

Ontario Waters of Lake of the Woods Fisheries Management Plan

Part 1 – Recreational walleye plan
Draft for consultation

September 2022

Lake of the Woods Recreational Walleye Plan – draft for consultation

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Résumé en français (French Language Summary)

Le lac des Bois est la deuxième plus grande masse d'eau continentale en Ontario (385 000 ha). Il est partagé entre la province du Manitoba et l'État du Minnesota (Figure 1). Les eaux de l'Ontario comprennent 245 000 ha (64%) de la superficie totale. Le lac des Bois soutient la pêche récréative dans les eaux continentales qui a la plus grande valeur sur le plan économique en Ontario tandis que les dépenses annuelles estimatives des pêcheurs à la ligne s'élèvent à 111,4 millions de dollars. Bien que cette valeur englobe la pêche récréative pour toutes les espèces, des études montrent que le doré jaune est l'espèce la plus prisée par les pêcheurs à la ligne dans le lac des Bois. La partie du lac des Bois qui est située en Ontario abrite plus de 6 000 chalets et autres propriétés saisonnières ainsi que plus de 60 entreprises touristiques, dont des pourvoyeurs, des pavillons qui servent de base principale, des terrains de camping et des entreprises qui offrent des services de guides. L'industrie du tourisme emploie environ 38 % de la main-d'œuvre dans la ville de Kenora. De plus, la pêche commerciale et la pêche de subsistance jouent un rôle important dans la vie des Autochtones sur le lac des Bois et dans les alentours en contribuant à combler les besoins alimentaires, sociaux, culturels et économiques de nombreuses communautés des Premières Nations et métisses.

Le Ministère des Richesses Naturelles et des Forêts (MRNF), qui surveille les données sur le lac des Bois, signale que la population de dorés jaunes est vulnérable aux niveaux de récolte continuellement élevés au point où la récolte actuelle présente un risque pour la qualité de la pêche au doré jaune. Plus particulièrement, voici les trois enjeux écologiques préoccupants :

- Les taux de récolte sont élevés et ils ont une incidence sur la capacité de la population à amortir des pressions comme les espèces envahissantes, la récolte plus soutenue et les changements climatiques.
- La biomasse de dorés jaunes observée est en-deçà de la biomasse repère.
- Les taux de mortalité sont élevés et il y a peu de dorés jaunes âgés dans la population.

Mis ensemble, ces enjeux donnent à entendre que la pêche au doré jaune est compromise à long terme. La capacité de la population de dorés jaunes à amortir les pressions imprévues dans l'avenir, comme les années de faible reproduction, la pression accrue sur les pêches ou les événements climatiques extrêmes, est faible. Parallèlement, le ministère de la MRNF, qui reconnaît l'importance de la pêche au doré jaune pour le bien-être économique et social des communautés dans la région du lac des Bois, s'est engagé à trouver un juste équilibre entre la conservation et les considérations socio-économiques.

Le ministère de la MRNF s'est associé à plusieurs communautés autochtones, exploitants d'entreprises touristiques, administrations municipales et usagers des installations récréatives à l'échelle locale afin de créer le comité consultatif sur les pêches du lac des Bois. Depuis le mois de janvier 2021, les membres de ce groupe se réunissent

afin de mettre au point ce plan de gestion de la pêche récréative au doré jaune afin d'améliorer la situation de la population tout en reconnaissant l'importance économique et sociale de la pêche, conformément aux orientations de la Stratégie provinciale de gestion des pêches de l'Ontario (MRNF 2015).

Les objectifs écologiques et socio-économiques du plan de gestion sont les suivants :

1. Diminuer la mortalité chez les dorés jaunes associée à la pêche récréative.
2. Accroître la biomasse constituée de dorés jaunes plus gros et plus âgés.
3. Traiter tous les pêcheurs récréatifs de dorés jaunes de manière équitable.
4. Reconnaître l'incidence des modifications réglementaires sur l'industrie touristique locale.
5. Offrir des possibilités supplémentaires de pêche à la ligne pour d'autres espèces, conformément aux objectifs de la Stratégie provinciale de gestion des pêches.

Les mesures associées au cinquième objectif seront reportées pour des exercices de planification à venir.

À l'heure actuelle, les règlements de la pêche récréative pour le lac des Bois vont comme suit :

Saison : ouverte du 1^{er} janvier au 14 avril et du troisième samedi du mois de mai jusqu'au 31 décembre

Limites (pour les résidents de l'Ontario et du Canada) : pêche sportive 4 et pêche écologique 2; pas plus d'un poisson de plus de 46 cm

Limites (pour les non-résidents) :

Limite quotidienne de prise et de garde – pêche sportive 2 et pêche écologique 2; pas plus d'un poisson de plus de 46 cm

Limite de possession – pêche sportive 4 et pêche écologique 2; pas plus d'un poisson de plus de 46 cm

Afin d'atteindre les quatre premiers objectifs de gestion, le ministère de la MRNF envisage d'apporter les modifications suivantes aux règlements sur la pêche récréative :

Option privilégiée

Saison : ouverte du 1^{er} janvier au 14 avril et du troisième samedi du mois de mai jusqu'au 31 décembre (inchangée)

Limites (pour tous les pêcheurs à la ligne) :

Limite quotidienne de prise et de garde

Pêche sportive 2; doit mesurer moins de 43 cm ou plus de 70 cm et pas plus d'un poisson de plus de 70 cm

Pêche écologique 1; doit mesurer moins de 43 cm

Limite de possession

Pêche sportive 4; doit mesurer moins de 43 cm ou plus de 70 cm et pas plus d'un poisson de plus de 70 cm

Pêche écologique 2; doit mesurer moins de 43 cm

Option de recharge

Saison : ouverte du 1^{er} janvier au 14 avril et du troisième samedi du mois de mai jusqu'au 31 décembre (inchangée)

Limites (pour tous les pêcheurs à la ligne) :

Limite quotidienne de prise et de garde

Pêche sportive 2; doit mesurer entre 35 cm et 43 cm ou faire plus de 70 cm et pas plus d'un poisson de plus de 70 cm

Pêche écologique 1; doit mesurer entre 35 cm et 43 cm

Limite de possession

Pêche sportive 4; doit mesurer entre 35 cm et 43 cm ou faire plus de 70 cm et pas plus d'un poisson de plus de 70 cm

Pêche écologique 2; doit mesurer entre 35 cm et 43 cm

Ce document sera accessible sur le Registre environnemental de l'Ontario pour une période de commentaires de 60 jours. Les renseignements seront également accessibles sur les médias sociaux. Nous avons communiqué directement avec 16 communautés autochtones potentiellement concernées afin de recueillir leurs commentaires. Après la consultation, une version finale du plan de gestion de la pêche récréative au doré jaune sera affichée sur le Registre environnemental de l'Ontario et accompagnée d'un avis de décision.

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Introduction

In 2015, the Ministry of Natural Resources and Forestry (MNRF) adopted the Provincial Fish Strategy (PFS; MNRF 2015), which is intended to improve the conservation and management of fisheries, and the ecosystems upon which communities depend, while at the same time to promote, facilitate, and encourage fishing as an activity that contributes to the nutritional needs, social, cultural, and economic well-being of individuals and communities in Ontario. All fisheries management activities in Ontario are now expected to be consistent with the direction of the Provincial Fish Strategy.

Lake of the Woods (LOTW) is the next largest waterbodies in Ontario after the Great Lakes and Lake Nipigon (385,000 ha). It is shared with the Province of Manitoba and the State of Minnesota (Figure 1). Ontario waters comprise 218,042 ha (57%) of the total surface area, situated within the bounds of Fisheries Management Zone 5 (Figure 2). Lake of the Woods is part of the Lake of the Woods Provincially Significant Inland Fishery (PSIF) complex which includes the Ontario waters of Shoal Lake (Shoal Lake is shared with Manitoba) and the Rainy River (shared with Minnesota), downstream of the Fort Frances dam. The Lake of the Woods Recreational Walleye Plan deals with the Ontario waters of Lake of the Woods proper; fisheries in the Rainy River and Shoal Lake will be addressed in future management planning.

MNRF has established the Lake of the Woods Fisheries Advisory Council (hereafter referred to as the 'Advisory Council'), comprised of members representing Indigenous communities, recreational anglers, the tourism industry, and other interested parties. This group advises MNRF with respect to developing objectives and management actions within the fisheries management planning process (PFS, MNRF 2015).

The intent of the LOTW fisheries management planning process is to develop a plan addressing the management of each species targeted by fisheries (i.e., recreational, and commercial) in the lake. Due to the ecological status of walleye (*Stizostedion vitreus*) and the economic importance of that species (Sections 1.1 and 1.2), initial management planning efforts in LOTW were directed towards the recreational fishery for walleye. The other fisheries of Lake of the Woods will be addressed in future planning exercises; this recreational walleye plan is intended to become a chapter in a lake-wide fisheries management plan resulting from these future planning exercises.

Lake of the Woods Recreational Walleye Plan – draft for consultation

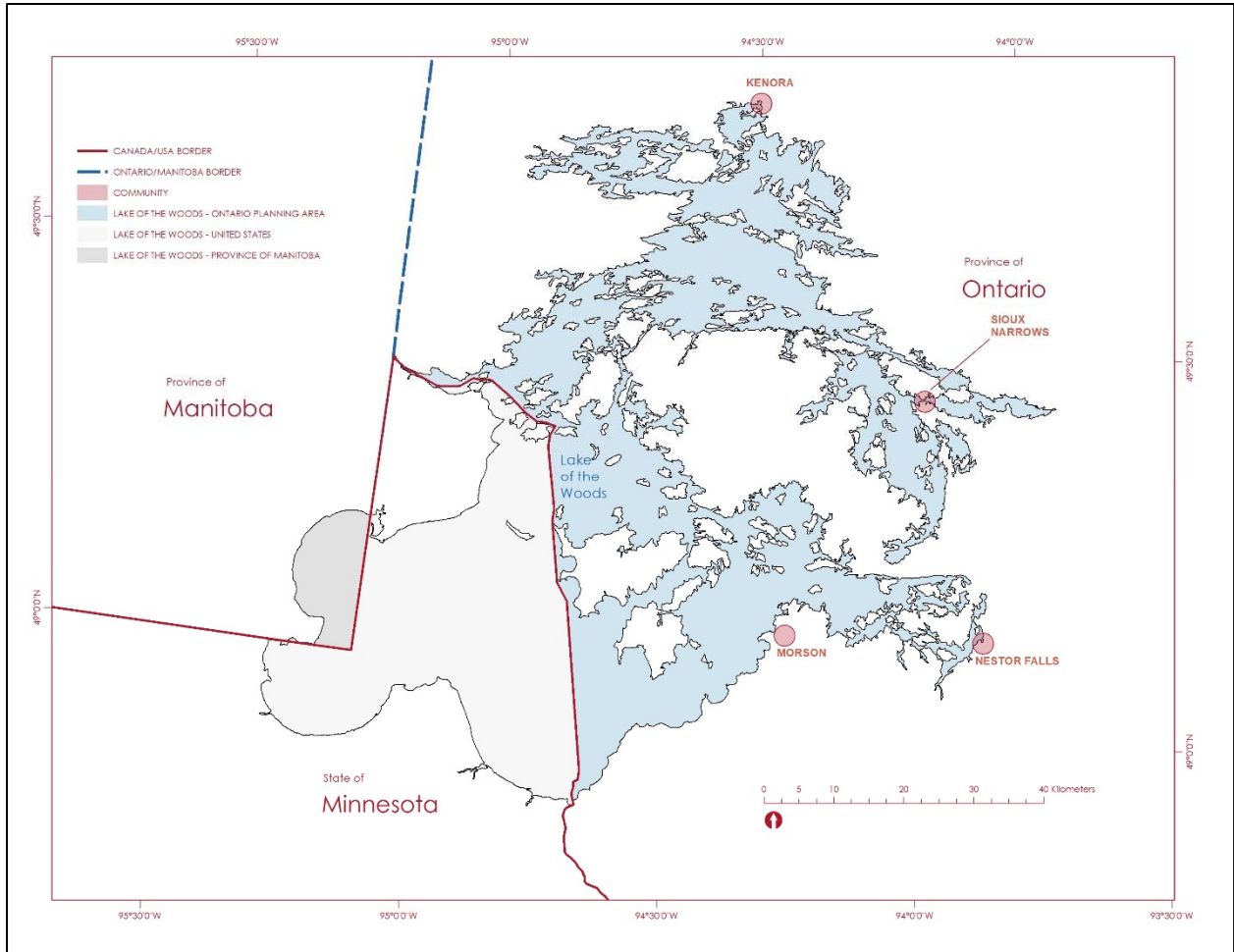


Figure 1: Map of Lake of the Woods showing jurisdictional boundaries.

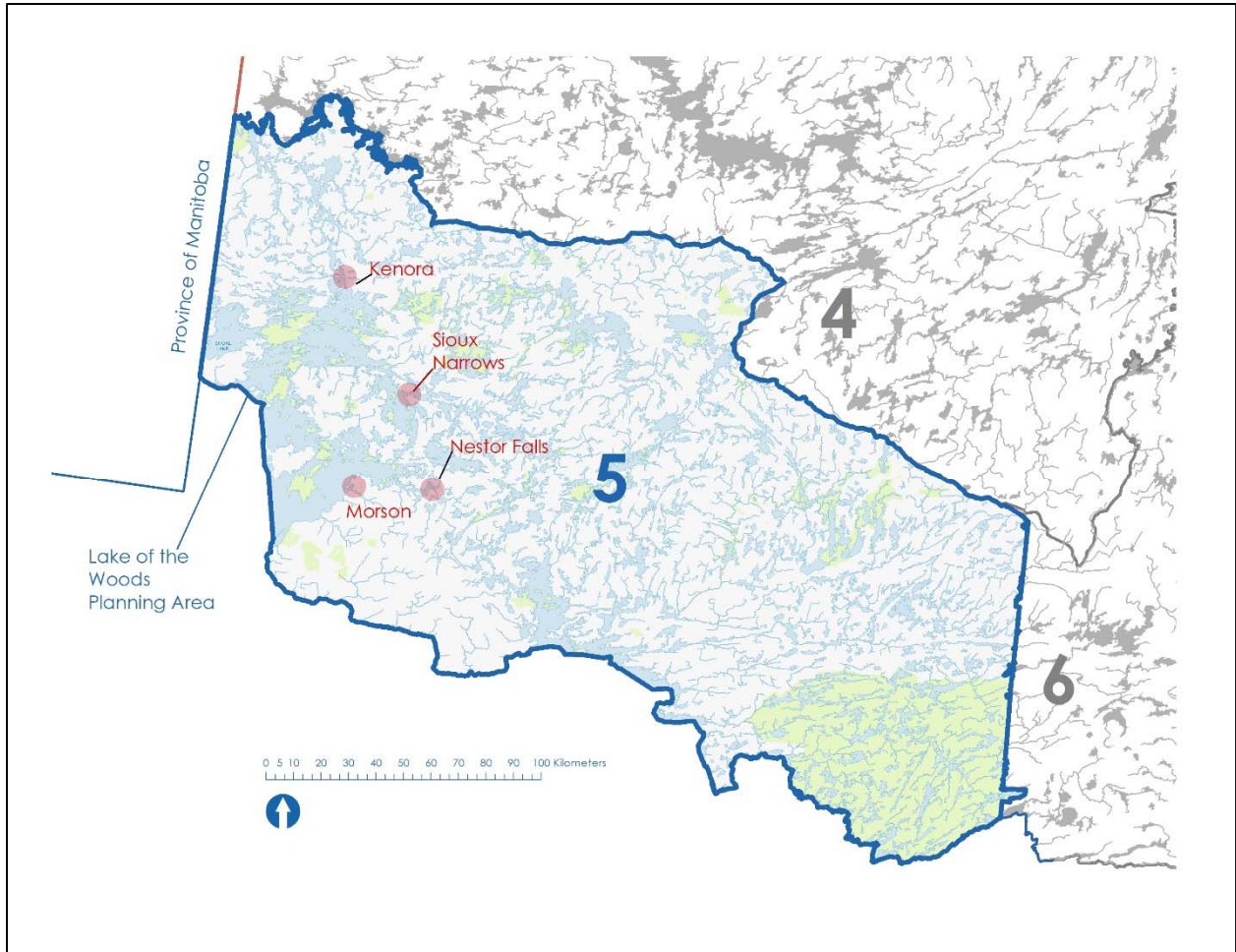


Figure 2: Map of Fisheries Management Zone 5 boundaries and general location of the Lake of the Woods Planning Area.

