



Redefining Fisheries Management in Alberta

“Call for change from the Alberta Fish and Game Association”

Background

Beginning in August of 2017, the Government of Alberta initiated a series of consultations and surveys related to planned changes to the direction of fisheries management in Alberta to be implemented during 2018 onward. The Alberta Fish and Game Association, other angling organizations, biologists and the angling community had serious reservations about the consultative process, and the narrow focus of the plans and frameworks. Their focus was primarily on implementing further restrictive angling regulations. These included closures, expanding catch and release regulations or applying harvest regulations that are de facto catch and release. The premise is that fish populations in Alberta remain at high risk or are not achieving a prescribed fisheries management objective. This is occurring despite already being managed with the most restrictive angling regulations in North America.

The initiatives presented provided limited alternatives, heightens the risk adverse management approach, and do not address the multi-factorial issues that are impacting our fisheries in Alberta. The Alberta Fish and Game Association (AFGA) wrote the Honorable Shannon Phillips, Minister of Environment and Parks on January 2, 2018 asking the Government of Alberta to put on hold planned changes to angling regulations for 2018 related to these plans. The AFGA noted that it was prepared to work with the Government of Alberta (GoA) and other stakeholders to develop the necessary comprehensive plans which must include appropriate resources, manpower and funding that lead to long term aquatic ecosystem function and health that is the foundation of sustainable fisheries management.

As a response to the proposed changes, the Alberta Fish and Game Association developed two discussion documents related to fisheries management in the province. These discussion documents were distributed widely to its members, others in the angling community and the Government of Alberta. The first component, with a focus on the *North-Central Alberta Native Trout Recovery Plan* was circulated in December of 2017. The second component was released in January 2018 and concentrated on the *Northern Pike and Walleye Management Frameworks*.

Following sending the letter to the Minister and the release of the discussion documents, conversations occurred between the Alberta Fish and Game Association and the Fish and Wildlife Policy Branch within Alberta Environment and Parks. This culminated in a meeting with Andre Corbould, Deputy Minister of Alberta Environment and Parks attended by Travis Ripley, Executive Director of Fish and Wildlife Policy, Doug Butler, AFGA President and Darryl Smith, AFGA Provincial Fish Chair in early February 2018. The discussions were forthright with a commitment of action to address many of the concerns of the Alberta

Fish and Game Association. The Deputy Minister also committed to addressing the AFGA 2018 Conference delegates.

On February 22, 2018, the Honourable Shannon Phillips met with the executive of the Alberta Fish and Game Association prior to delivering the opening address to the delegates at our annual conference. During this meeting she outlined the Government of Alberta commitments and direction related to fisheries management concerns brought to their attention by the AFGA and others. She then proceeded to address the conference delegates and guests delivering the same message.

The Alberta Fish and Game Association applauds the Honorable Shannon Phillips, Minister of Alberta Environment and Parks and the Government of Alberta for the announcements during our Annual Conference that our message had heard including outlining key initiatives. The Deputy Minister of Alberta Environment and Parks, Andre Corbould and the Executive Director of Fish and Wildlife Policy, Travis Ripley expanded on the direction as well as participating in the conference.

The angling closures along the Eastern Slopes that were part of the *North-Central Alberta Native Trout Recovery Plan* are being put on hold until there is further review of the science, assessment of habitat issues, capital costs for restoration determined, involvement of conservation organizations in habitat restoration, angling and environmental awareness education, citizen science and reporting tools developed, and a meaningful collaborative engagement process between the Government of Alberta and hunting and fishing community established at a local, regional and provincial level. While not directly addressed, there will be further engagement on the *Northern Pike and Walleye Management Frameworks*.

The Alberta Fish and Game Association draft response documents were introduced formally to the delegates during the Combined Hunting and Fishing Program Sessions on February 23, 2018. Following an overview, the AFGA Executive asked the delegates if they supported the direction that was outlined. The delegates overwhelmingly endorsed the direction. This supported similar feedback that had been obtained when the draft discussion documents were circulated within the angling community.

The Alberta Fish and Game Association Executive met on February 25, 2018. Based on the support of the membership, the draft responses will be refined, combined, formalized including removing cautions and draft notations. This revised document along with passed resolutions, policy and positions of the Alberta Fish and Game Association will now be used to guide further discussions with the Government of Alberta, other stakeholders and the angling public.

What must change?

The intention of the original documents were to create discussion and dialogue so that the Alberta Fish and Game Association can respond to issues related to proposed changes and initiatives related to fishery management in Alberta to be implemented in 2018/2019. These include angling regulation simplification, electronic version of angling regulations, Northern Pike and Walleye Management Frameworks, North-Central Alberta Native Trout Recovery Plan and Species at Risk Recovery Plans (bull trout, westslope cutthroat trout). Some of the direction as envisioned by the Government of Alberta can not be supported by the Alberta Fish and Game Association as currently described. This does not imply that the AFGA is against addressing the issues and developing solutions. The long term sustainable management of Alberta fisheries that achieves an acceptable balance from an economic, social and

environmental perspective must be the outcome. Such plans must establish realistic benchmarks in terms of fish population status and be prepared to accept risk. Many of the current initiatives within the Government of Alberta are linked. The commitments from the Government of Alberta that was delivered in the address by the Honourable Shannon Phillips provide a starting point to reset the agenda and direction.

The ongoing narrative from Fish and Wildlife must change to become positive. For far to long the Government of Alberta has been providing a singular perspective of the status of Alberta's fisheries. The message is they largely exist either in a collapsed or vulnerable state. The result is that recovery efforts are required for them to be classified as sustainable fisheries. With the introduction of the modelling tool known as the Fish Sustainability Index (FSI), new risk metrics have been introduced. Unless a fishery displays fish specie population densities based on subjectively defined historic high productivity metrics, it will remain at high risk. This is despite functioning within the natural productivity and variability parameters for the ecosystem.

This means recovery is not defined based on overall ecosystem dynamics but instead must display high modelled single specie population density that may not be in alignment with the productivity potential or ecosystem limitations for multi-species fisheries. Management efforts to date have largely relied on the use the use of catch and release angling regulations or the most restrictive harvest regulations in North America. Managers have not used all the tools available to them, particularly those that deal with habitat. The result is that fish populations are managed based on perceived historic productivity metrics without dealing with natural and anthropogenic limitations. Only by dealing with all limitations can risk ratings be reduced to meet overall fishery management objectives.

The Alberta Fish and Game Association cannot support the direction envisioned which relies primarily on angling regulations. The reasons are additional lost angling opportunity and the failure to deal with all the issues that are impacting our fisheries in a comprehensive manner. The foundation is habitat.

Conceptually much of the proposed direction is based on AFGA ideas that were presented over a number of years in various forums to the GoA and the angling community. What appears to have taken place is Alberta Environment and Parks has adopted the concepts and developed them into frameworks based on their own perception and benchmarks. What should have occurred is a collaborative process that starts at the beginning and continues until the final plan or product is in place. During such a process, Alberta Environment and Parks should be asking key questions: What can you accept? What needs to be changed? What is missing?

The reality is that fisheries in Alberta like elsewhere in North America are subject to risk. While risk is a factor that managers need to consider, it alone should not be the driver of decisions that need to balance environmental, social and economic variables. Going forward plans must be able to demonstrate that the following attributes can occur in concert. At the end of the day the outcomes must be:

- Sustainable fish populations
- Habitat protection
- Angling opportunity
- Distribution of angling pressure
- Understandable angling regulations including objectives

Each of the initiatives that are being proposed by the Government of Alberta will be described from the perspective of the Alberta Fish and Game Association. Online links to information and the perspective of the Government of Alberta have been provided.

We are asking readers to review the information provided. In doing so appreciate comment and feedback to the alternative directions proposed. The building blocks for such directions are based on input over the last several years from a variety of forums. These include presentations at AFGA conferences, Alberta Fisheries Management Round Table, AFGA resolutions, policies, positions, AFGA members, biologists, angling public and from other NGOs. Please forward comments to Darryl R. Smith at fishdoc44@gmail.com with the subject line **“Redefining Fisheries Management in Alberta: Call for change from the Alberta Fish and Game Association”**

Part One

North-Central Alberta Native Trout Recovery Plan

The plan is focused on native cold-water fish species (arctic grayling, mountain whitefish, Athabasca rainbow trout, bull trout) within a defined geographic area that includes the Red Deer, North Saskatchewan, Athabasca and Smoky River drainages.

<http://aep.alberta.ca/fish-wildlife/fisheries-management/north-central-native-trout-recovery.aspx>

Concerns of the Alberta Fish and Game Association to the North-Central Alberta Native Trout Recovery Plan:

The consultative process should have led to addressing concerns from the angling community through changes to the plan. Instead what appeared to be undertaken was a “marketing plan” aimed at reinforcing an internal perspective rather than meaningful consultation. The result is issues and concerns of the Alberta Fish and Game Association remain as they were not addressed. The announcements by the Minister at the AFGA conference has reset the agenda.

Any plan must be applied across the total range of cold-water species in Alberta, whether native or naturalized (bull trout, westslope cutthroat trout, eastern brook trout, brown trout, rainbow trout, Athabasca rainbow trout, golden trout, lake trout, arctic grayling, mountain whitefish). Long and short term sustainability is only possible by ensuring that watersheds across Alberta continue to have the necessary habitat conditions to support self reproducing populations of these fish. To achieve this involves protection, enhancement, restoration and development of the habitat base.

