

The Conundrum – Big Fish, Little Fish or No Fish

Autumn turned into winter fast this year! A week ago, was experiencing a great open water bite for walleye in shirt sleeve weather. Now after five days of continuous minus temps, which culminated in back to back overnight lows below minus 20 degrees Celsius, the hard water season has arrived. What lies ahead in terms of winter is anybody's guess. The same can be said for angling regulation changes that may occur in 2018.

Online surveys were open during the fall as part of a consultation process related to Northern Pike and Walleye Management Frameworks and the North-Central Alberta Native Trout Recovery Plan. These surveys spurred many comments, discussions and concerns from the angling public.

Fishery managers in Alberta appear to be moving to even more conservative angling regulations using risk analysis vectors based on historical population dynamics. The narrative also concludes that fish populations in Alberta exist at lower densities, yet these fish are apparently more catchable than in the rest of North America.

Every time I hear this message, ask myself why is Alberta so different and what is Alberta doing wrong considering we already have by far the most conservative angling regulations in North America that already should have factored in such variables? The corollary must be: What is the rest of North America doing that is right? This is especially relevant as many jurisdictions across North America have less fish habitat, more anglers, and similar limiting factors; yet have been able to provide far more angling opportunity for their residents and visitors.

Believe it boils down to the goals and vision of fishery managers in Alberta. Whether they align with social, economic and environmental reality is the question? We could all stop angling tomorrow; yet this will not stop the threat from invasive species, poaching, habitat degradation or the effect of climate change.

The *Fish Conservation and Management Strategy for Alberta* is the guiding document which outlines the expected priorities and outcomes. Setting outcomes, without being able to connect the pieces is a recipe for failure which is the present situation. At some point we must become realistic, practical, outward thinking and innovative if the heritage of angling, which includes some consumptive harvest of wild fish is to survive in Alberta.

http://issuu.com/esrd/docs/fish_conservation_and_management_st?e=12110136/8768768

What is missing within the metrics used to determine the status of fish populations are those that measure angling opportunity. Angling opportunity is a social and economic indicator of management success. Overall the angling community has become frustrated; the result is the necessary social license for the current direction has not been obtained by the Government of Alberta. Fishery managers must be able to demonstrate that the number of waterbodies supporting angling, both from a consumptive and catch and release angling perspective is increasing on a year over year basis.

Under the current paradigm, this is not occurring as managers are focused on biodiversity metrics. With biodiversity as the driver, managers are primarily engaged with fish population monitoring and subsequent reporting on the status of fish populations. Active management that extends beyond angling regulation does not occur. Until managers start using all the tools available to them and learn how to work collaboratively with other departments within the Government of Alberta, municipalities and industry thus garnering their support, the outcomes envisioned in the *Fish Conservation and Management Strategy for Alberta* will not occur on the broad scale necessary to demonstrate success.

I want to focus on innovation and outward thinking. I received an email related to Gord Pyzer's Outdoor Canada West article titled "*Size science*" in the last Outdoor Canada West publication. The premise of the article is that large mature fish should be released and harvest restricted to small fish. The reason put forward is that these mature fish are the most important cohort in the population from a genetic and reproductive standpoint. The proponents of this approach are biologists both at an academic and field level.

When I started writing a reply, realized that it creates a conundrum as brought into focus the differing approach to fishery management in Alberta than elsewhere. This is particularly relevant as the province is in the process of setting the tone for what amount to a generational effect on angling opportunity in the province. The proposed Northern Pike and Walleye Management Framework, North-Central Alberta Native Trout Recovery Plan and Species at Risk Recovery Plans for bull trout and westslope cutthroat trout will redefine angling in Alberta.

To be blunt, the AFGA will not support any of these plans as currently envisioned as they do not connect the "*pieces*". In addition, there has been far too little consultation, metrics used to define population status are not consistent with other jurisdictions, other management options have not been explored, offsetting lost opportunity is not envisioned and issues related to habitat are not addressed.

Where consumptive harvest is allowed or envisioned in the future within such plans, it is no secret that angling regulations in Alberta will continue to direct harvest towards mature fish. Minimum size limits will remain a primary angling regulation for walleye, northern pike, lake trout, mountain whitefish and trout in self-sustaining populations except to become even more conservative. Personally, I am troubled every time retain such fish, having fished in many jurisdictions that have in place angling regulations aimed at selective harvest of smaller fish, believe that Alberta should be following a similar direction.