1. Background

1.1 Socio-Economic Information

The largest municipality located on the shores of Lake of the Woods is the City of Kenora (population ~15,000; StatsCan 2021). The other organized municipalities on the Ontario waters of Lake of the Woods are the Township of Sioux Narrows-Nestor Falls (population ~550; StatsCan 2021a) and Lake of the Woods Township (population ~230; StatsCan 2021o). Reserve lands of eleven First Nations are located on the Ontario waters of Lake of the Woods (Figure 3), and one First Nation is located on the Manitoba waters. An additional two First Nations share Agency 30 reserve lands with the eleven located directly on the lake (Table 1). Lake of the Woods is also within the Lake of the Woods/Lac Seul/Rainy Lake/Rainy River asserted harvesting territory area of the Northwestern Ontario Métis Community (Métis Nation of Ontario Region One, MNO).

Table 1: First Nations located on Lake of the Woods (Source: StatsCan 2021 b-p)

First Nation	Population
Animakee Wa Zhing 37 First Nation (Northwest Angle 37)	185
Anishinaabeg of Naongashiing (Big Island First Nation)	110
Buffalo Point First Nation*	481
<i>*located on Manitoba waters of Lake of the Woods</i>	
Iskatewizaagegan 39 Independent First Nation (Shoal Lake 39)	540
Mishkosimiziibing First Nation (Big Grassy)	235
Naotkamegwanning First Nation (Whitefish Bay)	575
Northwest Angle 33 First Nation	190
Obashkaandagaang Bay First Nation (Washagamis Bay)	140
Ojibways of Onigaming First Nation	375
Rainy River First Nations	740
Shoal Lake 40 First Nation	220
Wauzhushk Onigum Nation (Rat Portage)	415
First Nations with shared Agency 30 reserve lands only	
Niisaachewan Anishinaabe Nation (Dalles)	195
Wabaseemoong Independent Nation	830

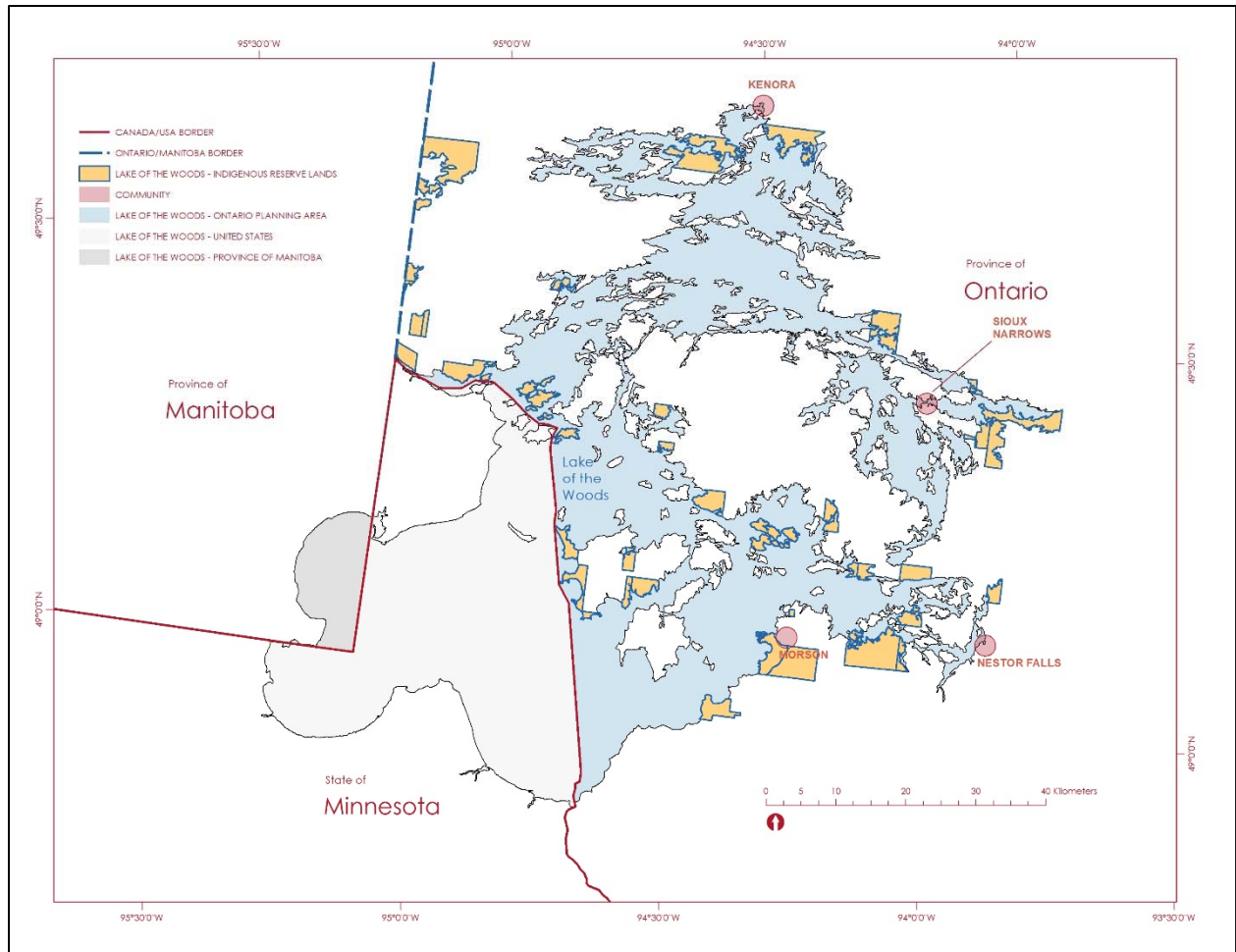


Figure 3: Map of Lake of the Woods illustrating First Nations reserve lands.

1.1.1 Tourism industry

Tourism is one of the most valuable economic industries in the Lake of the Woods catchment. Approximately 38% of the work force in the City of Kenora is employed in the tourism industry (Lake of the Woods Development Commission 2013). Total visitor spending in the region is reported as \$543 million (2011; City of Kenora 2014). The 2015 Survey of Recreational Fishing in Canada (DFO 2019; MNRF 2020) estimated that direct expenditures by anglers on Lake of the Woods was \$111.4 million.

Approximately 62 tourist establishments are located on the Ontario portion of Lake of the Woods (Figure 4). Three operating provincial parks are located along Highway 71, adjacent to Lake of the Woods; two non-operating provincial parks are located on the lake proper. The majority of the islands on Lake of the woods are regulated provincial conservation reserves.

Seasonal properties (i.e., cottages) comprise the largest component of domestic tourism. Over 6000 cottages are located on the Ontario portion of Lake of the Woods (MNRF unpublished data). Overnight stays at private cottages account for ~22% of domestic tourism in the Kenora census division (2017; MHSTCI unpublished data).

Open water creel surveys conducted in 2017-18 (Danco 2019) suggest the majority of recreational anglers are American non-residents (Table 2).

Table 2: Residency of angler groups interviewed during the 2017 and 2018 open water creel surveys (adapted from Danco 2019)

Origin	2017	2018
Local	7.2	6.6
Resident of Ontario (not local)	2.4	1.5
Resident of Canada (not Ontario)	12.6	10.2
Resident of United States	77.7	81.0
Other country	0.1	0.5

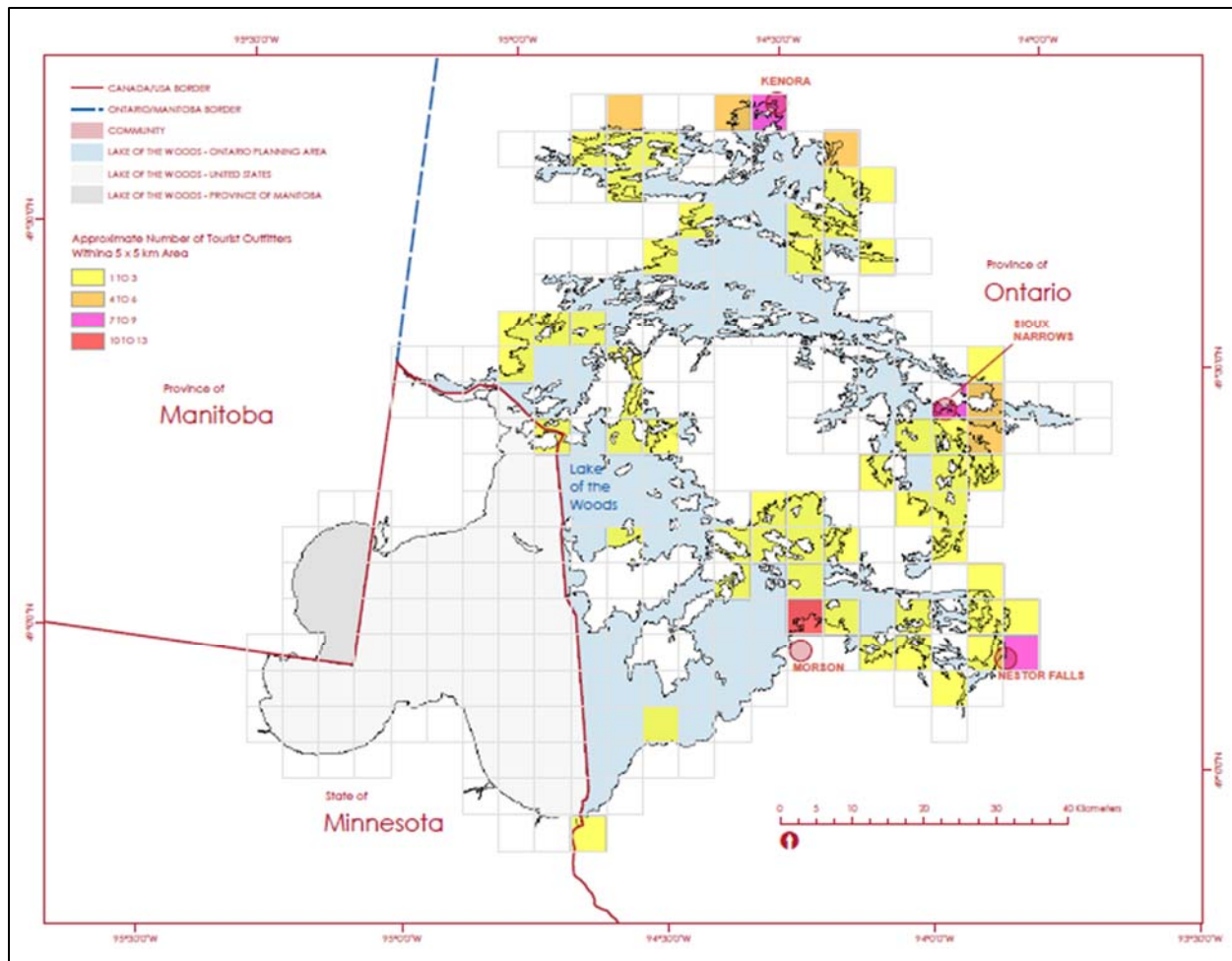


Figure 4: Map showing commercial tourist camps that are within Ontario on Lake of the Woods

NB: This map represents the best information available to MNR and may not be complete.

Research Resolutions & Consulting Ltd. (2015) found that most American anglers visiting northern Ontario came from (in order) Minnesota, Wisconsin, Michigan, and Illinois. This finding generally supports that of the 2015 Recreational Fishing Survey of Canada (DFO 2019; MNRF 2020; MNRF unpublished data) which found the highest number of respondents who reported fishing in Lake of the Woods coming from Minnesota (32%), Wisconsin (14%), Manitoba (14%), Illinois (8%) and Ontario (6%).

Appendix A summarizes the results of the 2015 Recreational Fishing Survey of Canada (DFO 2019; MNRF 2020; MNRF unpublished data) regarding the license type purchased by anglers who reported fishing the Ontario waters of Lake of the Woods. The most popular license purchased was the 8-day, non-resident conservation license (21.3%), followed closely by the 8-day, non-resident sport fishing license (20.7%). Amongst all license categories (including resident and non-resident), slightly more than half of anglers chose a sport fishing license over a conservation license (52%).

1.1.1.1 Competitive Fishing Events

Competitive fishing events (i.e. tournaments and derbies) are generally not directly regulated by MNRF, though participants are required to adhere to the provincial fishing regulations. Consequently, an accurate count of these events is difficult, considering the number of small events organized by cottage associations, neighbourhood groups, service clubs, etc. However, several large-scale events directed at professional anglers are held annually on the Ontario waters of Lake of the Woods, three of which target walleye:

- Lake of the Woods Women’s Walleye Tournament (80+ boats) – June
- Kenora Walleye Open (120+ boats) – July
- Lake of the Woods Walleye Challenge (50+ boats) – October

These three events are all live-release tournaments; the Lake of the Woods Walleye Challenge operates under a weigh-in format, the Women’s Walleye Tournament has a catch-photo-release format, while the Kenora Walleye Open uses a hybrid format.

1.2 Fisheries Monitoring

Fisheries independent (i.e. index netting) and fisheries dependant (i.e. creel surveys) information has been monitored by MNRF for decades. Between 1999 and 2017, MNRF’s fisheries-independent data came from Fall Walleye Index Netting (FWIN; Morgan 2002), a common assessment tool for monitoring walleye populations. Since 2018, MNRF has carried out the PSIF – Lake of the Woods Monitoring Program; the fisheries-independent component of this program follows the protocols of the provincially standardized Broad-scale Monitoring Program for Inland Lakes (BsM; Sandstrom et al. 2013). For more information regarding the BsM program, please visit [https://www.ontario.ca/page/broad-](https://www.ontario.ca/page/broad-scale-monitoring-program)

scale-monitoring-program. The PSIF monitoring program utilizes similar protocols to the BsM program, adapted to Lake of the Woods.

Fisheries dependent data is collected through roving creel surveys conducted during the open water and winter angling seasons. Creel surveys involve conducting recreational angler counts and interviews, to provide estimates of catch, effort (i.e., angler- or rod-hours), and harvest (Malvestuto et al. 1978; Lester and Korver 1996.). Creel results are supplemented with information from the Survey of Recreational Fishing in Canada (MNR 2020).

The LOTW monitoring program has recently completed a two-year netting event, two open-water creel programs, and multiple area specific winter creel programs over a five-year period. Future results of both the independent (index netting) and dependant (creel survey) monitoring of the PSIF – Lake of the Woods Monitoring Program will be used to measure success in achieving the walleye objectives.

1.2.1 Fisheries-Independent Monitoring Assessment

Walleye that are captured during netting surveys or sampled from angler catches during creel surveys are measured for a variety of biological attributes that provide information on population status including:

- Length
- Weight
- Sex
- Age

These measures are used to describe several important characteristics of the walleye population, including relative abundance (i.e., catch per unit effort), age structure, growth, biomass, and mortality. A minimum size is often used in the calculation and reporting of common fisheries metrics, often referred to as recruit- or harvestable-sized fish. The bulk of this management plan will report on walleye greater than or equal to 350 mm (13.75 inches) total length to represent the portion of the population that are fully recruited to the fishery (vulnerable to netting gear and other fishing, i.e., angling). Reporting on recruit- or harvestable-sized walleye (> 350 mm total length) can be considered an acceptable threshold as this is the average size that recreational anglers begin to target and harvest walleye.

The status of walleye fisheries in Ontario is evaluated using two biological reference points (Lester et al. 2003) for sustainable fishing (biomass and mortality rate) which can be used to identify overfishing (Figure 5). Biological reference points are a way to compare what is observed from monitoring data (i.e., netting) to what is expected given habitat and climate characteristics of a waterbody. Lester et al. (2004) developed the Thermal-Optical Habitat Area (TOHA) model to estimate walleye yield for Ontario lakes using physical and chemical parameters, including lake size, depth, nutrient levels, water

clarity, and temperature. The TOHA model describes a method for calculating the carrying capacity (B_{MAX}).

