISHERIES MANAGEMENT BASICS:

OPTIMIZING SUSTAINABLE FISHERIES

Yield is the amount of fish that a fishery produces per year. The amount of young fish that are produced and added to the fishery can be increased to compensate for the loss of adults due to harvest. **Maximum Sustained Yield (MSY)** is theoretically the maximum yield of fish that can be sustainably removed from a fish stock over an indefinite period without intentionally collapsing the population. In the early years of fisheries management, MSY was often used in planning fisheries harvests. Over time, it was realized that the successful implementation of MSY in the real world is very difficult.

The downfall of the MSY approach is that it requires the constant, high production of young fish and intensive monitoring. Nature rarely provides such consistency of production, and surveillance of all fisheries on an annual basis is not realistic. With harvest at maximum levels, all it takes is a decline in reproduction to quickly spiral into a collapse caused by too much harvest of too few fish. MSY-managed fisheries often show a boom and bust cycle, with dramatic collapses being followed by long closures and a recovery period that may take decades. Some of the most dramatic global fishery collapses have occurred while trying to harvest fish at the MSY level and ignoring the trade-offs with social and ecological factors.

In Alberta, an alternative to MSY is used whereby the best-available information is used to design harvest strategies that achieve a desired balance between fishing opportunities and the sustainability of the fishery. This is referred to as **Optimum Sustained Yield (OSY)**. ESRD's primary goal in using the OSY approach is to sustain fish populations while providing for fishing opportunities. It is understood that our knowledge of these systems will always be imperfect. For that reason, OSY is used as a management tool that balances the trade-offs between the risks of overfishing versus the social benefits of fishing. Appropriate trade-offs remain a key challenge facing today's fisheries managers.

For example, Lake Trout in an un-fished lake may likely be abundant and large. Angling and harvest of this fish population will cause the average size of fish to decline (lowering the quality). Increasing harvest means smaller and smaller fish will be caught with declining fishing quality. What size of trout is acceptable to anglers? Biologically, how low can the average size become before spawning failures occur? Setting a sustainable harvest is always a trade-off between the quality of fishing, opportunities for more fishermen, and the risk of overfishing and collapsing the fishery.

ALBERTA'S FISHERIES MANAGEMENT BASICS:

SETTING FISHERIES REGULATIONS TO ACHIEVE DESIRED OUTCOMES

When setting Alberta's Fisheries Regulations, ESRD recognizes that there is a trade off between increasing fishing pressure and harvest opportunity, and maintaining fisheries' sustainability and fishing quality. Generally, fisheries under lower pressure provide more options for a variety of quality-based outcomes. ESRD must strike a balance between the needs of the community and that of the resource.

Fishing regulations (e.g., size limits, gear restrictions, harvest tags) are used to manage harvest. Fisheries managers must decide whether to maintain or change the status of a fishery from a current to a desired condition. The larger the gap between current and desired status, the larger will be the restrictions on harvest and fishing, resulting in fewer opportunities for all users.

Conservation of Alberta's fish for the future is a baseline requirement for all of Alberta's fisheries. The desired status of a fishery, above this baseline conservation threshold, is set in consultation with stakeholders, with consideration of sustainability requirements and trade-offs.

STAKEHOLDER CONSULTATION

Consultation about a fishery is not always the same. The form of consultation reflects the status of fish populations within the fishery. As shown in the figure opposite,

as fish populations and fishery status improve, and options for use increase beyond merely recovery, the power to define Fisheries Management Objectives and select management options shifts towards stakeholders. More emphasis can be placed upon community needs knowing that the resource is sustainable.

See Figure 1.

FORMS OF CONSULTATION

Daily Interactions: conversations that occur daily between the departmental fisheries staff, partners and the public.