There is reference to possible access restrictions for recreational users, notably off highway vehicles (OHV) for environmental (habitat) reasons. The plan does not appear to apply to industry, agriculture, infrastructure or urbanization other than assessing their impact on habitat. The net deficit from past human disturbances in the watersheds that are impacting productivity from sedimentation, fragmentation and phosphorous loading are not remediated. For support, any plan must address all such issues including existing and future development that achieves a reduced linear footprint of disturbance, open road density limits and improved ecosystem function.

Interspecies competition from naturalized populations should only be considered under stringent conditions that guarantee habitat is capable of sustaining native species for generations even under a climate change paradigm. Such naturalized populations may be better adapted to exist under the current habitat conditions and those predicted in the near future than native species.

The plan relies primarily on the use of total angling closures for at a minimum five (5) year periods at the watershed scale coinciding largely at Hydrological Unit Code 8. This is analogous to medium-sized river basins. These closures are additive to the existing closure of the Upper Pembina River watershed, Tri-Creek Watershed, Whitegoat Wilderness Area, Siffleur Wilderness Area and Ghost River Wilderness Area. The plan indicates other watersheds will have similar closures placed in the future. This leads to immediate and future loss of angling opportunity over large contiguous areas in the region.

The basis for the closures is the hypothesis that mortality related to angling is the primary cause that is preventing fish populations to return to historical levels. As the watersheds designated for closure are primarily managed with catch and release or highly restrictive retention regulations, mortality associated with angling should be low. The hypothesis is that even this low angling related mortality is sufficient to prevent fish populations from rebounding from current levels. Once closures achieve a certain fish population threshold and dynamics as determined by managers, angling regulations would be modified to allow resumption of recreational angling. The plans do not appear to describe the benchmarks that would need to be achieved before angling would resume.

The watersheds contemplated for closure appear to be supporting sustainable fish populations, albeit perhaps not at historical highs. In addition, these systems provide and support much of the angling opportunity in the region including corresponding pressure. It is recognized that species at risk exist in these watersheds. Angling closures appear to be a stop gap measure in relation to the broader issues.

Fish populations across the broad landscape appear to have either stabilized, show signs of improvement or display expected variability found in natural ecosystems based on angler's observations. The plan appears to be aimed at creating a specific fishery management objective (desired state) for the watersheds rather than meeting a conservation objective. Whether closures aimed at speeding up the trajectory of the status of fish populations (density, maturity, size) to achieve a fishery management objective is supportable requires additional consultation in the context of the impact on angling throughout the region.

Such a strategy will result in lost opportunity for anglers at least in the medium term in closed watersheds. What metrics fish populations would have to show before angling could resume is subject to interpretation, change over time and undefined fishery management objectives.

Watersheds that are not subject to the closures likely will experience increased angling pressure. If the hypothesis that catch and release incidental mortality is the major limiting factor is valid, then fish populations in watersheds not closed will be put at greater risk. This could lead to even more lost opportunity if such watersheds would then subsequently be closed in the future to reverse the effects caused by increased angling pressure. The plan does not indicate whether these watersheds would be subject to more restrictive angling regulations to mitigate a shift in pressure. If such angling regulations are contemplated, this would equate to an additional medium-term loss of opportunity.

The plan suggests that Illegal harvest (poaching) will be reduced due to increased enforcement activity within the closed watersheds. The plan does not appear to have increased budgets, additional staffing or alternative enforcement strategies that would be needed to sustain a reduction in such illegal activity. Owing to the locations of the watersheds, existing capacity and priorities of enforcement, it is hard to envision a significant reduction of illegal activity whether in closed or open watersheds.

The plan does not address offsetting lost angling opportunity that would result if the plan is implemented. This is particularly critical as the plan suggests these closures will be applied in other watersheds in the future. This will have a multi-generational effect on angling opportunity. An offsetting plan, likely through expanding put and take stocked trout fisheries and other enhancement activities such a chemical rehabilitation or lake aeration must be included.

The methodology used to define fish population status is a concern. Historical changes in population are difficult to quantify as they are based on differing methodology. The result is that a subjective, though science-based interpretation as to the historical potential for such fisheries is driving benchmarks and thresholds. Natural changes in productivity and fish population occur in these watersheds. Current reactive management paradigms and the lack of long-term data using the same methodology which drive angling regulation development must use realistic thresholds, benchmarks and targets.

We recognize the digital age has allowed managers to develop modelling tools that aid in the decision-making process. This has become a major thrust in biological science. Unfortunately, the observational skills of the past appear to be diminishing that were able to recognize subtle difference and broader consequences that are not captured by such models. This carries over to the social side of biology where fishery managers must balance expectations without the skill set that is required of a social scientist. Increasingly across society including the sciences, the move is to specialist vantage points (narrow focus) rather than the generalist perspective of the past. This highlights the need for rigorous consultation processes that bring outsiders into the decision-making sphere in today's world if the direction or decisions are to reflect the required balance.

We support current monitoring protocols for these cold-water species as they will lead to comparative longitudinal studies in the future. This is provided they are used in a manner that recognizes natural variability in fish populations when used as a tool in the development of angling regulations. No single survey should be considered definitive as variably with monitoring protocols exist for a variety of reasons including timing, temperature, turbidity, flows and fish population dynamics.

In addition, there is increasing concern related to the frequency and intensity of monitoring. Indirect mortality related to monitoring through use of electrofishing and angling have been documented. The use of lethal monitoring protocols such as to determine disease prevalence or containment loading are statistically driven based on sample size and location. Moving to non-lethal protocols and differing benchmarks for monitoring in natural ecosystems needs to occur. Whirling disease prevalence detection is a prime example of such a lethal monitoring practice and protocol.

Academic research, like angling pressure needs to be distributed across the landscape in a manner that integrates with overall monitoring needs for all sectors.

At this time, the Alberta Fish and Game Association can not support the planned watershed angling closures for many reasons including:

1. Overlying land and aquatic ecosystem habitat plan for each watershed that deals with net habitat deficit from past has not been provided.
2. How ongoing and future human induced changes to habitat will be managed and mitigated has not been addressed.
3. No plan is provided that shows how the department plans to manage the shift in angling pressure to other watersheds and waterbodies.
4. No plan is provided that deals with compliance monitoring and enforcement from the perspective of the environment and fishery management.
5. Firm benchmarks, metrics and timelines have not been provided that would indicate when angling opportunity would be allowed to resume.
6. No offsetting plan has been provided to deal with the potential generational loss of angling opportunity in the region.
7. Scope of the consultations were limited to online survey and open houses aimed at select segment of the angling fraternity are insufficient to address such changes particularly at the local and municipal level.

AFGA Alternative Direction – Wild Trout, Arctic Grayling and Mountain Whitefish Management Plan for Alberta

The following alternative direction is being suggested by the Alberta Fish and Game Association. The aim is to develop a comprehensive plan at the broad landscape level that deals with issues such as indirect mortality associated with catch and release angling, habitat change, shifting angling pressure, angling opportunity, compliance and enforcement. At the same time, it recognizes the need for local and prescribed actions at a watershed level.

1. Current Fishery Zones would be realigned and renamed:

The current *Zone 1 - Eastern Slopes* would be expanded and renamed. By doing so the intention is to create a broad, common and comprehensive approach to fishery management and habitat in the zone. The primary focus in Zone 1 would be on cold-water species as the zone would encompass most of the historical and current range for such species in Alberta. The boundaries would roughly follow existing Watershed Units ES1, ES2, ES3, ES4 plus the addition of Watershed Unit NB2. Possible names could be “Foothills and Mountains” (Similar realignment and focus will be suggested in later sections of this document for the Northern Boreal and Parkland- Prairie Zones). Watershed units (ES2, NB2, etc.) as currently defined would exist only for internal administrative or logistic reasons. They would be replaced from a regulatory perspective as actual watersheds at a scale necessary for management purposes (e.g. Pembina River watershed). Reference within angling regulations at a watershed or waterbody level would only be required if unique, intensive or specific fishery management approaches are used. The intention is to supports the following outcomes:

- a. Common fishery management approach throughout the zone
- b. Angling regulation simplification
- c. Dispersion of angling pressure
- d. Electronic angling regulations

- e. Alignment of land-use planning, Water Policy, Wetland Policy, Water Conservation Strategy, and the Fish and Wildlife Policy with habitat requirements throughout the zone

2. **Protecting, enhancing and restoring habitat is the critical issue in ensuring the long-term sustainability of fisheries:**

This region has both an expanding human footprint and a net habitat deficit from past development. Many streams in this region are no longer capable of supporting cold-water species due to the cumulative impacts of human development over the last century. The headwaters from which most Albertans rely on for our domestic water needs are located here. Industry and agriculture also rely on this region to provide the necessary water to support their needs. The integration of land use planning, the Water Conservation Strategy and the under revision Fish and Wildlife Policy would be a step forward. This however does not address the immediate need for regulatory tools and conditions that are applicable across the broad landscape that lead to aquatic ecosystem health. Such tools must be able to be applied on both public and private lands. Maintaining and improving aquatic ecosystem function at the watershed level must be the priority of any plan. This will only occur through an integrated and comprehensive approach involving governments at all levels and land owners. While we recognize that some of the necessary policies are in place, the necessary widespread implementation does not appear to be occurring. Actions required include:

- a. Fast tracking Land-use Framework Regional Plan process in this new fishery zone where not started or complete
- b. Adopting and implementing integrated watershed management plans with aquatic ecosystem health as the key outcome
- c. Creation of a comprehensive habitat restoration, enhancement, development and protection program that addresses aquatic ecosystem health and maintenance of wetlands that involves and is applicable across all levels of government.
- d. Create tools and conditions that will protect habitat in critical wildlife upland zones, riparian areas, wetlands, littoral zones and aquatic ecosystems. This is a critical component if human disturbance footprint is to be managed across the broad landscape. This goes beyond best practices which are site specific. These would include:
 - i. Renewal of exiting licences or permits for industrial and agriculture purposes on public land must include an audit that addresses past environmental deficiencies with an action plan for restoration as a condition of approval
 - ii. New development approvals must be offset with habitat restoration, enhancement or protection requirements to deal with the net deficit from past development on the overall landscape. Such an offsetting formula must take into account both the impacts at the new development site and additional (cumulative) impacts that occur as the result of such development on supporting or existing infrastructure including roads.
 - iii. Changes to the Canada Fisheries Act that allow for the creation of habitat banks need to be established in critical or priority watersheds once passed.
 - iv. Establishing additional Class A, B and C waterbodies pursuant to the Alberta Water Code

- v. The Government of Alberta and municipalities must assume their responsibilities for remediation of environmental impacts related to their infrastructure development and assume a greater role in compliance monitoring and enforcement. The current largely complaint based, or self reporting process is insufficient considering the high level of development on the landscape.
- vi. Application of linear disturbance maximum thresholds at the township level including lower maximums in critical habitat zones.
- vii. Application of open road density maximums at a township level
- viii. Application of maximum water crossings numbers at both the watershed and township level
- ix. Move to new standards in term of water crossing design that will reduce potential for fragmentation and siltation. Additional conditions would include signage as fish habitat, ongoing monitoring, immediate remediation of harmful changes and reporting
- x. Active compliance monitoring and enforcement aimed at ensuring ecologically sensitive areas (riparian, littoral and land use designated) are protected
- xi. Incentives for landowners to protect and manage critical habitat
- xii. Incentives for landowners to restore and enhance habitat.
- xiii. Mandated wetland and riparian protection requirements on private land

3. Access management is a key element in any integrated plan as it linked to habitat, illegal activity and angling pressure concerns:

- a. Passive management is the most effective from cost and efficacy standpoint. It is thus the preferred route. It is however the result of having in place a land use planning and approval process supported by linear disturbance, open road density and water crossing maximum thresholds at a township and watershed level.
- b. Active access management requires consultation when it impacts the public and other stakeholders.
 - i. Motorized access by the public on open roads should not be restricted except under very limited circumstances.
 - ii. Restricting motorized access off road is a management tool that has application at a local level in critical habitat zones. The following are principles that need to be incorporated in such plans:
 - 1. Such plans must not universally be applied across the broad landscape.
 - 2. Designated route development should be the primary tool used if managers recommend restrictions. Such route development would be used to deal with critical habitat or within a land-use planning designation such as a provincial park
 - 3. Total closures would be limited to small local site-specific land bases, designated wilderness areas or ecological reserves.
 - iii. The Alberta Fish and Game Association has a draft Off Highway Vehicle Policy that provides a framework for discussion to address the issues.

4. Environmental education, communication and awareness must be part of any ongoing plan:

This must occur within the contemporary education system, within government at all levels and between branches, with stakeholders and the public. Among these would be the following:

- a. Mandated environmental education courses (similar to current safety course requirements) for companies and individuals working on public lands
- b. Mandated angler education (perhaps analogous with the current Conservation and Hunter Education Program requirements) for those angling in designated waters within the redefined *Zone 1*. (discussed in more detail in following sections)

5. **New Sportfishing Regulations within the redefined Zone 1 would be developed:**

They would deal with indirect mortality related to catch and release angling, direct mortality from consumptive harvest, fish stress related to angling and monitoring due to high temperatures, angling regulation simplification, transparent objectives, distribution of angling pressure and angling opportunity across Zone 1. The proposal for Zone 1 includes the following:

- a. Flowing waters and mountain lakes would be designated as the “Coldwater Habitat Subzone” with the primary objective of supporting self sustaining populations of both naturalized or native cold-water species including trout, char, mountain whitefish and arctic grayling. Most flowing waters and mountain lakes would be managed by Conservation regulations (general). The definition for such regulations could be:

“Conservation (general) regulations are intended to recognize the reality of anthropogenic change, natural productivity and variability constraints yet provide a level of protection that accepts risk while still maintaining angling opportunity.”

More details on actual regulations will be discussed in following sections. However, it is safe to say that if proposed regulations were adopted, they would exceed current protection levels at the broad landscape level. In addition, they would be by far the most restrictive general regulations in North America for cold-water species. The following are a synopsis of the regulations and licence requirements.

- i. Angling License requirement for this Coldwater Habitat Subzone would include:
 1. Coldwater Fish Stamp to support habitat initiatives or development of alternate fisheries
 - a. Required for all anglers except youth
 - i. Could be a condition for angling in either the *Zone 1* or the *Coldwater Habitat Subzone*
 - b. Mandatory angling education requirements as a condition of stamp purchase that addresses fish identification, proper handling and release of fish, aquatic invasive species and disease spread, fishery management, angling regulations, ethics and environmental stewardship
- ii. Angling Regulations for the Coldwater Habitat Subzone would include:
 1. Artificial lures only – No Bait

2. Single hook barbless – No double or treble hooks or multiple hooks on same lure (would still allow for the use of dropper hooks but they would need to conform to the single hook barbless designation)
3. Year-round open seasons for mainstems, lakes and other designated waterbodies
4. June 1 to October 31 open seasons on tributaries
5. Short term seasonal angling closures on a site-specific basis for critical conditions such as spawning or to prevent aquatic invasive species spread
6. Spot closures or daily angling hour restrictions for high water temperature conditions, disease outbreak or environmental disaster
7. Catch and Release only for all species
 - a. It is recognized that there is the ability for some consumptive harvest for cold-water and other species in the Coldwater Habitat Subzone. This is due to various reasons including overlapping ranges of some fish populations particularly in downstream sections of major rivers where walleye, northern pike and goldeye may predominate. There also may be cold-water fish species, particularly mountain whitefish that could sustain some harvest in certain watersheds. Special fishery management objectives may require tools such as the reduction of certain fish specie populations through angling to reduce competition, hybridization or restore native specie biodiversity in a few watersheds. These circumstances would be captured through special regulations that are waterbody specific. A recovery objective is not included as it should be considered as part of an action plan, not a fish management objective. This also reverses the narrative to positive outcomes. The objectives have been defined in a way that transparently defines their intent to anglers and the public. The following are the proposed objectives:
 - i. Refuge and Biosecurity: Such an objective would be reserved for a limited number of small watersheds/waterbodies that have the highest potential to resist anthropogenic change. As such their management would be aimed at meeting native specie biodiversity objectives and maintaining genetic purity. Angling may be allowed but would be highly regulated.
 - ii. Blue Ribbon: Intensively managed fisheries with an objective of high quality angling experience for either native or naturalized species
 - iii. Special: Regulations that vary from the Conservation (general) regulations. They would be designed to recognize that certain waterbodies have either different fish population dynamics or aquatic ecosystems. Many of these waterbodies support much of the angling

pressure in Alberta and as such would be intensively managed to optimize sustainable harvest and achieve balanced fish specie profiles. Other reasons include fish populations that because of Zone boundaries are not necessarily aligned with cold-water habitat which results in different fish specie profiles. Examples would be the lower reaches of major rivers in this zone where the fish population is dominated by cool-water species such as walleye, northern pike and goldeye.

- iii. It is recognized that parts of the newly defined Zone 1 (Foothills and Mountains) is largely cool-water habitat. Waterbodies (primarily lakes) support both provincially and regionally important fisheries for northern pike, walleye and lake whitefish among other species. These could be defined as another subzone within Zone 1 or individually listed. Options of how to manage these waterbodies will take place when the Northern Pike and Walleye Management Framework is discussed. Many such waterbodies likely will fall under the Special regulation designation. Other smaller waterbodies not captured would fall under Conservation (general) regulations which would vary by species. Put and Take Stocked Trout Fisheries could represent a third subzone in Zone 1 and will be discussed in the Angling Opportunity section and elsewhere in the document. It is also recognized that mountain whitefish and arctic grayling are present in many locations in the current Northern Boreal Zone. How to best handle these various populations, whether cold-water or cool-water that exist between zones in a consistent manner to maintain angling regulation simplification objectives requires additional thought. Currently believe the preferred option would be by using the Special regulation designation and subsequently applying the Conservation general regulations that exist for cold-water species in Zone 1 when such species dominate or are the focus of management efforts.
 1. A hypothetical example could be the House River watershed, an important arctic grayling habitat in the current NB 4 Watershed Unit. To remain consistent, the regulations would be catch and Release all species, single hook barbless, no bait. Whether the Coldwater Habitat Stamp to fish such designated waters outside of Zone 1 should be required is an item for discussion.