B_{MAX} refers to the expected biomass density when a population is unexploited (e.g., no harvest), or simply, the maximum amount of biomass a lake can support. MSY describes the maximum harvest that can be sustained over time, without detrimental effects to the population as evidenced by reduced biomass and increased mortality. Observed biomass (B_{OBS}) is measured from the PSIF - LOTW Monitoring Program (netting), whereas biomass at MSY (B_{MSY}) is estimated from predictive models (Lester et al. 2004) and defined as half of B_{MAX} . B_{MSY} is the benchmark against which to B_{OBS} can be compared ($B_{OBS}:B_{MSY}$).

Instantaneous total mortality (Z) is the rate at which fish in a population die on annual basis and accounts for both natural (M) and fishing (F) mortality. Fishing mortality results from sources including recreational, commercial, or subsistence fisheries. Observed instantaneous total mortality (Z_{OBS}) is measured from the PSIF - LOTW Monitoring Program (netting), whereas M is estimated from predictive models (Lester et al. 2014). Instantaneous total mortality rate at MSY (Z_{MSY}) is the benchmark against which to Z_{OBS} can be compared ($Z_{OBS}:Z_{MSY}$). Z_{MSY} is defined as: $M + F_{MSY}$ (where $F_{MSY} = M$), or simply $2M$ (Figure 5). Where Z_{OBS} exceeds Z_{MSY} , both yield and abundance (i.e. biomass) decline, decreasing the benefits to all users and increasing the risk to the walleye fishery (MNRF 2015).

The primary tool for visualizing the ratios of observed versus expected biomass ($B_{OBS}:B_{MSY}$) and (total) instantaneous mortality ($Z_{OBS}:Z_{MSY}$) is the 'Diagnostic Plot' or 'Kobe Plot' (Figure 5). This graphical tool allows us to classify a fishery into four stages:

- Top Left: high biomass and low mortality
- Top Right: high biomass and high mortality
- Bottom Left: low biomass and low mortality
- Bottom Right: low biomass and high mortality

The PSIF – LOTW monitoring program conducted index netting surveys in 2018 and 2019. Estimated measures for the walleye population were calculated by combining all nets (efforts) from historical sectors (Figure 6) and years and randomly drawing a sample of 98 efforts that accurately represent the contribution of each sector's area and depth to the whole lake. The mean value was then calculated from the pooled catch and this process repeated 100 times to understand the variability (level of uncertainty) associated with the resampled mean (Figure 7). This was done to provide a single estimate for the Ontario waters of Lake of the Woods. Results indicate that the walleye population status exists in the lower right quadrant of the Kobe plot (Figure 7), demonstrating low biomass and high mortality rates compared to benchmark/reference points.

MNRF netting data from 2018 and 2019 demonstrates that the walleye population in Lake of the Woods is skewed towards younger age classes, with fish older than age eight years making up less than 12 percent of the population (Figure 8). Fisheries researchers have

identified extended age structures as essential to the sustainability of many exploited fish stocks (Venturelli et al. 2009). Significant representation (numbers of fish) of numerous older age classes within a population serves to ensure that periodic disruptions to spawning that negatively impact a year class do not disproportionately affect the entire population. Missing or limited numbers of older spawning individuals may lead to reductions in the numbers of new individuals to replace those harvested, and low recruitment of individuals to the population, a phenomenon known as recruitment overfishing (Ricker 1975).

While the Lake of the Woods walleye population currently appears to have no issues with recruitment, the population's limited capacity to buffer against unforeseen pressures in the future/long term, such as poor reproductive years, increased fishing pressure, invasive species, or severe climate events is likely to be further compromised unless management action is taken to improve the health of the fishery.

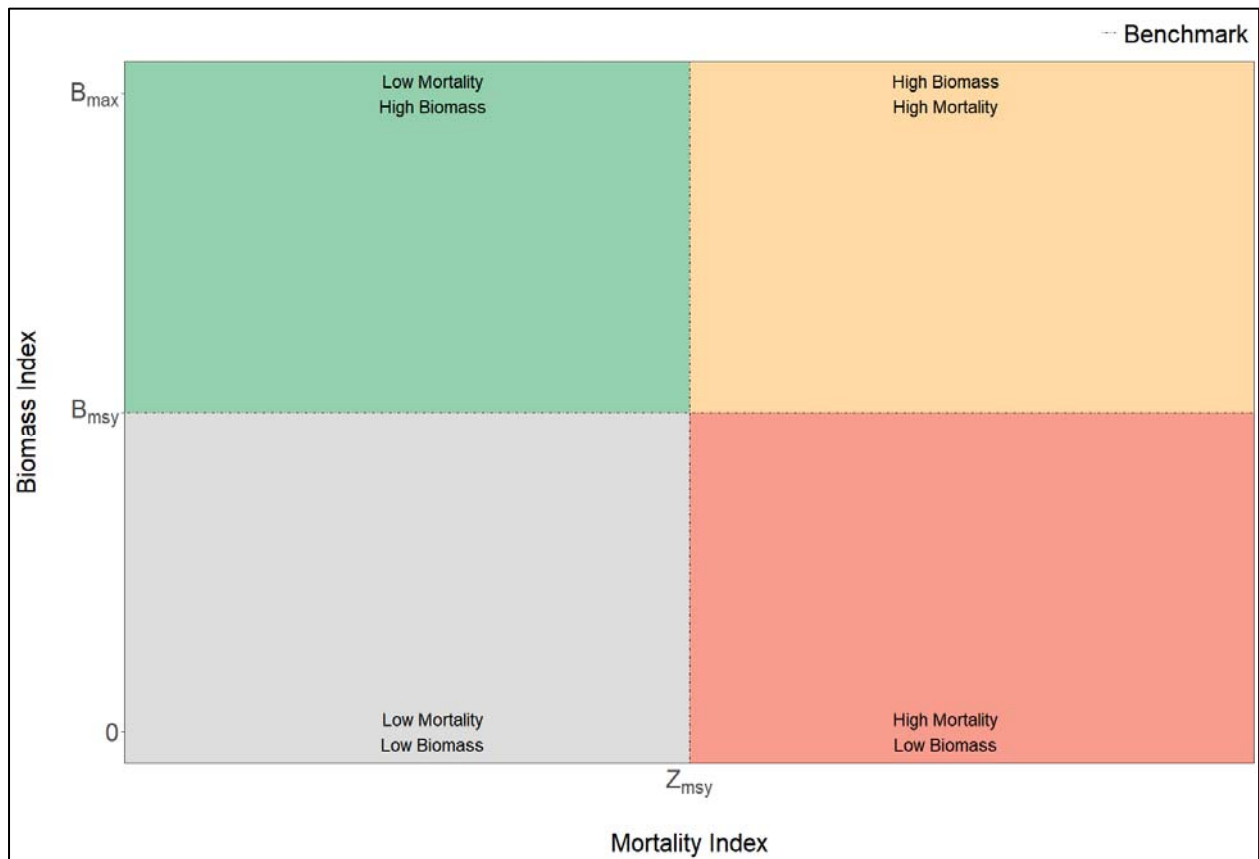


Figure 5: The diagnostic ‘Kobe’ plot is the primary indicator of status for fisheries management in Ontario. The horizontal and vertical dashed lines represent the biomass (B_{MSY}) and mortality ($Z_{MSY} = 2M$, where M is natural mortality) benchmark/reference points at maximum sustainable yield. Adapted from Lester et al. 2003; MNR 2015; Lester et al. 2021.

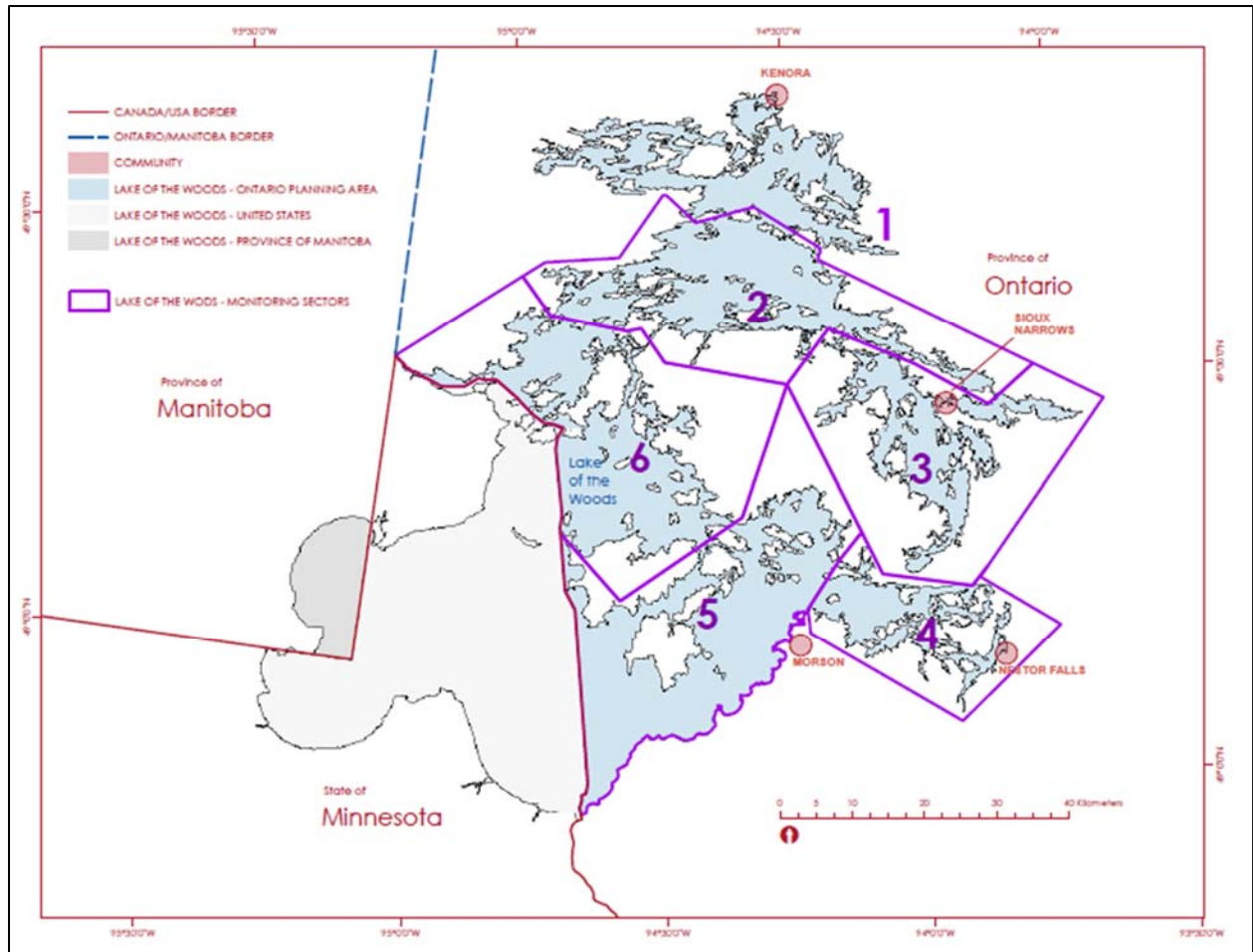


Figure 6: Historical monitoring sectors for Lake of the Woods.

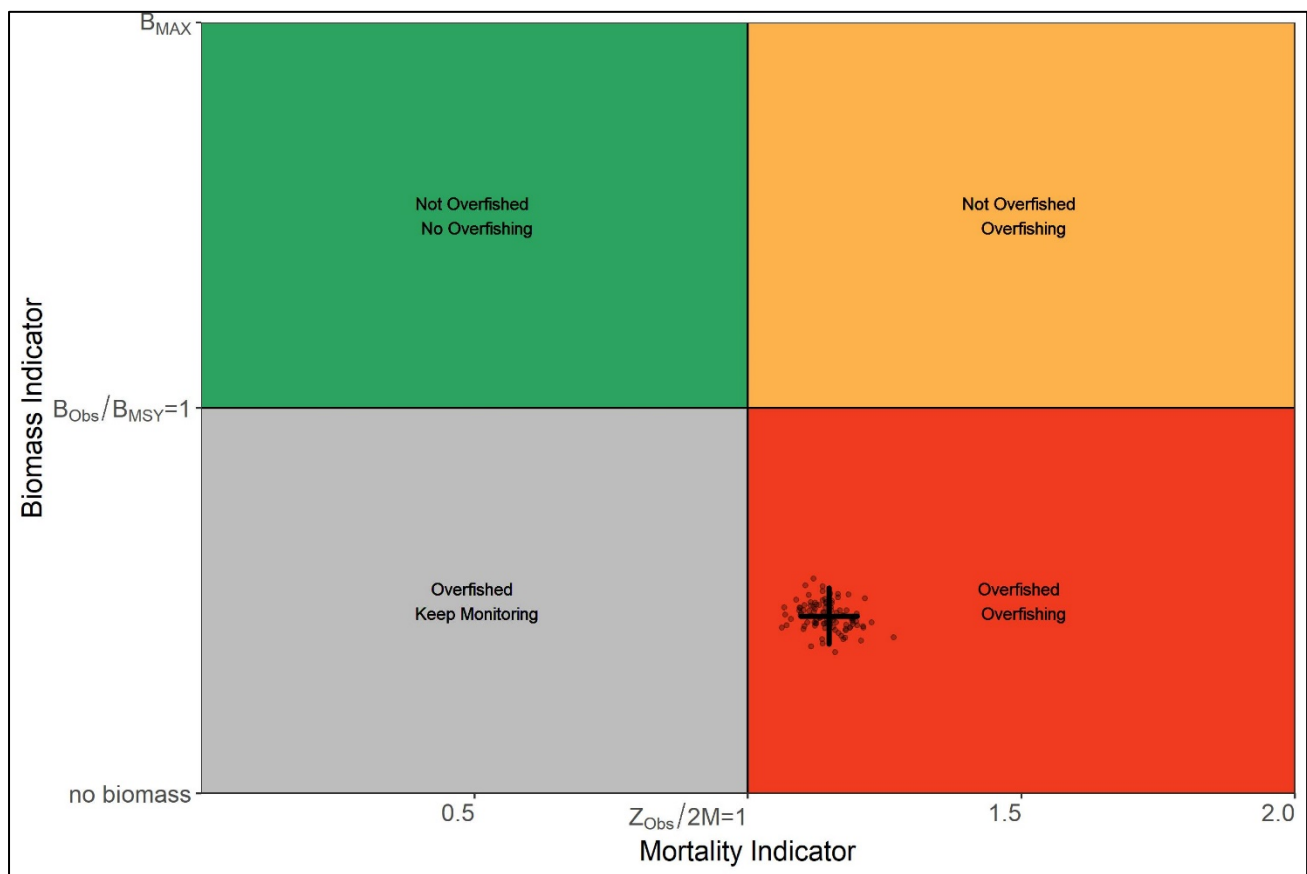


Figure 7: Kobe plot illustrating results of 2018-19 BsM survey. Data was resampled without replacement. The estimate of mortality was calculated from the truncated (age 4-11) Robson and Chapman method. Centroid of points is shown with “+” symbol. B_{MAX} = maximum biomass (carrying capacity of an unfished population), B_{OBS} = observed (estimated) biomass, B_{MSY} = biomass at maximum sustainable yield, Z_{OBS} = observed (estimated) mortality rate, M = estimated natural mortality.