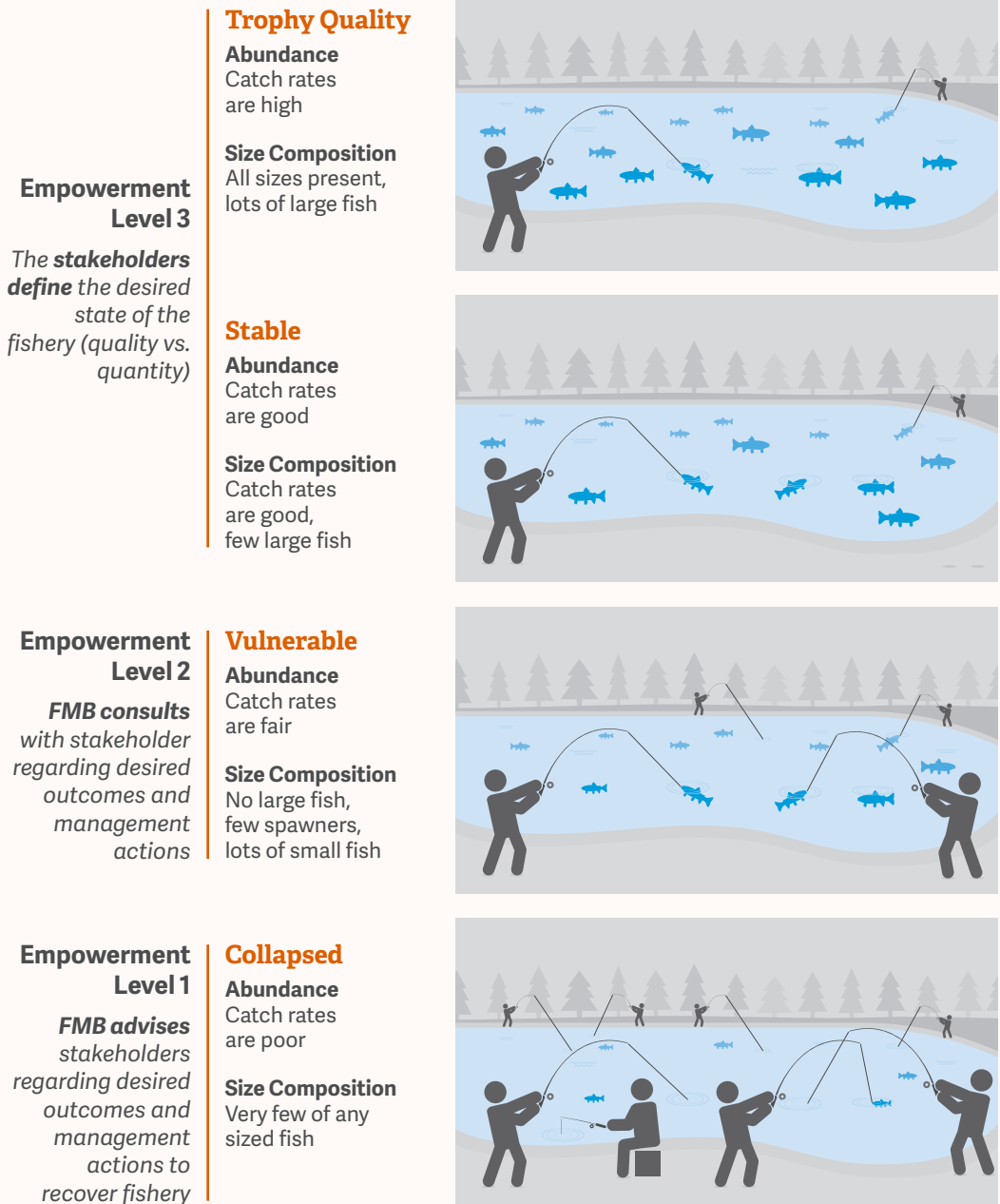
Local Meetings: regular opportunities to share information with members of clubs and stakeholder organizations, as well as with corporate meetings.

Round Tables: dedicated, formal consultation forums that occur on a provincial and regional scale, consisting of members of stakeholder organizations, other government agencies and non-government organizations, as well as concerned members of the general public. Round tables are usually held only once or twice a year.

Surveys: may occur at any time to obtain feedback from stakeholders on specific topics or questions. Web-based surveys are increasingly common. Surveys can be either based on a selected group of participants or target the general public.

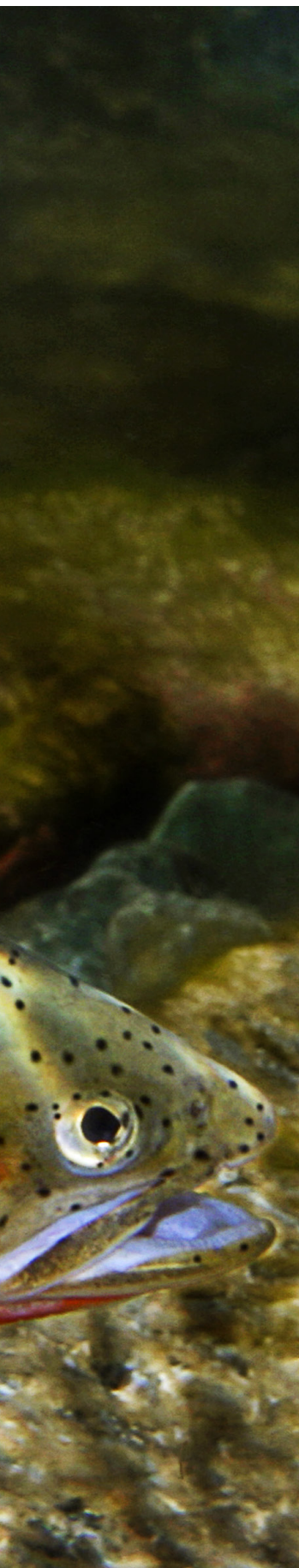
FIGURE 1.

