Lake Winnipeg Walleye (*Sander vitreus*), Sauger (*Sander canadensis*), and Lake Whitefish (*Coregonus clupeaformis*) Gillnet Fisheries

Pre-Assessment Report

Assessment Body	Ocean Outcomes
Fishery client	Lake Winnipeg Indigenous Commercial Fishers Inc. and Province of Manitoba, Fisheries Branch
Assessment type	Pre-assessment
Date	November 2024

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2. Glossary

AANDC	Aboriginal Affairs and Northern Development Canada
A/OFRC	Anishinabek/Ontario Fisheries Resource Centre
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)
DR	Dauphin River
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
IQE	individual quota entitlement
IUCN	International Union for Conservation of Nature
kg	kilogram
KFLW	Keewatinook Fishers of Lake Winnipeg
LKWH	Lake Whitefish
LMCFA	Lake Manitoba Commercial Fishers Association
LRP	limit reference point
LSM	Lake St. Martin
LWBP	Lake Winnipeg Basin Program
LWICFI	Lake Winnipeg Indigenous Commercial Fishers, Inc.
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
PCFM	Pioneer Commercial Fishers of Manitoba
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 Winnipeg commercial gillnet fishery in the Province of Manitoba, Canada. The Units of Assessment correspond to eight stocks of three target species: Walleye (2 stocks), Sauger (2 stocks), and Lake Whitefish (4 stocks). The target species are subject to national and provincial fisheries management measures and policy.

Some key strengths of the fishery:

- Stock assessments have been conducted and externally reviewed.
- 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 substrates 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 an important fisher group (Lake Winnipeg Indigenous Commercial Fishers Inc) are actively 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 Winnipeg 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 a registered MSC Technical Consultant 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.

There is no enhancement of Sauger or Lake Whitefish in Lake Winnipeg. However, there is some enhancement of Walleye. The Grand Rapids Fish Hatchery produces and releases Walleye fry into the lake. The hatchery is operated by Manitoba Hydro to offset impacts from the hydroelectric generating station on the lake. 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 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 Walleye UoAs.

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 the spawn collection camp at Vermillion River near Southern Indian Lake and from the Saskatchewan River (Manitoba Hydro).
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 Winnipeg.
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 Winnipeg 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 Grand Rapids Hatchery does not form a major part of a rebuilding plan for Lake Winnipeg 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 the 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 especially in warm water. The hatchery grows the fish to a small size, less than 10% of the average adult maximum weight, and releases them as fry.
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: ▪ 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.	Lake Winnipeg is extremely large, and the footprint of the Grand Rapids hatchery 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.

5.1.1. Unit(s) of Assessment

There are eight UoAs as described in Table 3.

Table 3: Units of Assessment (UoAs)

UoA 1	**Description**
Target Stock	Lake Winnipeg Walleye (*Sander vitreus*), North Basin
Geographical area	North Basin of Lake Winnipeg, Manitoba, Canada
Fishing gear type(s) and, if relevant, vessel type(s)	Set gillnets
Client group	Lake Winnipeg Indigenous Commercial Fishers Inc. and Province of Manitoba, Fisheries Branch
Other eligible fishers	Any fishers agreed to by the Client Group
Justification for choosing the Unit of Assessment	Based on the target stock
UoA 2	**Description**
Target Stock	Lake Winnipeg Walleye (*Sander vitreus*), South Basin and Channel
Geographical area	South Basin and Channel of Lake Winnipeg, Manitoba, Canada
Fishing gear type(s) and, if relevant, vessel type(s)	Set gillnets
Client group	Lake Winnipeg Indigenous Commercial Fishers Inc. and Province of Manitoba, Fisheries Branch
Other eligible fishers	Any fishers agreed to by the Client Group
Justification for choosing the Unit of Assessment	Based on the target stock
UoA 3	**Description**
Target Stock	Sauger (*Sander canadensis*), North Basin
Geographical area	North Basin of Lake Winnipeg, Manitoba, Canada
Fishing gear type(s) and, if relevant, vessel type(s)	Set gillnets
Client group	Lake Winnipeg Indigenous Commercial Fishers Inc. and Province of Manitoba, Fisheries Branch
Other eligible fishers	Any fishers agreed to by the Client Group
Justification for choosing the Unit of Assessment	Based on the target stock
UoA 4	**Description**
Target Stock	Sauger (*Sander canadensis*), South Basin and Channel
Geographical area	South Basin and Channel of Lake Winnipeg, Manitoba, Canada
Fishing gear type(s) and, if relevant, vessel type(s)	Set gillnets
Client group	Lake Winnipeg Indigenous Commercial Fishers Inc. and Province of Manitoba, Fisheries Branch
Other eligible fishers	Any fishers agreed to by the Client Group
Justification for choosing the Unit of Assessment	Based on the target stock
UoA 5	**Description**
Target Stock	Lake Whitefish (*Coregonus clupeaformis*), Grand Rapids (GR)

	Lake Whitefish stocks are known to move amongst areas, but they are philopatric and return to natal areas to spawn during the fall season.
Geographical area	Grand Rapids whitefish area of Lake Winnipeg, Manitoba, Canada
Fishing gear type(s) and, if relevant, vessel type(s)	Set gillnets
Client group	Lake Winnipeg Indigenous Commercial Fishers Inc. and Province of Manitoba, Fisheries Branch
Other eligible fishers	Any fishers agreed to by the Client Group
Justification for choosing the Unit of Assessment	Based on the target stock
UoA 6	**Description**
Target Stock	Lake Whitefish (*Coregonus clupeaformis*), Mossy Bay
Geographical area	Mossy Bay / Playgreen Lake whitefish area of Lake Winnipeg, Manitoba, Canada. (Marked as PG in Figure 1)
Fishing gear type(s) and, if relevant, vessel type(s)	Set gillnets
Client group	Lake Winnipeg Indigenous Commercial Fishers Inc. and Province of Manitoba, Fisheries Branch
Other eligible fishers	Any fishers agreed to by the Client Group
Justification for choosing the Unit of Assessment	Based on the target stock
UoA 7	**Description**
Target Stock	Lake Whitefish (*Coregonus clupeaformis*), Lake St. Martin (LSM)
Geographical area	Dauphin River/Lake St. Martin whitefish area of Lake Winnipeg, Manitoba, Canada
Fishing gear type(s) and, if relevant, vessel type(s)	Set gillnets
Client group	Lake Winnipeg Indigenous Commercial Fishers Inc. and Province of Manitoba, Fisheries Branch
Other eligible fishers	Any fishers agreed to by the Client Group
Justification for choosing the Unit of Assessment	Based on the target stock
UoA 8	**Description**
Target Stock	Lake Whitefish (*Coregonus clupeaformis*), South Basin and Channel
Geographical area	South Basin and Channel whitefish area of Lake Winnipeg, Manitoba, Canada (Marked as TB in Figure 1)
Fishing gear type(s) and, if relevant, vessel type(s)	Set gillnets
Client group	Lake Winnipeg Indigenous Commercial Fishers Inc. and Province of Manitoba, Fisheries Branch
Other eligible fishers	Any fishers agreed to by the Client Group
Justification for choosing the Unit of Assessment	Based on the target stock
UoA 9	**Description**
Target Stock	Lake Whitefish (*Coregonus clupeaformis*), Poplar River
Geographical area	Area F in the North Basin of Lake Winnipeg, Manitoba, Canada (Marked as PR in Figure 1)
Fishing gear type(s) and, if relevant, vessel type(s)	Set gillnets

Client group	Lake Winnipeg Indigenous Commercial Fishers Inc., Poplar River First Nation, and Province of Manitoba, Fisheries Branch
Other eligible fishers	Any fishers agreed to by the Client Group
Justification for choosing the Unit of Assessment	Based on the target stock

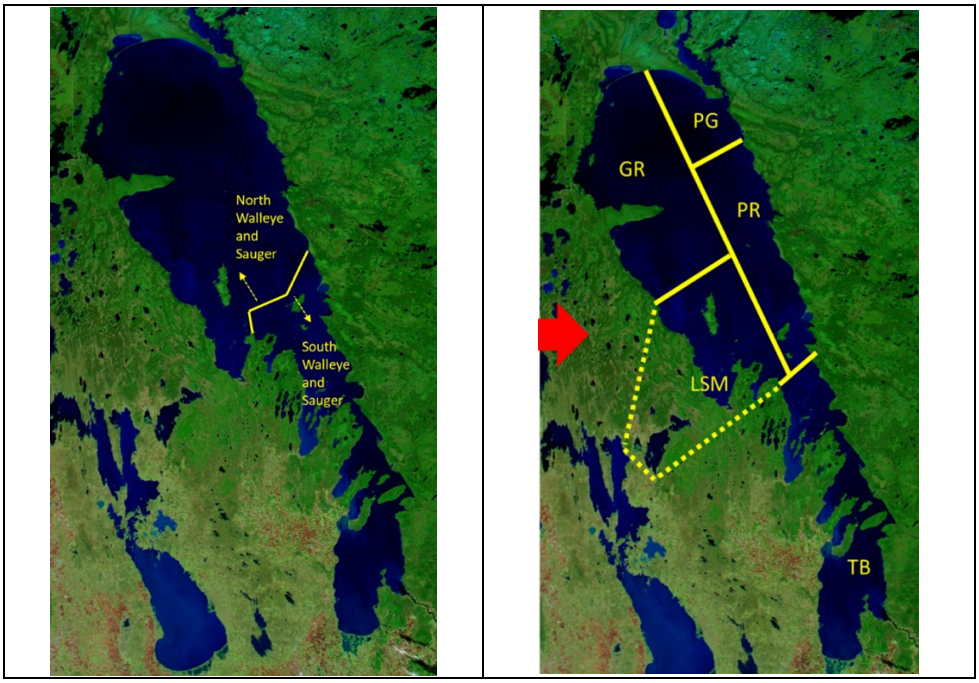


Figure 1. Fishing areas for the target stocks. Walleye and Sauger stock areas shown on the left, Lake Whitefish stock areas shown on the right.

5.2. Vessels list(s)

The open water fisheries (summer and fall) use small, skiff type boats ranging in size from 18’ to 26’ length. The commercial fleet consists of approximately 700 boats.

The winter fishery takes place under the ice and involves vehicles rather than vessels. The type of vehicles used depends 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 UoAs 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**

Landing procedures at Lake Winnipeg differ slightly by season.

Winter season / ice fishing
Harvest by land-based vehicle → depart lake at 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.

Summer and fall / open water fishing
Harvest by the fishing vessel → landing at designated port → 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

Landing at port or departing lake at access point → transport by truck → 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 or water as the fishers lift 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 to EDITNR within seven days after the end of each month.

A person must not transport fish in the Province 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

The definition of an IPI stock is where a non-target catch is practicably indistinguishable during normal fishing operations or, if distinguishable, it is not commercially feasible to separate non-target catch from the target

catch due to the practical operation of the fishery that would require significant modification to existing harvesting and processing methods. There may be some mixing of stocks, within P1 target species, in catches. If this fishery undergoes full assessment, and not all UoAs receive a conditional pass against the MSC standard, the assessment team may request information to evaluate potential IPI catch proportions. They will then determine whether additional traceability measures need to be taken regarding IPI stocks.	
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 water. However, 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. This allows fishers to get paid and have their quotas monitored, but may not allow for traceability of pooled fish back to the individual fisher.
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? If yes, describe	N/A
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 Winnipeg commercial fishers may not hold licenses on other lakes concurrent with their existing license. Fishers must comply with their license conditions which specify the areas they can fish. 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.	Possibly but unlikely. Fishers themselves would not typically handle both certified and non-certified target species products because their fishing licenses specify the areas where they can fish. If they operate in an area with certified stocks, all of their catch would be certified. One exception may be if they catch Lake Whitefish during the summer and winter seasons, when the stocks tend to be more mixed. However, fishers deliver their fish quickly after harvest, typically in a week or less, so Lake Whitefish that they catch outside of the fall season should be readily identified as such during the first point of sale.
Does transhipment occur within the fishery?	No transhipment occurs in the Lake Winnipeg fishery.
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.	There is minimal 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. Other fisheries can deliver to sheds that receive Lake Winnipeg fish, but mixing would not occur before purchase, because the fishers would not be licensed for fisheries other than their own, and the fish tubs are identified by fisher name until first sale.
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) and a key fisher group (Lake Winnipeg Indigenous Commercial Fishers Inc) 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. A management advisory board for the fishery used to exist (Lake Winnipeg Fisheries Management Advisory Board, established in 1978) but is no longer active. Re-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, especially in a fishery with a complex management system such as Lake Winnipeg. 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 (maximum sustainable yield) levels.

Improvements in data collection and fishery monitoring can also be made. One relevant recommendation was provided in A/OFRC (2022): “Fishery-dependent data should be collected, by way of a fishers’ logbook program and database, to allow reliable, and standardized, estimates of targeted effort, catch, discards and releases.” As an example, catches of Lake Whitefish have declined in recent years, and improved data collection, particularly in the north basin, may help managers and stock assessment scientists better understand whether these declines are due to decreased targeting of the species or declines in stock abundance. 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 1 – Stock status: UoAs 3 and 4	4	1	1
Principle 1 – Stock status: UoA 5	3	2	1
Principle 1 – Stock status: UoA 6	3	2	1
Principle 1 – Stock status: UoA 7	3	2	1
Principle 1 – Stock status: UoA 8	2	1	2
Principle 1 – Stock status: UoA 9	2	1	2
Principle 2 – Minimising environmental impacts	2	6	4
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, UoAs 1 and 2 (Walleye)	≥80	No
Rationale or key points		
Walleye are currently assessed as a single, lake-wide stock in Lake Winnipeg. Based on relative weights and estimated growth rates, the stock is highly likely above the PRI and may be close to current carrying capacity. Spawning potential ratio was estimated to be 33% under the scenario of 3.5” minimum mesh size and slow growth (yellow line in Figure 6), which is the thought to be the most reflective of current fishery conditions. This is quite close to the SPR value expected at F_{MSY} (35%). The 2022 stock assessment model estimates suggest that biomass exceeds the point of recruitment impairment ($B_{2020}/½B_{MSY}$ = 1.08) and is below the maximum sustainable yield (MSY) level (B_{2020}/B_{MSY} = 0.54). However, the model results are likely to be less reliable than the other abundance indicators, due to insufficient ability of the model to account for the likely shift in Walleye carrying capacity following the introduction of Rainbow Smelt into Lake Winnipeg.		
Performance Indicator	**Draft scoring range**	**Data deficient?**
1.1.1 – Stock status, UoAs 3 and 4 (Sauger)	<60	No
Rationale or key points		
Although there are potentially two Sauger stocks in Lake Winnipeg, the stock assessment focuses on the South Basin and Channel stock as it comprises the majority of commercial catches. Based on the most recent stock assessment (Klein 2022), the stock may be below PRI ($B_{2020}/½B_{MSY}$ = 0.58). The estimated stock biomass is well below the MSY level (B_{2020}/B_{MSY} = 0.291).		
Performance Indicator	**Draft scoring range**	**Data deficient?**
1.1.1 – Stock status, UoA5 (Grand Rapids LKWH)	60 – 79	No
Rationale or key points		
Based on the stock assessment review by North/South Consultants (2023a), the Grand Rapids Lake Whitefish stock is likely above the PRI ($B_{2018}/½B_{MSY}$ = 1.05). However, it is not at or fluctuating around the MSY level (B_{2018}/B_{MSY} = 0.52).		

Performance Indicator	Draft scoring range	Data deficient?
1.1.1 – Stock status, UoA6 (Mossy Bay LKWH)	60 – 79	No
Rationale or key points		
Based on the stock assessment review by North/South Consultants (2023a), the Mossy Bay Lake Whitefish stock is likely above the PRI ($B_{2021}/½B_{MSY}$ = 1.22). However, it is not at or fluctuating around the MSY level (B_{2021}/B_{MSY} = 0.61).		
Performance Indicator	**Draft scoring range**	**Data deficient?**
1.1.1 – Stock status, UoA7 (DR/LSM LKWH)	60 – 79	No
Rationale or key points		
Though they are genetically and morphologically similar considered components of the same stock, Dauphin River (DR) and Lake St. Martin (LSM) Lake Whitefish were modelled separately in the stock assessment to take advantage of the availability of the two data sets and compare their results. Based on the stock assessment review by North/South Consultants (2023a), the DR Lake Whitefish stock component is likely above the PRI ($B_{2021}/½B_{MSY}$ = 1.79) but may be below the MSY level (B_{2021}/B_{MSY} = 0.89).		
Performance Indicator	**Draft scoring range**	**Data deficient?**
1.1.1 – Stock status, UoA8 (South LKWH)	≥80	No
Rationale or key points		
Based on the stock assessment review by North/South Consultants (2023a), the south basin and channel Lake Whitefish stock is highly likely above the PRI ($B_{2021}/½B_{MSY}$ = 2.03) and is at or fluctuating around the MSY level (B_{2021}/B_{MSY} = 1.02).		
Performance Indicator	**Draft scoring range**	**Data deficient?**
1.1.1 – Stock status, UoA9 (Poplar River LKWH)	≥80	No
Rationale or key points		
The stock assessment (Klein, 2022) uses FFMC catch and effort data from the fall fishing seasons in 1996 through to 2020, excluding 1998. This is modelled using a Schaefer surplus production model (section 7.3). A limit reference point of 20% B0 (equivalent to the PRI) and target reference point of 40% B0 have been used in the assessment (see Figure 9, Frame A). Klein (2022) comments that the use of 40% and 20% does not overly concern the stock assessment biologist as Lake Whitefish are thought to be more resilient than the Schaefer model supposes. The assessment shows (Figure 9, Frame A) that the stock has been above the PRI since 2000 and there is a high degree of certainty to be above PRI. While the stock has been above the level consistent with MSY (B40%) since 2005, biomass has been declining since 2012. It remains above the level consistent with MSY. The fifth percentile of the estimate from the bootstrapped model distribution of parameters is 0.412; higher than B40%. It can be said that there is a high degree of certainty that the stock has been fluctuating around a level consistent with MSY using the 95th confidence percentile. The biomass required for MSY is 665,533 kg. The estimated stock biomass at the beginning of the 2021 fall season was 732,519 kg. There is a gap in		
Performance Indicator	**Draft scoring range**	**Data deficient?**
1.1.2 – Stock rebuilding; UoAs 1, 2 (Walleye); UoAs 3, 4 (Sauger); UoAs 5, 6, 7 (Lake Whitefish)	<60	No
Rationale or key points		
This PI must be scored if PI 1.1.1 for the stock scores <80, which is the case for UoAs 1, 2, 3, 4, 5, 6, and 7. The rebuilding strategy for all of these species and stocks essentially consists of the quota system, including a quota buy-back program, and gear regulations such as minimum mesh sizes. However, a rebuilding plan and timeframe have not been specified for any of these stocks. Monitoring is in place to determine whether the rebuilding strategy is effective, but there is not clear evidence that the strategy is working, nor has simulation modelling been used to evaluate the likelihood of it working.		
Performance Indicator	**Draft scoring range**	**Data deficient?**

1.1.2 – Stock rebuilding, UoAs 1, 2 (Walleye); UoAs 8, 9 (Lake Whitefish)	NA	No

Rationale or key points

This PI is not scored for UoAs 1, 2, 8 and 9 because these stocks, (north and south basin Walleye, south basin and channel Lake Whitefish, Poplar River Lake Whitefish) had PI 1.1.1 scores ≥80.

Performance Indicator	Draft scoring range	Data deficient?
1.2.1 – Harvest Strategy	<60	No

Rationale or key points

All of the target stocks are essentially managed using the following harvest measures: a licensing system that limits entry into the fishery, a multi-species quota system, and gear regulations including minimum mesh sizes. These allow for some control of fishing input and output, but quotas are generally not adjusted within a year, and the fact that they are multi-specific makes it difficult to precisely manage catches by stock or species.

These measures are not expected to manage fishing effort on target stocks in a responsive manner, particularly for Lake Whitefish stocks.

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 (catch per unit effort), SSB (spawning stock biomass), 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. There is little available evidence indicating that the tools in use are achieving exploitation levels that would be required under HCRs.

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 fleet composition is available to support the harvest strategy. The licensing system provides a fairly good picture of the number of fishers and vessels being used in the fishery. Information collected through research, 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 at a level of accuracy and coverage consistent with the harvest strategy, and one or more indicators are available and monitored with sufficient frequency to support the harvest strategy.

However, 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 and soak times. Some information on some fishery removals from the stock may not be available. Though they are expected to be limited, discards of target species and removals from subsistence fishing are not monitored. Recreational catches, which are significant, particularly for Walleye, have been periodically estimated through creel surveys conducted in the south basin.

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

Rationale or key points

Stock assessments are conducted by Fisheries Branch staff. The assessments utilize Bayesian surplus production models and catch-based abundance indices. They estimate stock status relative to MSY-based reference points in a probabilistic way, and take uncertainty into account. The methods are appropriate given available data and stock assessment capacity.

In addition to internal reviews, the assessments conducted in 2022 were also reviewed by an external consultant, to ensure that the methods were appropriate.

Performance Indicator	Draft scoring range	Data deficient?
2.1.1 – In-scope species outcome	≥80	Yes

Rationale or key points

The main in-scope species identified for all UoAs were Freshwater Drum, White Sucker, Shorthead Redhorse, and Northern Pike. This PI was evaluated using the MSC's Risk Based Framework (RBF) and productivity susceptibility analyses (PSAs) because stock status reference points are not available for these species in Lake Winnipeg.

None of these main in-scope species appeared to be at high risk of UoA impacts based on the PSAs. However, Freshwater Drum, Shorthead Redhorse, and Northern Pike appear to be at medium risk of impacts from the UoA fisheries.

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, Sauger, and to a slightly lesser extent, Lake Whitefish. The measures 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?
2.1.3R – In-scope species information if RBF is used to score PI 2.1.1	≥80	No

Rationale or key points

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	60-79	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 15).

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, except in the case of Lake Sturgeon. Commercial fishers are required to immediately release all caught live Lake Sturgeon, and submit any that are caught dead to the nearest Regional or District Office (CFG 2023), for monitoring purposes.

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. Some data may be available for Lake Sturgeon, but it is not clear how those data have been analyzed or used. 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	<60	No
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 fisheries. 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 Winnipeg is extremely large; gillnet fishing activity takes place in a very small proportion of the total lake area. The fishery does not appear to interact with more sensitive habitats.		

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 Winnipeg 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 weighing no more than 40 lbs, often less. Together these practices minimize impacts on bottom habitats and constitute a partial strategy to managed habitats impacts from the UoA.

Periodic monitoring of water quality and benthic invertebrate densities, as well as occasional research (e.g. Rudolfsen et al. 2021) suggests that habitats are not being seriously impacted by gillnet fishing activities. However, 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.

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 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 Winnipeg is an extremely large (~23,750 km^2) lake, and 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	≥80	No
Rationale or key points		
The UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function based on available information. Key ecosystem elements appear to be: (1) predator-prey interactions, particularly between Walleye and Sauger as predators, and Rainbow Smelt as prey; and (2) community composition.		

Any significant ecosystem impacts arising from the UoA will most likely be from fishery removals. Commercial gillnet fisheries have put heavy fishing pressure on Walleye, Sauger, and Lake Whitefish populations. However, none of the three P1 species appears to be a critical, limiting prey species for other predators. In turn, removals of Walleye, Sauger, and Lake Whitefish do not appear to have substantially altered the dynamics and presence of their prey species. In fact, availability of Rainbow Smelt appears to have more impact on Walleye and perhaps Sauger than the reverse. Nutrient inputs into the lake have also affected ecosystem elements substantially, through eutrophication and associated consequences on food webs. In short, available data suggest that other factors such as nutrient inputs and invasive species, including Rainbow Smelt, appear to have had greater impacts on key ecosystem elements than UoA fishery removals.

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 Lake Winnipeg fish community.

The main functions of the components in the ecosystem are known. For example, Walleye and Sauger are piscivorous predators (e.g. Hartman 2009), while Lake Whitefish are flexible feeders that form an ecologically important link between the upper and lower food webs (Pothoven and Madenjian 2013).

Fishery-independent pelagic trawl surveys and the index netting program provide information on general abundances of different fish species within the lake ecosystem. Monitoring of water quality, nutrient levels, and benthic invertebrates also takes place. However, the information may not be adequate to support the development of strategies to manage ecosystem impacts, including those from climate change.

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, and the Lake Winnipeg Administrative Procedures. 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 Winnipeg Administrative Procedures to handle disputes related to suspensions, which includes a review by an Assistant Deputy Minister. 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 (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 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. 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 and fisher communities participate in management processes through CLA (community licensing area) representation and associations such as Lake Winnipeg Commercial Indigenous Fishers Inc (LWCIFI). 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 Winnipeg commercial fishers. The Regional Fisheries Manager meets with CLA representatives each year, upon request of the community. 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 fisheries 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 Winnipeg. One example was the 2018 update of the Lake Winnipeg Administrative Procedures.

Decision-making processes respond to serious issues and other important issues. As an example, the document "Lake Winnipeg Measures to Enhance Sustainability" described proposed measures and regulations to enhance the sustainability of the commercial, angling and indigenous fisheries and reduce overfishing of Walleye and Sauger. Readers were encouraged to voice their opinions on the measures, which were subsequently discussed and implemented with some adjustment resulting from stakeholder input.

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, the number of violations per year is moderate and does not suggest systematic non-compliance. There may be around ten license suspensions per year, which for a fishery with about 1,100 commercial licenses represents a suspension rate of less than 1%. Most non-compliances related to fishing over quota. 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 Winnipeg management system are not clearly established, and there is limited evidence demonstrating that regular internal and occasional external review take place. The Fisheries Branch hired an external consultant to review its recent stock assessments for Lake Winnipeg, but this was for one part of the management system and may not be a regular occurrence.

7.4. Principle 1

7.4.1. Principle 1 background

7.4.1.1. Target species and stocks

Lake Winnipeg has the second largest commercial inland fishery in North America, second only to Lake Erie (ECCC and MARD 2020). The UoA fishery targets multiple species: Walleye, Sauger, and Lake Whitefish. All of these species are of significant cultural and economic importance to local communities.

Stock monitoring and assessments

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. The program starts about a week after the opening of the spring commercial season and proceeds from south to north, from Grand Beach and Victoria Beach to Riverton and Hecla to Frog Bay to Matheson Island (Figure 2). About a month of commercial fishing will have passed by the time crews conduct index netting at Matheson Island. A variety of mesh sizes are used, described as stretch measures: 1.5” (38 mm), 2” (51 mm), 2.5” (64 mm), 3” (76 mm), 3.5” (89 mm), 3.75” (96 mm), 4.25” (108 mm), 5” (127 mm), and 6” (152 mm). All of the fish captured in the index nets are counted and identified to species. A subset of the target species individuals are weighed, measured (fork length), evaluated for maturity status, sexed, and aged. The index netting program was originally focused on Walleye and Sauger, and catches of Lake Whitefish are limited. The Fisheries Branch is trying various programs to increase the amounts of Lake Whitefish being sampled (K. Casper, pers. comm., April 2024).