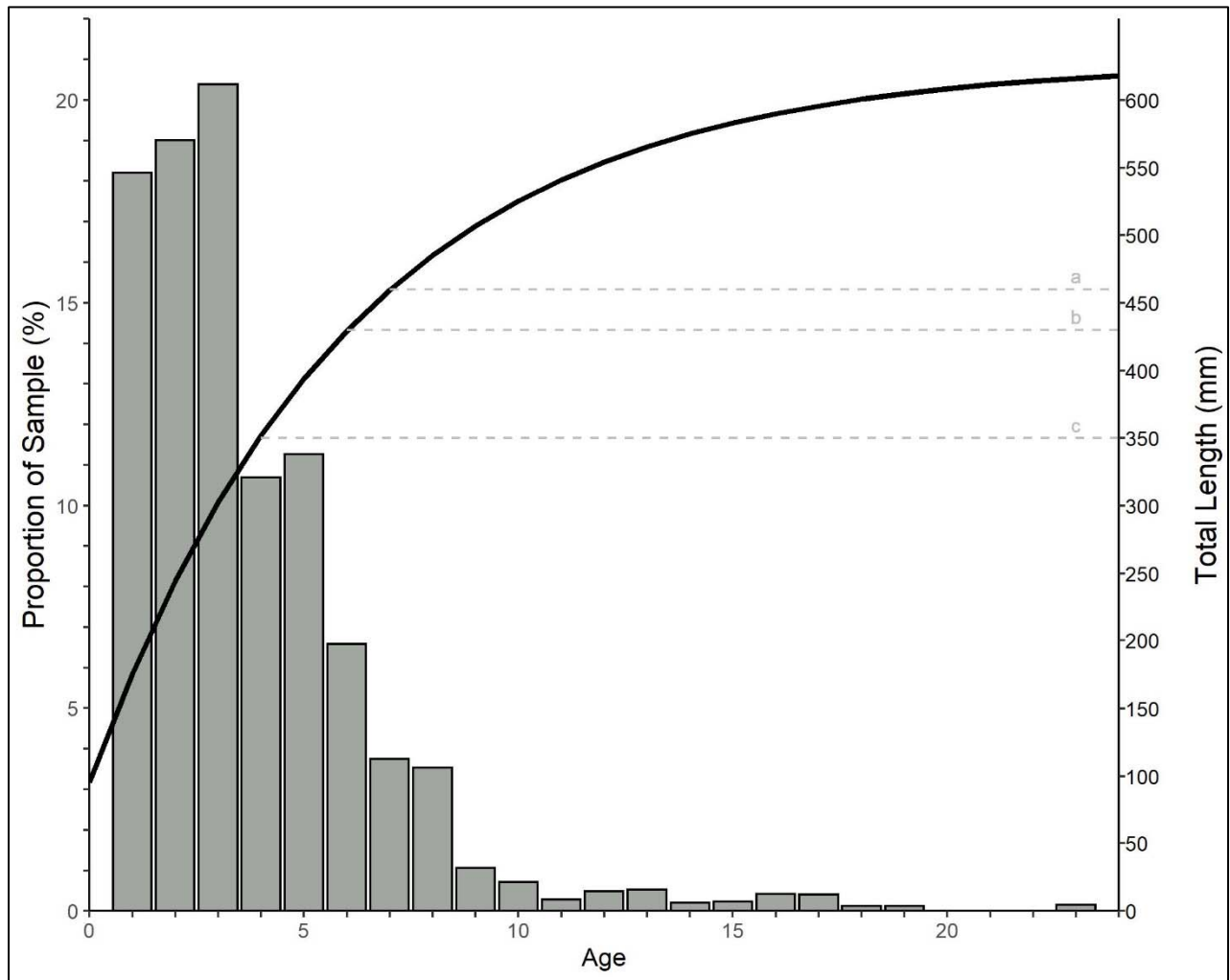


Figure 8. Walleye age distribution (grey bars) estimated through analytical resampling and the generalized growth curve for the population using 2018-2019 data (sexes combined). Horizontal dashed lines indicate the estimated age at key total length criteria used in this management plan (a) 460 mm; minimum size of current one over regulation, (b) 430 mm; maximum size limit (Advisory Council preferred option, Section 3.3.2) and (c) 350 mm minimum size for harvestable biomass estimate.

1.2.2 Fisheries-Dependent Monitoring

Fisheries dependant data is primarily collected using creel surveys to collect information on recreational fishing catch, effort, and harvest, as well as socio-economic information such as angler origin and licence type.

The most recent creel survey results indicate that walleye are the most targeted species in terms of angling effort (angler hours) and harvest (Figure 9). Danco (2019) reports that the proportion (percent) of recreational effort targeted at walleye was 75% and 76% in 2017 and 2018, respectively. Estimated open-water walleye effort has ranged from 2.49 angler-hours per hectare (542,713 angler-hours) in 1999 (Mosindy 2002; Spendlow 2007) to a high of 3.32 angler-hours per hectare (724,821 angler-hours) in 2017. The open-water harvest of walleye was estimated at 0.65 kg/ha in 2017 (240,414 ± 23,561 walleye totalling 140,662 kg) and 0.54 kg/ha in 2018 (205,967 ± 28,259 walleye totalling 118,359 kg) (Danco 2019). Current estimates of biomass suggest that the standing stock is approximately half of B_{MSY} , with a mean value of 2.65 kg/ha (range of uncertainty from 2.11 kg/ha to 3.28 kg/ha) (Figure 10).

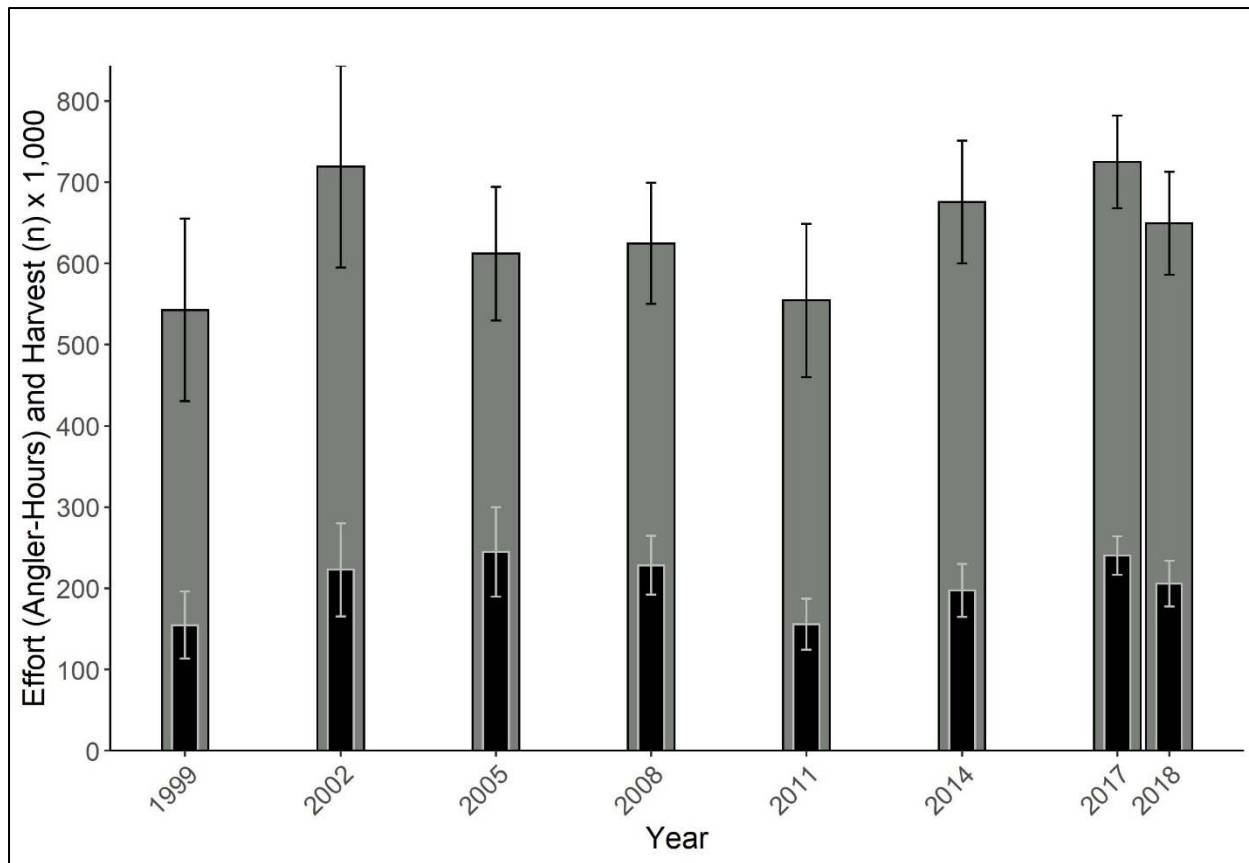


Figure 9: Estimated recreational angling effort (gray vertical bars) and harvest of walleye (black vertical bars) from 1999-2018 whole lake open water creel surveys. The 95% confidence interval is indicated by the vertical lines.

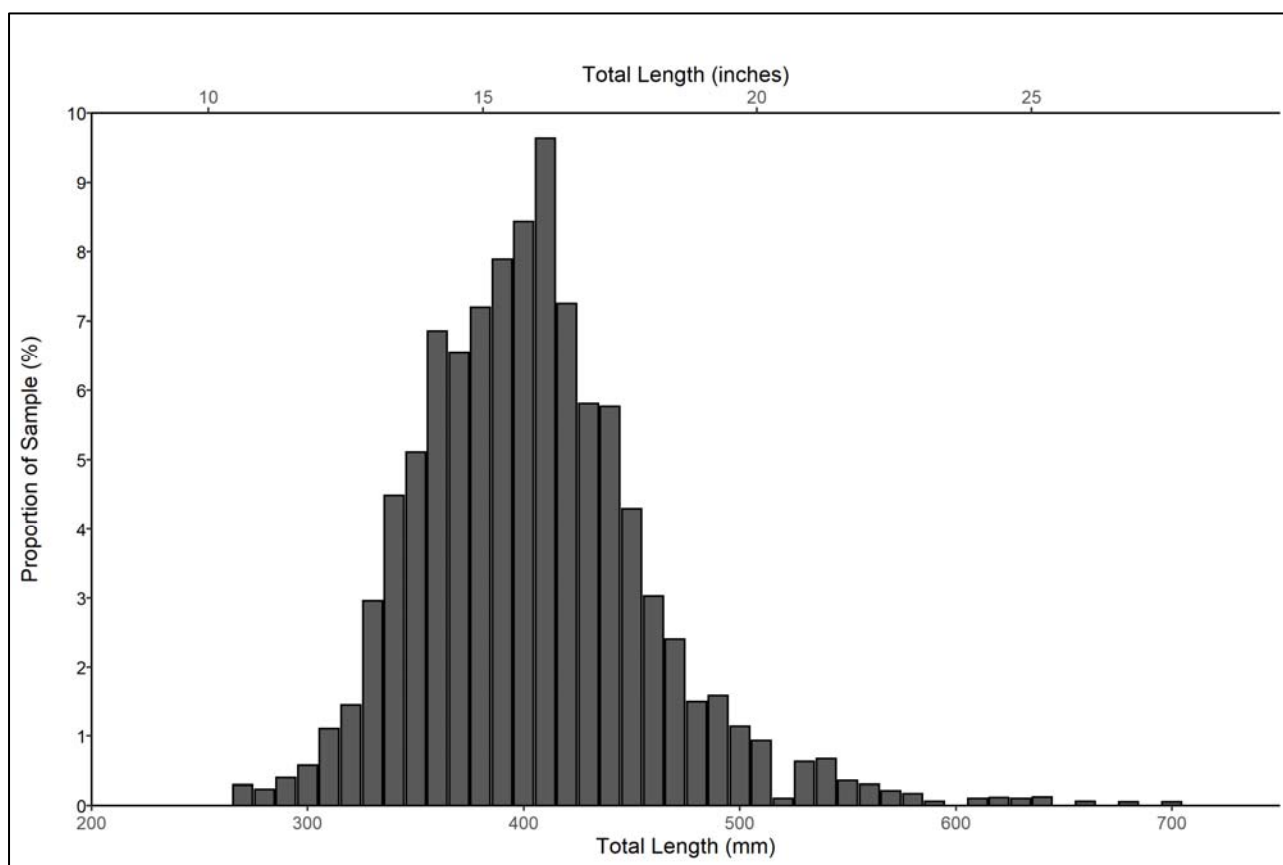


Figure 10: Size distribution of walleye harvested by the recreational open water fishery from the most recent (2017-18) open-water creel surveys.

1.3 Recreational Walleye - Issues Identification

The Lake of the Woods Fisheries Management Advisory Council was established in December 2019. The Advisory Council began meeting remotely in January 2021 to develop a management plan for the recreational walleye fishery. The second planning meeting of the Advisory Council (January 19, 2021) was dedicated to the identification of ecological and socio-economic issues that would be addressed in the management plan.

1.3.1 Summary - Ecological Issues

1. *Harvest is too high*

Walleye is the most targeted species by recreational anglers. The open-water harvest of walleye was estimated at 0.65 kg/ha in 2017 (240,414 ± 23,561 walleye totalling 140,662 kg) and 0.54 kg/ha in 2018 (205,967 ± 28,259 walleye totalling 118,359 kg). Exploitation rates for the combined open water (2017 and 2018) and winter harvests (multiple years) were calculated at 22% (18% - 27%) and 19% (16% - 24%). Based on the estimated natural mortality rate (M) of 0.21 for Lake of the Woods, a safe exploitation rate (0.75M) would be roughly 15%, as recommended in Lester et al. (2014).

2. *Biomass is too low*

Current estimates of observed biomass (B_{OBS}) based on large mesh netting suggest that the standing stock is approximately half of the expected benchmark (B_{MSY}) value (Figure 11).

3. *Age distribution is skewed to younger fish*

The age distribution of walleye in Lake of the Woods (Figure 8) is skewed to younger fish, with proportionally few fish above age 8, suggesting a population showing signs of exploitation resulting in the observed mortality rates (Z_{OBS}) that exceed the benchmark value ($Z_{OBS}/2M$).

Collectively, these issues suggest the walleye fishery is at risk due to the walleye population currently having a limited capacity to buffer itself against unforeseen pressures in the future, such as poor reproductive years, consistently high levels of fishing pressure, invasive species, or severe climate events over the long term.

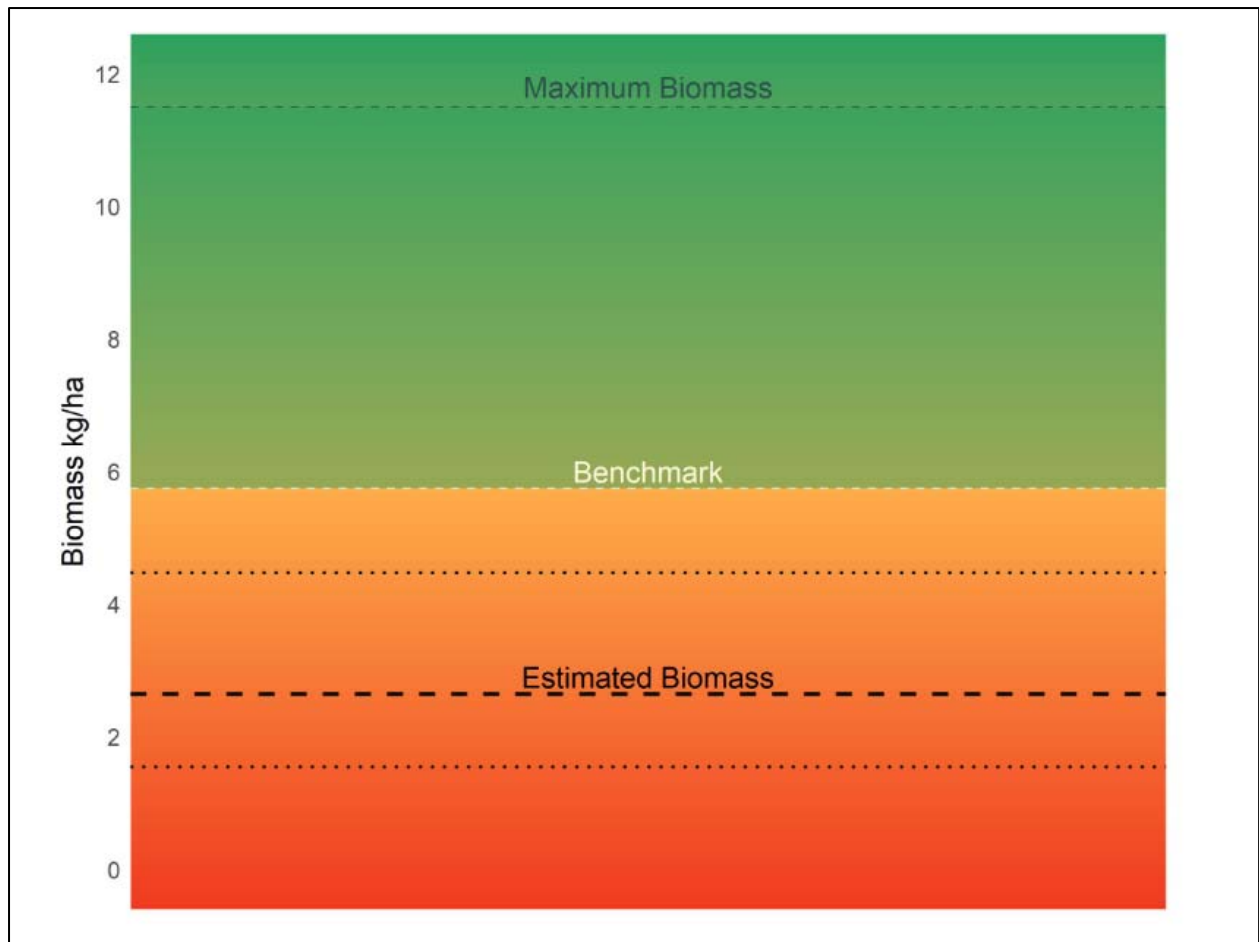


Figure 11: Lake of the Woods walleye biomass and benchmarks/reference points. The two horizontal reference lines represent the carrying capacity (maximum biomass), and benchmark/fully fished biomass (B_{MSY}). The larger black dashed line represents the mean 2018-2019 walleye (estimated) biomass status (B_{OBS}), and the dotted black line shows the associated uncertainty of the measure (95% confidence limit; Giacomini et al. 2020).