Fishery Classification





**FISH
MANAGEMENT
AND
CONSERVATION**



GUIDING STATEMENTS

FISH MANAGEMENT AND CONSERVATION

Fish Management and Conservation is an important component of the integrated ESRD portfolio of resource management within Alberta. While ESRD embodies an integrated vision and mandate that unifies and accommodates the needs and priorities of different resources, fisheries managers have a more singular focus and will employ the following, specific vision, mission, goals, guiding principles, and priorities and outcomes to their decision making.

VISION

Alberta's fish will be managed to meet the challenge of sustaining their ecological integrity while providing social and economic benefits to Albertans.

MISSION

Through the application of science, innovation, consultation and a focus on stewardship, strategies will be developed and implemented to actively manage the use of Alberta's fish to enhance their short and long-term sustainability.

OVERALL GOAL

Alberta's fish and their habitats are healthy, productive and sustainable.

GUIDING PRINCIPLES

Fisheries will be managed to optimize sustainable benefits for Albertans.

There will be public involvement and education in the conservation and management of Alberta's fish populations.

The precautionary management principle will be applied to the conservation and management of wild fish

(Code of Conduct for Responsible Fisheries, 1995. Fisheries Dept. Inland Fisheries, Food and Agriculture Organization, United Nations).

WHAT DOES THIS MEAN?

Harvesting a fish population causes trade offs. Increasing fishing pressure tends to decrease the quality and sustainability of a fishery. For Alberta, optimizing sustainable benefits means finding the balance between fishing opportunities, fishing quality and the sustainability of the fishery. This is a dynamic process of finding balance between social values and knowledge of ecological consequences.

WHAT DOES THIS MEAN?

Greater public awareness and the involvement of a knowledgeable public in fisheries management are essential to increasing public support to recover and sustain aquatic habitats and fish populations. Public involvement will be incorporated into fisheries management using consistent and clearly understood processes. Major initiatives will be announced in the Alberta Guide to Sportfishing Regulations one year before implementation. Public review will primarily occur at the local level, with additional input from the Alberta Fisheries Management Round Table committee. The final step is to seek Ministerial approval of proposed management changes.

WHAT DOES THIS MEAN?

We will plan and act with foresight to avoid putting the sustainability of fish and aquatic systems at risk. We will take into account uncertainties and the potential consequences of being wrong before making a decision.

The conservation and management of fisheries will be conducted using science and adaptive management, on the basis of fundamental ecological principles and factual information.

The natural biological diversity of the fish fauna in provincial waters is to be maintained, and the depletion of species, populations, subpopulations or unique strains must be avoided.

The management of fish to maintain fishing opportunities should not create undue risk to the sustainability of a native fish species or population.

WHAT DOES THIS MEAN?

We will use the best information available. While we will strive to be innovative and adaptive, we will ensure our management approach follows the rules of biological and ecological science and is grounded within the limits of natural systems. We will maintain contact with the greater scientific community and literature, strive to increase our scientific capability as a staff, and will engage in peer-review of our plans and actions. Wherever appropriate, we will employ an investigative approach to monitor the results of our actions and learn as we go.

WHAT DOES THIS MEAN?

Every species of fish in an aquatic community plays an important and integral role in the overall healthy function of the ecosystem. The diversity of a fish community is closely related to the diversity and health of habitat. Fisheries management and fish conservation strategies will consider the fish community and aquatic ecosystem in entirety, and will strive to maintain natural diversity and integrity in both the fish community and habitat. Where appropriate, biological diversity will be measured and will form a basis for management decisions. Higher management priority will be placed on native, versus non-native fishes. Fish stocking programs will be modified to protect native fishes where necessary. Control or removal of invasive, exotic species may be done to restore ecological integrity.

WHAT DOES THIS MEAN?

Higher management priority will be placed on native, versus non-native fishes. Fish stocking programs will be modified to protect native fishes where necessary. Control or removal of invasive, exotic species may be done to restore ecological integrity.



The co-existence and dependence of species on one another will be recognized and accommodated for when making management decisions.