6. **Creating angling opportunity offsets as a result of this more restrictive angling regulation paradigm must become a major priority for managers:**

This will help to disperse and reduce angling pressure on self-sustaining fisheries. This would occur largely through expansion of the existing put and take trout stocking program to other waterbodies or rehabilitation and enhancement activities at existing sites. Habitat improvement that result from an integrated approach to manage the growing human footprint will have significant rewards over the long term that will lead to more sustainable fisheries at less risk. Active habitat enhancement, development and restorations activities on both private and public land can reap benefits in both the medium and long term and should be pursued in a focused

manner keying in on critical or productive water courses. The requirement for offsets as a condition of development would greatly speed up such an active management approach.

7. **Species at Risk Recovery Plans (bull trout, westslope cutthroat trout) pose challenges:**

This is most relevant on the habitat front due to climate change and our expanding human footprint. This alternative management direction attempts to strike an appropriate balance while being realistic. The angling regulations proposed provide for greater protection for both native and naturalized cold-water fish species across the broad range. They also allow for special management approaches to be used in unique and limited circumstances after careful evaluation of the trade-offs that would need to be made. Refuge populations must be established both inside and outside historical ranges for these species. An integrated approach across government that moves beyond angling regulations must be undertaken if such species are to persist on the broader landscape in the long term.

Part Two

Northern Pike and Walleye Management Framework

The framework attempts to categorizes northern pike and walleye populations based on single specie risk-based metrics and bench marks to determine fishery management objective that leads to standardized angling regulations.

<https://talkaep.alberta.ca/3948/documents/7801>

<https://talkaep.alberta.ca/3948/documents/7800>

<https://talkaep.alberta.ca/3948/documents/7799>

Additionally, there are proposed angling regulation changes for 2018 for over 70 waterbodies based on the framework. Largely they would lead to more restrictive angling regulations, particularly for northern pike which would see catch and release regulations implemented for this species. No indication is given of future changes to angling regulations for 2019 and onward for waterbodies not currently assessed within the framework metrics.

https://talkaep.alberta.ca/northern-pike-and-walleye-management-frameworks?tool=survey_tool#tool_tab

<https://mywildalberta.ca/fishing/regulations/fisheries-management-changes.aspx>

This document will not comment on these individual waterbody changes. They do however provide insight as to the resulting management framework impact on angling regulations and opportunity as it is rolled out over the coming years.

Context

Part One focused on our cold-water species (trout, char, arctic grayling and mountain whitefish). In this second section the goal will be to identify concerns , issues and provide alternative direction for

northern pike and walleye management as well other cool-water species including, burbot, yellow perch and lake whitefish.

It is important to put into context the current approach to fishery management in Alberta. Managers have adopted a risk-based management approach that considers population dynamics, anthropogenic effects and habitat limitations. Risk however is subjective even when determined through the use of science-based models and frameworks. Risk may not equate to fish population health and status. Risk assessment should only be one tool among many to determine angling regulations.

Confusion is created when risk is used to classify and describe fish populations. Aquatic ecosystem dynamics that determine the relative status and health of fish populations that use common benchmarks which are comparable across jurisdictions should be how fish populations are classified.

Alberta has pushed the bar in terms of developing conservation-based angling regulations based on risk metrics along with customizing assessment tools, benchmark setting and science priority. The phrase “precautionary principles” has become ingrained in language and culture. The real question is how precautionary are we prepared to go? This leads to the question based on the current trajectory and focus of fisheries management: *“Is it time to shutdown sportfishing in Alberta?”*

The critical issues of habitat and the environment under an increasing human footprint on the landscape remain. Alberta fishery managers have a singular focus of manipulating angling regulations which also included the closure of the commercial fishery. The excuse given for this narrow focus is that that issues beyond angling regulations cannot be effectively dealt with unless there is the support of other ministries within the Government of Alberta and local government involvement. This support, which is necessary for the goals and objectives of the department to be met, apparently does not exist. This necessitates a radical rethink of priorities, programs, policy, plans and the business model within Alberta Environment and Parks.

The reality today is that fishery managers are either unwilling or unable to use all the tools available to effectively manage our fisheries and the habitat base. This is demonstrated over the last thirty years by the increasing number of species that are now considered at risk, threatened, or endangered in the province; reduced geographic range of species; fewer anglers; application of the most restrictive angling regulations in North America and the continual loss of angling opportunity across the province.

There are many tools available to fishery managers including stocking, predator control, habitat protection, restoration and enhancement. Fishery managers have largely chosen to allow ecosystems to function within their current productive capacity despite both natural and anthropogenic limitations. There was a time when fishery managers in Alberta were prepared to use all the tools at their disposal. The classic example is our provincial hatcheries where state of the art walleye rearing facilities sit idle.

Fishery managers in Alberta are neither right nor wrong with pursuing the current direction. They have however, shifted away from a consultation driven approach to developing fishery management strategies that gain the support and buy in of the angling community and other stakeholders. This has led to a situation where internal ideology and perspective within the fishery management section of Alberta Environment and Parks is expressed in plans and policy. As a senior fishery manager recently told me, *“we are paid by the Government of Alberta to manage Alberta’s fishery resource as we believe is in the best interests of Albertans!”* Unfortunately, this philosophy is siloing the department within the Government of Alberta and leading to both discontent and non-support from stakeholders and the

public. The effect is that that the appropriate environmental, economic and social balance including license is not obtained with the current direction.

The Alberta Fish and Game Association and other angling organizations have historically participated in the development of strategies or management plans with the Government of Alberta in relation to our fisheries resource. As the department drifted away from this consultative approach, the input and concerns of anglers have been ignored. The current consultative process is better defined as public information and marketing.

The Alberta Fish and Game Association has used what avenues are available to express concerns from its members and many in the larger angling community to the current direction and outcome of fishery management in Alberta. These have included dialogue, meetings, presentations, letters and resolutions directed to the government of Alberta. The concerns have also been expressed in the outdoor media. This effort to convey concerns and alternative paths by volunteers within the angling community appears not to have been given the needed consideration and has become lost within the department.

Will the announcements by the Honorable Shannon Phillips on February 22, 2018 at the Alberta Fish and Game Association Conference be the turning point and reset in the agenda is a key question?

Concerns of the Alberta Fish and Game Association to the Northern Pike and Walleye Management Frameworks:

In preparing this document for the Alberta Fish and Game Association, the primary driver was input from the membership, executive and the larger angling community. To comment effectively required research. The Alberta Environment and Parks, My Wild Alberta, Alberta Conservation Association and Talk Alberta Environment and Parks websites were all accessed for information pertinent to the management frameworks and plans. Two major textbooks, *Northern Pike Ecology, Conservation, and Management History, 2012* by **Rodney B. Pierce** and *Biology, Management, and Culture of Walleye and Sauger, 2011*, editor **Bruce Barton** were the foundation for the science review. Over 150 scientific research papers were reviewed, both from within Alberta and the larger scientific community outside of Alberta. The range of research was vast. A partial list of researchers includes: from Alberta, Drs. Michael Sullivan, Steven Spencer, Andrew Paul, Fiona Johnston, Stephanie Morgensen, John Post and fishery scientist John Tchir; outside Alberta, Drs. Chris Wilson, Peter Colby, George Morgan, Bruce Tufts and those associated with the Escanaba Lake Research Station (Wisconsin Department of Natural Resources) and Cornell Biological Field Station Oneida Lake (Cornell University). The research originating from the two stations is noteworthy as they are multi-factorial longitudinal studies spanning many decades. To ensure that the historical context was considered, *Synopsis of Biological Data on the Walleye, 1979*, prepared by **Peter Colby, Richard McNicol and Richard Ryder** was reviewed.

The framework expands on the current risk adverse approach to fishery management in Alberta without addressing existing concerns and questions from the Alberta Fish and Game Association and others in the angling community. The ongoing narrative, perspective, narrow focus, lack of alternative approaches, benchmarks, metrics, overall consequences and consultative process are among the issues that must be addressed before support for such a direction could be given.

It is paramount that any approach to fishery management must consider the following principles:

Sustainable fish populations
Habitat protection
Angling opportunity
Distribution of angling pressure
Understandable angling regulations including objectives

The *Northern Pike and Walleye Management Frameworks* categorizes and digitizes waterbodies based on risk metrics to apply standardized angling regulations. From a conceptual standpoint this is a reasonable objective. Practically however, it has complicated, simplified, confused, localized, centralized, expanded risk, sterilized and digitized the fishery management decision making process. Lost are the interpretive, observational, evaluative, comparative skills of biologists and application of local or traditional knowledge that addresses outcomes and consequences at a landscape level.

The low level of risk managers are willing to accept is demonstrated within these sportfishing regulatory frameworks. One could question whether there is further need for fishery managers with a narrow focus on monitoring, allocation and angling regulations when angling regulations have largely removed harvest opportunity from the equation. Risk metrics and benchmarks that managers are currently applying are translating into closures, catch and release or de facto catch and release angling regulations without addressing the multi-factorial issues that impact aquatic ecosystems and the fish populations they support. While model-based science is an important tool, it alone can not drive management decisions. Any framework or plan must lead to a comprehensive approach to fishery management that is outcome driven which expands management beyond angling regulations and addresses issues related to habitat, climate change and expanding human footprint.

While not wanting to become trapped in the narrative that fishery managers have used to describe the status of fisheries, there is the reality that Alberta, like many other jurisdictions in North America has a limited habitat base. A key objective must be to ensure that when making fishery management decisions, that the prudent use of this limited habitat base is maintained. The management paradigm in place is translating into lost angling opportunity. The direction that is envisioned does not change risk on a landscape basis in the short or long term. It only shifts risk. The consequence is lost angling opportunity and additional fish populations being put at higher risk.

