

Waterhen Lake

Summary Report

(Inc: Chitek, Inland, Archies & Crab)



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Manitoba Sustainable Development
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Location

Waterhen Lake is located between Lake Winnipegosis and Lake Manitoba in the province of Manitoba (see *Figure 1*).

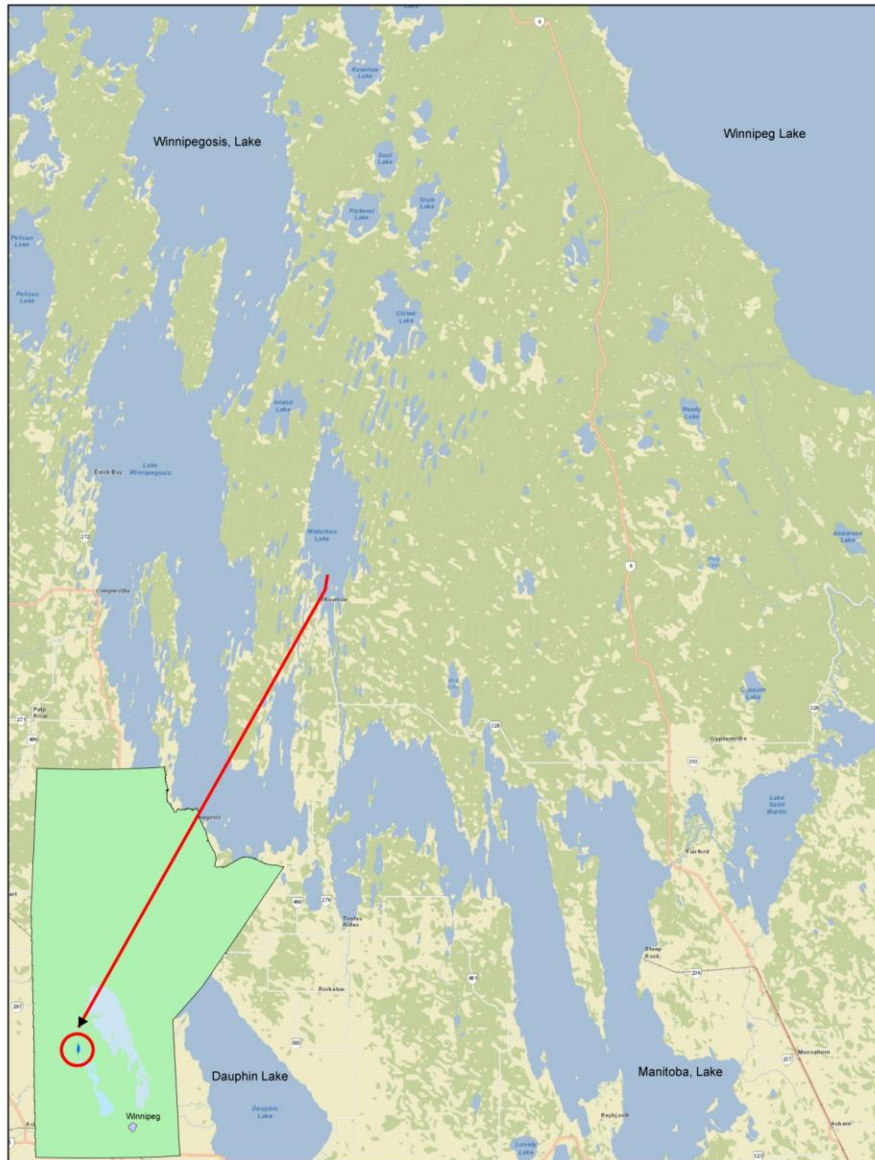


Figure 1: Map of location of Waterhen Lake.

The lake is approximately 34 kilometres long and 8 kilometres wide, with water depths ranging from 1 to 4.4 meters. Lake Winnipegosis empties into Waterhen Lake through both the Little Waterhen and West Waterhen rivers. Waterhen Lake then drains southward through the East Waterhen River into Lake Manitoba.

