Lake Manitoba Walleye (*Sander vitreus*) Gillnet Fishery

Pre-Assessment Report

Assessment Body	Ocean Outcomes
Fishery client	Lake Manitoba Commercial Fishermen's Association and Province of Manitoba, Fisheries Branch
Assessment type	Pre-assessment
Date	October 2024

1. Table of contents

2. Glossary

B_0	unfished biomass
B_{MSY}	biomass at maximum sustainable yield
CAB	Conformity Assessment Body
CI	confidence interval
CITES	Convention on International Trade in Endangered Species
CLA	community licensing area
cm	centimeter
CUE or CPUE	Catch Per Unit Effort
DCR	daily catch record
DFO	Department of Fisheries and Oceans (Canada)
ECCC	Federal Department of Environment and Climate Change Canada
EDITNR	Department of Economic Development, Investment, Trade, and Natural Resources
ERF	Evidence Requirements Framework
ETP	Endangered, Threatened or Protected
F	Fishing mortality
F_{MSY}	Fishing mortality which generates MSY
FCR	Fisheries Certification Requirements [for MSC]
FFMC	Freshwater Fish Marketing Corporation
FIP	Fishery Improvement Project
FL	fork length
GPS	Global Positioning System
IUCN	International Union for Conservation of Nature
kg	kilogram
LKWH	Lake Whitefish
LMCFA	Lake Manitoba Commercial Fishers Association
LRP	limit reference point
m	meter
MARD	Manitoba Agriculture and Resource Development
MSC	Marine Stewardship Council
MSY	Maximum sustainable yield
NGO	Non-Governmental Organization
OOS	Out-of-scope, in relation to MSC P2 species categories
P1, P2, P3	Principle 1, 2, 3
PI	performance indicator
PSA	productivity susceptibility analysis
RBF	Risk Based Framework
SARA	Species at Risk Act
SBR	spawning biomass ratio
SD	standard deviation
SG	scoring guidepost
SSBDM	state-space biomass dynamic model
t	tonnes
TAC	Total Allowable Catch
TRP	target reference point
UoA	Unit of Assessment
VME	Vulnerable marine ecosystem

3. Executive summary

This document is a Marine Stewardship Council (MSC) pre-assessment report for the Lake Manitoba commercial gillnet fishery in the Province of Manitoba, Canada. The Unit of Assessment corresponds to the target stock and species of Lake Manitoba Walleye. The target species is subject to national and provincial fisheries management measures and policy.

Some strengths of the fishery:

- Habitats impacts from the commercial gillnet fishing gear are limited. The most direct interaction between fishing gear and bottom habitats is from the gillnet anchors, which have limited footprints. Any disturbances of the most commonly encountered bottom substrate types, soft clay and silty loam sediments, are likely temporary.
- The UoA fishery is not expected to cause irreversible harm to key ecosystem elements including fish community structure, although continued monitoring and research would help confirm whether this is the case.
- Appropriate governance policies objectives exist at the federal and provincial levels.
- Enforcement mechanisms are in place and are being applied.
- The provincial government (Fisheries Branch) and the Lake Manitoba Commercial Fishermen's Association are actively cooperating and working to improve stakeholder engagement.

Some weaknesses of the fishery:

- The multi-specific quota system makes it difficult to control harvests on individual stocks. Overall quotas may exceed maximum sustainable yields for the target stocks.
- The harvest strategy is not very responsive to stock status, and harvest control rules are lacking.
- Fishery impacts on non-target species and ETP species are not directly monitored. Fishers are not required to keep logbooks.
- A fishery-specific management plan is lacking. Related to this, fisheries management objectives for the Lake Manitoba fishery could be more explicit and specific with respect to maintenance of stock status and ecosystem impacts.

Ocean Outcomes has determined that the fishery is unlikely to achieve unconditional or conditional pass performance against the MSC standard because multiple performance indicators (PIs) under MSC Principle 1 are likely to score <60. There is also a possibility that the overall score for Principle 2 will not reach a passing level. However, there appears to be keen interest from both fishers and the provincial government in eco-certification, making the fishery a good candidate for a fishery improvement project (FIP).

Assessor information

Dr Jocelyn Drugan

Jocelyn is the Analytics Team Director and a Senior Fisheries Scientist with Ocean Outcomes, a global fishery improvement organization that provides technical support to fisheries aiming to improve their sustainability. She has a B.S. in Ecology and Evolutionary Biology from Yale University and a M.S. and Ph.D. in Fisheries Science from the University of Washington. She was also a postdoctoral research associate at the NOAA Alaska Fisheries Science Center in Seattle. Jocelyn has co-authored more than five MSC assessments and numerous MSC pre-assessments, with regional experience spanning countries across northeast Asia and the Americas. Jocelyn is fully MSC-trained and meets the MSC Team Leader competency requirements.

4. Report details

4.1. Aims and constraints of the pre-assessment

This report only provides recommendations; full certification will be conducted completely independently of pre-assessment results. A pre-assessment of a fishery does not attempt to duplicate a full assessment against the MSC standard; it is a provisional assessment of a fishery based on a limited set of information provided by the client. A full

assessment involves a full team of assessors and public consultation stages that are not included in a pre-assessment.

4.2. Version details

Table 1: Fisheries program documents versions

Document/Assessment Tree	Version number/Type
MSC Fisheries Certification Process	Version 3.0
MSC Fisheries Standard	Version 3.0
Assessment tree	*Default*
MSC General Certification Requirements	Version 2.5
MSC Reporting Template	Version 2.0
MSC Pre-Assessment Reporting Template	Version 4.1

5. Unit(s) of Assessment and Unit(s) of Certification

5.1. Unit(s) of Assessment

Ocean Outcomes confirms that the fishery under assessment is within the scope of the MSC Fisheries Standard (v3.0, Section 1.1):

- The target species is not an amphibian, reptile, bird or mammal;
- The fishery does not use poisons or explosives;
- The target species are not introduced species;
- The client group does not include any vessel that has been implicated of a “serious crime” for an offence listed Section 1.1.5 of the Fisheries Standard (v3.0) whilst undertaking fishing operations in the last 2 years;
- The client group does not include any vessel that has been implicated in a conviction for a shark finning violation in the last 2 years;
- The client group does not include an entity that has been successfully prosecuted for a forced or child labour violation in the last 2 years.

The Swan Creek Hatchery located on Lake Manitoba produces Walleye fry, primarily for stocking lakes in southwest Manitoba for recreational fishing. The hatchery releases about 10% of its production (~10 million fry) into Lake Manitoba to contribute to the origin stock. On the basis that hatchery production is very limited compared to natural spawning production and follows appropriate practices to not cause irreversible harm to wild populations and habitats, we determined that the fishery still meets the scope criteria for eligible enhanced fisheries. These are described below in Table 2.

Table 2. Scope criteria for enhanced fisheries as they pertain to the UoA.

Scope criteria from Table 1 of MSC Standard V3.0 (1.1.3)	Application to UoAs
Linkages to and maintenance of a wild stock	
At some point in the production process, the system relies upon the capture of fish from the **wild environment**. Such fish may be taken at any stage of the life cycle including eggs, larvae, juveniles or adults. The ‘wild environment’ in this context includes marine, freshwater and any other aquatic ecosystems.	Walleye brood stock are collected from Lake Manitoba at the mouth of Swan Creek. The creek itself is devoid of water or frozen solid during the winter. Wild Walleye from Lake Manitoba are captured each year with 300 to 400 individuals used to take eggs and milt. The brood stock are released

	alive, and tagging studies of brood stock have determined that their survival rate is acceptable.
The **species are native** to the geographic region of the fishery and the natural production areas from which the fishery's catch originates.	Walleye is native to Lake Manitoba.
There are **natural reproductive components** of the stock from which the fishery's catch originates that maintain themselves without having to be restocked every year.	The vast majority of Walleye spawning in Lake Manitoba is from natural reproductive components of the stock that are self-maintaining.
Where fish stocking is used in hatch-and-catch (HAC) systems, such stocking does not form a major part of a current rebuilding plan for depleted stocks. Note: This requirement shall apply to the current status of the fishery. Wild stocks shall be managed by other conventional means. If rebuilding has been done by stocking in the past, it shall not result in an out-of-scope determination as long as other measures are now in place.	Stocking from the Swan Creek Hatchery does not form a major part of a rebuilding plan for Lake Manitoba wild Walleye stocks. The amount of natural spawning habitat and size of the spawning stock greatly exceeds what could be accomplished in any fish culture program on this lake.
The UoA shall incorporate some element of harvest of a wild population.	The vast majority of the UoA Walleye catches are from the wild population.
The UoA shall be managed so that the natural productivity and genetic biodiversity of the wild population is not undermined with respect to any impacts on long-term sustainability.	Enhancement-based production is very minimal compared to natural production and is highly unlikely to undermine productivity and genetic biodiversity of the wild population (D. Kroeker, pers. comm., February 2024).
Feeding and Husbandry	
The production system operates without **substantial augmentation of food supply**. In HAC systems, any feeding is used only to grow the animals to a small size prior to release (not more than 10% of the average adult maximum weight), such that most of the total growth (not less than 90%) is achieved during the wild phase. In catch-and-grow (CAG) systems, feeding during the captive phase is only by natural means (e.g., filter feeding in mussels), or at a level and duration that provide only for the maintenance of condition (e.g., crustaceans in holding tanks) rather than to achieve growth.	Walleye have a small yolk sack, so they need to be fed within 3 to 4 days after hatching. The hatchery doesn't usually supplement food to the fry and aims to release them within a few days of hatching. Thus they're released at a small size, less than 10% of the average adult maximum weight.
In CAG systems, production during the captive phase does not routinely require disease prevention involving chemicals or compounds with medicinal prophylactic properties.	N/A because this is not a CAG fishery.
Habitat and ecosystem impacts	
Any modifications to the habitat of the stock are reversible and do not cause serious or irreversible harm to the natural ecosystem's structure and function. Note: Habitat modifications that are not reversible, are already in place and are not created specifically for the fishery shall be in scope. This includes:	Lake Manitoba is very large, and the footprint of the Swan Creek Hatchery is very small relative to the size of the lake. Habitat modifications are not expected to cause serious or irreversible harm to the lake ecosystem's structure and function, though obtaining more details about the hatchery structure and operations would be useful to confirm this.

▪ Large-scale artificial reefs. ▪ Structures associated with enhancement activities that do not cause irreversible harm to the natural ecosystem inhabited by the stock, such as salmon fry farms next to river systems.	There are constructed spawning riffles on one or more of the northern tributaries, but the state of these structures is not known, nor is information about their design and placement available.

5.1.1. Unit(s) of Assessment

There is one UoA as described in Table 3. This pre-assessment focuses specifically on the winter fishery.

Table 3: Units of Assessment (UoAs)

UoA 1	**Description**
Target Stock	Lake Manitoba Walleye (*Sander vitreus*)
Geographical area	Lake Manitoba, Manitoba, Canada. 51.03°N, 98.81°W
Fishing gear type(s) and, if relevant, vessel type(s)	Set gillnets. Stretch measure mesh sizes between 95 mm and 127 mm. Vessels depend on the amount of snow on the ice and may include tracked snow vehicles, all terrain vehicles, and pickup trucks.
Client group	Lake Manitoba Commercial Fishers Association and Province of Manitoba, Fisheries Branch
Other eligible fishers	Licensed commercial fishers of Lake Manitoba
Justification for choosing the Unit of Assessment	Based on the target stock

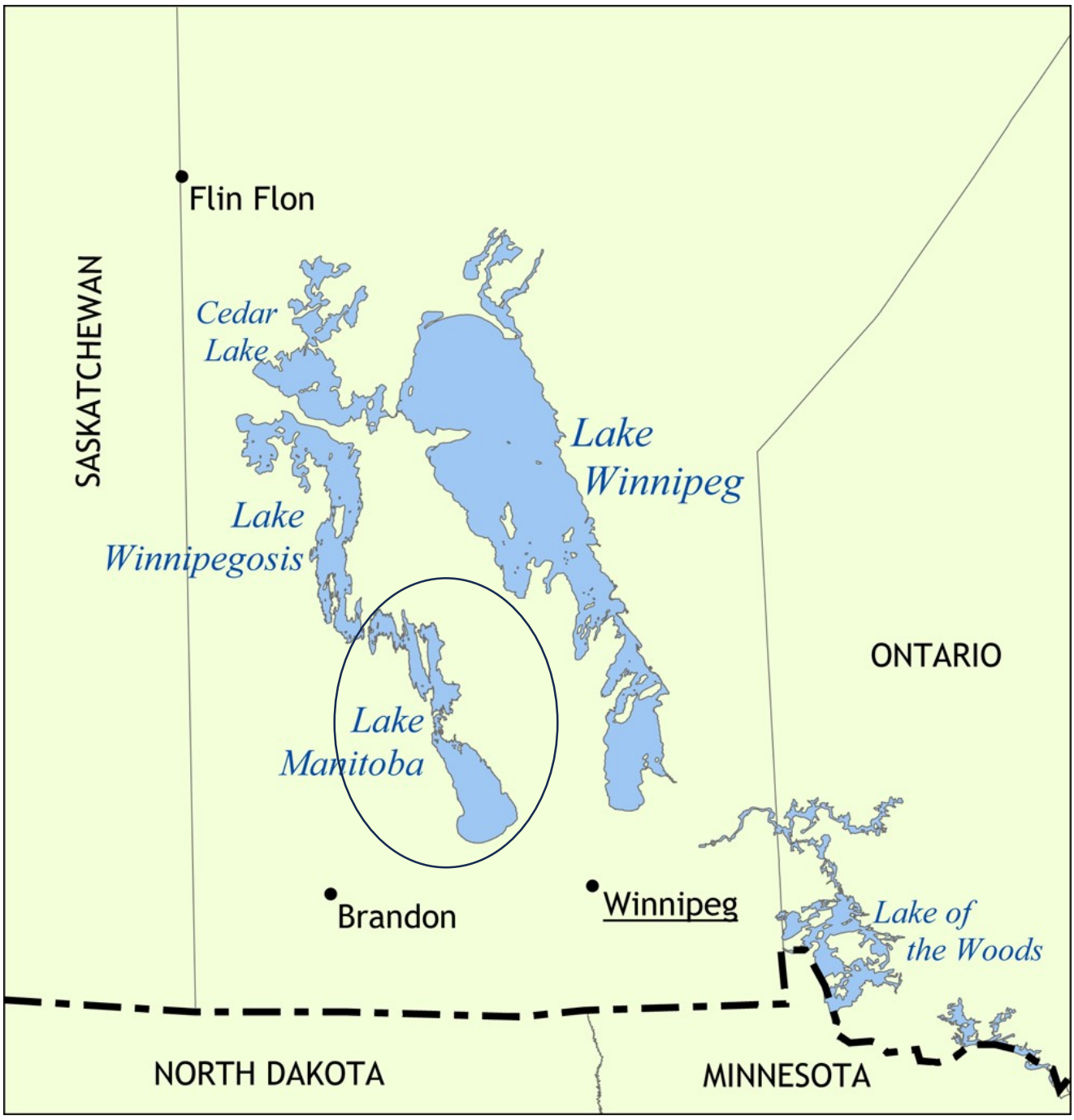

Figure 1. UoA fishing area, circled. Source: NormanEinstein on Wikipedia.

5.2. Vessels list(s)

This fishery takes place under the ice and involves vehicles rather than vessels. Vehicles used depend on environmental conditions and may include tracked snow vehicles, all-terrain vehicles, and pickup trucks.

6. Traceability

6.1. Traceability within the fishery

Below we provide information below relating to the fishery's ability to segregate and identify catch by gear type, species and catch area. Tracking systems that allow products to be traced back to the UoA will be needed if products are intended to be sold as belonging to a FIP, or to be labelled with the MSC eco-label should the fishery become certified in the future.

Table 4: Traceability within the fishery

Statement on fishery's ability to track and trace to each Unit of Assessment
Systems allow the fishery client to track to trace any fish or fish products back to each individual UoA
Movement of fish and fish product between **harvest** and **landing** *An illustration of movement of product between harvest and landing. Include when any of the following happen: Harvesting, At-Sea processing, Translocation, Transhipment, Offloading, Landing.*
Harvest by land-based vehicle → Depart lake at any shore access point → primary processing (heading and gutting), if fish are not sold round → offload to authorized agent, e.g. packing shed or other reception facility.
Movement of fish and fish products between **landing** and the proposed **start of the CoC** if relevant
Departing lake at access point → consolidated transport by truck in some cases → fish packing shed Sorting/grading may take place prior to landing.
Description of any processing and sorting/ grading prior to change of ownership
Sorting and grading may occur on the ice as the fishers lifts their nets. The fisher may sort by species and by quality. Gillnets are selective by size, so some inherent sorting occurs due to the gear. Primary processing happens on the ice, at the fishers' residences if they are equipped, or packing sheds. Primary processing here refers to gutting, or heading and gutting. The first point of sale and change in ownership takes place upon reception by an authorized agent, e.g. packing shed or other reception facility. When the fish crosses the weigh scale and the fisher receives a daily catch record or fish purchase record from the agent's weighman, the first sale is considered to have occurred.
For the critical tracking events (i.e. where in the product flow this data needs to be transferred) of all fish and fish product handling and sale not covered by the proposed CoC describe: - Process of segregating to each Unit of Assessment - Key data elements (i.e. the data or documents to identify the UoA such as species, catch area, gear)
Under the Fish Marketing Regulation, Fish Dealers are required to be licenced and report fish purchases and sales. They must complete a Fish Purchase Record (provided by EDITNR) when purchasing fish from a fisher or the person transporting fish on behalf of the Fisher (who will require a loadslip – see below). A licensed Fish Dealer must ensure that all fish purchase records are signed by the dealer, fisher or fish transporter. They provide EDITNR with a weekly electronic summary of all fish purchased no later than seven days after the end of the week. Commercial fishers must complete a Trade Record (provided by EDITNR) with their name, licence number, date of transfer of ownership, form and weight of the landed catch in kg, and the body of water from which the fish were caught. They must submit a copy of every Trade Record to EDITNR within seven days after the end of each month.

A person must not transport fish in the province beyond their declared landing point, unless the fish is accompanied by an approved loadslip form that contains the following information: 1. Name of the person who caught the fish and, if applicable, the person's fisher number and licence number under which the fish were caught; 2. Name of the person transporting the fish; 3. Date the fish is transported; 4. Species of fish, its form and its weight in kg; 5. Body of water in which the fish was caught; 6. Point at which the fish is loaded; 7. Address or location where the fish is to be delivered; 8. If applicable, the Season End Declaration number under which the fish were kept by the Fisher. A loadslip must be signed by the fisher who caught the fish. A separate loadslip is required for each fisher's fish. Copies of loadslips must be provided to EDITNR no later than 7 days after the end of each month.	
Where there are IPI stock(s) within the scope of certification, describe the verification of traceability systems	
N/A. There are no other Walleye stocks caught in the Lake Manitoba fishery.	
Other relevant information on the systems to track and trace to each UoA	
Catch records (trade records, fish purchase records) are kept as fish are transported and sold. FFMC packing sheds and larger buyers / processors such as Presteve Foods are aware of the need to keep MSC certified and non-certified products separated and labeled.	
Do systems allow the fishery client to trace any fish or fish products back to the individual UoA and how do they do this? If yes, describe	Yes. Catches are tracked through Trade Records, Fish Purchase Records, and loadslips in cases where a fishers' catch is transported to the packing shed (first point of sale) by someone other than the fisher.
Does transhipment occur within the fishery?	Transshipment does not occur on the ice, but fishers may pool their catches in a common vehicle for delivery to packing sheds. This practice may have been more frequent in the past than it is currently. When pooling does happen, fishers weigh their individual catches before loading them into the common vehicle.
What is the type of transhipment and what the systems to track and trace to UoA? (high seas/in port/ other) If yes: • How and when does this occur? • What systems allow to track and trace to UoA?	In port. Fishers may pool their catch in a common vehicle for transportation to a packing shed.
For high seas transhipment are the systems to support tracking and tracing to UoA verified independent from the certificate holder? If yes, describe	N/A. There is no high seas transhipment in this fishery.
For high seas transhipment do the systems to verify tracking and tracing to UoA cover both fishing and receiving vessels?	N/A

If yes, describe	
For high seas transhipment do the systems to track and trace to UoA apply to 100% of transhipment events? If yes, describe	N/A

6.2. Traceability risks and mitigations

Table 5 describes the factors that may lead to risks of non-UoA fish being mixed with UoA fish.

Table 5: Traceability risks and mitigation within the fishery

Factor	Description of the traceability risk factors and details of the risk mitigation and management
Will the fishery use gears that are not part of the UoA?	No. Only set gillnets are used in the fishery. License conditions specify required parameters for the gillnets such as minimum mesh size. In some cases fish caught in treaty nets have entered the commercial supply, but enforcement authorities keep an eye out for this type of activity and take actions when they detect it.
Will vessels in the UoA also fish outside the UoA geographic area? If Yes, include in the description: • If this may occur on the same trip; • How any risks are mitigated.	In general, no. Lake Manitoba fishers may not hold licenses on other lakes concurrent with their Lake Manitoba license. Non-compliant fishers have occasionally fished outside their designated areas, which could result in some fishing outside of the UoA geographic area. However, enforcement patrols attempt to monitor and mitigate such activity.
Do client group members ever handle certified and non-certified products during any of the activities covered by the UoA? This refers to both at-sea activities and on-land activities and should reflect those listed in product movement in Table 4. It includes: • Translocation • Transhipment • Transport • Storage • Processing • Sorting/ grading • Packing • Landing • Auction If yes please describe how any risks are mitigated.	Unlikely. Fishers would not typically handle both certified and non-certified target species products because their fishing licenses specify the areas where they can fish. In this case the fishing area is Lake Manitoba, and the entire Walleye population in the lake is within the UoA.
Does transhipment occur within the fishery?	No transhipment occurs in the Lake Manitoba fishery.

Factor	Description of the traceability risk factors and details of the risk mitigation and management
Are there any other risks of mixing or substitution between the UoA and other non-certified product? If yes, please describe how any risks are mitigated.	Generally low risk. Fish from the fishery are delivered directly by the fisher, or the fisher's helper, to the first buyer at the fish packing shed identified by the fisher on their license at the beginning of the fishing year. If the fisher wishes to take fish elsewhere, the fisher is required to fill out a loadslip that must be produced upon request by a Conservation Officer. Fish tubs are identified by fisher name until first sale. However, packing sheds may receive fish from multiple lakes. Thus it will be worth verifying protocols taken at the sheds to minimize risk of mixing of non-certified and certified product.
Are there any other risks of mixing between different UoAs? Please describe how any risks are mitigated.	Fishers will sometimes have their fish delivered by a common vehicle, but their catches remain separated by tubs until they arrive at the scale.

7. Pre-assessment results

7.1. Pre-assessment results overview

7.1.1. Overview

The pre-assessment results suggest that the fishery is currently unlikely to achieve an unconditional or conditional pass against the MSC standard, because multiple performance indicators (PIs) under MSC Principle 1 received draft scoring ranges <60. There is also a possibility that the overall score for Principle 2 will not reach a passing level.

The main obstacles to certification are:

(1) the lack of effective harvest control rules, especially considering the risk of overfishing individual stocks that is associated with the multi-species quota system;
(2) the lack of direct evidence that the fishery has minimal impacts on in-scope and out-of-scope species;
(3) the lack of a fishery-specific management plan and management objectives.

On the positive side, the provincial government (Fisheries Branch, Province of Manitoba) and the Lake Manitoba Commercial Fishermen's Association are actively working together, which is an important foundation for making management and sustainability improvements.

7.1.2. Recommendations

Whether the client group chooses to pursue MSC certification or other sustainability improvement initiative, a top priority should be maintaining effective communication channels between fishery stakeholders and the government. Establishment of an advisory board or small committee with industry representation could benefit decision-making processes. Sharing and co-collection of fishery data can further support collaboration efforts.

In terms of achieving passing scores against the MSC standard, we recommend addressing the PIs that scored less than 60, namely those relating to the status of certain stocks and harvest control rules. Harvest controls are a critical component of the harvest strategy and maintenance of stock health. Making changes to harvest management is typically a slow and arduous process. Stepwise adjustments, via the quota buy-back program and mesh size regulations that are in place, are helpful. At the same time, the fishery is in need of a more responsive mechanism to

adjust harvest levels in response to stock status indicators, especially because current legal fishing capacity likely exceeds MSY.

Improvements in data collection and fishery monitoring can also be made. In particular, it would be useful to collect fishery-dependent data, by way of a fishers' logbook program and database, to allow reliable, and standardized, estimates of targeted effort, catch, discards and releases. On a related note, PIs 2.1.1 and 2.2.1 were scored using productivity susceptibility analyses (PSAs) due to the lack of quantitative data on proportions of in-scope fish species within total catches and frequency of incidental encounters of ETP/OOS species. The PSAs suggested low risk of impacts to these species from the UoA fisheries, but provision of empirical data will strengthen this determination should the fisheries eventually undergo full MSC assessment.

7.2. Summary of draft scoring ranges by Principle

A draft scoring range was determined for each Performance Indicator (PI). The scoring ranges can be interpreted as follows.

- <60: Information suggests fishery is not likely to meet the SG60 for at least one scoring issue, which may result in a Fail in a full assessment.
- 60-79: Information suggests fishery will reach SG60 but may not meet all scoring issues at SG80; a condition may be needed.
- ≥80: Information suggests fishery is likely to exceed SG80 resulting in an unconditional pass for this Performance Indicator.

Table 6: Summary of Performance Indicator draft scoring ranges within each Principle.

Principle of the Fisheries Standard	Number of PIs <60	Number of PIs 60-79	Number of PIs ≥80
Principle 1 – Stock status: UoAs 1 and 2	2	1	2
Principle 2 – Minimising environmental impacts	2	7	3
Principle 3 – Effective management	1	4	1

7.3. Summary of Performance Indicator level scores

Table 7: Summary of Performance Indicator level scores

Performance Indicator	Draft scoring range	Data deficient?
1.1.1 – Stock status	≥80	No
Rationale or key points		
Walleye are currently assessed as a single, lake-wide stock in Lake Manitoba. The 2023 stock assessment used a surplus production model (SPM) run using index netting CUE and commercial CUE data. Based on the SPM results, the stock appears to be fluctuating around a level consistent with MSY (B_{2022}/B_{MSY} = 1.09), and there is a high degree of certainty that the stock is above the PRI ($B_{2022}/½B_{MSY}$ = 2.19).		
Performance Indicator	**Draft scoring range**	**Data deficient?**
1.1.2 – Stock rebuilding	N/a	N/a
Rationale or key points		
This PI is not applicable because PI 1.1.1 did not score less than 80. The stock does not appear to be reduced, based on the most recent stock assessment.		
Performance Indicator	**Draft scoring range**	**Data deficient?**
1.2.1 – Harvest Strategy	<60	No

Rationale or key points
The current harvest strategy for Lake Manitoba is based on several input measures and a lake-wide, multi-species quota of 907.2 t for any combination of Walleye and Sauger roundweight. These measures allow for some control of fishing input and output but do not constitute a cohesive harvest strategy that is expected to manage fishing effort on target stocks in a responsive manner. In addition, there is a large amount of latent fishing power in the fishery, and no defined management mechanism to limit that fishing power if the stock were to require rebuilding. The quota was exceeded in the 2022-2023 fishing year, producing the highest deliveries of Walleye since 1959. Monitoring of commercial fishing activity is in place to determine whether the harvest strategy is working, but there is limited evidence to conclude that the harvest strategy is periodically reviewed and improved as necessary.

Performance Indicator	Draft scoring range	Data deficient?
1.2.2 – Harvest control rules and tools	<60	No

Rationale or key points
HCRs are not in use for this fishery, nor have they been applied in the past. Fish biological data are regularly collected through the index netting program, and indices related to CUE, SSB, and fish ages/sizes can be estimated. However, these indices are not currently used to trigger reductions in exploitation rate as PRIs of the stocks are approached, in a pre-determined manner. On the whole, available information on fishing mortality suggests that existing harvest controls are not fully effective at achieving targeted exploitation levels.

Performance Indicator	Draft scoring range	Data deficient?
1.2.3 – Information and monitoring	60 – 79	No

Rationale or key points
Information related to stock structure, stock productivity, and numbers of commercial licenses is available to support the harvest strategy. Information collected through the index netting program and daily catch records is used to assess stocks and could be used to calculate indices for use in HCRs. Stock abundance and UoA removals are regularly monitored, and one or more indicators are monitored with sufficient frequency to support the harvest strategy. However, one significant gap in the commercial catch data is fishing effort, as fishers are not required to report related information such as number of nets used and soak times. Some information on some fishery removals from the stock may not be available, such as discards of target species, though these are expected to be limited.

Performance Indicator	Draft scoring range	Data deficient?
1.2.4 – Assessment of stock status	≥80	No

Rationale or key points
The most recent stock assessments for Lake Manitoba walleye were conducted in 2020 and 2023. The assessment is appropriate for the stock and nature of data collected, using both fishery-dependent and fishery-independent data. Alternative hypotheses and assessment approaches were explored. For example, SPMs were run with different data sets for comparison, and a sensitivity analysis was performed with respect to one data collection year when index netting sampling was limited to the north basin.

Performance Indicator	Draft scoring range	Data deficient?
2.1.1 – In-scope species outcome	60 – 79	Partially

Rationale or key points
The main in-scope species are Sauger, White Sucker, and Northern Pike. This PI was scored using both stock assessment information (for Sauger) and productivity susceptibility analyses (PSAs; for White Sucker and Northern Pike), because stock status information is not available for the latter two species. The Lake Manitoba Sauger stock has been assessed using a surplus production model, which estimated relative biomass in 2022 (B_{2022}/B_{MSY}) to be 0.447. This suggests that the stock is below PRI, although the stock appears to be growing. The trend of increasing abundance suggests that it is likely that the UoA does not hinder recovery and rebuilding. The PSAs for White Sucker and Northern Pike suggested low risk of the UoA fishery hindering stock health and recovery.