Wild fish populations are to be maintained by natural reproduction wherever possible.

WHAT DOES THIS MEAN?

We will assess and consider the effects of management decisions on all fish species in a water body, and will not knowingly implement actions that will indirectly jeopardize the sustainability of any co-existing fish species. For example, regulations that increase Walleye harvest may increase overall fishing effort and result in excessive Northern Pike harvest. If needed, Northern Pike regulations would be modified to provide sufficient protection.

WHAT DOES THIS MEAN?

Natural reproduction is the most biologically sound and cost-effective way of maintaining fish populations. The highest priority allocation of fish resources is to the population itself, to ensure sustainability. Notwithstanding the importance of natural reproduction, Alberta will continue to support a significant and important fish culture program to create fisheries that would not exist through natural reproduction of wild fish. Where necessary, fish culture may also be used to maintain fish species threatened with extirpation (local extinction), or to re-establish fish populations that have been eliminated through excessive harvest or habitat alteration.



Protecting fish habitats is critical to sustaining Alberta's fish populations.

Alberta's fish stocking program will be delivered in an ecologically and socially responsible manner.

WHAT DOES THIS MEAN?

We will work with the regulators of fish habitat, the public and other stakeholders to collectively act in a manner which first and foremost maintains or avoids the loss of the integrity and productive capacity of fish habitat. Where feasible and beneficial, restoration will be pursued. Newly constructed habitats designed to offset the impacts resulting from naturally occurring aquatic habitats will be considered a less desirable alternative to protection.

WHAT DOES THIS MEAN?

Native and non-native fish will be stocked to provide recreational benefits and restore extirpated fish populations using species and practices that are supported by the conservation and biodiversity principles of Alberta Environment and Sustainable Resource Development. Waters which are stocked by the department for recreational use must be accessible to the public with a minimum of right-of-way to the water body without fear of trespass.





PRIORITIES AND OUTCOMES

1 FISHERIES MANAGEMENT

Aim: To actively manage fisheries in order to optimize sustainable benefits from the fisheries resource. Management decisions will follow a clear and effective evaluation of the resource status and will be in accordance with allocation priorities.

A FISHERIES RESOURCE STATUS AND SUSTAINABILITY ASSESSMENT

RATIONALE:

Clear, effective and regular evaluation of the status of provincial fish populations is needed to provide a defensible and consistent assessment of the sustainability of provincial fisheries in support of fisheries management and fish conservation.

This requires the collection of relevant information and subsequent analysis. The implementation of an Index of Native Fish Integrity (fish community level) and a Fish Sustainability Index (individual species level) is a high priority departmental initiative that allows ESRD to organize and analyze the data collected about fish and aquatic ecosystems and facilitate sound decision-making.

Over time, data collection and status assessment tools must be refined and improved as needed in order to stay current with the best methodologies and science. This allows the department to increase the quality and comparability of the data that it collects, the scope of relevance to all fish species, the efficient use of departmental resources, and the ability to integrate this information with other aquatic monitoring, conservation initiatives and cumulative effects based land-use planning in the province.



FACT

According to the 2010 Survey of Recreational Fishing in Canada, just over 12 million fish were caught by anglers in Alberta, as many as were caught in British Columbia in both fresh and tidal waters combined. Approximately 4 million out of this total were walleye.

PRIORITIES:

- Assess and report the status and sustainability of the province's fish populations.
- Develop and apply tools and approaches to describe relationships between fish population sustainability and human activities.
- Provide information about current and future risks to the sustainability of Alberta's fish populations.
- Refine, improve and standardize the tools and approaches used for collecting and analyzing data from fisheries, fish populations and fish communities.

SUCCESS INDICATORS:

- Indices of Native Fish Integrity and Fish Sustainability Indices are used in land-use planning to assist with balancing of social, economic and environmental values.
- Fish Sustainability Index assessments are conducted for managed fish species in Alberta, in order of priority for management and conservation.
- Government of Alberta departments and partner agencies indicate understanding of and support for the Native Fish Integrity and Fish Sustainability Indices.
- Fish Sustainability Index assessment summaries are publicly accessible.
- Information about all fish species is collected and reported for all field surveys.
- Management of entire fish communities is emphasized over single species management approaches.

- Fisheries data and data collection methods are incorporated into relevant provincial initiatives (e.g., Alberta Biodiversity Monitoring Institute).
- Field surveys and assessment tools are evaluated and improved as needed.