Communities

There are three communities located on or near Waterhen Lake. These include:

- The Skownan First Nation is located on the south shore of Waterhen Lake. The First Nation, as of March 2014, had a total registered population of 1,292, of which the total on-reserve population was 709 residents. (source: Aboriginal Affairs and Northern Affairs Canada website: <https://www.aadnc-aandc.gc.ca/eng/1357840941919/1360162052669>).
- The community of Waterhen located on the east shore of the Waterhen River midway between Waterhen Lake and Lake Manitoba has a population of 166 people year-round and 100 additional people throughout the cottage season. (source: Community of Waterhen website: <http://www.waterhen.ca>).
- The community of Mallard located on the shores' southeast end of Waterhen Lake has, as of November 2011, a population is 150 residents. (source: Community of Mallard website: <http://mallardmb.ca>).

Fish Species

The winter commercial fishery is based primarily on Walleye (*Sander vitreus*) as the only species harvested under the annual lake quota of 36,300 kilograms. The remaining species harvested have unlimited quota including Lake Whitefish (*Coregonus clupeaformis*); Northern Pike (*Esox lucius*); Yellow Perch (*Perca flavescens*); Sauger (*Sander canadensis*); White Sucker (*Catostomus commersoni*), and Shorthead Redhorse (*Moxostoma macrolepidotum*), marketed as “mullet”; Cisco (*Coregonus artedi*), marketed as “tullibee”; and Common Carp (*Cyprinus carpio*).

Types of Fisheries

Waterhen Lake is classified as a multi-use fishery consisting of Aboriginal domestic harvest, commercial gill netting, and recreational angling. Commercial fishing however represents the main fisheries activity occurring on the lake.

1. Aboriginal Domestic/Sustenance Fishing

Domestic harvest by Aboriginal communities in the area occurs throughout the year. However, the level of harvest by sustenance fishing is unknown.

2. Commercial Net

There are two types of commercial gillnet fisheries on Waterhen Lake:

- a limited entry winter commercial fishery (maximum 22 licensed commercial fishers) using gillnets subject to harvest control rules (i.e. quota, seasons, and gear); and

- a year-round carp/sucker gillnet fishery.

* An essential component of the overall Waterhen Lake commercial gillnet fishery includes commercial fishing activities on Chitek, Inland, Crab and Archies lakes. For summary information pertaining to these water-bodies please refer to **Appendix 1**.

3. Commercial Tourism

There are a number of commercial tourism lodge / outfitting operations that offer recreational angling opportunities in the area, primarily on the connecting tributaries of the Little Waterhen, East and West Waterhen rivers. These are as follows:

- *Harvest Lodge* – located on the Waterhen River between Waterhen Lake and Lake Manitoba.
- *Cat Eye Outfitters* – offers guided angling adventures in lakes, rivers and reservoirs throughout Southwestern Manitoba, including the Little Waterhen, East and West Waterhen rivers.
- *South Shore Lodge* – located on Lake Winnipegosis, the licence permits operator to offer angling service on the Waterhen River system.
- *SKO Outfitting* (Skownan First Nation Development Corporation) – offers guided angling adventures on the West Waterhen River, East Waterhen River and Waterhen Lake.

4. Recreational Angling

Recreational fishing also occurs in the area but is confined mainly to the tributaries of the lake (Little Waterhen, East Waterhen and West Waterhen rivers) during the open water season. The exact level of recreational harvest is unknown, however provincial angling regulations apply.

History of the Fishery

1. Commercial

Waterhen Lake has been commercially fished since 1931. Over the years there has been several management changes related to mesh sizes, quotas and commercial fishing seasons (see **Appendix 2**).

- *Mesh Size:*

Historically, the minimum allowable mesh size of gillnets used on Waterhen Lake ranged between 102 millimetres and 108 millimetres.