Performance Indicator	Draft scoring range	Data deficient?
2.1.2 – In-scope species management strategy	<60	No

Rationale or key points
Although measures for managing fishing effort exist, there is not a partial strategy in place for the UoA that is expected to maintain or not hinder rebuilding of the main in-scope species to target levels. Fishing effort is managed through a licensing and quota system and time and area-based management, as well as gear regulations. Conservation officers and Fisheries Branch staff routinely monitor quotas and compliance with license conditions. However, these measures are focused on Walleye and Sauger and are not explicitly aimed at managing fishery impacts on other fish species. Catch logbooks are not required, although catch records exist for the fish that are sold commercially. The level of unwanted catches is uncertain due to the lack of logbooks. There is no evidence of review of alternative measures to minimise UoA-related mortality of unwanted catch of main in-scope species.

Performance Indicator	Draft scoring range	Data deficient?
2.1.3 – In-scope species information	≥80	No

Rationale or key points
We scored this PI for Sauger. Commercial catches of Sauger are quantified and well understood via daily catch records (DCRs). Fishery-independent data on Sauger and other species are collected as well, through the index netting program. These data are used in surplus production modeling to evaluate the status of the Sauger stock. Information is adequate to support a partial strategy to manage this main, in-scope species.

Performance Indicator	Draft scoring range	Data deficient?
2.1.3R – In-scope species information if RBF is used to score PI 2.1.3	≥80	Yes

Rationale or key points
We scored this PI for White Sucker and Northern Pike. Some quantitative information is adequate to assess productivity and susceptibility attributes for main in-scope species. Research has been conducted to understand their biology, and the index netting program provides quantitative information on their susceptibility to the UoA fisheries. The index netting program also provides quantitative information to estimate the impact of the UoA on minor in-scope species with respect to status. The information described is adequate to support a partial strategy to manage main in-scope species.

Performance Indicator	Draft scoring range	Data deficient?
2.2.1 – ETP/OOS species outcome	≥80	Yes

Rationale or key points
This PI was scored using the RBF because the direct impacts of the UoAs on the ETP/OOS units in relation to their conservation status have not been quantitatively determined by an independent source. The ETP/OOS units for all UoAs are Bigmouth Buffalo, Double-Crested Cormorant, Horned Grebe, and Western Grebe. Based on PSAs, two of the units are at low risk of UoA impacts (Bigmouth Buffalo and Double-Crested Cormorant), whilst two are at medium risk of UoA impacts (Horned Grebe and Western Grebe; see Table 14).

Performance Indicator	Draft scoring range	Data deficient?
2.2.2 – ETP/OOS species management strategy	60 – 79	No

Rationale or key points
Measures in place that are expected to minimise the UoA-related mortality of the ETP/OOS include operational requirements and behaviors. For example, commercial fishers do not operate nearshore. However, strategies specifically designed to minimize UoA impacts on ETP/OOS species appear limited. There is limited evidence that the measures have reduced or minimised the mortality of the ETP/OOS units, as fishers are not required to keep logbooks of encounters with ETP/OOS species. There is no periodic review (at least once every 5 years) of the alternative measures to minimise UoA-related mortality of the ETP/OOS units. Measures that are expected to minimise ghost gear and its impact on the ETP/OOS units are also in place. In addition to fishers' natural inclinations to minimise ghost gear, the Commercial Fishing Guide 2023-24 has regulations relevant to ghost gear management, such as: (1) fishers may not leave decaying fish in a net, (2) fishing gear (buoys, poles) may not be left in place when not being actively fished.

Performance Indicator	Draft scoring range	Data deficient?

2.2.3R – ETP/OOS species information if RBF is used to score PI 2.2.3 – delete if not applicable	<60	Yes
Rationale or key points		
Qualitative and quantitative information is adequate to estimate productivity and susceptibility attributes for the ETP/OOS species. However, it is not clear whether available information (e.g. from index netting) is adequate to support measures to manage impacts on ETP/OOS species and evaluate their effectiveness.		

Performance Indicator	Draft scoring range	Data deficient?
2.3.1 – Habitats outcome	≥80	No
Rationale or key points		
The UoA is highly unlikely to reduce structure and function of less sensitive habitats to a point where there would be serious or irreversible harm. Gillnets are the only fishing gear used in the UoA fishery. The most direct interaction between this gear and bottom habitats is from the gillnet anchors, which have limited footprints. Fishing takes place away from the shoreline in deeper water dominated by soft clay and silty loam benthic substrate types; any habitat disturbances therefore are expected to be temporary. In addition, Lake Manitoba is very large; gillnet fishing activity takes place in a very small proportion of the total lake area.		

Performance Indicator	Draft scoring range	Data deficient?
2.3.2 – Habitats management strategy	60 – 79	No
Rationale or key points		

Commercial gillnet fishing activities in Lake Manitoba are regulated through gear regulations, seasonal area closures, and effort limitations via the licensing and quota systems. The Commercial Fishing Guide 2023-24 specifies the following requirements:

- Gear must be marked with the person's Fisher Number, a unique identifier
- Commercial fishers may not fish within 1.5 km of the location where a stream or a river enters a lake. Commercial licenses are normally issued only on lakes. In the cases they're issued for a river, nets may not block more than ⅔ of the river channel.
- Fishers may not leave decaying fish in a net.
- Fishing gear (buoys, poles) may not be left in place when not being actively fished.

In addition, the gear is fished statically rather than being pulled over the bottom, using anchors with limited footprints that typically weigh 1 lb or less. Together these practices minimize impacts on bottom habitats and constitute a partial strategy to managed habitats impacts from the UoA.

Aside from beach testing for *E. coli* during the summer, there is no ongoing monitoring of water quality, benthic invertebrate densities, or other habitat health indicators. A partial strategy to minimise ghost gear is also lacking. Lost gillnets are not required to be tracked or reported, nor does a gear loss reduction program exist.

Performance Indicator	Draft scoring range	Data deficient?
2.3.3 – Habitats information	60 – 79	No
Rationale or key points		
The nature, distribution, and vulnerability of habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA. The south basin is mostly homogenous and dominated by fine particles, clay, and silt. Coarser substrate such as sand, cobbles, and gravel are found in some shoreline areas. However, information may not be adequate to estimate the impacts of the UoA on habitats with a high degree of accuracy, as the spatial and temporal distribution of fishing effort in the UoA in relation to habitats is not precisely known. Fishers are not required to report fishing locations using GPS, VMS, or other means. That said, Lake Manitoba is quite large (4607 km^2), and the numbers of licensed fishers is known. Thus the overall level of commercial fishing interaction with the lake bottom is expected to be limited.		

Performance Indicator	Draft scoring range	Data deficient?
2.4.1 – Ecosystem outcome	60 – 79	Yes, possibly
Rationale or key points		

The UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function based on available information. Key elements of the Lake Manitoba ecosystem that may be impacted by the UoA are: (1) predator-prey interactions, particularly between Walleye and smaller prey fish; and (2) community composition.

Any significant ecosystem impacts arising from the UoA will most likely be from fishery removals. Commercial gillnet fisheries have put substantial fishing pressure on Walleye in the lake. In terms of their role in the Lake Manitoba fish community, Walleye has a relatively high trophic position. Walleye consume fish species such as Emerald and Spottail Shiner. In turn, they are consumed by predators such as Northern Pike and Double-crested Cormorants.

Nutrient inputs into the lake have also affected ecosystem elements substantially, through eutrophication and associated consequences on food webs. Invasive species such as zebra mussels are found or starting to be found in Lake Manitoba. In short, available data suggest that other factors such as nutrient inputs and invasive species appear to be having greater impacts on key ecosystem elements than UoA fishery removals, though ecosystem research appears limited for Lake Manitoba. It may be worth conducting a Scale Intensity Consequence Analysis (SICA) to evaluate this PI.

Performance Indicator	Draft scoring range	Data deficient?
2.4.2 – Ecosystem management strategy	60 – 79	No

Rationale or key points

UoA fishery removals are regulated through input and output controls, and these regulations combine with monitoring of the fish community in a manner that allows for management of impacts on key ecosystem elements. Ongoing monitoring suggests that the UoA fishery is not substantially disrupting community structure or predator-prey interactions. However, existing measures are not explicitly designed for the purpose of managing UoA fishery impacts on key ecosystem elements, and it is not clear whether there is a broader awareness of the need to change the measures should they cease to be effective.

Performance Indicator	Draft scoring range	Data deficient?
2.4.3 – Ecosystem information	60 – 79	No

Rationale or key points

The main impacts of the UoA on the key ecosystem elements can be inferred from existing information and are expected to be due to fish removals. However, these impacts have not been investigated in detail, e.g. whether fishery removals have noticeably altered the structure of the Lake Manitoba fish community.

The main functions of the components in the ecosystem are known. For example, Walleye are piscivorous predators (e.g. Hartman 2009).

The fishery-independent index netting program provides information on general abundances of different fish species within the lake ecosystem. However, no information was provided on monitoring of other indicators such as nutrient levels and benthic invertebrates.

Performance Indicator	Draft scoring range	Data deficient?
3.1.1 – Legal and/or customary framework	60 – 79	No

Rationale or key points

At the Federal and Provincial levels, there is an effective legal system and binding procedures governing cooperation with other parties. Most of the day-to-day management and administration of fisheries regulations has been delegated to Manitoba by the federal government under Manitoba Fishing Regulation (1987) under Canada's Fisheries Act, although the Government of Canada retains legal responsibility for fish habitat conservation matters. The Province of Manitoba has relevant legislation and policies in place, including the Manitoba Fisheries Act and regulations (including the Fish Marketing Regulations), Branch Procedures, the Manitoba Commercial Fishing Guide, and the Commercial Net Fishing Licence Suspension Directive. The defined approaches are legally binding on the Federal and Provincial management bodies.

The Provincial management system incorporates mechanisms for the resolution of legal disputes, which depend on the nature of the dispute. Licensing disputes are handled by the Director of the Fisheries Branch. There is an appeal process outlined in the Lake Manitoba Administrative Procedures to handle disputes related to licence suspensions, which includes a review by the Lake Manitoba Licence Review Board. Enforcement infractions can be disputed in Manitoba courts. Enforcement infractions can be disputed in Manitoba courts. The process is outlined on the ticket, and some infractions require a court appearance or they go to a default conviction.

Other legal disputes can be elevated to the court system; however this is extremely rare. There is limited information to evaluate the effectiveness of provincial mechanisms at handling disputes.

The Natural Resources Transfer Agreement (1930), which forms part of The Constitution Act of Canada (1982), provides that First Nations with status have a right to fish for subsistence uses (food) throughout Manitoba on all unoccupied Crown lands and on any other lands to which they may have a right of access. The Red River Métis have rights recognized and affirmed as protected by section 35 of the Constitution Act, 1982 to harvest fish for food from the defined region of Manitoba known as the recognized area for Métis Natural Resource Harvesting. When Manitoba adopted a fishing license system with seasonal closures, Indigenous rights holders could continue to fish for sustenance without a licence. As such, there are mechanisms for observing the legal fishing rights of Indigenous peoples. Fishing gear, such as gill nets, that are left unattended by rights holders must be clearly marked with the owner's name and either their Treaty number or Manitoba Métis Federation Card number.

Performance Indicator	Draft scoring range	Data deficient?
3.1.2 – Consultation, roles, and responsibilities	60 – 79	No

Rationale or key points

Organisations and individuals involved in the management process have been identified, and their roles generally understood. The primary organisation involved in the governance of the fishery is the Manitoba Department of Economic Development, Investment, Trade, and Natural Resources (EDITNR), Fisheries Branch. The Manitoba Conservation Officer Service, also within EDITNR, is responsible for the enforcement of fisheries regulations. The federal Department of Fisheries and Oceans (DFO) is responsible for enforcement of fish habitat protection. Fishers have representation through the Lake Manitoba Commercial Fishermen's Association. However, the roles and responsibilities of these organisations have not been explicitly defined for key areas of responsibility and interaction in publicly available documents.

The management system includes consultation processes that obtain relevant information from the main affected parties to inform the management system and provides opportunity for interested parties to be involved. EDITNR meets regularly with Lake Manitoba commercial fishers. The Regional Fisheries Manager meets with Lake Manitoba Commercial Fishers Association representatives each year, upon request of the association. However, there is limited public documentation, such as meeting minutes and reports, to demonstrate how the management system considers and uses the information obtained.

Performance Indicator	Draft scoring range	Data deficient?
3.1.3 – Long term objectives	≥80	No

Rationale or key points

Long-term objectives are clear and explicit within management policy, particularly at the federal level. Sustainability objectives relating to fish stocks, ecosystem impacts, and the precautionary approach are included in Canadian legislation such as the Fisheries Act and Species at Risk Act, as well as policy initiatives such as the Sustainable Fisheries Framework.

Performance Indicator	Draft scoring range	Data deficient?
3.2.1 – Fishery-specific objectives	60 – 79	No

Rationale or key points

The Fisheries Branch, Province of Manitoba has described fishery-specific management objectives as follows:

- Develop a fisheries management plan cooperatively with commercial fishers and recognize the need for an adaptive management approach.
- Implement management changes with engagement of commercial fishers and other resource users to ensure harvest levels are reflective of current stock status.
- Continue to implement the Department's Suspension Directive to ensure fishers are held accountable when enforcement infractions take place.
- Work with the industry to ensure continued access to local and international markets.

However, these do not appear to be explicitly captured in documentation such as a fishery management plan.

Performance Indicator	Draft scoring range	Data deficient?
3.2.2 – Decision-making processes	60 – 79	No

Rationale or key points

The Province of Manitoba, through existing acts and regulations, retains primary authority and the legal right to make decisions in the best interests of conservation and the fishery resources of Manitoba, including those in Lake Manitoba. The Fisheries Branch aims to proactively engage stakeholders, including commercial fishers and fisher cooperatives, when developing and making management decisions.

One example of decision-making is reflected in operational and regulatory changes in mesh size, as described in an EDITNR report (2021). The Lake Manitoba commercial fishery became a winter-only fishery starting in 1905 and initially targeted Lake Whitefish. As the whitefish stock declined, and smaller mesh sizes were allowed, harvest shifted to Walleye and Sauger, which were primarily caught using 3.75-inch mesh gillnets. In turn the Walleye and Sauger stocks declined. Fishers then started catching Yellow Perch, in the mid 1980s, when 3-inch mesh gillnets were allowed. Production kept declining until fishers formally requested a return to minimum mesh size of 3.75 inches during the 2016-2017 fishing year.

However, it is not apparent that decision-making processes use the precautionary approach**.** Though the Fisheries Branch has made some positive regulatory changes under its sustainability mandate, overall management of the fishery cannot be described as precautionary. For example, individual fish stocks are quite vulnerable to overfishing due to the multi-species quota system, and decision-making mechanisms to address this vulnerability appear limited.

EDITNR makes information on the fishery's performance and management action available on request and provides explanations for management actions taken. The management system attempts to comply in a timely fashion with judicial decisions arising from any legal challenges, of which there currently are none active.

Performance Indicator	Draft scoring range	Data deficient?
3.2.3 – Compliance and enforcement	60 – 79	No

Rationale or key points

MCS mechanisms exist within the UoA**.** Licences can be suspended or cancelled following conviction under federal and provincial fisheries legislation and regulations. The Manitoba Conservation Officer Service is responsible for the enforcement of fisheries regulations. They regularly conduct patrols, as weather permits, in cooperation with the Fisheries Branch. There is also a mechanism (hotline) for fishers and other community members to report non-compliances. Summary information provided by EDITNR is adequate to broadly understand compliance. Fisheries Branch staff review DCRs and licensing paperwork, and flag potential non-compliances for further investigation. It is not clear whether information is adequate to estimate compliance in the UoA with a high degree of accuracy.

While non-compliances do occur, these appear to be infrequent and consist primarily of failing to properly mark fishing gear. The provided enforcement logs do not suggest systematic non-compliance. It is less evident whether the majority of other regulations for governing sustainable fishing practices are likely to be complied with.

Performance Indicator	Draft scoring range	Data deficient?
3.2.4 – Monitoring and management performance evaluation	<60	No

Rationale or key points

Evidence of mechanisms to evaluate the fishery-specific management system was not provided. Fisheries Branch staff regularly meet with community and industry stakeholders, but there is no clear indication that these communication channels serve a management evaluation function.

There are opportunities for some oversight among government departments, and between the Fisheries Branch main office and regional offices. However, review processes for the Lake Manitoba management system are not clearly established, and there is limited evidence demonstrating that regular internal and occasional external review take place.

7.4. Principle 1

7.4.1. Principle 1 background

7.4.1.1. Target species and stocks

This fishery targets one species and stock: Walleye (*Sander vitreus*) in Lake Manitoba. This species is of high social and economic importance to local communities.

Stock monitoring

Target species stocks are monitored using fishery-dependent and fishery-independent data. Commercial catch information is collected in the form of daily catch records (DCRs), which record the date, fisher identification, and the weight of the catch by species, form, and size grade. One data gap is that fishers do not provide information on fishing effort (e.g. numbers of nets and soak times) used to produce a given amount of catch.

Fishery-independent data are collected through an annual index netting program operated by the Province of Manitoba Fisheries Branch, hereafter referred to as the Fisheries Branch. Index netting is carried out on Lake Manitoba in August and September, typically on an annual basis. One index gang has panels of 38 mm stretch measure mesh, 51 mm, 64 mm, 76 mm, 89 mm, 95 mm, 108 mm, 127 mm, and 152 mm. The panels are all 1.8 metres deep. The lengths of the panels have changed over the years (see Klein 2020) and are all corrected to 22.5 m in length per mesh size panel for the purpose of calculating the index of abundance (Klein 2023). The index net sites and numbers of sets made in different years is shown in Table 8.

Table 8. Index net sets and sites in Lake Manitoba. Manipogo and Steeprock are in the north area whilst Lundar and Whitemud are in the south basin. The Narrows is located between the north and south areas. Source: Klein 2023.

	Manipogo	Steeprock	Lundar	Whitemud	Narrows
2009	9	11	11	11	
2010	12	11	10	11	
2011	10	11	8	11	
2012	11	7	7	8	
2013	11	11	10	11	
2014	11	11	11	11	
2015	11	11			
2016					
2017	11	10	10	8	
2018	11	11	10	4	
2019	9	9			
2020	9	9	5	7	
2021		9			12
2022	9	9	9	5	6

Walleye

Walleye (*Sander vitreus*) is a cool-water species distributed widely in larger freshwater aquatic systems in North America. They tolerate a range of environmental conditions, appearing to reach greatest abundance in large, shallow, turbid lakes (Scott and Crossman 1973). Temperature and light penetration strongly influence walleye summer habitat. Several subspecific colour phases have been identified in the literature, such as ‘blue’ and ‘yellow’ forms. The yellow form is currently the dominant form throughout the species range. Walleye is an especially valued fish commercially, recreationally, and culturally within Canadian inland waters. It is highly sought after as a food fish.

The biology and ecology of walleye have been studied extensively (e.g. Scott and Crossman 1973). It is considered a keystone predator in many environments, selectively predating on lower trophic level forage fish such as Emerald Shiner (*Notropis atherinoides*) and rainbow smelt (*Osmerus mordax*; Sheppard et al. 2015). Walleye spawn in spring in relatively shallow water from a few cm to several m in depth (Colby et al. 1979). Females broadcast spawn eggs that fall into substrate crevices and vegetation mats (Bozek et al. 2011b). Walleye prefer temperatures in the range of 11°C to 25°C during the summer (Lester et al. 2004).

Environmental conditions have a strong influence on recruitment and productivity of Walleye populations. Size at age and growth rate are quite variable across the geographic range of the species, with growth being more rapid in southern parts of the range (Bozek et al. 2011a; Colby et al. 1979). These differences largely stem from variation in annual input of thermal energy, usually described in terms of growing degree days (GDD; Colby and Nepszy 1981). Bozek et al. (2011a) presented a bi-phase growth model, consisting of rapid, virtually linear growth during the juvenile phase followed by a gradual reduction in growth rate after sexual maturity. Male Walleye generally mature at 2 to 4

years of age and over 279 mm in length, while females mature at 3 to 6 years of age and at 356 to 432 mm in length (Scott and Crossman 1973). In the province of Manitoba, female walleye usually become sexually mature at lengths of 420 to 480 mm (Klein et al. 2020). Analysis using generalized linear models estimated that 50% of north area female Walleye in Lake Manitoba were mature at 433 mm. In the south basin, the length at 50% maturity was 452 mm, which was not considered a very substantial difference (Klein 2023).

Walleye does not fit the profile of a lower-trophic-level species as defined by the MSC Fisheries Standard v3.0.

Lake Manitoba Walleye in the north area and south basins show some physical differences; the two stocks differ in growth rate, condition, and age at maturity (Klein 2020). Although no physical barrier to fish movement exists between the north area and south basin, there is no indication that inter-basin movement regularly occurs (Klein 2023). The stock assessment took two approaches: (1) assessing a single, lake-wide stock, and (2) assessing the north area and south basin stocks separately. The fishery itself is managed at the lake-wide scale.

Changes in fishing practices have likely affected the time series of catch data. Both the north and south areas of Lake Manitoba were able to use 76 mm mesh until 2001, when the north area agreed to a larger, permanent minimum mesh size of 95 mm in order to extend their season from an end date of March 15 to an end date of March 31. The south basin continued to fish 76 mm mesh until 2013, when a very large year class of Northern Pike (*Esox lucius*) made it impossible to fish small mesh. The pike were attracted into the nets by the small fish being caught, and then would twist the net into a rope as they struggled. In 2017, the south basin fishers petitioned to have their minimum allowable mesh size officially increased from 76 mm mesh to 95 mm mesh in order to have their fishing season extended from March 15 to March 31. The south basin's suspension of small mesh fishing is renewed on an annual basis.

Fisheries Branch assessment (Klein 2023)

The stock assessment uses Bayesian surplus production models that include biomass dynamics, run via the software program CMSY++ (Froese et al. 2021). As described in North/South Consultants (2022):

> *Surplus production modelling (SPM) is commonly used for data and capacity-limited (DCL) fisheries. SPM captures somatic growth (biomass), reproduction (recruitment), natural mortality, and density-dependent processes with two parameters, the intrinsic rate of population increase (r) and carrying capacity (K). SPM uses a time series of stock abundance, usually based on effort (e.g., catch rate) as a surrogate for stock abundance, and fish catch (e.g., total biomass; B_t) to calibrate a simple two-parameter production model (see Schaefer 1954) that provides estimates of current stock abundance, target stock abundance, and maximum sustainable yield (MSY). While an underlying assumption of SPMs is that the shape of the B_t / B_{MSY} curve is symmetric, this may not always hold true (see Pella and Tomlinson 1969; Fox 1970). Further in SPM, both r and K, which are used to determine B_{MSY}, are influenced by the type of density dependent response curve (Brännström and Sumpter 2005) where the degree of compensation defines a continuum between contest and scramble competition (Sheperd 1982).*

MSY is calculated as one quarter the product of *r* and *K,* parameters that are negatively correlated with each other.

Improvements in fishing efficiency, also referred to as effort creep, was accounted for in the stock assessment. Effort creep was assumed to be 1%, which is on the lower end of effort creep estimates (Palomares and Pauly 2019). This value is thought to be appropriate given the level of technological advances that have taken place in the fishery, such as a change in net materials from twisted nylon to monofilament throughout the 1990s, increasingly supple monofilaments, more powerful snowmobiles, electric jigger boards, more affordable nets, and more affordable and reliable augers (Klein 2023).

Two main indices of abundance are used in the models: (1) an abundance index estimated from the Lake Manitoba index netting program, which provides fishery-independent data; and (2) CUE calculated from commercial fishery data. The models estimate biomass (*B*) and harvest rates (*H*) as a measure of fishing mortality (*F*). Although the model outputs are technically harvest rates, calculated as catch divided by estimated biomass with no direct accounting for age or size-specific depletion, we will hereafter refer to harvest rate as *F* in some instances, because the model generated figures use *F* instead of *H* in their notation.

The lake-wide assessment using commercial catch data (DCRs for fishing years from 1996 to 2022) had a mean estimate of carrying capacity (*K*) for the whole of Lake Manitoba of 8869 tonnes (t), with a standard deviation of 2912 t. The median estimate was 8301 t (95% CI = 4806 t – 16,100 t). Because the Schaefer model assumes a symmetrical logistic growth function, the biomass required to produce the maximum sustainable yield (B_{MSY}) was therefore 4151 t. Using the convention that the point of recruitment impairment (PRI) is half of B_{MSY}, the biomass at the point of recruitment impairment was 2075 t. The median estimated intrinsic growth rate (*r*) was 0.302 (95% CI: 0.199 – 0.461).

The model suggested that biomass exceeded the PRI starting in about 2003 and started exceeding B_{MSY} in 2010, noting that pre-2010 estimates of biomass were likely biased by a strong 2005 year class (Klein 2023). The biomass in 2022 (B_{2022}) was estimated to be 5851 t, exceeding B_{MSY} with 99.8% probability and exceeding PRI with complete (>99%) certainty (Figure 2). However, the model did not fit the data very well for 2021 and 2022; fits improved when the time series was truncated to the year 2020. In the truncated model, the estimated stock biomass in 2020 exceeded B_{MSY} with 91% probability (Klein 2023).

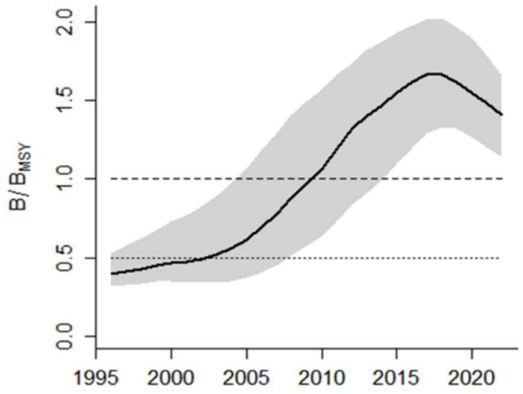

Figure 2. Estimated B/B_{MSY} for Lake Manitoba Walleye (lake-wide) over time, using commercial CUE as the abundance index. The grey shaded area represents the 95% confidence interval of the estimates. Source: Klein 2023.

The basin-specific models used the same data as the lake-wide model, except that data from deliveries made to the following packing sheds were excluded: the Eddystone and Vogar packing sheds, which are located near the Narrows area between the basins; and packing sheds not located adjacent to Lake Manitoba. Results from these models indicated that both the north area and south basin stocks are above their respective PRIs with complete certainty. The north area biomass showed a steady increase and exceeded PRI starting around 2007 (Figure 3). In the south basin, estimated Walleye biomass did not start exceeding PRI until 2014 (Figure 3), just one year after the fishers stopped using 76 mm mesh. These models suggested that B_{2022} was greater than B_{MSY} for both the south basin and north area, at 98% and 88% probability, respectively. Retrospective analyses for the basin-specific models were more stable than for the lake-wide model (Klein 2023).

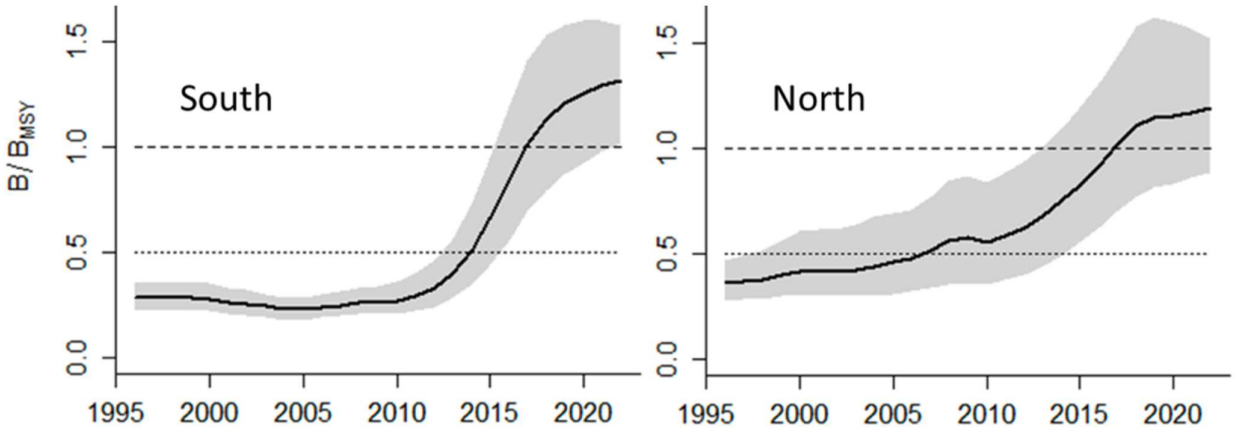

Figure 3. Estimated B/B_{MSY} for Lake Manitoba Walleye in the south basin (left panel) and north area (right panel) over time, using commercial CUE as the abundance index. The grey shaded area represents the 95% confidence interval of the estimates. Source: Klein 2023.

The stock assessment models were also run using index netting data as the measure of abundance. The lake-wide index netting-based SPM was heavily influenced by the north basin index catch over the most recent eight years of the time series. From 2015 to 2022, 128 north area sets were made, compared to only 58 sets in the south basin (Klein 2023). Nonetheless, the overall results were similar to those from the lake-wide model based on commercial CUE. The estimated K was 8090 t (95% CI: 3970 t – 16,746 t); i.e. B_{MSY} = 4045 t. The estimated r was higher than that from the commercial CUE model at 0.437 (95% CI: 0.255 – 0.750), suggesting greater optimism regarding resiliency of the stock. The estimated B_{2022} of 4428 t (95% CI: 1979 t – 8373 t) exceeded the PRI with complete certainty and

exceeded B_{MSY} with 70.6% probability (Figure 4). The index netting CUE model fit the catch data better than the commercial CUE model (Klein 2023).