B SPECIES MANAGEMENT PLANNING

RATIONALE:

Sound fisheries management decisions are supported by plans developed through the use of a clear and logical management framework. Species Management Plans that provide an easy to understand and logical approach are needed to guide the setting of harvest levels and regulations and to assist in the application of other fisheries management and conservation tools.

Species Management Plans outline routine management activities and may identify key uncertainties for further investigation.

PRIORITY:

- Develop and revise fish Species Management Plans following a consistent, clear and efficient approach.

SUCCESS INDICATORS:

- The format of fish Species Management Plans is reviewed and revised to be more concise.
- Species Management Plans are completed for key managed fish species.
- Stakeholder consultation and communication efforts regarding species management, including local fishery-specific issues, are guided by Species Management Plans.
- Fisheries regulations are consistently applied and reflect management direction described in approved species or Water Body Management Plans.
- Key uncertainties are stated in Species Management Plans and are resolved through special initiatives and applied research.



C FISHERIES ALLOCATION

RATIONALE:

Balancing the trade-offs between the risk of overfishing for commercial benefit versus the social benefits of fishing versus conservation goals is a key challenge facing fisheries management in Alberta. Defining Fisheries Management Objectives in a clear, concise manner improves stakeholder understanding of fisheries management decisions.

Fish harvest includes intentional harvest and indirect, unintentional mortality.

Management strategies that optimize sustained benefits and achieve a balance amongst all fisheries stakeholders are based on the best available information and science.

PRIORITIES:

- Achieve clearly-defined Fisheries Management Objectives.
- Optimize and integrate sustainable fisheries' benefits with conservation needs and stakeholder values.

SUCCESS INDICATORS:

- A revised, concise format is implemented for setting Fisheries Management Objectives.
- Conservation requirements for managed fish species (e.g., population abundance and structure) are quantified and clearly stated.
- Fisheries Management Objectives are set for managed fish populations which integrate stakeholder values and current and desired status.
- Albertans have a diversity of fishing opportunities that are provided via the use of a suite of effective and sound management options, while ensuring fisheries remain sustainable.
- The fish user allocation ranking is reviewed and revised to include competitive fishing events.
- Alberta's guidelines are updated such that lakes are managed for long term, sustainable Lake Whitefish populations without negatively impacting other fish species or user groups.
- Effort and harvest information is obtained from First Nation and Métis fishers to ensure fish conservation and the effective allocation of fish.

D FISH STOCKING

RATIONALE:

In some areas of the province, stocked trout fisheries provide the most popular and productive stillwater fisheries available. Stocking of non-native trout supports roughly one quarter (25%) of all fishing effort in Alberta. Stocking can also be an important population restoration tool.

Restoration of extirpated native fish populations is required to fulfill federal and provincial policies on sustaining biodiversity.

Fish stocking can increase recreational opportunities for anglers. However, concerns regarding genetic compatibility and risks of unintentional transfer of aquatic organisms must be managed to ensure that ecological and conservation values are considered along with stakeholder expectations.



FACT

Burbot, a freshwater member of the Cod family, is the only fish species in Alberta that grows faster during winters and spawns under ice cover. When spawning, burbot make noises described as “burps”.

PRIORITIES:

- Enhance non-native stocked fisheries without compromising wild fish conservation and biodiversity, and management objectives for other fisheries.
- Implement actions to restore high priority fish populations that have been extirpated as per approved plans (e.g., Species Management Plans, Water Body Management Plans).

SUCCESS INDICATORS:

- All fish stockings are consistent with relevant provincial policies;
- Angler satisfaction and participation at stocked fisheries is maintained or increased;
- More opportunities are available to anglers due to increased numbers of stocked waters and fish;
- Best management practices and guidelines are implemented to ensure that wild fish stocks are protected from disease, parasites, competition and unwanted genetic mixing that could result from stocking programs;
- Recognizable, genetically-distinct and intact native fish stocks are protected;
- Risk or degree of escape of hatchery-reared fish from stocked waters to adjacent waters is determined prior to stocking in areas where the stocked fish could survive outside the stocking location;
- Development of a population restoration program for native fish species at risk that assesses, on a case-by-case basis, native fish species and populations at risk; and
- A complete review of the fish stocking program and hatchery operations to determine opportunities for facility upgrades benefiting all fish stocking operations.

E PUBLIC INVOLVEMENT AND CONSULTATION

RATIONALE:

The shared responsibility and management of the fisheries resource in Alberta considers the values of Albertans. A full range of regulations and management techniques must be considered to ensure future healthy populations are maintained. These healthy fisheries provide many options for sustainable use. However, when fish populations are low, the options available for management become limited. Stakeholder's expectations, biological realities and desired outcomes must be aligned to foster good decision-making.