In 1992, however, a 76 millimetre experimental winter fishery was created to catch Yellow Perch and remove overabundant small Northern Pike. The rationale for such a decision was based upon the fact that catches of Yellow Perch in a 102 millimetres mesh gillnet are low since the largest of Yellow Perch are still too small to be recruited into a 102 millimetres mesh gillnet in large

numbers. Furthermore, this experimental fishery was seen as a way to allow fishers to evaluate the potential of a Yellow Perch fishery on Waterhen Lake which had provided additional economic benefits to fishers on other lakes; as well as, take advantage of a market demand for smaller sized Northern Pike available through the Freshwater Fish Marketing Corporation (FFMC). The 1992/1993 76 millimetres experimental Yellow Perch fishery was authorized under the following conditions:

- The fishery was open from January 1st, 1993 to, and including, March 15th, 1993.
- The fishery was allowed to occur only within a specified area of the lake (see *Figure 2*).
- Each licensed fisher was limited to eight nets of a 76 millimetre mesh size.
- Each fisher was allowed a maximum individual quota of 50 kilograms of “small” Walleye.

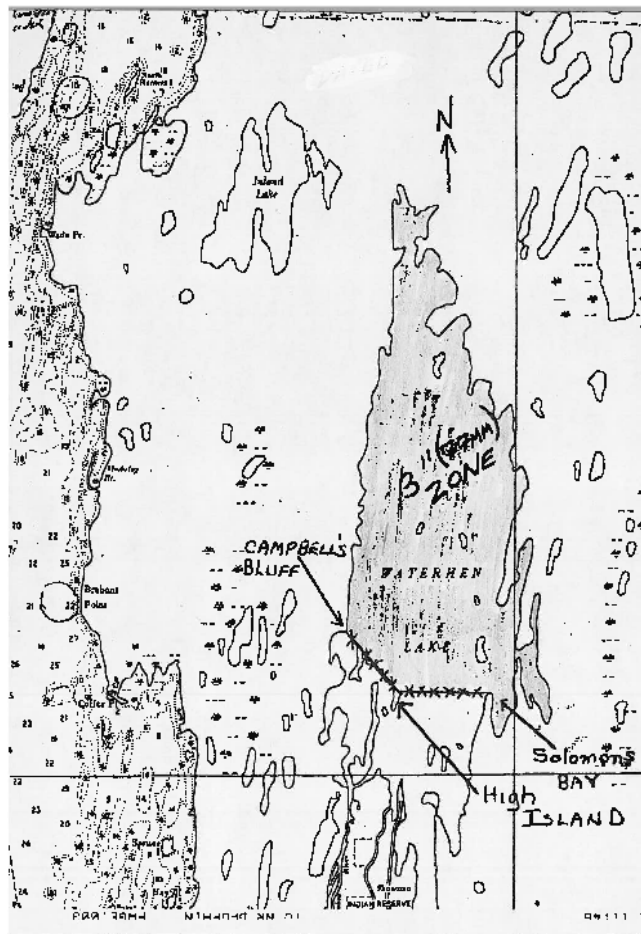


Figure 2: Area of Waterhen Lake opened to the 1992/1993 experimental 76 mm fishery.

Notwithstanding this, in 1994, the 76 millimetre winter fishery was discontinued because of concerns over the harvest of small Walleye. Subsequently, the minimum allowable mesh on Waterhen Lake was reduced from 102 millimetres to 95 millimetres as an acceptable adjustment for removing the smaller 76 millimetre mesh experimental Yellow Perch fishery.

- lake zoning that would preclude the use of 76 millimetres mesh nets from designated areas of the lake; and
- establishment of a 10 % tolerance limit on the number of Walleye harvested.

Since 2001, however, no 76 millimetre fishery has been authorized on Waterhen Lake and the minimum allowable mesh size of gillnets has remained at 95 millimetres.

During the 2013/2014 commercial fishing season a maximum mesh size regulation of 114 millimetres was implemented on Waterhen Lake. This management action was taken in accordance with the application of the harvest strategy for Walleye as established under the Lake Waterhen Fishery Management Plan.