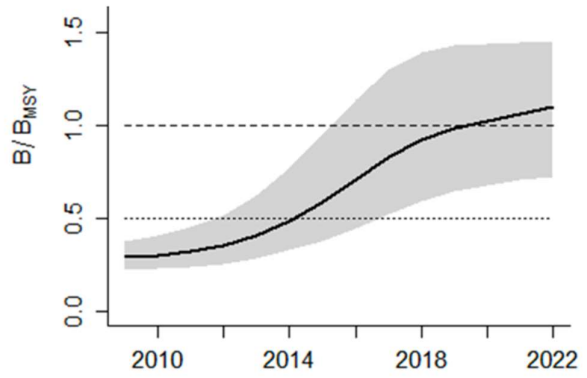

Figure 4. Estimated B/BMSY for Lake Manitoba Walleye (lake-wide) over time, using index netting CUE as the abundance index. The grey shaded area represents the 95% confidence interval of the estimates. Source: Klein 2023.

Index netting CUE was used to run basin-specific models as well. As with the commercial CUE models, south basin and north area Walleye stocks were estimated to be above PRI with complete certainty (Figure 5). The north area result was very similar to the result from the commercial CUE model. The south basin result was much less optimistic about the estimated biomass compared to commercial CUE model, due to missing data in the most recent eight years of the time series. In addition, the three most recent years of data available, 2018, 2020, and 2022, showed a declining trend (Figure 5). Retrospective analyses for the basin-specific models were more stable than for the lake-wide model (Klein 2023).

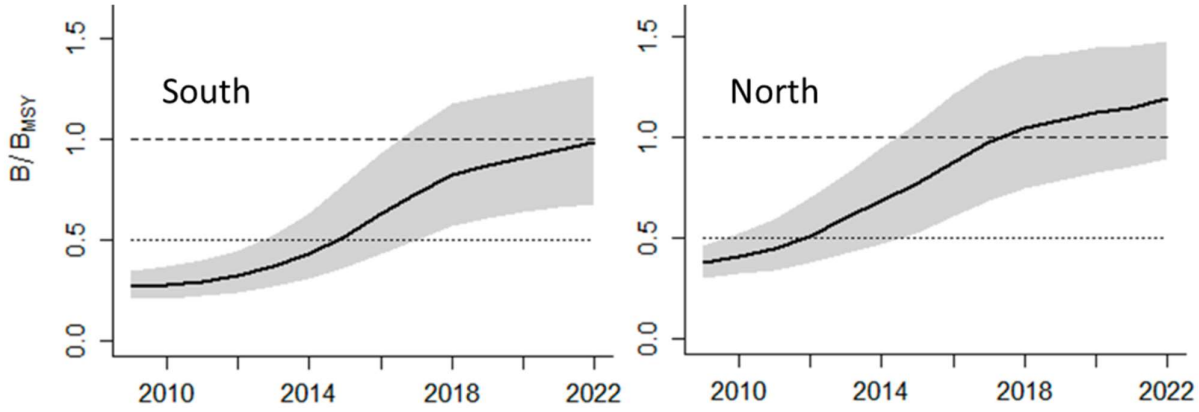

Figure 5. Estimated B/B_{MSY} for Lake Manitoba Walleye in the south basin (left panel) and north area (right panel) over time, using index netting CUE as the abundance index. The grey shaded area represents the 95% confidence interval of the estimates. Source: Klein 2023.

7.4.1.2. Fishery operations and management overview

Fishing areas and seasons

The Lake Manitoba commercial gillnet fishery is managed through a total quota of 907.2 t for Walleye and Sauger combined. Currently, minimum allowable mesh size ranges from 95 mm (3 ¾") to 127 mm (5"). In past years (~1985 to 2001 in the north area, and 1985 to 2013 in the south basin), smaller minimum mesh sizes (76 mm) were used. Actual distributions of mesh sizes are not closely monitored, but fisheries management staff believe that most of the fishers are using 95 mm mesh, the smallest size permitted (Klein 2023). Commercial fishers are required to have licenses. To acquire a license, a fisher must be 18 years or older and live in one of the Rural Municipalities adjacent to Lake Manitoba. Once a fisher acquires a license, they can maintain it even if they move farther away from the lake. A licensed fisher may fish anywhere on the lake, although they normally do not fish too far from their residences to minimize time and transportation (fuel) costs.

The fishery operates in winter under ice. Licensed fishers set their nets through the ice starting when ice makes, after November 1st. The winter season ends March 31st. Fishers lift their nets every one to seven days and remove the fish from the gillnets. Depending on the catch, the fisher elects to either leave the net in place or move it to a new location.

Fishers may dress their catch on the lake or when they return to shore. Fishers may cull (discard) target and bycatch species on the water, and additional culling may occur when the fisher delivers their catch. Fishers may not leave any gear in the water when there is no active season underway. Discards are not regulated.

Fishing gear and vessels

The only gear type used in the UoAs is set gillnets (Figure 6). Most gillnets are 80 to 100 yards in length. The maximum allowable net yardage per license is 7400 m (8000 yards). There is no regulation governing net depth (height of the wall). The height of the net wall varies depending on the depth of water being fished. Fishers prefer to fish as much of the water column as possible while minimising the risk of having the net freeze into the bottom of the ice. Hanging ratio and web color are also not prescribed.

Commercial fishing licenses list conditions that fishers must adhere to, including minimum allowable gillnet mesh size (stretch measure). Per license conditions, fishers may only set through the ice. When ice is sufficiently thick, fishers select locations to set their nets. They make a hole with an auger, or sometimes a large chisel. The fisher then inserts a jiggerboard attached to a running line through the hole. The board floats up against the ice and is oriented in the direction the fisher wishes to set his net. The jiggerboard travels under the ice for the length of the net that is to be set, whereupon the fisher or their assistant locates the jiggerboard and makes a second hole at its location. A net is attached to the running line and then pulled under the ice to the other hole. Both ends of the net are tied to downlines by their bridles. The downline connects an anchor stone to the stake above the ice. The second hole is used as the start of the next net set in the string with both net bridles tied to the same downline. Figure 6 and Figure 7 show some gillnet components and how they are set up under the ice.

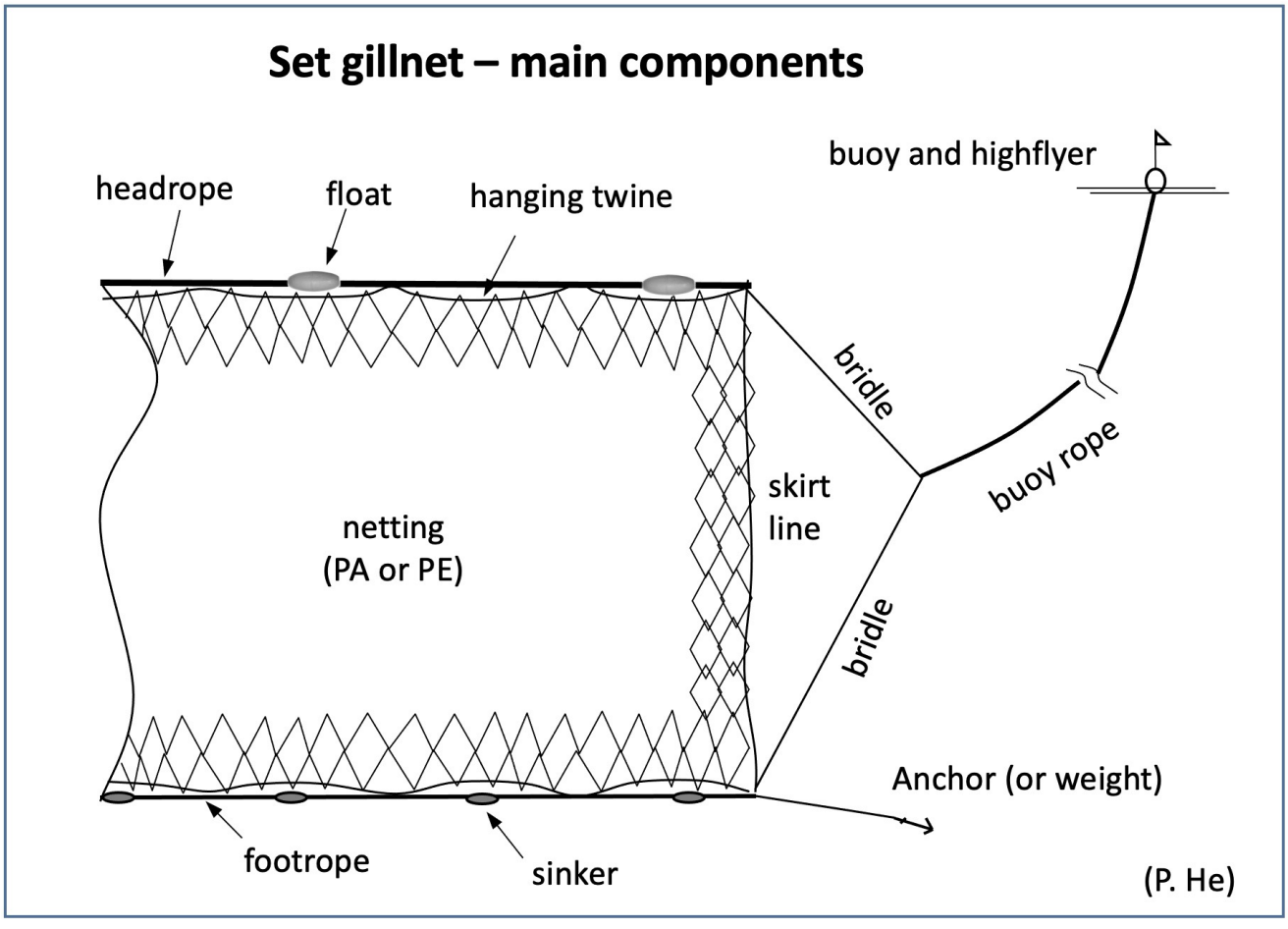

Figure 6. Diagram of a standard set gillnet. Source: FAO.

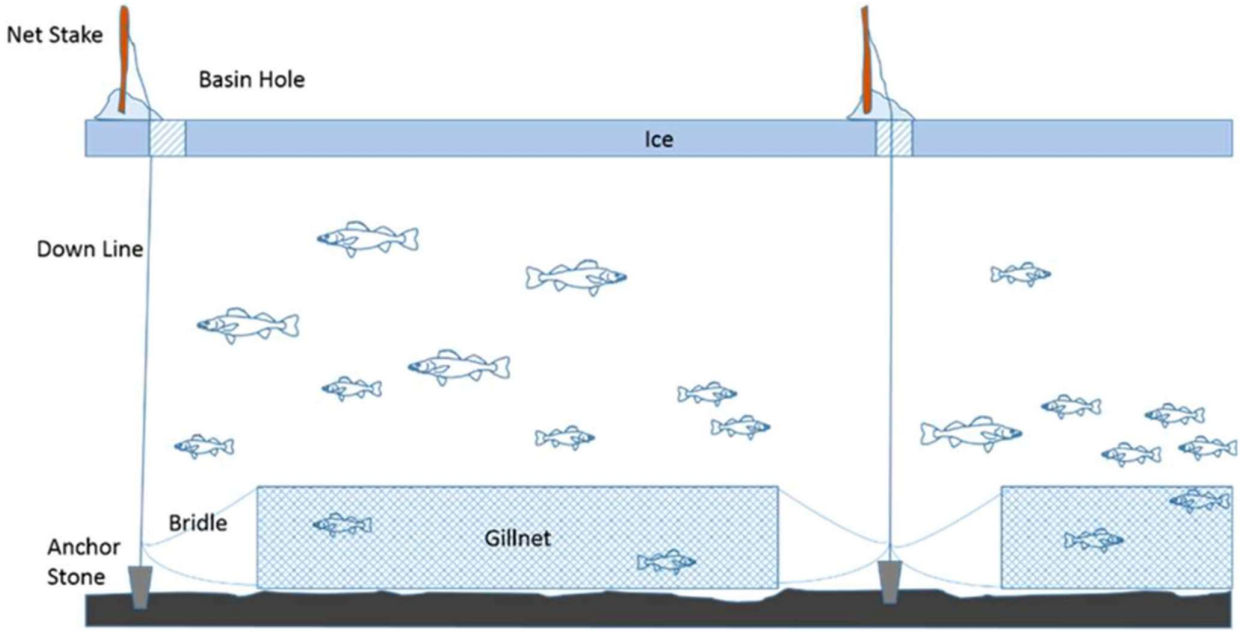

Figure 7. Diagram of gillnet setup under the ice. Source: Fisheries Branch, Manitoba.

All net stakes above the ice must be marked with the fisher's identifying number, but there is no obligation to mark any of the submerged gear. Under ice, anchor stones weight less than 1-5 pounds are used with short bridles. Nets are usually set directly on the bottom substrate.

When the fisher is ready to lift the net, typically after 1 to 7 days, they break open the ice that has reformed in the hole, lift the downline out of the water, and untie the net. They do the same thing at the other end of the net and tie the running line onto the net end at the far hole. The net is lifted through the near hole where fish are removed from the net as it comes out of the water. When the net has been picked clean, the running line is used to draw the net back under the ice, the bridles are retied to the downlines, and the anchor stones are sent back down the holes.

Fish may receive primary processing on the lake where the offal is left on the ice and is consumed by ravens, eagles, wolves, and coyotes. Alternatively, fish may be processed at the fish packing shed if facilities are available. Fish are graded and weighed, and the fisher receives a DCR as a receipt of sale.

Fishers take tracked snow vehicles (e.g. snowmobiles pulling toboggans or bombardiers), all-terrain vehicles, or trucks to get to their fishing sites. Fishers check their nets after one to six nights of soak time, as the catch stays fresh for a long time under the ice. The catch is delivered to packing sheds on the day of lifting, or the next day.

Harvest strategy

The current harvest strategy for Lake Manitoba is based on four input measures and a lake-wide quota of 907.2 t. There are no harvest control rules (HCRs) that are responsive to the state of the stock. The 907.2 t quota is for any combination of Walleye and Sauger (*Sander canadensis*) roundweight. The input measures are limited access through the commercial licensing system, a closed season from April 1st until first ice in November, allowable mesh sizes between 95 mm and 127 mm stretch measure, and a maximum allowable net yardage per license of 7400 m. In 2015, 554 fishers were eligible to obtain fishing licenses (Klein 2020). In practice, many fewer actually fish in a given year. At the fishery's nadir, around 2009, only 104 fishers delivered any production at all (Klein 2023). Fishers decide whether to participate in the fishery based on fish prices, abundance, operating costs, and the availability of competing economic opportunities. Importantly, there is a large amount of latent fishing power in the fishery that is rarely exercised. In 2023, Manitoba Natural Resources and Northern Development, under EDITNR (Manitoba Department of Economic Development, Investment, Trade, and Natural Resources), began a program to buy back and remove some commercial licenses from the fishery. As of August 2023, 71 licenses had been surrendered for CAD $7000 compensation each. Manitoba Natural Resources and Northern Development is aiming to buy back a total of one hundred licenses.

The quota of 907.2 t combined Walleye and Sauger roundweight was decided during the 1980s as part of a suite of fishery reforms. The quota, roughly equal to two million pounds roundweight, was a reduction from a former combined species quota of five million pounds. No clear rationale for how managers landed on the two million pound quota appears to be available, other than an understanding that the five million pound quota could lead to overfishing. The quota was exceeded three times early on after its adoption; in 1988, 1989, and 1991 (Figure 8). It was also exceeded in the 2022-2023 fishing year.

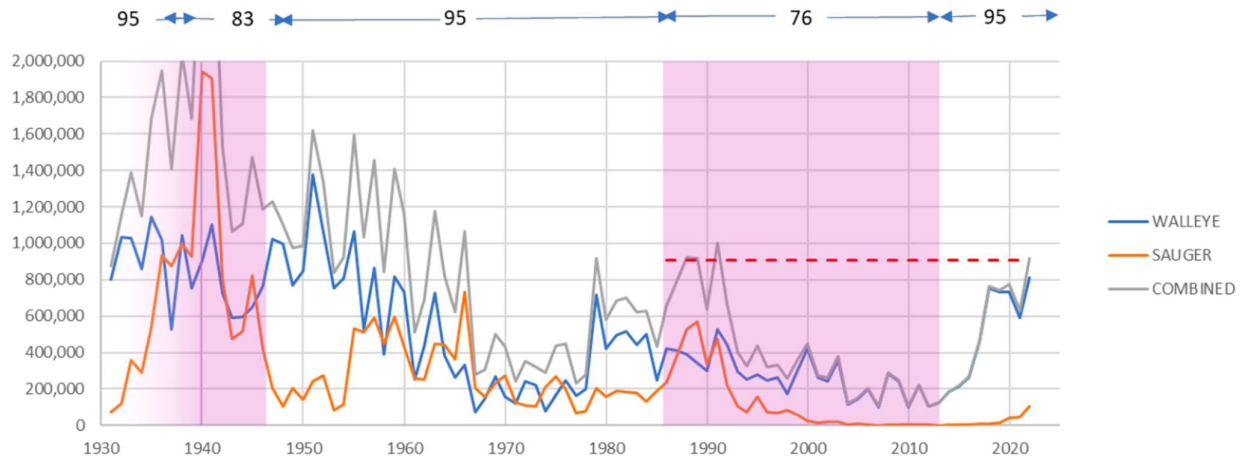

Figure 8. Lake Manitoba commercial Walleye (blue) and Sauger (orange) production from the 1931 fishing year to the 2022/23 fishing year. The red dashed line is the modern quota for the combined deliveries of the two species. Numbers above the graph are the minimum allowable mesh sizes (in mm) used in the fishery. Shaded areas of the graph indicate periods when small mesh fishing was occurring. Source: Klein 2023.

Monitoring is in place to determine whether the harvest strategy is working. Monitoring components consist of DCR data, index netting program data, and surplus production modelling. The index netting program data can also be used to calculate spawning potential ratio (SPR).

7.4.2. Catch profiles

Figure 9 and Figure 10 show time series of commercial deliveries of Walleye in Lake Manitoba.

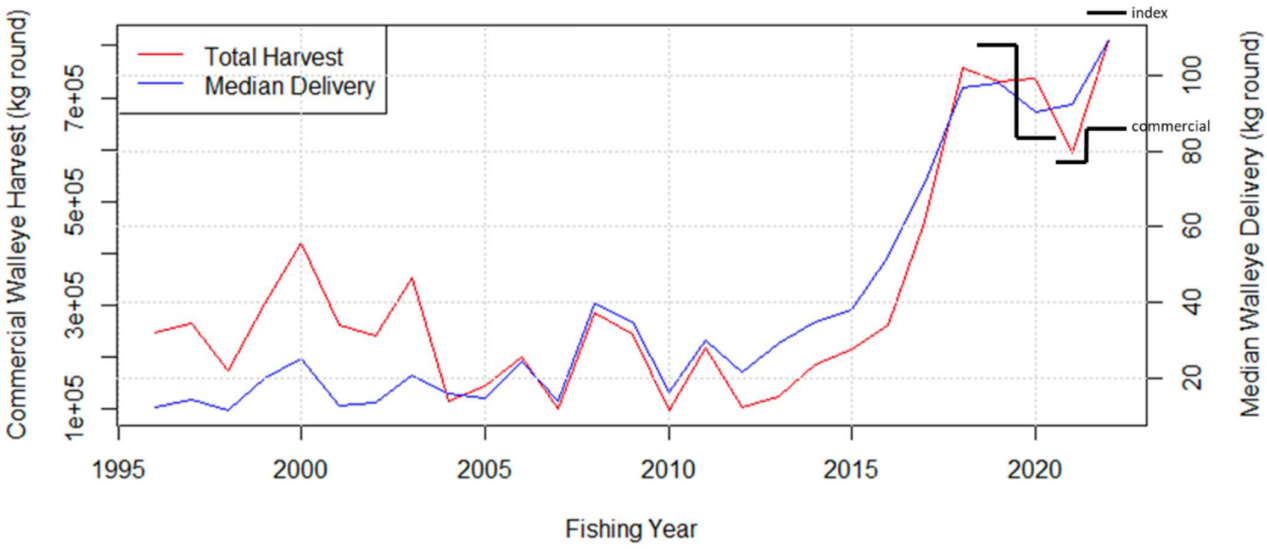

Figure 9. Lake Manitoba commercial Walleye deliveries from 1996 to 2022. Black lines in the upper right represent the recommended allowable harvest of 797 tonnes for the 2019-20 fishing year and 612 t for the 2020-21 fishing year. Source: Klein 2023.

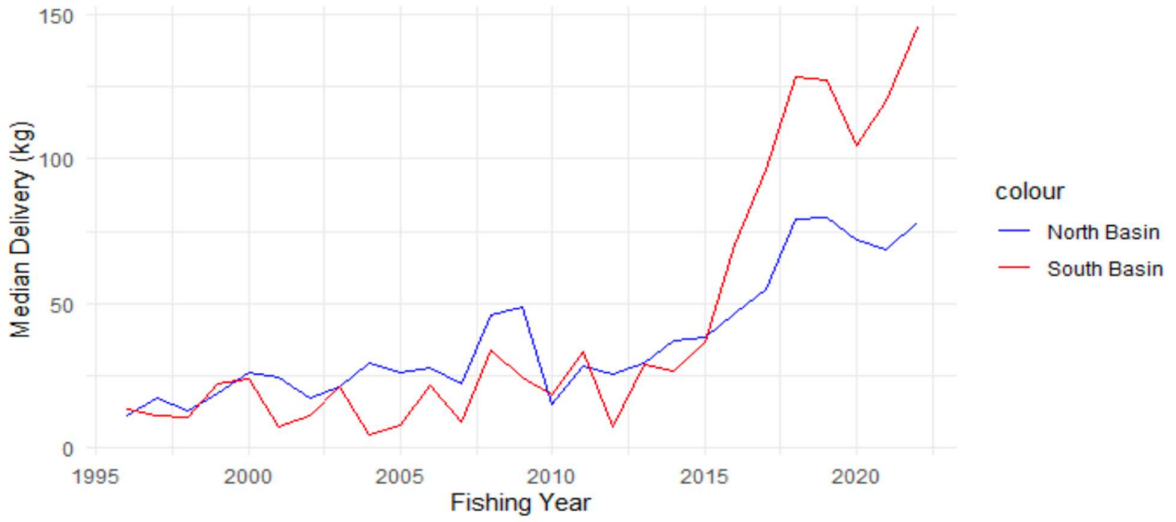

Figure 10. Differences in median Walleye delivery size (roundweight equivalents) declared on daily catch records. Source: Klein 2023.

7.4.3. Total Allowable Catch (TAC) and catch data

This fishery is not managed by TAC, though there is a lake-wide, multi-species quota of 907.2 t. Klein (2020) recommended a harvest of 797 tonnes (t) of Walleye for the 2019-20 fishing year, and 612 t for the 2020-21 fishing year. The fishery produced 732 t and 736 t in those years (Klein 2023).

Table 9: Catch data for the UoA.

Lake Manitoba Walleye (UoA 1)	Year	Amount
TAC	n/a	n/a
UoA share of TAC	n/a	n/a
Total catch by UoA (most recent year)	Year (2020-21)	732 t
Total catch by UoA 1 (second most recent year)	Year (2019-20)	736 t

7.4.4. Principle 1 Performance Indicator scores and rationales

PI 1.1.1 – Stock status

PI 1.1.1		The stock is at a level that maintains high productivity and has a low probability of recruitment overfishing		
Scoring issue		**SG 60**	**SG 80**	**SG 100**
a	**Stock status relative to recruitment impairment**			
	Guidepost	It is **likely** that the stock is above the point of recruitment impairment (PRI).	It is **highly likely** that the stock is above the PRI.	There is a **high degree** of certainty that the stock is above the PRI.
	Met?	**Yes**	**Yes**	**Yes**
Rationale		**SG60, 80, and 100 are met** because there is a high degree of certainty that the stock is above the PRI**.** Stock reference points were determined in terms of B_{MSY} and estimated using surplus production models (SPMs). Because the SPM based on index netting CUE fit the catch data better than the commercial CUE model (Klein 2023), we focus on the index netting model results here. The lake-wide, index netting-based SPM was heavily influenced by the north basin index catch over the most recent eight years of the time series. From 2015 to 2022, 128 north area sets were made, compared to only 58 sets in the south basin (Klein 2023). Nonetheless, the overall results were similar to the those from the lake-wide model based on commercial CUE. The estimated K was 8090 t (95% CI: 3970 t – 16,746 t); i.e. B_{MSY} = 4045 t. The estimated r was higher than that from the commercial CUE model at 0.437 (95% CI: 0.255 – 0.750), suggesting greater optimism regarding resiliency of the stock. The estimated B_{2022} of 4428 t (95% CI: 1979 t – 8373 t) exceeded the PRI with complete certainty (Figure 4).		
b	**Stock status in relation to achievement of maximum sustainable yield (MSY)**			
	Guidepost		The stock is at or fluctuating around a level consistent with MSY.	There is a high degree of certainty that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years.
	Met?		**Yes**	**No**
Rationale		**SG80 is met** because the stock is at or fluctuating around a level consistent with MSY. According to the lake-wide, index netting-based SPM, the estimated B_{2022} of 4428 t (95% CI: 1979 t – 8373 t) exceeded B_{MSY} with 70.6% probability (Figure 4). **SG100 is not met** because estimated biomass only started exceeding B_{MSY} in 2020, and the 70.6% probability of $B_{2022}/B_{MSY} > 1$ does not reflect a high degree of certainty, generally defined by the MSC as ≥ 95% probability in the context of P1 (SA2.12). Nonetheless, the overall trend of stock abundance appears to steadily increasing and stable in recent years.		

Stock status relative to reference points			
	Type of reference point	Value of reference point	Current stock status relative to reference point
Reference point used in scoring stock relative to PRI (SIa)	$½B_{MSY}$	2023 t (index netting model)	$B_{2022}/½B_{MSY}$ = 2.19
Reference point used in scoring stock relative to MSY (SIb)	B_{MSY}	4045 t (index netting model)	B_{2022}/B_{MSY} = 1.09

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**
Data-deficient? (Risk-Based Framework needed)	**No**

PI 1.1.2 – Stock rebuilding

PI 1.1.2		Where the stock is reduced, there is evidence of stock rebuilding within a specified timeframe		
Scoring issue		**SG 60**	**SG 80**	**SG 100**
a	**Rebuilding timeframes**			
	Guide post	A rebuilding timeframe is specified for the stock that is the **shorter of 20 years or 2 times its generation time**. For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.		The shortest practicable rebuilding timeframe is specified that does not exceed **1 generation time** for the stock.
	Met?	**N/A**		**N/A**
Rationale		This PI is not applicable because PI 1.1.1 did not score less than 80. The stock does not appear to be reduced, based on the most recent stock assessment (Klein 2023).		
b	**Rebuilding evaluation**			
	Guide post	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within the specified timeframe.	There is **evidence** that the rebuilding strategies are rebuilding stocks, or it is **likely** based on simulation modelling, exploitation rates, or previous performance that they will be able to rebuild the stock within the **specified timeframe**.	There is **strong evidence** that the rebuilding strategies are rebuilding stocks, or it is highly likely based on simulation modelling, exploitation rates, or previous performance that they will be able to rebuild the stock within the **specified timeframe**.
	Met?	**N/A**	**N/A**	**N/A**
Rationale		See SI(a) above.		

Draft scoring range	**N/A**
Information gap indicator	**Information sufficient to score PI**

PI 1.2.1 – Harvest strategy

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
Scoring issue		**SG 60**	**SG 80**	**SG 100**
a	**Harvest strategy design**			
	Guide post	The harvest strategy is **expected** to achieve stock management objectives reflected in PI 1.1.1/PI 1.1.1A SG80.	The harvest strategy is **responsive** to the state of the stock and the elements of the harvest strategy **work together** towards achieving stock management objectives reflected in PI 1.1.1/PI 1.1.1A SG80.	The harvest strategy is **responsive** to the state of the stock and is **designed** to achieve stock management objectives reflected in PI 1.1.1/PI 1.1.1A SG80.
	Met?	**No**	**No**	**No**
Rationale		**SG60 is not met** because there is not a harvest strategy in place that is expected to achieve stock management objectives reflected in PI 1.1.1 SG80. The current harvest strategy for Lake Manitoba is based on four input measures and a lake-wide, multi-species quota of 907.2 t for any combination of Walleye and Sauger roundweight. The input measures are: (1) limited access through the commercial licensing system, (2) a closed season from April 1st until first ice in November, (3) allowable mesh sizes between 95 mm and 127 mm stretch measure, and (4) a maximum allowable net yardage per license of 7400 m. These measures allow for some control of fishing input and output but do not constitute a cohesive harvest strategy that is expected to manage fishing effort on target stocks in a responsive manner. In addition, there is a large amount of latent fishing power in the fishery, and no defined management mechanism to limit that fishing power if the stock were to require rebuilding. As an illustrative example, 554 fishers were eligible to obtain fishing licenses in 2015 (Klein 2020), but only 104 fishers delivered fish in 2009 (Klein 2023). In other words, overfishing could occur if all eligible commercial fishers started fishing regularly. Fishers decide whether to participate in the fishery based on fish prices, abundance, operating costs, and the availability of competing economic opportunities. In recent years, stock sustainability goals have become more incorporated into harvest management. In 2023, the Fisheries Branch, Province of Manitoba initiated a program to buy back and remove some commercial licenses from the fishery, which is voluntary on the part of the license holders. As of August 2023, 71 licences had been surrendered for CAD $7000 compensation each (Klein 2023). The Fisheries Branch is aiming to buy back a total of one hundred licenses.		
b	**Harvest strategy evaluation**			
	Guide post	The harvest strategy is **likely** to work based on prior experience or plausible argument.	The harvest strategy has been **tested** and is expected to meet the objectives reflected in PI 1.1.1/ PI 1.1.1A SG80 or there is evidence that the harvest strategy is achieving its objectives reflected in PI 1.1.1/ PI 1.1.1A SG80.	The performance of the harvest strategy has been **evaluated** and evidence exists to show that it is achieving the objectives reflected in PI 1.1.1/ PI 1.1.1A SG80, including being clearly able to maintain stocks at target levels.
	Met?	**No**	**No**	**No**
Rationale		**SG60 is not met** because there is limited evidence that the harvest strategy is likely to work. The lake-wide quota of 907.2 t combined Walleye and Sauger roundweight was put in place during the 1980s as part of a suite of fishery reforms, and there is no clear explanation of how managers decided on the quota amount. The quota was exceeded three times shortly following its adoption; in 1988, 1989, and 1991. In the most recent fishing year (2022/23), the quota was exceeded again, producing the highest deliveries of Walleye since 1959.		