If we are to maintain the connection of angling with gathering of food, one is left with no other choice but to harvest these large fish in Alberta. While I am a proponent of catch and release angling when used to achieve a management objective at a watershed level, it does shift the focus solely to the recreational value of angling. Repeated studies have shown that society will support hunting when it is used to acquire food, but support quickly diminishes when it is seen only as a recreational pursuit. At what point in the future will the necessary social contract for angling be lost as it becomes only a recreational activity in Alberta?

On the surface it appears anglers in Alberta support the current direction of fishery management in Alberta based on recent surveys. This creates a dilemma for the AFGA as it challenges the proposed plans as it may be viewed by the larger angling community as having a narrow focus. Anglers and manager need however to be careful when drawing conclusions from surveys. Survey design, questions and sample size (+/- 3500) may not be indicative if other options had been presented or different questions asked. When the actual regulations roll out and the implications at a local level are felt, the response from the angling public may be different. The following is a snapshot from the survey response:

- *For the majority of respondents, harvest is not the prime motivation for going fishing. Most respondents would like the opportunity to harvest walleye and northern pike if that option is available, and recognize the importance of that limited opportunity.*
- *While the goal for fish populations is to have them healthy and robust enough to allow harvests, the majority of respondents have indicated they prefer healthy stocks.*
- *The majority of respondents indicate they would rather see catch and release or closures to speed recovery rather than risk slowing recovery by allowing limited harvest.*

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

Why does Alberta use minimum size limits? Recently the Government of Alberta has embarked on a communication plan aimed at demonstrating that its viewpoint makes the most sense for Alberta. To be fair, current minimum size limits when combined with one (1) fish limits do protect mature fish but not large mature fish. This is outlined in a recent posting on My Wild Alberta titled "*Alberta Fisheries Management - the Science of Fish*". The following is an excerpt:

The issue of size limits and protecting breeding fish is complex and Alberta's regulations allowing the harvest of big fish might raise some questions.

At most lakes, there are far more small fish than big fish. Typically in Alberta, 20 anglers will each catch a small spawning-sized pike, and only one angler will catch a big pike. Regulations require the release of the 20 smaller fish to increase the number of eggs that are released.

Consider this: a 100 cm pike might produce 100,000 eggs whereas a smaller 60 cm pike may only produce 25,000. If you were managing a live-well in your boat and caught one big female and one smaller female, you would logically save more eggs by releasing the big one.

This is not the case if you are biologist managing an entire lake's fishery. That catch ratio is not one big fish to one small fish because catch analysis shows that for every big female fish caught by anglers, there are typically 20 smaller females caught. For pike, that one big fish might have 100,000 eggs, but the 20 small fish would have 25,000 eggs each for a total of half a million eggs. Releasing the numerous small breeders and harvesting the one older fish puts many more eggs back into the lake.

<https://albertaep.wordpress.com/2017/07/14/alberta-fisheries-management-the-science-of-fish/>

A similar article put out by the Government of Alberta also provides further justification from their perspective as why minimum size limits work well in Alberta. It is titled “Slot Size Limits in Alberta”. It concludes that minimum size limits are best for the Alberta situation.

<https://mywildalberta.ca/fishing/regulations/documents/SlotSizeLimitsAlberta-May2017.pdf>

Challenging this perspective is difficult as the angling community is not united on a common direction as there are many differing opinions to how fish populations should be managed. Regardless of the viewpoint, there are social, economic and environmental trade-offs. My concern is that managers, biologists and anglers are forming opinions and making decisions, each from a narrow perspective that do not adequately address or take into account trade-offs, consequences, knowledge and biological constraints.

While we can probably have some quality, fisheries based on catch and release and selective harvest, this is only possible if the ecosystem has the ability to produce large fish in substantial numbers. Most of our eutrophic systems, while highly productive are better managed to produce small and medium size fish supporting sustainable harvest. The other issue with the high minimum size limits used in Alberta is that they target female fish that generally grow faster or larger than males.

Northern pike and walleye exhibit growth and age potentials across North Americas based on similar climatic zones. 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 of this size and becomes increasingly dominated by female fish as they grow larger. The northern pike minimum size limit of 63 cm fortunately sees a 70% male and 30% female ratio. Regulation proposals currently been suggested by Alberta managers would see this minimum size move to a 70 cm or higher minimum which is where the male/female ratio begins to favor female fish in the population.