PRIORITY:

- Consistently implement a clear and transparent consultation framework that provides the public with opportunities to share values and aid decision-making processes regarding fisheries management and fish conservation in Alberta. The framework should clarify how stakeholder input and empowerment varies relative to fishery status.

SUCCESS INDICATORS:

- Public consultation about fisheries management occurs using a model that is consistent with provincial government consultation guidelines;
- Information is shared amongst all users to inform and improve awareness of fisheries management initiatives;
- The provincial round table on fisheries management is effective; and
- Regional-level fisheries consultation processes are established and consistently implemented.

Stakeholder's expectations, biological realities and desired outcomes must be aligned to foster good decision-making

F FIRST NATIONS CONSULTATION

RATIONALE:

Treaties ensure the rights of First Nations to access fish for food or ceremonial purposes. After conservation needs, First Nations are the highest priority user of fish in Alberta. The Sparrow Decision (1990) clarified that although treaty rights may be infringed upon, this can only occur when a demonstrable conservation issue is identified, meaningful consultation with the affected First Nations has occurred, and attempts are made to first mitigate any infringement. Ensuring that any regulation or management action proposed effectively and honourably considers potential effects on First Nations is a key obligation of the Government of Alberta. Consultation with First Nations will be improved by increasing the knowledge and understanding of the needs and issues faced by both parties.

After conservation needs, First Nations are the highest priority user of fish in Alberta

PRIORITY:

- Improve the department's understanding of First Nations' needs for fish;
- Similarly, work with First Nations to enhance their understanding of fisheries management issues and processes; and
- Fulfill obligations to consult with First Nations on the basis of good communication and understanding.

SUCCESS INDICATORS:

- The Government of Alberta's duty to consult is fulfilled through the use of the approach outlined in departmental standards for consultation with First Nations;
- First Nations representatives indicate an improved understanding of fisheries conservation and management issues, and processes and regulations for waters they fish, through meaningful discussions with departmental staff;
- Departmental staff involved with First Nations consultation indicate a better understanding of First Nations traditional use of fish and their concerns; and
- Revised or new estimates of First Nations traditional harvest levels at domestic fisheries are available for fisheries management purposes.

2 FISH AND ECOSYSTEM CONSERVATION

Aim: Maintain or improve the health of aquatic ecosystems, supporting populations of native fishes and desired non-native fishes, to optimize and sustain environmental, economic and social benefits for Albertans.

A FISH CONSERVATION

RATIONALE:

Alberta's aquatic natural resources and healthy ecosystems provide many benefits that are pivotal to ensure the well-being of Albertans. Healthy fish populations and communities are crucial to the integrity of aquatic ecosystems and are excellent indicators of good water quality and quantity.

Maintaining natural biodiversity, with the suite of organisms uniquely adapted to their ecosystems, is a key goal of biological conservation. Once lost, biodiversity and unique adaptations are gone forever. Sound fisheries and ecosystem management which conserves and protects aquatic ecosystems is more cost-effective than recovery efforts.

The conservation of fish and aquatic ecosystems requires collaboration amongst stakeholders, regulators and other partners.

PRIORITIES:

- Implement and prescribe management practices to conserve, protect and recover populations of native fish species and communities to sustainable levels: and
- Collect and share information, and provide advice and guidance to support the stewardship, conservation and restoration of fish communities and habitats.

SUCCESS INDICATORS:

- Native fish populations are assessed as per Alberta's Strategy for the Management of Species at Risk (2009-2014);



- Species recovery and management plans are developed and implemented as required.
- Index of Native Fish Integrity and other assessments are completed for focal fish populations and communities;
- The status of fish populations and the intrinsic value of a healthy ecosystem, along with risks caused by acute and cumulative effects, are considered in land-use and water management planning and decision-making related to the Land-use Framework and the Water for Life strategy;
- Needs and opportunities for biological reference areas are identified and communicated to partner agencies for planning purposes;
- Plans to compile information about fish population genetics are developed and implemented;
- An effective program for monitoring fish health is developed in collaboration with other agencies;
- Unauthorized fish transfers and invasive species introductions (and subsequent exposure to fish pathogens, parasites and diseases) are reduced through enforcement and education campaigns, and where appropriate, actions to eliminate the unwanted organisms are undertaken;
- Recovery of native fish species of concern is facilitated by a reduction or avoidance of competition from non-native fish where required; and
- Legislative time frames for fish species recovery plans are met.