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
		Although this recent catch was high, and the most recent stock assessment indicates that overfishing is not occurring (Klein 2023), this may be partly due to the fact that latent fishing power is not being completely utilized.		
c	**Harvest strategy monitoring**			
	Guide post	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	Met?	**Yes**		
Rationale		**SG60 is met** because monitoring is in place that is expected to determine whether the harvest strategy is working**.** Monitoring components consist of DCR data, index netting program data, and stock assessments based on surplus production modelling. The index netting program data can also be used to calculate spawning potential ratio.		
d	**Harvest strategy review**			
	Guide post			The harvest strategy is periodically reviewed and improved as necessary.
	Met?			**No**
Rationale		**SG100 is not met** because there is limited evidence to conclude that the harvest strategy is periodically reviewed and improved as necessary. Nonetheless, it is worth noting that the Fisheries Branch regularly monitors commercial fishing activity and catch information in a manner that can be used to evaluate effectiveness of the harvest strategy.		
e	**Shark finning**			
	Guide post	There is a **high degree of certainty** that shark finning is not taking place.		
	Met?	**N/A**		
Rationale		There are no sharks in Lake Manitoba.		
f	**Review of alternative measures**			
	Guide post	There has been a review of **alternative measures** to minimise UoA-related mortality of unwanted catch of the target stock.	There is a **review** every 5 years of **alternative measures** to minimise UoA-related mortality of **unwanted catch** of the target stock and they are implemented as appropriate.	There is a **review** that happens every 2 years of **alternative measures** to minimise UoA-related mortality of **unwanted catch** of the target stock, and they are implemented, as appropriate.
	Met?	**NA**	**NA**	**NA**
Rationale		There is no unwanted catch of the UoA target species, Walleye. All sizes of Walleye that can be caught in mesh sizes between 95 mm and 127 mm are saleable. Different size grades of Walleye command different prices, but because all the fishers produce against a lake quota that is rarely met, there is no motivation to discard any of the Walleye catch.		

Draft scoring range	**<60**
Information gap indicator	**Information sufficient to score PI**

PI 1.2.2 – Harvest control rules and tools

PI 1.2.2		There are well-defined and effective HCRs in place		
Scoring issue		**SG 60**	**SG 80**	**SG 100**
a	**HCRs design and application**			
	Guide post	**Generally understood** HCRs are **in place** that are **expected to reduce the exploitation rate as the PRI is approached.**	**Well-defined** HCRs **are in place** that **ensure** the exploitation rate is reduced as the PRI is approached, and are expected to keep the stock **fluctuating around** a target level consistent with (or above) MSY, or for key LTL species at levels consistent with ecosystem needs.	The HCRs are expected to keep the stock **fluctuating at or above** a target level consistent with MSY, or another more appropriate level **most** of the time, taking into account the ecological role of the stock.
	Met?	**No**	**No**	**No**
Rationale		**SG60 is not met** because HCRs are not in use for this fishery, nor have they been applied in the past. Fish biological data are regularly collected through the index netting program, and indices related to CUE, SSB, and fish ages/sizes can be estimated. However, these indices are not currently used to trigger reductions in exploitation rate as PRIs of the stocks are approached, in a pre-determined manner.		
b	**The robustness of HCRs to uncertainty**			
	Guide post		The HCRs are likely to be robust to the main uncertainties.	The HCRs take account of a **wide** range of uncertainties including the ecological role of the stock, and there is **evidence** that the HCRs are robust to the main uncertainties.
	Met?		**No**	**No**
Rationale		**SG80 is not met** because there are no HCRs that are likely to be robust to the main uncertainties.		
c	**Evaluation of HCRs**			
	Guide post	There is **some evidence** that tools used or **available** to implement HCRs are appropriate and effective in controlling exploitation.	**Available evidence indicates** that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.	**Evidence clearly shows** that the tools in use are effective in achieving the exploitation levels required under the HCRs.
	Met?	**Yes**	**No**	**No**
Rationale		**SG60 is met** because there is some evidence that tools are available to implement HCRs, that would be appropriate and effective in controlling exploitation. These tools include the indices described under SI(a), and the authority of the Fisheries Branch to adjust quotas on an annual basis and to close the fishery as quotas are reached. **SG80 is not met** because available evidence does not indicate that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs. As one example, data from the index netting program was used to estimate spawning potential ratio (SPR), an indicator of fishing mortality that focuses on females only. An SPR of 35% is assumed to reflect exploitation being at the MSY level. For both the south basin and north area, estimated SPR was below 35% (Klein 2023). SPR in the south basin started falling below at 35% age 5, which reflects the high fishing mortality (0.70) for this stock. SPR in the north area fell below 35% starting around age 11. On the whole, available information on fishing mortality suggests that existing harvest controls are not fully effective at achieving targeted exploitation levels.		

Draft scoring range	**<60**
Information gap indicator	**Information sufficient to score PI**

PI 1.2.3 – Information and monitoring

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring issue		SG 60	SG 80	SG 100
a	**Range of information**			
	Guide post	**Some** relevant information related to stock structure, stock productivity, and fleet composition is available to support the harvest strategy.	**Sufficient** relevant information related to stock structure, stock productivity, fleet composition, and other data are available to support the harvest strategy.	A **comprehensive range** of information (on stock structure, stock productivity, fleet composition, stock abundance, UoA removals, and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
	Met?	**Yes**	**Yes**	**No**
Rationale		**SG60 is met** because some relevant information related to stock structure, stock productivity, and numbers of commercial licenses is available to support the harvest strategy. The licensing system provides a fairly good picture of the number of fishers in the fishery. Information collected through research, the index netting program and DCRs is used to evaluate stock structure and productivity. Commercial catch information is collected in the form of daily catch records (DCRs), which record the date, fisher identification, and the weight of the catch by species, form, and size grade. **SG80 is met** because sufficient relevant information related to stock structure, stock productivity, and other data are available to support the harvest strategy. In addition to fishery-dependent data collected via DCRs, the Fisheries Branch operates an annual index netting program to produce a fishery-independent index of abundance. Index netting is carried out on Lake Manitoba in August and September, typically on an annual basis. **SG100 is not met** because it cannot be said that a comprehensive range of information is available, particularly with respect to environmental information.		
b	**Monitoring**			
	Guide post	Stock abundance and UoA removals are monitored and **at least 1 indicator** is available and monitored with sufficient frequency to support the harvest strategy.	Stock abundance and UoA removals are **regularly monitored at a level of accuracy and coverage consistent with the harvest strategy**, and **1 or more indicators** are available and monitored with sufficient frequency to support the harvest strategy.	**All information** required by the harvest strategy is monitored with high frequency and a high degree of certainty, and there is a good understanding of the inherent **uncertainties** in the information (data) and the robustness of assessment and management in dealing with this uncertainty.
	Met?	**Yes**	**Yes**	**No**

Rationale		**SG60** is met because stock abundance and UoA removals are monitored, and at least 1 indicator is available and monitored with sufficient frequency to support the harvest strategy. **SG80 is met** because stock abundance and UoA removals are regularly monitored at a level of accuracy and coverage consistent with the harvest strategy, and 1 or more indicators are available and monitored with sufficient frequency to support the harvest strategy. Fishery dependent data are collected through DCRs, whilst fishery-independent data are collected through the index netting program. These data can be used to calculate a variety of CUE and abundance indices. **SG100 is not met** because not all information required by the harvest strategy is monitored with high frequency and a high degree of certainty. One significant gap in the commercial catch data is fishing effort, as fishers are not required to report related information such as number of nets used, soak times, etc.		
c	**Comprehensiveness of information**			
	Guide post		There is good information on all other fishery removals from the stock.	
	Met?		**No**	
Rationale		**SG80 is not met** because information on some fishery removals from the stock may not be available. The 2020 Lake Manitoba Stock assessment (Klein 2020) included estimates of Walleye fishery removals from subsistence and recreational angler fishing. However, there does not appear to be much information on discards, though discards are expected to be limited.		

Draft scoring range	**60-79**
Information gap indicator	**Information sufficient to score PI**

PI 1.2.4 – Assessment of stock status

PI 1.2.4		There is an assessment of the stock status		
Scoring issue		**SG 60**	**SG 80**	**SG 100**
a	**Appropriateness of assessment to stock under consideration**			
	Guide post		The assessment is appropriate for the stock and for the harvest strategy.	The assessment takes into account the major features relevant to the biology of the species and the nature of the UoA.
	Met?		**Yes**	**No**
Rationale		**SG80 is met** because the assessment is appropriate for the stock and for the harvest strategy. The Lake Manitoba Walleye assessment uses both fishery-dependent and fishery-independent data. The methods are appropriate given the nature of data the collected. For Lake Manitoba Walleye, the most recent stock assessments were conducted in 2020 and 2023. **SG100 is not met** because there is not sufficient information to ensure that the assessment takes into account the major features relevant to the biology of the species and the nature of the UoA. Although the assessment takes into account some features relevant to the biology of the species, other features are lacking. For example, potential environmental effects on carrying capacity have not been fully accounted for.		
b	**Assessment approach**			
	Guide post	The assessment estimates stock status relative to generic reference points appropriate to the species category.	The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.	
	Met?	**Yes**	**Yes**	
Rationale		**SG60 is met** because the assessment estimates stock status relative to generic reference points appropriate to the species category. The generic reference points used include an SPR of 35%. **SG80 is met** because the assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated. B_{MSY} was estimated for the lake-wide stock, as well as for the north area and south basin, using two of the different indices of abundance available.		
c	**Uncertainty in the assessment**			
	Guide post	The assessment **identifies major sources** of uncertainty.	The assessment **takes uncertainty into account**.	The assessment evaluates stock status relative to reference points in a **probabilistic** way.
	Met?	**Yes**	**Yes**	**Yes**
Rationale		**SG60 is met** because the assessment identifies major sources of uncertainty. For example, the assessment acknowledges that the DCR data do not reflect effort very precisely, given that no information is collected on the mesh size and soak time associated with the catch (Klein 2023). **SG80 is met** because the assessment takes uncertainty into account. One way it does so is by running and comparing models based on fishery-dependent and fishery-independent data. **SG100 is met** because the assessment evaluates stock status relative to reference points in a probabilistic way. These are reflected in the probability estimates and confidence intervals provided with the model-estimated parameters.		
d	**Evaluation of assessment**			

	Guide post			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?			**Yes**
Rationale		**SG100 is met** because the assessment has been tested, and alternative hypotheses and assessment approaches rigorously explored. For example, SPMs were run with different data sets for comparison, and a sensitivity analysis was performed with respect to one data collection year when index netting sampling was limited to the north basin. Other proxies for abundance such as spawning potential ratios were estimated.		
	Peer review of assessment			
e	Guide post		The assessment of stock status is subject to peer review.	The assessment has been **internally and externally peer** reviewed.
	Met?		**Yes**	**No**
Rationale		**SG80 is met** because stock assessments are subject to peer review within the Fisheries Branch. **SG100 is not met** because there no evidence of external review of the assessment was provided.		

Draft scoring range	**≥80**
Information gap indicator	**More information sought on:** Review processes for the Lake Manitoba Walleye stock assessment

7.5. Principle 2

7.5.1. Principle 2 background

For evaluation of management related PIs (2.1.2, 2.2.2, 2.3.2, 2.4.2), the MSC guidance (SA3.3.1) provides the following interpretations:

a. “Measures” to mean actions or tools that explicitly manage impacts on the component or indirectly contribute to management of the component under assessment having been designed to manage impacts elsewhere.
b. “Partial strategy” to mean a cohesive arrangement that may comprise 1 or more measures, an understanding of how the measures work to achieve an outcome and an awareness of the need to change the measures should they cease to be effective. A “partial strategy” may not have been designed to manage the impact on that component specifically.
c. “Strategy” to mean a cohesive and strategic arrangement that may comprise 1 or more measures and an understanding of how the measures work to achieve an outcome. A “strategy” should be designed to manage impact on that component specifically, it needs to be appropriate to the scale, intensity, and cultural context of the fishery and should contain mechanisms for the modification of fishing practices if unacceptable impacts are identified.
d. “Comprehensive strategy” to mean a complete and tested strategy made up of linked monitoring, analyses, and management measures and responses. The term is only applicable to the ETP/OOS component.

7.5.1.1. In Scope, Out of Scope (OOS), and Endangered, Threatened, or Protected (ETP) species

For the purposes of this assessment “In-scope species” are defined as those not included under Principle 1 in the Units of Assessment, and are not considered ETP/OOS species or species. This fishery does not use bait, so bait species are not considered further in this report.

MSC assessment criteria further distinguish Principle 2 species based on level of harvest. “Main” species constitute 5% or more of the total UoA catch by weight, or if the species is classified as “less resilient,” 2% or more of the total catch by weight. “Minor” species make up less than 2% of the total UoA catch.

In-scope species include non-target freshwater fish species that are caught by the commercial gillnet fishery during Walleye harvesting activities. Species composition can vary by the depth at which the gillnets are set, and the area where fishing takes place. Out-of-scope species include any non-target, non-fish species that are incidentally caught during commercial gillnet fishing activity. Endangered, threatened, or protected (ETP) species are those that are recognized by national legislation, binding international agreements (e.g. CITES), or OOS species (amphibians, reptiles, birds and mammals) that are listed in the IUCN Red List as vulnerable (VU), endangered (EN) or critically endangered (CE).

In Canada, the Canadian Species at Risk Act (SARA) is the main piece of national legislation used to recognize domestic species in need of protection. The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) was established under SARA as an independent body of experts responsible for identifying and assessing wildlife species considered to be at risk. COSEWIC's wildlife species assessments are taken into consideration by the Government of Canada when establishing the Legal List of Species at Risk (species protected under SARA).

In scope species

There is no logbook or observer program for the Lake Manitoba set gillnet fishery; thus commercial delivery and index netting data were used instead to identify in-scope species caught in the UoA fishery.

Eleven species and one species complex have been reported in commercial delivery data since 1996 (Table 10). The species complex is “mullet,” a catchall term in Manitoba for various catostomid species. In Lake Manitoba, the species that occur under the mullet category are White Sucker (*Catostomus commersoni*) Shorthead Redhorse (*Moxostoma macrolepidotum*) and Quillback (*Carpiodes cyprinus*). This broader categorization is used because fishers and buyers do not distinguish the catostomid species at first sale. Relative proportions of the different species were estimated

using data from the index netting program. The index netting program uses three mesh sizes that overlap with sizes used in the commercial fishery: 95 mm, 108 mm, and 127 mm. The total catch of mullet, by species, in the overlapping index nets from 2009 to 2022 was 83% White Sucker, 13% Shorthead Redhorse, and 4% Quillback. Mullet made up 17% of the total catch (Klein 2023). Based on these proportions, the mullet species category was assumed to mostly consist of White Sucker and was evaluated as such.

Two of the species in Table 10 are invasive in Lake Manitoba: Common Carp (*Cyprinus carpio*) and White Bass (*Morone chrysops*). White Bass contribute to bycatch in trace amounts and will not be considered further in this pre-assessment. Some carp occur as bycatch in the Walleye fishery, but most commercially caught carp are caught in a separate fishery that targets them using large 203 – 254 mm mesh gillnets, or seines. Similarly, Freshwater Drum (*Aplodinotus grunniens*) and White Sucker are targeted in fisheries besides the winter Walleye fishery. In spring, after the Walleye fishery closes, there is a trap net fishery that targets White Sucker as they ascend smaller Lake Manitoba tributaries (creeks and drains) to spawn.

Table 10. Total commercial deliveries by species for Lake Manitoba from 1996 to 2022. Source: Klein 2023.

	Burbot	Common Carp	Lake Cisco	Freshwater Drum	Goldeye	Lake Whitefish	Northern Pike	Sauger	Mullet	Walleye	White Bass	Yellow Perch	Total	Total without carp
	Lota lota	*Cyprinus carpio*	*Coregonus artedii*	*Aplodinotus grunniens*	*Hiodon alosoides*	*Coregonus clupeaformis*	*Esox lucius*	*Sander candensis*	sucker spp	*Sander vitreus*	*Morone crysops*	*Perca flavescens*		
1996	706	125,814	0	0	0	6,251	75,771	73,287	621,400	245,691	0	144,892	1,293,812	1,167,998
1997	0	309,054	0	0	0	4,008	104,423	64,833	677,973	264,304	0	177,830	1,602,425	1,293,371
1998	4,749	244,803	0	0	0	4,275	95,461	82,310	948,268	174,605	0	177,104	1,731,575	1,486,772
1999	0	443,884	0	0	0	2,903	89,719	58,127	1,172,972	302,576	0	83,651	2,153,832	1,709,948
2000	25	184,662	10	0	0	9,369	82,191	27,287	1,826,912	419,510	0	85,796	2,635,762	2,451,100
2001	46	192,624	0	0	0	9,744	71,727	14,621	1,105,576	261,307	0	444,277	2,099,922	1,907,298
2002	1,696	439,601	0	0	0	5,186	165,678	20,683	1,051,756	243,497	0	304,067	2,232,164	1,792,563
2003	2,182	186,438	0	0	0	5,977	134,329	21,838	1,111,114	358,789	0	136,146	1,956,813	1,770,375
2004	0	330,804	1,467	0	0	3,903	41,677	4,103	725,371	115,530	0	110,096	1,332,951	1,002,147
2005	0	241,028	0	0	0	3,587	70,947	7,879	446,403	145,865	0	133,055	1,048,764	807,736
2006	0	276,631	0	0	2	3,789	151,649	2,920	353,813	199,126	0	181,926	1,169,856	893,225
2007	0	79,859	0	0	0	3,363	97,177	1,247	156,614	100,767	0	241,052	680,079	600,220
2008	0	91,390	0	0	3	9,516	98,114	2,484	559,907	285,135	0	81,758	1,128,307	1,036,917
2009	0	72,460	0	0	4	6,574	89,496	4,441	331,322	243,856	0	106,743	854,896	782,436
2010	0	896	0	0	4	5,396	93,892	5,598	48,665	97,596	0	142,261	394,308	393,412
2011	0	2,283	104	0	1	7,230	165,610	3,502	280,519	218,361	3	248,370	925,983	923,700
2012	0	249	153	0	6	17,480	245,739	1,514	129,161	103,429	0	40,761	538,492	538,243
2013	0	116,340	0	3	6	17,814	306,424	994	185,186	123,891	0	16,180	766,838	650,498
2014	0	532,213	5	7,767	2	16,455	355,276	1,609	297,086	183,712	254	26,127	1,420,506	888,293
2015	0	527,102	353	0	0	32,167	388,036	2,469	497,919	216,465	0	3,195	1,667,706	1,140,604
2016	0	490,808	0	977	1	12,509	289,493	4,381	499,617	262,701	1	110	1,560,598	1,069,790
2017	0	530,429	661	191	0	54,853	311,147	6,890	365,442	458,490	0	313	1,728,416	1,197,987
2018	0	379,297	528	312	0	13,046	248,650	6,793	286,622	755,860	0	1,345	1,692,453	1,313,156
2019	0	373,154	971	0	4	15,685	166,037	12,532	225,719	730,656	0	4,473	1,529,231	1,156,077
2020	0	137,883	11,917	714	1	14,730	169,976	39,875	278,222	734,928	341	22,270	1,410,857	1,272,974
2021	0	121,596	45,099	535	0	5,692	114,480	44,621	161,763	588,675	317	32,137	1,114,915	993,319
2022	0	103,567	45,360	1,871	0	8,478	96,645	105,598	292,245	810,484	0	28,988	1,493,236	1,389,669
2018-2022 average	0	223,099	20,775	686	1	11,526	159,158	41,884	248,914	724,121	132	17,843		

Subsequent analysis by Klein (2023) identified main and minor in-scope species, using the above estimated mullet species percentages, and accounting for the fact that carp are mostly targeted in a different fishery outside of the UoA fishery. Although Sauger have only averaged 3.4% of the catch from 2018 to 2022 (Table 11), the stock is growing quickly after being overfished and may comprise at least 5% of the catch in the near future. The species highlighted in orange in Table 11 (with White Sucker representing the mullet category) were evaluated as main, in-scope species in this pre-assessment. All other species were considered minor in-scope species, noting that Lake Cisco and Yellow Perch (highlighted in yellow in Table 11) each averaged more than 1% of the total winter Walleye fishery catch by weight from 2018 to 2022.

Sauger, Lake Whitefish, and Yellow Perch have high landed values such that discards are very unlikely in the fishery. It is less certain that discards seldom occur of White Sucker and Northern Pike, which have lower landed values. Nonetheless, fishers report that they currently tend to retain these species (A. Gaudry, pers. comm., 19 March 2024). If some individuals are discarded, they are probably not discarded alive. All retained fish delivered to delivery sheds are weighed, and weights are reported via DCRs. No recordkeeping is required for discards.

Due to the lack of logbook or other monitoring data, we used productivity-susceptibility analyses (PSAs) under the MSC's Risk-Based Framework (RBF) to evaluate the risk of UoA impacts on main in-scope species. Though these species are not actively managed, some research has been conducted on them. There are acoustic tagging studies involving Lake Sturgeon, Freshwater Drum, Common Carp, Bigmouth Buffalo, and Channel Catfish in Lake Winnipeg (e.g. Enders et al. 2019).

Table 11. Percentages by weight of species in the Lake Manitoba commercial fishery. Common Carp percentages are based on the total catch; all other species' percentages are based on the total catch without carp. Source: Klein 2023.

	Burbot	Common Carp	Lake Cisco	Freshwater Drum	Goldeye	Lake Whitefish	Northern Pike	Sauger	Mullet	Walleye	White Bass	Yellow Perch
	Lota lota	*Cyprinus carpio*	*Coregonus artedii*	*Aplodinotus grunniens*	*Hiodon alosoides*	*Coregonus clupeaformis*	*Esox lucius*	*Sander candensis*	sucker spp	*Sander vitreus*	*Morone crysops*	*Perca flavescens*
1996	0.1	10.8	0.0	0.0	0.0	0.5	6.5	6.3	53.2	21.0	0.0	12.4
1997	0.0	23.9	0.0	0.0	0.0	0.3	8.1	5.0	52.4	20.4	0.0	13.7
1998	0.3	16.5	0.0	0.0	0.0	0.3	6.4	5.5	63.8	11.7	0.0	11.9
1999	0.0	26.0	0.0	0.0	0.0	0.2	5.2	3.4	68.6	17.7	0.0	4.9
2000	0.0	7.5	0.0	0.0	0.0	0.4	3.4	1.1	74.5	17.1	0.0	3.5
2001	0.0	10.1	0.0	0.0	0.0	0.5	3.8	0.8	58.0	13.7	0.0	23.3
2002	0.1	24.5	0.0	0.0	0.0	0.3	9.2	1.2	58.7	13.6	0.0	17.0
2003	0.1	10.5	0.0	0.0	0.0	0.3	7.6	1.2	62.8	20.3	0.0	7.7
2004	0.0	33.0	0.1	0.0	0.0	0.4	4.2	0.4	72.4	11.5	0.0	11.0
2005	0.0	29.8	0.0	0.0	0.0	0.4	8.8	1.0	55.3	18.1	0.0	16.5
2006	0.0	31.0	0.0	0.0	0.0	0.4	17.0	0.3	39.6	22.3	0.0	20.4
2007	0.0	13.3	0.0	0.0	0.0	0.6	16.2	0.2	26.1	16.8	0.0	40.2
2008	0.0	8.8	0.0	0.0	0.0	0.9	9.5	0.2	54.0	27.5	0.0	7.9
2009	0.0	9.3	0.0	0.0	0.0	0.8	11.4	0.6	42.3	31.2	0.0	13.6
2010	0.0	0.2	0.0	0.0	0.0	1.4	23.9	1.4	12.4	24.8	0.0	36.2
2011	0.0	0.2	0.0	0.0	0.0	0.8	17.9	0.4	30.4	23.6	0.0	26.9
2012	0.0	0.0	0.0	0.0	0.0	3.2	45.7	0.3	24.0	19.2	0.0	7.6
2013	0.0	17.9	0.0	0.0	0.0	2.7	47.1	0.2	28.5	19.0	0.0	2.5
2014	0.0	59.9	0.0	0.9	0.0	1.9	40.0	0.2	33.4	20.7	0.0	2.9
2015	0.0	46.2	0.0	0.0	0.0	2.8	34.0	0.2	43.7	19.0	0.0	0.3
2016	0.0	45.9	0.0	0.1	0.0	1.2	27.1	0.4	46.7	24.6	0.0	0.0
2017	0.0	44.3	0.1	0.0	0.0	4.6	26.0	0.6	30.5	38.3	0.0	0.0
2018	0.0	28.9	0.0	0.0	0.0	1.0	18.9	0.5	21.8	57.6	0.0	0.1
2019	0.0	32.3	0.1	0.0	0.0	1.4	14.4	1.1	19.5	63.2	0.0	0.4
2020	0.0	10.8	0.9	0.1	0.0	1.2	13.4	3.1	21.9	57.7	0.0	1.7
2021	0.0	12.2	4.5	0.1	0.0	0.6	11.5	4.5	16.3	59.3	0.0	3.2
2022	0.0	7.5	3.3	0.1	0.0	0.6	7.0	7.6	21.0	58.3	0.0	2.1
2018-2022 average	0.0	18.3	1.8	0.1	0.0	0.9	13.0	3.4	20.1	59.2	0.0	1.5

White Sucker (*Catostomus commersoni*)

The MSC PSA score for White Sucker in the Lake Manitoba commercial gillnet fishery is 1.71, which corresponds to low risk (scoring range ≥ 80) for an in-scope species. This species is moderately susceptible to getting caught in the fishery, and it has biological characteristics associated with high to medium productivity (Table 16).

Northern Pike (*Esox lucius*)

The MSC PSA score for Northern Pike in the Lake Manitoba commercial gillnet fishery is 2.23, which corresponds to low risk (scoring range ≥ 80) for an in-scope species. This species is moderately susceptible to getting caught in the fishery, and it has biological characteristics associated with medium productivity (Table 17).

Sauger (*Sander canadensis*)

Sauger is distributed widely in North America, from Quebec to Alberta in Canada, and south to northern Alabama and Louisiana in the USA. This species inhabits sand and gravel runs, sandy and muddy pools, and backwaters of small to large rivers (Page and Burr 2011). They occur less frequently in lakes and enclosed bodies of water. During their larval stage, sauger feed on cladocerans, copepods, and midge larvae, whilst juveniles and adults are piscivorous.

Sauger spawn between March and June in pairs or small aggregations (Collette et al. 1977). Females are slightly larger than males and more susceptible to fishing mortality, especially after age eight (Klein 2022).

Because Walleye and Sauger partially overlap in their diets and habitats, they are considered competitors and may show inverse population trends. In terms of differences, Sauger tend to be found in benthic (bottom) habitats whereas Walleye are more pelagic.

Sauger has been considered overfished and a species of conservation concern in Lake Manitoba in recent decades (Klein 2020). This species is never specifically targeted on Lake Manitoba, but it is economically valuable and not generally discarded unless the fish is not of saleable quality. Sauger catch data from DCRs were used to run a surplus production model and estimate relative biomass (B/B_{MSY}) over time (Figure 11). Using a lower estimate of K = 1795 t, derived from mean commercial abundance between 1970 and 1985, and the modern biomass estimate from the index netting program of 401 t (95% CI = 206 - 760 t), the estimate of B/B_{MSY} was estimated to be 0.447. This suggests that the stock is below PRI, although the stock appears to be growing (Figure 11).