<http://wildernessnorth.com/wordpress/wp-content/uploads/2014/09/FishGrowthChart.pdf>

Complicating this is that as pike are highly adaptive to a variety of ecosystems where growth potentials vary dramatically which is not depicted in such composite statistics. Highly productive waterbodies with habitat limitations seldom produce northern pike above 65 cm yet will provide great angling experiences including the ability to harvest. Such waters if the direction proposed by managers comes into effect would effectively become C&R only.

I have personally advocated for **narrow** harvest slots for walleye which likely could also apply to other species such as lake trout that would direct harvest equally to males and females. Such regulations would likely in most cases be supported by 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) both outside and 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.

Northern pike based on information provided to me from biologists outside of the current management team with the Government of Alberta suggest that they can be managed sustainably with a one (1) fish limit or one (1) fish limit supported by the current 63 cm minimum depending on ecosystem dynamics. We could choose to apply a harvest slot that would protect mature fish which would be an even more precautionary option. The ability to harvest an occasional giant could be done through SHLs(tags). In Texas such opportunity is provided though a single annual tag which allows an angler to harvest a fish of a lifetime.

Over the years that have been fish chair, coming to a consensus within AFGA on such regulations has been difficult. In presentations at conference/meetings/forums and Outdoor West columns have put all these ideas forward. The angling community must come together with reasonable and biologically sound alternatives to those being proposed by the Government of Alberta. Such alternatives must support angling regulation simplification, maintain angling opportunity but at the same time allow for sustainable harvest that still achieve conservation objectives across most of Alberta fisheries.

Conservation objectives must not be confused with Fishery Management Objectives (FMO) which is the “desired state of a fishery from an angling experience”. Conservation objectives are applied across all waterbodies whereas Fishery Management Objectives apply to individual waterbodies which are determined through a consultative and consensus based process. However, risk management approaches based on the Fish Sustainability Indexes (FSI) and optimal sustainable harvest metrics used by Alberta’s fishery managers leave little room for consumptive allocation beyond indirect mortality from C&R angling or illegal harvest (poaching) particularly when any available harvest is directed at large mature fish.

Optimal sustainable yield is the management paradigm that has replaced maximum sustained yield. Wikipedia’s definition is as follows:

*In environmental science, **optimum sustainable yield** is the largest economical yield of a renewable resource achievable over a long time period without decreasing the ability of the population or its environment to support the continuation of this level of yield, and enables an ecosystem to have a high aesthetic value. This concept is widely used specifically in the management of fisheries, where surplus fish are removed so the population stays at its carrying capacity. This allows the most fish to be harvested while still maintaining maximum population growth.^[1]*

Optimal sustained yield is difficult to determine as natural ecosystems have a great deal of variability. Such variability in models used to calculate optimal sustained yield become “risk”. What risk factors to use and their relative weighting depends on the model. The potential harvest level is based on the data that the scientists input into the equation or model. While the data is scientifically based, it becomes subjective as the actual value/parameter/number inputted will vary due to the individual or group perspective. What is true is that optimal sustained yield will be lower than the maximum sustained yield used in the past. When the **underlying baseline objective** is to have historical population levels based on single specie metrics there is even less room for harvest.

Would Alberta managers be willing to use **general slot size regulations** to protect mature fish which are increasingly becoming common across North America is probably the question should be asking?

Narrow harvest slot regulations applied across Alberta waterbodies could be developed. Such regulations protect mature fish, allow fish within the harvest slot to be vulnerable for only a short period and thus allow sufficient numbers of fish to recruit to the protected range again. Such regulations are in reality both a minimum and maximum size limit and are more precautionary than the current regulations except those that are C&R only.

Would such regulations be an acceptable alternative to anglers and managers? The answer appears to be “no” when you review the posting online from the Government of Alberta. We appear headed to largely C&R regulations or total closures.

Despite other jurisdictions in North America recognizing the importance of maintaining large fish in their waters to achieve long term objectives – Alberta continues to suggest that its current management approach has no long-term consequence to populations. Large mature fish represent an extremely important metric that needs to exist in most fish populations. Nowhere is this more important than in jurisdictions such as Alberta which are constrained by lack of fish habitat, angler numbers and limiting factors effecting productivity. Continuing to target such fish for harvest is putting into jeopardy the long-term strategy to achieve sustainable fishery management outcomes. Catch and release only regulations are however not the panacea that is depicted by some as the solution. The time to be innovative and take some risks is upon us! Just my opinion but appears that biologists and managers outside Alberta agree (includes many in Alberta as well who believe their voices are not being heard).