One could suggest that moving to largely catch and release angling regulations does not impact angling opportunity. What it does change is why anglers pursue the sport and the perception of angling by the general population. Defining angling as a solely recreational pastime comes with its consequences.

National health agencies are recommending that citizens eat at least two servings of fish per week. Some are even suggesting four or five weekly servings should be recommended. Why should sportfishing not be a means for Albertans and Canadians to gather fish for the table? Is going to the supermarket to buy fish that is sourced from unsustainable commercial fisheries, or aquaculture with related risks, a more environmentally responsible and ethical means?

The first part of this document does advocate for catch and release angling regulations for wild trout, char, arctic grayling and mountain whitefish in Alberta. This however was in response to conservation concerns, habitat limitations and regulatory requirements to recover species at risk. At the same time,

opportunity to allow for the sustainable harvest of such species was supported through adoption of special management and regulations at a waterbody level.

The management of cool-water species in Alberta such as northern pike and walleye do create challenges. They however are not generally on the scale or landscape basis as those impacting our cold-water species. While overlying themes are similar, there are some significant differences which should translate into different approaches.

While cool-water fish species population declines attributed to angling did occur in the past, this took place under a much different regulatory framework. High daily harvest limits, no size restrictions and greater numbers of anglers was the norm. Overlying this was a commercial fishing industry, both for domestic consumption but also to support the raising of animals such as mink and foxes. Fish populations did collapse under such pressure, but this occurred over a generational period. Under current angling regulations, while hypothetical ideal population status and metrics may not be possible, collapses due to angling alone would be unlikely.

Alberta anglers have demonstrated that they will support highly restrictive angling regulations. The *Northern Pike and Walleye Management Frameworks* further expands the risk approach to achieve fishery management objectives using angling regulations as the primary tool. It does not consider the impact at a landscape level on angling opportunity, angling pressure or address habitat issues. Fishery managers appear unwilling or unable to use all the tools that are available that are commonly used in other jurisdictions. In addition, the consequences and implication of adopting the framework are difficult for both the biologist or angler to envision.

Alberta anglers are accepting of highly restrictive sportfishing regulations. We also want comprehensive plans that deal with all the issues that are impacting our fishery resource and aquatic ecosystems. Such plans must be tied to actions not words. The siloes within the Government of Alberta must fall. Trade-offs the Government of Alberta is willing to make for social, economic or environmental reasons must be clearly outlined and transparently disclosed. We expect fishery managers to use all the tools available to them including education, compliance monitoring, enforcement, adaptive angling regulations, fish stocking, predator management, chemical rehabilitation, aquatic invasive specie control and habitat enhancement where appropriate. Multi-jurisdictional consensus-based science must be the foundation for establishing realistic benchmarks and metrics with stakeholder agreement. While we support angling regulation simplification and standardization, this must not lead to a sterilized digitized decision-making process. Sufficient alternative regulation options must remain. Collaborative and ongoing engagement with stakeholders by fishery managers must be the cornerstone.

Our understanding is that there is support for the *Northern Pike and Walleye Management Frameworks* based on the online surveys. Alberta Environment Park should be cautioned that owing to survey design, content and understanding, this conclusion may not represent that of the broader angling community. With that said, the framework does establish a starting point for further discussions.

The Alberta Fish and Game Association sent a letter to the Minister of Environment and Parks, the Honorable Shannon Phillips in early January 2018. It stated:

“We are asking the government of Alberta to put on hold planned changes to angling regulations for 2018 related to these plans. The AFGA is prepared to work with the Government Alberta and other

stakeholders to develop the necessary comprehensive plans which must include appropriate resources, manpower and funding that lead to long term aquatic ecosystem function and health that is the foundation of sustainable fishery management.”

Commitments for change to fisheries management in Alberta were made by the Minister at the 2018 Alberta Fish and Game Association Annual Conference. How these commitments relate to the Northern Pike and Walleye Management Frameworks is uncertain. Discussion with the Deputy Minister, Andre Corbould and Executive Director of Fish and Wildlife Policy indicate that the door is open for comprehensive review and change.

Alberta Fish and Game: Concerns with current fisheries management direction

The Narrative

Fishery managers have communicated a negative message as to the status of Alberta fisheries. They indicate that fish populations are at lower densities and more catchable in Alberta. In addition, productivity is less due to our northerly geographic location, severe habitat limitations, and lack of species diversity. High angler numbers lead to high angling pressure. While there is “truth” in these words, the message is not entirely accurate. In addition, angling regulations currently in place have largely addressed such concerns.

This is especially relevant as many jurisdictions across North America have less fish habitat, more anglers and multiple limiting factors. Yet, they have been able to provide far more angling opportunity for their residents and visitors. Support for agencies managing the resource is high in these jurisdictions, albeit with some conflicts.

Much of the narrative or communication is based on “risk”. Risk metrics are just one tool that assists fishery managers in addressing and understanding issues related to the sustainability of fish populations. The degree of risk that fishery managers are willing to accept is based on the benchmarks and metrics that are set in models. While scientifically based, they are still subjective, and perception driven. This is true even when based on International Union for Conservation of Nature (IUCN) criteria.

Conservation based angling regulations are currently in place for both walleye and northern pike. The issue that should be front and center is what should be the fishery management objective for each water body (desired state)? To achieve such objectives, what are the tools that we need to use? Tools include angling regulations, education, habitat programs, stocking, enforcement and appropriate land/water use policies. Determining such objectives involves consultation and communication with anglers and stakeholders throughout the process.

This narrative of “risk” has equated into the perception by anglers and the public that most walleye and northern pike populations in Alberta are collapsed. Comparisons with other jurisdictions and literature using science and consensus-based benchmarks appears to indicate that northern pike and walleye population status and health are good in Alberta generally. By not communicating that the status of our cool-water fisheries are healthy and being managed appropriately is impacting the image of Alberta both provincially, nationally and internationally as a poor environmental steward.

Reviewing abiotic and biotic factors affecting northern pike and walleye populations indicates that generally Alberta represents the optimal range for the species. This is both in terms of productivity and environmental factors such as climate. Calculations for Alberta show that despite a northerly latitude, degree days are higher in the province than further east at the same latitude due to influence of geography. This becomes more relevant in the face of climate change. While cold-water species will be impacted negatively, the warming trend means even the most northerly populations of cool-water species in the province should be positively impacted. This is an example of the consequences of climate change and the varying impacts it will have on the biological community.

Messaging must change. Communication is a vehicle that tells a story, but its aim must not be to support a perspective. Generalizations often create inaccuracies, miss elements and create biases. The result is the whole story is not told. The current communication approach can be summed as marketing.

The starting point must be addressing the status and health of fish populations in terms of clear benchmarks used in the broader fishery community. Science should reflect consensus-based positions that reflect the overall knowledge base derived from research from across the range of the species. Risk is only a metric. When using precautionary principles to set benchmarks, it must be clearly articulated that the most conservative position is being taken, not the consensus-based middle. The necessary actions that must be taken to reduce risk must be clearly articulated. These actions go beyond angling regulations. When actions cannot be implemented due to cost or tradeoffs for economic, social and environmental reasons, these must be transparently disclosed including the reasons. Positive messaging and collaborative engagement across all stakeholders must become the norm if broader support for needed direction is to be gained.

Fish Density Calculations

Alberta has historically used multiple monitoring techniques and standardized monitoring protocols. Review of other jurisdictions in North America shows that multiple standardized sampling protocols are employed including creel surveys, test angling, index netting, mark recapture surveys, electrofishing assessments for spawning, forage, and recruitment, seine netting for forage evaluations/young of the year and trap netting for spawning assessment. New technology that relies on pheromone and DNA detection hold promise. Many of the techniques used in other jurisdictions are non-lethal sampling protocols.

What has changed is that Alberta has largely moved to a single monitoring methodology based on Fall Walleye Index Netting (FWIN) developed by Dr. George Morgan. Fall Index Netting (FIN) is used to evaluate both northern pike and walleye populations in the province. The gear used consist of multi-mesh gill net panels which are similar to those used in the past. Stringent protocols based on water temperature, time, net distribution, depth and sample size are in place.

The AFGA has concerns. The use of a single sampling methodology to assess population status is not consistent with best practices. Sampling bias and precision vary regardless of methodology due to multiple factors including timing, site, and weather. FWIN surveys have been shown to be useful to determine relative abundance and change over time in individual walleye populations but have not demonstrated consistent results with other fish species. In addition, while direct comparisons with other waterbodies are commonly made, there is statistical variability, so the comparison are only relative. Most jurisdictions using FWIN also use other sampling protocols to monitor walleye populations. In

addition, current methodology used, which is designed to generate greater statistical accuracy is also more lethal as sample sizes are larger than that used in other jurisdictions. Lethal sampling protocols are additive to natural or angling related mortality.

FIN surveys in Alberta are based on FWIN protocols. AEP communications indicate reference populations have been used for calibration purposes. Fish stock assessments derived from FIN for both walleye and northern pike have supposedly been calibrated to reflect fish density (fish per hectare). Research related to this calibration which involves mark recapture surveys involving multiple sampling protocols has not been provided. We are aware of several mark recapture studies related to northern pike and walleye abundance in Alberta but whether these were used as part of the calibration process is unknown. Independent third-party reviews in other jurisdictions using FWIN protocols have noted the need for mark recapture surveys to verify the statistical results even at a waterbody level.