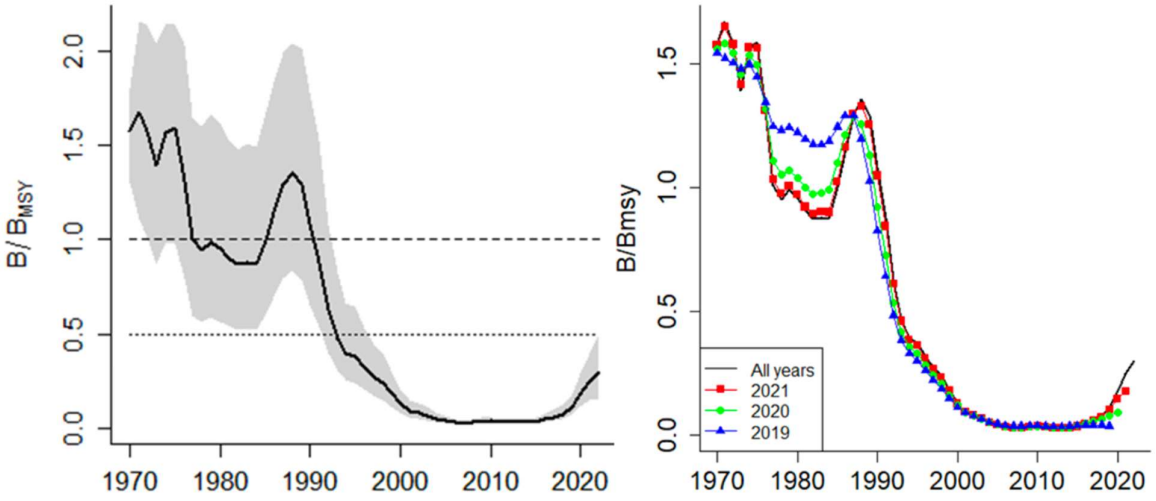

Figure 11. Left frame: estimated B/B_{MSY} of Lake Manitoba Sauger over time. Right frame: retrospective models of relative biomass dropping the most recent year out sequentially. Source: Klein 2023.

Out of scope species

Due to the lack of logbook or other monitoring data, we used PSAs under the MSC RBF to evaluate the risk of UoA impacts on out-of-scope (OOS) and ETP species.

Aquatic birds

Bird species including Double-Crested Cormorants, Common Loon, grebes (e.g. Eared Grebe, Piebald Grebe, Western Grebe, Horned Grebe), and ducks (e.g. Canvasbacks, Redheads, and Lesser Scaup) inhabit lake and lakeshore habitats in Manitoba during their breeding seasons, typically from spring to fall. However, many of these species migrate to more sheltered or temperate areas during the winter. Thus there is little risk of interaction with the Lake Manitoba commercial winter fishery.

Among these species, only Western Grebe and Horned Grebe have Schedule 1 listings under SARA. Western Grebe and Horned Grebe will therefore be evaluated as ETP species. We therefore conducted PSAs on Western Grebe and Horned Grebe as ETP species, as described further below. Double-Crested Cormorant, Common Loon, Eared Grebe, Pied-billed Grebe, Canvasback, Redhead, and Lesser Scaup are all considered species of Least Concern on the IUCN Red List.

Double-Crested Cormorants are among the most frequently seen birds while fishing during open water seasons (A. Gaudry, pers. comm., March 2024). Population abundance has been recently estimated at 33,906 breeding pairs in Manitoba, and almost a quarter million breeding pairs in Canada (McKellar et al. 2021). Common Loon, with an estimated global population of 612,000 to 640,000 individuals (Wetlands International 2016) are common in Manitoba lakes as well. However, they generally stay close to shore whereas commercial fishers operate farther offshore and

under the ice (K. Casper pers. comm., March 2024). Based on this information, we evaluated Double-crested Cormorant as an OOS species.

Double-crested Cormorant

The MSC PSA score for Double-crested Cormorant in the Lake Manitoba commercial gillnet fishery is 1.93, which corresponds to low risk (scoring range ≥80; Table 19). This species has biological characteristics associated with high productivity. Importantly, aquatic birds migrate to other areas during the winter and are very unlikely to interact with the Lake Manitoba winter commercial fishery. Although incidental catches are reportedly rare, it would be useful to have evidence from logbooks or other means of monitoring.

The MSC assessment report for Cedar Lake, another large freshwater lake in Manitoba, noted that the overall frequency of incidental entanglement and/or discard of bird species is thought to be extremely low (Knapman et al. 2022). For example, no Double-crested Cormorant were caught in Cedar Lake from 2019 to 2022.

Aquatic mammals, turtles and amphibians

North American River Otter (*Lontra canadensis*) can be found in Manitoba lakes, but they are uncommon and tend be found close to shore or in the rivers. Common Muskrat (*Ondatra zibethicus*) inhabit lakes as well. Both of these species are considered of Least Concern on the IUCN Red List. Fisheries Branch staff and commercial fishers (K. Casper and A. Gaudry, pers. comm., March 2024) report that otters and other mammals do not get accidentally caught in gillnets.

There are two native turtle species in Manitoba: Common Snapping Turtle (*Chelydra serpentina*) and Western Painted Turtle (*Chrysemys picta bellii*). They prefer shallow or river habitats and are not expected to interact with commercial gillnets, which are used in deeper parts of Lake Manitoba. Gillnet fishery risks to amphibian species are also expected to be negligible.

Due to the low risk of impacts, aquatic mammals, turtles and amphibians are not considered further in this pre-assessment.

Endangered, Threatened, or Protected (ETP) species

One fish species of concern may interact with the Lake Manitoba fishery, Bigmouth Buffalo. Bigmouth Buffalo are listed as a species of Special Concern under SARA. The other ETP species described below are two bird species, Horned Grebe and Western Grebe.

Bigmouth Buffalo (*Ictiobus cyprinellus*)

The following information is summarized from the DFO management plan for Bigmouth Buffalo (Fisheries and Oceans Canada 2021a). The Bigmouth Buffalo is a large, deep-bodied fish of the sucker family Catostomidae. The Saskatchewan-Nelson River population of Bigmouth Buffalo was listed as a species of special concern under SARA in 2011. Bigmouth Buffalo populations in Manitoba are considered to be secure, while populations in Saskatchewan are thought to have declined (COSEWIC 2009). There is not much current information on stock status. Loss of spawning and rearing habitat, and habitat fragmentation are considered threats of medium concern to this species. Commercial fishing activities are considered low concern. Commercial fisheries do not target Bigmouth Buffalo, but they are sometimes misidentified as carp and may therefore be at risk of capture in gillnets. Bigmouth Buffalo are also captured incidentally by recreational fishers (anglers or bow fishers); however, the level of harvest is likely quite low.

The MSC PSA score for Bigmouth Buffalo in the Lake Manitoba commercial gillnet fishery is 1.98, which corresponds to low risk (scoring range ≥80). The species has biological characteristics of high to medium productivity. They are more likely to be caught in fisheries targeting carp than in the commercial gillnet fishery targeting Walleye.

Horned Grebe (*Podiceps auritus*)

The following information is summarized from the Species at Risk Public Registry website for Horned Grebe and a proposed management plan for Horned Grebe by Environment and Climate Change Canada (2021a). Approximately 92% of the North American breeding range of the Horned Grebe is in Canada. This species breeds in British Columbia, Yukon, the Mackenzie River Valley in the Northwest Territories, the extreme southern part of Nunavut, all of the Prairies, northwestern Ontario and the Magdalen Islands (Quebec). In the United States, it breeds in central and southern Alaska, as well as locally in some northwestern states. The western population of Horned Grebe is estimated at between 200,000 and 500,000 individuals, with most of the birds inhabiting Saskatchewan and Alberta.

Permanent loss of wetlands to agriculture and development are among the more serious threats to Horned Grebe populations. Temporary loss of wetlands during droughts can also negatively impact Horned Grebe, as can eutrophication and degradation of nesting sites from the accumulation of fertilizers used in agriculture. Because they specialize on eating fish, grebes are vulnerable to getting caught and drowning in fishing nets. The threat level to Horned Grebe from fishing activities is considered low, though there is uncertainty about actual impacts due to lack of species-specific monitoring data.

The MSC PSA score for Horned Grebe in the Lake Manitoba commercial gillnet fishery is 2.12, which corresponds to low risk (scoring range ≥80). This species has biological characteristics associated with high to medium productivity (Table 20). Importantly, grebes migrate to other areas during the winter and are unlikely to interact with the Lake Manitoba winter commercial fishery.

Western Grebe (*Aechmophorus occidentalis*)

The following information is summarized from a proposed management plan for Western Grebe by Environment and Climate Change Canada (2021b). The Western Grebe is a colonial waterbird species endemic to North America. The continental population is estimated at 100,000 individuals, of which 31,000 to 34,000 breed in Canada. It is listed as Special Concern in Schedule 1 of SARA and as Threatened under the Alberta Wildlife Act. The Western Grebe is protected in Canada under the Migratory Birds Convention Act, 1994 and in the United States, where most of the population winters, under the Migratory Bird Treaty Act.

The core of the Canadian breeding range is located in the Prairie Provinces. Manitoba has fewer Western Grebe colonies than either Alberta or Saskatchewan, but they tend to be larger. The largest colonies in recent years are located on Lake Manitoba (Delta Marsh, Sandy Bay and Marshy Point), Lake Winnipegosis (Long Island and Long Island Bay IBA), Lake Winnipeg (Netley-Libau Marsh) and Whitewater Lake. Many colonies have declined and some have even disappeared since intensive research on the species was conducted in the 1970s and 1980s. The Western Grebe faces numerous threats on its breeding grounds in Canada, such as disturbance from boating activities, changes in water levels (as a result of heavy rains, storms or water management), lethal and sub-lethal effects of pesticides and contaminants, and problematic invasive species which modify or destroy its breeding habitat.

Threats to Western Grebe from fishing activity are considered low, although effects are not well quantified. Western Grebe forage by diving, so they are susceptible to getting caught in gillnets and/or derelict nets, and then drowning. The COSEWIC status report (2014) documents a few cases involving Western Grebe and derelict/ghost nets.

The MSC PSA score for Western Grebe in the Lake Manitoba commercial gillnet fishery is 2.12, which corresponds to low risk (scoring range ≥80). This species has biological characteristics associated with high to medium productivity (Table 21). Importantly, grebes migrate to other areas during the winter and are unlikely to interact with the Lake Manitoba winter commercial fishery.

7.5.1.2. Habitats impacts

Set gillnets are the only fishing gear used in the Lake Manitoba winter commercial fishery. Gillnet web is monofilament, either single strand or three strand. Mesh sizes in the fishery range from 89 mm stretch measure to 140 mm stretch measure. Individual nets are between 80 and 100 yards in length, while net depth typically varies from 3 to 9 m. Nets are set with the leadline directly on the bottom substrate, or suspended below the surface so that the leadline does not contact the bottom, allowing benthic species to pass underneath the net. Nets are ganged together, with the gang length preference varying by fisher. The same nets are used in the open water as under ice, but the anchoring differs. In open water when winds and currents are stronger, king anchors of 25 to 40 pounds on long bridles are used. Under ice, light anchors of 1 to 10 pounds are common, with very short bridles. The anchors used for ice fishing can be as minimal as single bricks (Figure 12). All anchors, which are the main point of interaction between the bottom substrate and the fishing gear, have limited footprints.

Figure 12. Ice fishing on Lake Winnipeg, similar to the setups used on Lake Manitoba. The grey brick visible on the right side is used as an anchor. Photo by J. Drugan.

The most direct interaction between fishing gear and bottom habitats is from the gillnet anchors, which have limited footprints. Given that soft clay and silty loam sediments are the most commonly encountered benthic substrate types, habitat disturbances are expected to be temporary. Morgan and Chuenpagdee (2003) note that bottom gillnets can damage habitat if they become snagged on rocks or aquatic plants while being hauled out, or if currents are strong. In Lake Manitoba, fishers set their gillnets in deeper water offshore, where this type of snagging is not expected to be an issue. Gillnets suspended in midwater have minimal impacts on bottom habitat (Morgan and Chuenpagdee 2003).

The Commercial Fishing Guide 2023-24 (CFG 2023) includes the following regulations relevant to habitats impacts and protection.

- Gear must be marked with the person's Fisher Number, a unique identifier (e.g. as shown in Figure 13).
- Commercial fishers may not fish within 1.5 km of the location where a stream or a river enters a lake. Commercial licenses are normally issued only on lakes. In the cases where they're issued for a river, nets may not block more than ⅔ of the river channel.
- Fishers may not leave decaying fish in a net.
- Fishing gear (buoys, poles) may not be left in place when not being actively fished.

Figure 13. Stake labeled with fisher's identification number. Photo by J. Drugan.

The CFG regulations help reduce risks of gillnets disturbing sensitive nearshore and spawning habitats by prohibiting fishing within 1.5 km of locations where tributaries enter lake. Both Walleye and Sauger spawn in rivers, streams, and along shorelines, especially where the bottom has gravel and cobble (Bozek et al. 2011b). Commercial gillnet fishing is unlikely to take place in these preferred spawning habitats.

Gear loss and ghost fishing may occur during the open water season if severe weather causes fishers to lose gear, as happened during some serious storms in 2011. Individual gillnets currently cost about CAD $180 to $250, so fishers naturally try to keep and maintain their gear. They may also remove derelict gear as they find it, to reduce ghost fishing and waste, though retrieval is not always possible (A. Gaudry, pers. comm., 19 March 2024). Tools used to retrieve gear include large hooks. During the winter season, the gillnet floatline may freeze into the ice when temperatures fall. However, fishers can generally still free the net when this happens, for example by drilling into multiple locations in the ice, or by using underwater cameras to see where the net is stuck. Lost gillnets are not required to be tracked or reported, nor does a gear loss reduction program exist. Reportedly, lost nets eventually become tangled and roll into a ball, which eventually drift ashore. How quickly this occurs is not well known and is likely to be influenced by a variety of factors including where the gear is lost, water depth, and weather conditions (Knapman et al. 2022).

7.5.1.3. The aquatic ecosystem

Lake Manitoba is a large, shallow lake that has an area of around 4706 km^2 (Gushulak et al. 2024). The lake is divided into two major areas: a large oval southern basin and a long winding northern basin separated by a geologic constriction called the Narrows. The lake is polymictic, meaning that the water essentially circulates continuously.

The lake supports numerous fish and other water-associated species and has been impacted by eutrophication and introduced species, some of which have proven to be highly invasive. Eutrophication stems from agriculture-based phosphorus inputs that lead to elevated densities of nitrogen-fixing cyanobacteria and other phytoplankton. In Lake Manitoba, densities of cyanobacteria have exhibited more stable, less extreme patterns than those observed in Lake

Winnipeg despite ongoing eutrophication (Gushulak et al. 2024). Introduced species that have had observable ecosystem impacts include Common Carp (*Cyprinus carpio*), which was believed to have first appeared in the lake in the late 1940s (Atton 1959). Carp affect water clarity and submersed aquatic vegetation by resuspending bottom sediments and physically disturbing the vegetation. Carp gates have been installed to exclude carp from Delta Marsh, the largest coastal marsh on Lake Manitoba.

7.5.1.4. Principle 2 scoring elements

Table 12: P2 scoring elements for the Lake Manitoba pre-assessment. Catch composition percentages are based on 2022 commercial catch data provided by Klein 2023.

Component	Scoring element	Catch composition	Main?	Data-deficient?
Target / P1	Walleye (*Esox lucius*)	58.3%	n/a	No
In-scope	Mullet / White Sucker (*Catostomus commersonii*)	21%	Yes	Yes
In-scope	Sauger (*Sander candensis*)	7.6%	Yes	No
In-scope	Northern Pike (*Esox lucius*)	7.0%	Yes	Yes
In-scope	Freshwater Drum (*Aplodinotus grunniens*)	0.1%	No	Yes
In-scope	Lake Whitefish (*Coregonus clupeaformis*)	0.6%	No	Yes
In-scope	Cisco (*Coregonus artedi*)	3.3%	No	Yes
In-scope	Yellow Perch (*Perca flavescens*)	2.1%	No	Yes
In-scope	Shorthead Redhorse (*Moxostoma macrolepidotum*)	Unknown but present	No	Yes
In-scope	Quillback (*Carpiodes cyprinus*)	Unknown but present	No	Yes
In-scope	Burbot (*Lota lota*)	Unknown but present	No	Yes
In-scope	Carp (*Cyprinus carpio*)	Unknown but present	No	Yes
ETP/OOS	Double-crested Cormorant	n/a	n/a	Yes
ETP/OOS	Horned Grebe	n/a	n/a	Yes
ETP/OOS	Western Grebe	n/a	n/a	Yes
ETP/OOS	Bigmouth Buffalo	n/a	n/a	Yes

7.5.2. Principle 2 Performance Indicator scores and rationales

PI 2.1.1 – In-scope species outcome

<table>
<tr><th colspan="2">PI 2.1.1</th><th colspan="3">The UoA aims to maintain in-scope species above the PRI and does not hinder recovery of in-scope species if they are below the PRI</th></tr>
<tr><td colspan="2">Scoring issue</td><th>SG 60</th><th>SG 80</th><th>SG 100</th></tr>
<tr><td rowspan="3">a</td><td colspan="4">Main in-scope species stock status</td></tr>
<tr><td>Guide post</td><td>Main in-scope species are likely to be above the PRI.

or

If the species is below the PRI, it is likely that the UoA does not hinder recovery and rebuilding.</td><td>Main in-scope species are highly likely to be above the PRI.

or

If the species is below the PRI, there is evidence of recovery, or it is highly likely that the UoA does not hinder recovery and rebuilding.</td><td>There is a high degree of certainty that main in-scope species are fluctuating around a level consistent with MSY.</td></tr>
<tr><td>Met?</td><td>Yes</td><td>No</td><td>No</td></tr>
<tr><td colspan="2">Rationale</td><td colspan="3">The main in-scope species are Sauger, White Sucker, and Northern Pike. This PI was scored using both stock assessment information (for Sauger) and the RBF (for White Sucker and Northern Pike), because stock status information is not available for the latter two species.

The Lake Manitoba Sauger stock has been assessed using a surplus production model, which estimated relative biomass in 2022 (B_{2022}/B_{MSY}) to be 0.447. This suggests that the stock is below PRI, although the stock appears to be growing (Figure 11). The trend of increasing abundance suggests that it is likely that the UoA does not hinder recovery and rebuilding.

SG60 is met because none of the scoring elements is at high risk of UoA impacts based on PSAs (Table 13) and available stock assessment information.

SG80 is not met because one of the scoring elements has a PSA scores associated with medium risk (Sauger). The other two elements (White Sucker and Northern Pike) have PSA scores associated with low risk.

Table 13: Scores for main in-scope species.

<table><tr><th>Scoring element</th><th>Designation</th><th>Score</th><th>Rationale</th></tr><tr><td>Sauger</td><td>Main</td><td>60-79</td><td>Stock appears to be below PRI but growing</td></tr><tr><td>White Sucker</td><td>Main</td><td>≥ 80</td><td>Low risk based on PSA, see Table 16</td></tr><tr><td>Northern Pike</td><td>Main</td><td>≥ 80</td><td>Low risk based on PSA, see Table 17Error! Reference source not found.</td></tr></table></td></tr>
<tr><td rowspan="3">b</td><td colspan="4">Minor in-scope species stock status</td></tr>
<tr><td>Guide post</td><td></td><td></td><td>Minor in-scope species are highly likely to be above the PRI.

or

If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor in-scope species.</td></tr>
<tr><td>Met?</td><td></td><td></td><td>No</td></tr>
</table>

Rationale	Minor in-scope species include Cisco, Freshwater Drum, Lake Whitefish, Yellow Perch, Shorthead Redhorse, Quillback, Burbot, and Common Carp. **SG100 is not met** because there is insufficient information to conclude that these species are highly likely to be above their respective PRIs.

Draft scoring range	**60-79**
Information gap indicator	**Information sufficient to score PI**
Data-deficient? (Risk-Based Framework needed)	**Yes**

PI 2.1.2 – In-scope species management strategy

PI 2.1.2		**There is a strategy in place that is designed to maintain or to not hinder rebuilding of in-scope species**		
Scoring issue		**SG 60**	**SG 80**	**SG 100**
a	**Management strategy in place**			
	Guide post	There are **measures** in place for the UoA, **if necessary**, that are expected to maintain or to not hinder rebuilding of the **main** in-scope species at/to the in-scope species outcome SG60 level.	There is a **partial strategy** in place for the UoA, **if necessary**, that is expected to maintain or to not hinder rebuilding of the main in-scope species at/to the in-scope species outcome SG80 level. or Where in-scope species outcome fails to meet the SG80, a demonstrably effective strategy is in place between all MSC UoAs that categorise this species as **main** in-scope to ensure that they collectively do not hinder recovery and rebuilding.	There is a **strategy** in place for the UoA for managing **main** and **minor** in-scope species at the in-scope species outcome SG80 level.
	Met?	**Yes**	**No**	**No**
Rationale		The main in-scope species for the UoA are Sauger, White Sucker, and Northern Pike. **SG60 is met** because there are measures in place for the UoA that are expected to maintain or to not hinder rebuilding of the main in-scope species at/to the in-scope species outcome SG60 level. **SG80 is not met** because there is not a partial strategy in place for the UoA that is expected to maintain or not hinder rebuilding of the main in-scope species at/to the in-scope species outcome SG80 level. In this multi-specific fishery, fishing effort is managed through a licensing and quota system and time and area-based management. Gear regulations such as minimum mesh size affect the species and sizes of fish caught. Conservation officers and Fisheries Branch staff routinely monitor quotas and compliance with license conditions. However, these measures are focused on Walleye and are not explicitly aimed at managing fishery impacts on main in-scope species.		
b	**Management strategy effectiveness**			

PI 2.1.2		There is a strategy in place that is designed to maintain or to not hinder rebuilding of in-scope species		
	Guide post	The measures, **if necessary**, are considered **likely** to work for the **main** in-scope species, based on plausible argument.	There is some **evidence** that the measures/partial strategy, **if necessary**, is achieving the objectives for **main** in-scope species set out in scoring issue (a), based on some information directly about the UoA and/or species involved.	**There is evidence** that the partial strategy/strategy is achieving the objectives set out in scoring issue (a), based on information directly about the UoA and/or species involved.
	Met?	**Yes**	**No**	**No**
Rationale		**SG60 is met** because the measures are considered likely to work for the main in-scope species, based on plausible argument. Licensing, quotas, and gear regulations are established measures used to manage gillnet fisheries. **SG80 is not met** because there is limited evidence that the measures are achieving the objectives for main in-scope species set out in scoring issue (a). Catch logbooks are not required, although catch records exist for the fish that are sold commercially. Data from the index netting program can be used to check for changes in CUE and lengths / weights / ages of these in-scope fish species in Lake Manitoba, though it is not apparent whether such an analysis has been carried out.		
c	**Review of alternative measures**			
	Guide post	There is a **review** of **alternative measures** to minimise UoA-related mortality of **unwanted catch** of **main** in-scope species	There is a **review** at least once every 5 years of **alternative measures** to minimise UoA-related mortality of **unwanted catch** of **main** in-scope species and they are **implemented, as appropriate**.	There is a **review** that happens every 2 years of **alternative measures** to minimise UoA-related mortality of **unwanted catch** of all in-scope species, and they are **implemented, as appropriate**.
	Met?	**No**	**No**	**No**
Rationale		The main in-scope species identified in this pre-assessment are reported to be retained. However, species such as burbot and bullhead may be discarded, and without logbooks or other monitoring data, the level of unwanted catches is uncertain. Hence we evaluated this scoring issue. **SG60 is not met** because there is no evidence of review of alternative measures to minimise UoA-related mortality of unwanted catch of main in-scope species.		
d	**Shark finning**			
	Guide post	There is a **high degree of certainty** that shark finning is not taking place.		
	Met?	**NA**		
Rationale		There are no shark species in Lake Manitoba.		
e	**Ghost gear management strategy**			
	Guide post	There are measures in place for the UoA, **if necessary**, that are expected to minimise ghost gear and its impact on all in-scope species.	There is a partial strategy in place for the UoA, **if necessary**, that is expected to minimise ghost gear and its impact on all in-scope species.	There is a strategy in place for the UoA, **if necessary**, that is expected to minimise ghost gear and its impact on all in-scope species.
	Met?	**NA**	**NA**	**NA**

PI 2.1.2	There is a strategy in place that is designed to maintain or to not hinder rebuilding of in-scope species
Rationale	The Scoring Issue was not scored because the equivalent ghost gear SI within ETP/OOS is scored.

Draft scoring range	**<60**
Information gap indicator	**Information sufficient to score PI**

PI 2.1.3 – In-scope species information

PI 2.1.3		Information is adequate to determine the impact of the UoA on in-scope species and the effectiveness of management measures or strategies in place		
Scoring issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impact on main in-scope species			
	Guide post	Information is adequate to **broadly understand** the impact of the UoA on the stock status of **main** in-scope species.	Information is adequate to **estimate** the impact of the UoA on the stock status of **main** in-scope species with a **high degree of accuracy**.	Information is adequate to **estimate** the impact of the UoA on the stock status of **main** in-scope species with a **very high degree of accuracy**.
	Met?	**Yes - Sauger**	**Yes - Sauger**	**No - Sauger**
Rationale		The main in-scope species for the UoA are Sauger, White Sucker, and Northern Pike. Sauger was scored using PI 2.1.1 under the default assessment tree; hence we score the Sauger element for this PI (MSC Fisheries Standard Toolbox v1.1, A1.1.4). This scoring issue requires application of the MSC ERF and evaluation of the trueness of information. TG2 is considered met because there is limited potential for bias to exist in the information available for in-scope species, but where it might exist, its effect on trueness is broadly understood and is not considered to be consequential. Sauger are valuable and not discarded, making the catch records (DCRs) a reliable information source on UoA impacts. **SG60 is met** because information is adequate to broadly understand the impact of the UoA on the stock status of main in-scope species. Commercial catches of Sauger are quantified and well understood via DCRs. **SG80 is met** because information is adequate to estimate the impact of the UoA on the stock status of main in-scope species with a high degree of accuracy. The DCR data are used in a surplus production model to estimate stock biomass and evaluate stock status. **S100 is not met** because evidence to confirm a very high degree of accuracy is limited.		
b	Information adequacy for assessment of impact on minor in-scope species			
	Guide post			Information is adequate to **estimate** the impact of the UoA on the stock status of **minor** in-scope species with a **high degree of accuracy**.
	Met?			**No**
Rationale		Minor in-scope species include Cisco, Freshwater Drum, Lake Whitefish, Yellow Perch, Shorthead Redhorse, Quillback, Burbot, and Common Carp. **SG100 is not met** because information is not adequate to estimate the impact of the UoA on the stock status of minor in-scope species with a high degree of accuracy.		
c	Information adequacy for management strategy			
	Guide post	Information is adequate to support **measures** to manage **main** in-scope species.	Information is adequate to support a **partial strategy** to manage **main** in-scope species.	**Information is adequate to support a strategy** to manage **all** in-scope species and evaluate with a **high degree of certainty** whether the strategy is achieving its objective.
	Met?	**Yes - Sauger**	**Yes - Sauger**	**No**

PI 2.1.3	Information is adequate to determine the impact of the UoA on in-scope species and the effectiveness of management measures or strategies in place
Rationale	**SG60 is met** because information is adequate to support measures to manage main in-scope species. Fishery dependent data for Sauger are collected through DCRs. **SG80 is met** because information is adequate to support a partial strategy to manage main in-scope species. In addition to DCRs, some fishery-independent data are collected through the index netting program. **SG100 is not met** because information is adequate to support a strategy to manage **all** in-scope species and evaluate with a high degree of certainty whether the strategy is achieving its objective.

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

PI 2.1.3R – In-scope species information if RBF is used to score PI 2.1.1

PI 2.1.3R		Information on the nature and amount of in-scope species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage in-scope species		
Scoring issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impact on main in-scope species			
	Guide post	Qualitative information is adequate to estimate productivity and susceptibility attributes for main in-scope species.	Some quantitative information is adequate to assess productivity and susceptibility attributes for main in-scope species.	
	Met?	**Yes – White Sucker and Northern Pike**	**Yes – White Sucker and Northern Pike**	**NA**
Rationale		The main in-scope species for the UoA are Sauger, White Sucker, and Northern Pike. White Sucker and Northern Pike were scored using the RBF; hence we scored PI 2.1.3R for those elements. **SG60 is met** because qualitative information is adequate to estimate productivity and susceptibility attributes for main in-scope species. Their general biological characteristics are known. **SG80 is met** because some quantitative information is adequate to assess productivity and susceptibility attributes for main in-scope species. Some research has been conducted to understand their biology, and the index netting program provides quantitative information on their susceptibility to the UoA fishery.		
b	Information adequacy for assessment of impact on minor in-scope species			
	Guide post			Some quantitative information is adequate to **estimate** the impact of the UoA on minor in-scope species with respect to status.
	Met?			**Yes**
Rationale		**SG100 is met** because some quantitative information is collected and adequate to estimate the impact of the UoA on minor in-scope species with respect to status. The index netting program provides information on CUE and lengths / weights / ages of minor in-scope fish species in Lake Manitoba, allowing for evaluation of UoA impacts on their status.		
c	Information adequacy for management strategy			
	Guide post	Information is adequate to support **measures** to manage **main** in-scope species.	Information is adequate to support a **partial strategy** to manage **main** in-scope species.	Information is adequate to support **a strategy** to manage **all** in-scope species and evaluate with a **high degree of certainty** whether the strategy is achieving its objective.
	Met?	**Yes**	**Yes**	**No**
Rationale		**SG60 is met** because information is adequate to support measures to manage main in-scope species. The index netting program provides information on CUE and lengths / weights / ages of minor in-scope fish species in Lake Manitoba. **SG80 is met** because data from the index netting program is adequate to support a partial strategy to manage main in-scope species.		

PI 2.1.3R	Information on the nature and amount of in-scope species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage in-scope species
	SG100 is not met because information is not adequate to support a strategy to manage all in-scope species and evaluate with a high degree of certainty whether the strategy is achieving its objective.