1.3.2 Socio-economic Issues

1. *Tourism is a critical part of the regional economy*

Recreational fishing attracts tourists, particularly non-resident tourists. Walleye is the most-sought species by anglers in FMZ 5 (MNRF 2020). Consequently, recreational walleye regulations, especially those that focus on non-residents, have a direct effect on the economy.

The local tourism industry has been adversely affected by the closure of the United States land border in March 2020 due to the COVID-19 pandemic, with some Advisory Council members reporting 90% or greater reduction in guests at their facilities in 2020.

2. *Concerns that solutions to the ecological issues should be borne by all segments of the recreational fishery (Ontario residents, Canada residents, non-residents).*

Since 1982, walleye regulations within FMZ 5 have been primarily focused on reducing the non-resident portion of the walleye harvest on Lake of the Woods and other border waters. The Advisory Council is concerned that continuing to place the onus for walleye rehabilitation on non-residents may significantly impact the ability of the tourism industry to market LOTW as a destination.

3. *Day trippers harvest fish without contributing to the Ontario economy.*

The Advisory Council expressed concern that day trippers (non-resident anglers who fish Ontario waters but who are accommodated outside of Ontario) are harvesting a significant number of walleye, but are not contributing to the Ontario economy, notwithstanding the cost of their Ontario fishing licenses.

The 1999 NAFTA challenge (Appendix B) determined that Ontario's previous approach to regulate day trippers differently than non-residents accommodated in Ontario violated the trade principle of "national treatment", (i.e., that Ontario cannot discriminate against foreign service providers). Consequently, this issue has been determined to be out of the scope of the current planning exercise.

2. Goals and Objectives

The Provincial Fish Strategy (MNRF 2015) directs the Ministry of Natural Resources and Forestry to *develop and implement fisheries management plans with measurable objectives for Fisheries Management Zones and for intensively managed water bodies such as Provincially Significant Inland Fisheries*. In the context of fisheries management planning, objectives are specific, measurable and verifiable statements of intermediate tasks which serve to focus the activities of fisheries managers on the desired "what" and

“how” of achieving the organizations goals (Barber and Taylor 1990). PSIF fisheries management objectives must be consistent with the goals and objectives of the PFS and should have associated performance measures attached through which the plan can be evaluated for its progress and effectiveness.

2.1 LOTW Fisheries Management Goals

For the purposes of establishing fisheries management objectives, the following PFS goal statements have been adopted for the Ontario waters of Lake of the Woods:

Goal #1: Healthy ecosystems that support self-sustaining native fish communities.

Lake of the Woods supports an array of recreational, commercial, First Nations, and Métis fisheries that are dependent upon a healthy aquatic ecosystem, including high quality fish habitat. The focus of Goal #1 is to protect and rehabilitate or restore native fish communities and their supporting ecosystem and habitat, and to avoid introductions of new species. Certain species have previously been introduced (e.g. smallmouth bass) and are now naturalized, providing significant economic, social, and in many cases ecological benefits. Like native species, naturalized species and their supporting ecosystems and habitats should be afforded protection and rehabilitated consistent with established fisheries management objectives.

Goal #2: Sustainable fisheries that provide benefits for Ontarians.

A well-managed fishery, supported by high-quality fish habitat and a healthy aquatic ecosystem, is a renewable resource that replenishes itself annually and provides outdoor activity, wholesome food, employment, income, as well as social and cultural benefits for present and future generations. The economic benefits of Lake of the Woods’ recreational, commercial, First Nations, and Métis fisheries are valued at more than \$111.4 million (MNR 2020) and are important to the regional economy of northern Ontario. For First Nations and Métis communities, fishing for food, social and ceremonial purposes is a part of their traditional and current way of life, an expression of their established or credibly asserted Aboriginal and treaty rights, and often provides an essential component to their nutritional intake. First Nations and Métis peoples are also involved in commercial fishing, and in an array of other activities related to fisheries.

PFS includes three further goal statements which address how MNR develops and uses legislation, policy and science, and how the Ministry interacts with stakeholders, Indigenous communities and the general public. While these goals are important to the way MNR conducts its business, they do not relate directly to the establishment of the fisheries management objectives for Lake of the Woods.

2.2 LOTW Walleye Objectives

Two ecological objectives and three socio-economic objectives for walleye were established by the Advisory Council to address the issues identified in Section 1.3.

Where there is conflict between the socio-economic objective and the ecological objective, the ecological objective shall take precedence.

2.2.1 Ecological Objectives

Objective 2021-1: Reduce walleye harvest associated with the recreational fishery.

Reducing mortality can be addressed directly by effecting regulatory changes intended to reduce harvest by recreational anglers. It can also be addressed indirectly through regulatory and non-regulatory actions intended to lessen post-release mortality.

Reductions in mortality associated with the recreational walleye fishery will be assumed to occur through the reduction of walleye harvest (in terms of biomass), compared to the harvests measured in LOTW's most recent open-water creels. This change in harvest is expected to be large enough to be statistically detectable in creel surveys, as well as preserve enough biomass within the walleye population to allow the netting programs to document the effectiveness of the regulation over time (D. de Kerckhove, MNRF, pers. comm.).

The indicator for this objective will be:

- Forty percent reduction of walleye harvest (biomass) as compared to values reported in 2017/18 creel surveys (see Section 1.2.2) (Danco 2019). This will be revisited in future planning exercises based on the most recent data available at the time.

This objective aligns with the following objectives from the Provincial Fish Strategy (MNRF 2015):

- Objective 1.3 - Restore, recover, or rehabilitate degraded fish populations and their supporting ecosystems
- Objective 2.1 - Harvest fish within safe biological limits

Objective 2021-2: Increase biomass of larger/older walleye.

The second and third ecological issues that have been identified (Section 1.3.1) are closely related. The walleye population in Lake of the Woods currently does not seem to be experiencing a recruitment issue; 2018 and 2019 netting exhibited strong juvenile year classes (Figure 8). However, the combination of low biomass of walleye > 430 mm total length (Figure 11) and a skewed age distribution (Figure 8) suggest that recruitment overfishing may occur.

The indicator for this objective will be:

- Increase in the observed biomass of larger walleye (> 430 mm total length) from netting surveys following regulation change.

This objective addresses the following objectives from the Provincial Fish Strategy (MNRF 2015):

- Objective 1.2 - Protect the composition of native fish communities
- Objective 1.3 - Restore, recover, or rehabilitate degraded fish populations and their supporting ecosystems

2.2.2 Socio-economic Objectives

Objective 2021-3: Treat all recreational anglers for walleye equally.

The intent of this objective is that all recreational walleye anglers should be subject to the same suite of regulations, regardless of place of residency. This objective is included in consideration of the following:

- The strategy of implementing more restrictive regulations for non-resident anglers has not succeeded in protecting the walleye resource in Lake of the Woods after nearly 40 years of implementation. New regulations will apply to all recreational anglers.
- The local tourism economy is largely based on non-resident anglers. Given the importance of tourism to the regional economy, fisheries management actions must balance ecological needs with consideration of their impact to this sector (Objective 2021-4). There is concern that further restrictions applied only to non-resident anglers will affect the tourism industry's ability to market LOTW as a destination for recreational angling.

This objective aligns with PFS Objective 2.2 – Allocate fish resources considering the needs and interests of all users, and Objective 2.3 – Increase economic, social, and cultural benefits derived from fish resources.

Objective 2021-4: Recognize the impact of regulatory changes on the local tourism industry.

This objective recognizes the importance of resource-based tourism to the regional economy. Where the evaluation of two regulatory proposals indicate that both would address the ecological objectives equally, the option that best allows the tourism industry to market Lake of the Woods as a desirable destination should be considered preferable.

Objective 2021-4 is intended to address the interests of the local tourism industry, including competitive fishing events.

This objective aligns with PFS Objective 2.2 – Allocate fish resources considering the needs and interests of all users, and Objective 2.3 – Increase economic, social, and cultural benefits derived from fish resources.

Objective 2021-5: Provide additional angling opportunities for other species, consistent with the goals of the Provincial Fish Strategy.

The final objective for walleye recognizes that achieving the ecological objectives necessarily reduces harvest opportunities for all anglers on Lake of the Woods. To offset these impacts, future planning exercises should actively seek opportunities to increase angling opportunities for other species. However, those opportunities must be consistent with the PFS, particularly PFS Objective 2.1 – Harvest fish within safe biological limits.

The nature of Objective 2021-5 makes it necessary to defer actions to address this objective until the planning exercises for other recreationally targeted species commence.

This objective aligns with PFS Objective 2.2 – Allocate fish resources considering the needs and interests of all users, and Objective 2.3 – Increase economic, social and cultural benefits derived from fish resources.

Additionally, the communications, consultation, and education products associated with implementing this recreational walleye management plan aligns with PFS Objective 2.4 - Promote the development and use of responsible fishing practices.

3 Fisheries Management Tools

3.1 Stocking

The *Guidelines for Stocking Fish in Inland Waters of Ontario* (MNR 2002) specifies that “The use of artificially-reared fish should not be used as an alternative to the protection/restoration of habitat or the regulation of harvest.”

Netting results for LOTW suggest that natural reproduction is not an issue. The fish stocking guidelines state: “Walleye should not be stocked in waters already containing viable, naturally reproducing populations of walleye.”

Successful stocking is dependent upon the fish community of the receiving waterbody. The fish stocking guidelines caution against stocking walleye in waters containing large populations of predators (e.g., northern pike) or competitive fish species (e.g., bass, panfish).

For these reasons, rehabilitative stocking of walleye was not considered for the current exercise.

3.2 Fishing regulations

Ontario uses a variety of regulatory tools to manage various species, which can be broadly grouped into six categories: licensing, seasons, sanctuaries, gear and bait restrictions, catch and possession limits, and size limits.

3.2.1 Licensing

Currently, Ontario recognizes three general categories of recreational fishing license, based upon place of residence:

- Ontario resident
- Canadian resident (residents of Canada, outside of Ontario)
- Non-resident (anglers residing outside of Canada)

Within each of these categories, anglers have the choice of a Sport Fishing License or a Conservation Fishing License; the latter is a lower-cost license that typically comes with a lower catch and possession limit than the Sport Fishing License.

License categories are determined at a provincial scale and cannot be modified for local management plans. Changes to licensing is considered out of scope for the current exercise.

3.2.2 Seasons

The intent of closed seasons is to protect walleye during the staging, spawning and post-spawn recovery periods when walleye aggregate and are particularly vulnerable to angling. Seasons are typically determined on a regional scale based on geographic and climatic variables. The current closed season for walleye on LOTW is April 15 through the Friday before the third Saturday in May.

Reductions in open seasons seldom reduce harvest in a meaningful way (Christie 1978). Reducing seasons may not reduce overall fishing effort but only concentrate the same amount of fishing into the shorter seasons. For this reason, changes to walleye seasons are not being considered for this exercise.

3.2.3 Sanctuaries

Fish sanctuaries are areas that exclude any fishing activity. Some sanctuaries are seasonal in nature, while others are year-round closures. Seasonal fish sanctuaries are extensively used in Ontario to reduce harvest in both specific spawning areas (to protect adult fish and eggs) and areas where fish form pre-spawning aggregations, while still allowing angling outside the protected area.

A single fish sanctuary is currently in place on LOTW at Nestor Falls. MNRF is currently undertaking a review of how fish sanctuaries are regulated throughout Ontario. Discussions pertaining to the LOTW sanctuary will be deferred pending the outcome of the provincial review and implemented through future planning exercises.

3.2.4 Gear and Bait Restrictions

Restrictions including prohibitions on live bait, organic bait, barbed hooks, treble hooks, and multiple hooks are used in many jurisdictions to reduce hooking mortality by minimizing handling time and hooking depth. Gear and bait restrictions are currently regulated on portions of Lake of the Woods as a management tool for lake trout (MNRF 2020a).

While gear and bait restrictions can be effective for salmonid species (Bartholomew and Bohnsack 2005; Hühn et al. 2011), there is a body of evidence that shows they are generally ineffective for reducing hooking mortality in walleye (Reeves and Bruesewitz 2005; Reeves and Stapes 2011). For this reason, gear and bait restrictions were not considered for the current exercise.

3.2.5 Catch and Possession Limits

Catch limit is defined as the number of fish an angler may legally catch and keep in one day. The possession limit is the total number of fish an angler can possess legally, whether on-hand, in cold storage, or in transit. Possession limits for each FMZ are the same as one day's catch limit for walleye in most of Ontario; however, as part of a NAFTA dispute resolution process (Appendix B) differential catch and possession limits were regulated for the Border Waters Area (including Lake of the Woods) in 1999 and extended to the balance of FMZ 5 (Figure 2) in 2018.

The concept behind catch and possession regulations is to limit the overall harvest, to equitably distribute the resource among users and to promote the ethical use of the resource (Rietveld et al. 1999). Reductions in daily catch limits are only effective in fisheries where a large proportion of anglers are regularly catching their limit.

When separated from the daily catch limit, the possession limit is strictly a socio-economic tool with no utility in rehabilitating a population. Members of the Advisory Council spoke

to the popularity of the current possession limit of four walleye for non-resident anglers, its importance to the tourism industry, and how extending the differential catch and possession limit to resident anglers under the reduced catch limit scenario would improve acceptance of the reduced catch limit. Further, extending the differential limit to resident anglers is consistent with the intent of Objective 2021-3.

Recommendation: For options that include the reduced catch limit scenario, include a differential possession limit of 4 for holders of a Sport License, and 2 for holders of a Conservation License for all anglers.

Members of the Advisory Council expressed concern that currently some anglers do not fully understand Ontario's rules regarding daily catch limits. Specifically, the Advisory Council voiced concerns over individuals that catch a limit of fish, consume those fish during the day, and proceed to catch another limit of fish later in the day.

Recommendation: MNRF to develop a strategy to better educate anglers about Ontario's catch-and-retain regulations.

3.2.5.1 Catch and Possession Limits: Options Development

MNRF staff conducted computer simulations, based upon 2017-18 LOTW open water creel survey data (Section 1.2.2) to evaluate the potential success of two different daily catch limits combined with eight different size limits (Section 3.2.6), in achieving the 40% reduction in angler harvest specified in Objective 2021-1 (Section 2.2.1).

Recommendation: The two daily catch limits considered were:

Status quo:

Ontario and Canadian Residents – Sport License 4, Conservation License 2

Non-residents – Sport License 2, Conservation License 2

Reduced catch limit:

All anglers – Sport License 2, Conservation License 1

Results of the simulations are presented alongside the size limits in Section 3.2.6.1.

Members of the Advisory Council spoke to the popularity of the current possession limit of four walleye for non-resident anglers, its importance to the tourism industry, and how extending the differential catch and possession limit to resident anglers under the reduced catch limit scenario would improve acceptance of the reduced catch limit, allowing resident anglers to save one day's catch to make a bigger meal. Further, extending the differential limit to resident anglers is consistent with the intent of Objective 2021-3.