The AFGA has concerns regarding the validity of FIN as a standardized sampling protocol for northern pike abundance. The Alberta Fish and Game Association does not have confidence that using the FIN assessment protocol for northern pike has been rigorously evaluated through appropriate research and calibration.

“Standardized sampling protocols cannot substitute for an understanding of fish biology, population dynamics, and gear selectivity. A rigorous education in fisheries science that includes sampling theory and fish ecology is a prerequisite for implementing standard fish sampling protocols and analyzing the associated data. All models are wrong, but some models are useful—a truism to live by for fisheries managers Therefore, a new motto is suggested: all models are wrong; validate and proceed cautiously. (Amanda Rosenberger, University of Alaska–Fairbanks, School of Fisheries and Ocean Sciences, Fisheries Division)”

This statement is particularly relevant when reviewing interpretation of data from both inside and outside of Alberta. Relative adult walleye abundance represented by FWIN surveys outside of Alberta are generally considered stable or healthy when the catch per net/per standard unit of effort for mature walleye is 5 or above and overall FWIN is 10 or above. Additional or variations of the statistical format are also used such as walleye per net over 48 cm to provide comparisons particularly related to the mature female cohort in the population.

Most FIN assessments from Alberta show relative adult population assessments for walleye to exceed the benchmark of 5. As FWIN or FIN only relates to relative walleye abundance, how does this equate to actual walleye density?

Actual adult walleye density is usually expressed as the number of walleye per hectare greater than or equal to 35 cm fork length. Literature from both inside and outside Alberta would suggest that a benchmark of 5 adult walleye per hectare is a metric which represents a stable walleye population. Recently a publication from the Government of Alberta, *Alberta Fisheries Management – Fishery Productivity* has moved the benchmark to 8 walleye per hectare.

Recently released population estimates for walleye at several of Alberta’s more popular fisheries indicate densities between 14 and 21 walleyes per hectare. This begs the question: Do Alberta lakes support a greater density of walleye than elsewhere? Are such populations at their carrying capacity based on productivity and habitat limitations? To date the answer has been provided is that walleye density in lakes in Alberta are lower than elsewhere in North America, they are just more catchable.

Confusion is further created as FIN assessment for adult walleye in Alberta must reach 20 before being considered at low risk based on FSI metrics. Risk however is only an evaluation tool and must not be confused with the actual status of a fish population. Attempting to standardize angling regulations using a risk assessment model is over simplifying a complex decision-making process.

Fish Sustainability Index

The Alberta Fish and Game Association believes the Fish Sustainability Index (FSI) is a valuable tool. We recognize it is based on International Union of Conservation for Nature (IUCN) criteria. The rule sets have been shared. What has not occurred is broader discussion with stakeholders on how the FSI and its components should be used and weighted particularly in the context of setting angling regulations. This is particularly relevant when regional and local factors such as angling pressure, relative angling opportunity, human disturbance footprint, local and traditional knowledge must be reflected in management direction and actions.

The [Limitations and Caveats of Alberta's Fish Sustainability Index \(FSI\)](#) speak directly to this concern.

“When FSI information is used in the appropriate context, and its limitations understood, it can be a powerful broad-scale summary and management tool for Alberta’s fisheries.”

[A Generic Rule Set for Applying the Alberta Fish Sustainability Index – Second Edition](#) provides further context:

“In each of the three sections of the load form described above there is also an area where metrics relating to monitoring and vigilance (date of most recent field work) are evaluated. This addresses how likely the assessment is erroneous due to incorrect, inaccurate, or lacking data. The three monitoring metrics considered are monitoring quality, monitoring quantity, and monitoring timeliness. The majority of FSI ranks are all qualitative, subjective, and relatively straightforward to assign.”

“By assessing each individual metric with these ranks, it allows for biologists to easily see which areas of their FSI are weakest and provides them with direction in terms of where to focus future data collection.”

Information related to FSI can be found by going to <http://aep.alberta.ca/fish-wildlife/fisheries-management/fish-sustainability-index/default.aspx> .

The FSI primarily looks at single species, though other interrelationships are assessed including genetic integrity and changes to predator, prey and competitor metrics. What the FSI does not do is to determine what is the appropriate relationship (abundance) between species when establishing fisheries management objectives (FMO) at a waterbody level. Just because a single species is at high risk within a waterbody should not mean catch and release angling regulations should be applied. However, if the driver is for more or less of a particular species based on consultation, then appropriate angling regulations need to be implemented to achieve the desired state.

Conservation objectives under current regulations have largely been met even though a population is considered at high risk. Conservation, fisheries management objectives and risk all play a role in the decision-making process but must not be confused as they imply different parameters.

Actual walleye and northern pike density and population structure are needed to determine sustainable harvest. Stable fish populations exist at varying densities depending on aquatic ecosystem dynamics. The AFGA recognizes that angling regulations will vary between waterbodies to maintain stable fish

populations. While standardized approaches and angling regulation simplification are supported by the AFGA, the question that must be asked is “How simple or standard should we go?”

A major concern with the Northern Pike and Walleye Management Framework is that it has essentially digitized and sterilized what should be a multi-factorial decision-making process by using the Fish Sustainability Index (FSI) out of context.

Multi-jurisdictional consensus-based science must be the foundation for establishing realistic benchmarks and metrics with stakeholder agreement. This applies to the FSI scores and other modeling tools. The current categorisation is subjective even when based on IUCN criteria when overlying precautionary principles are also in play. As a starting point, there must be stakeholder agreement that the appropriate abundance metrics are in place.

Angling Pressure

Angling pressure should be a major consideration in the decision-making process. Reduced angling pressure at lakes appears to have been dismissed as a consideration in determining appropriate angling regulations. The rationale appears to be a standardized approach that only looks at fish population abundance and modeled risk metric is more scientifically supportable. This is particularly troubling as a major driver for catch and release angling regulations or SHLs (tags) is high angling pressure on lakes near major metropolitan centers even when at low risk. The reverse should also be true. The potential variability in angling pressure due to the open access for Alberta fisheries is seen as a major risk despite historical creel data and existing restrictive regulations. Standardization and the application of precautionary risk principles becomes the cornerstone at a provincial level which does not account for local or regional differences.

Driving time and road network in relations to major and minor population centers are used to determine FSI ranking. For example, *“accessible by 2WD, within an hour of Lethbridge, Grand Prairie, Red Deer, Fort McMurray, or Medicine Hat”* is described as high risk. Does this equate to actual angling pressure at a waterbody level?

The Alberta Fish and Game Association is requesting the department to graphically display all historical angling survey data (creel survey) for each waterbody, river or stream based on angler hours per hectare or kilometer per year plotted against the commercial and sportfishing regulations that were in place. Metrics that define actual angling pressure in terms of high, medium and low need to be developed with stakeholder input. Distributing angling pressure, making the optimal use of our fisheries, and using actual angling pressure needs to be major consideration of managers when determining appropriate angling regulations.

The generalized narrative from the department is that Alberta waterbodies are under high and increasing pressure. Actual review shows a different picture at a local or regional level. We do acknowledge high pressure at popular locations, particularly when within a 150 km radius of major metropolitan centers like Edmonton or Calgary. Some of this can be accounted for as the current sportfishing regulations shift risk rather than distributing pressure. Review outside this radius show a different picture with actual angler hour per hectare per year are often in the range of 3 to 7 angling hours per hectare per year on popular waterbodies in these regions. Waterbodies in other jurisdictions in North America commonly exceed 15 angler hours/ hectare/ year.

Minimum Size Limits

The Alberta Fish and Game Association is concerned about the continuing reliance on minimum size limits by fishery managers. Growing research indicates that harvest only directed at mature fish in the population has both genetic consequences and may lead to population structures dominated by small fish. Some of this research is from Alberta and is often referenced as the “hockey stick phenomena”.

The reason given for reliance on minimum size limits is that it works in the Alberta context because it is simply, understandable and has high compliance. There are consequences however with using this approach. Composite data for growth of northern pike and walleye in our climatic zones shows we are disproportionately harvesting mature female fish as we move to higher minimum size limits. Using the 50 cm minimum size limit for walleye, which appears to be the default regulation favored by Alberta biologists, the population ratio has already shifted to 40 % male and 60 % female for walleye. A 60 cm minimum size limit as proposed in the framework for quality walleye fisheries would direct 100 percent of the harvest onto female walleye. The current northern pike minimum size limit of 63 cm fortunately sees a 70 % male and 30 % female ratio. Regulation proposals included in the framework for northern pike currently been suggested by Alberta managers would see this number move to a 70 cm or higher minimum which is where the male/female ratio begins to favor female fish in the population. The current 50 cm walleye minimum size and 63 cm northern pike minimum size already provide multiple years of spawning protection. The framework provides additional years of spawning protection but also approaches the expected natural life span for most of the fish in the population.

Many other jurisdictions are moving to restrict the harvest of mature fish but at the same allow harvest of smaller adults. Such a strategy is also used during fish population recovery phase of management. To some degree Alberta has moved in this direction by the application of special harvest license (tags) and through the adoption of single fish limits. Sustainable harvest is lowered when harvest is solely directed at large mature fish as they are the least abundant cohort in sustainably managed fisheries.