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

PI 2.2.1 – ETP/OOS species outcome

PI 2.2.1		The direct effects of the UoA do not hinder recovery of the ETP/OOS unit to favourable conservation status		
Scoring issue		**SG 60**	**SG 80**	**SG 100**
a	**Direct effects**			
	Guide post	The direct effects of the UoA are **unlikely** to hinder recovery of the ETP/OOS unit to favourable conservation status.	The direct effects of the UoA are **highly unlikely** to hinder recovery of the ETP/OOS unit to favourable conservation status.	There is a **high degree of certainty** that the direct effects of the UoA do not hinder recovery of the ETP/OOS unit to favourable conservation status.
	Met?	**Yes – all scoring elements**	**Yes – all scoring elements**	**No – all scoring elements**
Rationale		This PI was scored using the RBF because the direct impacts of the UoAs on the ETP/OOS units in relation to their conservation status have not been quantitatively determined by an independent source. The ETP/OOS units for all UoAs are Bigmouth Buffalo (fish), Double-crested Cormorant (bird), Horned Grebe (bird), and Western Grebe (bird). **SG60 and SG80 are met** because all of the units are at low risk of UoA impacts based on PSAs (Table 14). **SG100 is not met** because use of the RBF precludes a high degree of certainty that the direct effects of the UoA do not hinder recovery of the ETP/OOS unit to favourable conservation status.		

Table 14: Scoring out-of-scope and ETP units.

Scoring element	Designation	Score	Rationale
Bigmouth Buffalo	ETP	≥80	Low risk based on PSA, see Table 18
Double-crested Cormorant	OOS	≥80	Low risk based on PSA, see Table 19
Horned Grebe	ETP/OOS	≥80	Low risk based on PSA, see Table 20
Western Grebe	ETP/OOS	≥80	Low risk based on PSA, see Table 21

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**
Data-deficient? (Risk-Based Framework needed)	**Yes**

PI 2.2.2 – ETP/OOS species management strategy

PI 2.2.2		The UoA has precautionary management strategies in place designed to: • **Ensure that incidental catches of the ETP/OOS unit are minimised and where possible eliminated** • **Ensure that the UoA does not hinder recovery to Favourable Conservation Status.**		
Scoring issue		**SG 60**	**SG 80**	**SG 100**
a	**Management strategy in place**			
	Guide post	There are **measures** in place, **if necessary**, that are expected to **minimise** the UoA-related mortality of the ETP/OOS unit and achieve the ETP/OOS outcome SG80 level of performance.	There is a **strategy** in place, **if necessary**, that is expected to minimise the UoA-related mortality of the ETP/OOS unit and achieve the ETP/OOS outcome SG80 level of performance.	There is a **comprehensive strategy** in place that is expected to **minimise** the UoA-related mortality of the ETP/OOS unit and achieve the ETP outcome SG80 level of performance.
	Met?	**Yes – all scoring units**	**No – all scoring units**	**No – all scoring units**
Rationale		The ETP/OOS scoring units for all UoAs are Bigmouth Buffalo, Double-crested Cormorant, Horned Grebe, and Western Grebe. **SG60 is met** because there are measures in place that are expected to minimise the UoA-related mortality of the ETP/OOS units and achieve the ETP/OOS outcome SG80 level of performance. These measures include operational requirements and behaviors. For example, commercial fishers do not operate nearshore, and fishing gear cannot be left in the water when not actively being used. **SG80 is not met** because there does not appear to be a strategy in place for ETP/OOS units. **Bigmouth Buffalo** – Manitoba commercial gillnet fisheries do not target Bigmouth Buffalo, but they are sometimes misidentified as carp and are at risk of capture as bycatch. In the past DFO has made signage to help fishers distinguish Bigmouth Buffalo from other species, in particular Common Carp, that are caught in commercial nets and by anglers. However, live release is not required. **Fishing birds (including grebes and cormorants)** Fishing birds are reported to rarely get caught in commercial gillnets, suggesting that general fishing practices do not contribute significantly to mortality. Fishing during the winter season, in particular, is expected to have negligible impacts. However, an intentional strategy to minimize bird bycatch does not appear to be in place.		
b	**Management strategy effectiveness**			
	Guide post		Evidence indicates that the **measures, strategy or comprehensive strategy** have reduced or **minimised** the mortality of the ETP/OOS unit.	
	Met?		**No**	
Rationale		**SG80 is not met** because there is limited evidence that the measures have reduced or minimised the mortality of the ETP/OOS units. Fishers are not required to keep logbooks of encounters with ETP/OOS species.		
c	**Review of alternative measures to minimise mortality of the ETP/OOS unit**			
	Guide post		There is a **review** at least once every 5 years of the **alternative measures** to **minimise** UoA-related mortality of the ETP/OOS unit	There is a **review** that happens every 2 years of **alternative measures** to **minimise** UoA- related mortality of the ETP/OOS unit,

PI 2.2.2		The UoA has precautionary management strategies in place designed to: • Ensure that incidental catches of the ETP/OOS unit are minimised and where possible eliminated • Ensure that the UoA does not hinder recovery to Favourable Conservation Status.		
			and they are implemented as appropriate for the ETP/OOS unit.	and they are implemented, as appropriate for the ETP/OOS unit.
	Met?		**No**	**No**
Rationale		**SG80 is not met** because there is no periodic review (at least once every 5 years) of the alternative measures to minimise UoA-related mortality of the ETP/OOS units.		
d	**Shark finning**			
	Guide post	There is a **high degree of certainty** that shark finning is not taking place.		
	Met?	**NA**		
Rationale		There are no shark species in Lake Manitoba.		
e	**Ghost gear management strategy**			
	Guide post	There are **measures** in place, **if necessary**, for the UoA that are expected to **minimise** ghost gear and its impact on the ETP/OOS unit.	There is a **partial strategy** in place for the UoA, **if necessary**, that is expected to **minimise** ghost gear and its impact on the ETP/OOS unit.	There is a **strategy** in place for the UoA, **if necessary**, that is expected to **minimise** ghost gear and its impact on the ETP/OOS unit.
	Met?	**Yes**	**No**	**No**
Rationale		**SG60 is met** because there are measures in place for the UoAs that are expected to minimise ghost gear and its impact on the ETP/OOS units. Fishers make efforts to retrieve lost gear or remove derelict gear as they find it, though retrieval is not always possible (A. Gaudry, pers. comm., 19 March 2024). Tools used to retrieve gear include hooks. In addition, the Commercial Fishing Guide 2023-24 includes the following regulations relevant to ghost gear management. • Gear must be marked with the person's Fisher Number, a unique identifier. • Commercial fishers may not fish within 1.5 km of the location where a stream or a river enters a lake. • Fishers may not leave decaying fish in a net. • Fishing gear (buoys, poles) may not be left in place when not being actively fished. In particular, the latter two CFG regulations are expected to minimise ghost fishing impacts on ETP/OOS species. **SG80 is not met** because there not a partial strategy in place for the UoAs that is expected to minimise ghost gear and its impact on the ETP/OOS units. The measures described above are not associated with an explicit objective to minimise ghost gear impacts.		

Draft scoring range	**60-79**
Information gap indicator	**Information sufficient to score PI**

PI 2.2.3R – ETP/OOS species information if RBF is used to score PI 2.2.1

PI 2.2.3R		Relevant information is collected to support the management of UoA impacts on the ETP/OOS unit, including: • Information for the development of the management strategy. • Information to assess the effectiveness of the management strategy. • Information to determine the outcome status of the ETP/OOS unit.		
Scoring issue		**SG 60**	**SG 80**	**SG 100**
a	**Information adequacy for assessment of impacts**			
	Guide post	Qualitative information is adequate to estimate productivity and susceptibility attributes for the ETP/OOS unit.	Some quantitative information is adequate to assess productivity and susceptibility attributes for the ETP/OOS unit.	
	Met?	**Yes**	**Yes**	**NA**
Rationale		The ETP/OOS unit for the UoA are Bigmouth Buffalo, Double-crested Cormorant, Horned Grebe, and Western Grebe. **SG60 is met** because qualitative information is adequate to estimate productivity and susceptibility attributes for the ETP/OOS unit. The general biological characteristics of the ETP/OOS species are known. **SG80 is met** because some quantitative information is adequate to assess productivity and susceptibility attributes for the ETP/OOS unit. Some research has been conducted to understand their biology.		
b	**Information adequacy for management strategy**			
	Guide post	Information is adequate to support **measures** to manage impacts on the ETP/OOS unit.	**Information is adequate** to support a strategy to manage impacts on the ETP/OOS unit, and to measure trends to evaluate the effectiveness of the **measures** to minimise mortality.	Information is adequate to support a **comprehensive strategy** to manage impacts on the ETP/OOS unit, and to evaluate the effectiveness of the **measures** to minimise mortality with a **high degree of certainty**.
	Met?	**No**	**No**	**No**
Rationale		**SG60 is not met** because it is not clear whether available information (e.g. from index netting) is adequate to support measures to manage impacts on ETP/OOS units and evaluate their effectiveness.		

Draft scoring range	**<60**
Information gap indicator	**Information sufficient to score PI**

PI 2.3.1 – Habitats outcome

PI 2.3.1		The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(ies) responsible for fisheries management in the area(s) where the UoA operates		
Scoring issue		**SG 60**	**SG 80**	**SG 100**
a	**Less sensitive habitats**			
	Guide post	The UoA is **unlikely** to reduce structure and function of **less** sensitive habitats to a point where there would be **serious or irreversible harm**.	The UoA is **highly unlikely** to reduce structure and function of **less** sensitive habitats to a point where there would be **serious or irreversible harm**.	There is **evidence** that the UoA is **highly unlikely** to reduce structure and function of **less** sensitive habitats to a point where there would be **serious or irreversible harm**.
	Met?	**Yes**	**Yes**	**No**
Rationale		**SG60 and SG80 are met** because the UoA is highly unlikely to reduce structure and function of less sensitive habitats to a point where there would be serious or irreversible harm. Gillnets are the only fishing gear used in the UoA fishery. The most direct interaction between this gear and bottom habitats is from the gillnet anchors, which have limited footprints. Fishing takes place away from the shoreline in deeper water dominated by soft clay and silty loam benthic substrate types; any habitat disturbances therefore are expected to be temporary. In addition, Lake Manitoba is very large; gillnet fishing activity takes place in a very small proportion of the total lake area. **SG100 is not met** because there is not evidence that the UoA is highly unlikely to reduce structure and function of less sensitive habitats to a point where there would be serious or irreversible harm.		
b	**More sensitive habitats**			
	Guide post	The UoA is **unlikely** to reduce structure and function of **more** sensitive habitats to a point where there would be **serious or irreversible harm**.	The UoA is **highly unlikely** to reduce structure and function of **more** sensitive habitats to a point where there would be **serious or irreversible harm**.	There is **evidence** that the UoA is **highly unlikely** to reduce structure and function of **more** sensitive habitats to a point where there would be **serious or irreversible harm**.
	Met?	**NA**	**NA**	**NA**
Rationale		This fishery does not interact with more sensitive habitats, defined by the MSC as “habitat that would be unable to recover to at least 80% of its unimpacted structure and function within 20 years if fishing were to cease entirely.” As described under SI(a), fishing is not conducted near the shoreline where possibly more sensitive habitats such as marshes may be found.		

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**
Data-deficient? (Risk-Based Framework needed)	**No**

PI 2.3.2 – Habitats management strategy

PI 2.3.2		There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats		
Scoring issue		**SG 60**	**SG 80**	**SG 100**
a	**Management strategy in place**			
	Guide post	There are **measures** in place, **if necessary**, that are expected to achieve the habitat outcome SG80 level.	There is a **partial strategy** in place, **if necessary**, that is expected to achieve the habitat outcome SG80 level or above.	There is a **strategy** in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.
	Met?	**Yes**	**Yes**	**No**
Rationale		**SG60 is met** because there are measures in place that are expected to achieve the habitat outcome SG80 level. **SG80 is also met** because a partial strategy is in place. Winter commercial gillnet fishing activities in Lake Manitoba are regulated through gear regulations and effort limitations via the licensing and quota systems. The Commercial Fishing Guide 2023-24 also specifies the following: • Gear must be marked with the person's Fisher Number, a unique identifier • Commercial fishers may not fish within 1.5 km of the location where a stream or a river enters a lake. Commercial licenses are normally issued only on lakes. In the cases they're issued for a river, nets may not block more than ⅔ of the river channel. • Fishers may not leave decaying fish in a net. • Fishing gear (buoys, poles) may not be left in place when not being actively fished. In addition, the gear is fished statically rather than being pulled over the bottom, using anchors with limited footprints typically weighing less than 1 lb each. Together these practices minimize impacts on bottom habitats. **SG100 is not met** because these practices are not part of a strategy with a defined objective for managing habitat impacts and full monitoring.		
b	**Management strategy effectiveness**			
	Guide post	The **measures**, **if necessary**, are considered **likely** to work, based on **plausible argument**.	There is some **evidence** that the measures/partial strategy, **if necessary**, is achieving the objectives set out in SI (a), based on **information directly about the UoA and/or habitats** involved.	There is evidence that the **partial strategy/strategy** is achieving the objectives set out in SI (a), based on **information directly about the UoA and/or habitats** involved.
	Met?	**Yes**	**No**	**No**
Rationale		**SG60 is met** because the measures are considered likely to work, based on plausible argument. The nature of the fishing gear, combined with information on bottom substrate types, indicate that habitat impacts from fishing will be minimal. **SG80 is not met** because there is limited evidence that the partial strategy is achieving the objectives set out in SI (a), based on information directly about the UoA and/or habitats involved. Aside from beach testing for *E. coli* during the summer, there is no ongoing monitoring of water quality, benthic invertebrate densities, or other habitat health indicators.		
c	**Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect more sensitive habitats**			
	Guide post	Information is adequate to **broadly understand** compliance in the UoA with management requirements to	Information is adequate to **determine**, with a **high degree of accuracy**, compliance in the UoA with both its management	Information is adequate to **determine**, with a **very high degree of accuracy**, compliance in the UoA with both its management

PI 2.3.2		There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats		
		protect **more** sensitive habitats.	requirements and protection measures afforded to **more** sensitive habitats by other MSC UoAs/non-MSC fisheries, **where relevant**.	requirements and with protection measures afforded to more sensitive habitats by other MSC UoAs/ non-MSC fisheries, **where relevant**.
	Met?	**NA**	**NA**	**NA**
Rationale		This fishery does not interact with more sensitive habitats.		
d	**Ghost gear management strategy**			
	Guide post	There are **measures** in place, **if necessary**, for the UoA that are expected to **minimise** ghost gear and its impact on all habitats.	There is a **partial strategy** in place for the UoA**, if necessary**, that is expected to **minimise** ghost gear and its impact on all habitats.	There is a **strategy** in place for the UoA, **if necessary**, that is expected to **minimise** ghost gear and its impact on all habitats.
	Met?	**Yes**	**No**	**No**
Rationale		**SG60 is met** because there are measures in place for the UoA that are expected to minimise ghost gear and its impact on all habitats. Overall usage of gear is regulated through effort limitations via the licensing and quota systems. In addition, fishers naturally try to keep and maintain their gear, as gillnets are not inexpensive (~CAD $180 to $250 per net). They may also remove derelict gear as they find it, to reduce ghost fishing and waste. Tools used to retrieve gear include large hooks. Fishing gear may not be left in place when not being actively fished, nor can decaying fish be left in nets (CFG 2023). The latter requirement may help reduce the chance that foraging or scavenging animals get attracted into the nets. **SG80 is not met** because there is not a partial strategy to minimise ghost gear. Lost gillnets are not required to be tracked or reported, nor does a gear loss reduction program exist.		

Draft scoring range	**60-79**
Information gap indicator	**Information sufficient to score PI**

PI 2.3.3 – Habitats information

PI 2.3.3		Information is adequate to determine the impact of the UoA on habitats, including changes in the risk posed by the UoA over time		
Scoring issue		**SG 60**	**SG 80**	**SG 100**
a	**Information quality**			
	Guide post	The types and distribution of habitats are **broadly understood**.	The nature, distribution, and **vulnerability** of habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA.	The distribution of The distribution of habitats is known over their range, with particular attention given to the occurrence of **vulnerable** habitats. habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.
	Met?	**Yes**	**Yes**	**No**
Rationale		**SG60 is met** because the types and distribution of habitats are broadly understood. Bottom substrates in the South Basin of Lake Manitoba consist mainly of silts and clayey silts (Last 1980). **SG80 is met** because the nature, distribution, and vulnerability of habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA. The south basin is mostly homogenous and dominated by fine particles, clay, and silt. Coarser substrate such as sand and gravel are found in some shoreline areas. The vulnerability of these habitat types is generally understood. For example, disturbance of fine particles and silt is expected to be temporary. **SG100 is not met** because the distribution of habitats is known over their range, with particular attention given to the occurrence of vulnerable habitats.		
b	**Information adequacy for assessment of impacts**			
	Guide post	Information is adequate to **broadly understand** the impacts of gear use on habitats.	Information is adequate to **estimate** the impacts of the UoA on habitats with a **high degree of accuracy**.	Information is adequate to **estimate** the impacts of the UoA on habitats with a **very high degree of accuracy**.
	Met?	**Yes**	**No**	**No**
Rationale		This scoring issue requires application of the MSC Evidence Requirements Framework (ERF) and evaluation of the trueness of information. TG2 (trueness guidepost 2) is considered met because there is limited potential for bias to exist in the information, but where it might exist, its effect on trueness is broadly understood and is not considered to be consequential. **SG60 is met** because information is adequate to broadly understand the impacts of gear use on habitats. For example, bottom-set gillnets are not expected to damage habitat unless they become snagged on rocks or aquatic plants while being hauled out, or if currents are strong (Morgan and Chuenpagdee 2003). Gillnets suspended in midwater have minimal impacts on bottom habitat (Morgan and Chuenpagdee 2003). **SG80 is not met** because information is not adequate to estimate the impacts of the UoA on habitats with a high degree of accuracy. The spatial and temporal distribution of fishing effort in the UoA in relation to habitats is not precisely known, as fishers are not required to report fishing locations using GPS, VMS, or other means. That said, Lake Manitoba is quite large (4607 km^2), and the numbers of licensed fishers is known. Thus the overall level of commercial fishing interaction with the lake bottom is expected to be limited. **SG100 is not met** because information is not adequate to estimate the impacts of the UoA on habitats with a very high degree of accuracy.		

PI 2.3.3		Information is adequate to determine the impact of the UoA on habitats, including changes in the risk posed by the UoA over time		
c	**Monitoring**			
	Guide post		Adequate information continues to be collected to detect any increase in risk to habitats.	Changes in habitat distributions over time are measured.
	Met?		**Yes**	**No**
Rationale		**SG80 is met** because adequate information continues to be collected to detect any increase in risk to habitats. Fishing effort and activities are regulated. **SG100 is not met** because changes in habitat distributions over time are not measured.		

Draft scoring range	**60-79**
Information gap indicator	**Information sufficient to score PI**

PI 2.4.1 – Ecosystem outcome

PI 2.4.1		The UoA does not cause serious or irreversible harm to the key elements underlying ecosystem structure and function		
Scoring issue		**SG 60**	**SG 80**	**SG 100**
a	**Ecosystem status**			
	Guide post	The UoA is **unlikely** to disrupt the **key** elements underlying ecosystem structure and function to a point where there would be serious or irreversible harm.	The UoA is **highly unlikely** to disrupt the **key** elements underlying ecosystem structure and function to a point where there would be serious or irreversible harm.	There is **evidence** that the UoA is **highly unlikely** to disrupt the **key** elements underlying ecosystem structure and function to a point where there would be serious or irreversible harm.
	Met?	**Yes**	**No**	**No**
Rationale		The MSC defines key ecosystem elements as the features considered most crucial to the ecosystem's characteristic nature and dynamics, and to the maintenance of the integrity of its structure and functions. Key elements of the Lake Manitoba ecosystem that may be impacted by the UoA are: (1) predator-prey interactions, particularly between Walleye and smaller prey fish; and (2) community composition. Any significant ecosystem impacts arising from the UoA will most likely be from fishery removals. Commercial gillnet fisheries have put substantial fishing pressure on Walleye in the lake. In terms of their role in the Lake Manitoba fish community, Walleye has a relatively high trophic position. Walleye consume fish species including Emerald Shiner (*Notropis atherinoides*) and Spottail Shiner (*Notropis hudsonius*). In turn, they are consumed by predators such as Northern Pike and Double-crested Cormorants. Walleye does not appear to be a critical, limiting prey species for other predators such as Northern Pike and Double-crested Cormorants. These predators consume a variety of species and do not show signs of depletion. In turn, removals of Walleye do not appear to have altered the dynamics and presence of their prey species, thought research is limited. Nutrient inputs into the lake have also affected ecosystem elements substantially, through eutrophication and associated consequences on food webs. Invasive species such as zebra mussels are found or starting to be found in Lake Manitoba. **SG60 is met** because the UoA is **unlikely** to disrupt the **key** elements underlying ecosystem structure and function to a point where there would be serious or irreversible harm. Lake Manitoba has diverse species and community composition, such that Walleye is not a limiting/critical prey or predator species. Other factors such as nutrient inputs and invasive species may have greater impacts on key ecosystem elements. **SG80 is not met** because evidence indicating that the UoA is **highly unlikely** to disrupt the **key** elements underlying ecosystem structure and function is limited.		

Draft scoring range	**60-79**
Information gap indicator	**More information sought** on the community of fish species in Lake Manitoba, as well as recent information on nutrient inputs and invasive species. Stakeholder consultation may help inform the scoring of this PI.
Data-deficient? (Risk-Based Framework needed)	**Possibly** Where there is no information available to support an analysis of the impact of the fishery on the ecosystem, the outcome PI in relation to ecosystem may be scored using the "Scale Intensity Consequence Analysis (SICA)" of the MSC's Risk Based Framework, Tool A of the MSC Fisheries Standard Toolbox v1.0.

PI 2.4.2 – Ecosystem management strategy

PI 2.4.2		There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function		
Scoring issue		**SG 60**	**SG 80**	**SG 100**
a	**Management strategy in place**			
	Guide post	There are **measures** in place, **if necessary**, which considers the potential impacts of the UoA on the **key** elements underlying ecosystem structure and function.	There is a **partial strategy** in place, **if necessary**, that is expected to achieve the Ecosystem outcome SG80 level.	There is a **strategy** in place for managing the impact of the UoA on the **key** elements underlying ecosystem structure and function.
	Met?	**Yes**	**No**	**No**
Rationale		**SG60 is met** because there are measures in place which consider the potential impacts of the UoA on the **key** elements underlying ecosystem structure and function. UoA fishery removals are regulated through input and output controls, and these are combined with monitoring of the fish community in a manner that allows for some management of impacts on key ecosystem elements. **SG80 is not met** because these measures do not appear to constitute a partial strategy that is expected to achieve the Ecosystem outcome SG80 level. The existing measures are not explicitly designed for the purpose of managing UoA fishery impacts on key ecosystem elements, and it is not clear whether there is a broader awareness of the need to change the measures should they cease to be effective.		
b	**Management strategy effectiveness**			
	Guide post	The **measures, if necessary**, are considered **likely** to work, based on plausible argument.	There is **some evidence** that the **measures/partial strategy, if necessary**, is achieving the objectives set out in scoring issue (a), based on some information directly about the UoA and/or the ecosystem involved.	There is **evidence** that the **partial strategy/strategy** is achieving the objectives set out in scoring issue (a) based on information directly about the UoA and/or ecosystem involved.
	Met?	**Yes**	**No**	**No**
Rationale		**SG60 is met** because the measures are considered likely to work based on plausible argument. Licensing, quota systems, and gear regulations are common measures for managing fishery removals. **SG80 is not met** because there is limited evidence that the partial strategy is achieving the objectives set out in scoring issue (a), based on some information directly about the UoA and/or the ecosystem involved. The UoA fishery does not appear to be substantially disrupting community structure or predator-prey interactions, but data analysis to support this conclusion has not yet been formally conducted.		

Draft scoring range	**60-79**
Information gap indicator	**Information sufficient to score PI**

PI 2.4.3 – Ecosystem information

PI 2.4.3		There is adequate knowledge of the ecosystem and the main impacts of the UoA on key ecosystem elements		
Scoring issue		**SG 60**	**SG 80**	**SG 100**
a	**Information quality**			
	Guide post	Information is adequate to identify the key elements of the ecosystem.	Information is adequate to broadly understand the key elements of the ecosystem.	
	Met?	**Yes**	**No**	
Rationale		**SG60 is met** because information is adequate to identify the key elements of the ecosystem. **SG80 is not met** because information may not be adequate to broadly understand the key elements of the ecosystem. Monitoring of ecosystem indicators for Lake Manitoba appears limited.		
b	**Investigation of UoA impacts**			
	Guide post	Main impacts of the UoA on the **key** ecosystem elements **can be inferred** from existing information	Main impacts of the UoA on the **key** elements of the ecosystem **have been investigated in detail**.	Main interactions between the UoA and the **key** ecosystem elements **have been investigated in detail**.
	Met?	**Yes**	**No**	**No**
Rationale		**SG60 is met** because the main impacts of the UoA on the key ecosystem elements can be inferred from existing information. UoA impacts on the ecosystem are largely due to fish removals, which are well quantified for the target species. **S80 is not met** because main impacts of the UoA on the key elements of the ecosystem have not been investigated in detail. Impacts of UoA fish removals on Lake Manitoba fish community structure have not been explicitly studied.		
c	**Understanding of component functions**			
	Guide post		The main functions of the components in the ecosystem are **known**.	The impacts of the UoA on the components are identified and the main functions of these components in the ecosystem are **understood**.
	Met?		**Yes**	**No**
Rationale		**SG80 is met** because the main functions of the components in the ecosystem are known. For example, Walleye are piscivorous predators (e.g. Hartman 2009) that form an ecologically important link between the upper and lower food webs (Pothoven and Madenjian 2013). Functions of OOS/ETP species and habitats are also generally known. **S100 is not met** because while the impacts of the UoA on the components have been broadly identified, the main functions of these components in the ecosystem are not fully understood.		
d	**Monitoring**			
	Guide post		Adequate data continue to be collected to detect any increase in risk level.	**Information is adequate** to support the development of strategies to manage ecosystem impacts.
	Met?		**No**	**No**
Rationale		**SG80 is not met** because it is not clear whether adequate data continue to be collected to detect any increase in risk level. The fishery-independent index netting program provides information on general abundances of different fish species within the lake ecosystem. Regular		

PI 2.4.3	There is adequate knowledge of the ecosystem and the main impacts of the UoA on key ecosystem elements
	monitoring of other indicators such as nutrient levels and benthic invertebrates does not appear to take place.

Draft scoring range	**60-79**
Information gap indicator	**Information sufficient to score PI**

7.6. Principle 3

7.6.1. Principle 3 background

The intent of Principle 3 (P3) is to ensure that there is an institutional and operational framework appropriate to the size and scale of the UoAs for implementing Principles 1 and 2, and that this framework is capable of delivering sustainable fisheries in accordance with the outcomes articulated in these Principles.

7.6.1.1. Areas of operation

The fishery takes place in Lake Manitoba, Province of Manitoba (Figure 1). The commercial fishery is operated during the winter under ice, opening when ice makes on or after November 1st and running through March 31st.

Freshwater fisheries in the Province of Manitoba are subject to both Federal and Provincial jurisdictions. Protection, ownership, allocation, use and management of fish, and fish habitat in Manitoba are governed by the Canadian constitution, duly signed treaties, and federal and provincial legislation (Knapman et al. 2022).

7.6.1.2. Legal and customary framework

The Manitoba Government Legislative Framework Overview describes the main components of the legal framework, as follows.

Conservation of Fish Resources under Federal Jurisdiction:

Section (§) 92.12 of the Constitution Act (1867) states that the Canadian Parliament has exclusive legislative authority to make laws respecting “Sea Coast and Inland Fisheries.” This has been judicially interpreted to mean that only the federal parliament, and not the provincial legislatures, can make laws governing the conservation and preservation of Canadian fisheries. Under the authority of § 91.12, Parliament enacted the Fisheries Act 1985 (Canada), the main law governing fisheries management in Canada.

Under the Fisheries Act (Canada), fisheries regulations are developed to address specific fish management issues in each province. In the case of the Province of Manitoba, these are embodied within the Manitoba Fishery Regulations.

Fish on Crown Property are a Provincial Resource:

The Government of Canada administered and controlled all Crown lands and resources in Manitoba, Alberta, and Saskatchewan until 1930, at which time the Constitution Act (1930) enacted Natural Resources Transfer Agreements for these three prairie provinces. The agreements transferred administrative control of Crown lands and resources to each provincial government, to better equalize the positions of all Canadian provinces.

Paragraph 10 of the Manitoba Natural Resources Transfer Agreement (1929) states:

> *10. Except as herein otherwise provided, all rights of fishery shall, after the coming into force of this agreement, belong to and be administered by the Province, and the Province shall have the right to dispose of all such rights of fishery by sales, licence or otherwise, subject to the exercise by the Parliament of Canada of its legislative jurisdiction over sea-coast and inland fisheries.*

Thus the Legislature of Manitoba has subsequently been able to make laws relating to the use of its own property and resources, under the authority of § 92(5) of the Constitution Act, 1867 (“the Management and Sale of the Public Lands belonging to the Province and of the Timber and Wood thereon”).

Mixed Federal and Provincial Jurisdiction:

Consequently:

1. The Canadian Parliament has exclusive constitutional jurisdiction to make laws for the conservation of fish, including setting fishing seasons, quotas, size limits and gear restrictions, and does this under the authority of the Fisheries Act (Canada) and regulations to that Act; while

2. The Legislature of Manitoba maintains constitutional jurisdiction to make laws relating to the use and allocation of fish in Crown (Manitoba) waters as part of the public property. This includes the right to determine who can fish on provincial Crown land (licencing), what conditions may be included in a licence, and what fee would be paid for the licence. This authority is exercised under The Fisheries Act of Manitoba and regulations to that Act.