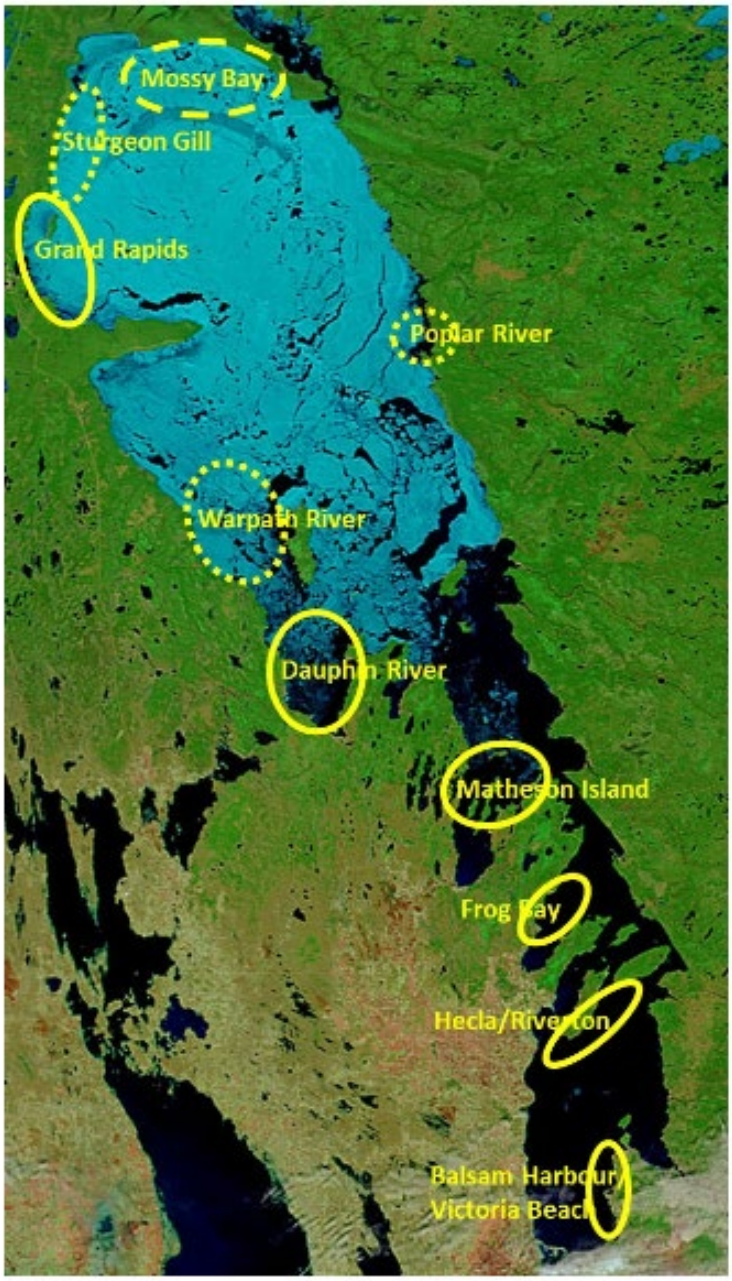


Figure 2. Index netting sites in Lake Winnipeg. Solid ellipses mark locations that have been monitored since 2009. Source: Klein 2022.

The Fisheries Branch conducts stock assessments for the target species / stocks using catch per unit effort (CUE) abundance indices derived from the DCR and index netting program data. These assessments utilize Bayesian surplus production models that include biomass dynamics. As described in North/South Consultants (2023b):

> *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. SPMs have a limitation in that they assume static *r* and *K*, although in reality these parameters are dynamic and affected by environmental conditions. Nonetheless, SPMs are an appropriate option given the data available for this fishery, and the assessors were diligent about describing how changes in the ecosystem and in fishing practices may have affected model parameters (Klein 2022; North/South Consultants 2023b).

The stock assessments include descriptions of sources of uncertainty and assumptions. For example, improvements in fishing efficiency, also referred to as effort creep, is accounted for in the models and is assumed to be fairly low at 1%. This value was selected because there have not been major changes in efficiency of fishing technology over the history of the fishery, but the assessors noted that a higher level of effort creep may be warranted in future assessments (Klein 2022).

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. 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). In Lake Winnipeg near Hecla, Manitoba (around the middle of the lake), approximately 80% of female walleye finish spawning by about May 22 (W. Galbraith, Aboriginal Affairs and Northern Development Canada (AANDC); as cited in Knapman et al. 2022). 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, often 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 Manitoba, female walleye usually become sexually mature at lengths of 420 to 480 mm (Klein et al. 2020). However, Walleye in the south basin of Lake Winnipeg mature at an unusually small size, with 50% reaching maturity at only 381 mm (Klein 2022).

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

Two Walleye stocks have been identified in Lake Winnipeg on the basis of differences in growth and maturity rates: North Basin (UoA 1) and South Basin and Channel (UoA 2). The stock was assessed at the lake-wide level in the most recent assessment but will be assessed as two separate stocks in the future (G. Klein, pers. comm., May 2024). Various studies have examined Walleye movement patterns within the lake. Turner et al. (2021) compared historic tagging studies to movements implied by modern acoustic tagging, whilst Munaweera et al. (2021) used acoustic data and state-space modelling to infer movement patterns. Currently, there is an ongoing acoustic telemetry project being carried out by Fisheries and Oceans Canada (DFO) tracking movements of Walleye and some Lake Whitefish.

Several key ecosystem changes have taken place in Lake Winnipeg that have likely affected carrying capacity of the stocks over time. In particular, these include: (1) the invasion of Rainbow Smelt starting in the late 1980s; and (2) large inputs of phosphorus from large flood events in 1997, 2005, and 2011 that increased eutrophication (North/South Consultants 2023b). Rainbow Smelt became a favored prey item of Walleye (Sheppard et al. 2015), supporting the growth of individual fish as well as the population at large. Eutrophication in Lake Winnipeg was positively correlated with commercial Walleye landings, likely because the increased phosphorus increased pelagic

productivity and supported Rainbow Smelt abundance. Walleye carrying capacity declined after the Rainbow Smelt population collapsed in 2012 following an especially hot summer (Klein 2022).

Impacts of the Rainbow Smelt collapse are reflected in data on Walleye weights at length and age over time; relative weights of larger (40-60 cm) Walleye showed a distinct drop in 2012 and did not start increasing again until after 2019 (Figure 3). Relative weight values of 100 or more indicate very high condition for Walleye; 87 is considered an average value (Klein 2022).

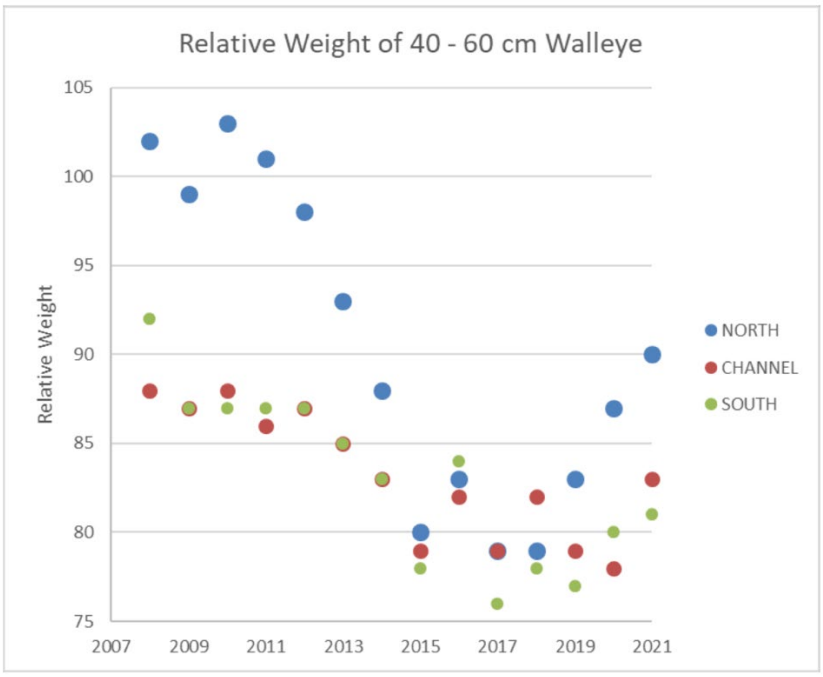


Figure 3. Relative weights of 40 - 60 cm Walleye caught in the Lake Winnipeg index netting program over time. The colors represent different areas of the lake. Source: Klein (2022).

Two recent stock assessments for Lake Winnipeg Walleye exist: (1) one developed by the Province of Manitoba Fisheries Branch, hereafter referred to as Fisheries Branch (Klein 2022), and (2) one prepared by the Anishinabek/Ontario Fisheries Resource Centre (A/OFRC) for the Pioneer Commercial Fishers of Manitoba (A/OFRC 2022). The two stock assessments used roughly the same data sets but employed different computational models. Both assessments assumed a single Walleye stock in Lake Winnipeg.

Fisheries Branch assessment (Klein 2022)

The Fisheries Branch Walleye stock assessment uses Bayesian surplus-production modelling with biomass dynamics and age-structure, run via the software program CMSY++ (Froese et al. 2021). The assessment report described results from three SPM variants based on the abundance index used: (1) commercial deliveries exceeding 54 kg, from the period spanning 1996 to 2012; (2) commercial catch and index netting data, from the period spanning 2009 to 2020, and (3) commercial deliveries exceeding 27 kg, from the period spanning 2009 to 2020. The latter two SPM variants are the most relevant for understanding current stock status.

The abundance index based on index netting data was calculated as the geometric mean among sampling sites of the weight of Walleye per index gang caught in mesh sizes of 76 mm (3”) or larger. The commercial indices were calculated as the geometric mean among CLAs of Walleye weights per daily catch record (DCR), truncated to include only deliveries exceeding a certain weight threshold (54 kg or 27 kg). These thresholds were used to handle issues such as separation of bycatch deliveries from targeted catch deliveries, using skewness as a diagnostic.

The models were used to estimate stock biomass (B) and harvest rates (H), the latter being a type of fishing mortality (F) measure. In some of the figures below, F is used in the notation rather than H. B_{MSY}, the biomass that would produce maximum sustainable yield, was calculated as half the model-estimated carrying capacity, i.e. $B_{MSY} = ½ K$. The point of recruitment impairment (PRI) for the stock was assumed to be $½ B_{MSY}$.

According to model estimates, total Walleye abundance fell to a low point in 2018 and now appears to be increasing (Figure 4). Reduced fishing pressure resulting from reduced fish sales may have contributed to the increase. The 2019/20 fishing year ended early due to the COVID-19 pandemic, as restaurants closed and major fish buyers stopped purchasing fish in late March 2020 (Klein 2022). Another potential factor was the increase in the minimum

allowable mesh size in the South Basin and Channel areas at the beginning of the 2020-21 fishing year, from 3 inches to 3.5 inches. This mesh size change was implemented to combat the decline of Sauger abundance (3 inch mesh is highly selective for mature Sauger females) and to reduce growth overfishing of Walleye (Klein 2022). The 3 inch mesh begins to catch Walleye at less than 300 mm fork length, with a mode just under 370 mm. At the larger 3.5 inch mesh size, Walleye start being caught at lengths of around 330 mm, with the greatest selectivity being for fish just over 430 mm (Klein 2022).

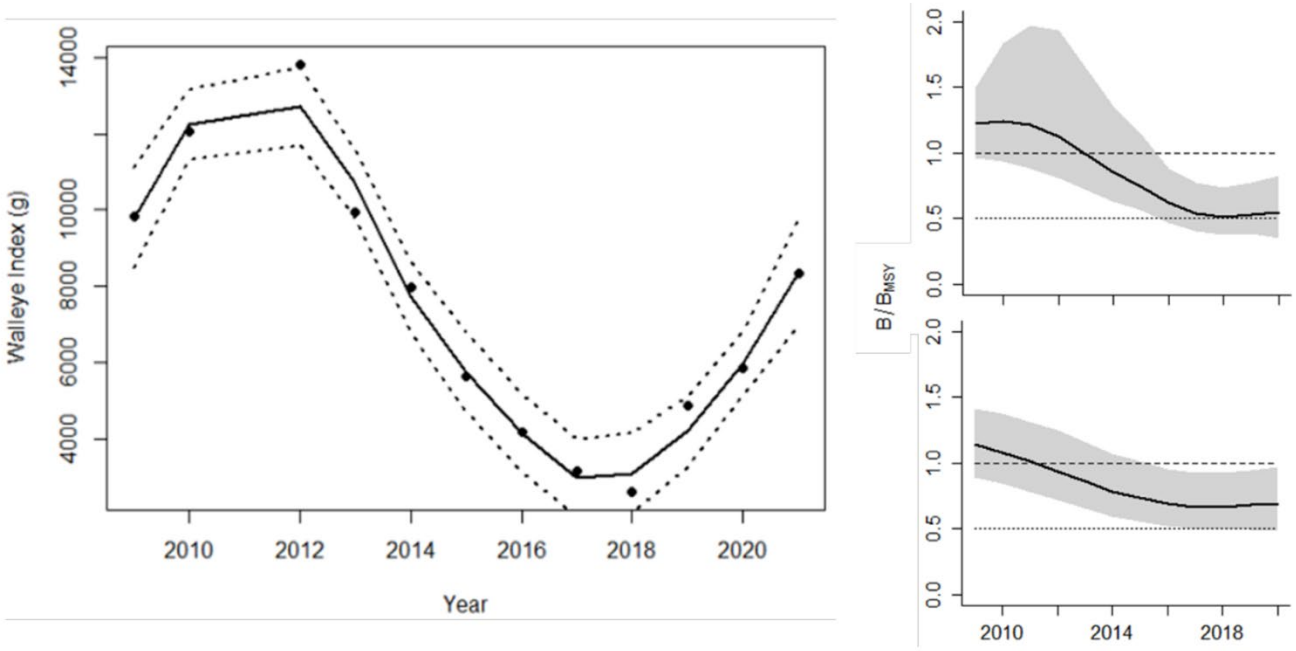


Figure 4. Estimated Lake Winnipeg Walleye abundance over time (left panel) and posterior estimates of biomass relative to BMSY (right panels). The upper right panel estimates were based on total commercial catch and abundance indices from the index netting program. The lower right panel estimates were based on commercial CUE abundance indices. Source: Klein 2022.

As described above, a substantial shift in the Lake Winnipeg carrying capacity of Walleye is thought to have taken place in 2012. For the time period from 1996 to 2012, estimates of the ratio of harvest rate to the harvest rate that would produce maximum sustainable yield (H/H_{MSY}) were generally less than 1. The estimated ratio of biomass to the biomass that would produce maximum sustainable (B/B_{MSY}) ranged from about 0.5 to 1.2 during that same time period (Klein 2022).

The main time series of model results presented in the stock assessment are for the years from 2009 to 2020. Estimated B/B_{MSY} in 2020 was 0.544 (95% CI: 0.350 – 0.857) when using index netting CUE as the abundance index, and 0.693 when commercial CUE was used as the abundance index (95% CI: 0.488 – 0.969; Klein 2022). Estimated F/F_{MSY} in 2020 was 1.50 (95% CI: 0.770 – 3.91) when using index netting CUE as the abundance index, and 1.13 when commercial CUE was used as the abundance index (95% CI: 0.670 – 1.98; Klein 2022). The Kobe plot below summarizes the trends in these model estimated ratios from 2009 to 2020 based on index netting CUE (Figure 5). Figure 5 indicates that overfishing has occurred over the entire time series, and that the Walleye stock has been overfished since about 2013.

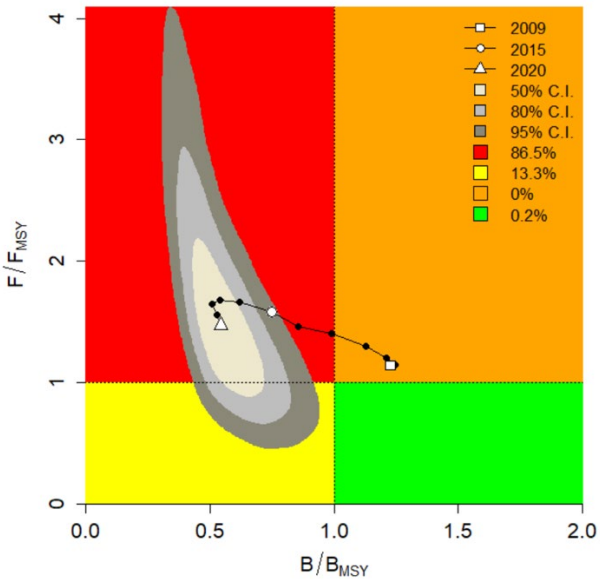


Figure 5. Kobe plot of the 2009-2020 time series of estimates of relative fishing mortality and biomass of Lake Winnipeg Walleye, based on index netting as the index of abundance and total commercial catch. Source: Klein 2022.

Catch curve analysis was used to obtain another estimate of fishing mortality based on index netting data. The analysis suggested 54.9% total annual mortality for Lake Winnipeg Walleye. Natural annual mortality (*M*) was estimated to be 23%, using the average of model outputs from estimators developed by Hoenig (1983) and Pauly (1980). Assuming natural and fishing mortality are additive, fishing mortality was then calculated to be 32% (Klein 2022). A common rule in fishing is that fish of middling and better productivity approach MSY when fishing mortality is equal to natural mortality, i.e. $F = M$. An alternative, more conservative rule based on Zhou et al. (2012) suggests that $F_{MSY} = 0.922*M$. By either rule, the F/F_{MSY} ratio is greater than 1; hence this second measure of *F* supports the determination that the stock is subject to overfishing.

However, the stock assessment noted that these model outputs may not be reliable due to limitations of SPMs, particularly with respect to the shift in Walleye carrying capacity in 2012. The time series of relative weights of Walleye may be a more reliable indicator of stock abundance (G. Klein, pers. comm., May 2024). Relative weights of individual Walleye are lower than they have been in the past, though they have been increasing, especially in the north basin (Figure 3). In addition, the intrinsic growth rate estimated from the more recent index netting data set ($r = 0.375$; 95% CI: 0.212 – 0.679) is very similar to the *r* estimated from the commercial data set from years prior to the Rainbow Smelt collapse ($r = 0.338$; 95% CI: 0.189 – 0.593; Klein 2022). Considering that Walleye are not growing faster today than they did historically, and that their relative weights are low, it appears that biomass is close to the carrying capacity.

Another metric related to fishing mortality is spawning potential ratio (SPR), defined as the ratio of ‘eggs produced per individual when the population is fished’ to ‘eggs produced per individual when the population is not fished.’ An SPR of 35% is considered a common limit reference point and proxy for F_{MSY} (Klein 2022). Under the scenario of 3.5” minimum mesh size and slow growth (yellow line in Figure 6), which is the thought to be the most reflective of current fishery conditions, the SPR at 21 years is 33%, quite close to 35%.

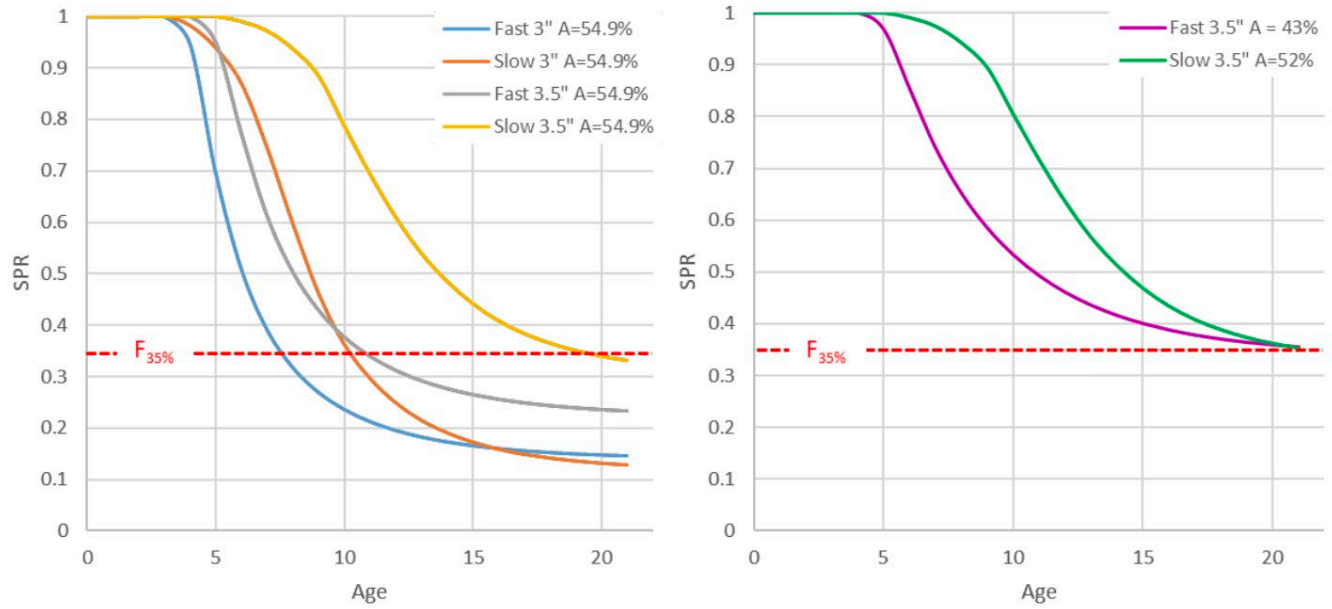


Figure 6. SPR at age of Lake Winnipeg Walleye under current total annual mortality (A), for fast and slow growth regimes and different minimum mesh sizes (left panel), and SPR at age needed to remain above the point of recruitment impairment, for fast and slow growth regimes under two estimates of A (right panel). Source: Klein (2022).

An independent review of the Fisheries Branch stock assessment was completed by North/South Consultants (2023b). They attempted to replicate the assessment process with the same data and concluded that the methods and results were generally sound. Nonetheless, as mentioned previously, other indicators may more accurately reflect current Walleye stock status. Relative weights, estimated intrinsic growth rates, and SPR suggest that the stock is currently in a reasonably productive state.

A/OFRC assessment (A/OFRC 2022)

This stock assessment was conducted by the Anishinabek/Ontario Fisheries Resource Centre (A/OFRC). They used the following data sets provided by the Fisheries Branch: (1) annual commercial catch 1973-2021, (2) annual commercial gill net CUE 1973-2021; (3) index netting program data 1979-2003; (4) index netting data 2009-2021, and (5) Lake Winnipeg small mesh index survey data 2012-2020. They used state-space biomass dynamic models (SSBDM), which are a type of SPM that allow for the estimation of time-variant parameters related to catchability, natural mortality, and stock recruitment. SSBDMs are of intermediate complexity and are used for fishery assessment when data on catch-at-age or catch-at-length are not available. The assessment was accompanied by a provisional management strategy evaluation (MSE), described in a separate document (A/OFRC 2021), to explore the implications of a change in minimum mesh size assuming different levels of fishing effort.

The conclusions from the A/OFRC assessment were more optimistic than those presented in the Fisheries Branch assessment. The Bayesian model averaged results suggested that the biomass in 2021 exceeded the limit reference point of ½ B_{MSY} with greater than 99% probability and had a 57% probability of exceeding the target reference point of B_{MSY} (A/OFRC 2022). Fishing mortality in 2021 was estimated to exceed F_{MSY} with 55% probability.

The MSE report used the A/OFRC stock assessment modelling framework to simulate effects of changes in the selectivity of commercial gillnets on abundance and age composition of commercial catches, and on population abundances of Walleye and Sauger. A/OFRC concluded that fishing effort had to increase by about 1.40 to 1.45 times when using 3.5” minimum mesh to achieve the same level of catches when using 3” minimum mesh. They suggested that requiring a larger minimum mesh size would not have a substantial impact Walleye or Sauger biomass if fishing effort increased as assumed under this scenario.

The results from both the Fisheries Branch and A/OFRC assessments were considered and discussed by government, and ultimately the A/OFRC assessment and MSE were not used in the management process due to issues they identified with the scope of the analysis and the assumptions made (E. Dunbar, pers. comm., March 2024). Because the results from the A/OFRC reports were not used to support decision-making, they were not considered further in this pre-assessment.

Sauger

Sauger (*Sander canadensis*) 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). The maximum age of Sauger caught in the Lake Winnipeg index netting program is 18 years (Klein 2022). Females are slightly larger than males and more susceptible to fishing mortality, especially after age eight. Average length at maturity for female Sauger is 314 mm (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. Walleye grow much larger than Sauger and can consume larger prey fish. Both lake eutrophication and the establishment of Rainbow Smelt in Lake Winnipeg are thought to have provided competitive advantages to Walleye. These ecological advantages, along with gillnet mesh sizes that have historically been highly selective for mature Sauger females, appeared to negatively impact Sauger stocks in the lake. 3 inch mesh captures Sauger starting around the 25th percentile of maturity. The Rainbow Smelt collapse in 2012 affected larger sized Sauger that could consume them as prey, contributing to decreases in their growth rates (Klein 2022).

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

Two Sauger stocks have been identified in Lake Winnipeg based on differences in growth and maturity rates as measured in the index netting program: North Basin (UoA 3) and South Basin and Channel (UoA 4). North Basin Sauger mature at greater ages due to differences in productivity and comparatively fewer GDD in the cooler north basin (Klein 2022). From 2010 to 2020, the average age at maturity for female Sauger was 5.99 years in the North Basin. From 2009 to 2020 the average ages at maturity for female Sauger in the Channel and South Basin were 4.61 and 4.89 years, respectively (Klein 2022). The length at maturity of female Sauger is 314 mm (Klein 2022).

The North Basin fishery is much smaller than the South Basin and Channel fishery, and commercial deliveries have generally declined since 1995 (Figure 7).

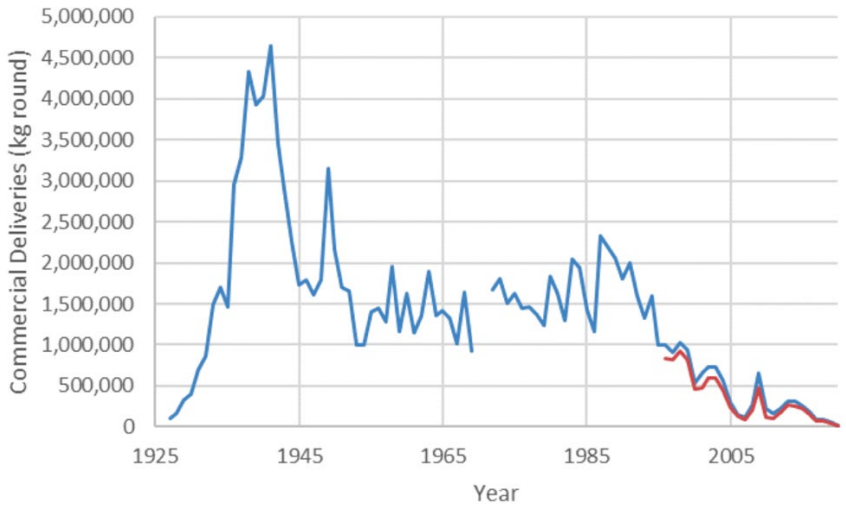


Figure 7. Commercial production of Sauger in Lake Winnipeg from 1927 to 2020. The red line from 1996 to 2020 represents the contribution from South Basin and Channel areas to the total catch in those years. Source: Klein 2022.

Fisheries Branch assessment (Klein 2022)

Because the South Basin and Channel fishery contributes much more to total catches (see Figure 7), the Fisheries Branch stock assessment focuses on South Basin and Channel Sauger only. The assessment uses a Bayesian surplus production model that was run using two different abundance indices: (1) commercial CUE based on commercial delivery data from 1996 to 2019 and (2) index netting CUE based on commercial delivery and index netting data from 2009 to 2020. The target reference point for the stock is B_{MSY}, the biomass needed to produce the maximum sustainable yield, defined here as half of the carrying capacity (K). The PRI is assumed to be ½ B_{MSY}.