Recommendation: For options that include the reduced catch limit scenario, include a differential possession limit of 4 for holders of a Sport License, and 2 for holders of a Conservation License, for all anglers.

Members of the Advisory Council expressed concern that currently, some anglers do not fully understand Ontario's rules regarding daily catch limits. Specifically, the Advisory Council voiced concerns over individuals that catch a limit of fish, consume those fish during the day, and proceed to catch another limit of fish later in the day.

Recommendation: MNRF to develop a strategy to better educate anglers about Ontario's catch-and-retain regulations.

3.2.6 Size Limits

Size limits have been used by fisheries managers across North America for decades. Some of the objectives of size limits include increasing the size of fish caught, maximizing yield, protecting brood stock, maintaining desirable population structure, and maintaining angling quality. Any size limit regulation requires that the managers have sufficient age, length, and maturity data for the effects of size limit regulations to be accurately modeled before their inception (Rietveld et al. 1999). Several types of size regulations were considered by the Advisory Council and assessed by MNRF for effectiveness including:

- **Minimum size limit:** Fish less than the minimum size limit must be immediately released
- **Maximum size limit:** Fish greater than the maximum size limit must be immediately released
- **Protected slot size:** Fish within the designated slot range must be immediately released.
- **Harvestable slot size:** Only fish within the designated slot range can be harvested

3.2.6.1 Size Limits: Options Development

Using 2017-18 open water creel survey data, MNRF staff conducted computer simulations (Section 1.2.2) to evaluate the potential success of two different daily catch limits combined with eight different catch limits (Section 3.2.5), in achieving the 40% reduction in angler harvest specified in Objective 2021-1 (Section 2.2.1). The eight size limits considered were:

- 35-50 cm (14"-19") protected slot
- 40-45 cm (16"-18") harvestable slot
- 35-55 cm (14"-22") harvestable slot
- 35-45 cm (14"-18") harvestable slot
- 46 cm (18") minimum size limit
- 46 cm (18") maximum size limit

- 43 cm (17”) maximum size limit (included on recommendation by the Advisory Council)
- 35 cm (14”) maximum size limit

A full description of the simulation exercise has been published by MNRF in a separate document (Giacomini et al. 2022). The results of the simulations combined with the two catch limits, are summarized in Table 3:

Table 3: Regulatory combinations expected to reduce recreational harvest (biomass, kg/yr) by at least 40%

Size Limit	S4/C2 Residents S2/C2 Non-residents	S2/C1 All anglers
35-50 cm (14”-19”) protected slot	No	Yes
40-45 cm (16”-18”) harvestable slot	No	Yes
35-55 cm (14”-22”) harvestable slot	No	No
35-45 cm (14”-18”) harvestable slot	No	No
46 cm (18”) minimum size limit	No	Yes
46 cm (18”) maximum size limit	No	No
43 cm (17”) maximum size limit	No	Yes
35 cm (14”) maximum size limit	Yes	Yes

Of the size limits evaluated in Table 3, three were rejected as not meeting Objective 2021-1. Others were rejected for not meeting other objectives (Table 4):

Table 4: Criteria for rejection of size limits

Size Limit	Criteria for rejection
35-50 cm (14”-19”) protected slot	Objective 2021-2 (protect large fish) Objective 2021-4 (impact to tourism)
40-45 cm (16”-18”) harvestable slot	Objective 2021-4 (impact to tourism)
35-55 cm (14”-22”) harvestable slot	Objective 2021-1 (40% harvest reduction)
35-45 cm (14”-18”) harvestable slot	Objective 2021-1* (40% harvest reduction)
46 cm (18”) minimum size limit	Objective 2021-2 (protect large fish)
46 cm (18”) maximum size limit	Objective 2021-1 (40% harvest reduction)
43 cm (17”) maximum size limit	Accepted
35 cm (14”) maximum size limit	Objective 2021-4 (impact to tourism)

* Although the 35-45 cm harvestable slot was rejected, the Advisory Council recommended putting forward a 35-43 cm (14”-17”) harvestable slot as an alternative option on the premise that the harvest would be less than that expected from the 43 cm

maximum size limit, which exceeded the 40% harvest reduction threshold. The 35-43 cm harvestable slot was not included in the simulation.

3.2.7 “One over” modifier

While the Advisory Council desires to protect large, spawning aged fish, they expressed concern over the ability to continue hosting walleye tournaments on Lake of the Woods, should a maximum size limit of 43 cm be regulated. Under Section 12 of the *Ontario Fishery Regulations, 2007* (OFR); if an angler catches a fish that cannot be legally retained or possessed, the fish must be immediately released into the waters where it was caught, and it must be released in a manner that causes the least harm to the fish. The regulations do not differentiate between the reasons why it might be prohibited to retain a fish (e.g., out of season, size restrictions, over the possession limit).

Activities (e.g., retaining a fish to weigh or photograph it) that do not directly contribute to meeting these requirements would not be consistent with the regulations. Therefore, anglers including those fishing in competitive fishing events would not be able to delay the release of a fish outside the size-based regulations. Catch-photo-release events that include fish of prohibited size are not consistent with Section 12 of the OFR and therefore not permitted

Recognizing the importance of competitive fishing events to the local economy (Objective 2021-4), that the three walleye tournaments on the Ontario waters of Lake of the Woods are all live-release events, and that most LOTW anglers do not harvest very large walleye, the Advisory Council has recommended allowing one very large fish greater than 70cm (27.5”), for holders of a Sport License only. The intent of this recommendation is specifically to support competitive fishing events until such a time as MNRF can complete a review of Section 12 of the OFR. If this review renders the one-over modifier redundant it will be removed.

Recommendation: Include a “one fish greater than 70 cm” modifier to proposed size limits. The Advisory Council has specifically requested that it be noted in the plan that they support this recommendation only until MNRF completes a review of Section 12 of the OFR.

3.3 Management Options for Consultation

The following suites of recreational angling regulations are being considered for their potential to meet the ecological and socio-economic objectives for walleye in Lake of the Woods:

3.3.1 Status Quo

Season

January 1 to April 14 and third Saturday in May to December 31

Catch and Possession Limits (Ontario and Canadian Residents):

Sport 4 and Conservation 2; not more than 1 greater than 46 cm.

Limits (Non-residents):

Daily Catch-and-retain limit

Sport 2 and Conservation 2; not more than 1 greater than 46 cm.

Possession limit

Sport 4 and Conservation 2; not more than 1 greater than 46 cm.

Objective 2021-1: Does not meet objective

Objective 2021-2: Does not meet objective

Objective 2021-3: Does not meet objective

Objective 2021-4: Meets objective

The Status Quo does not meet three of the four plan objectives and is presented here for comparative purposes. Maintaining status quo for the recreational walleye angling regulations on Lake of the Woods places the walleye fishery at risk in the long-term. The ability of the walleye population to buffer itself against unforeseen pressures in the future, such as poor reproductive years, increased fishing pressure or severe climate events, will remain low.

3.3.2 Preferred Option

Season: January 1 to April 14 and third Saturday in May to December 31 (unchanged)

Limits (All anglers):

Daily Catch-and-Retain Limit

Sport 2; must be less than 43 cm or greater than 70 cm and not more than 1 greater than 70 cm

Conservation 1; must be less than 43 cm

Possession limit

Sport 4; must be less than 43 cm or greater than 70 cm and not more than 1 greater than 70 cm

Conservation 2; must be less than 43 cm

Objective 2021-1: Meets objective

Objective 2021-2: Meets objective

Objective 2021-3: Meets objective

Objective 2021-4: Meets objective

The Advisory Council has recommended this suite of regulations as their preferred option by consensus, as the most likely option to balance the ecological and socio-economic objectives detailed in Section 2.2.

3.3.3 Alternate Option

Season: January 1 to April 14 and third Saturday in May to December 31 (unchanged)

Limits (All anglers):

Daily Catch-and-Retain Limit

Sport 2; must between 35 cm and 43 cm or greater than 70 cm and not more than 1 greater than 70 cm

Conservation 1; must between 35 cm and 43 cm

Possession limit

Sport 4; must between 35 cm and 43 cm or greater than 70 cm and not more than 1 greater than 70 cm

Conservation 2; must between 35 cm and 43 cm

Objective 2021-1: Meets objective

Objective 2021-2: Meets objective

Objective 2021-3: Meets objective

Objective 2021-4: Meets objective

The Advisory Council has recommended this suite of regulations as their alternate option by consensus. It is likely to balance the ecological and socio-economic objectives detailed in Section 2.2 but restricts harvest opportunities more so than the Preferred Option.

3.4 Non-regulatory Recommendations

Recommendation: MNRF to develop a strategy to better educate anglers about Ontario’s catch-and-retain regulations.

Recommendation: MNRF to support the review of Ontario’s catch and retain rules. Of specific interest to LOTW are provisions that would enable competitive events to include fish of a restricted size under catch-photo-release formats.

Recommendation: Carry forward Objective 2021-5 (Provide additional angling opportunities for other species, consistent with the goals of the Provincial Fish Strategy) to future chapters of the Lake of the Woods Fisheries Management Plan.

4. Summary of Consultation

The Lake of the Woods Advisory Council Terms of Reference identifies twenty-one individuals representing Indigenous communities and organizations, and non-Indigenous stakeholder sectors and organizations, though not all of these communities, organizations and stakeholders participate actively in the council. Each representative named in the draft Terms of Reference has received copies of all meeting minutes and presentations. The thirteen First Nations with reserve lands on Lake of the Woods (Table 1) and the Métis Nation of Ontario (Region 1) also received copies of all meeting minutes and presentations.

The Terms of Reference include the following statement pertaining to First Nations and Métis involvement in the LOTW Fisheries Advisory Council:

First Nations and Métis communities will be invited to participate in the Advisory Council. It is recognized that participation in the Advisory Council does not satisfy the Crown’s Duty to Consult.

The LOTW Fisheries Advisory Council met eleven times between January 2021 and August 2022 to advise MNRF in the development of the LOTW Draft Recreational Walleye Fishery Management Plan. Meeting agendas are included in Appendix C.

Meeting #1 – January 12, 2021

Purpose – Organization for planning

Meeting #2 – January 19, 2021

Purpose – Issues identification

Lake of the Woods Recreational Walleye Plan – draft for consultation

Meeting #3 – February 9, 2021

Purpose – Goals and Objectives

Meeting #4 – March 2, 2021

Purpose – Overview of regulatory tools available for planning

Meeting #5 – March 23, 2021

Purpose – Options identification

Meeting #6 – May 11, 2021

Purpose – Options identification (continued)

Meeting #7 – May 25, 2021

Purpose – Options identification (continued)

Meeting #8 – June 15, 2021

Purpose – Options identification (continued)

Meeting #9 – June 29, 2021

Purpose - wrapping up administrative items associated with planning.

Meeting #10 – October 5, 2021

Purpose – review draft plan document and plans for consultation

Meeting #11 – August 23, 2022

Purpose – review results of virtual engagement sessions and discuss further consultation, seek Advisory Committee’s final endorsement to post the plan on the Environmental Registry.

Following the endorsement of the draft plan document by the Advisory Council, MNRF engaged in broader consultation on the draft plan recommendations, through a series of three virtual public engagement sessions held on March 8, 22, and 29, 2022. Each two-hour engagement session comprised 45 minutes of presentation by MNRF staff, followed by a moderated discussion and question-answer period. Total participation from the public engagement sessions was 83 public attendees. A full summary of the results of the public engagement sessions, including the presentation materials, is found in Appendix D.

Following the virtual public engagement sessions, MNRF staff met remotely with the MNO Region 1 Consultation Committee, on May 26, 2022. This meeting included the same presentation used in the public engagement sessions, as well as a discussion and question-answer period.

Future consultation on LOTW Draft Recreational Walleye Fishery Management Plan will include:

Lake of the Woods Recreational Walleye Plan – draft for consultation

- 1) The document will be placed on the Environmental Registry of Ontario for public review with a 60 day comment period. Information about the draft management plan directing interested parties to the Environmental Registry of Ontario will be placed on social media (Facebook, Twitter).
- 2) Public information centers will be hosted in Kenora and Nestor Falls in early November, 2022.
- 3) Copies of the document and an invitation to provide feedback will be sent to 17 Indigenous communities and organizations concurrent to its posting on the Ontario Environmental Registry, along with an opportunity for meeting with MNRF staff to further discuss the Plan.

The Indigenous communities and organizations contacted are listed below:

First Nations with reserve lands on the Ontario or Manitoba waters of Lake of the Woods:

1. Animakee Wa Zhing 37 First Nation (Northwest Angle 37)
2. Anishinaabeg of Naongashiing (Big Island First Nation)
3. Buffalo Point First Nation
4. Iskatewizaagegan 39 Independent First Nation (Shoal Lake 39)
5. Mishkosimiziibing First Nation (Big Grassy)
6. Naotkamegwaning First Nation (Whitefish Bay)
7. Northwest Angle 33 First Nation
8. Obashkaandagaang Bay First Nation (Washagamis Bay)
9. Ojibways of Onigaming First Nation
10. Shoal Lake 40 First Nation
11. Rainy River First Nation
12. Wauzhushk Onigum Nation (Rat Portage)
13. Niisaachewan Anishinaabe Nation (Dalles)
14. Wabaseemoong Independent Nation

Other First Nations organizations

1. Grand Council Treaty 3
2. Anishinaabeg of Kabapikotawangag Resource Council (AKRC)

Métis located on Lake of the Woods

1. Northwestern Ontario Métis Community (Métis Nation of Ontario Region 1)

Lake of the Woods Recreational Walleye Plan – draft for consultation

A summary of the feedback received will be included in the final Plan Amendment document. The final Plan Amendment document and its accompanying decision note will be placed on the Environmental Registry on its completion.

List of Acronyms

AKRC - Anishinaabeg of Kabapikotawangag Resource Council

BAMS – Biodiversity and Monitoring Section

B_{MAX} – Maximum biomass (carrying capacity)

B_{MSY} – Biomass at Maximum Sustainable Yield

B_{OBS} – Observed biomass

BsM – Broadscale Monitoring Program

DFO – Fisheries and Oceans Canada

EFFM – Ecological Framework for Fisheries Management

ERO – Environmental Registry of Ontario

FAU – Fisheries Assessment Unit

FMZ – Fisheries Management Zone

FWIN – Fall Walleye Index Netting

LOTW – Lake of the Woods

MHSTCI – Ontario Ministry of Heritage, Sport, Tourism and Culture Industries

MNDNR – Minnesota Department of Natural Resources

MNO – Métis Nation of Ontario

MNR – Ministry of Natural Resources

MNRF – Ministry of Natural Resources and Forestry

MRNF - Ministère des Richesses Naturelles et des Forêts

MSY – Maximum Sustainable Yield

NAFTA - North American Free Trade Agreement

NOTO – Nature and Outdoor Tourism Ontario

Lake of the Woods Recreational Walleye Plan – draft for consultation

OFAH – Ontario Federation of Anglers and Hunters

OFR – Ontario Fishery Regulations, 2007

PSIF – Provincially Significant Inland Fishery

SDW – Specially Designated Waters

TOHA – Thermal-Optical Habitat Area

USTR – United States Trade Representative

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Appendix A: Lake of the Woods Anglers by License Type (2015)

Table A1: Lake of the Woods Anglers by License Type (2015). Source: MNRF (unpublished data)

Angler Group	License Type	Type Description	Number of Respondents	Estimated # Active Anglers	Total	Percentage	
Non-Resident	Sport	3 yr Sport	4	685			
		1 yr Sport	90	6526			
		8 day Sport	142	12,945			
		1 day Sport	6	1545	21701	34.8	
	Conservation	3 yr Conservation	2	257			
		1 yr Conservation	62	4320			
		8 day Conservation	142	13318	17895	28.7	
Canadian	Over 65	no license	5	714	714	1.1	
	Sport	3 yr Sport	5	1731			
		1 yr Sport	16	3356			
		1 day Sport	34	3889			
					8976	14.4	
	Conservation	3 yr Conservation	4	779			
		1 yr Conservation	32	5634			
					6413	10.3	
Ontario	Over 65	no license	10	1199	1199	1.9	
	Sport	3 yr Sport	10	2723			
		1 yr Sport	13	2178			
		1 day Sport	1	152			
					5053	8.1	
	Conservation	3 yr Conservation	1	301			
		1 yr Conservation	1	161			
					462	0.7	
Total			580	62413			

Appendix B: 1999 USTR Press Release

OFFICE OF THE UNITED STATES TRADE REPRESENTATIVE

Executive Office of the President

Washington, D.C.