Simply put, those matters dealing with the conservation of the fish resource are addressed by the Fisheries Act (Canada) and the Manitoba Fishery Regulations made under the Act. Those matters relating to property rights in fish on Manitoba Crown land (water) are covered by The Fisheries Act (Manitoba) and regulations to that Act.

Fish Management and Administration:

While the Government of Canada retains ultimate legal authority and responsibility for fish and fish habitat conservation matters, some of the day-to-day management and administration of federal fisheries regulations has effectively been delegated to the following Manitoba officials: The Minister of Water Stewardship, the Director of Fisheries, and fishery officers employed by Manitoba.

Under the Manitoba Fishery Regulations (Canada), the Minister of Water Stewardship and the Director of Fisheries have been given the authority to vary close times, quotas and gear types established under those regulations. Changes to the Manitoba Fishery Regulations (Canada) are proposed by the Minister of Water Stewardship to Fisheries and Oceans Canada. Fisheries and Oceans Canada then reviews the proposed changes and forwards them for approval by Federal Cabinet (Governor in Council).

Legislative responsibility for management of fish habitat has not been specifically legislatively delegated to Manitoba officials. However, Manitoba Water Stewardship continues to manage habitat as an adjunct to other fish management activities.

Fisheries Branch, Province of Manitoba also operates under, amongst others, the authority of The Wildlife Act (Manitoba), The Fisheries Act (Manitoba), The Endangered Species and Ecosystems Act (Manitoba), and The Water Protection Act (Manitoba). In 2013/2014, the Province of Manitoba enacted The Fisheries and Wildlife Amendment Act (Restitution) which amended The Fisheries Act (F90) of Manitoba and The Wildlife Act of Manitoba to specify that persons convicted of offences involving the unlawful harvesting or possession of fish or wild animals are liable to the government for their value. Offenders cannot obtain a hunting or fishing licence until they have paid the amount owed. Restitution does not apply to commercial fishers because the administration system allows for quota deductions and other penalties such as licence suspensions to address harvest overages occurring during normal commercial fishing activities (Klein et al. 2020).

In summary, most of the governance and management tools for the Lake Manitoba commercial gillnet fishery are held in Provincial legislation and Provincial Fisheries Branch policy. One significant exception is governance of fish habitat, for which the federal government retains responsibility. Information relating the Fisheries Act (Manitoba) and the Manitoba Fishery Regulations is shared with commercial fishers through the Commercial Fishing Guide, which is attached to individual fishing licences, and through the EDITNR Fisheries Branch website.

7.6.1.3. Dispute resolution

The Federal Courts Act 1985 provides a mechanism for parties to challenge decisions of administrative bodies or tribunals. Unresolved disputes within the Canadian fisheries management system can be, and have been, taken to the Canadian judicial system for a final decision. One of the most notable of these over the last three decades in relation to fishing rights has been the "Sparrow" decision. The Sparrow Decision (1990) resolved that Indigenous groups have a right to fish for food, societal and ceremonial purposes, and that this use-right is surpassed only by conservation of the resource. Essentially, the first priority for determination of fishing rights is conservation, followed by rights holders, and then recreational fishers and commercial fishers. The relative prioritization of the latter two groups is determined by each province.

The Provincial management system also incorporates mechanisms for the resolution of legal disputes, which depend on the nature of the dispute. Licensing disputes are handled by the Director of the Fisheries Branch. There is an appeal process outlined in the Lake Manitoba Administrative Procedures to handle disputes related to licence suspensions, which includes a review by the Lake Manitoba Licence Review Board. Enforcement infractions can be disputed in Manitoba courts. The process is outlined on the ticket, and some infractions require a court appearance, or

they go to a default conviction. Other legal disputes can be elevated to the court system; however this is extremely rare. There is limited information to evaluate the effectiveness of provincial mechanisms at handling disputes.

At the level of individual, enforcement-related disputes, fishers who wish to dispute enforcement charges can do so through court challenges. For example, a fisher's licence can be suspended or cancelled on the Minister's authority following any conviction under fisheries legislation, or for violating terms and conditions of a licence. Fishers who wish to appeal a suspension can do so referring to the Commercial Fishing Suspension Directive for guidance. The Suspension Directive has been revised with the most recent changes made effective on December 20, 2022.

7.6.1.4. First Nations fisheries and respect of rights

The Constitution Act 1982 (Part II, Section 35) recognises and confirms Aboriginal and treaty rights of the Aboriginal peoples of Canada, including the legal rights to fish for food and livelihood. This has been litigated and confirmed by the Supreme Court on several occasions (e.g. R.v Sparrow). Manitoba has First Nations, Métis and Inuit people. Métis are peoples of mixed European and North American indigenous parentage. Lake Manitoba specifically has First Nation and Métis people and communities (E. Dunbar, pers. comm. June 2024).

At the federal level, the Constitution Act 1982 (Part II, Section 35) recognises and confirms Aboriginal and treaty rights of the Aboriginal peoples of Canada, including the legal rights to fish for food and livelihood. The Natural Resources Transfer Agreement (1930), which forms part of The Constitution Act (1982), provides that First Nations with status have a right to fish for subsistence uses throughout Manitoba on all unoccupied Crown lands and on any other lands to which they may have a right of access. At the provincial level, seven of the Numbered Treaties between the Crown and First Nations apply in Manitoba: 1, 2, 3, 4, 5, 6, and 10. The treaties were signed to enshrine, among other things, the respective rights of First Nations people and governments to use lands that First Nations people traditionally inhabited. The Red River Métis have rights recognized and affirmed as protected by section 35 of the Constitution Act, 1982 and through Manitoba courts, to harvest fish for food from the defined region of Manitoba known as the recognized area for Métis Natural Resource Harvesting.

Two treaties include the shorelines of Lake Manitoba: Treaty 1 (1871) – Sandy Bay First nation; Treaty 2 (1871) – Pinaymootang First Nation, Lake Manitoba First Nation, O-chi-chak-ko-sipi First Nation, Ebb-and-flow First Nation. Nearby on Lake St. Martin are Lake St. Martin First Nation and Little Saskatchewan First Nation.

Two of Manitoba's Indigenous groups live adjacent to Lake Manitoba and use it the most frequently: the Anishinaabe and Métis. When Manitoba adopted a commercial fishing license system with seasonal closures, rights holders could continue to fish for their own needs without a licence and are generally not subject to seasonal closures or gear restrictions. As such, there are mechanisms for observing the legal fishing rights of Indigenous peoples. Fishing gear, such as gill nets, that are left unattended by rights holders must be clearly marked with the owner's name and either their Treaty number or Manitoba Métis Federation Card number.

Subsistence fishing often involves multiple household members including men, women and children. Gillnets and rod-and-reel fishing are the main gears used. Fishers are not restricted to a specific number of nets if the catch is for personal and household consumption, noting as stated above that the nets need to be marked with identifying information. The level of subsistence harvest is not directly known, as subsistence fishers do not need permits and cannot be formally tracked. The province of Manitoba uses broadly-based studies of Indigenous subsistence consumption to roughly estimate subsistence harvest levels (Klein et al. 2020).

7.6.1.5. Groups involved in provincial fisheries governance

The primary organisation involved in the governance of the fishery is the Manitoba Department of Economic Development, Investment, Trade, and Natural Resources (EDITNR), Fisheries Branch. EDITNR is responsible for the management of the fishery, index netting and assessment of the fish stocks, and collating all delivery data from fishers and fish buyers. They are also responsible for advising fishers when quotas have been filled and that the fishery is being closed. Typically, fishers are advised by notices posted at landing areas or packing sheds. The Manitoba Conservation Officer Service, also within EDITNR, is responsible for the enforcement of fisheries regulations. Figure 14 depicts an organizational chart showing important roles and responsibilities within the EDTINR Fisheries Branch.

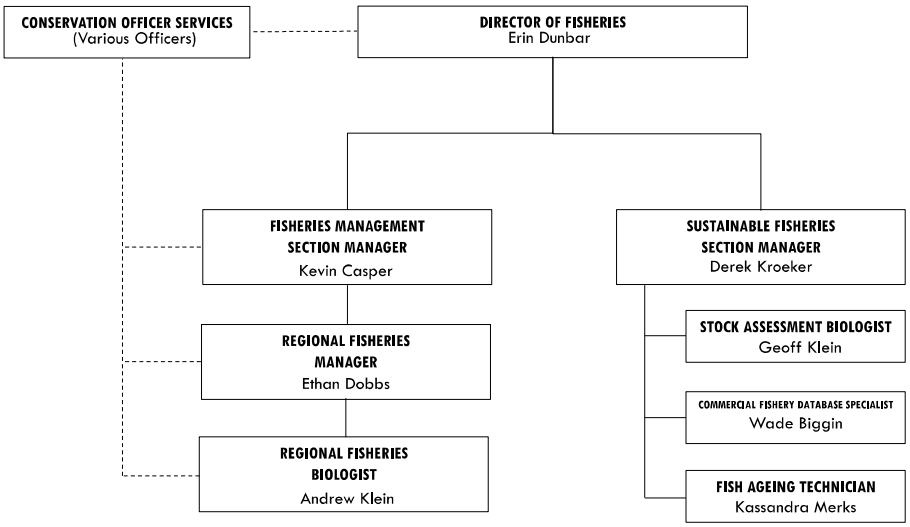

Figure 14. Chart showing key individuals in Manitoba fisheries management and their roles. Source: Fisheries Branch.

The federal Department of Fisheries and Oceans (DFO) is responsible for enforcement of fish habitat protection, and through the Coast Guard, the quality of vessels in the fishery. Specifically, DFO regulates activities that cause the harmful alteration, disruption or destruction of fish habitat or the death of fish by means other than fishing. There is some overlap between DFO and the Federal Department of Environment and Climate Change Canada (ECCC), which manages water quality and prohibits the deposit of “deleterious substances” into “waters frequented by fish,” with the exceptions of: (1) deposits in the context of aquaculture, and (2) deposits for the control or eradication of aquatic invasive species and aquatic pests.

The Fisheries Branch meets with Lake Manitoba commercial fishers through the Lake Manitoba Commercial Fishermen’s Association, by attending meetings held in communities adjacent to the lake. The Regional Fisheries Manager meets annually and additionally upon request with the Association. Meetings typically occur in Spring after the winter commercial fishing season concludes. The stock status and management of the fishery are discussed at these meetings, along with any other matters raised by the Fisheries Branch or by the fishers.

7.6.1.6. Fisheries management objectives

Long-term objectives

At the federal level, Canada’s Fisheries Act has a purpose statement (Section 2.1) outlining its objectives. Additionally, the act includes a series of considerations for decision making which contain the precautionary approach, ecosystem approach, and sustainability of fisheries.

Purpose of Act

2.1 The purpose of this Act is to provide a framework for

(a) the proper management and control of fisheries; and

(b) the conservation and protection of fish and fish habitat, including by preventing pollution.

Considerations for decision making

2.5 Except as otherwise provided in this Act, when making a decision under this Act, the Minister may consider, among other things,

(a) the application of a precautionary approach and an ecosystem approach;

(b) the sustainability of fisheries;

(c) scientific information;

(d) Indigenous knowledge of the Indigenous peoples of Canada that has been provided to the Minister;

(e) community knowledge;
(f) cooperation with any government of a province, any Indigenous governing body and any bod — including a co-management body — established under a land claims agreement;
(g) social, economic and cultural factors in the management of fisheries;
(h) the preservation or promotion of the independence of licence holders in commercial inshore fisheries; and
(i) the intersection of sex and gender with other identity factors.

The stated purpose of the Species at Risk Act (SARA) is "to prevent wildlife species, from being extirpated or becoming extinct, to provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity and to manage species of special concern to prevent them from becoming endangered or threatened."

At the Provincial level, the Fisheries Branch is mandated to meet its "Public Trust" obligations by ensuring the rational, orderly use of Manitoba's fisheries resource**s** within the resources**'** capacity to produce a harvestable surplus**.** Their long-term objectives towards achieving this mandate are described as follows (Klein et al. 2020):

- ensure "No Net Loss" of quality and quantity of fish habitats;
- ensure that adequate supply exists to meet Constitutional obligations for Indigenous peoples to fish for food;
- have sustainable, community supported fishery management strategies;
- provide a diversity of angling opportunities;
- provide consistent, professional, high quality service to our clients and recommendations to elected decision makers; and
- facilitate public participation in resource management and the decision making process.

Fisheries-specific objectives

There is no official management plan for the Lake Manitoba commercial gillnet fishery, but some provincial-level objectives exist. However, the Fisheries Branch, Province of Manitoba has described the following fishery-specific objectives for management, which appear to be implicit rather than explicit at this stage:

- Develop a fisheries management plan cooperatively with commercial fishers and recognize the need for an adaptive management approach.
- Implement management changes with engagement of commercial fishers and other resource users to ensure harvest levels are reflective of current stock status.
- Continue to implement the Department's Suspension Directive to ensure fishers are held accountable when enforcement infractions take place.
- Work with the industry to ensure continued access to local and international markets.

7.6.1.7. Decision making processes

The Province of Manitoba, through existing acts and regulations, retains primary authority and the legal right to make decisions in the best interests of conservation and the fishery resources of Manitoba, including those in Lake Manitoba. First Nations located on the lake have some decision-making authority within their areas of jurisdiction. For example, they may decide who gets to hold commercial fishing licenses within their licensing area (E. Dunbar, pers. comm., March 2024). However, there is no formal co-management arrangement, and First Nations do not have legal authority with respect to commercial fisheries management.

The Fisheries Branch aims to proactively engage stakeholders, including commercial fishers and fisher cooperatives, when developing and making management decisions. One example of decision-making is reflected in operational and regulatory changes in mesh size, as described in an EDITNR report (2021). The Lake Manitoba commercial fishery became a winter-only fishery starting in 1905 and initially targeted Lake Whitefish. As the whitefish stock declined, and smaller mesh sizes were allowed, harvest shifted to Walleye and Sauger, which were primarily caught using 3.75-inch mesh gillnets. In turn the Walleye and Sauger stocks declined. Fishers then started catching Yellow Perch, in the mid 1980s, when 3-inch mesh gillnets were allowed. Production kept declining until fishers formally requested a return to

minimum mesh size of 3.75 inches during the 2016-2017 fishing year. Following this regulatory change, Walleye production increased. The Sauger stock is still in the process of recovery.

Another example is the voluntary license buy-back program implemented by the Fisheries Branch. The goal of the program was to reduce the number of commercial licences on Lake Manitoba, which could reduce the lake quota and help ensure the long-tern sustainability of the fishery. On June 16, 2022, the Fisheries Branch sent a letter to Lake Manitoba commercial fishers describing the status of fishery, accompanied by a questionnaire to obtain fishers' feedback on a voluntary license buy-back program and other management topics. The questionnaire results suggested some interest in the program, which was implemented starting in late 2022. As of August 2023, 71 licences had been surrendered.

7.6.1.8. Control and enforcement

The Manitoba Conservation Officer Service, under EDITNR, is responsible for the enforcement of fisheries regulations.

Licences can be suspended or cancelled on the Minister's authority following any conviction under Fisheries legislation (federal Fisheries Acts and/or their regulations) or for violating terms and conditions of a licence. This authority is defined in Section 16 of MR 124/97, the Fishing Licensing Regulation. The Suspension Directive was originally approved in 2007 and recently revised with changes effective on December 20, 2022. This directive describes the principles and process underlying the administration and enforcement of commercial fishing licence suspensions. The directive describes different categories of offenses and the recommended suspension terms for each category (Table 15).

According to the directive, a fisher, while serving a suspension of their commercial fishing license, cannot:

1) participate in the setting, lifting or retrieval of any commercially set fishing net or other equipment associated with any commercial fisher within Manitoba;
2) participate as a hired man or helper for another licensed commercial fisher during the term of the suspension;
3) participate in the transportation of fish and cannot participate in any activity involving the sale of fish; and
4) transport fishing equipment from the location being fished, to the point of landing, to a location where fish are being processed and to a location where fish are sold.

In areas where there are no individual quotas, such as Lake Manitoba, the total lake quota is fished by all licensed fishers. In these cases there are no overage charges.

Table 15. Offence categories and recommended suspensions. Source: Manitoba Commercial Fishing Suspension Directive.

Offence Category Schedules	Recommended Suspension
A. Illegal Fishing or Illegal Sale ♦ Illegal sale / barter (failing to provide a trade record or sales receipt) ♦ Fishing out of season Fishing without authorization (harvest or sale / barter of fish without a proper licence)	♦ Up to 3 year suspension for a single conviction ♦ Up to 5 year suspension for convictions for 2 offences that occurred within 5 years ♦ Up to a lifetime suspension for 3 convictions in 10 years
B. Conservation Violations ♦ Leaving decayed fish in nets ♦ Fishing out of season ♦ Use of illegal mesh nets ♦ Possession or marketing of Lake Sturgeon	♦ Up to 1 year suspension for a single conviction ♦ Up to 2 year suspension for 2 convictions that occurred within 5 years
C. Fraudulent or Negligent Reporting / Record Keeping ♦ Provide records with false information ♦ Alter or allow others to use licence ♦ Incomplete Trade Records or loadslips ♦ Fail to submit trade records or loadslips ♦ Transport fish in contravention of loadslip regulation	♦ Up to 1 year suspension for 2 convictions in 5 years
D. Breaching term or condition of a licence ♦ Significantly or persistently exceed allowable quota ♦ Failing to meet any licence condition	♦ Up to 1 year suspension for a single breach ♦ Multiple or further breaches may result in suspensions of a greater length

Note: Multiple or continuous violations beyond the recommended suspension outlined in this table may result in suspensions of greater length.

Individuals who are being issued a suspension have the opportunity to submit a written appeal within 30-working days of the date of the letter notifying them of the suspension. In the appeal they may provide details on any extenuating circumstances beyond their control that may have resulted in the violation.

Commercial Fish Patrol Reports were provided describing the results from seven patrols conducted by conservation officers and Fisheries Branch staff from 3 January to 16 February, 2022. During these patrols, one fisher was issued two tickets for failing to comply with license conditions and not properly marking their gillnet. Another received warnings for not having the licensed commercial fisher present during fishing operations, failing to comply with conditions, and not properly marking their gillnet. A third fisher received tickets for allowing fish to rot in their nets, resulting in wastage. No Lake Manitoba fishers have been suspended in recent years (K. Casper, pers. comm., June 2024).

7.6.1.9. Management performance evaluation

Fisheries Branch staff meet regularly (e.g. annually or more frequently upon request) with key community and industry stakeholders including the Lake Manitoba Commercial Fishermen's Association. Meetings cover a variety of fisheries management topics such as reviews of current stock assessment information, management of the fishery, and coordinating progress on initiatives such as eco-label certification. The Fisheries Branch sends letters to individual commercial fishers when major changes to the fishery are proposed and sends newsletters to keep fishers informed of happenings in the fishery. These communication mechanisms allow for some evaluation of the management system.

Government departments, as well as main and regional offices, may also provide some mutual oversight of aspects of management.

7.6.2. Principle 3 Performance Indicator scores and rationales

PI 3.1.1 – Legal and/or customary framework

PI 3.1.1		**The management system exists within an appropriate and effective legal and/or customary framework which ensures that it:** • **Is capable of delivering sustainability in the UoA(s);** • **Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and** • **Incorporates an appropriate dispute resolution framework**		
Scoring issue		**SG 60**	**SG 80**	**SG 100**
a	**Compatibility of laws or standards with effective management**			
	Guide post	There is an **effective national legal system** and a **framework for cooperation** with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an **effective national legal system** and **organised and effective cooperation with other parties**, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an **effective national legal system** and **binding procedures governing cooperation with other parties** that deliver management outcomes consistent with MSC Principles 1 and 2.
	Met?	**Federal - Yes**	**Federal - Yes**	**Federal - Yes**
		Provincial - Yes	**Provincial - Yes**	**Provincial - Yes**
Rationale		Federal and Provincial level governance **SG 60 is met** because there is an effective national legal system and framework for cooperation to deliver management outcomes consistent with MSC Principles 1 and 2. The Canadian Parliament has exclusive constitutional jurisdiction to make laws for the conservation of fish and does this under the authority of the Fisheries Act (Canada) and regulations to that Act. The Legislature of Manitoba maintains constitutional jurisdiction to make laws relating to the use and allocation of fish in Crown (Manitoba) waters as part of the public property. This includes the right to determine who can fish on provincial Crown land (licencing), what conditions may be included in a licence, and what fee would be paid for the licence. This authority is exercised under The Fisheries Act of Manitoba and regulations to that Act. **SG 80 is met** because there is an effective national legal system and organised and effective cooperation with other parties. Most of the day-to-day management and administration of fisheries regulations has been delegated to Manitoba (e.g. the Minister of Water Stewardship, the Director of Fisheries, and fishery officers employed by Manitoba), although the Government of Canada retains legal responsibility for fish habitat conservation matters. The Province of Manitoba has relevant legislation and policies in place, particularly the Manitoba Fisheries Act and regulations (including the Fish Marketing Regulations), Branch Procedures, and the Lake Manitoba Administrative Procedures.		

<table>
<tr><td colspan="2">PI 3.1.1</td><td colspan="3">The management system exists within an appropriate and effective legal and/or customary framework which ensures that it:
• Is capable of delivering sustainability in the UoA(s);
• Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and
• Incorporates an appropriate dispute resolution framework</td></tr>
<tr><td colspan="2"></td><td colspan="3">SG100 is met because the procedures governing cooperation with other parties are also binding. Changes to the Manitoba Fishery Regulations are proposed by Manitoba's Minister of Manitoba Natural Resources and DFO. DFO then reviews the proposed changes and forwards them for approval by the Federal Cabinet. The defined approaches are legally binding on the Federal and Provincial management bodies.</td></tr>
<tr><td rowspan="4">b</td><td colspan="4">Resolution of disputes</td></tr>
<tr><td>Guide post</td><td>The management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system.</td><td>The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the UoA.</td><td>The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes, which is appropriate to the context of the fishery and has been tested and proven to be effective.</td></tr>
<tr><td rowspan="2">Met?</td><td>Federal - Yes</td><td>Federal - Yes</td><td>Federal - Yes</td></tr>
<tr><td>Provincial - Yes</td><td>Provincial - No</td><td>Provincial - No</td></tr>
<tr><td colspan="2">Rationale</td><td colspan="3">Federal level governance

SG60 is met because the federal management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system. The Federal Courts Act 1985 provides a mechanism for parties to challenge decisions of administrative bodies or tribunals. Unresolved disputes within the Canadian fisheries management system can be taken to the Canadian judicial system for a final decision.

SG80 is met because the mechanism for the resolution of legal disputes is transparent and considered to be effective. Federal court hearings are open to the public and media, and court cases and their proceedings can be viewed online. The dispute resolution mechanism is therefore considered to be transparent, effective and appropriate for dealing with most issues in the context of the UoAs.

SG100 is met because the mechanism for the resolution of legal has been tested and proven to be effective. For example, the Sparrow Decision (1990) resolved that Indigenous groups have a right to fish for food, societal and ceremonial purposes, and that this use-right is surpassed only by conservation of the resource.

Provincial level governance

SG60 is met because the provincial management system incorporates mechanisms for the resolution of legal disputes arising within the system. The mechanism employed depends on the nature of the dispute. Licensing disputes are handled by the Director of the Fisheries Branch. There is an appeal process outlined in the Lake Manitoba Administrative Procedures to handle disputes related to suspensions, which includes a review by the Lake Manitoba Licence Review Board. Enforcement infractions can be disputed in Manitoba courts. The process is outlined on the ticket, and some infractions require a court appearance or they go to a default conviction. Other legal disputes can be elevated to the court system; however this is extremely rare.

SG80 is not met because there is limited information to evaluate the effectiveness of provincial mechanisms at handling disputes.</td></tr>
<tr><td>c</td><td colspan="4">Respect for rights</td></tr>
</table>

PI 3.1.1		The management system exists within an appropriate and effective legal and/or customary framework which ensures that it: • **Is capable of delivering sustainability in the UoA(s);** • **Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and** • **Incorporates an appropriate dispute resolution framework**		
	Guide post	The management system has a mechanism to **generally respect** the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to **observe** the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to **formally commit** to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
	Met?	**Federal - Yes**	**Federal - Yes**	**Federal - Yes**
		Provincial - Yes	**Provincial - Yes**	**Provincial - Yes**
Rationale		Federal and provincial level governance Manitoba, has First Nations, Métis and Inuit people. Lake Manitoba specifically has First Nation and Métis people and communities (E. Dunbar, pers. comm. June 2024). **SG60 is met** because the management system has a mechanism to generally respect the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2. At the federal level, the Constitution Act 1982 (Part II, Section 35) recognises and confirms Aboriginal and treaty rights of the Aboriginal peoples of Canada, including the legal rights to fish for food and livelihood. The Natural Resources Transfer Agreement (1930), which forms part of The Constitution Act (1982), provides that First Nations with status have a right to fish for subsistence uses throughout Manitoba on all unoccupied Crown lands and on any other lands to which they may have a right of access. At the provincial level, seven of the Numbered Treaties between the Crown and First Nations apply in Manitoba: 1, 2, 3, 4, 5, 6, and 10. Treaties 1 and 2 include the shores of Lake Manitoba. The treaties were signed to enshrine, among other things, the respective rights of First Nations people and governments to use lands that First Nations people traditionally inhabited. The Red River Métis have rights recognized and affirmed as protected by section 35 of the Constitution Act, 1982 and through Manitoba courts, to harvest fish for food from the defined region of Manitoba known as the recognized area for Metis Natural Resource Harvesting. **SG80 is met** because the mechanism also observes these legal rights. Canadian courts have established that subsistence fisheries of indigenous people have priority over all other uses of the resource except conservation of the resource itself, through the Constitution Act of Canada 1982 and the treaties with First Nations. Rights cases have been litigated and confirmed by the Supreme Court on several occasions (e.g. *R.v Sparrow*). At the provincial level, First Nation and Métis people can harvest fish from Lake Manitoba for subsistence. When Manitoba adopted a commercial fishing license system with seasonal closures, rights holders could continue to fish for their own needs without a licence and are generally not subject to seasonal closures or gear restrictions. This indicates that the legal fishing rights of First Nations people, Métis people, and communities are being observed. **SG100 is met** because the mechanism also formally commits to these legal rights**.** As demonstrated in cases such as *R.v Sparrow*, the Canadian constitution and Supreme Court of Canada judgements provide a tested and proven mechanism to formally commit to the legal rights of Indigenous peoples to fish for food and livelihood. The Numbered Treaties also represent formal commitments, as can be seen in Treaties 1 and 2 Between Her Majesty The Queen and the Chippewa and Cree Indians of Manitoba and Country Adjacent with Adhesions.		

Draft scoring range	**60-79**

Information gap indicator	**Information sufficient to score PI**

PI 3.1.2 – Consultation, roles, and responsibilities

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties		
Scoring issue		**SG 60**	**SG 80**	**SG 100**
a	**Roles and responsibilities**			
	Guide post	Organisations and individuals involved in the management process have been identified. Functions, roles, and responsibilities are **generally understood**.	Organisations and individuals involved in the management process have been identified. Functions, roles, and responsibilities are **explicitly defined and well understood for key areas** of responsibility and interaction.	Organisations and individuals involved in the management process have been identified. Functions, roles, and responsibilities are **explicitly defined and well understood for all areas** of responsibility and interaction.
	Met?	**Federal - Yes**	**Federal - No**	**Federal - No**
		Provincial - Yes	**Provincial – No**	**Provincial – No**
Rationale		Federal and provincial level governance **SG60 is met** because organisations and individuals involved in the management process have been identified, and their roles generally understood. The primary organisation involved in the governance of the fishery is the Manitoba Department of Economic Development, Investment, Trade, and Natural Resources (EDITNR), Fisheries Branch. Roles within the Fisheries Branch are shown in Figure 14. The Manitoba Conservation Officer Service, also within EDITNR, is responsible for the enforcement of fisheries regulations. The federal Department of Fisheries and Oceans (DFO) is responsible for enforcement of fish habitat protection, and through the Coast Guard, the quality of vessels in the fishery. Fishers and fisher communities participate in management processes through associations such the Lake Manitoba Commercial Fishermen's Association. **SG80 is not met** because the roles and responsibilities of these organisations have not been explicitly defined for key areas of responsibility and interaction in publicly available documents.		
b	**Consultation processes**			
	Guide post	The management system includes consultation processes that **obtain relevant information** from the main affected parties, including **local knowledge**, to inform the management system.	The management system includes consultation processes that **regularly seek and accep**t relevant information, **including local knowledge**. The management system demonstrates consideration of the information obtained.	The management system includes consultation processes that **regularly seek and accept** relevant information, including **local knowledge**. The management system demonstrates consideration of the information and **explains how it is used or not used**.
	Met?	**Federal - NA**	**Federal - NA**	**Federal - NA**
		Provincial - Yes	**Provincial – No**	**Provincial – No**
Rationale		Provincial level governance – for this scoring issue, provincial governance is the most relevant. **SG60 is met** because the management system includes consultation processes that obtain relevant information from the main affected parties, including local knowledge, to inform the management system. The Fisheries Branch meets regularly with Lake Manitoba commercial fishers through the Lake Manitoba Commercial Fishermen's Association, at meetings held in communities adjacent to the lake. The Regional Fisheries Manager meets the fishers annually and additionally upon request of the Association. Meetings typically occur in Spring after the winter commercial fishing season concludes. The stock status and management of the fishery		

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties		
		are discussed at these meetings, along with any other matters raised by the Department or by the fishers. **SG80 is not met** because there is limited public documentation, such as meeting minutes and reports, to demonstrate how the management system considers and uses the information obtained.		
c	**Participation**			
	Guide post		The consultation process **provides opportunity** for all interested and affected parties to be involved.	The consultation process **provides opportunity and encouragement** for all interested and affected parties to be involved, and **facilitates** their effective engagement.
	Met?		**Yes**	**No**
Rationale		**SG80 is met** because the consultation process provides opportunity for all interested and affected parties to be involved. The Department meets with fishery stakeholders as described under SI(b), and the EDITNR website for Manitoba Fisheries provides its contact information to the general public. **SG100 is not met** because the extent to which the consultation process provides encouragement for affected parties to be involved and facilitates their effective engagement is not very clear.		