As estimated by the index netting CUE model, B_{MSY} (½ K) is 910 t (95% CI: 544-1489 t; Klein 2022). Estimated B_{2020}/B_{MSY} was 0.291 (95% CI: 0.183 – 0.453). However, the 2020 biomass estimate from the model using commercial CUE was not considered reliable because catchability was strongly affected by the change in minimum allowable mesh size that year. Thus we also provide estimates of B_{2019}/B_{MSY}. The index netting CUE model estimated a B_{2019}/B_{MSY} ratio of 0.249 (95% CI: 0.151 – 0.411), while the commercial CUE model estimated a B_{2019}/B_{MSY} ratio of

0.165 (95% CI: 0.110 – 0.259). Both models suggest that B/B_{MSY} has declined from 2010 to present, and that the Sauger stock is overfished (Figure 8).

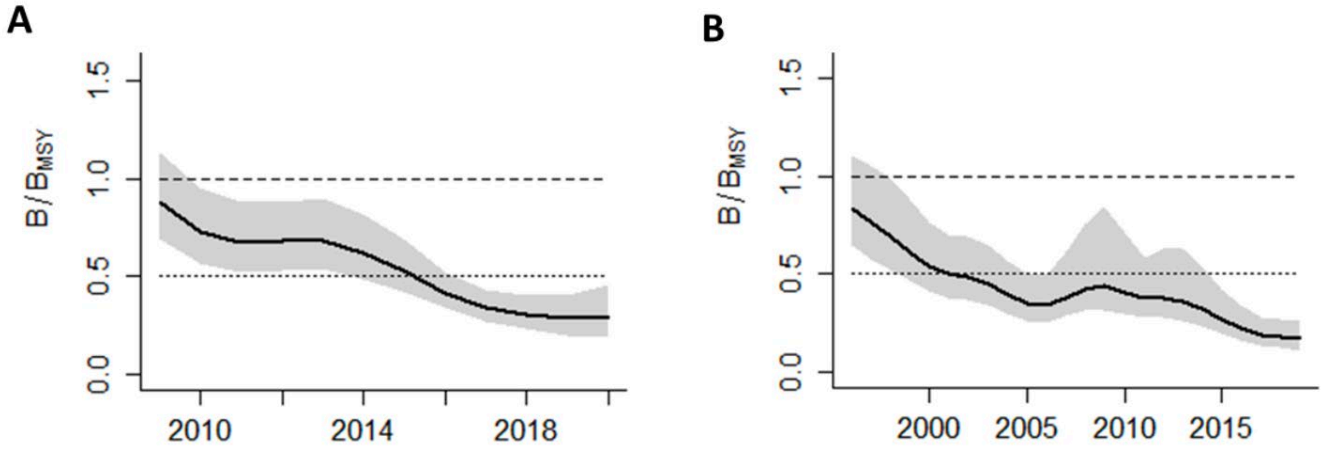


Figure 8. Ratio of B/B_{MSY} over time for South Basin and Channel Sauger. Frame A shows model outputs based on index netting CUE. Frame B shows model outputs based on commercial CUE. The grey areas represent 95% confidence intervals for the estimates. Source: Klein (2022).

The Bayesian SPMs were also used to estimate harvest rates (H), a measure of fishing mortality (F). Both the index netting CUE model and the commercial CUE models estimated that F exceeded F_{MSY} from 2010 to 2020, with a peak in the F/F_{MSY} ratio around 2016 (Figure 9). Thus, overfishing appears to be occurring.

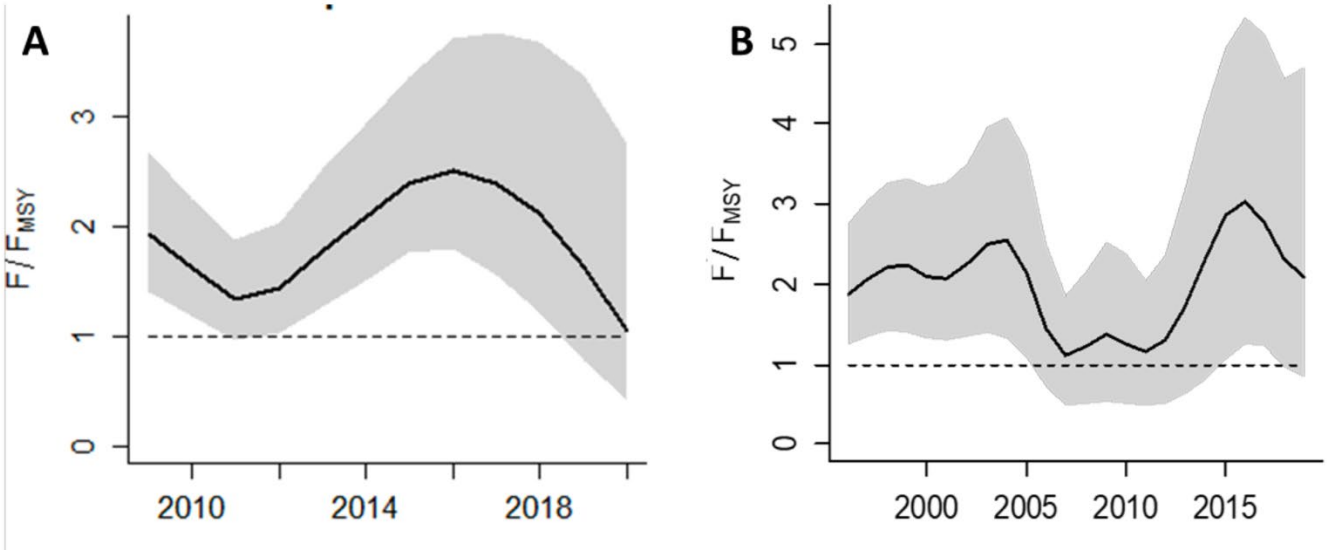


Figure 9. F/F_{MSY} over time estimated using index netting CUE data as the abundance index (Frame A) and commercial CUE data as the abundance index (Frame B). The grey areas represent 95% confidence intervals for the estimates. Source: Klein (2022).

Overall, the models suggested a 55% probability overfishing was occurring and a 100% probability the stock was overfished in 2020 (Figure 10). The Sauger stock has been overfished since 2009. The regulatory increase in minimum mesh sizes applied in 2020, along with reduced fishing due to Covid-19 related factors, appear to have reduced fishing mortality such that F is approaching F_{MSY}, although the confidence intervals are quite large (Figure 9).

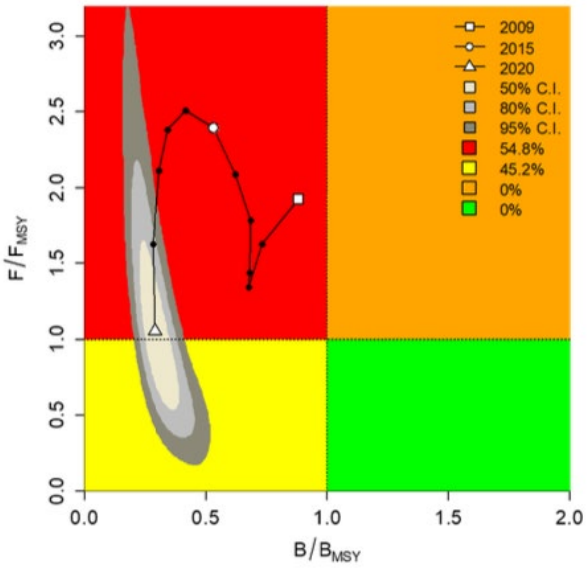


Figure 10. Kobe plot of the time series of estimates of relative fishing mortality and biomass of South Basin and Channel Sauger. The time series starts in 2009 and ends in 2020. Source: Klein (2022).

Natural and fishing mortality on the Sauger stock were also estimated using age-based and growth-based models. Averaging the results from the two types of models suggests an annual natural mortality rate of about 27.5% (Klein 2022). A meta study by Zhou et al. (2012) suggested the following relationship between the fishing rate at maximum sustainable yield (F_{MSY}) and instantaneous natural mortality (M) for the order Perciformes: $F_{MSY} = 0.922*M$ (standard deviation = 0.092). The model-averaged M for South Basin and Channel Sauger from 2016 to 2020 is 0.325; F_{MSY} therefore is 0.300 (Klein 2022). Catch curve analyses suggest that overfishing on Sauger begins after the fish reach nine years of age (Klein 2022).

Another metric related to fishing mortality is spawning potential ratio (SPR). As mentioned previously, female Sauger are especially susceptible to fishing mortality from gillnet fishing. Despite this, the estimated SPR of Sauger at age 18 is 38.8% (95% confidence interval = 30.1-57.2), exceeding the 35% SPR value that is used as a common target reference point and proxy for F_{MSY} (Klein 2022). In other words, older females appear to still produce substantial numbers of eggs under existing fishing conditions.

In relation to stock rebuilding, the minimum mesh size of 3.5” is particularly relevant for allowing mature female Sauger to escape the fishery and contributing to stock recovery. In Lake Winnipeg, female Sauger typically mature at a length of about 314 mm (length at 50% maturity; Figure 11). Size selectivity data from the index netting program indicates that Sauger weighing 300 g or less are mostly able to escape the fishery (Figure 11). At typical growth rates, a 300 g Sauger would be 340 mm in length, well above the length at 75% maturity.

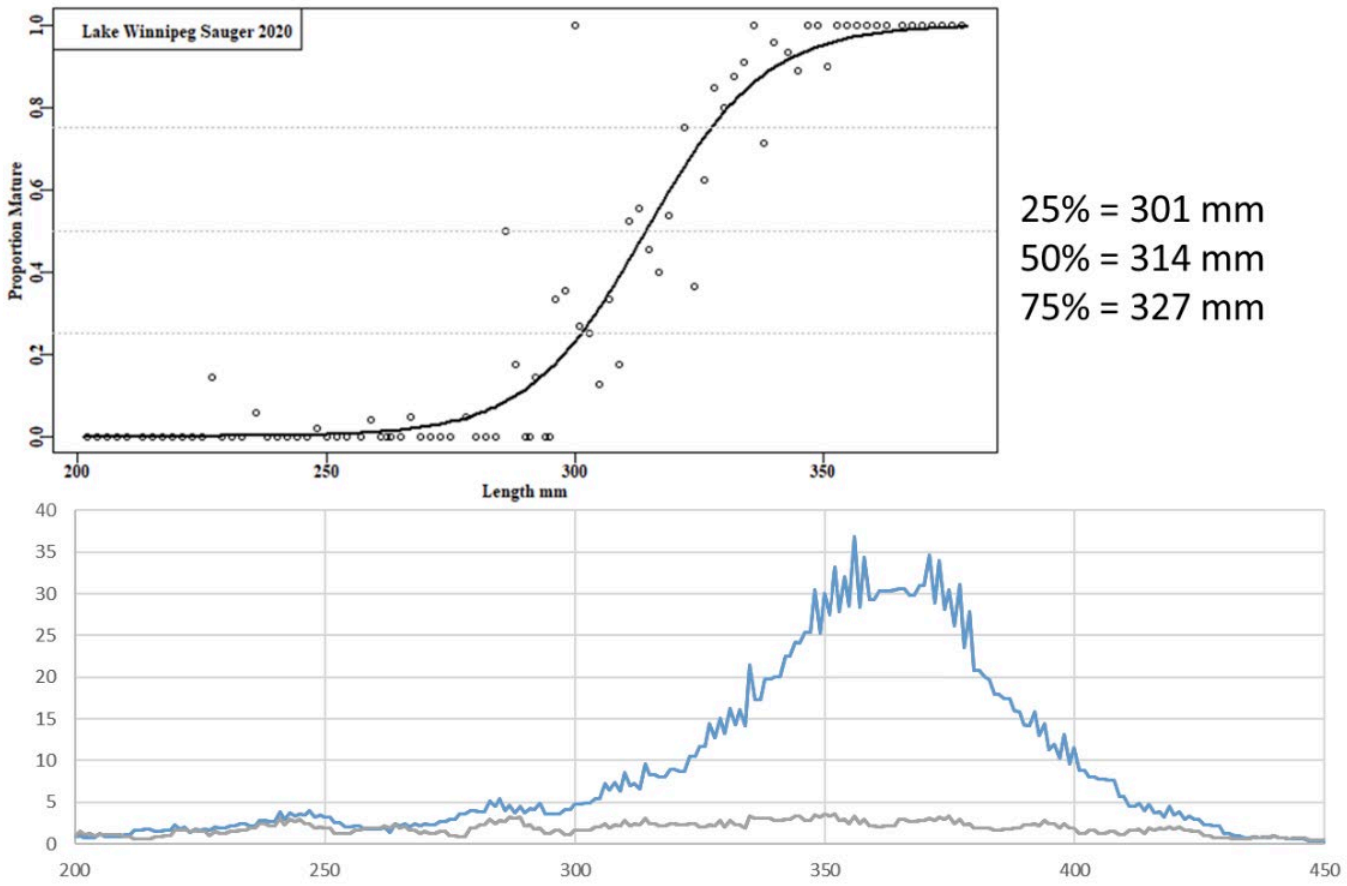


Figure 11. Logistic regression showing length at 50% maturity of female Lake Winnipeg Sauger from all areas (upper frame). The lower frame shows the size selectivities of the 3” mesh in the index programme (blue), and the 3.5” mesh in the index programme (grey). Source: Klein (2022).

Lake Whitefish

Lake Whitefish (*Coregonus clupeaformis*) are important for subsistence, commercial and recreational fisheries across their range. Lake Whitefish spawn in the fall, congregating at night on rocky reefs nearshore or in rivers. The larvae hatch in the spring and rear as juveniles in nearshore areas, where they feed until they grow large enough to move into offshore waters (USFWS 2024). As adults, they move to and inhabit offshore areas before returning to more nearshore areas or rivers to spawn. Adult lake whitefish feed on invertebrates, small mussels and small fish, primarily near the bottom. Larval and juvenile Lake Whitefish feed primarily on zooplankton (USFWS 2024).

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

Although the number of Lake Whitefish stocks in Lake Winnipeg is not very clear, the current assumption is that there are five stocks based on age distribution, proteins (allozymes), and meristic analysis (Kristofferson and Clayton 1990, Pollard 1973). These stocks are: Grand Rapids (GR); Mossy Bay / Playgreen Lake; Dauphin River / Lake St. Martin (LSM), Poplar River, and Traverse Bay (TB). These correspond to the UoAs and delivery sheds shown in Table 8. Poplar River was not included in this pre-assessment because the Poplar River Lake Whitefish stock underwent a separate MSC pre-assessment process.

Table 8. Genetic stocks of Lake Whitefish in Lake Winnipeg and how they correspond to the UoAs.

UoA	Genetic stock(s)
Grand Rapids (UoA 5)	Grand Rapids
Mossy Bay (UoA 6)	Mossy Bay / Playgreen Lake
Dauphin River/Lake St. Martin (UoA 7)	Dauphin River/Lake St. Martin
South Basin and Channel (UoA 8)	Traverse Bay
Poplar River (UoA 9)	Poplar River

In the summer and winter, Lake Whitefish from the three north basin stocks (Grand Rapids, Mossy Bay, Poplar River) mix and are caught together. An acoustic tracking program is currently demonstrating that Lake Whitefish of the south basin and channel stock vacate the south basin as temperatures increase in summer (G. Klein, pers. comm., May 2024). As a philopatric species, Lake Whitefish return to their natal spawning areas in the fall. Fall catches are therefore thought to be a relatively representative index of stock abundance, because fish caught in the fall are more likely to have originated from the area where they were caught.

Fisheries Branch assessment (Klein 2022)

Most of the Lake Whitefish stocks were assessed using Schaefer surplus production models run in CMSY++, using various abundance indices based on the data available for each stock. Commercial CUE was calculated as the geometric mean of total round weights of Lake Whitefish declared on daily catch records (DCRs). The Fisheries Branch assessment did not provide the numeric values for some key parameters, such as the estimated stock biomass in the most recent year. Thus in some cases we provide estimates from the models run by North/South Consultants (2023a), which used the same data sets and attempted to replicate the results described in the Fisheries Branch assessment.

Grand Rapids

For the Grand Rapids stock, Klein (2022) ran four model variants using the following abundance indices: (1) average CUE for all deliveries in a year for the years 1996-1998, (2) average winter deliveries greater than 20 kg compared to total catch for the years 1999-2018, (3) average fall deliveries greater than 20 kg compared to total catch for the years 1996-2018, and (4) combined winter and fall average catch greater than 54.6 kg compared to total catch for the years 1996-2018. Commercial deliveries of Lake Whitefish were very small from 2019 to 2020, such data for those years could not be used in the assessment. The marked decline in deliveries of Whitefish could have been due either reduced fishing pressure or because the stock is so depleted that Whitefish are not being caught. Little fishery-independent data was available for this stock.

Kobe plots for these four models are shown in Figure 12. Across all four models, B exceeded B_{MSY}, and H remained below H_{MSY} until about 2010. The relative harvest rate (H/H_{MSY}) peaked in 2016 and declined until the end of the time series in 2018. One area where the models differed was in their identification of the year that overfishing stopped occurring. The model that used fall and winter CUEs greater than 54.6 kg (Model 4) estimated that overfishing was no longer occurring in 2018. The other three models estimated that overfishing was ongoing in 2018. All of the models suggested that B has been well below B_{MSY} in recent years. Across the four models, estimates of r ranged from 0.305 to 0.330, and K ranged from 248 to 269 t. Model 4, which estimated a low r that would correspond to a more precautionary estimate of B_{MSY}, estimated that MSY was 269 t (95% CI: 210 t - 363 t).

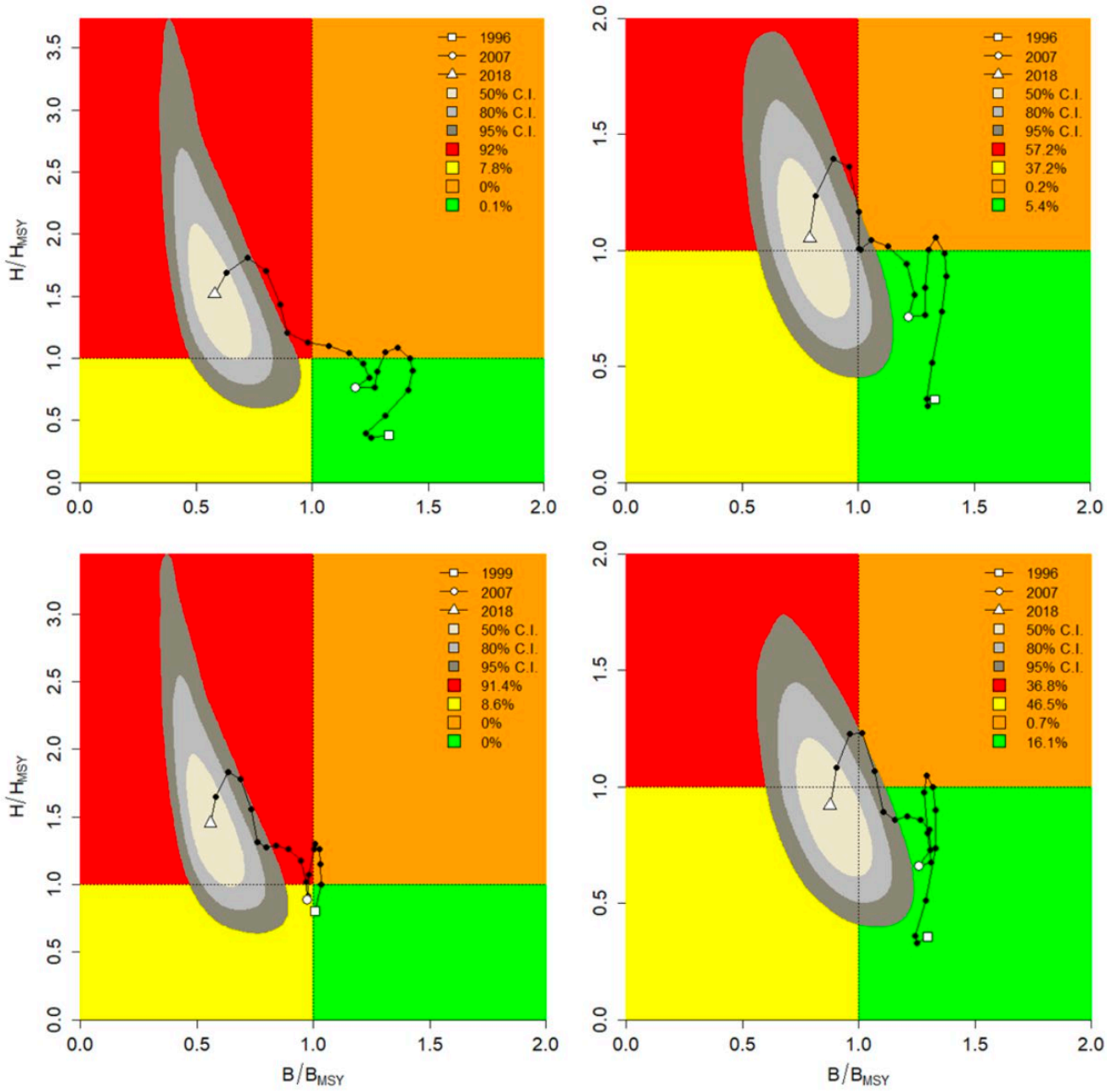


Figure 12. Kobe plots for Lake Winnipeg Grand Rapids Whitefish using four different abundance indices. Upper left panel uses the average delivery size of all the deliveries from spring, fall, and winter. Upper right panel uses the average delivery size of only fall deliveries that were greater than 20 kg. Lower left panel uses the average delivery of only winter deliveries that were greater than 20 kg. Lower right panel uses the average delivery of fall and winter deliveries that were greater than 54.6 kg. Source: Klein (2022).

The stock assessment model run by North/South Consultants (2023a) produced estimates that were fairly comparable to those from Model 4 in Klein (2022). Their results indicated that MSY was 268 t (95% CI: 216 t - 339 t), B_{MSY} was 1,624 t (95% CI: 891 t - 3,069 t), and biomass in the most recent year (B_{2018}) was 852 t (95% CI: 461 t - 1,800 t). Thus B_{2018}/B_{MSY} was 0.535 (95% CI: 0.373 - 0.722). Estimated F_{MSY} was 0.166 (95% CI: 0.0895 - 0.292), fishing mortality in most recent year (F_{2018}) was 0.217 (95% CI: 0.0834 - 0.528), making F_{2018}/F_{MSY} = 1.34 (95% CI: 0.608 - 3.14). Estimates of q (catchability), r (growth rate), K (carrying capacity), and MSY for Model 4 in Klein 2022 were 0.0759, 0.305, 3525 t, and 269 t, respectively. In the North/South Consultants model (2023a), these parameters were estimated to be 0.172, 0.332, 3248 t, and 268 t, respectively.

Mossy Bay and Playgreen Lake

The Mossy Bay / Playgreen Lake stock is also sometimes referred to as the Norway House stock. The fishery on this stock predominantly takes place in the spring and fall seasons by Norway House fishers, who fish a communal quota held by the Norway House Fishermen's Co-op. There is at least a modest level of fish movement between Mossy Bay and Playgreen Lake (Pollard 1973). The bay and lake have different quotas, with the Mossy Bay quota being comparatively much larger since about 2007.

Klein (2022) ran multiple model variants based on different CUE indices and time series, to try to account for variability arising from external factors such as mixing of stocks in spring catches, and fishing activity disruption due to the Covid-19 pandemic. Model variants that included 2020 and 2021 data suggested that overfishing occurred from 2014 to 2018, with H/H_{MSY} exceeding a value of 1. When the model used a combination of fall DCR and fall catch as the abundance index and ended the time series in 2019, which is expected to be fairly representative of the stock and more typical catch patterns, H/H_{MSY} did not exceed 1 except in 2019 (upper rightmost panel in Figure 13). Another model variant that was tested but not shown in Figure 13 was with fall DCR / fall catch and truncation of the time series in 2020. This model fit the data quite well and suggested that overfishing was occurring from 2015 to 2019, and that the stock was in an overfished condition after 2018 (Klein 2022).

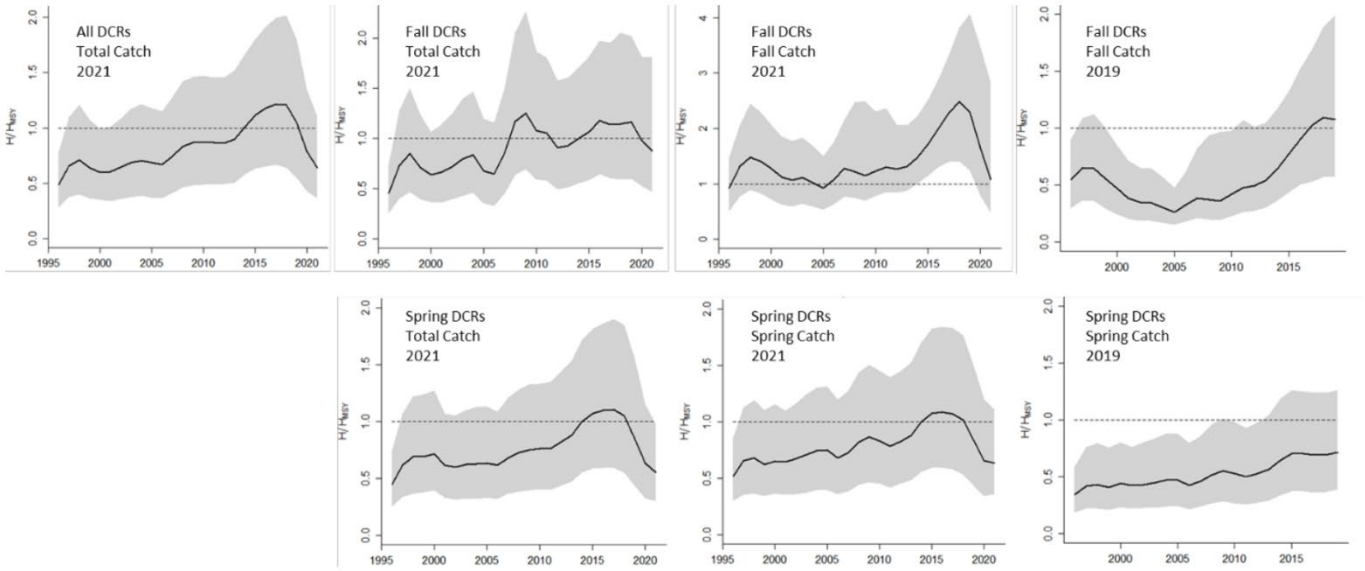


Figure 13. Estimated H/H_{MSY} over time for the Mossy Bay Lake Whitefish fishery over time, under 7 modeling scenarios. Plots are labelled with the abundance indices, measures of catch, and the final year included in the time series. Shaded areas represent 95% confidence intervals. Source: Klein (2022).

In terms of biomass, all of the models that included the full time series of data (through 2021) indicated that B/B_{MSY} fell below 1 after 2019 (Figure 14).