B HABITAT PROTECTION

RATIONALE:

Habitat protection and restoration is achieved through collaboration with other provincial and federal regulatory agencies and stakeholders. The compilation of information about fish habitat status, threats and mitigation is fundamentally important to increasing knowledge, guiding stewardship, facilitating the protection of fish habitats and focusing enforcement efforts. The development and province-wide implementation of policies, guidelines, standards and tools aimed at fish habitat assessment and protection facilitates a well-supported, consistent and clear response to requests for information and advice from regulators and stakeholders. Restoration of degraded fish habitats will improve the sustainability of specific fish populations and will provide beneficial case studies and examples, upon which subsequent efforts can be built.

Habitat protection and restoration is achieved through collaboration

PRIORITIES:

- In collaboration with provincial and federal regulatory agencies and stakeholders, collect and share information about fish habitat conditions, threats and consequences of land-use decisions and mitigation options in support of habitat protection efforts;
- Develop, implement and share approaches and tools to integrate fish conservation values and habitat protection needs into decisions about land and water use and inform land-use regional planning; and
- Capitalize on opportunities to increase fish habitat integrity through collaborative restoration efforts.

SUCCESS INDICATORS:

- Strategic advice is provided to partner agencies, advocating for fish habitat protection and avoidance of loss or damage;
- The habitat health assessment component of the Fish Sustainability Index is further refined to become more quantitative;



FACT

There are approximately 800 naturally fish-bearing lakes in Alberta, with another 300 lakes stocked annually with hatchery-source trout. With over 300,000 active anglers in the province, the ratio of anglers per lake is roughly 300 to 1.

- Habitat health assessments in the Fish Sustainability Index for managed fish species are available to inform habitat protection and management efforts;
- Habitat health assessments are incorporated into landscape-scale and local operational management decisions;
- Information about degraded habitats is shared with partner agencies and recommendations for remediation are communicated;
- Advisories are provided in response to critically-low habitat health or fish-kill situations.
- Habitat health ratings increase for managed fish populations at risk;
- High-priority needs for information about relationships between habitat condition and fish status are identified;
- Quantified relationships are developed between habitat health and fish community and population status, and used to provide advice to habitat regulators and decision-making processes;
- Multi-agency working groups are maintained or developed to address habitat management issues;
- Partner agencies use statements related to fish habitat protection in Fisheries Management Objectives in making decisions about land and water use;
- A consistent approach to identifying non-fish-bearing habitat is developed for Alberta and endorsed;
- Habitat loss and alterations are factored into fishery status assessments, management plans and harvest allocations;
- In-stream flow needs are determined for high-priority flowing waters;
- A process for managing water withdrawals to minimize risk to fish is developed and implemented in collaboration with partner agencies; and
- Habitat health assessments (e.g., within the Fish Sustainability Index) are used to support audits of habitat protection policies and actions.



WE DON'T WORK ALONE

Other government agencies, the public and industry also have important, related roles in fisheries management.

THE ROLE OF ALBERTA AGRICULTURE AND RURAL DEVELOPMENT:

This department licences aquaculture operations to ensure compliance with guidelines and regulations, while providing opportunities for individuals to develop private or commercial fish farming operations.

THE ROLE OF ALBERTA TOURISM, PARKS AND RECREATION:

Alberta Tourism, Parks and Recreation manages flora and fauna, access and land use within provincial

parks and protected areas, where it also enforces regulations affecting recreational and food fisheries. The Fisheries Management Branch manages the fisheries within these same areas, in consultation and collaboration with departmental staff.

THE ROLE OF ALBERTA HEALTH:

Alberta Health evaluates contaminants in fish to determine safe consumption levels, issuing consumption warnings to the public as required.

THE ROLES OF THE FEDERAL DEPARTMENTS OF FISHERIES AND OCEANS CANADA AND ENVIRONMENT CANADA:

Fisheries and Oceans Canada manages and protects fish habitat from harm pursuant to



the federal Fisheries Act. Some of this responsibility is shared with Environment Canada who administers the pollution prevention provisions of the Fisheries Act. In discharging their duties under the Fisheries Act in Alberta, these two federal departments work closely with Alberta provincial staff. Fisheries and Oceans Canada take into account Alberta's Fisheries Management Objectives when issuing regulatory decisions. Fisheries and Oceans Canada also has responsibilities pursuant to the federal Species at Risk Act and works with ESRD staff to identify and recover endangered or threatened populations of aquatic species in Alberta.