Index netting from September 2014 indicated harvest control measures for the 2014/2015 winter commercial fishing season to be a minimum mesh size of 95 mm (3 ¾-inch) and a maximum mesh size of 114 mm (4 ½-inch). Yardage was not to exceed 50 nets per gang.

- *Quota:*

Prior to 1979 a lake quota of 45,360 kilograms (100,000 pounds) comprised of Walleye, Northern Pike and Sauger existed on Waterhen Lake. In 1972, however, the quota was reduced to 34,020 kilograms (75,000 pounds) based on the outcomes/conclusions from a departmental survey (1971) to determine theoretical fish production capacity. The survey included a review of annual commercial production from 1963 to 1972, annual domestic use, local sales, loss to spoilage, and angler harvest.

In 1980, following a request from commercial fishers and the Skownan First Nation Band Council to address “high grading”, Northern Pike and Sauger were removed from the lake quota leaving only Walleye as the quota species. Also at that time to reflect the removal of these species from the quota, the Walleye quota was adjusted to 27,300 kilograms (60,186 pounds).

Since 1980, the Walleye quota on the lake has been changed on the following three occasions:

- In 1983 based on departmental stock assessments the Walleye quota was raised to 30,900 kilograms (68,122 pounds).
- Subsequently in 1987 the Walleye quota was raised to 36,300 kilograms (80,000 pounds). The rationale for increasing the lake quota both occasions was the belief that since the Walleye stocks appeared stable for many years under the various set lake quotas it was therefore reasonable to try the larger lake quota.
- During the 2012/2013 commercial fishing season the lake quota was reduced from 36,300 kilograms (round weight) to 34,600 kilograms (round weight). This management action was taken in accordance with the application of the harvest strategy for Walleye as established under the Lake Waterhen Fisheries Management Plan.

- *Season:*

The commercial gillnet fishery on Waterhen Lake has been predominantly a winter fishery. Historically, the commercial fishing season was open from *November 11th to, and including, February 15th*. However, starting in the 1960s the opening and closing dates of the commercial fishery began to change. Firstly, in 1960/1961, the opening date of the fishing season was moved from November 11th to the *first day ice makes after November 1st*. Then in 1961/1962, the commercial fishing season was extended by moving the last open date from February 15th to March 10th. Subsequently, throughout most of the 1960s, the commercial fishing season commenced on *the first day ice makes after November 1st to, and including, March 10th*. The last change to the winter commercial fishing season occurred in 1968/1969, when the last open day of fishing was extended from March 10th to March 31st. Therefore it can be stated that since 1968/1969 up to the present day the winter commercial fishing season has been open as follows: “*when ice makes on or after November 1st to, and including, March 31st*”.

The 76 millimetre winter fishery, when authorized, operated from mid to late January until the end of February or mid-March.

In 2002, a permanent year-round Common Carp and Sucker fishery was established on Waterhen Lake.

During the 2012/2013 commercial fishing season, in response to the reduction in the lake quota resulting from the application of the harvest strategy for Walleye as pursuant to the Lake Waterhen Fishery Management Plan, the fishing season was closed on Sunday, January 13th, 2013, when the reduced lake quota was reached.

2. Recreational

There have been no recreational angling regulation changes made specifically to Waterhen Lake. All rules and regulations identified in the Manitoba Angler’s Guide apply.

Current Regulations

1. Commercial

The commercial fishing seasons on Waterhen Lake are established under the *Manitoba Fishery Regulations, 1987*.

The winter walleye season is open from “*when ice makes on or after November 1st to March 31st*”. Commercial harvest during the winter fishing season is limited to the use of gill nets with a mesh size not less than 95 millimetres and a maximum length of 5,700 metres. The lake Walleye quota is 36,300 kilograms.

The Carp/Sucker gill net fishery operates year round with a minimum mesh size of 203 millimetres with an unlimited annual quota

2. Recreational

Under Manitoba Angling Regulations, Waterhen Lake is part of the Southern Division and current General Limits and Southern Division Regulations apply. There are no special regulations for Waterhen Lake.