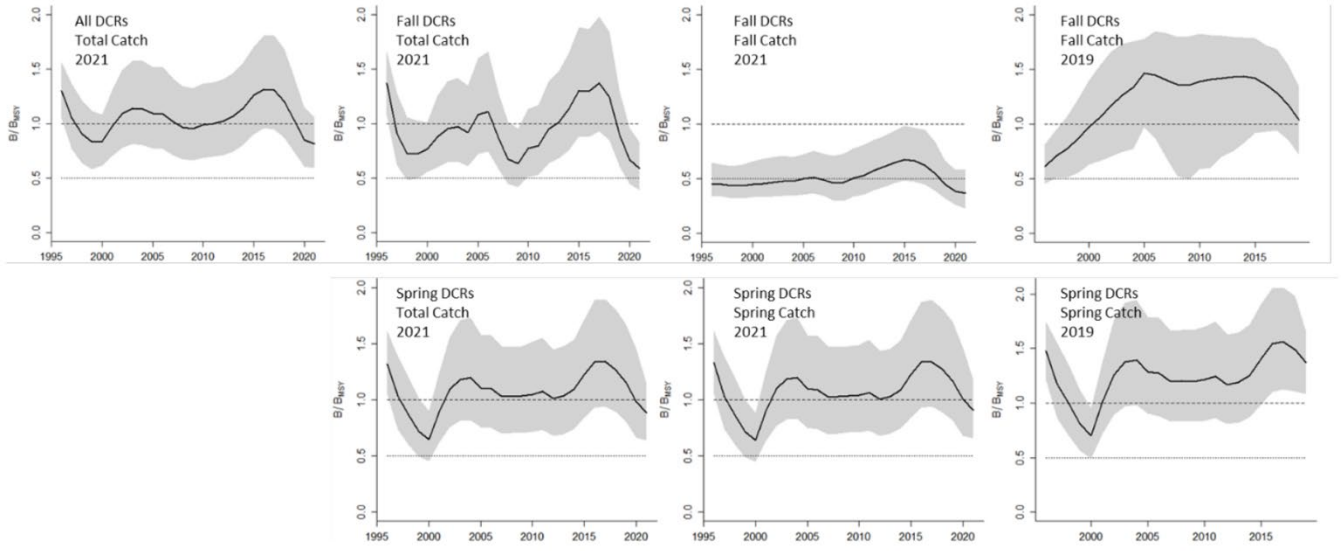


Figure 14. Estimated B/B_{MSY} over time for the Mossy Bay Lake Whitefish fishery over time, under 7 modeling scenarios. Plots are labelled with the abundance indices, measures of catch, and the final year included in the time series. Shaded areas represent 95% confidence intervals. Source: Klein (2022).

For the Mossy Bay / Playgreen Lake stock, North/South Consultants (2023a) estimated the following. MSY was 574 t (95% CI: 456 t - 818 t), B_{MSY} was 3057 t (95% CI: 1621 t - 6827 t), and biomass in the most recent year (B_{2021}) was 1873 t (95% CI: 789 t - 4583 t). Thus B_{2021}/B_{MSY} was 0.609 (95% CI: 0.382 - 0.874). Estimated F_{MSY} was 0.188 (95% CI: 0.10 - 0.332), fishing mortality in most recent year (F_{2021}) was 0.253 (95% CI: 0.00842 - 0.723), making F_{2021}/F_{MSY} = 1.38 (95% CI: 0.602 - 3.46). Estimates of q, r, K, and MSY for the 'fall DCR/fall catch' model in Klein 2022 were

0.112, 0.345, 5351 t, and 460 t, respectively. In the North/South Consultants model (2023a), these parameters were estimated to be 0.132, 0.375, 6115 t, and 574 t, respectively.

The north basin stock complex (Grand Rapids, Mossy Bay, Poplar River) was also modelled using catch data from the mixed stock fisheries that take place. The mixed stock model results suggested that overfishing took place from 2014 to 2018, after which harvest levels abated to some extent. In 2021, there was only a 0.4 percent probability that overfishing was occurring on the mixed stock complex. However, the model also estimated a 54.3% probability that the stock complex was overfished in 2021 that year (Figure 15).

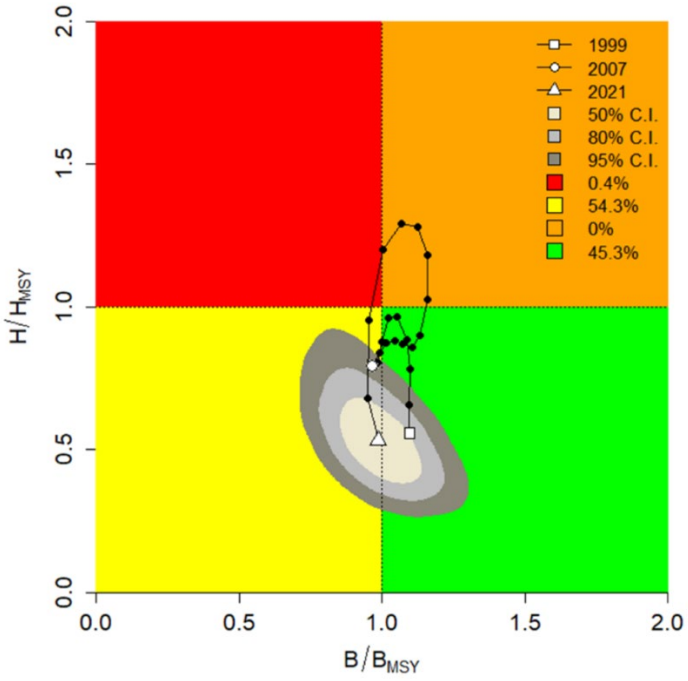


Figure 15. Kobe plot of the mixed stock (Grand Rapids, Mossy Bay, Poplar River) model results. Source: Klein (2022).

Dauphin River / Lake St. Martin

Dauphin River (DR) and Lake St. Martin (LSM) are connected bodies of water located between Lake Winnipeg and Lake Manitoba. Fish from the two areas appear genetically and morphologically similar (Kristofferson and Clayton 1990), but DR and LSM data were modelled separately to take advantage of the availability of the two data sets and triangulate their results. The Dauphin River flows into Lake Winnipeg through Sturgeon Bay. The Fairford Dam largely bars fish migration between Lake St. Martin and Lake Manitoba, though there is a technical fish pass in one of the dam's nine bays. High water years and floods appear to affect the sizes of Lake Whitefish deliveries between areas, which are not always in phase (Klein 2022). The Dauphin River fishery has a multi-species quota of 498.26 t, while the LSM fishery has a multi-species quota of 340.2 t (Klein 2022).

Dauphin River

According to Klein (2022), the estimated MSY for Dauphin River is 325 t (95% CI: 262 t - 427 t). The estimated B_{2021}/B_{MSY} was 0.801 (95% CI: 0.572 - 1.06), with a 93.4% probability that the stock is overfished. Estimated H_{2021}/H_{MSY} was 0.99 (95% CI: 0.583 - 1.63), with a 51.8% chance that overfishing is not occurring. See right panel in Figure 16.

The results generated by North/South Consultants (2023a) were similar. Estimated MSY was 498 t (95% CI: 382 t to 667 t), B_{MSY} was 2752 t (95% CI: 1368 t to 5594 t), and biomass in the most recent year (B_{2021}) was 2462 t (95% CI: 1220 t to 4928 t). Thus B_{2021}/B_{MSY} was 0.889 (95% CI: 0.667 – 1.17). Estimated F_{MSY} was 0.10 (95% CI: 0.0397 to 0.261), and F_{2021}/F_{MSY} was 0.555 (95% CI: 0.265 to 1.18). Estimates of q, r, and K for the 'fall DCR/total catch' model in Klein 2022 were 0.0957, 0.242, and 5,368 t, respectively. In the North/South Consultants model (2023a), these parameters were estimated to be 0.0754, 0.36, and 5,505 t, respectively.

LSM

The estimated MSY for LSM is 325 t as well (95% CI: 276 t - 390 t). The estimated B_{2021}/B_{MSY} was 0.835 (95% CI: 0.528 - 1.15), with an 84.4% probability that the stock is overfished. Estimated H_{2021}/H_{MSY} was 0.953 (95% CI: 0.567 -

1.74), with a 56.6% chance that overfishing is not occurring. See left panel in Figure 16. The estimates of H/H_{MSY} for both the Dauphin River and LSM models were very similar over the entire time series (Figure 16).

The results generated by North/South Consultants (2023a) were different and less optimistic about the status of the LSM stock component. Estimated MSY was 292 t (95% CI: 217 t to 417 t), B_{MSY} was 2217 t (95% CI: 1601 t to 3901 t), and biomass in the most recent year (B_{2021}) was 989 t (95% CI: 395 t to 2052 t). Although 989 t / 2217 t is about 0.45, their reported model estimate of B_{2021}/B_{MSY} was 0.392 (95% CI: 0.186 – 0.668). Estimated F_{MSY} was 0.103 (95% CI: 0.0657 to 0.138), and F_{2021}/F_{MSY} was 0.857 (95% CI: 0.268 to 4.47). Estimates of q, r, and K in Klein 2022 were 0.0456, 0.463, and 2803 t, respectively. In the North/South Consultants model (2023a), these parameters were estimated to be 0.306, 0.312, and 3249 t, respectively. Their report did not explain why their results differed substantially from those of the Fisheries Branch assessment, but the estimates of q, defined as defined as the amount of biomass/catch taken with one unit of effort, were quite different.

On the whole, three of the four models (DR and LSM from Klein 2022 and DR from North/South Consultants 2023a) suggested that the DR/LSM Lake Whitefish stock is highly likely to be above the PRI.

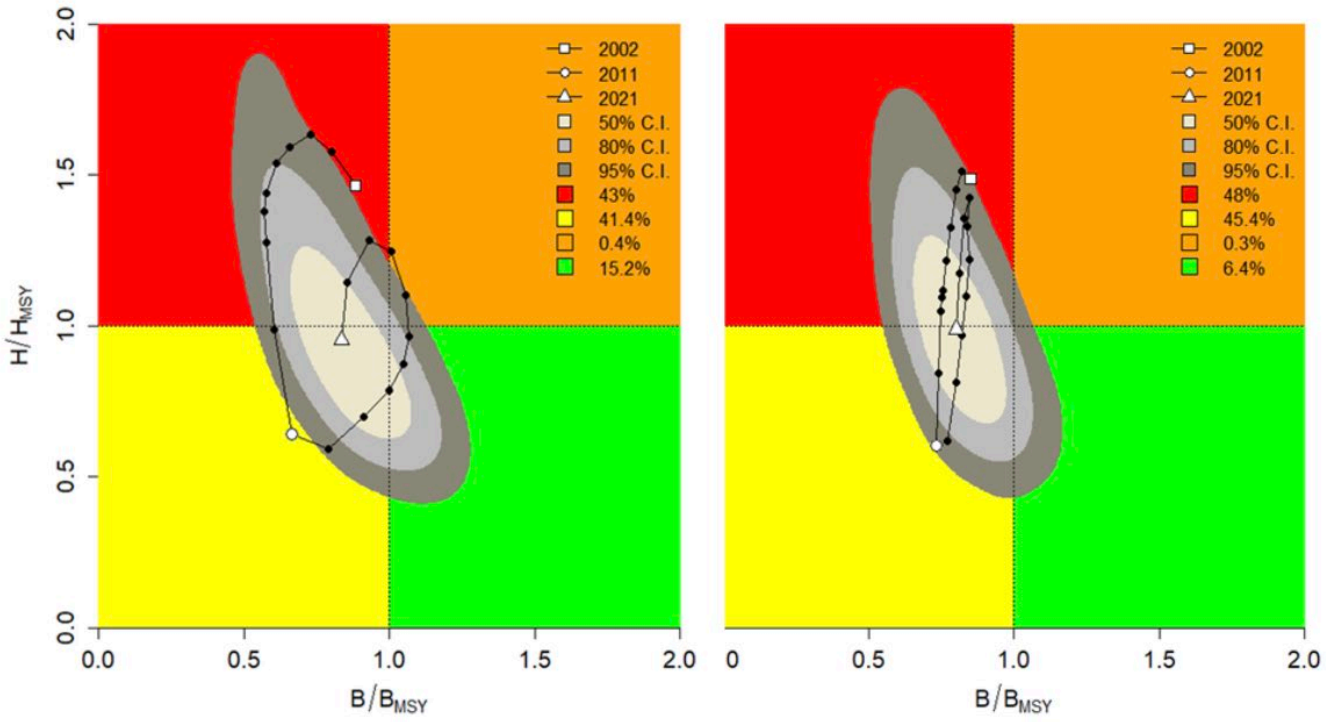


Figure 16. Kobe plots of the LSM/Dauphin River Lake Whitefish stock, using LSM mean delivery size (left panel) and Dauphin River mean delivery size (right panel) as the abundance indices. Source: Klein (2022).

Traverse Bay (South Basin and Channel)

Index netting data are limited for this stock; from 2008 to 2021, only 286 Lake Whitefish were caught (Klein 2022). Average commercial deliveries as recorded on individual fishers' DCRs were used as the index of abundance, and these were compared to the total catch from the fall season only. Model results indicated that the stock biomass was well below the B_{MSY} level from 1995 to 2011, started increasing, and is now approaching B_{MSY} with a 30% probability of exceeding it (Figure 17). Harvest rates have been close to and generally not exceeding the H_{MSY} level with some variability since 2010. The model suggested a 62% probability that H is less than H_{MSY}, which may have contributed to the increasing B/B_{MSY} ratio.

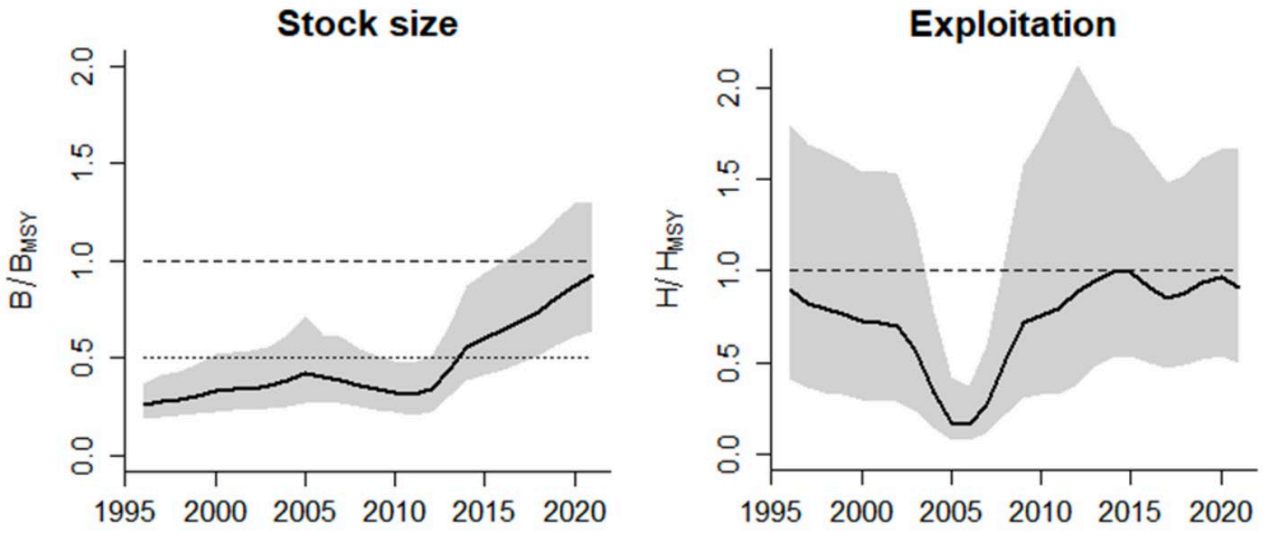


Figure 17. Estimated biomass relative to the biomass required for maximum sustainable yield (left) and the estimated harvest rate relative to the rate at MSY (right) for south basin and channel area Lake Whitefish. Source: Klein 2022.

The results generated by North/South Consultants (2023a) were as follows. Estimated MSY was 587 t (95% CI: 402 t to 890 t), B_{MSY} was 4160 t (95% CI: 2198 t to 7920 t), and biomass in the most recent year (B_{2021}) was 4228 t (95% CI: 2139 t to 8787 t). Thus B_{2021}/B_{MSY} was 1.02 (95% CI: 0.758 – 1.35). Estimated F_{MSY} was 0.14 (95% CI: 0.0915 to 0.222), and F_{2021}/F_{MSY} was 0.926 (95% CI: 0.412 to 2.03). Estimates of q, r, and K in Klein 2022 were 0.0217, 0.229, and 10,877 t, respectively. In the North/South Consultants model (2023a), these parameters were estimated to be 0.0132, 0.281, and 8,320 t, respectively.

Poplar River

Based on data from catch totes, recruitment in this stock appeared to be very good from 1992 until 1998, very low from 1999-2009, and then somewhat recovered after 2009, though not to the 1992-1998 levels (Klein 2022). The fall gillnet fishery, which takes place from mid-September to mid-October, accounts for 95.2% of the Poplar River Lake Whitefish commercial catch. The remainder is caught as bycatch in the summer fishery targeting Walleye.

The estimate of exploitable depletion was 0.548 for 2020 (Figure 18, Frame A); that is, the stock was depleted to 54.8% of the unfished, exploitable biomass in 2020. This is well above the 0.2 (20%) threshold limit depicted as a red line, and also above the 0.4 (40%) MSY level depicted as a green line within Frame A.

Surplus production modelling indicated that the harvest rates exceeded MSY levels in 2014, 2015, and 2016; harvests were then at or around MSY for 2017-2019 (Figure 18, Frame B). The 2020 fishing year saw a particularly high catch because the 2020 summer season was effectively cancelled when markets abruptly closed due to Covid-2019. This left fishers with all their quota to be caught in the fall when the fishery catches 95% whitefish. The model suggested an 88% chance that overfishing occurred in 2020.

It can be said that there is a high degree of certainty that the stock has been fluctuating around a level consistent with MSY using the 95th confidence percentile. The biomass required for MSY is 665,533 kg. The estimated stock biomass at the beginning of the 2021 fall season was 732,519 kg (Klein 2022).

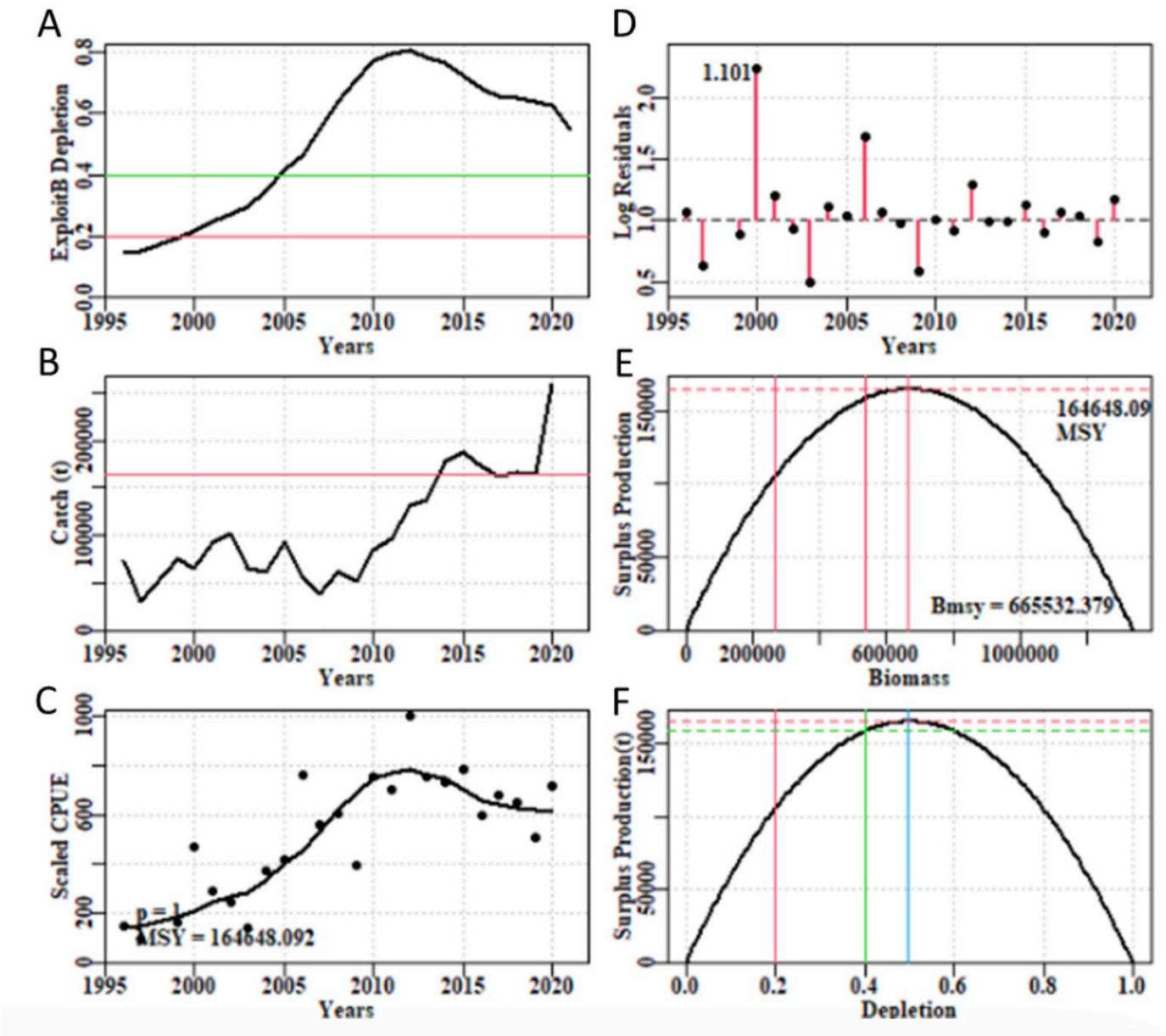


Figure 18. Schaefer surplus production model outputs based on CUE. Frame A shows the estimated exploitable depletion, including the limit reference point of 0.2 in red, and level consistent with MSY (0.4) in green. Frame B shows the catch each year in the Poplar River fall whitefish fishery with a red line as the predicted MSY. Frame C shows the CUE in the fishery since 1996 and the modeled line from the Schaefer model parameters. Frame D presents the residuals of the model in C along with the root mean squared error of the log normal residuals. Frame E shows the Schaefer production model based on r = 0.4923, K = 1,337,686 kg, and B0 = 196,567 kg, in terms of biomass with vertical red lines at B20% and B40%, and a fuchsia vertical line at BMSY. The horizontal red dashed lines shows the MSY of 164,648 kg. Frame F shows the same information as Frame E in terms of depletion. Source: Klein (2022).

7.4.1.2. Fishery operations and management overview

Fishing areas and seasons

Over 23,000 permanent residents live in 30 communities along the shores of Lake Winnipeg, including many First Nation and Métis communities (Manitoba.ca – Environment and Climate Change). Métis are peoples of mixed European and North American indigenous parentage. The north and south basins of the lake, which are separated by an area called the Narrows, have distinct demographic characteristics. The north basin is less densely populated and is home to a number of indigenous communities. The south basin is surrounded by more developed infrastructure, including for transportation, and has a higher concentration of commercial fishers with non-indigenous heritage.

The north and south basins have slightly different fisheries management practices. For example, fishers in the north basin have generally been using larger minimum mesh sizes than those in the south basin. In addition, some

indigenous communities implement voluntary harvest measures in the areas they fish, such as use of rod and reel only within river areas (S. Murdock, pers. comm., 20 March 2024). In many years, north basin communities have also opened the spring fishery slightly later than the south basin (documentation provided by W. Galbraith, May 2024). For example, in 2017 the south basin fishery opened on 21 May. Norway House chose to open their area (Area “M”) to fishing on 4 June, while Berens River and Poplar River opened their areas (Areas “E” and “D” respectively) on 3 June. All other areas opened the spring fishery on 26 May.

There is essentially a total allowable catch (TAC) in the form of a lake-wide quota that is currently set at 6.1033 million kg for 2024 (Manitoba Commercial Harvest Schedule 2024-01). This quota is for the three ‘quota species’ combined: Walleye, Sauger, and Lake Whitefish. The lake-wide quota has varied between ~6 to 7.3 million kg in recent decades (Figure 19). The 7.3 million kg peak during the 1970 to 2015 period included extra quota from the Whitefish Optimization Program, which created extra allowances for Walleye and Sauger on north basin quotas that had been historically fished during the winter season and produced mostly (93%) Lake Whitefish (Klein 2022). The Whitefish Optimization Program has paused, with communication going out to fishers in early May 2024 along with their commercial fishing licence package (E. Dunbar, pers. comm., May 2024). The Fisheries Branch has the authority to adjust quotas on an annual basis and to close the fishery as quotas are reached. However, adjusting quotas on Lake Winnipeg, which has an Individual Quota Entitlement (IQE) system, is relatively challenging. Quota buy-back programs have been utilized to reduce quota when deemed necessary, though these rely on voluntary sales by quota holders. There is also not an established mechanism to adjust the TAC. The Manitoba Fisheries Branch does make adjustments to the opening date of the spring season based on monitoring of spawning activity.

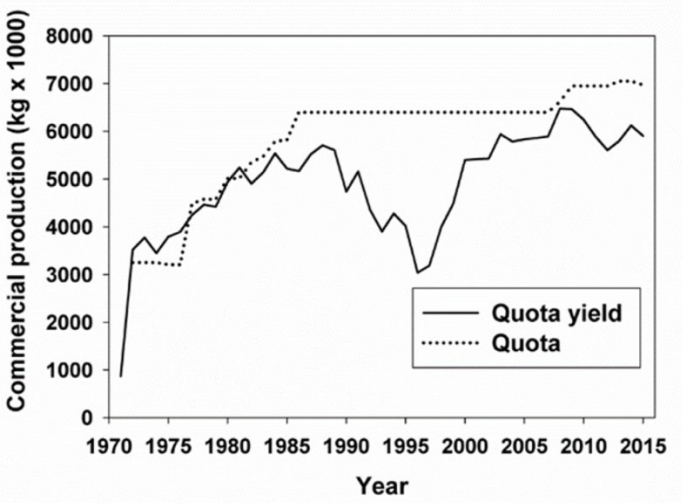


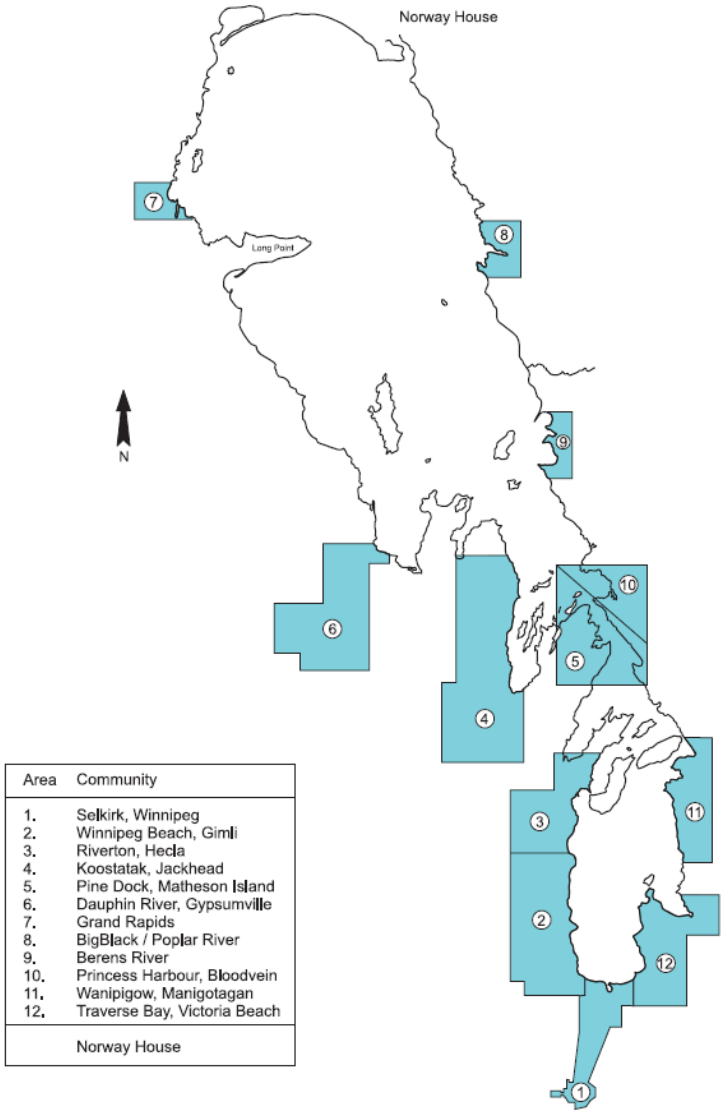
Figure 19. Lake Winnipeg commercial production (quota yield) for all quota species combined (Walleye, Sauger, Lake Whitefish) from 1971 to 2015, and total quota from 1972 to 2015. Source: ECCC and MARD 2020.