Draft scoring range	**60-79**
Information gap indicator	**Information sufficient to score PI**

PI 3.1.3 – Long term objectives

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with the MSC Fisheries Standard, and incorporates the precautionary approach		
Scoring issue		**SG 60**	**SG 80**	**SG 100**
a	**Objectives**			
	Guide post	Long-term objectives to guide decision-making, consistent with the MSC Fisheries Standard and the **precautionary approach,** are **implicit** within **management policy**.	**Clear** long-term objectives that guide decision-making, consistent with the MSC Fisheries Standard and the **precautionary approach**, are **explicit** within **management policy**.	**Clear** long-term objectives that guide decision-making, consistent with the MSC Fisheries Standard and the **precautionary approach**, are **explicit** within **and required by** management policy.
	Met?	**Federal - Yes**	**Federal - Yes**	**Federal - Yes**
		Provincial - Yes	**Provincial - Yes**	**Provincial - No**
Rationale		Federal level governance **SG60 and SG80 are met** because the long-term objectives to guide decision-making, consistent with the MSC Fisheries Standard and the precautionary approach, are clear and explicit within management policy at the federal level. Sustainability objectives relating to fish stocks, ecosystem impacts, and the precautionary approach are included in Canadian legislation such as Canada's Fisheries Act and Species at Risk Act, as well as policy initiatives such as the Sustainable Fisheries Framework. Specifically, the stated purpose of Canada's Fisheries Act is "to provide a framework for (a) the proper management and control of fisheries; and (b) the conservation and protection of fish and fish habitat, including by preventing pollution. The act specifies that when making a decision under the act, the Minister may consider, among other things, "(a) the application of a precautionary approach and an ecosystem approach…." **SG100 is met** because these federal-level objectives are also required by management policy. Provincial level governance **SG60 and SG80 are met** because the long-term objectives to guide decision-making, consistent with the MSC Fisheries Standard and the precautionary approach, are clear and explicit within management policy at the provincial level. The EDITNR Fish and Wildlife website states, "the Manitoba government has a mandate to secure the sustainability and certification of our commercial fisheries." To meet this mandate, the Fisheries Branch has defined the following long-term objectives (Klein et al. 2020): • ensure "No Net Loss" of quality and quantity of fish habitats; • ensure that adequate supply exists to meet Constitutional obligations for Indigenous peoples to fish for food; • have sustainable, community supported fishery management strategies; • provide a diversity of angling opportunities; • provide consistent, professional, high quality service to our clients and recommendations to elected decision makers; and • facilitate public participation in resource management and the decision making process. **SG100 is not met** because we did not have evidence that these provincial-level objectives are required by management policy.		

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

PI 3.2.1 – Fishery-specific objectives

PI 3.2.1		The fishery-specific management system has clear, specific objectives designed to achieve the outcomes expressed by MSC Principles 1 and 2		
Scoring issue		**SG 60**	**SG 80**	**SG 100**
a	**Objectives**			
	Guide post	**Objectives**, which are broadly consistent with achieving the outcomes expressed by MSC Principles 1 and 2, are **implicit** within the fishery-specific management system.	**Short and long-term objectives**, which are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, are **explicit** within the fishery-specific management system.	**Well-defined and measurable short- and long-term objectives**, which are demonstrably consistent with achieving the outcomes expressed by MSC Principles 1 and 2, are **explicit** within the fishery-specific management system.
	Met?	**Yes**	**No**	**No**
Rationale		**SG60 is met** because objectives, which are broadly consistent with achieving the outcomes expressed by MSC Principles 1 and 2, are implicit within the fishery-specific management system. The Fisheries Branch, Province of Manitoba has described these fisheries management objectives as follows: • Develop a fisheries management plan cooperatively with commercial fishers and recognize the need for an adaptive management approach. • Implement management changes with engagement of commercial fishers and other resource users to ensure harvest levels are reflective of current stock status. • Continue to implement the Department's Suspension Directive to ensure fishers are held accountable when enforcement infractions take place. • Work with the industry to ensure continued access to local and international markets. **SG80 is not met** because short-term and long-term objectives, which are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, are not explicit within the fishery-specific management system. Although some objectives have been described as above, there is no management plan with explicit objectives for the Lake Manitoba commercial gillnet fishery.		

Draft scoring range	**60-79**
Information gap indicator	**Information sufficient to score PI**

PI 3.2.2 – Decision-making processes

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery		
Scoring issue		**SG 60**	**SG 80**	**SG 100**
a	**Decision-making processes**			
	Guide post	There are **some** decision-making processes in place that result in **measures** and **strategies** to achieve the fishery-specific objectives.	There are **established** decision-making processes that result in **measures** and **strategies** to achieve the fishery-specific objectives.	
	Met?	**Yes**	**No**	
Rationale		**SG60 is met** because there are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives**.** The Province of Manitoba, through existing acts and regulations, retains primary authority and the legal right to make decisions in the best interests of conservation and the fishery resources of Manitoba, including those in Lake Manitoba. The Fisheries Branch aims to proactively engage stakeholders, including commercial fishers and fisher cooperatives, when developing and making management decisions. **SG80 is not met** because evidence is limited that these decision-making processes are established and result in measures and strategies to achieve the fishery-specific objectives for Lake Manitoba.		
b	**Responsiveness of decision-making processes**			
	Guide post	Decision-making processes respond to **serious issues** identified in relevant research, monitoring, evaluation, and consultation, in a transparent, timely and adaptive manner, and take some account of the wider implications of decisions.	Decision-making processes respond to **serious and other important issues** identified in relevant research, monitoring, evaluation, and consultation, in a transparent, timely, and adaptive manner, and take account of the wider implications of decisions.	Decision-making processes respond to **all issues** identified in relevant research, monitoring, evaluation, and consultation, in a transparent, timely, and adaptive manner, and take account of the wider implications of decisions.
	Met?	**Yes**	**No**	**No**
Rationale		One example of decision-making is reflected in operational and regulatory changes in mesh size, as described in an EDITNR report (2021). The Lake Manitoba commercial fishery became a winter-only fishery starting in 1905 and initially targeted Lake Whitefish. As the whitefish stock declined, and smaller mesh sizes were allowed, harvest shifted to Walleye and Sauger, which were primarily caught using 3.75-inch mesh gillnets. In turn the Walleye and Sauger stocks declined. Fishers then started catching Yellow Perch, in the mid 1980s, when 3-inch mesh gillnets were allowed. Production kept declining until fishers formally requested a return to minimum mesh size of 3.75 inches during the 2016-2017 fishing year. Following this regulatory change, Walleye production increased. The Sauger stock is still in the process of recovery. Another example is the voluntary license buy-back program implemented by the Fisheries Branch. The goal of the program was to reduce the number of commercial licences on Lake Manitoba, which could reduce the lake quota and help ensure the long-tern sustainability of the fishery. In June 2022, the Fisheries Branch sent a letter to Lake Manitoba commercial fishers describing the status of fishery, accompanied by a questionnaire to obtain fishers' feedback on a voluntary license buy-back program and other management topics. The questionnaire results suggested some interest in the program, which was implemented starting in late 2022. As of August 2023, 71 licenses had been surrendered. **SG60 is met** because these examples indicate that decision-making processes respond to serious issues identified in relevant research, monitoring, evaluation, and consultation, in a		

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery		
		transparent, timely and adaptive manner, and take some account of the wider implications of decisions. **SG80 is not met** because these decision-making processes have not clearly resulted in measures and strategies to achieve fishery-specific objectives related to sustainability, although some positive steps are being achieved.		
c	**Use of precautionary approach**			
	Guide post		Decision-making processes use the **precautionary approach** and are based on best available information.	
	Met?		**No**	
Rationale		**SG80 is not met** because it is not apparent that decision-making processes use the precautionary approach**.** Though the Fisheries Branch has made some positive regulatory changes under its sustainability mandate, overall management of the fishery cannot be described as precautionary. For example, individual fish stocks are quite vulnerable to overfishing due to the multi-species quota system, and decision-making mechanisms to address this vulnerability appear limited. On the positive side, managers do use available information to inform their decisions, as demonstrated by the examples described under 3.2.2 SI(b).		
d	**Accountability and transparency of management system and decision-making process**			
	Guide post	Some information on the fishery's performance and management action is generally available on request to stakeholders.	**Information on the fishery's performance and management action is available on request**, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation, and review activity.	Formal reporting to all interested stakeholders **provides comprehensive information on the fishery's performance and management actions** and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation, and review activity.
	Met?	**Yes**	**No**	**No**
Rationale		**SG60 is met** because some information on the fishery's performance and management action is generally available on request to stakeholders. For example, EDITNR provides contact information on its website and publishes some reports on the status of fisheries, such as this report for Lake Manitoba. **SG80 is not met** because it is not clear whether information on the fishery's performance and management action is made available on request, and whether explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation, and review activity.		
e	**Approach to disputes**			
	Guide post	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating	The management system or UoA is attempting to comply in a timely fashion with judicial	The management system or UoA acts proactively to avoid legal disputes or rapidly

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery		
		a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability of the fishery.	decisions arising from any legal challenges.	implements judicial decisions arising from legal challenges.
	Met?	**Yes**	**No**	
Rationale		**SG60 is met** because the management authority or fishery is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability of the fishery. There is no evidence that the Fisheries Branch or the fishery itself is violating laws or regulations, and the Lake Manitoba commercial fishery is not currently subject to any court challenges (E. Dunbar, pers. comm. March 2024). **SG80 is not met** because documented evidence that the management system attempts to comply in a timely fashion with judicial decisions arising from any legal challenges is limited.		

Draft scoring range	**60-79**
Information gap indicator	**Information sufficient to score PI**

PI 3.2.3 – Compliance and enforcement

PI 3.2.3		Monitoring, control, and surveillance (MCS) mechanisms ensure the management measures in the UoA are enforced and complied with		
Scoring issue		**SG 60**	**SG 80**	**SG 100**
a	**MCS system**			
	Guide post	MCS **mechanisms** exist within the UoA.	An MCS **system** exists within the UoA.	A **comprehensive** MCS system is well-established within the UoA.
	Met?	**Yes**	**Yes**	**No**
Rationale		**SG60 is met** because MCS mechanisms exist within the UoA**.** Licences can be suspended or cancelled on the Minister's authority following any conviction under Fisheries legislation (federal Fisheries Acts and/or their regulations) or for violating terms and conditions of a licence. This authority is defined in Section 16 of MR 124/97, the Fishing Licensing Regulation. **SG80 is met** because an MCS system exists within the UoA. The Manitoba Conservation Officer Service, under EDITNR, is responsible for the enforcement of fisheries regulations. They conduct patrols, as weather permits, in cooperation with the Fisheries Branch. Examples of patrol logs were provided, showing that officers checked for compliance with requirements such as gear marking, having the licensed fisher present, and using appropriate mesh sizes. There is also a mechanism (hotline) for fishers and other community members to report non-compliances. **SG100 is not met** because the MCS cannot be described as comprehensive.		
b	**Sanctions**			
	Guide post	Sanctions to address non-compliance exist within the UoA.	Sanctions to deal with non-compliance exist, that are appropriate to the UoA, and are applied.	Comprehensive sanctions to address non-compliance exist, that are appropriate to the UoA, and are consistently applied.
	Met?	**Yes**	**Yes**	**No**
Rationale		**SG60 is met because sanctions to address non-compliance exist within the UoA.** The Suspension Directive was originally approved in 2007 and recently revised with changes effective on December 20, 2022. This directive describes the principles and process underlying the administration and enforcement of commercial fishing licence suspensions. The directive describes different categories of offenses and the recommended suspension terms (in years) for each category (Table 15). **SG80 is met** because these sanctions are appropriate to the UoA and are applied. Recommended suspensions range from 1 to 5 years or possibly more, depending on severity and frequency of convictions. These appear appropriate to the UoA. Commercial Fish Patrol Reports provide evidence that sanctions are applied. **SG100 is not met** because the MCS system cannot be described as comprehensive.		
c	**Compliance (information)**			
	Guide post	Information is adequate to **broadly understand** compliance in the UoA.	Information is adequate to **estimate** compliance in the UoA with a **high degree of accuracy**.	Information is adequate to **estimate** compliance in the UoA with a **very high degree of accuracy**.
	Met?	**Yes**	**No**	**No**
Rationale		This scoring issue requires application of the MSC ERF and evaluation of the trueness of information. TG2 is considered met because there is limited potential for bias to exist in the information available for compliance, but where it might exist, its effect on trueness is broadly understood and is not considered to be consequential.		

PI 3.2.3		Monitoring, control, and surveillance (MCS) mechanisms ensure the management measures in the UoA are enforced and complied with		
		SG60 is met because information is adequate to broadly understand compliance in the UoA. Fisheries Branch staff review DCRs and licensing paperwork, and flag potential non-compliances for further investigation. The Manitoba Conservation Officer Service keeps enforcement logs and patrol reports. **SG80 is not met.** Although patrol reports provided by the Fisheries Branch indicate that records are kept on non-compliances, it is not clear whether information is adequate to estimate compliance in the UoA with a high degree of accuracy.		
d	**Compliance (outcome)**			
	Guide post	**Systematic non-compliance** of regulations specific to governing sustainable fishing practices on the water is not evident within the UoA.	Majority of regulations, including all regulations specific to governing sustainable fishing practices on the water, are **likely** to be complied with.	Majority of regulations, including all regulations specific to governing sustainable fishing practices on the water, are **consistently** complied with.
	Met?	**Yes**	**No**	**No**
Rationale		**SG60 is met** because systematic non-compliance of regulations specific to governing sustainable fishing practices on the water is not evident within the UoA. While non-compliances do occur, most reported violations appear minor in nature. Commercial Fish Patrol Reports were provided describing the results from 16 patrol days conducted by conservation officers and Fisheries Branch staff from 31 December 2019 to 24 January 2023. During these patrols, verbal warnings were issued to a few fishers for failing to properly mark their gillnets. Officers seized one net seized from a gang for being too close (within 1.5 km) of a creek. No Lake Manitoba fishers have been suspended in recent years (K. Casper, pers. comm., June 2024). **SG80 is not met** because it is not evident whether the majority of regulations, including all regulations specific to governing sustainable fishing practices on the water, are likely to be complied with.		

Draft scoring range	**60-79**
Information gap indicator	**Information sufficient to score PI**

PI 3.2.4 – Monitoring and management performance evaluation

PI 3.2.4		There is a system for monitoring and evaluating the performance of the fishery-specific management system against its objectives. There is effective and timely review of the fishery-specific management system		
Scoring issue		**SG 60**	**SG 80**	**SG 100**
a	**Evaluation coverage**			
	Guide post	There are mechanisms in place to evaluate **some** parts of the fishery-specific management system.	There are mechanisms in place to evaluate **key** parts of the fishery-specific management system.	There are mechanisms in place to evaluate **all** parts of the fishery-specific management system.
	Met?	**No**	**No**	**No**
Rationale		**SG60 is not met** because evidence of mechanisms to evaluate the fishery-specific management system was not provided. Fisheries Branch staff regularly meet with community and industry stakeholders, but there is no clear indication that these communication channels serve a management evaluation function.		
b	**Internal and/or external review**			
	Guide post	The fishery-specific management system is subject to **occasional internal** review.	The fishery-specific management system is subject to **regular internal** and **occasional external review**.	The fishery-specific management system is subject to **regular** internal and external review.
	Met?	**Yes**	**No**	**No**
Rationale		**SG60 is met** because the fishery-specific management system is subject to occasional internal review. There are opportunities for some oversight among government departments, and between the Fisheries Branch main office and regional offices. **SG80 is not met** because review processes for the fishery-specific management system are not clearly established, and there is limited evidence demonstrating that regular internal and occasional external review take place. As one example, Fisheries Branch hired an external consultant to review its recent stock assessments for Lake Winnipeg. However, this was for one part of the management system in a different lake, and it may not be a regular occurrence.		

Draft scoring range	**<60**
Information gap indicator	**More information sought** on management system review mechanisms and processes.

8. Appendices

8.1. Evaluation processes and techniques

8.1.1. Site visits

Jocelyn Drugan made a site visit to the Lake Manitoba fishery on 19 and 20 March, 2024. A list of meetings and attendees is provided below.

Attendee(s)	Organization / affiliation	Date and subjects discussed
Erin Dunbar, Kevin Casper, Derek Kroeker	Fisheries Branch, Province of Manitoba	19-20 March 2024 Stock assessment, ecosystem impacts, fisheries management and enforcement
Allan Gaudry	Lake Manitoba Commercial Fishers Association	19 March 2024 Fishing operations, ecosystem impacts
Barry Matkowski, Peter Matkowski, Dylan Licoppe	Commercial fishers	20 March 2024 Fishing operations
Sam Murdock	Lake Winnipeg Indigenous Commercial Fishers Inc.	20 March 2024 Management system
Shawn Rolland	Presteve Foods	20 March 2024 Processing and traceability
Jason Grabowski	Freshwater Fish Marketing Corporation, Riverton Packing Shed	20 March 2024 Processing and traceability

8.2. Risk-Based Framework outputs

8.2.1. Productivity Susceptibility Analysis (PSA)

PSAs were conducted to score PIs 2.1.1, 2.2.1. Geoff Klein, who has extensive knowledge of these species within Manitoba lake systems, was consulted on scoring.

Table 16: PSA productivity and susceptibility attributes for White Sucker.

Performance Indicator	2.1.1	
Productivity		
Scoring element (species)	White Sucker (*Catostomus commersonii*)	
Attribute	**Justification**	**Score**
Average age at maturity	4 years	**1**
Average maximum age	21 years	**2**
Fecundity	20,000 to 50,000 eggs (Fishbase)	**1**
Average maximum size	<60 cm	**1**
Average size at maturity	<40 cm	**1**
Reproductive strategy	Eggs scattered over gravel (Fishbase)	**1**
Trophic level	2.8 ± 0.2 standard error (Fishbase), likely to be on lower end (<2.75)	**1**
Susceptibility		
Attribute	**Justification**	**Score**
Areal Overlap	Medium areal overlap	**2**
Encounterability	Medium overlap with fishing gear. Fishers generally set their gillets at depths to target Walleye and limit catches of other, less economically valuable species.	**2**
Selectivity of gear type	Most immature individuals can escape the gillnets.	**1**
Post capture mortality	Retained species	**3**
PSA score = 1.71, risk category is low, scoring range ≥80		

Table 17: PSA productivity and susceptibility attributes for Northern Pike.

Performance Indicator	2.1.1	
Productivity		
Scoring element (species)	Northern Pike (*Esox lucius*)	
Attribute	**Justification**	**Score**
Average age at maturity	3 to 4 years (Animal Diversity Web)	**1**
Average maximum age	12 years (Animal Diversity Web)	**2**
Fecundity	7,000 to 100,000 eggs (Fishbase), likely >20,000 eggs per year	**1**
Average maximum size	150 cm (Fishbase)	**2**
Average size at maturity	46 - 51 cm (Animal Diversity Web)	**2**
Reproductive strategy	Broadcast spawner (Animal Diversity Web)	**1**
Trophic level	4.1 ± 0.4 standard error (Fishbase)	**3**
Susceptibility		

Attribute	Justification	Score
Areal Overlap	Medium areal overlap	**2**
Encounterability	Assumed high in the absence of information suggesting otherwise.	**3**
Selectivity of gear type	Pike are predators that may be attracted towards fish that are caught in the nets. Nonetheless, immature pike are unlikely to get caught in the minimum mesh sizes used in this fishery, and they also are less attracted to the larger prey that would be caught because they exceed their gape size.	**1**
Post capture mortality	Retained species	**3**
PSA score = 2.23, risk category is low, scoring range ≥80		

Table 18: PSA productivity and susceptibility attributes and scores for Bigmouth Buffalo.

Performance Indicator	2.2.1	
Productivity		
Scoring element (species)	Bigmouth Buffalo (*Ictiobus cyprinellus*)	
Attribute	**Justification**	**Score**
Average age at maturity	3 years (Animal Diversity Web)	**1**
Average maximum age	>25 years	**3**
Fecundity	400,000 (Fishbase)	**1**
Average maximum size	123 cm (Fishbase)	**2**
Average size at maturity	36 cm (Fishbase)	**1**
Reproductive strategy	Broadcast spawner (Animal Diversity Web)	**1**
Trophic level	3.1 ± 0.41 standard error (Fishbase)	**2**
Susceptibility		
Attribute	**Justification**	**Score**
Areal Overlap	Low overlap.	**1**
Encounterability	Assumed high in the absence of information suggesting otherwise.	**3**
Selectivity of gear type	Not likely to get caught by commercial gillnets targeting whitefish. More susceptible to gear targeting carp.	**1**
Post capture mortality	Live release is not required; they may be mistaken for other sucker species and retained when accidentally caught.	**3**
PSA score = 1.98, risk category is low, scoring range ≥80		

Table 19. PSA productivity and susceptibility attributes and scores for Double-Crested Cormorant.

Performance Indicator	2.2.1	
Productivity		
Scoring element (species)	Double-crested Cormorant (*Phalacrocorax auritus*)	
Attribute	**Justification**	**Score**
Average age at first breeding	2 years (University of Michigan)	**1**
Average ‘optimal’ adult survival probability	0.80 (United States Dept of Agriculture)	**1**

Fecundity	About 3 eggs per year, or ~1.5 chicks/year assuming 50% survival in the first year (United States Dept of Agriculture)	**2**
Susceptibility		
Attribute	**Justification**	**Score**
Areal Overlap	Areal overlap would be negligible during the winter fishery, because grebes migrate to other areas during that season. We estimated overlap to be 10-30%.	**1**
Encounterability	Typical diving range of 8-25 feet is within gillnet setting depth (United States Dept of Agriculture)	**3**
Selectivity of gear type	Default high risk score in the absence of effective mitigation measures	**3**
Post capture mortality	Default high risk score in the absence of verification that individuals are released alive, and post-release survivorship is high.	**3**
PSA score = 1.93, risk category is low, scoring range ≥ 80		

Table 20. PSA productivity and susceptibility attributes and scores for Horned Grebe.

Performance Indicator	2.2.1	
Productivity		
Scoring element (species)	Horned Grebe (*Podiceps auritus*)	
Attribute	**Justification**	**Score**
Average age at first breeding	1 year (COSEWIC Assessment)	**1**
Average 'optimal' adult survival probability	0.75, assumed to be about the same as for Western Grebe	**1**
Fecundity	3-8 eggs per year, assume ~1 chick/year (Animal Diversity Web)	**2**
Susceptibility		
Attribute	**Justification**	**Score**
Areal Overlap	Areal overlap would be negligible during the winter fishery, because grebes migrate to other areas during that season.	**1**
Encounterability	Diving range (up to 20 feet) is within gillnet setting depth (Allaboutbirds.org)	**3**
Selectivity of gear type	Default high risk score in the absence of effective mitigation measures	**3**
Post capture mortality	Default high risk score in the absence of verification that individuals are released alive, and post-release survivorship is high.	**3**
PSA score = 2.12, risk category is low, scoring range ≥ 80		

Table 21. PSA productivity and susceptibility attributes and scores for Western Grebe.

Performance Indicator	2.2.1	
Productivity		
Scoring element (species)	Western Grebe (*Aechmophorus occidentalis*)	
Attribute	**Justification**	**Score**
Average age at first breeding	1 year (COSEWIC Assessment)	**1**
Average 'optimal' adult survival probability	0.75 (based on rate estimated for Great Crested Grebe; COSEWIC Assessment)	**1**

Fecundity	1-4 eggs per year, ~1 chick per year (COSEWIC Assessment)	**2**
Susceptibility		
Attribute	**Justification**	**Score**
Areal Overlap	Areal overlap would be negligible during the winter fishery, because grebes migrate to other areas during that season.	**1**
Encounterability	Diving range (~4 feet) is within gillnet setting depth (Life History Account CDFW)	**3**
Selectivity of gear type	Default high risk score in the absence of effective mitigation measures	**3**
Post capture mortality	Default high risk score in the absence of verification that individuals are released alive, and post-release survivorship is high.	**3**
PSA score = 2.12, risk category is low, scoring range ≥ 80		

8.3. References (Bibliography)

Bozek, M. A., Baccante, D.A., & Lester, N.P. 2011a. Walleye and sauger life history. *In* Biology, management, and culture of walleye and sauger. American Fisheries Society, Bethesda, Maryland, 233-301.

Bozek, M. A., Haxton, T. J., & Raabe, J. K. 2011b. Walleye and sauger habitat. *In* Biology, management, and culture of walleye and sauger. American Fisheries Society, Bethesda, Maryland, 133-197.

Colby, P.J., R.E. McNicol, and R.A. Ryder.1979. Synopsis of biological data on the walleye Stizostedion v. vitreum (Mitchell 1918). Food and Agricultural Organization of the United Nations, Fisheries Synopsis 119, FAO, Rome. 148 pp.

Collette, B.B., M.A. Ali, K.E.F. Hokanson, M. Nagiec, S.A. Smirnov, J.E. Thorpe, A.H. Weatherly and J. Willemsen, 1977. Biology of the percids. J. Fish. Res. Board Can. 34(10):1891-1899.

COSEWIC. 2009. COSEWIC assessment and status report on the Horned Grebe *Podiceps auritus*, Western population and Magdalen Islands population, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 42 pp.

COSEWIC. 2017. COSEWIC Assessment and Status Report on the Lake Sturgeon *Acipenser fulvescens*.

ECCC and MARD (Environment and Climate Change Canada, Manitoba Agriculture and Resource Development). 2020. State of Lake Winnipeg 2nd Edition.

EDITNR. 2021. Lake Manitoba Fishery: A Fishery on the Road to Sustainability.

Enders, E.C., D.A. Watkinson, C. Charles, M.A. Pegg, J. Wendel, and T. Caspers. 2019. Red River telemetry study 2018/19 Final Report. Fisheries and Oceans Canada report to the International Joint Commission – International Watershed Initiative Project. 20 pp.

Environment and Climate Change Canada. 2021a. Management Plan for the Horned Grebe (*Podiceps auritus*), Western population, in Canada. Species at Risk Act Management Plan Series. Environment and Climate Change Canada, Ottawa. v + 45 pp.

Environment and Climate Change Canada. 2021b. Management Plan for the Western Grebe (*Aechmophorus occidentalis*) in Canada [Proposed]. Species at Risk Act Management Plan Series. Environment and Climate Change Canada, Ottawa. iv + 52 pp.

Fisheries and Oceans Canada (DFO). 2021. Management Plan for the Bigmouth Buffalo (*Ictiobus cyprinellus*) in Canada (Saskatchewan-Nelson River populations). Species at Risk Act
Management Plan Series. Fisheries and Oceans Canada, Ottawa. iv + 24 pp.

Froese, R., Demirel, N., Coro, G., & Winker, H. 2021. User guide for CMSY++.

Gladston, Y., Devi, M. S., Xavier, K. M., Kamat, S., Chakraborty, S. K., Ravi, O. P. K., & Shenoy, L. 2017. Design and gillnet selectivity of *Pampus argenteus* along the Satpati coast, Maharashtra, India. Regional Studies in Marine Science, 9, 156-161.

Hartman, G.F. 2009. A biological synopsis of walleye (*Sander vitreus*). Canadian Manuscript Report of Fisheries and Aquatic Sciences 2888: v + 48 pp.

Klein. G.M. 2020. Lake Manitoba 2020 Fish Stock Assessment. Wildlife, Fisheries, and Resource Enforcement Branch Report. 29 pp.

Klein, G., W. Galbraith, and I. Kitch. 2020. Cedar Lake Fisheries Management Plan. Manitoba Agriculture and Resource Development. Manuscript Report No. 20-01. 66 pp.

Knapman, P., Casselman, J., Blyth-Skyrme, R., and Pawar, R. 2022. Cedar Lake Walleye and Northern Pike Fisheries: Public Certification Report. LRQA.

McKellar, A. E., Simpson, S. E., & Wilson, S. 2021. Abundance, population trends, and negative associations with lake water levels for six colonial waterbird species over five decades in southern Manitoba. Avian Conservation & Ecology, 16(1).

Page, L.M. and B.M. Burr, 2011. A field guide to freshwater fishes of North America north of Mexico. Boston : Houghton Mifflin Harcourt, 663p.

Scott and Crossman. 1973. Walleye. Pages 767–774 in Freshwater Fishes of Canada. Fisheries Research Board of Canada Bulletin 184. 966 pages.

Pothoven, S. A., & Madenjian, C. P. 2013. Increased piscivory by lake whitefish in Lake Huron. North American Journal of Fisheries Management, 33(6), 1194-1202.

Sheppard, K. T., Davoren, G. K., & Hann, B. J. 2015. Diet of walleye and sauger and morphological characteristics of their prey in Lake Winnipeg. Journal of Great Lakes Research, 41(3), 907-915.

USFWS. 2024. Lake Whitefish.

Wetlands International. 2016. Waterbird Population Estimates. Available at: wpe.wetlands.org.

9. Template information and copyright

Marine Stewardship Council

Marine House

1 Snow Hill

London EC1A 2DH

United Kingdom

Phone: + 44 (0) 20 7246 8900

Fax: + 44 (0) 20 7246 8901

Email: standards@msc.org