20508

USTR Press Releases are available on the USTR home page at www.ustr.gov.

They are also available through the USTR Fax Retrieval System at 202-395-4809.

Corrected Version (corrects Typo in 3rd sentence).

99-94

For Immediate Release Contact: Thomas Tripp

November 5, 1999 Helaine Klasky

Amy Stilwell

(202) 395-3230

**U.S. Prevails in Dispute With Canada
Over Sport Fishing and Tourism Services**

Today, United States Trade Representative Charlene Barshefsky announced resolution of the NAFTA dispute with Canada over Ontario's discriminatory regulations concerning sport fishing and tourism services. Ambassador Barshefsky stated: "I am pleased to announce that Ontario has revoked the discriminatory practices at issue. The vitality of small and medium-sized businesses in northern Minnesota was directly at stake, this action demonstrates that NAFTA works for large and small companies alike."

This ends the section 301 investigation initiated in April, but USTR will continue monitoring the situation pursuant to section 306 of the Trade Act.

Ambassador Barshefsky further stated: "We were able to address the trade matters at issue and at the same time encourage sustainable fisheries in the border lakes. I believe this sets an excellent example of how open markets and environmental objectives can be realized. This was also another precedent setting case in the level of cooperation between the U.S. federal government and a state government. Minnesota state officials participated at every stage of the consultations and negotiations with Canada. I want to thank Governor Ventura and his team for their assistance, which was critical."

Background

Since 1994, the Province of Ontario, Canada, had sought to induce U.S. recreational fishermen to use Ontario resort facilities and services (lodging, fishing guides, boats, etc.) by limiting the amount of certain fish they could catch and keep in certain lakes that straddle the Minnesota-Ontario border, unless they lodged or otherwise spent money on the Ontario side. The restrictions, applied to 150 miles of the border, unfairly discriminated against U.S. resorts, fishing guides, and other businesses tied to sport fishing. On April 29, 1999, USTR initiated a section 301 investigation pursuant to a petition filed by the Border Waters Coalition. After several sessions, including consultations under Article 2006 of the NAFTA, Ontario revoked the "stay overnight" requirement and other discriminatory measures.

Appendix C: LOTW Fisheries Advisory Council meeting agendas

Meeting #1 – January 12, 2021

- Introduce new planning team
- Make clear the role of the Advisory Council
- Outline the project plan process
- Legislation and policy overview
- Regulatory change process and timeline
- What is out of scope

Meeting #2 – January 19, 2021

- Review minutes from September 12
- Process review – Issues vs Objectives
- Ecological Issues
- Socio-Economic Issues
- Other Issues
- Objective setting primer

Meeting #3 – February 9, 2021

- Review minutes from January 19
- Process review
- Issues – What We Think We Heard
- Objective setting primer
- Plan Goals
- Ecological Objectives
- Socio-economic Objectives

Meeting #4 – March 2, 2021

- Revised project timeline
- Review minutes from February 9
- Process review
- Objectives – reminder from last month
- Fishing Regulations 101

Meeting #5 – March 23, 2021

- Review minutes from March 2
- Process review
- Objectives – reminder
- Catch limits
- Size limits
- Live wells
- Discussion – 3 – 5 Options to take forward

Meeting #6 – May 11, 2021

- Review minutes from March 23
- Process review
- Media interest
- Open discussion
- Next steps
- Objectives and targets
- Options Evaluation
- Discussion

Meeting #7 – May 25, 2021

- Review minutes from May 11
- Clarification on stocking Lake Nipissing
- Process review
- Targets and Timelines
- Regulatory Options
- Discussion
- Information Item – 2021 monitoring plans
- Information Item – Contraventions Project

Meeting #8 – June 15, 2021

- Assistant Deputy Minister Jennifer Barton
- Review minutes from May 25
- Process Review
- What we learned last month (in plain language)
- Regulatory options for consultation
- Information Item – Contraventions Project
 - (carried over from Meeting #7)
- Next Steps

Meeting #9 – June 29, 2021

No agenda – wrapping up administrative items associated with planning.

Meeting #10 – October 5, 2021

- Draft Plan document discussion
- Consultation
- Other business
 - Bait policy implementation

Meeting #11 – August 23, 2022

- Summary of meetings #1-10
- Summary of March 2022 virtual engagement sessions
- Council member feedback
- Next steps

Appendix D: Lake of the Woods Recreational Walleye Management March 2022 Public Engagement Virtual Sessions Summary

Purpose:

As a Provincially Significant Inland Fishery (PSIF), the Ministry is required to develop a fisheries management plan for Lake of the Woods. There is currently no fisheries management plan in place for the Ontario waters of Lake of the Woods. Furthermore, MNRF fisheries monitoring data indicates that the Lake of the Woods walleye population is below the provincial benchmark and has been for some time.

In keeping with Ministry policy, a fisheries Advisory Council comprised of local stakeholders and Indigenous communities was established. The role of a council member is to provide advice to the Ministry, while soliciting feedback from and sharing information with their respective networks.

Twelve meetings with the Advisory Council were held between 2019 and 2022. Ministry fishery specialists provided an overview of fisheries management planning in Ontario and presented the council with scientific data outlining the state of the lake's walleye population. Recognizing the need to act, the council proposed two potential changes to the walleye sportfishing regulations: one preferred option and one alternative. Both options address the proposed ecological and socio-economic objectives developed by the Ministry and the Advisory Council: reduce the recreational harvest, increase the amount of large, older walleye, treat both resident and non-resident anglers equally, and respect the potential economic impacts of any changes. These proposals were included in a draft management plan written by Ministry staff that was shared with the Advisory Council in September 2021.

A series of public engagement sessions were hosted to solicit broad stakeholder feedback. Due to the COVID-19 pandemic, these sessions were held virtually. The following report provides a summary of the information shared and feedback received at these sessions.

Quick Facts:

- Three virtual sessions occurred March 8th, 22nd, 29th, 2022 from 6-8 pm CST
- Hosted by Dave Smith, Parliamentary Assistant to Minister Greg Rickford
- Moderated by Rob Irwin, Senior Events and Multimedia Lead, MGCS
- Invitations sent to Fisheries Advisory Council & posted on MNRF social media
- Platform: Microsoft Teams Live; Q & A portion via Slido.com
- Presentations: 45 minutes; Attendee feedback and questions: 1.25 hours
- Presenters:
 - Brian Kilgour, Kenora District Manager, ROD

- Steve Bobrowicz, Regional Fisheries Specialist, ROD
 - Dr. Dak de Kerckhove, Research Scientist, ARMS
 - Blair Wasylenko, Provincial Aquatics Monitoring Lead, BAMS
- Combined total of public attendees: 83

Part 1: MNRF Staff Presentations

The first portion of the session involved a background presentation discussing the state of the walleye fishery on Lake of the Woods. This included an outline of the planning process conducted with the Advisory Council to date. The entire presentation is included at the end of this Appendix.

Part 2: Ministry Questions for Participants

The second portion of the session involved real-time polling of participants using the Slido.com platform. Questions were developed in collaboration with Minister's office staff and the session was moderated by Parliamentary Assistant Dave Smith. Participants were asked a question and were able to view the collective results live as they came in. Nine questions were asked; seven of these had multiple choice answers, two required textual submissions. A consolidation of the three session's results for each of the nine questions is provided below.

In general, there were three main takeaways from public feedback at the sessions:

1. Recognition of and support for the science information presented regarding the status of the walleye fishery on Lake of the Woods.
2. Most participants agreed that harvest from the recreational fishery is cause for concern.
3. Regulatory options with reduced harvest and size limits are needed, they should be applied equally to residents and non-residents, and the proposed regulations are reasonable.

Poll Question Combined Results:

1. *Has your angling experience reflected a decline in the quality and quantity of walleye on Lake of the Woods?*

Yes: 69% Somewhat: 18% No: 13%

Lake of the Woods Recreational Walleye Plan – draft for consultation

2. *We talked about some potential options for the recreational walleye fishery. What do you think about these options, like keeping two fish instead of four?*

- Comments broadly supportive of reducing sportfishing licence limit from 4 fish to 2
- Some feedback regarding a desire for increased enforcement, dislike of the 1 “large” fish >70 cm proposal, and a desire for commercial fishing regulation

3. *What are your thoughts on treating resident and non-resident anglers equally (i.e., same catch limits)?*

Strongly agree: 67% Agree: 13% Disagree: 10% Strongly disagree: 10%

4. *What factors other than sport/recreational overharvesting do you feel might be contributing to the decline in the walleye population? (Participants were able to vote for any number of the five options listed below. Percentages indicate the proportion of participants who voted for that option).*

- a) Commercial fish harvesting: 75%
- b) Water quality: 36%
- c) Invasive species: 34%
- d) Cormorants and pelicans: 20%
- e) Water levels: 20%

5. *Have you been contacted by an MNRF enforcement officer on Lake of the Woods?*

Never: 41% Occasionally: 56% Often: 3%

6. *Are you concerned with overharvesting on Lake of the Woods?*

- a) Really concerned: 82%
- b) Concerned: 18%
- c) Not concerned: 0%
- d) Really not concerned: 0%

7. *What has your experience been fishing for walleye on LOTW versus other big, popular lakes like Rainy Lake or Lac Seul? Have you caught the same size and amount of walleye, or have you noticed a difference?*

- a) Size and number of walleye caught elsewhere greater than LOTW: 42%
- b) I don't fish other big, popular lakes: 40%
- c) Size and number of walleye caught elsewhere less than LOTW: 11%
- d) No difference: 7%

8. *Quite a few people here are involved in the tourism industry on LOTW. What are your concerns if no changes are made or if new regulations are introduced?*

- Majority of comments reflect fears of a continued decline of the fishery if no changes are made, resulting in severe negative impacts to the tourism industry and local economy
- Many comments regarding the need to regulate Indigenous commercial fishing
- Some comments voicing opposition to a 2-fish limit, feeling that it unfairly targets resident anglers

9. *Do you have any questions or options that you didn't hear today through presentations or discussion that you feel might be worth exploring?*

Common responses include comments about the need to:

- a) regulate Indigenous commercial fishing
- b) increase enforcement
- c) change the regulations regarding 'catch-photograph-release'

Part 3: Question and Answer Period

The final portion of the session was a real-time question and answer period. Participants were asked to submit written questions via Slido.com and to “upvote” questions posted by others that addressed topics that were also important to them. Questions were answered live by MNRF staff.

Top-5 Combined Topics ‘Upvoted’ by Attendees:

1. Indigenous commercial fishing

Response:

Commercial and subsistence fishing on the Ontario waters of Lake of the Woods is carried out exclusively by members of Indigenous communities. All commercial licenses are held by Indigenous communities.

Ontario is working collaboratively with Indigenous communities and commercial fishing operators to responsibly manage the fishery. This includes a pilot project with a First Nation community that aims to cooperatively monitor the stock status in partnership with the Government of Canada. Ontario is also working with local First Nations to ensure that nets are properly marked and checked.

The Lake of the Woods Indigenous commercial fishery is small-scale and localized. Effort and harvest can fluctuate based upon a variety of factors. For example, the fish processing plant in Kenora recently closed. Prior to its closure, Ontario received three years of data from this facility. Based on these data, we estimate that recreational angling accounts for more than twice the amount of walleye harvested by commercial fishing.

In addition to Lake of the Woods, we also spoke about other large walleye fisheries across the province. Examples include Rainy Lake, Lac Seul, and Lake Nipissing. Each of these lakes has active commercial fisheries.

2. 'Day-trippers' from the United States fishing in Ontario waters

Response:

Between 1986 and 1999, Ontario had angling regulations in place for Lake of the Woods that put more restrictive harvest limits on non-resident anglers who were not being accommodated overnight in Ontario (“day trippers”). In 1999, the State of Minnesota filed a complaint with the Office of the United States Trade Representative, on the basis that Ontario’s fishing regulations violated the NAFTA principle of “national treatment”. Through a dispute resolution process, the governments of Canada and Ontario agreed to change the non-resident angling regulation to its current form. Although NAFTA has been replaced by the Canada-United States-Mexico Agreement (CUSMA), the principle of “national treatment” is unchanged in the current agreement. NDMNRF staff have been advised that revisiting regulations that treat “day trippers” differently than other non-resident anglers would risk further action on the part of the Office of the United States Trade Representative, and that such a course of action is therefore ill-advised.

3. Tournaments: 1 “large” fish >70 cm proposal, catch-photograph-release rules

Response:

Competitive fishing events (“tournaments”) are an important component of the Lake of the Woods tourism industry and are included in the proposed socio-economic objectives developed by the Advisory Council. Currently, competitive fishing events in general are not specifically regulated anywhere in Ontario; participants must have valid fishing licenses and follow the applicable fishing regulations, but tournament organizers require no form of government authorization to hold their events.

Throughout North America, there is currently a movement towards fishing tournaments that operate under a “catch-photo-release” format, whereby participants photograph their catches and release them at the catch site, rather than retaining them in a live well and bringing them to a central weigh station. However, in Ontario, anglers are required to immediately release any fish captured which they are not legally entitled to possess. The definition of “immediate release” precludes retaining such a fish for the amount of time necessary to photograph it.

MNRF staff recognize that the “catch-photo-release” format is consistent with best management practices for fish handling and are currently investigating options to revise the Ontario Fishery Regulations, 2007, in order to allow this practice, without sacrificing other, necessary components of the concept of immediate release. However, such a correction is more difficult than it appears, and must be conducted on a provincial scale, rather than just Lake of the Woods. It may be some time before the change can be made.

Advisory Council members representing the competitive fishing industry voiced a concern that they would no longer be able to host walleye events on Lake of the Woods were we to implement a 43 cm (17 inch) maximum size limit. After a great deal of discussion, the Advisory Council agreed to recommend a compromise of one very large (>70cm) walleye, for holders of sportfishing licenses only, as a temporary measure, until provincial changes to allow catch-photo-release events could be made.

Concerns that many large fish might be harvested were allayed by the following considerations:

- a. Walleye >70cm are not plentiful in Lake of the Woods, proportionate to the number of fish <43cm.
- b. Advisory Council members all agreed that very few anglers, apart from tournament anglers, target these large fish, preferring smaller fish for table fare.
- c. Information from summer creels estimated that there are few fish harvested that are > 70cm.

4. Stocking of walleye to offset the current decline in the population

Response:

Fish stocking has been carried out throughout Ontario for approximately 130 years; for the first hundred of those years, little forethought was given to the potential consequences of stocking on the fish communities of the lakes and rivers that were being stocked. However, beginning in the early 1990s, a great deal of research on this topic was undertaken throughout North America, and this science has shaped Ontario's policies on where, when, why and what to stock in our waters.

The success of a walleye stocking project depends on many variables, including the fish community of the receiving waterbody, the life stage of the fish that are being stocked, stocking location, temperature, and perhaps most importantly, availability of an appropriate food source for the newly-stocked fish. For walleye particularly, stocking young-of-year walleye into a lake that already contains a self-sustaining population typically results in no net gain, because of limitations on prey availability and resultant cannibalism among the juvenile fish.

Also importantly, rehabilitative stocking is only a suitable management action when a population is demonstrating reproductive failure. In the case of Lake of the Woods, our data indicates that there is an abundance of small fish in the population; reproduction is

clearly not the problem. The problem is keeping the fish in the population long enough to grow into the large, old walleye that would typically be the backbone of a recreational fishery.

5. Reduced angling effort due the COVID-19 pandemic and US border closure

Response:

While angling efforts in the summer of 2020 for all species on Lake of the Woods was estimated through aerial surveys to be 85% less than previous years (non-residents made up a large portion of the angling effort annually), the impact of this change in pressure on fish populations is not known at this time.

The expected changes in walleye biomass and age structure will be assessed through future monitoring, but generally it takes several years of reduced fishing pressure to result in a significant long-term change in the health of fish populations.