Commercial fishers need both a commercial license and at least one quota entitlement (QE) to have the legal authority to set gillnets in Lake Winnipeg and sell the catch. A fisher may hire as many helpers as they wish, but the licensed fisher must be present during fishing activities. QEs are allocated among twelve community licensing areas (CLAs) shown in Figure 20. In general, QEs may only be transferred within a CLA. To obtain a QE, a fisher must meet certain residency requirements (Lake Winnipeg Administrative Procedures 2018).

An individual fisher can own up to nine QEs, each of which specifies the total weight of Walleye, Sauger, and Lake Whitefish that may be caught. Fishers can fish any mix of these three species to fill their quotas, unless they hold certain types of former winter quotas or whitefish fleet quotas, which are supposed to consist mostly of Whitefish. These exceptions have a historical background; when individually transferable quotas were initially granted to fishers in the 1980s, each fisher could own a maximum two quotas per season. Then beginning in 2001, fishers were permitted to fish their quotas in any season of their choosing. Winter quotas in CLAs 6, 7, and 8 had primarily consisted of Lake Whitefish. To avoid a sudden, drastic shift in fishing pressure on Walleye and Sauger, these former winter quotas are currently limited to 30% of the total quota being delivered as Walleye or Sauger if the quota is fished during summer or fall. If the quota is fished during winter, any amount of the total allocation can be delivered as any species.

The three-species quota system has at times contributed to fish discarding, which is not regulated. Beginning in 2000, any quota could be fished in any season. Around this time, the Walleye population expanded from very low numbers to the higher abundances observed following the Rainbow Smelt invasion. Because fishers became increasingly able to fill their three-species quotas with Walleye, they started discarding lower-value Lake Whitefish. In response, the government created an off-quota allocation of Lake Whitefish that allowed fishers to deliver some quantity of Lake Whitefish to the main buyer at the time, the Freshwater Fish Marketing Corporation (FFMC), without having that

quantity deducted from their quota. That allowance started at 167,500 kg in 2008 and was increased to a high of 295,800 in 2016 and 2017 prior to a reduction to 252,450 kg, which remains at present (Klein 2022). In recent years, prices of and demand for all three target species has been sufficiently high that fishers do not discard any of them (B. Matkowski, pers. comm., 20 March 2024). Fishers currently discard only a few species, such as burbot, that lack demand from buyers.



Area	Community
1.	Selkirk, Winnipeg
2.	Winnipeg Beach, Gimli
3.	Riverton, Hecla
4.	Koostatak, Jackhead
5.	Pine Dock, Matheson Island
6.	Dauphin River, Gypsumville
7.	Grand Rapids
8.	BigBlack / Poplar River
9.	Berens River
10.	Princess Harbour, Bloodvein
11.	Wanipigow, Manigotagan
12.	Traverse Bay, Victoria Beach
	Norway House

Quota per CLA

Community Licensing Area	Total Quota
1, 2, 3, 12	1,983,650
11	219,650
4	700,990
5, 10	586,100
6	479,110
7	556,012
8	334,370
9	444,360
Norway House (13)	808,000
Total Lake Quota	**6,112,242**

Figure 20. Map of community licensing areas in Lake Winnipeg (left) and total quota per CLA in 2023/24 (right). Source: Fisheries Branch.

There are three fishing seasons: summer, fall, and winter. Open water fishing takes place in the summer and fall, while ice fishing takes place in the winter. The fishing year for the south basin and channel area begins in May or early June, two full days after the time when 80% of female Walleye caught in government nets at Hecla Bar (south basin) are spawned out. If this occurs in May, the north basin delays the start of fishing until June 1st. If south basin fishing begins in June, north basin fishing starts at the same time. The summer season ends on July 10th, July 27th, or August 8th, depending on the licensing area. Currently, the fall season begins September 7th and runs until November 6th. The winter season begins after November 1st, or when ice makes, as fishers must set through the ice. In general, ice conditions are not safe enough to support winter commercial fishing until December, however this varies from year to year. The winter season runs until March 31st.

Fishing areas vary by season (Figure 21). All CLAs except those in the south basin (CLAs 1, 2, 3, 11, and 12) may access the large central area of the north basin in the summer and winter seasons, as specified on their license conditions. During the fall, that central area (colored grey in the center map of Figure 21) is closed to fishing, to protect Lake Whitefish spawning within that part of the lake.

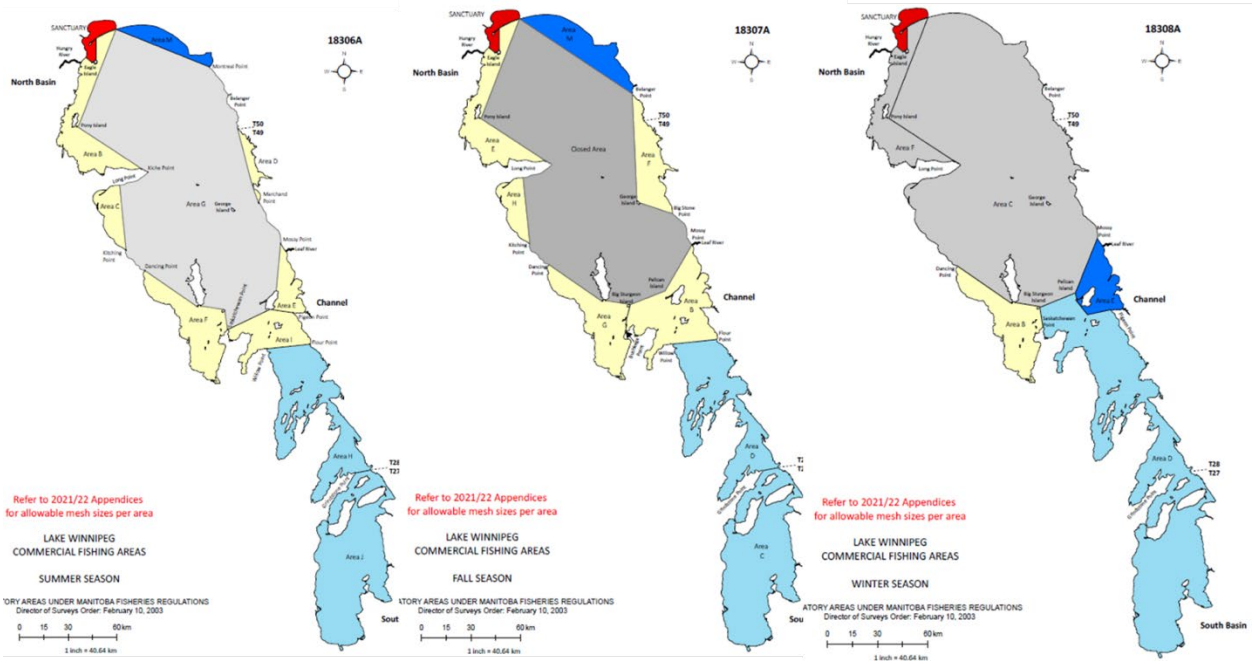


Figure 21. Regulatory areas under Manitoba Fisheries Regulations, for summer, fall and winter seasons (left to right). Source: Fisheries Branch, Manitoba.

Fishing gear and vessels

The only gear type used in the UoAs is set gillnets (Figure 22). Most gillnets are 80 to 100 yards in length, although maximum allowable (horizontal) yardages vary by license type and by season. There is no regulation governing net depth (height of the wall). In practice, nets are 2.5 to 4 metres (m) deep but can be as much as 10 m deep. Hanging ratio and web color are also not prescribed. Fishers use net mesh sizes of their choosing, so long as they exceed the minimum size limit specified in their license conditions. By varying the mesh size they vary the sizes and species of fish caught; larger mesh nets catch larger sized fish, and are easier to pull and pick.

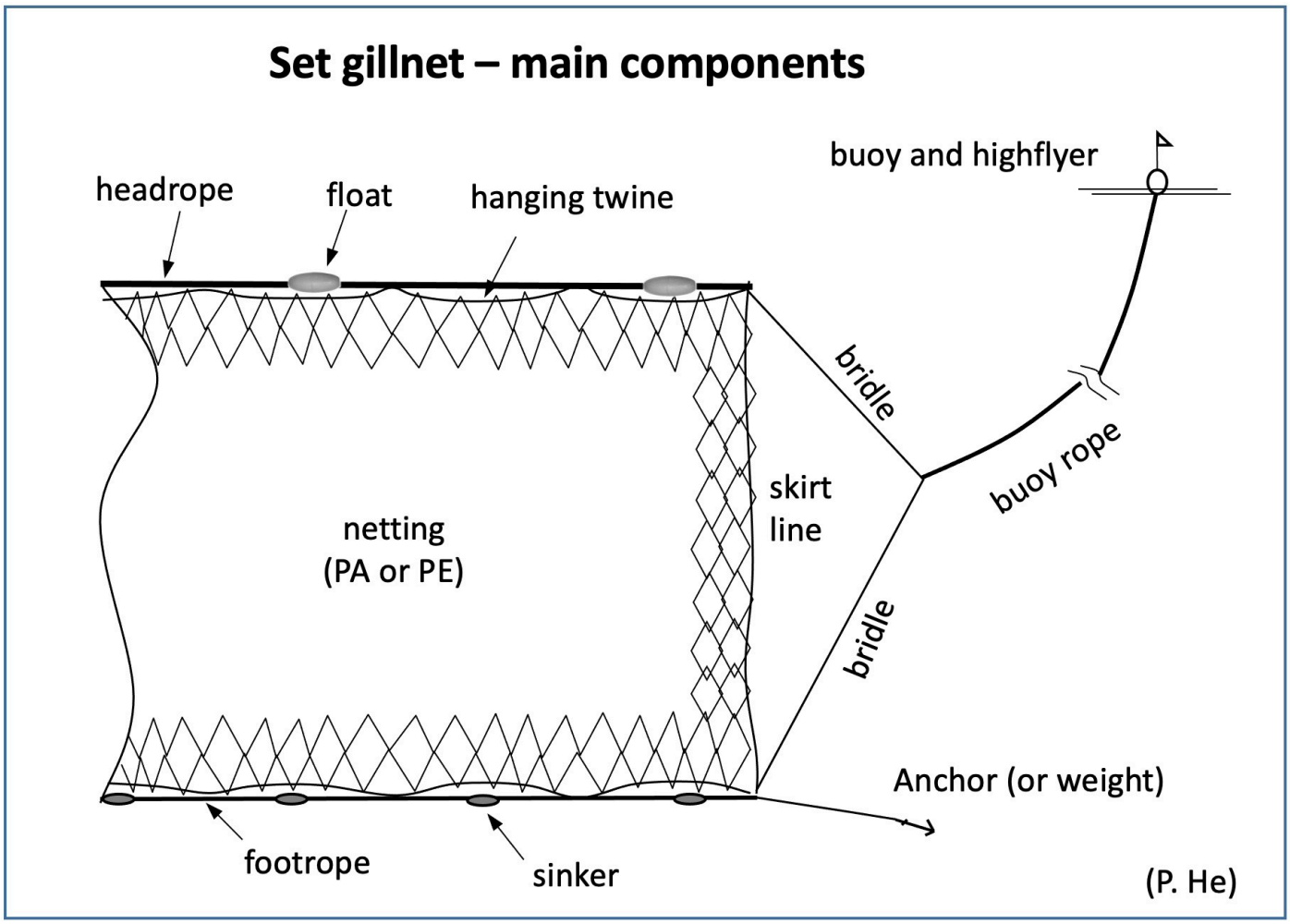


Figure 22. Diagram of a standard set gillnet. Source: FAO.

Allowable mesh sizes vary by area. In the south basin and channel area, along with Berens River, the minimum allowable gillnet mesh size was recently raised to 3½ inches (89 mm) stretch measure in 2020, from the previous minimum of 3 inches (76 mm). South basin fishers generally use 3½ inch to 5¼ inch mesh. In the rest of the lake, fishers use 3¾ inch to 5½ inch mesh, though the minimum mesh size in the large centre of the north basin (Area G; large grey area in leftmost map of Figure 21) is 4¼ inch. The material of the gillnet web is nylon monofilament, often with two to three strands of monofilament twisted together loosely to make up the web or netting.

In terms of recent changes, the minimum allowable gillnet mesh size was recently increased to 3½ inches (89 mm) stretch measure from 3 inches (76 mm) in the south basin. The north basin stock is fished with a variety of minimum mesh sizes ranging from 3.5 inches in the winter in the Berens River pocket to 3¾ inches in Mossy Bay. In practice, larger minimum mesh sizes have been used in the north basin as compared to the south basin for some time (see Table 9 for an example of mesh sizes used in the Norway House fishery). Currently, much of the north basin has a minimum mesh size of 3¾ inches.

Table 9. Minimum mesh sizes used in the Norway House fishery. The year of change signifies the start of a change that remained in place until the next listed year. Source: Klein 2022.

Year change begins	Minimum allowable mesh size	Mossy Bay quota	Playgreen Lake quota	Additional off-quota whitefish – Mossy Bay
1982	5.00"	68,040	?	0
1985	5.00"	113,400	?	0
1986	5.00"	68,040	235,900	0
1992	4.25"	158,840	145,100	0
1994	4.25"	68,040	235,900	0
1995	4.25"	68,040	281,300	0
1996	4.25"	204,120	172,436	0
1997	4.25"	338,000	281,300	0
1998	4.25"	383,300	235,940	0
1999	4.25"	360,680	258,620	0
2000	4.25"	337,940	467,853	0
2001	4.25"	407,940	191,400	0
2002	4.25"	474,080	335,900	0
2003	4.25"	488,000	235,900	0
2006	4.25"	453,000	235,900	0
2007	4.25"	488,000	235,900	0
2008	4.25"	608,000	115,900	26,000
2014	4.25"	808,000	115,900	26,000
2016	4.25"	808,000	115,900	39,000
2022	3.75"	808,000	115,900	39,000

During the open water seasons, fishers will usually gang multiple nets together in a string that must be marked by floats with a flag ("highflyer" in Figure 22) at least 0.9 m above the water surface. The flag is the only part of the gear that must be marked with the fisher's identifying number. There is no obligation to mark the actual net, nor the anchors, nor any lines. Open water fishers use king anchors of 25 – 40 pounds tied to long bridles to anchor their net strings in place.

During the ice fishing season, a net stake above the ice must be marked with the fisher's identifying number, but there is no obligation to mark any of the submerged gear (Figure 23). When fishing under ice, fishers use short bridles and small anchors of less than 10 pounds; sometimes the anchors are simply 1 pound bricks.

Nets are usually set directly on the bottom substrate, but when fishers want to avoid bottom-oriented bycatch, or fish higher in the water column for target species, they may add flotation to the floatline ("headrope" in Figure 22) and fish the net in a suspended manner. Fishers may not leave any gear in the water when there is no active season underway to avoid wasteful ghost fishing.

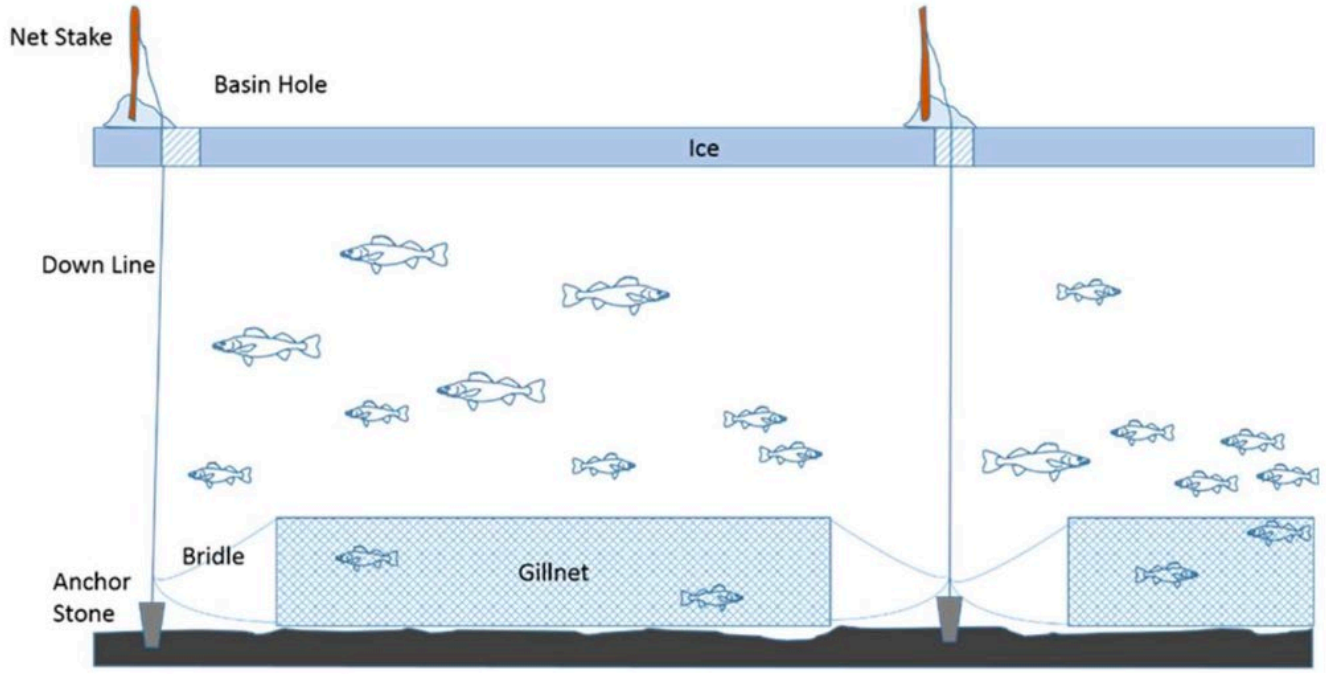


Figure 23. Diagram of gillnet setup under the ice. Source: Fisheries Branch, Manitoba.

Fishing vessels are used during the open water seasons. Most vessels are 6 to 9 m long, open boats powered by one or two outboard motors. In the Lake Winnipeg fishery these boats are referred to as yawls or skiffs. These vessels leave and return to their home ports within a day. The fishers visit their set nets once or twice per day depending on the temperature; visits tend to be more frequent when temperatures are higher. The fishers carry crushed ice and ice the fish as they are picked from the nets.

There is a limited number of larger boats (~ 22 m in length) that have living quarters, on the order of a dozen throughout Lake Winnipeg. These boats carry ice and may venture to other areas of the lake and deliver to stations that are not their home port. They also have larger net yardage allowances.

During the ice fishing season, fishers take snowmobiles pulling toboggans, or bombardiers, 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. Bombardiers are tracked vehicles manufactured from the 1940s to the 1970s that enclose their passengers. The catch can be transported on the roof of the bombardier or inside of it. As during the open water seasons, the catch is delivered on the day of net lifting, or the next day.

Non-commercial fisheries on Lake Winnipeg

Lake Winnipeg has recreational and subsistence fisheries for Walleye, Sauger, and Lake Whitefish in addition to the commercial gillnet fishery. Under the Natural Resources Transfer Agreement (1930), First Nations have a right to fish for subsistence uses throughout the province on all unoccupied Crown lands and on any other lands to which they may have a right of access. Métis peoples have constitutionally protected rights to fish for food in the recognized area for Métis Natural Resource Harvesting. Due to the nature of these rights, the Manitoba government likely has limited authority to request information on levels of subsistence harvests.

There is a very active recreational fishery for Walleye and other species in Lake Winnipeg. Recreational anglers must follow regulations described in the Manitoba Anglers' Guide 2024. All anglers engaging in angling, dip netting, cast netting, seining, minnow trapping, spear fishing, and bow fishing must have a Manitoba Angling Licence unless they are in a group with a licence exemption (e.g. Status Indians, Manitoba Resident Seniors and Youth). Anglers must use barbless hooks. Possession limits are specified for each species, and some species also have size restrictions. If recreational fishers catch an undersized fish, they are required to release them. Recreational catches have been periodically estimated through creel surveys conducted in the south basin. These surveys have taken place in 2010, 2017, and 2018/2019, and 2021/2022.

7.4.2. Catch profiles

Figure 24 and Figure 25 show time series of commercial catches of the Walleye, Sauger, and Lake Whitefish in Lake Winnipeg.

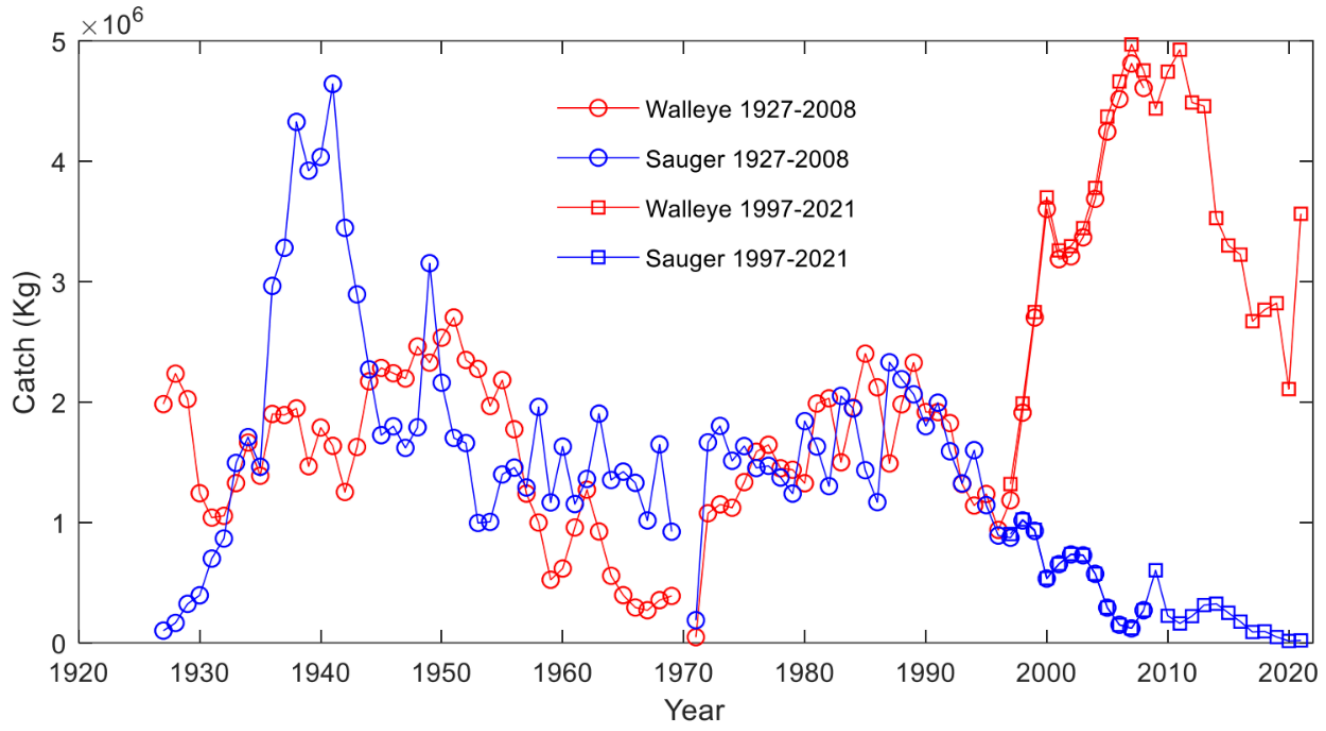


Figure 24. Catches of Walleye (red) and Sauger (blue) over time in the Lake Winnipeg commercial fishery, excluding releases and discards. Source: A/OFRC (2022).

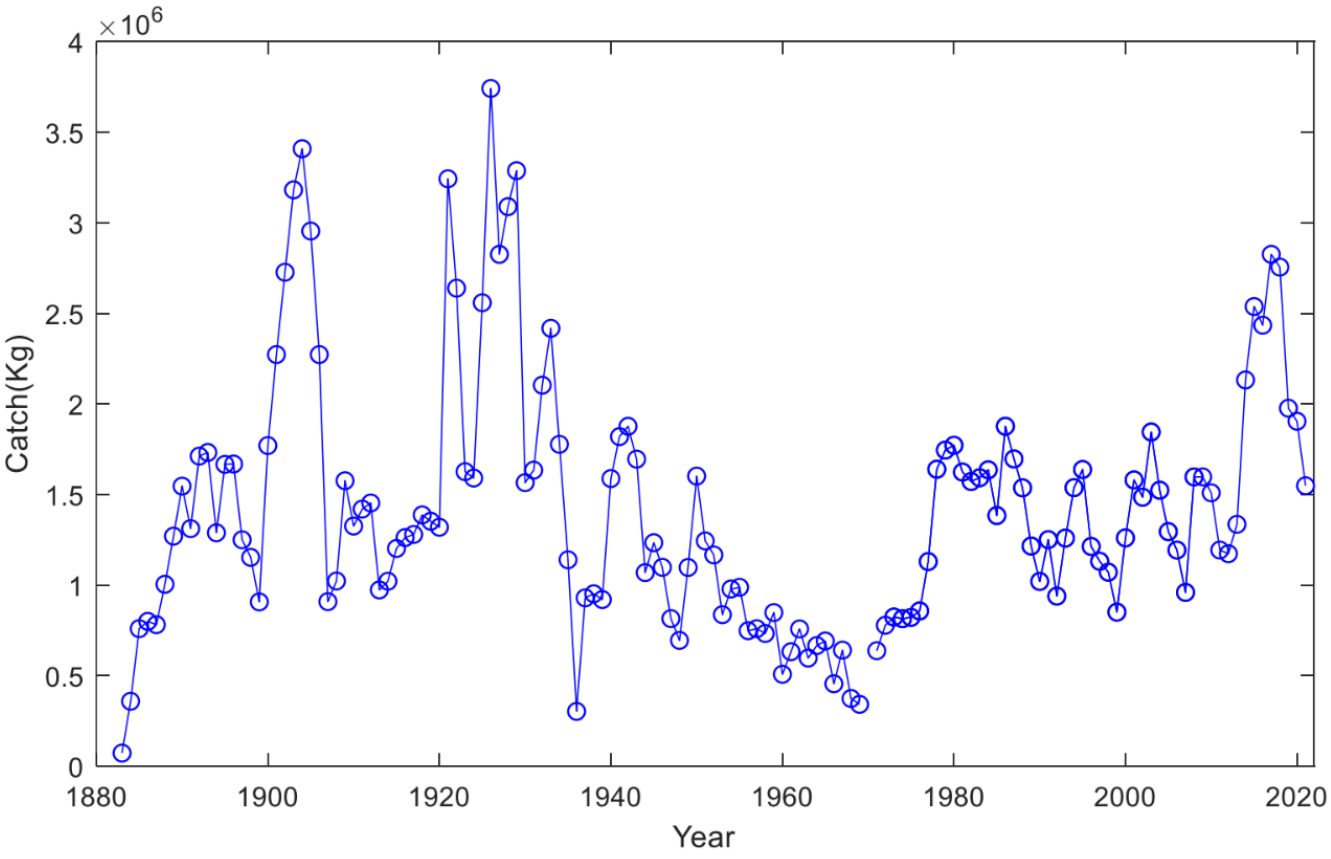


Figure 25. Catches of Lake Whitefish over time in the Lake Winnipeg commercial fishery. Source: A/OFRC (2022).