Licensing

1. Commercial

In order to participate in the commercial fishery individuals are required to be a member of the Lake Waterhen Fishermen's Association. Since the start of the 1989-1990 commercial fishing season the Association has operated within the bounds of a series of by-laws. One of these by-laws has set a limit on the number of commercial fishers to a maximum of 22 licence holders.

Table 1: *Number of individuals licenced to commercially fish on a yearly basis since the 1956/57 winter commercial fishing season.*

Fishing Season	Number of Fishers	Fishing Season	Number of Fishers
1956-1957	8	1973-1974	19
1957-1958	11	1974-1975	12
1958-1959	19	1975-1976	17
1959-1960	44	1976-1977	17
1960-1961	52	1977-1978	19
1961-1962	35	1978-1979	16
1962-1963	11	1979-1980	16
1963-1964	30	1980-1981	15
1964-1965	23	1981-1982	15
1965-1966	32	1982-1983	17
1966-1967	46	1983-1984	17
1967-1968	24	1984-1985	17
1968-1969	18	1985-1986	21
1969-1970	24	1986-1987	21
1970-1971	28	1987-1988	21
1971-1972	27	1988-1989	21
1972-1973	17		

2. Recreational

Under the *Fisheries Act (Manitoba)* any person engaging in recreational fishing must have a valid angling licence.

Fisheries Management Plan

Lake Waterhen Fisheries Management Plan - starting in 2009, Manitoba Sustainable Development (Wildlife and Fisheries Branch and Conservation Officers Service) has been working in cooperation with the Lake Waterhen commercial fishers to establish a fisheries management plan that would enable the Walleye and Northern Pike gillnet commercial fishery to obtain full eco-certification under the Marine Stewardship Council (MSC) program. Development of the Lake Waterhen Fisheries Management Plan was completed in March 2013.

Four performance indicators have been selected with the support of Waterhen Lake commercial fishers to guide the commercial Walleye harvest on Waterhen Lake. They are:

- catch-per-unit-effort;
- spawning stock biomass;
- spawning female age diversity; and
- total mortality.

The performance indicators selected to govern the management of the Waterhen Lake Walleye gillnet fishery are assessed using lower and upper stock reference points. Individual performance indicators will be assessed as either “Low Risk” (highlighted as **green**), “Medium Risk” (highlighted as **yellow**) or “High Risk” (highlighted as **red**). Harvest control measures are implemented in response to changes in performance indicators estimated from annual stock monitoring. Three of the harvest control measures are input controls involving mesh size and total allowable yardage, and the fourth is an output control, quota reduction. The reference points selected for the Catch-per-unit-effort (CPUE) and Spawning Stock Biomass (SSB) are based on the rationale that harvest over the past nine years has been at a sustained high level, and that the values measured for those performance indicators are therefore desirable (Table 2).

Table 2: *Summary table of performance indicators selected to govern the Waterhen Lake Walleye fishery.*

Index	Lower Limit	Upper Stock	Target
Catch-Per-Unit-Effort	2 fish per net night	5 fish per net night	6.3 fish
Spawning Stock Biomass	20 kg per 30 nets	40 kg per 30 nets	50 kg
Spawning Female Diversity	0.31	0.58	0.60
Total Mortality	70%	60%	53%