Narrow harvest slots for walleye which likely could also apply to other species such as lake trout and northern pike would direct harvest equally to males/females. Such regulations would in most cases have a one (1) fish limit as well. Biologically some waterbodies could support greater harvest, but this could be done with other means including SHLs (tags) outside/inside the harvest slot. It is also important to recognize that one (1) fish limits for walleye, northern pike and lake trout appear to be socially acceptable to Albertans. One (1) fish limits in themselves are extremely precautionary when compared to all other jurisdiction in North America including those with more anglers, limited fish habitat and similar limiting factors/risks. The Alberta Fish and Game Association believes that their needs to be a shift from minimum size limits to more selective harvest through the use of narrow harvest slots.

Precautionary Principles

From Wikipedia, “*precautionary principle (or precautionary approach) generally defines actions on issues considered to be uncertain, for instance applied in assessing [risk management](#).^[1] The principle is used by policy makers to justify discretionary decisions in situations where there is the possibility of harm from making a certain decision (e.g. taking a particular course of action) when extensive scientific knowledge on the matter is lacking. The principle implies that there is a [social responsibility](#) to protect the public from exposure to harm, when scientific investigation has found a plausible risk. These protections can be relaxed only if further scientific findings emerge that provide sound evidence that no harm will result.*”

The real question is how precautionary do we need to go particularly when there is wealth of multi-jurisdictional consensus-based science on fish population dynamics related to walleye and northern pike? Precautionary principles in Alberta have come to mean that the most conservative value should be assigned when determining benchmarks or metrics. For example, a 10 percent indirect mortality rate for catch and release angling using artificial lures for trout is being suggested as the benchmark. Research would indicate that on average the number is far lower. When we apply multiple conservative benchmarks, they have a compounding effect. This is leading to very little available fish for sustainable harvest. Some examples of this compounding effect are as follows:

- Resiliency – population must be high to as possible in case of disease or habitat limitation such as lack of oxygen (summer/winter kill)
- Genetic purity – Fish populations are considered at risk unless they display high genetic purity as defined at a waterbody level. The classic example is westslope cutthroat trout which under the recovery plan in Alberta need to demonstrate a 99 percent purity in relation to their stream of origin. In the United States the metric is variable, but 85 percent purity is often referenced as defining a native population. Walleye similarly are defined in the FSI in term of there genetic purity. Those populations that have had historical stockings are considered at high risk. Many Alberta waterbodies have had historical stockings of walleye over the last century. Genetic purity is better referenced as a measure of biodiversity. Whether serious negative effects have occurred from such stockings needs much further discussion with stakeholders. The Alberta Fish and Game Association believes that stocking is an important management tool not only for the recovery of fish populations but as a method to create and maintain angling opportunity. The Alberta Fish and Game Association is not advocating stocking of walleye over existing populations that have been shown that sustainable fisheries can be maintained through natural recruitment. We are however advocating supplemental stocking in habitat limited systems on a put and take basis likely with a minimum size limit in place such as one (1) walleye over 40 cm.
- Illegal harvest – Varying numbers are being used to determine the percentage of harvest taken through illegal means (poaching). How these numbers are derived is unknown. Are they based on enforcement statistics or other survey methodology? Three to five percent of the harvest is often attributed to illegal activity. If these numbers are valid this is a serious issue both in terms of the impact on sustainable harvest and enforcement effectiveness. Other jurisdictions use lower percentages than in Alberta for their calculations.
- Catch and Release Indirect Hooking Mortality – Calculating indirect hooking mortality as a part of sustainable harvest determination is a common practice in many jurisdictions. However, Alberta is attributing a greater percentage than in other jurisdictions. Five and six percent appears to be the numbers commonly used in Alberta for walleye. When this is applied against catch rates, most of the sustainable harvest can in effect be allocated to indirect mortality. Why does Alberta apply a higher percentage than in other jurisdictions and what is the research to back the assumption?
- Optimal sustainable harvest – For walleye population there appears to be extensive cross-jurisdictional research that suggests 20 percent of the annual incremental growth can be allocated for harvest in most walleye populations that are stable. Alberta applies a much lower percentage. Compensatory effects from harvest are also considered risk factors in Alberta. Such effects are fundamental for there to be sustainable harvest of fish that approach the productive

potential of a waterbody. The establishment of optimal sustainable harvest metrics in Alberta appears to be tied with achieving an overall vision by fishery managers as to the state of Alberta fisheries at a landscape level. The goal appears to be quality fisheries with minimal harvest rather than optimal sustainable yield. Despite the framework suggesting a Province-Wide Recreational Fisheries Management Objective (RFMO) of Sustainable Harvest, when the sportfishing regulations and risk metrics are applied the outcome is a different objective. There must be much broader discussion on this issue with stakeholder understanding on the implications and consequences for there to be support for such direction.

- Vulnerability to Harvest - Stephanie Mogensen, John Post and Micheal Sullivan published in 2014 an article titled, *Vulnerability to harvest by anglers differs across climate, productivity, and diversity clines*. The conclusion reached was walleye in Alberta are four times more likely to be catchable and northern pike are 10 more catchable. There are many other studies by different researchers that suggest forage fish abundance, walleye density, lake morphology and other factors are the reasons for varying catch rates. Regardless, there appears based on this single study a recognition that walleye and northern pike may be more catchable across a significant part of their current range in Canada and the United States. In addition, the increased catchability is still exhibited at low density according to the study. This appears contrary to the narrative used in the past that restrictive walleye sportfishing regulations were needed as anglers were complaining about poor catch rates which were correlated to low population density. More studies must be done to confirm the relationships.

What does increased catchability connote under the current management paradigm? From a fishery management perspective this would imply increased risk. The reality is such risk has already been factored in with current restrictive harvest angling regulations. However, indirect mortality related to catch and release angling would become a greater factor under this scenario. Anglers and managers should be considering what other options are available to reduce catchability. Possible actions include education to reduce indirect mortality, no bait, or gear restrictions (single barbless hook) aimed at increasing survivability. Some form of angling closures during peak bites when depth, high temperatures and angling pressure become major factor have also been suggested.

Alberta Fish and Game Association: Concerns with the Northern Pike and Walleye Management Frameworks

Many of our concerns have been identified earlier in this document related to the current direction of fishery management in Alberta and by extension to the frameworks and plans. We would have preferred not to see the frameworks for the first time in what appears to be a final version. However, we accept that cannot reverse the past. We view the framework as a starting point in collaborative engagement process to discuss alternative options and incorporate missing elements. The first step must be to separate and delink the elements within the framework.

There are concepts within the framework such as passive and active management that the Alberta Fish and Game Association can support. The first layer should be to decide on which waterbodies are going to be actively or passively managed. This must occur through a collaborative engagement process. We

would expect that about 100 waterbodies or watercourses would fall under the active management category.

Three sub-categories should be developed indicating management direction and applied against the passive and active management categorization. Suggested categories are Conservation, Specific and Habitat Limited. For example, a range of waterbodies would be identified under the habitat limited category. Many reservoirs, lakes subject to low dissolved oxygen conditions, high alkalinity waterbodies, pothole and urban fisheries would fall under this category.

Passively managed systems would generally have conservation-based regulations put in place that accept risk but are not tied to a specific Recreational Fishery Management Objectives (RFMO) such as quality fishery. The vast majority of waterbodies in Alberta would be managed in this fashion. The regulations proposed for such passive management in the framework are either too restrictive or liberal. The consequence will be shift in angling pressure, angling opportunity loss and risk transfer. With limited waterbodies in Alberta, landscape effects are more pronounced if the appropriate balance in the regulatory regime is not achieved. For waterbodies in this category to switch to a different RFMO would by local area residents requesting a change with a supporting consultation process.

Active managed waterbodies would include the most important sport fisheries in the province at a provincial, regional and local level. Specific management direction using a variety of regulatory options and other tools to achieve the desired RFMO developed through a consultative process would be applied. The regulatory options in the framework are not sufficient to address such specific management direction. The focus would be on sustainable harvest, quality, or special/unique fisheries. Much of the resources within AEP would be expended on the managing these lakes and river systems and the supporting consultative process.

Habitat limited represents a subset of Alberta waterbodies where sustainable fishery management objectives cannot be met without additional actions. Put and take trout fisheries are a prime example. Those subject to summer or winterkill would also fall under this category. Southern Alberta reservoirs due to their increasing age and primary use for water storage and flood control create significant management challenges. The management approach needs to be re-evaluated on these reservoirs as it is leading to lost opportunity and angling pressure shift. Habitat enhancement programs, change in water management and supplemental stocking as is used in other jurisdictions must be part of a new direction.

Words such as old growth, liberal harvest, preservation and experimental need to be removed from the framework in this layer as they are confusing and not easily understood by the angling public or even biologists. Reference to FSI and specific regulatory options also need to be removed.

The decision-making process must change and be based on the overall aquatic ecosystem dynamics and landscape effects. Separating out single species or using a notification process does not lead to the achievement of a RFMO. Collaborative consultation must be an integral component of the decision-making process. The decision-making process involves using tools such as the FSI, identifying issues related to habitat, incorporating actual angling pressure data, overlying angling opportunity in the area, considering risk shifts, and incorporating local and traditional knowledge.

The last layer is the sportfishing regulation development. The regulation options presented in the framework further expand risk-based metrics. A landscape view of their application across all lakes, river

and streams must be part of deliberations to ensure that angling pressure and opportunity are being distributed. The public has indicated that they want to see alternative regulatory options. Such options will be discussed later in this response.