7.4.3. Total Allowable Catch (TAC) and catch data

Table 10: Catch data for each UoA. There is a lake-wide quota of 6.1033 million kg for 2024 but no species or stock-specific TAC.

Walleye North (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 (2022)	864,439 kg
Total catch by UoA 1 (second most recent year)	Year (2021)	866,886 kg
Walleye South / Channel (UoA 2)	**Year**	**Amount**
TAC	n/a	n/a
UoA share of TAC	n/a	n/a
Total catch by UoA (most recent year)	Year (2022)	2,803,168 kg
Total catch by UoA (second most recent year)	Year (2021)	2,691,985 kg
Sauger North (UoA 3)	**Year**	**Amount**
TAC	n/a	n/a
UoA share of TAC	n/a	n/a
Total catch by UoA (most recent year)	Year (2022)	3,701 kg
Total catch by UoA (second most recent year)	Year (2021)	5,340 kg
Sauger South / Channel (UoA 4)		
TAC	n/a	n/a
UoA share of TAC	n/a	n/a
Total catch by UoA (most recent year)	Year (2022)	10,344 kg
Total catch by UoA (second most recent year)	Year (2021)	14,611 kg
Lake Whitefish Grand Rapids (UoA 5)		
TAC	n/a	n/a
UoA share of TAC	n/a	n/a
Total catch by UoA (most recent year)	Year (2022)	17,079 kg
Total catch by UoA (second most recent year)	Year (2021)	4149 kg
Lake Whitefish Mossy Bay (UoA 6)		
TAC	n/a	n/a
UoA share of TAC	n/a	n/a
Total catch by UoA (most recent year)	Year (2022)	51,137 kg
Total catch by UoA (second most recent year)	Year (2021)	54,058 kg
Lake Whitefish Dauphin River / LSM (UoA 7)		
TAC	n/a	n/a
UoA share of TAC	n/a	n/a
Total catch by UoA (most recent year)	Year (2022)	118,864 kg
Total catch by UoA (second most recent year)	Year (2021)	159,355 kg
Lake Whitefish South Basin / Channel (UoA 8)		
TAC	n/a	n/a
UoA share of TAC	n/a	n/a
Total catch by UoA (most recent year)	Year (2022)	566,635 kg
Total catch by UoA (second most recent year)	Year (2021)	464,608 kg
Lake Whitefish Poplar River (UoA 9)		

TAC	n/a	n/a
UoA share of TAC	n/a	n/a
Total catch by UoA (most recent year)	Year (2022)	84,416 kg
Total catch by UoA (second most recent year)	Year (2021)	103,415 kg

7.4.4. Principle 1 Performance Indicator scores and rationales

PI 1.1.1 – Walleye 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 – UoAs 1 and 2**	**Yes – UoAs 1 and 2**	**No – UoAs 1 and 2**
Rationale		Walleye was most recently assessed as a single, lake-wide stock in Lake Winnipeg. A number of stock abundance indicators have been estimated: relative weights over time, growth rates, B/B_{MSY} from Schaefer surplus production modelling (SPM), and spawning potential ratio (SPR). Two SPM variants were run for the data time series from 2009-2020; one based on index netting and total catches, and one based on commercial deliveries of 27 kg or greater. The overall conclusions from the two models were not very different; we will focus on the index netting results here. **SG60 is met** because it is likely that the stock is above the PRI. For the index CUE model, estimated B_{MSY} was 16,811 t (95% CI: 10,082 t – 30,505 t). At ½ B_{MSY}, PRI is 8405 t. The estimated B_{2020} of 9041 t (95% CI: 4816 t – 19,693 t) is likely above the PRI. **SG80 is also met** because it highly likely that the stock is above the PRI**.** Data on relative weights, estimated growth rate, and SPR suggest that the stock is close to carrying capacity and hence is well above PRI.		
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 – UoAs 1 and 2**	**No – UoAs 1 and 2**
Rationale		**SG80 is met** because the stock is at or fluctuating around a level consistent with MSY based on relative weights, estimated growth rate, and SPR. These indicators suggest that the stock is close to carrying capacity. The model estimated B_{2020} of 9041 t did not exceed the B_{MSY} of 16,811 t, but the results are not considered reliable due to insufficient ability to account for the likely shift in Walleye carrying capacity following the introduction of Rainbow Smelt into Lake Winnipeg. **SG100 is not met** because there is not 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. Although the stock appears to be close to carrying capacity based on several indicators, additional supporting evidence, including from simulation models, would help justify meeting this SG.		

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)	½ B_{MSY}	8405 t	$B_{2020}/½B_{MSY}$ = 1.08
Reference point used in scoring stock relative to MSY (SIb)	B_{MSY}	16,811 t	B_{2020}/B_{MSY} = 0.54 Note: the B_{MSY} indicator was not used as the basis of scoring, see rationale.

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

PI 1.1.2 – Walleye 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?	**NA – UoAs 1 and 2**		**NA – UoAs 1 and 2**
Rationale		This PI is not scored for UoAs 1 and 2 because they received PI 1.1.1 scores of ≥ 80.		
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?	**NA – UoAs 1 and 2**	**NA – UoAs 1 and 2**	**NA – UoAs 1 and 2**
Rationale		See SI(a) above.		

Draft scoring range	**NA**
Information gap indicator	**Information sufficient to score PI**

PI 1.1.1 – Sauger 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?	**No – UoAs 3 and 4**	**No – UoAs 3 and 3**	**No – UoAs 3 and 4**
Rationale		Although there are potentially two Sauger stocks in Lake Winnipeg, the stock assessment focuses on the South Basin and Channel stock as it comprises the majority of commercial catches. Stock reference points were determined in terms of B/B_{MSY} and F/F_{MSY} from Schaefer surplus production modelling (SPM). Two SPM variants were run; one based on index netting CUE, and one based on commercial CUE. The 2020 biomass estimate from the model using commercial CUE was not considered reliable because catchability was strongly affected by the change in minimum allowable mesh size that year; hence we focus on the index netting results here. Both model variants suggested that B/B_{MSY} has declined from 2010 to present and that the Sauger stock is overfished (Figure 8). **SG60 is not met** because it is not likely that the stock is above the PRI, based on SPM model results. As estimated by the index netting CUE model, B_{MSY} is 910 t (95% CI: 544-1489 t). At 1/2 B_{MSY}, PRI is 455 t. The model estimate of B_{2020} was 262 t (95% CI: 141-505 t), which is substantially below the estimated PRI. However, the estimated spawning potential ratio (SPR) of Sauger at age 18 was 38.8% (95% confidence interval = 30.1-57.2), exceeding the 35% SPR value that is used as a common target reference point and proxy for F_{MSY} (Klein 2022). In other words, the Walleye stock still appears reasonably productive under existing fishing conditions, and recruitment may not be seriously impaired.		
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?		**No – UoAs 3 and 3**	**No – UoAs 3 and 4**
Rationale		**SG80 is not met** because the stock is not at or fluctuating around a level consistent with MSY, based on SPM model results (Figure 4 and Figure 5). The model estimate of B_{2020} was 262 t (95% CI: 141-505 t), resulting in B_{2020}/B_{MSY} = 0.291 (95% CI: 0.183 – 0.453).		

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)	½ B_{MSY}	455 t	$B_{2020}/½B_{MSY}$ = 0.58
Reference point used in scoring stock relative to MSY (SIb)	B_{MSY}	911 t	B_{2020}/B_{MSY} = 0.29

Draft scoring range	**<60**

Information gap indicator	**Information sufficient to score PI**
Data-deficient? (Risk-Based Framework needed)	**No**

PI 1.1.2 – Sauger 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?	**No – UoAs 3 and 4**		**No – UoAs 3 and 4**
Rationale		**SG60 is not met** because a rebuilding timeframe has not been specified for the stock. The rebuilding strategy essentially consists of the quota system, including a quota buy-back program, and gear regulations such as minimum mesh sizes. The minimum mesh size of 3.5” is particularly relevant for allowing mature female Sauger to escape the fishery and contributing to stock recovery. In Lake Winnipeg, female Sauger typically mature at a length of about 314 mm (length at 50% maturity; Figure 11). Size selectivity data from the index netting program indicates that Sauger weighing 300 g or less are mostly able to escape the fishery (Figure 11). At typical growth rates, a 300 g Sauger would be 340 mm in length, well above the length at 75% maturity.		
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?	**Yes – UoAs 3 and 4**	**Yes – UoAs 3 and 4**	**No – UoAs 3 and 4**
Rationale		**SG60 is met** because monitoring is in place to determine whether the rebuilding strategies are effective. Fishery monitoring data are regularly collected via the index netting program and commercial DCRs. **SG80 is met** because data from the index netting program suggests that female Sauger in Lake Winnipeg mature at sizes that allow them the escape 3.5” gillnet mesh. This provides some evidence that the rebuilding strategy, which includes mesh size regulations, is likely to rebuild the stock in a reasonable timeframe. **SG100 is not met** because there is not strong evidence that the rebuilding strategy is rebuilding stocks.		

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

PI 1.1.1 – Grand Rapids Lake Whitefish 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 – UoA 5**	**Yes – UoA 5**	**No – UoA 5**
Rationale		For the Grand Rapids Lake Whitefish stock, Klein (2022) presented four SPM model variants that used abundance indices based on commercial deliveries from about 1996 to 2018. Deliveries were very small from 2019-2021, so data from those years could not be used in the assessment. All four models suggested that B has been well below B_{MSY} in recent years. The assessor had the highest confidence in the model using the abundance index based on fall deliveries (G. Klein, pers. comm. May 2024). **SG60 is met** because it is likely that the stock is above the PRI. Numeric point estimates of B and B_{MSY} were not provided in the Fisheries Branch stock assessment, but the stock assessment model run by North/South Consultants (2023a) produced estimates that were reportedly comparable to those from Model 4 in Klein (2022). Their results indicated that MSY was 268 t (95% CI: 216 t - 339 t) and B_{MSY} was 1,624 t (95% CI: 891 t - 3,069 t). At ½ B_{MSY}, the PRI would be 812 t. The estimated biomass in the most recent year (B_{2018}) was 852 t (95% CI: 461 t - 1,800 t), which is likely above the PRI of 812 t. **SG80 is met** because it is highly likely that the stock is above the PRI. The Kobe plots for all four SPM variants suggested that B_{2018} was greater than ½ B_{MSY} with close to or greater than 80% confidence (Figure 12). **SG100 is not met** because there is not a high degree of certainty that the stock is above the PRI. Not all of the Kobe plots for the four SPM variants suggested that B_{2018} was greater than ½ B_{MSY} with 95% confidence (Figure 12).		
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?		**No – UoA 5**	**No – UoA 5**
Rationale		**SG80 is not met because the stock is not at or fluctuating around a level consistent with MSY**, based on SPM model results. The estimated B_{2018} of 852 t was much less than the B_{MSY} of 1,624 t.		

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)	½ B_{MSY}	812 t	$B_{2018}/½B_{MSY}$ = 1.05
Reference point used in scoring stock relative to MSY (SIb)	B_{MSY}	1,624 t	B_{2018}/B_{MSY} = 0.52

Draft scoring range	**60-79**
Information gap indicator	**Information sufficient to score PI**
Data-deficient? (Risk-Based Framework needed)	**No**

PI 1.1.1 – Mossy Bay / Playgreen Lake Lake Whitefish 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 – UoA 6**	**No – UoA 6**	**No – UoA 6**
Rationale		Klein (2022) noted that the Mossy Bay / Playgreen Lake stock was difficult to model and ran seven main model variants that used different CUE indices and time series, to try to account for variability arising from factors such as the fact that Lake Whitefish stocks mix in the spring. The model variant using total annual catch and fall DCRs (data from 1996 to 2021) had relatively pessimistic results and was also expected to be the most representative of the Mossy Bay stock alone, as fall data are collected when Lake Whitefish return to their natal areas to spawn. Thus North/South Consultants (2023a) attempted to replicate the results from this variant. **SG60 is met because it is likely that the stock is above the PRI**. The stock assessment model run by North/South Consultants (2023a) estimated that MSY was 574 t (95% CI: 456 t - 818 t) and B_{MSY} was 3057 t (95% CI: 1621 t - 6827 t). At ½ B_{MSY}, the PRI would be 1529 t. The estimated biomass in the most recent year (B_{2021}) was 1873 t (95% CI: 789 t - 4583 t), which is likely above the PRI of 1529 t. **SG80 is not met because it is not highly likely that the stock is above the PRI.** The 95% CI for the B_{2021} estimate does not suggest that the stock is above PRI with at least 80% probability, per the MSC's definition of 'highly likely.'		
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?		**No – UoA 6**	**No – UoA 6**
Rationale		**SG80 is not met because the stock is not at or fluctuating around a level consistent with MSY**, based on SPM model results. The estimated B_{2021} of 1873 t was much less than the B_{MSY} of 3057 t. The model estimate of B_{2021}/B_{MSY} was 0.609 (95% CI: 0.382 - 0.874).		

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)	½ B_{MSY}	1,529 t	$B_{2021}/½B_{MSY}$ = 1.22
Reference point used in scoring stock relative to MSY (SIb)	B_{MSY}	3,067 t	B_{2021}/B_{MSY} = 0.61

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

Data-deficient? (Risk-Based Framework needed)	**No**

PI 1.1.1 – Dauphin River / Lake St. Martin Lake Whitefish 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 – UoA 7**	**Yes – UoA 7**	**No – UoA 7**
Rationale		Dauphin River and Lake St. Martin are located between Lake Winnipeg and Lake Manitoba. Fish from the two areas appear genetically and morphologically similar and are considered a single stock. However, the DR and LSM data sets were modelled separately to check if they showed similar results. **Dauphin River** According to Klein (2022), the estimated MSY for Dauphin River is 325 t (95% CI: 262 t - 427 t). The estimated B_{2021}/B_{MSY} was 0.801 (95% CI: 0.572 - 1.06), with a 93.4% probability that the stock is overfished. The results generated by North/South Consultants (2023a) also suggest the stock is currently below the MSY level. Estimated MSY was 498 t (95% CI: 382 t to 667 t), B_{MSY} was 2752 t (95% CI: 1368 t to 5594 t), and biomass in the most recent year (B_{2021}) was 2462 t (95% CI: 1220 t to 4928 t). Thus B_{2021}/B_{MSY} was 0.889 (95% CI: 0.667 – 1.17). Estimates of *q*, *r*, and *K* in Klein 2022 were 0.0957, 0.242, and 5368 t, respectively. In the North/South Consultants model (2023a), these parameters were estimated to be 0.0754, 0.36, and 5505 t, respectively. **LSM** According to Klein (2022), the estimated MSY for LSM is 325 t (95% CI: 276 t - 390 t). The estimated B_{2021}/B_{MSY} was 0.835 (95% CI: 0.528 - 1.15), with an 84.4% probability that the stock is overfished. The results generated by North/South Consultants (2023a) were quite different. Estimated MSY was 292 t (95% CI: 217 t to 417 t), B_{MSY} was 2217 t (95% CI: 1601 t to 3901 t), and biomass in the most recent year (B_{2021}) was 989 t (95% CI: 395 t to 2052 t). Their reported B_{2021}/B_{MSY} was 0.392 (95% CI: 0.186 – 0.668), although 989 t / 2217 t is 0.45. Estimates of *q*, *r*, and *K* in Klein 2022 were 0.0456, 0.463, and 2803 t, respectively. In the North/South Consultants model (2023a), these parameters were estimated to be 0.306, 0.312, and 3249 t, respectively. Looking at all of the results together, the LSM result from North/South Consultants appears to have been an outlier. **SG60 is met** because it is likely that the DR/LSM stock is above the PRI. The three models that had more consistent and potentially reliable results suggested that B_{2021}/B_{MSY} exceeded 0.80. **SG80 is also met** because the stock is highly likely to be above the PRI. The three models all suggested that B_{2021} exceeded ½ B_{MSY} with at least 80% probability (Figure 16). **SG100 is not met** because there is not a high degree of certainty that the stock is above the PRI. Not all of the models suggested that B_{2021} exceeded ½ B_{MSY} with at least 95% probability (Figure 16).		
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?		**No – UoA 7**	**No – UoA 7**
Rationale		**SG80 is not met** because neither stock component is at or fluctuating around a level consistent with MSY, based on SPM model results. For Dauphin River, the estimated B_{2021} of 2462 t was less than the B_{MSY} of 2752 t (North/South Consultants 2023a). The Fisheries Branch model estimate of B_{2021}/B_{MSY} was 0.889 (95% CI: 0.667 – 1.17). For LSM, the Fisheries Branch model estimate of B_{2021}/B_{MSY} was 0.392 (95% CI: 0.186 – 0.668).		

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)	½ B_{MSY}	1376 t (Dauphin River) 1109 t (LSM)	$B_{2021}/½B_{MSY}$ = 1.79 (DR)
Reference point used in scoring stock relative to MSY (SIb)	B_{MSY}	2752 t Dauphin River) 2217 t (LSM)	B_{2021}/B_{MSY} = 0.89 (DR)

Draft scoring range	**60-79**
Information gap indicator	**Information sufficient to score PI**
Data-deficient? (Risk-Based Framework needed)	**No**

PI 1.1.1 – South Basin and Channel Lake Whitefish 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 – UoA 8**	**Yes – UoA 8**	**No – UoA 8**
Rationale		The south basin and channel Lake Whitefish stock (Traverse Bay stock) appears to be relatively healthy according to the stock assessment, which was based on a commercial CUE index. Index netting data are limited for this stock; from 2008 to 2021, only 286 Lake Whitefish were caught. Average commercial deliveries as recorded on individual fishers' DCRs were used as the index of abundance, and these were compared to the total catch from the fall season. The results generated by North/South Consultants (2023a) were as follows. Estimated MSY was 587 t (95% CI: 402 t to 890 t), B_{MSY} was 4160 t (95% CI: 2198 t to 7920 t), and biomass in the most recent year (B_{2021}) was 4228 t (95% CI: 2139 t to 8787 t). Thus B_{2021}/B_{MSY} was 1.02 (95% CI: 0.758 – 1.35). Estimates of *q*, *r*, and *K* in Klein 2022 were 0.0217, 0.229, and 10,877 t, respectively. In the North/South Consultants model (2023a), these parameters were estimated to be 0.0132, 0.281, and 8,320 t, respectively. **SG60 is met because it is likely that the stock is above the PRI**. The stock assessment model run by North/South Consultants (2023a) estimated that MSY was 587 t (95% CI: 402 t to 890 t) and B_{MSY} was 4160 t (95% CI: 2198 t to 7920 t). At ½ B_{MSY}, the PRI would be 2080 t. The estimated biomass in the most recent year (B_{2021}) was 4228 t (95% CI: 2139 t to 8787 t), which is likely above the PRI of 1529 t. **SG80 is met because it is highly likely that the stock is above the PRI.** Given that the 95% CI for the B_{2021} estimate ranged from 2139 t to 8787 t, there is greater than 80% probability that 2021 biomass exceeded the PRI of 2080 t.		
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 – UoA 8**	**No – UoA 8**
Rationale		Model results indicated that the stock biomass was well below the B_{MSY} level from 1995 to 2011, started increasing, and is now approaching B_{MSY} with a 30% probability of exceeding it (Figure 17). Harvest rates have been close to and generally not exceeding the H_{MSY} level with some variability since 2010. The model suggested a 62% probability that *H* is less than H_{MSY}, which may have contributed to the increasing B/B_{MSY} ratio. **SG80 is met because the stock is at or fluctuating around a level consistent with MSY**, based on SPM model results. The model estimate of B_{2021}/B_{MSY} was 1.02 (95% CI: 0.758 – 1.35). **SG100 is not met** because there is not a high degree of certainty that the stock has been fluctuating around a level consistent with MSY, based on the CI associated with the B_{2021}/B_{MSY} estimate. The MSC defines "High degree of certainty" as greater than or equal to the 95th percentile.		

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)	½ B_{MSY}	2080 t	$B_{2021}/½B_{MSY}$ = 2.03
Reference point used in scoring stock relative to MSY (SIb)	B_{MSY}	4160 t	B_{2021}/B_{MSY} = 1.02

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

PI 1.1.1 – Poplar River Lake Whitefish 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 – UoA 9**	**Yes – UoA 9**	**Yes – UoA 9**
Rationale		Based on data from catch totes, recruitment in this stock appeared to be very good from 1992 until 1998, very low from 1999-2009, and then somewhat recovered after 2009, though not to the 1992-1998 levels (Klein 2022). The fall gillnet fishery, which takes place from mid-September to mid-October, accounts for 95.2% of the Poplar River Lake Whitefish commercial catch. The remainder is caught as bycatch in the summer fishery targeting Walleye. The estimate of exploitable depletion was 0.548 for 2020 (Figure 18, Frame A); that is, the stock was depleted to 54.8% of the unfished, exploitable biomass in 2020. This is well above the 0.2 (20%) threshold limit depicted as a red line, and also above the 0.4 (40%) MSY level depicted as a green line within Frame A. Surplus production modelling indicated that the harvest rates exceeded MSY levels in 2014, 2015, and 2016; harvests were then at or around MSY for 2017-2019 (Figure 18, Frame B). The 2020 fishing year saw a particularly high catch because the 2020 summer season was effectively cancelled when markets closed due to Covid-2019. This left fishers with all their quota to be caught in the fall, when the fishery catches 95% whitefish. The model suggested an 88% chance that overfishing occurred in 2020. **SGs 60, 80, and 100 are met because there is a high degree of certainty that the stock is above the PRI.** The stock assessment model (Klein 2022) indicates that the stock has been well above the PRI since 2000. In 2020, the estimate of exploitable depletion was 0.548, where threshold limit is 0.2.		
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 – UoA 9**	**Yes – UoA 9**
Rationale		The stock biomass has been above the level consistent with MSY ($B_{40\%}$) since 2005, although shows a declining trend since 2012. MSY and B_{MSY} were most recently estimated at 164,648 kg and 665,533 kg, respectively (Figure 18). The estimated stock biomass at the beginning of the 2021 fall season was 732,519 kg (Klein 2022). **SG80 is met because the stock is at or fluctuating around a level consistent with MSY**, based on SPM model results. The model estimate of B_{2021}/B_{MSY} was 1.10 (732,519 kg / 665,533 kg; Klein 2022). **SG100 is also met because there is a high degree of certainty that the stock has been fluctuating around a level consistent with MSY.** The fifth percentile of the estimate from the bootstrapped model distribution of parameters is 0.412, exceeding the MSY level of $B_{40\%}$. It can therefore be said that that the stock has been fluctuating around a level consistent with MSY with 95% certainty.		

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)	20%B_0 = ½ B_{MSY}	332,767 kg	$B_{2021}/½B_{MSY}$ = 2.20
Reference point used in scoring stock relative to MSY (SIb)	40%B_0 = B_{MSY}	665,533 kg	B_{2021}/B_{MSY} = 1.10

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

PI 1.1.2 –Lake Whitefish stocks 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?	**No – UoAs 5, 6, 7** **NA – UoA 8**		**No – UoAs 5, 6, 7** **NA – UoA 8**
Rationale		**SG60 is not met** for any of the Lake Whitefish UoAs that received because a PI 1.1.1 score of < 80, because rebuilding timeframes have not been specified for the stocks. This PI is not scored for UoA 8 (south basin and channel) because that UoA received a PI 1.1.1 score of ≥ 80.		
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?	**Yes – UoAs 5, 6, 7** **NA – UoA 8**	**No – UoAs 5, 6, 7** **NA – UoA 8**	**No – UoAs 5, 6, 7** **NA – UoA 8**
Rationale		**SG60 is met** because monitoring is in place to determine whether the rebuilding strategies are effective. Monitoring data are regularly collected via the index netting program and commercial DCRs, that can be used to determine whether the stock has been rebuilt to target levels. However, it is worth noting that there is uncertainty about how representative the north basin DCRs are of Lake Whitefish stock abundance due to recent changes in the quota system. Alternative indicators, and perhaps additional monitoring of north basin stocks, may be useful. **SG80 is not met** because there is not yet evidence that the rebuilding strategies are effective in rebuilding the Lake Whitefish stocks that are in need of recovery. The rebuilding strategy essentially consists of the quota system, including a quota buy-back program, and gear regulations such as minimum mesh sizes. Though this strategy may work, there is no clear evidence that the strategy is working, nor has simulation modelling been used to evaluate the likelihood of it working.		

Draft scoring range	**<60**
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 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 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 SG80.
	Met?	**No – all UoAs**	**No – all UoAs**	**No – all UoAs**
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. All of the target stocks are essentially managed using the same harvest measures with the following elements: a licensing system that limits entry into the fishery, a multi-species quota system, and gear regulations including minimum mesh sizes. These 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, particularly for Lake Whitefish stocks. In recent years, stock sustainability goals have become more incorporated into harvest management. However, quotas are generally not adjusted within a year, and the fact that they are multi-specific makes it difficult to precisely manage catches by stock or species. Changing gear regulations, e.g. minimum mesh sizes, takes considerable effort and expense and cannot happen quickly.		
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. As described under SI(a), there is not a cohesive harvest strategy for this fishery that is expected to maintain stocks at target levels and meet the objectives reflected in PI 1.1.1 SG80. Nonetheless, there have been some positive developments. Data from the index netting program supports the case for the increase in minimum mesh size that was implemented in the south basin in 2020. Catches of target species were high in 2023-24, such that the total quota was met well before the official end of the season on 31st March. Continued data collection may provide supporting evidence that the harvest strategy is working.		
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 fishery monitoring data are regularly collected via the index netting program and commercial DCRs.		
d	**Harvest strategy review**			

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
	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, Manitoba Province regularly monitors commercial fishing activity and catch information in a manner that can be used to evaluate effectiveness of the harvest strategy. Fisheries Branch staff can and do propose changes to improve harvest regulations, with consideration of input from fishers at meetings.		
e	**Shark finning**			
	Guide post	There is a **high degree of certainty** that shark finning is not taking place.		
	Met?	**NA**		
Rationale		There are no sharks in Lake Winnipeg.		
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 target stocks.		

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 the HCRs are not 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 there is little available evidence indicating that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.		

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 fleet composition is available to support the harvest strategy. The licensing system provides a fairly good picture of the number of fishers and vessels/other vehicles being used in the fishery. Information collected through research (e.g. research trawls), the index netting program and DCRs is used to evaluate stock structure and productivity. **SG80 is met** because sufficient relevant information, as described above, and other data are available to support the harvest strategy. For example, data from the index netting program is useful for stock assessment and calculating indices that can be used in HCRs. Recruitment relationships are also being explored, although the data have not yet been published (G. Klein, pers. comm., May 2024). **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. **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. Though they are expected to be limited, discards of target species and removals from subsistence fishing are not monitored. Recreational catches, which are significant, particularly for Walleye, have been periodically estimated through creel surveys conducted in the south basin. These took place in 2010, 2017, and 2018/2019, and 2021/2022.		