We expect the reduced pressure on the fishery would likely contribute to stronger than usual year classes that will continue to move through the fishery over time.

Media summary:


1. February 17: Lake of the Woods District Sustainability Association's 'Area News'
2. March 14: Outdoor News
3. March 17: Muskie Magazine
4. March 25: Thunder Bay Television
5. April 20: Kenora Daily Miner and News

Public Engagement Session Slide Deck

Ministry of Northern Development, Mines, Natural Resources and Forestry

**Lake of the Woods
Walleye Management
Public Engagement Session**

March 8, 2022

Ontario 

Media

Email: MediaDesk.MNRF@ontario.ca

Tel. (416) 314-2106

Ontario 

Land Acknowledgement

In the spirit of reconciliation, the Ministry of Northern Development, Mines, Natural Resources and Forestry acknowledges that Lake of the Woods is located on the traditional territory of the Anishinaabe and Metis of Treaty #3.

Indigenous communities and their members are vital and valued partners in the management of our shared resources.



Purpose



The Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF) is conducting engagement roundtables, seeking broad public input regarding the state of the Lake of the Woods walleye fishery.



This session is intended to share information about the fishery's health and the ministry's role in fishery management to help guide discussions.



Most importantly, we want to hear about your experiences and views regarding potential solutions.



Agenda

Welcome and Opening Remarks

Dave Smith, Parliamentary Assistant to Greg Rickford Minister of Northern Development, Mines, Natural Resources and Forestry

Presentations:

- Fisheries management
- Walleye population health and analysis what we know and what we don't know
- Planning efforts and objectives
- Summary of the work of the Lake of the Woods Fisheries Advisory Council

Open Discussion

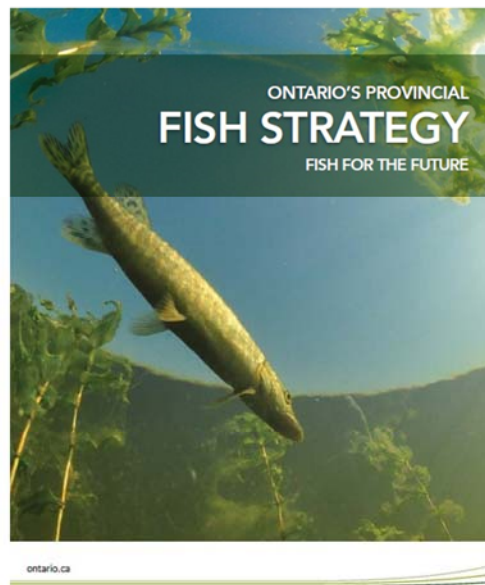
- Question and answer session led by Parliamentary Assistant Dave Smith



Provincial role in fisheries management

Steve Bobrowicz

Regional Fisheries Specialist
Northwest Region



Management and Monitoring

- Most fisheries management planning and associated resource monitoring is conducted on a landscape scale, with Fisheries Management Zones (FMZ) being the primary unit of management.
- 12 waterbodies have been designated Provincially Significant Inland Fisheries (PSIF), such as Lake of the Woods. These are monitored and managed independent of the FMZs.
- Fisheries Management Plans are operational policies that outline the ministry's objectives for FMZs and PSIFs, as well as regulatory and non regulatory actions to meet those objectives.



Walleye population health and analysis

Dr. Dak de Kerckhove
Research Scientist
Aquatic Research and Monitoring Section

Blair Wasylenko
Provincial Aquatics Monitoring Lead
Biodiversity and Monitoring Section



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Multiple factors can affect the LOTW aquatic communities

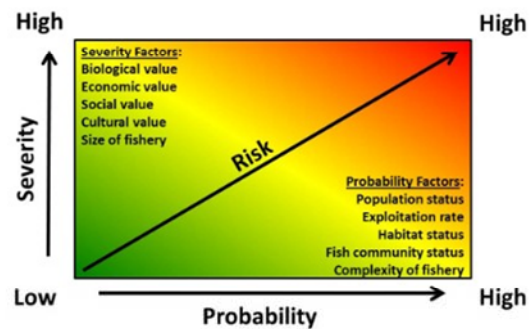
- Invasive Species
 - Spiny Water Flea, and Rusty Crayfish have invaded the lake within the last 30 years and zebra mussels may be on the doorstep.
 - Invasive species can negatively impact walleye stocks in some situations.
 - We have not yet seen declines in biomass or fish condition that correlate with establishment of invasive species.
- Commercial fishing harvest
 - The fishery is smallscale and localized, and the total harvest is currently difficult to measure and quantify.
 - Commercial efforts are generally directed towards small and medium Walleye for which the stock is more robust.
- Cormorants and Pelicans
 - These birds preferentially feed on small, readily available small fish including Walleye (Age 0, 1 and 2).
 - We do not see any juvenile recruitment issues in our monitoring timeseries (*i.e.*, lots of little fish around).
- Water Levels
 - Fluctuations in water levels can lead to lost fish habitat at critical times of year *e.g.* exposure of spawning beds).
 - Low recruitment (*i.e.*, the loss of young fish) would be the most likely outcome, which we do not see in our monitoring data.
- Water Quality
 - Large algae blooms can have negative effects on by reducing energy transfer through the food web.
 - It is not known whether water quality issues, such as algae blooms, affect walleye food sources on Lake of the Woods.
- Recreational Fishing Harvest
 - The harvest from the recreational fishery is high enough on its own to be cause for concern.
 - The majority of the observed Walleye mortality can be directly attributed to the recreational harvests observed in our creel surveys.

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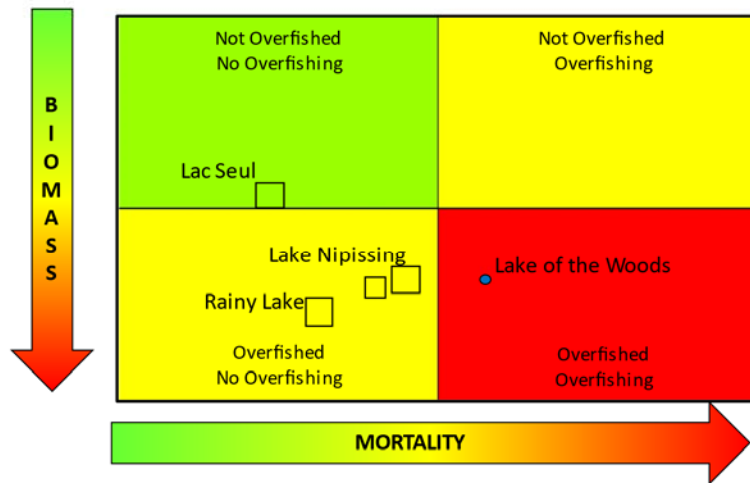
Monitoring on Lake of the Woods

- LOTW is one of twelve **Provincially Significant Inland Fisheries** in Ontario.
- It receives targeted monitoring and science advice.
- Monitoring effort is determined by the value, status and complexity of the fishery:
 - Commercial Fishery
 - Large recreational fishery
 - 60 Tourism businesses
 - International/interprovincial waters
- Internationally accepted monitoring methodology.
- History of monitoring almost annually since 1979
 - Currently, 2 netting, 3 summer creel and 1 winter creel in a 5-year cycle



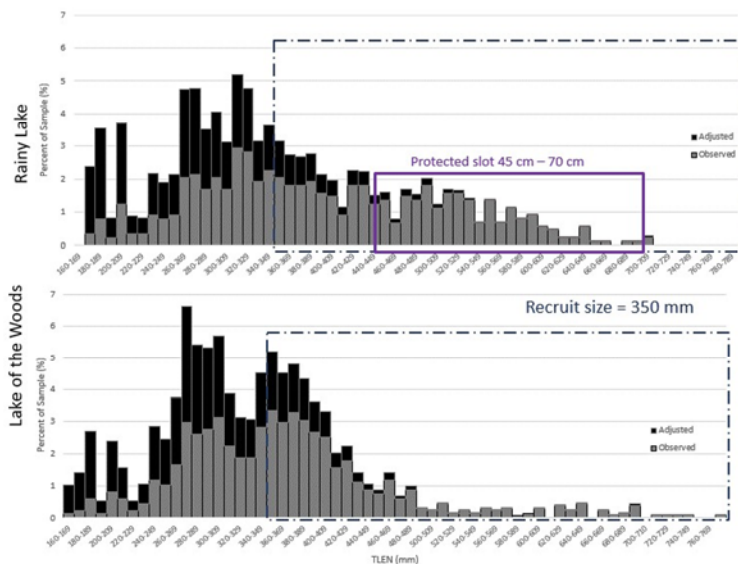
Status of the Walleye Stock

- The status of Ontario's inland fisheries is best represented by the **Kobe Plot** which shows 4 quadrants of status based on the **biomass** (weight) and the **mortality** (death rate) of all walleye of a fishable size.
- Reference points** divide the quadrants and are 1) the biomass found in a lake at a sustainable harvest and 2) a fishing mortality that is about the same as the natural death rate.
- 2018-2019 surveys suggested that LOTW walleye were **overfished** and subject to **overfishing**.



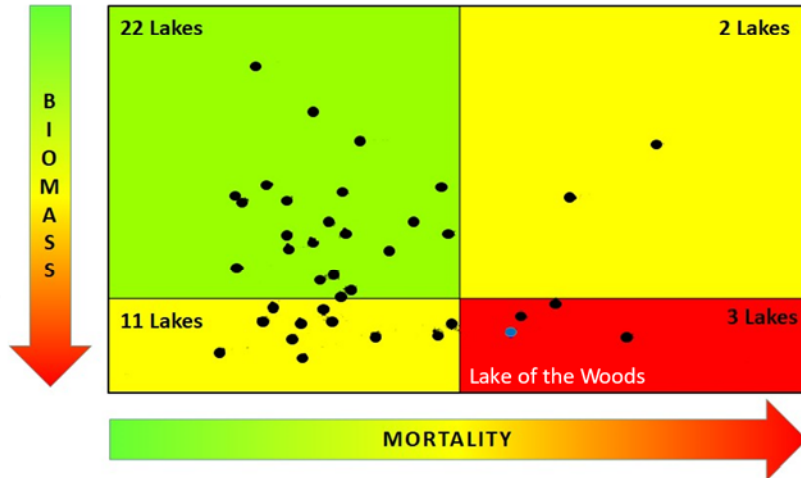
Status of the Walleye Stock

- 2018-2019 sample results showed that the age distribution of walleye on LOTW is skewed to younger fish.
- A healthier population has a higher proportion of mature fish (e.g. Rainy Lake), which are larger fish and support stock recruitment.
- Note that Rainy Lake has a protected slot of 45-70 cm, allowing 1 fish over 70 cm.



Status of other Walleye Stocks in FMZ 5

- Ontario’s Broad-scale Monitoring Program (BsM) is the primary survey for monitoring inland lakes. This allows for comparisons within the FMZ –among lakes including LOTW.
- More than 50% of the 52 walleye trend lakes surveyed in FMZ 5 are considered healthy, whereas only 8% have both high death rates and low biomass.
- LOTW goes against the observed trend in the zone (i.e. more generally, high death rates for walleye tend to be rarer than low biomass).



Summary

- There are a large number of factors that influence the LOTW walleye population, such as harvest from the recreational fishery, changing water quality, competition for resources from other species, invasive species impact, and commercial harvest.
- The biomass of the LOTW walleye stock is lower than the amount we’d expect for a healthy lake. This threshold is called a **fisheries reference point** and is determined by a mathematical model which is widely applied across FMZ 5.
- Mortality is higher than what we’d expect for a healthy stock (i.e. the **fisheries reference point**). This threshold is determined by a widely accepted scientific paper on sustainable walleye stocks.
- We also observe a lower number of old, big fish than found in comparably large recreational walleye fisheries (e.g. Rainy Lake).

Fisheries management planning efforts and objectives

Steve Bobrowicz

Regional Fisheries Specialist
Northwest Region



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Fisheries Advisory Councils

Fisheries management follows a cycle of:

- planning (setting objectives and strategies)
- implementing strategies
- monitoring and reporting
- evaluating success

NDMNRF work with advisory groups as part of the fisheries management planning processes for FMZs and significant lakes like LOTW.

The role of the councils include:

- Providing advice to NDMNRF on objectives for the fishery that help balance social, economic and biological values.
- Providing advice on potential management actions (e.g. fishing rules).
- Supporting NDMNRF during public consultation phases of the planning process by engaging within their networks.

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Rationale for Development of a Recreational Walleye Management Plan

- The walleye population is below provincial standards and has been for a long time.
- High harvest rates – very few large, older walleye.
- Fishery may be unable to withstand emerging pressures (e.g., invasive species, increased harvest, climate change).
- Provincial policy directs the ministry to develop Fisheries Management Plans for Provincially Significant Inland Fisheries.

Objectives Proposed by the Advisory Council for the Recreational Walleye Fishery

Proposed Ecological Objective #1

- Reduce the walleye harvest associated with the recreational fishery

Proposed Ecological Objective #2

- Increase the amount of large, older walleye

Proposed Socio-Economic Objective #1

- Treat all anglers equally (non-residents *and* residents: same catch limit and size restrictions)*

Proposed Socio-Economic Objective #2

- Recognize the impacts of regulatory changes on the local tourism industry

*Note this is typical in most parts of Ontario

The Advisory Council proposed the following recommendations for walleye regulations:

<u>Current Regulations</u>	<u>Proposed Option</u> (for residents and non-residents)	<u>Alternate Option</u> (for residents and non-residents)
<p><u>Residents</u> Sportfishing: 4 fish Conservation: 2 fish One fish >46 cm (18 inches)</p> <p><u>Non-Residents</u> Sportfishing: 2 fish Conservation: 2 fish One fish >46 cm (18 inches)</p> <p><u>Possession limit:</u> Sportfishing: 4 fish Conservation: 2 fish One fish >46 cm (18 inches)</p>	<p><u>Daily limit:</u> Sportfishing: 2 fish Must be <43 cm (17 inches) One fish >70 cm (27.5 inches)</p> <p>Conservation: 1 fish Must be <43cm (17 inches)</p> <p><u>Possession limit:</u> Sportfishing: 4 fish Must be <43 cm (17 inches) One fish >70 cm (27.5 inches)</p> <p>Conservation: 2 fish Must be <43 cm (17 inches)</p>	<p><u>Daily limit:</u> Sportfishing: 2 fish Must be 35-43 cm (13.8 – 17 inches) One fish >70 cm (27.5 inches)</p> <p>Conservation: 1 fish Must be 35-43 cm (13.8 – 17 inches)</p> <p><u>Possession limit:</u> Sportfishing: 4 fish Must be 35-43cm (13.8 – 17 inches) One fish >70 cm (27.5 inches)</p> <p>Conservation: 2 fish Must be 35-43cm (13.8 – 17 inches)</p>



Open Discussion



Discussion

1. Has your angling experience on LOTW reflected a decline in the quality and quantity of walleye on LOTW?
2. We talked about some potential options for the recreational walleye fishery. What do you think about these options, like keeping two fish instead of four? If catch limits in Lake of the Woods were reduced, would you continue to fish in Lake of the Woods or fish elsewhere?
3. What are your thoughts on treating resident and nonresident anglers equally (.e. same catch limits)?
4. What factors other than sport/recreational overharvesting do you feel might be contributing to the decline in the walleye population?
5. Have you been contacted by an NDMNRF enforcement officer on Lake of the Woods?
6. Are you concerned with overharvesting on Lake of the Woods, and if so, why?
7. What has your experience been fishing for walleye on LOTW versus other big, popular lakes like Rainy Lake or Lac Seul? Have you caught the same size and amount of walleye, or have you noticed a difference?
8. Quite a few people here are involved in the tourism industry on LOTW. What are your concerns if no changes are made or if new regulations are introduced?
9. Do you have any questions or options that you didn't hear today through presentations or discussion you feel might be worth exploring?

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Thank you for your valuable feedback!

Next Steps:

Additional virtual session will be held on March 22 and possibly a third date (TBD).

In-person sessions are being tentatively scheduled for future dates throughout spring and summer 2022.

What we hear at all of these sessions will be considered and factored into any potential regulation changes.

Questions? Email: kenora.mnrf@ontario.ca

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