Catch per Unit Effort

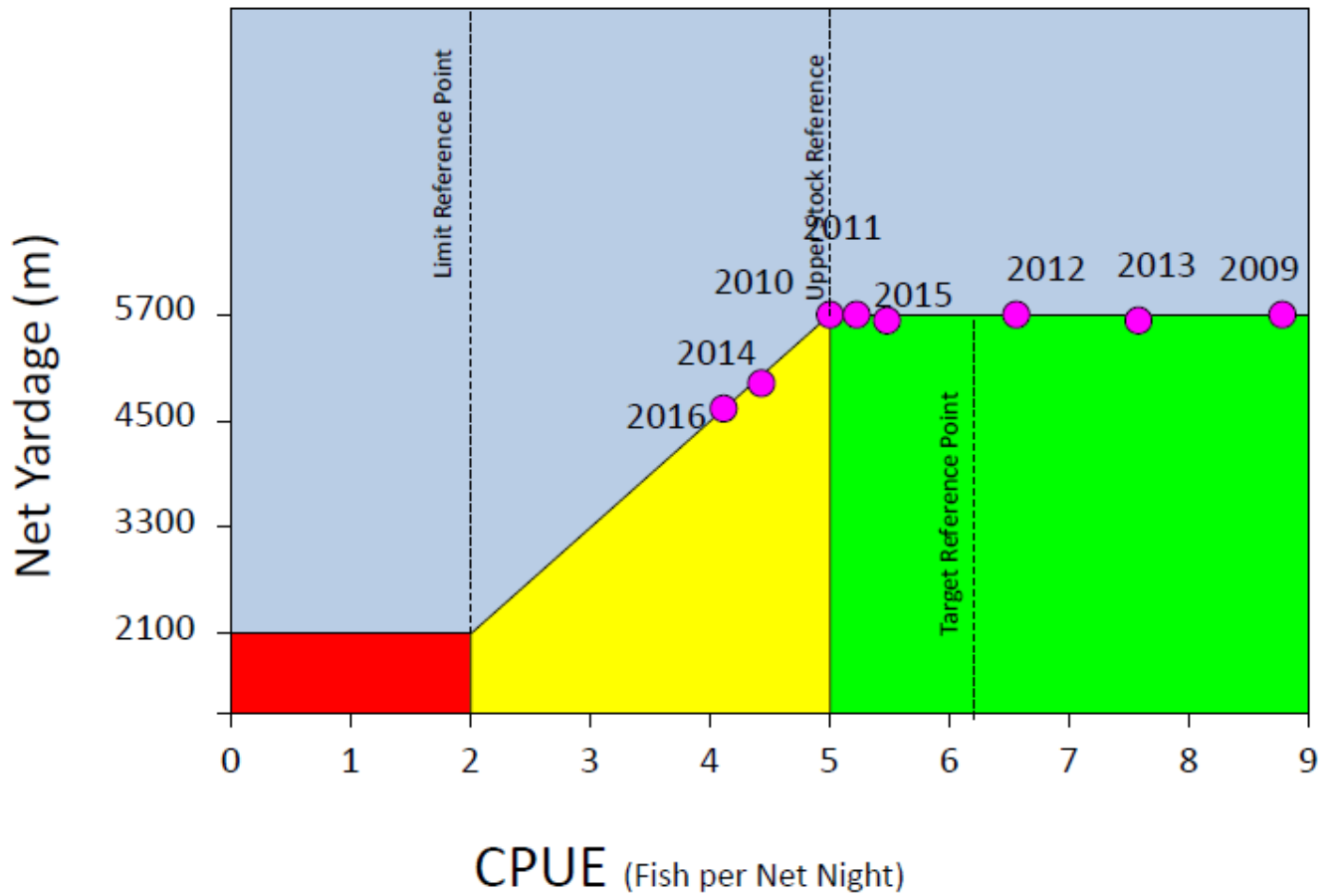


Figure 4: Harvest control scheme governing allowable yardage for the Waterhen Lake commercial Walleye fishery. Pink circles mark the catch-per-unit effort (CPUE) from the past eight years of index netting. If CPUE fell into the medium risk zone, allowable yardage in the commercial fishery would diminish.