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. Stock assessments are conducted by Fisheries Branch staff, who have a tentative goal to assess each major stock approximately every two years. The assessments utilize Bayesian surplus production models and catch per unit effort (CUE) abundance indices. The methods are appropriate given available data and stock assessment capacity. **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.		
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 assessments estimate stock status relative to generic reference points appropriate to the species category. These reference points relate to spawning stock biomass (SSB) and harvest / fishing mortality. **SG80 is met** because the assessments estimate stock status relative to reference points that are appropriate to the stocks. For example, the commercial CUE and index netting abundance indices are used to estimate spawning stock biomass relative to MSY-based targets.		
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 assessments identify major sources of uncertainty. These include regulatory changes that likely affected fishing effort and mortality. Improvements in fishing efficiency (effort creep) were also accounted for. **SG80 is met** because the assessments take uncertainty into account, providing confidence intervals around point estimates. **SG100 is met** because the assessments evaluate stock status relative to reference points in a probabilistic way. For most stocks, probability of overfishing and probability of the stock being overfished were described.		
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 – UoAs 1 - 4** **No – UoAs 5 - 9**
Rationale		**SG100 is met** for the Walleye and Sauger UoAs because the assessments have been externally reviewed and shown to be robust. Alternative hypotheses and assessment approaches were rigorously explored. For example, SPMs were run with different data sets for comparison, and sensitivity analyses were performed for some assumed values such as effort creep. Other proxies for abundance such as spawning potential ratios were estimated. **SG100 is not met** for the Lake Whitefish UoAs because the assessments, while they have been externally reviewed, generally did not explore alternative hypotheses and assessments approaches as rigorously.		
e	**Peer review of assessment**			
	Guide post		The assessment of stock status is subject to peer review.	The assessment has been **internally and externally peer** reviewed.
	Met?		**Yes**	**Yes**
Rationale		**SG80 is met** because the assessment of stock status is subject to peer review within the Fisheries Branch. **SG100 is met** because the assessment has been internally and externally peer reviewed. In addition to internal reviews, the assessments conducted in 2022 were also reviewed by an external consultant, to ensure that the methods were appropriate.		

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

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 UoAs, and are not considered ETP/OOS 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 by weight.

In-scope species include non-target freshwater fish species that are caught by the commercial gillnet fishery during Walleye, Sauger, and Lake Whitefish harvesting activities. 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 observer program for the Lake Winnipeg fishery, nor are fishers required to keep logbooks on catches of non-quota species. To identify in scope species for this fishery, we analysed two subsets of data from the index netting program.

First, we used data from index sets intentionally designed to replicate commercial fishery sets, which we will term ‘bycatch index netting.’ Bycatch index netting involves setting a net of a common commercial conformation: commercial size, monofilament, 100 yards long and 12 feet deep. Mesh size and setting depth are consistent with those being used by fishers that season. For example, if most of the fishers are floating their gillnets, the netting program will do so as well (K. Casper, pers. comm. 4 March 2024). Bycatch index netting data were available for 2021, 2022, and 2023 (Table 11).

Table 11. Catch composition by weight (proportion) of species based on bycatch index netting data. Mean refers to the average across the three years. Species highlighted in green are Principle 1 target species. Species highlighted in orange were close to or above 5% of the catch by weight on average. Data provided by the Fisheries Branch.

	Channel Catfish	Cisco	Freshwater Drum	Goldeye	Lake Whitefish	Northern Pike	Sauger	Shorthead Redhorse	Walleye	White Sucker	Yellow Perch
2021	0.024	0	0.078	0.004	0.015	0.007	0.006	0	0.863	0	0.002
2022	0.012	0.013	0.058	0.019	0.018	0.047	0.016	0.081	0.698	0.034	0.003
2023	0.001	0	0.288	0	0.024	0.091	0	0	0.587	0.009	0
Mean	**0.012**	**0.004**	**0.141**	**0.008**	**0.019**	**0.048**	**0.007**	**0.027**	**0.716**	**0.014**	**0.002**

Second, we analysed standard index netting program data for mesh sizes between 3.5 and 5 inches, the range of the minimum allowable mesh size (since 2020 for the south basin) up to the largest size typically used by commercial fishers. Summary data on catch proportions for 2018 to 2022 are shown in Table 12. Note that the proportions within a year may not sum to one, because not all species caught were included in the table. The species that were not included were caught in minimal quantities, less than 1% of the total catch by weight.

Table 12. Catch composition by weight (proportion) of species based on Lake Winnipeg index netting data, for mesh sizes from 3.5 to 5 inches. Mean refers to the average across the five years. Species highlighted in green are Principle 1 target species. Species highlighted in orange were close to or above 5% of the catch by weight on average. Data provided by the Fisheries Branch.

	Channel Catfish	Cisco	Freshwater Drum	Goldeye	Lake Whitefish	Northern Pike	Sauger	Shorthead Redhorse	Walleye	White Sucker	Yellow Perch
2018	0.028	0.013	0.317	0.003	0.030	0.061	0.019	0.023	0.236	0.244	0.007
2019	0.001	0.016	0.168	0.001	0.052	0.082	0.014	0.081	0.363	0.203	0.007
2020	0.019	0.024	0.193	0.006	0.039	0.030	0.016	0.023	0.407	0.214	0.004
2021	0.056	0.020	0.116	0.001	0.040	0.077	0.009	0.069	0.350	0.240	0.004
2022	0.005	0.008	0.055	0.001	0.051	0.075	0.014	0.055	0.506	0.201	0.004
Mean	**0.022**	**0.016**	**0.170**	**0.003**	**0.042**	**0.065**	**0.014**	**0.050**	**0.373**	**0.221**	**0.005**

Species composition of catches can vary based on factors such as the depth at which gillnets are set and the area where fishing takes place. For example, Shorthead Redhorse are more commonly caught in the Dauphin River area (K. Casper, pers. comm. 4 March 2024). However, sampling was not ideally structured to support UoA-specific catch composition analysis; for example, bycatch index netting data were not collected in both basins of the lake for all years. Thus the estimated catch compositions were assumed to apply across all UoAs.

Considering data from both data sets, and erring on the side of precaution and being inclusive, we identified the main in-scope species as Freshwater Drum, Northern Pike, Shorthead Redhorse, and White Sucker. These species are generally retained (B. Matkowski, pers. comm., 20 March 2024), or 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.

Lake Sturgeon were assessed as a minor in-scope species. Lake Sturgeon has life history characteristics associated with low productivity that make it very susceptible to overfishing; hence the Lake Winnipeg population may warrant protective measures. However, they have no legal ETP designation in Manitoba. Lake Sturgeon have been recommended for Endangered status by COSEWIC, but DFO has not acted on this recommendation. As a less-resilient species, Lake Sturgeon would be categorized as a main in-scope species if it comprised at least 2% of total catches by weight. However, Lake Sturgeon are rarely caught, as evidenced by data from the index netting program.

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, e.g. acoustic tagging studies on Freshwater Drum, Channel Catfish (Enders et al. 2019, Watkinson et al. 2021).

Freshwater Drum (*Aplodinotus grunniens*)

The MSC PSA score for Freshwater Drum in the Lake Winnipeg commercial gillnet fishery is 2.25 for the north basin and 2.54 for the south basin, which corresponds to low risk (scoring range ≥ 80) for an in-scope species. This species is moderately susceptible to getting caught in the fishery, more so in the south basin than the north basin, and it has biological characteristics associated with medium productivity (Table 19).

White Sucker (*Catostomus commersonii*)

The MSC PSA score for White Sucker in the Lake Winnipeg commercial gillnet fishery is 1.71 in the north basin and 2.20 in the south basin, which corresponds to low risk (scoring range ≥ 80) for an in-scope species. This species is moderately susceptible to getting caught in the fishery, more so in the south basin than the north basin, and it has biological characteristics associated with high to medium productivity (Table 20).

Shorthead Redhorse (*Moxostoma macrolepidotum*)

The MSC PSA score for Shorthead Redhorse in the Lake Winnipeg commercial gillnet fishery is 2.02 for the north basin and 2.45 for the south basin, 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 21). Shorthead Redhorse is in the same family as White Sucker, Catostomidae, but there is slightly less biological information available for this species.

Northern Pike (*Esox lucius*)

The MSC PSA score for Northern Pike in the Lake Winnipeg commercial gillnet fishery is 2.09 for the north basin and 2.23 for the south basin, 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 22).

Lake Sturgeon (*Acipenser fulvescens*)

The following information is summarized from the COSEWIC status report for Lake Sturgeon (COSEWIC 2017). The Lake Sturgeon has a rich historical significance to First Nations peoples and was also commercially harvested across much of the species' range between the late-1800s and mid-1900s. The Canadian range stretches from the North and South Saskatchewan rivers in Alberta in the west, to the St. Lawrence River estuary in the east, and from various rivers that empty into Hudson Bay in the north to several boundary waters (e.g., Rainy River, Great Lakes) in the south. The majority of Lake Sturgeon populations in Canada declined precipitously over a period of ~150 years beginning in the 18th century. Some of the well-studied populations appear to be rebounding; still, a sizable proportion of populations have yet to exhibit meaningful signs of population recovery, and the species has disappeared from areas that it used to inhabit.

Threats to sustainability and/or impediments to recovery of Lake Sturgeon populations include harvest, habitat alterations (primarily due to dams), barriers to migration (dams), entrainment losses (dams), invasive species, and pollution. The current population status of sturgeon in Lake Winnipeg is not well known. As described in the Commercial Fishing Guide, commercial fishers are required to immediately release all caught live Lake Sturgeon. All Lake Sturgeon that are caught dead must be submitted to the nearest Regional or District Office (CFG 2023) for monitoring purposes; in practice, very few sturgeon carcasses are caught and submitted (D. Kroeker, pers. comm., May 2024). Available empirical evidence suggests that, despite a three decades fishing ban, the Lake Winnipeg sturgeon population has not increased or shown signs of recovery (G. Klein, pers. comm., May 2024).

The MSC PSA score for Lake Sturgeon in the Lake Winnipeg commercial gillnet fishery is 3.16, which corresponds to medium risk (scoring range ≥ 60-79). This species is moderately susceptible to getting caught in gillnets, and it has some biological characteristics associated with low productivity, including late age of maturity (Table 24). Lake Sturgeon are required to be released when caught alive, and some post-release survival is expected based on studies such as Baker et al. (2008).

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

Research on bird bycatch in freshwater gillnet fisheries is limited, but studies in marine gillnet fisheries have found that diving birds are quite susceptible to drowning in the nets (e.g Žydelis et al. 2013). Based on their geographic range, diving or aquatic bird species that may interact with the fishery include, Double-Crested Cormorants (*Nannopterum auritum*), Common Loon (*Gavia immer*), Eared or Black-necked Grebe (*Podiceps nigricollis*), Pied-billed Grebe (*Podilymbus podiceps*), Western Grebe (*Aechmophorus occidentalis*), Horned Grebe (*Podiceps auritus*), Canvasback (*Aythya valisineria*), Redhead (*Aythya americana*), and Lesser Scaup (*Aythya affinis*).

Among these bird species, Western Grebe and Horned Grebe have threatened status with their Schedule 1 listings under SARA. We therefore conducted PSAs on Western Grebe and Horned Grebe as ETP species, as described further in the 'Endangered, Threatened, or Protected (ETP) species' section 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.

Fisheries Branch staff and commercial fishers (K. Casper and B. Matkowski, pers. comm., March 2024) report that birds rarely get caught in gillnets. During the winter, the risk of bird interactions is negligible because the birds have migrated to other areas and are not present. 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 (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 Winnipeg commercial gillnet fishery is 2.53, which corresponds to low risk (scoring range ≥80). This is largely because the species has biological characteristics associated with high productivity; they are potentially susceptible to drowning in gillnets due to their diving behavior (Table 25). 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 Lake Winnipeg, but they are uncommon and tend be found close to shore or in the rivers. Common Muskrat (*Ondatra zibethicus*) inhabit nearshore habitats in the lake 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 B. Matkowski, pers. comm., March 2024) report that otters and other mammals do not get accidentally caught in gillnets. Commercial fishers do not set their nets close to shore or in rivers.

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 Winnipeg. 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 ETP fish species may interact with the Lake Winnipeg 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 Winnipeg 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 (Table 23).

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 during migration and on their wintering grounds, 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 Winnipeg commercial gillnet fishery is 2.68, which corresponds to medium risk (scoring range 60-79). Areal overlap with fishing operations is somewhat limited, but this species is potentially susceptible to drowning in gillnets due to their diving and fishing behaviors. Without evidence of effective mitigation measures being employed in the UoA fishery, or logbook data on incidental encounters, the susceptibility score is high. This species has biological characteristics associated with high to medium productivity (Table 26).

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 Winnipeg commercial gillnet fishery is 2.68, which corresponds to medium risk (scoring range 60-79). Areal overlap with fishing operations is somewhat limited, but this species is potentially susceptible to drowning in gillnets due to their diving and fishing behaviors. Without evidence of effective mitigation measures being employed in the UoA fishery, or logbook data on incidental encounters, the susceptibility score is high. This species has biological characteristics associated with high to medium productivity (Table 27).

7.5.1.2. Habitats impacts

UoA fishing gear consists only of set gillnets. 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 26). All anchors, which are the main point of interaction between the bottom substrate and the fishing gear, have limited footprints.

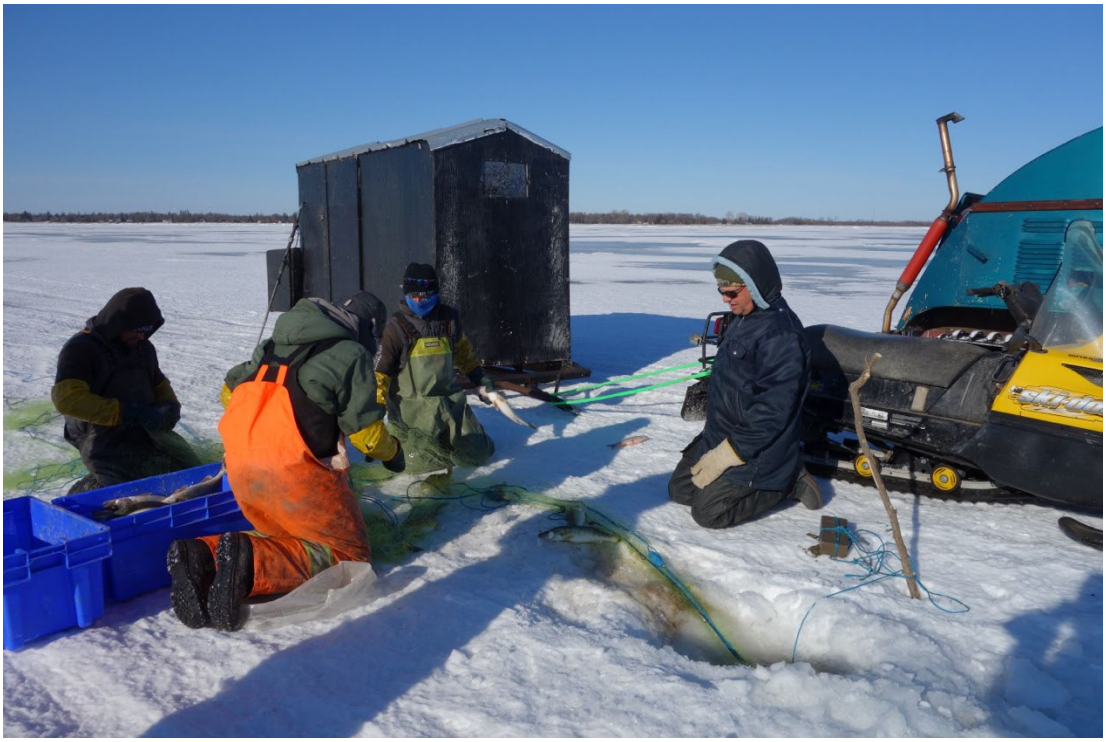


Figure 26. Ice fishing on Lake Winnipeg. The grey brick visible on the right side is used as an anchor. Photo by J. Drugan.

Bottom substrates in Lake Winnipeg consist predominantly of fine particles and clay (26.1%), silt (23.7%), and gravel (25.4%); other observed substrates are sand (17.2%) and hard bottom (7.6%; Rudolfsen et al. 2021). 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 east shoreline of the south basin is especially abundant in coarse substrate and hard bottom characteristic of the Canadian Shield (Rudolfsen et al. 2021).

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 Winnipeg, 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 27).
- 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.

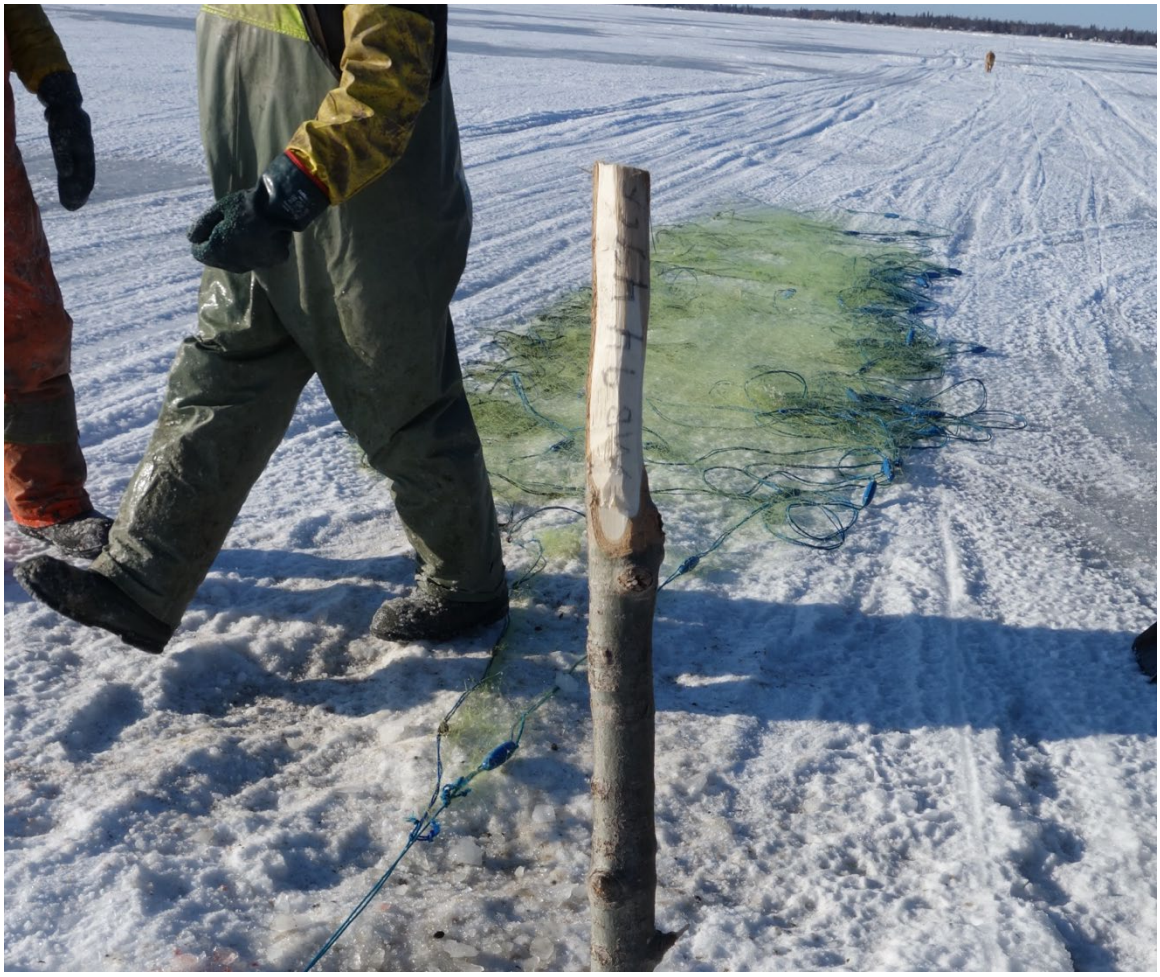


Figure 27. Stake labeled with fisher's identification number. Photo by J. Drugan.

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. In addition, there is a conservation closure of Limestone Bay in the northwest corner of Lake Winnipeg to protect spawning Walleye and Sauger. The closure of the central north basin area in the fall (Figure 21) helps protect spawning Lake Whitefish.

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 (B. Matkowski, pers. comm., 20 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 Winnipeg (French: Lac Winnipeg) is an extremely large (~23,750 km^2) lake located within the province of Manitoba, Canada. It has the largest watershed of all the lakes in Canada, with some of its larger tributaries being the Saskatchewan River, Winnipeg River, Dauphin River, Bloodvein River, Berens River, Poplar River, Red River, and Manigotogan River. On average, the Saskatchewan, Winnipeg, and Red Rivers provide more than 60% of the total river flow into Lake Winnipeg (Manitoba.ca). The lake is relatively shallow for its large size, with a mean depth of ~ 12 m; this makes it prone to high turbidity and nutrient levels in the summer. The north basin of Lake Winnipeg is larger,

colder, and deeper than the south basin, about 13.3 m average depth in the north versus 9 m average depth in the south basin. Thus, fish usually take longer times to reach maturity in the north basin. Large sediment deposits from the Red River and substrate resuspension from strong wind events contribute to the lake's high primary productivity and low water clarity (Matisoff et al. 2017). There are a series of dams and hydroelectric power stations in the Nelson River, the only river that flows out of the lake. Lake Winnipeg currently has a relatively short water residence time of about 3 to 5 years (Manitoba.ca).

Agricultural runoff is the main contributor of nutrient loading into the lake. Nutrient and contaminant loading are further exacerbated by landscape modifications such as loss of wetlands, forest and native vegetation; artificial drainage; and hard urban surfacing. Shifts in algal species compositions and phytoplankton biomass have been observed since the 1990s when nutrient inputs into the Lake Winnipeg increased. For example, phosphorus inputs led to elevated densities of nitrogen-fixing cyanobacteria and other phytoplankton (Bunting et al. 2016, Schindler et al. 2012). Since 2000, water samples have been collected four times per year at locations around the lake and analysed for variables such as nitrogen and phosphorus, chlorophyll a (a measure of algae biomass), metals, pesticides, and dissolved oxygen (Manitoba.ca). From about 2016 to 2020, the total phytoplankton biomass was stable and similar to the 1999–2016 average (ECCC and MARD 2020). Sediment sampling and analysis of benthic organism densities is conducted annually to support monitoring of ecosystem health (ECCC and MARD 2020).

The Lake Winnipeg Research Consortium supports scientific research on Lake Winnipeg, including the water sampling described above. One component of their support is an annual science workshop where researchers present their work. Abstracts for these presentations can be found in the annual reports that are posted publicly on their website. Most of the consortium's research is focused on water quality and limnology, but there is some research on the fish community including a pelagic trawl fish survey and acoustic tagging (Scott 2023).

The lake supports numerous fish and other water-associated species and has been heavily impacted by introduced species, some of which have proven to be highly invasive (e.g. Depew et al. 2021, Watkinson et al. 2021). Introduced species that have had observable ecosystem impacts include Rainbow Smelt (*Osmerus mordax*), Common Carp (*Cyprinus carpio*), Spiny Water Flea (*Bythotrephes longimanus*), and Zebra Mussel (*Dreissena polymorpha*). Rainbow Smelt were first reported in Lake Winnipeg in 1991 and became a major prey item for Walleye and larger-sized Sauger (Sheppard et al. 2015). Rainbow Smelt are a cold water species, and the Lake Winnipeg population suffered a collapse following a hot summer in 2012 and have not rebounded to their former abundance levels. Rainbow Smelt started reappearing in measurable abundance only since 2020 (Scott 2023).

Other common prey species for native fishes and other animals include Emerald Shiner (*Notropis atherinoides*), Logperches (genus *Percina*), Spottail Shiner (*Notropis hudsonius*), and juveniles of multiple fish species. The prey fish community in the north basin of Lake Winnipeg has been dominated by Rainbow Smelt following their introduction, and is generally less diverse than the prey fish community in the south basin (ECCC and MARD 2020). Fishes such as Walleye, Sauger, Lake Whitefish, Burbot (*Lota lota*), and Northern Pike (*Esox lucius*) occupy higher trophic levels. There are about 29 species making up the Lake Winnipeg fish community, based on data from trawl surveys (ECCC and MARD 2020). Some have been studied more than others. As one example, Rudolfsen et al. (2021) used acoustic tagging to identify benthic habitat associations for Lake Sturgeon, Freshwater Drum, and Common Carp.

7.5.1.4. Principle 2 scoring elements

Table 13: P2 scoring elements for the Lake Winnipeg pre-assessment. Catch composition percentages are based on 2022 index netting data (3.5 inch to 5 inch mesh).

Component	Scoring element	Catch composition	Main?	Data-deficient?
Target / P1	Walleye	50.6%	n/a	No
Target / P1	Sauger	1.42%	n/a	No
Target / P1	Lake Whitefish	5.07%	n/a	No
In-scope	Freshwater Drum (*Aplodinotus grunniens*)	5.50%	Yes	Yes
In-scope	Northern Pike (*Esox lucius*)	7.48%	Yes	Yes
In-scope	Shorthead Redhorse (*Moxostoma macrolepidotum*)	5.48%	Yes	Yes
In-scope	White Sucker (*Catostomus commersonii*)	20.1%	Yes	Yes
In-scope	Lake Sturgeon (*Acipenser fulvescens*)	< 0.1%	No	Yes
In-scope	Bullhead (*Ameiurus melas*)	< 0.1%	No	Yes
In-scope	Burbot (*Lota lota*)	0.94%	No	Yes
In-scope	Channel Catfish (*Ictalurus punctatus*)	0.52%	No	Yes
In-scope	Cisco (*Coregonus artedi*)	0.85%	No	Yes
In-scope	Goldeye (*Hiodon alosoides*)	< 0.1%	No	Yes
In-scope	Longnose Sucker (*Catostomus catostomus*)	1.39%	No	Yes
In-scope	Quillback (*Carpiodes cyprinus*)	< 0.1%	No	Yes
In-scope	Rock Bass (*Ambloplites rupestris*)	< 0.1%	No	Yes
In-scope	Yellow Perch (*Perca flavescens*)	0.40%	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

PI 2.1.1		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		
Scoring issue		**SG 60**	**SG 80**	**SG 100**
a	**Main in-scope species stock status**			
	Guide post	**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.	**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.	There is a **high degree of certainty** that **main** in-scope species **are** fluctuating around a level consistent with MSY.
	Met?	**Yes – all scoring elements**	**Yes – all scoring elements**	**No – all scoring elements**
Rationale		This PI was scored using the RBF because stock status information is not available for the main in-scope species scoring elements. The main in-scope species for all UoAs are Freshwater Drum, White Sucker, Shorthead Redhorse, Northern Pike. **SG60 is met** because none of the scoring elements is at high risk of UoA impacts based on PSAs (Table 14). **SG80 is met** because all of the scoring elements have PSA scores associated with low risk. However, fishing mortality on Freshwater Drum is higher in the south basin than the north basin (G. Klein, pers. comm., May 2024). Table 14: Scores for main in-scope species.		
b	**Minor in-scope species stock status**			
	Guide post			**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.
	Met?			**No**
Rationale		Minor in-scope species include Lake Sturgeon, Bullhead, Burbot, Channel Catfish, Cisco, Goldeye, Longnose Sucker, Quillback, Rock Bass, and Yellow Perch. SG100 is not met because there is insufficient information to conclude that these species are highly likely to be above their respective PRIs.		