THE ROLE OF ABORIGINAL PEOPLES WITH CONSTITUTIONALLY PROTECTED RIGHTS:

Alberta is committed to strengthening relationships and learning from its Aboriginal peoples. It respects First Nations' Treaty rights which are protected by section 35 of the Constitution Act, 1982⁹ and provides provincial consultation opportunities to First Nations and Métis to develop approaches for the sustainable use and harvest of available fisheries resources for domestic consumption.

Aboriginal communities can help ensure the sustainability of the fisheries resource by reporting on their levels of harvest. An additional and valuable component of Aboriginal consultation includes the sharing of traditional knowledge of past fishery conditions, which helps to develop a picture of the history of the resource and a path forward in sharing the resource.

9. Government of Alberta (2014), The Government of Alberta's Policy on Consultation with First Nations on Land and Natural Resource Management, 2013 <http://www.aboriginal.alberta.ca/documents/GoAPolicy-FNConsultation-2013.pdf>

THE ROLE OF THE ALBERTA CONSERVATION ASSOCIATION (ACA):

The ACA has been delegated responsibility and authority by the Minister of Environment and Sustainable Resource Development to use licence fee levies for delivery of its Fisheries Program, in support of the ESRD's provincial Fisheries Management Objectives. The ACA program supports the department in the determination of stock and population status, the development and implementation of management plans, and the management of consumptive and non-consumptive use and users. The ACA Fisheries Program includes the assessment of fish populations, fisheries and fish habitats to determine distribution, abundance, status, harvest and trends. Also included is the stocking of select trout fisheries via the Enhanced Fish Stocking Program. Through the Report-a-Poacher Program, the ACA also helps reduce the loss of fish due to illegal harvest.

THE ROLE OF MUNICIPAL GOVERNMENTS:

Municipal government regulate certain land use activities that may have an impact on fish and fish habitat. In addition, municipal governments undertake their own activities that can have a significant impact on aquatic systems, and must tailor their activities and approvals to encourage the protection and maintenance of aquatic systems.

THE ROLE OF INDUSTRY:

Industry regulation and cooperation is important for the health of Alberta's fisheries. Industry must obtain the required regulatory approvals for its work, incorporating appropriate fish and habitat protection, mitigation and compensation measures to minimize effects on fish populations. Industry also works with government agencies to ensure that sound resource status information is available before, during and after industrial activities.

THE ROLE OF THE PUBLIC:

Public participation is vital in managing Alberta's fisheries. Contributing to the development and support of Fisheries Management Objectives (by responding to invitations for public consultation), promoting and delivering stewardship programs, and complying with regulations and angling codes of ethics are additional roles of a public interested in the maintenance of the fisheries resource.

BENEFITS OF THE FISH RESOURCE

Alberta's fisheries offer benefits for both consumptive and non-consumptive users to enjoy. Albertans should expect:

- **Biodiversity and ecosystem health:** diverse and stable populations of fish are an integral part of a healthy aquatic ecosystem. Fish are sensitive to disturbances in water quality and quantity and serve as a useful indicator of broad ecosystem health. In Alberta, the Land Use Framework recognizes fish sustainability as key criteria in determining how to balance the social, economic and environmental values.
- **Cultural and natural history:** Fish are interesting. Learning about fish species, aquatic habitats and ecosystem linkages, and simply knowing that these complex communities exist and are being managed effectively is of interest to the public; an interest that is growing along with increasing environmental awareness. Fish also play an important role in traditions and culture, particularly those of Aboriginal peoples.
- **Social and recreational enjoyment:** Alberta supports over 300,000 anglers each year who participate in recreational fishing as a benefit to their quality of life. Angling is an opportunity to connect with nature, connect with family and engage in outdoor activities that showcase the natural capital of the province. Anglers spend nearly four million days angling in Alberta, annually.

- **A source of food:** Fish are an important and nutritious source of food for Albertans, whether accessed directly through domestic and recreational angling or purchased from the commercial fishery.
- **Economic benefits:** Expenditures related to direct and indirect purchases involved in support of angling contributes over \$400 million annually to the province. Alberta hosts anglers from across the world who seek an angling adventure in our waters. In addition, the annual sales of fish commercially caught in Alberta often exceed \$2 million annually.

COMMITMENT OF FISHERIES MANAGEMENT

ESRD actively works and collaborates with Albertans to recover and ensure the ongoing sustainability of fish populations. We remain committed to involving all stakeholders, First Nations, Métis, anglers, commercial fishers, industry and the general public to ensure healthy, productive fisheries for the enjoyment of all Albertans now and into the future.



Alberta Environment and Sustainable Resource Development. 2014. Fish Conservation and Management Strategy for Alberta. Alberta Environment and Sustainable Resource Development, Edmonton, AB. 56 pp.

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