Spawning Stock Biomass

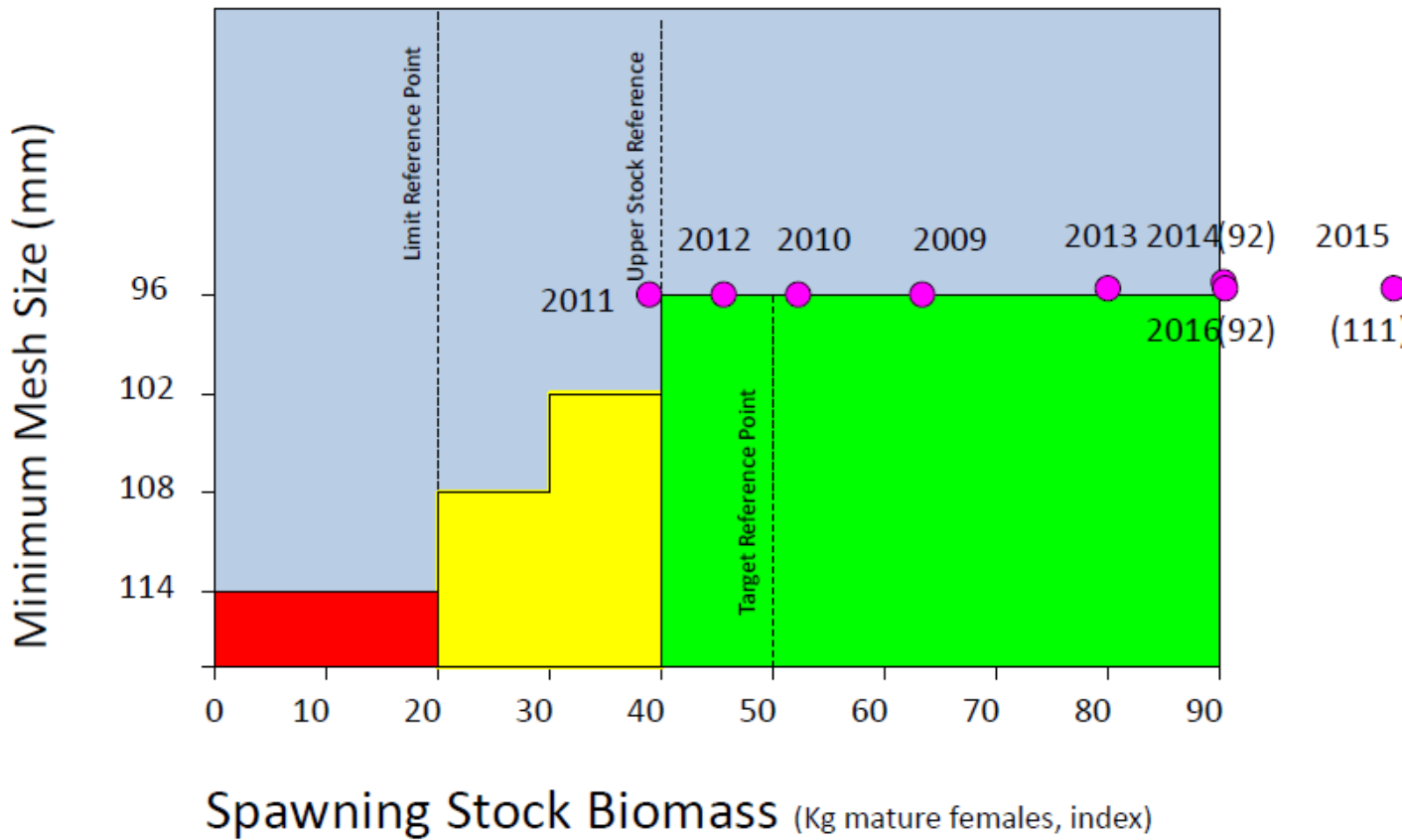


Figure 5: Harvest control scheme to avoid recruitment overfishing in the Waterhen Lake commercial Walleye fishery. Pink circles mark the spawning stock biomass which is reflected as the total kilograms of gravid female Walleye caught in all 30 nets of the annual index program over the past five years. As spawning stock biomass decreases, the minimum mesh size allowed in the commercial fishery increases so more females recruit to spawning size.