Scoring element	Designation	Score	Rationale
Freshwater Drum	Main	≥ 80	Low risk for north and south basins based on PSA, see Table 19
White Sucker	Main	≥ 80	Low risk for north and south basins based on PSA, see Table 20
Shorthead Redhorse	Main	≥ 80	Low risk for north and south basins based on PSA, see Table 21
Northern Pike	Main	≥ 80	Low risk for north and south basins based on PSA, see Table 22

Draft scoring range	**≥80**
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 all UoAs are Freshwater Drum, White Sucker, Shorthead Redhorse, 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, Sauger, and to a slightly lesser extent, Lake Whitefish. The measures are not explicitly aimed at managing fishery impacts on main in-scope species.		
b	**Management strategy effectiveness**			
	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**

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		**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 Winnipeg, but 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 Winnipeg.		
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**
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 2.1.3R – 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**	**Yes**	**NA**
Rationale		The main in-scope species for all UoAs are Freshwater Drum, White Sucker, Shorthead Redhorse, and Northern Pike. **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 fisheries.		
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 Winnipeg, 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 Winnipeg. **SG80 is met** because data from the index netting program is adequate to support a partial strategy to manage main 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 – Bigmouth Buffalo and Double-crested Cormorant** **No – Horned and Western Grebe**	**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), Lake Sturgeon (fish), Double-crested Cormorant (bird), Horned Grebe (bird), and Western Grebe (bird).

SG60 is are met because all of the units are at medium or low risk of UoA impacts based on PSAs (Table 15).

SG80 is not met because two of the units are at medium or low risk of UoA impacts based on PSAs (Table 15).

Table 15: Scoring out-of-scope and ETP units.

Scoring element	Designation	Score	Rationale
Bigmouth Buffalo	ETP	≥80	Low risk based on PSA, see Table 23
Double-crested Cormorant	OOS	≥80	Low risk based on PSA, see Table 25
Horned Grebe	ETP/OOS	60-79	Medium risk based on PSA, see Table 26
Western Grebe	ETP/OOS	60-79	Medium risk based on PSA, see Table 27

Draft scoring range	60-79
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, Lake Sturgeon, 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 and they are implemented as appropriate for 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, and they are implemented, as appropriate for 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.		
	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 Winnipeg.		
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 (B. Matkowski, 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**	**No**
Rationale		The ETP/OOS unit for all UoAs 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 fisheries. 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 Winnipeg is extremely 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. Commercial gillnet fishing activities in Lake Winnipeg are regulated through gear regulations, seasonal area closures, 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 weighing no more than 40 lbs, often less. 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**	**Yes**	**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 met** because there is some 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. Periodic monitoring of water quality and benthic invertebrate densities, as well as occasional research (e.g. Rudolfsen et al. 2021) suggests that habitats are not being seriously impacted by gillnet fishing activities. **SG100 is not met** because there is not very explicit evidence that the partial strategy is achieving the objectives set out in SI(a).		
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	Information is adequate to **determine**, with a **very high degree of accuracy**, compliance in the UoA with

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.	both its management requirements and protection measures afforded to **more** sensitive habitats by other MSC UoAs/non-MSC fisheries, **where relevant**.	both its management 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. There is limited evidence of a cohesive arrangement of measures specifically aimed at achieving reduction of ghost gear impacts being in place.		

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 habitats is known over their range, with particular attention given 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 Lake Winnipeg consist predominantly of fine particles and clay (26.1%), silt (23.7%), and gravel (25.4%); other observed substrates are sand (17.2%) and hard bottom (7.6%; Rudolfsen et al. 2021). **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 east shoreline of the south basin is especially abundant in coarse substrate and hard bottom characteristic of the Canadian Shield (Rudolfsen et al. 2021). 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 Winnipeg is an extremely large (~23,750 km^2) lake, 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.		
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.

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		
	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, and periodic monitoring of water quality and benthic invertebrate densities takes place. **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**	**Yes**	**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 Winnipeg ecosystem that may be impacted by the UoAs are: (1) predator-prey interactions, particularly between Walleye and Sauger as predators, and Rainbow Smelt as prey; and (2) community composition. Any significant ecosystem impacts arising from the UoA will most likely be from fishery removals. Commercial gillnet fisheries have put heavy fishing pressure on Walleye, Sauger, and Lake Whitefish populations. In particular, Sauger abundances have declined quite substantially, as reflected in commercial production over time (Figure 7). In terms of their roles in the Lake Winnipeg fish community, Walleye and Sauger have a relatively high trophic position, while Lake Whitefish have a middle to high trophic position. Walleye and Sauger consume fish species including Rainbow Smelt and shiners such as Emerald Shiner (*Notropis atherinoides*) and Spottail Shiner (*Notropis hudsonius*). In turn, they are consumed by predators such as Northern Pike and Double-crested Cormorants. Lake Whitefish are flexible feeders that also link upper and lower food webs (Pothoven and Madenjian 2013). None of the three P1 species appears 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, Sauger, and Lake Whitefish do not appear to have altered the dynamics and presence of their prey species. In fact, availability of Rainbow Smelt appears to have more impact on Walleye and perhaps Sauger than the reverse. For example, Walleye abundances and body weights decreased after the Rainbow Smelt population collapsed around 2012. The prey fish community in the north basin of Lake Winnipeg has been dominated by Rainbow Smelt following their introduction and is generally less diverse than the prey fish community in the south basin (ECCC and MARD 2020), so Rainbow Smelt abundance may be especially limiting in the north basin. The prey-predator link between Rainbow Smelt and Walleye has made it difficult to pinpoint a single primary cause of Walleye and Sauger declines, which likely resulted from a combination of prey availability and heavy fishing pressure. Nutrient inputs into the lake have also affected ecosystem elements substantially, through eutrophication and associated consequences on food webs. **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 Winnipeg has diverse species and community composition, such that Walleye, Sauger, and Lake Whitefish are not limiting/critical prey or predators. **SG80 is also met** because the UoA is **highly unlikely** to disrupt the **key** elements underlying ecosystem structure and function. Available data suggest that other factors such as nutrient inputs and invasive species, including Rainbow Smelt, appear to have had greater impacts on key ecosystem elements. **SG100 is not met** because there is not 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.		

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

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 put together.		

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**	**Yes**	
Rationale		**SG60 is met** because information is adequate to identify the key elements of the ecosystem. **SG80 is also met** because that information is adequate to broadly understand the key elements of the ecosystem. Physical, environmental, and biological aspects of the Lake Winnipeg ecosystem have been monitored for decades and are generally understood, as described in the 'State of Lake Winnipeg' report by ECCC and MARD (2020).		
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 Winnipeg 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 and Sauger are piscivorous predators (e.g. Hartman 2009), while Lake Whitefish are flexible feeders 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?		**Yes**	**No**
Rationale		**SG80 is met** because adequate data continue to be collected to detect any increase in risk level. Fishery-independent pelagic trawl surveys and the index netting program provide information on general abundances of different fish species within the lake ecosystem. Monitoring of water quality, nutrient levels, and benthic invertebrates also takes place.		

PI 2.4.3	There is adequate knowledge of the ecosystem and the main impacts of the UoA on key ecosystem elements
	SG100 is not met because the information may not be adequate to support the development of strategies to manage ecosystem impacts, including those from climate change, based on available evidence.

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 Winnipeg, Province of Manitoba (Figure 1). The fishery is undertaken throughout the year with an open water season (summer, fall) and ice fishing season (winter). The open water commercial fishing season opens from May or early June in the south basin and channel areas, and from June 1st in the north basin, and ends October 30th. The winter commercial fishing opens when ice makes on or after November 1st, then runs 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; F90) 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 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 Winnipeg 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, recreational fishers, and then commercial fishers.

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 Winnipeg Administrative Procedures to handle disputes related to suspensions, which includes a review by an Assistant Deputy Minister. 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 was recently 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 Winnipeg specifically has First Nation and Metis 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.

Three of Manitoba's Indigenous groups live adjacent to Lake Winnipeg and use it most frequently: the Anishinaabe, Cree, 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 as long as 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 28 depicts an organizational chart showing important roles and responsibilities within the EDTINR Fisheries Branch.

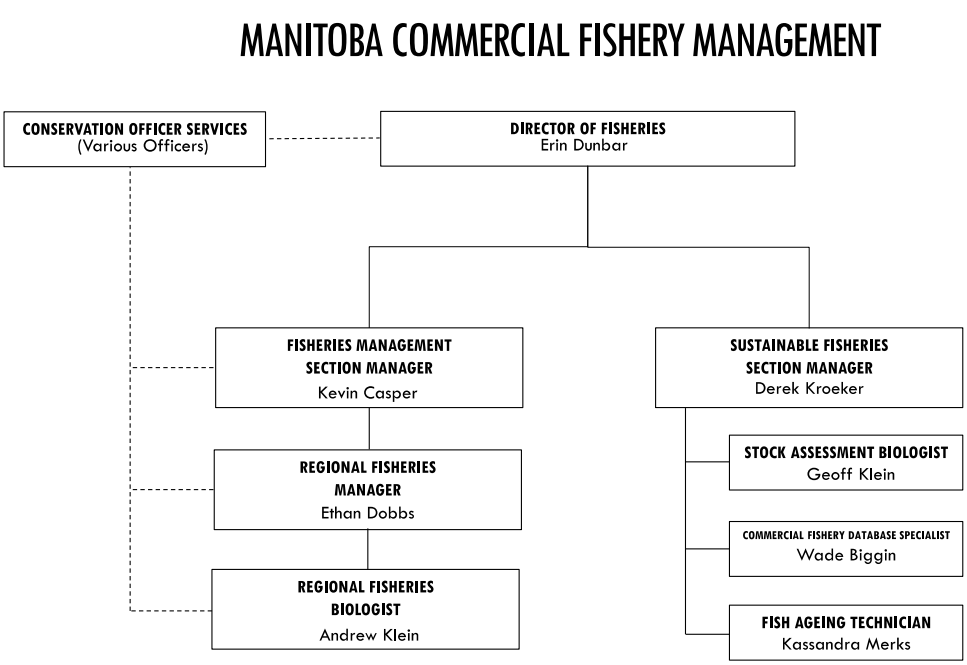


Figure 28. Chart showing key individuals in Manitoba fisheries management and their roles. Source: Fisheries Branch.

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.

Within Lake Winnipeg, each community licensing area (CLA) is represented by two to four individuals who represent their community interests to EDITNR at biannual meetings.

Lake Winnipeg Indigenous Commercial Fishers Inc. (LWICFI) is a consortium of indigenous fishers on Lake Winnipeg who work with CLA representatives to liaise with EDITNR. The LWICFI was established in December 2021 and represents 11 Indigenous commercial fishing communities. Another indigenous fisher group on Lake Winnipeg is Keewatinook Fishers of Lake Winnipeg (KFLW). Some KFLW representatives are also representative members of Lake Winnipeg Indigenous Fishers Inc., but the two groups maintain separate channels of discussion with EDITNR.

The Fisheries Branch meets regularly with Lake Winnipeg commercial fishers. The Regional Fisheries Manager meets with CLA representatives each year, upon request of the community. Meetings typically occur in spring, upon conclusion of the winter commercial fishing season and before the spring season commences. In Spring 2023, department staff met with Grand Rapids, Dauphin River, Matheson Island, Riverton, Norway House and Poplar River communities. The Fisheries Branch also meets with the LWICFI. The branch provides funding to the LWICFI to support the meetings and engages with fishers on a variety of fisheries management topics including reviewing current stock assessment information, management of the fishery, and coordinating progress on initiatives such as eco-label certification.

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 currently no official, fishery-specific management plan for the Lake Winnipeg commercial fishery. 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 Winnipeg. 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. Some First Nations such as the Norway House Cree First Nation, Poplar River First Nation, and the Misipawistik Cree Nation (Grand Rapids) collect fishery scientific data and may share their data with the Fisheries Branch (E. Dunbar and D. Kroeker, pers. comm., March 2024).

The Fisheries Branch aims to proactively engage stakeholders, including commercial fishers and fisher cooperatives, when developing and making management decisions. For example, after the department was mandated to pursue sustainability certification for Manitoba's commercial fisheries, they developed two primary commercial fishing measures (see Lake Winnipeg Measures to Enhance Sustainability). First was the Lake Winnipeg IQE Buy-back Program, aimed at reducing total available quota on the lake to a more sustainable (MSY) level. Second was a minimum gillnet mesh size of 3.75 inches to be applied across all lake areas and seasons, to allow smaller sized Walleye and Sauger to escape the fishery. Fishers were notified that these measures were under consideration and provided an opportunity to voice their opinions. Based on discussion and compromise, the Fisheries Branch decided to implement a minimum mesh size of 3.5 inches in the south basin. They also bought back some quota from willing quota holders.

The Lake Winnipeg Administrative Procedures (2018) provides another example of decision-making processes for the fishery. A summary of the process:

- A review of the administrative procedures was recommended by Manitoba Sustainable Development and the Lake Winnipeg Fishery Co-Management Board in December 2016.
- A sub-committee of the Board met in July 2017 to review and propose amendments to the procedures. The proposed amendments were presented to the board in December 2017 for review, and a final draft document was shared with the board for review and approval on April 9, 2018.
- A different sub-committee of the board, which included representation from LWICFI, met April 25-26, 2018 to review and propose amendments to the procedures.
- In November 2018, procedures were provided to the Lake Winnipeg Co-management board. The board accepted the procedures, with a recommendation to the suspension directive.

The purpose of the administrative procedures review and amendment process was to further develop and define procedures in the IQE system, such as IQE transfers, IQE ownership limits and fishing seasons, and handling of partially fished quota transfers, which relate to harvest management objectives.

7.6.1.8. Control and enforcement

The Manitoba Conservation Officer Service, under EDITNR, is responsible for the enforcement of fisheries regulations. Conservation officers conduct patrols on the lake and periodically inspect nets and catches. The Fisheries Branch supports enforcement efforts by monitoring for quota overages, and contacting fishers if they have exceeded their quota.

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 16).

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 (i.e. a number of commercial fishers fishing a lake quota), the lake quota may be fished by remaining fishers. In all other areas, the suspended commercial fisher's quota allocation will revert to the Crown for the period of suspension and is not eligible for sale or purchase. For situations where individual quotas are exceeded, the overage will be deducted that individual's quota in the subsequent year/season.

Table 16. 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.

Summary information on suspensions and over quota violations (Table 17 and Table 18) suggest that enforcement is applied with some consistency. While non-compliances do occur, the number of violations per year is moderate and does not suggest systematic non-compliance. Ten suspensions per year for a fishery with about 1,100 commercial licenses represents a suspension rate of less than 1%.

Table 17. Summary information on suspensions in Lake Winnipeg. Source: EDITNR

Year	# suspensions (≤ 1 year)	# suspensions (> 1 year)	Reasons for suspension
2023-24	10	0	Selling fish to non-licensed dealer, fishing out of season, spoilage of fish, fishing without license, wrong mesh size, over quota
2022-23	3	0	Over quota
2021-22	4	1	Over quota, illegal sales, chronic infractions

Table 18. Over quota enforcement actions for Lake Winnipeg. Source: EDITNR

Year*	Amount of overage (kg)	# of fishers	Enforcement action taken
2023-24	Under 100	0	Written warning and quota reduction
2022-23	101 - 999	0	Enforcement Notice and Quota Reduction
2021-22	>1000	1	Suspension

* As of December 31, 2023.

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 CLA representatives and the LWICFI. 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 also 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.		

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**		
		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 Winnipeg Administrative Procedures. **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.		
b	**Resolution of disputes**			
	Guide post	The management system incorporates or is subject by law to a **mechanism** for the resolution of legal disputes arising within the system.	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.	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**.
	Met?	**Federal - Yes**	**Federal - Yes**	**Federal - Yes**
		Provincial - Yes	**Provincial - No**	**Provincial - No**
Rationale		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 Winnipeg Administrative Procedures to handle disputes related to suspensions, which includes a review by an Assistant Deputy Minister. 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.		

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**		
		SG80 is not met because there is limited information to evaluate the effectiveness of provincial mechanisms at handling disputes.		
c	**Respect for rights**			
	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 Winnipeg 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. 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 Winnipeg 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. One example can be seen in Treaty 5 (1875) – Misipawistik Cree Nation, Norway House Cree Nation, Poplar River First Nation, Berens River First Nation, Bloodvein First Nation, Hollow Water First Nation, Kinoneoshtigan First Nation, and Fisher River Cree Nation. Under Treaty 5, the Crown agreed “that they, the said Indians, shall have right to		

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**
	pursue their avocations of hunting and fishing throughout the tract surrendered as hereinbefore described, subject to such regulations as may from time to time be made by Her Government of Her Dominion of Canada, and saving and excepting such tracts as may from time to time be required or taken up for settlement, mining, lumbering or other purposes.”

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 28. 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 CLA (community licensing area) representation, commercial fisher cooperatives, and associations such as Lake Winnipeg Commercial Indigenous Fishers Inc. (LWCIFI) and Keewatinook Fishers of Lake Winnipeg (KFLW). **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. EDITNR meets regularly with Lake Winnipeg commercial fishers. The Regional Fisheries Manager meets with CLA representatives each year, upon request of the community. Meetings typically occur in spring, upon conclusion of the winter commercial fishing season and before the spring season commences. In Spring 2023, department staff met with Grand Rapids, Dauphin River, Matheson Island, Riverton, Norway House and Poplar River communities. The Department also meets with the LWICFI.		

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		
		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. Nonetheless, it is worth noting that the Fisheries Branch provides funding to the LWICFI to support meetings and engages with fishers on management topics such as reviewing current stock assessment information, management of the fishery, and initiatives such as eco-label certification (E. Dunbar, pers. comm., March 2024).		
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. The Fisheries Branch provides funding to the LWICFI to support meetings, but this aspect of the consultation process is not well documented.		

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 - Yes**
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 met** because these provincial-level objectives fall under the EDITNR mandate and hence 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 not a management plan with explicit objectives for the Lake Winnipeg 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 Winnipeg. One example of this is the 2018 update of the Lake Winnipeg Administrative Procedures (2018) provides an example of decision-making processes for the fishery. A summary of the process: • A review of the administrative procedures was recommended by Manitoba Sustainable Development and the Lake Winnipeg Fishery Co-Management Board in December 2016. • A sub-committee of the Board met in July 2017 to review and propose amendments to the procedures. The proposed amendments were presented to the board in December 2017 for review, and a final draft document was shared with the board for review and approval on April 9, 2018. • A different sub-committee of the board, which included representation from LWICFI, met April 25-26, 2018 to review and propose amendments to the procedures. • In November 2018, procedures were provided to the Lake Winnipeg Co-management board. The board accepted the procedures, with a recommendation to the suspension directive. The purpose of the updating process was to further develop and define procedures in the IQE system, such as IQE transfers, IQE ownership limits and fishing seasons, and handling of partially fished quota transfers, which relate to harvest management objectives. **SG80 is not met** because these decision-making processes are have not clearly resulted in measures and strategies to achieve fishery-specific objectives related to sustainability**.**		
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		**SG60 is met** because decision-making processes respond to serious issues identified in relevant research, monitoring, evaluation, and consultation and take some account of the wider implications of decisions. An example of a management response is captured in the document “Lake Winnipeg Measures to Enhance Sustainability,” which described proposed measures and regulations to enhance the sustainability of the commercial, angling and indigenous fisheries and reduce overfishing of Walleye and Sauger.		

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			
	The proposed commercial fishing measures were: • A Lake Winnipeg Individual Quota Entitlement (IQE) Buy-back Program to reduce total available quota on the lake. • Minimum gillnet mesh size of 3.75 inches (95mm) stretched mesh, for all areas of Lake Winnipeg for all three commercial fishing seasons. The proposed recreational fishing measures were: • Required release of all Walleye and Sauger under 35 cm for the Red and Winnipeg rivers and certain associated tributaries, and Lake Winnipeg and its tributaries. Readers were encouraged to voice their opinions on the measures, which were subsequently discussed and implemented, with some adjustment resulting from stakeholder input. The first round of Quota Buy Back was completed in March 2019 where nearly 520,000kg of quota was retired from 89 fishers (127 individual quota entitlements purchased) for a cost of $5.4 million (Manitoba Wildlife Federation 28 October 2020). A minimum mesh size of 3.5 inches, a compromise between the proposed 3.75 inch and existing 3.0 inch minimum size, came into effect in the south basin and channel of Lake Winnipeg on April 1, 2020. The regulation for recreational anglers was also implemented. **SG80 is not met** because these processes may not respond to serious and other important issues identified in relevant research, monitoring, evaluation, and consultation, in a transparent, timely, and adaptive manner. Other examples to demonstrate management responsiveness were not provided.			
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.			
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			

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		
		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 a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability of the fishery.	The management system or UoA is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or UoA acts proactively to avoid legal disputes or rapidly 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 Winnipeg commercial fishery is not currently subject to any court challenges (E. Dunbar, pers. comm. March 2024). The most recent legal dispute in the fishery involved a fisher using a license that was not valid. The Fisheries Branch strives to address appeals within 30 business days, but the scheduling of hearings is decided by the Assistant Deputy Minister, who is above the Fisheries Branch Director. This dispute was settled this most recent fiscal year (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 regularly 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 and having the active license holder present during fishing activities. 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 16). **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. Enforcement logs provide some evidence that sanctions are applied. **SG100 is not met** because there is not clear evidence that sanctions are comprehensive and consistently applied. Such evidence could potentially be information showing that high levels of enforcement have been applied and resulted in a reduction of non-compliances.		
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. TG3 is considered met because most potential sources of bias have been mitigated, and where bias might exist, its effect on trueness is well 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 summary information provided by EDITNR indicates that records are kept on suspensions and quota overages (Table 17 and Table 18), 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, the number of violations per year is moderate and does not suggest systematic non-compliance (Table 17 and Table 18). Ten suspensions per year (see Table 17) for a fishery with about 1,100 commercial licenses represents a suspension rate of less than 1%. Most of the reported non-compliances related to fishing over quota. In terms of over quota violations, only about 3 to 4 per year exceed 1000 kg, and in those cases the fishers are subject to suspension (Table 18). **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. The Fisheries Branch hired an external consultant to review its recent stock assessments for Lake Winnipeg, but this was for one part of the management system and may not be a regular occurrence.		

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

8. Appendices

8.1. Evaluation processes and techniques

8.1.1. Site visit

Jocelyn Drugan made a site visit to the Lake Winnipeg 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 19: PSA productivity and susceptibility attributes for Freshwater Drum.

Performance Indicator	2.1.1	
Productivity		
Scoring element (species)	Freshwater Drum (*Aplodinotus grunniens*)	
Attribute	**Justification**	**Score**
Average age at maturity	10.8 years in the north basin, 7.5 years in the south basin	**2**
Average maximum age	~60 years	**3**
Fecundity	50,000 eggs (Animal Diversity Web)	**1**
Average maximum size	63 cm +/- 22 cm	**1**
Average size at maturity	43 cm in the north basin, 36 cm in the south basin	**2,1**
Reproductive strategy	Broadcast spawner (Animal Diversity Web)	**1**
Trophic level	3.4 ± 0.43 standard error (Fishbase)	**3**
Susceptibility		
Attribute	**Justification**	**Score**
Areal Overlap	Low (<10%) in the north basin High (>30%) in the south basin	**1,3**
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	Freshwater Drum are deep-bodied fish that outgrow the mesh sizes used in the fishery after a few years of age.	**2**
Post capture mortality	Retained species	**3**
PSA score = 2.25 for north basin and 2.54 for south basin, risk category is low, scoring range ≥ 80		

Table 20: 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	Low (<10%) in the north basin High (>30%) in the south basin	**1,3**
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, especially in the north basin where the minimum mesh size is slightly larger.	**1**
Post capture mortality	Retained species	**3**
PSA score = 1.71 for north basin and 2.20 for south basin, risk category is low, scoring range ≥ 80		

Table 21: PSA productivity and susceptibility attributes for Shorthead Redhorse.

Performance Indicator	2.1.1	
Productivity		
Scoring element (species)	Shorthead Redhorse (*Moxostoma macrolepidotum*)	
Attribute	**Justification**	**Score**
Average age at maturity	4 years	**2**
Average maximum age	19 years	**2**
Fecundity	18,000 eggs (Fishbase)	**2**
Average maximum size	64 cm	**1**
Average size at maturity	33 cm	**1**
Reproductive strategy	Eggs scattered over gravel, assumed similar to White Sucker	**1**
Trophic level	3.1 ± 0.41 standard error (Fishbase)	**2**
Susceptibility		
Attribute	**Justification**	**Score**
Areal Overlap	Low (<10%) in the north basin High (>30%) in the south basin	**1,3**
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, especially in the north basin where the minimum mesh size is slightly larger.	**1**
Post capture mortality	Retained species	**3**
PSA score = 2.02 for north basin and 2.45 for south basin, risk category is low, scoring range ≥ 80		

Table 22: 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	Low (<10%) in the north basin Medium (10-30%) in the south basin	**1,2**
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 = 2.09 for north basin and 2.23 for south basin, risk category is low, scoring range ≥ 80		

Table 23: 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	<10% 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 24: PSA productivity and susceptibility attributes and scores for Lake Sturgeon.

Performance Indicator	2.2.1	
Productivity		
Scoring element (species)	Lake Sturgeon (*Acipenser fulvescens*)	
Attribute	**Justification**	**Score**
Average age at maturity	~20 years, females mature later than males (Animal Diversity Web)	**3**

Average maximum age	152 years (Animal Diversity Web)	**3**
Fecundity	50,000 eggs and up (Fishbase), but they may not spawn every year	**2**
Average maximum size	274 cm (Fishbase)	**2**
Average size at maturity	100 cm (Fishbase)	**2**
Reproductive strategy	Broadcast spawner (Animal Diversity Web)	**1**
Trophic level	3.3 ± 0.49 standard error (Fishbase)	**3**
Susceptibility		
Attribute	**Justification**	**Score**
Areal Overlap	Assumed high in the absence of information suggesting otherwise.	**3**
Encounterability	Medium overlap with fishing gear expected. Fishers generally set their gillets at depths to target Walleye.	**2**
Selectivity of gear type	Individuals < half the size at maturity can escape or avoid gear.	**2**
Post capture mortality	Live release is required, and some post-capture survival is expected (Baker et al. 2008)	**2**
PSA score = 2.78, risk category is medium, scoring range 60-79		

Table 25. 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	In summer and fall, areal overlap would primarily occur while the birds are foraging. 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%.	**2**
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 = 2.53, risk category is low, scoring range ≥ 80		

Table 26. 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	In summer and fall, areal overlap would primarily occur while the birds are foraging. Gillnets are not set in breeding habitats. We estimated overlap to be 10-30%. Areal overlap would be negligible during the winter fishery, because grebes migrate to other areas during that season.	**2**
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 = 2.68, risk category is medium, scoring range 60-79		

Table 27. 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	In summer and fall, areal overlap would primarily occur while the birds are foraging. Gillnets are not set in breeding habitats. We estimated overlap to be 10-30%. Areal overlap would be negligible during the winter fishery, because grebes migrate to other areas during that season.	**2**
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 = 2.68, risk category is medium, scoring range 60-79		

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9. Template information and copyright

The CAB should delete the table below:

Table 28: Template version control

Version	Date of publication	Description of amendment
1.0	15 August 2011	Date of first release
1.1	31 October 2013	Updated in line with changes to CR v1.3
2.0	08 October 2014	Confirmed background sections (Section 3) as optional (use of 'may' statements) Modified Table 6.3 to create a simplified scoring sheet to be completed in place of full evaluation tables Made amendments to PIs based on Fishery Standard Review changes (e.g. removed original PIs 1.1.2, 3.1.4 and 3.2.4).
2.1	9 October 2017	Inclusion of optional full evaluation tables
3.0	17 December 2018	Release alongside Fisheries Certification Process v2.1
3.1	29 March 2019	Minor document changes for usability
3.2	25 March 2020	Release alongside Fisheries Certification Process v2.2
4.0	26 October 2022	Release alongside Fisheries Certification Process v3.0
4.1	01 May 2023	Added optional vessel lists section 5.2, minor correction to RBF PI 1.2.3

A controlled document list of MSC program documents is available on the MSC website (https://www.msc.org/for-business/certification-bodies/supporting-documents).

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