AFGA Alternative Direction – Cool-water fish species management plan

The following build on or repeat themes that were presented in Part One of this document. The focus is however in relation to the management of cool-water species such as northern pike, walleye, lake whitefish, burbot and yellow perch.

1. Current Fishery Zones would be realigned and renamed:

The Zone 2 Parkland-Prairie would be expanded to include the Northern Boreal Watershed Unit 1. Northern Boreal Watershed Unit 3 and Northern Boreal Watershed Unit 4 would now represent Zone 3 Northern Boreal. By doing so the intention is to create a broad, common and comprehensive approach to fishery management and habitat in each of the three new zones. (Zone 1 was described in Part One of this document)

The primary focus in Zone 2 would be on cool-water species, put and take fisheries and habitat limitations as the result of largely developed landscape and closeness to major urban centers. Most of the population of Alberta lives in this zone.

Zone 3 would concentrate on both cool-water and cold-water species as it encompasses Canadian Shield and boreal regions. The zone generally has less angling pressure and much of it is still remote.

Cool-water fisheries located in the redefined Zone 1 would be managed based on landscape issues that would shift them into the appropriate Zone 2 or Zone 3 focus to ensure commonality of approach.

Watershed units as currently defined would exist only for internal administrative or logistic reasons. They would be replaced from a regulatory perspective as actual watersheds at a scale necessary for management purposes (e.g. Beaver River watershed, Calling Lake). Reference within sportfishing regulations at a watershed or waterbody level would only be required if unique, intensive or specific fishery management approaches are used. The intention is to supports the following outcomes:

- a. Common fishery management approach throughout the zone
- b. Angling regulation simplification
- c. Dispersion of angling pressure
- d. Electronic angling regulations
- e. Alignment of land-use planning, Water Conservation Strategy, Wetland Policy and the Fish and Wildlife Policy with habitat requirements throughout the zones

2. Protecting, enhancing and restoring habitat is the critical issue in ensuring the long-term sustainability of fisheries:

The zones have vast areas of developed land for agricultural, industrial or urban purposes. Development pressure is intense in the Edmonton to Lethbridge corridor. There is also an expanding human footprint on what were once considered remote areas both because of timber harvest and hydrocarbon development. Impacts related to new technology that is leading to enhanced heavy oil extraction and non-conventional hydrocarbon development (shale) need to be addressed as new development is occurring across a much broader landscape. There is a net habitat deficit from past development. Lakeshore development and changes within the related watershed are contributing to critical habitat issues. The integration of land use planning, the Water Conservation Strategy, Water Policy, Wetland Policy and the under-revision Fish and Wildlife Policy would be a step forward.

This however does not address the immediate need for regulatory tools and conditions that are applicable across the broad landscape that lead to aquatic ecosystem health. Such tools must be able to be applied on both public and private lands. Maintaining and improving aquatic ecosystem function at the watershed level must be the priority of any plan. This will only occur through an integrated and comprehensive approach involving governments at all levels and land owners. While we recognize that some of the necessary policies are in place, widespread implementation does not appear to be occurring. (See Part One for more detail and required actions)

3. **Environmental education, communication and awareness must be part of any ongoing plan:**

This must occur within the contemporary education system, within government at all levels and between branches, with stakeholders and the public. Among these would be the following:

- a. Mandated environmental education courses (similar to current safety course requirements) for companies and individuals working on public lands or infrastructure projects.
- b. Mandated angler education (perhaps analogous with the current Conservation and Hunter Education Program requirements).

4. **Sportfishing regulations for cool-water species:**

The Northern Pike and Walleye Management Frameworks identify regulatory options. They include closures, catch and release only and special harvest licenses and minimum size length regulations. The size limits being suggested are more risk adverse than in the past. Largely this is to fit within a standardized and simplified regulation platform based on perceived risk. They however do not consider local factors adequately such as angling pressure. Further, they will not take full advantage of our limited habitat base or distribute angling pressure.

The Alberta Fish and Game Association is proposing the following alternative regulations and framework. Based on consultations and research it is our belief that conservation objectives can be met through such a framework. Additionally, angling opportunity, standardization, angling regulation simplification and reducing risk s can be achieved. Most waterbodies in Alberta would have General conservation-based angling regulations.

General Sportfishing Regulations - Cool-water species

- a. One fish limits supported by either minimum size limits or narrow harvest slots for predator species (lake trout, northern pike, walleye, sauger and burbot) depending on waterbody fishery dynamics.
 - i. Walleye/Sauger - 1 over 50 cm or second option 1 between 43cm and 48cm
 - ii. Northern Pike - 1 over 63 cm or second option 1 between 63 cm and 75 cm
 - iii. Burbot – 1 no size limit
 - iv. Lake trout – 1 -harvest slot or minimum size - lake specific
- b. Other species
 - i. Lake whitefish limit 5.
 - ii. Yellow perch limit 15 but only 5 over 30 cm
 - iii. Stocked trout limit 5
- c. Year round angling (Closures based by species or critical spawning sites)
 - i. Northern pike and walleye/sauger 0 retention March 15 to May 31
 - ii. Lake trout 0 retention September 15 to November 30
 - iii. Short term seasonal angling closures on a site-specific basis for critical conditions such as spawning

Waterbody Specific – Cool-water species

- a. Waterbodies within this category would generally be actively managed. General sportfishing Regulation options may be applied for angling regulation simplification purposes or to offset angling pressure shifts particularly at a species level. Year-round angling would be encouraged by using species closures. Many of the habitat limited designation would fall within this active management category. The intention is to have a much larger tool set available for fishery managers. To achieve RFMO within this category, managers will need to think outside the box. Beyond angling regulations, other tools including predator control (cormorants), supplemental stocking, gear restrictions, bait restrictions, enhanced enforcement and habitat programs would be expected to be implemented based on each waterbody's dynamics.
 - i. Sportfishing Regulation options would include closures, catch and release, special harvest license (SHL) and an expanded angling regulation option list. Adaptive management taking advantage of year class strengths would be applied to provide additional opportunity. One constant however would be that in the case of open harvest regulations, predator fish such as walleye and northern pike would be restricted to one fish limits. Some of the angling regulations proposed in the framework could be added to the option list. Narrow harvest slot limits would also be used. There are a variety of other regulatory options including short concurrent seasons or maximum yearly retention limits. Such methods should not be discounted and deserve greater discussion.
- b. There are five RFMO categories that should be considered within this active management or waterbody specific category:

- i. Refuge and Biosecurity: Such an objective would be reserved for a limited number of small watersheds/waterbodies that have the highest potential to resist anthropogenic change. As such their management would be aimed at meeting native specie biodiversity objectives and maintaining genetic purity. Angling may be allowed but would be highly regulated.
- ii. Unique: There are a number of waterbodies in Alberta that have unique characteristics. They require both active and intensive management to ensure their fish populations remain stable and healthy. (e.g. Rock Lake)
- iii. Blue Ribbon or Quality: Intensively managed fisheries with an objective of high quality angling experience for either native or naturalized species.
- iv. Special: Regulations may vary from the General regulations. They would be designed to recognize that certain waterbodies have either different fish population dynamics or aquatic ecosystems. Many of these waterbodies support much of the angling pressure in Alberta and as such would be intensively managed to optimize sustainable harvest, achieve balanced fish specie profiles or other RFMO.
- v. Habitat limited: This category would generally see less restrictive regulations in place. Such populations are cyclical and require additional management actions including stocking and lake aeration. They can provide significant angling opportunity even though having only limited self-sustaining potential. This habitat limited category may overlap with the special category on a species basis. Particularly in lakes that have shown that they can support a specie such as walleye but have limitations that do not lead to sustainable populations.

5. **Creating angling opportunity offsets as a result of more restrictive angling regulation paradigm must become a major priority for managers:**

This will help to disperse and reduce angling pressure on self-sustaining fisheries. Primary tools include the expansion of the existing put and take trout stocking program, rebuilding walleye stocking capacity and habitat rehabilitation and enhancement programs. Habitat improvement that results from an integrated approach to manage the growing human footprint will have significant rewards over the long term that will lead to more sustainable fisheries at less risk. Active habitat enhancement, development and restorations activities on both private and public land can reap benefits in both the medium and long term and should be pursued in a focused manner keying in on critical or productive water bodies or courses. The requirement for offsets as a condition of development would greatly speed up such an active management approach. In addition, such an offset requirement can create many new angling opportunities in urban settings.

6. **Enhanced Fisheries Stamp:**

The Alberta Fish and Game Association is proposing the purchase of a mandatory Enhanced Fishery Stamp be included as a component of a sportfishing licence. The cost is suggested to be ten (10) dollars. The funding derived would provide additional support for the provincial fish

hatchery system and related programs. Reviving the walleye stocking program and alternative specie propagation should be the immediate priority for such funds. All anglers benefit, even if not fishing in enhanced waterbodies as the program reduces angling pressure at self-sustaining fisheries through out the province.

Conclusion

The Alberta Fish and Game Association is asking the angling community and the Government of Alberta to consider these alternative approaches. We are not asking for anything that is not already in place in other jurisdictions. The recent announcements by the Honourable Shannon Phillips, Minister of Environment and Parks and the follow-up by the Deputy Minister Andre Corbould and Executive Director Fish and Wildlife Policy, Travis Ripley are encouraging that a different direction is possible. Constructive dialogue and meaningful consultation is the starting point.