Spawning Female Age Diversity

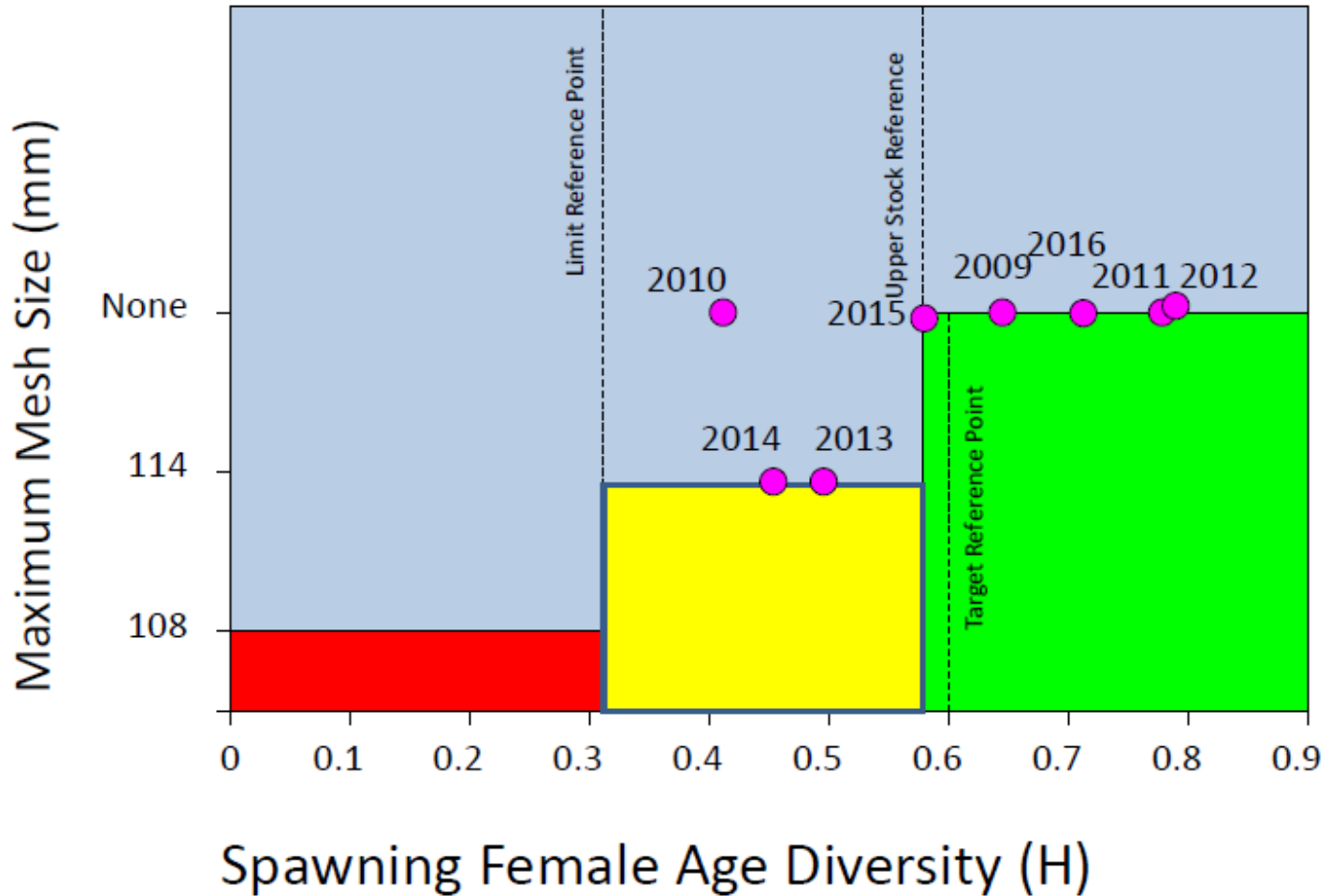


Figure 6: The harvest control rule for Shannon’s Diversity Index for spawning female Walleye ages. When the performance indicator, H, is above 0.58 there is no maximum gillnet mesh, but values in the cautionary zone will result in a maximum mesh size of 114 mm or 108 mm to conserve and enhance age diversity among spawning females.

Mortality

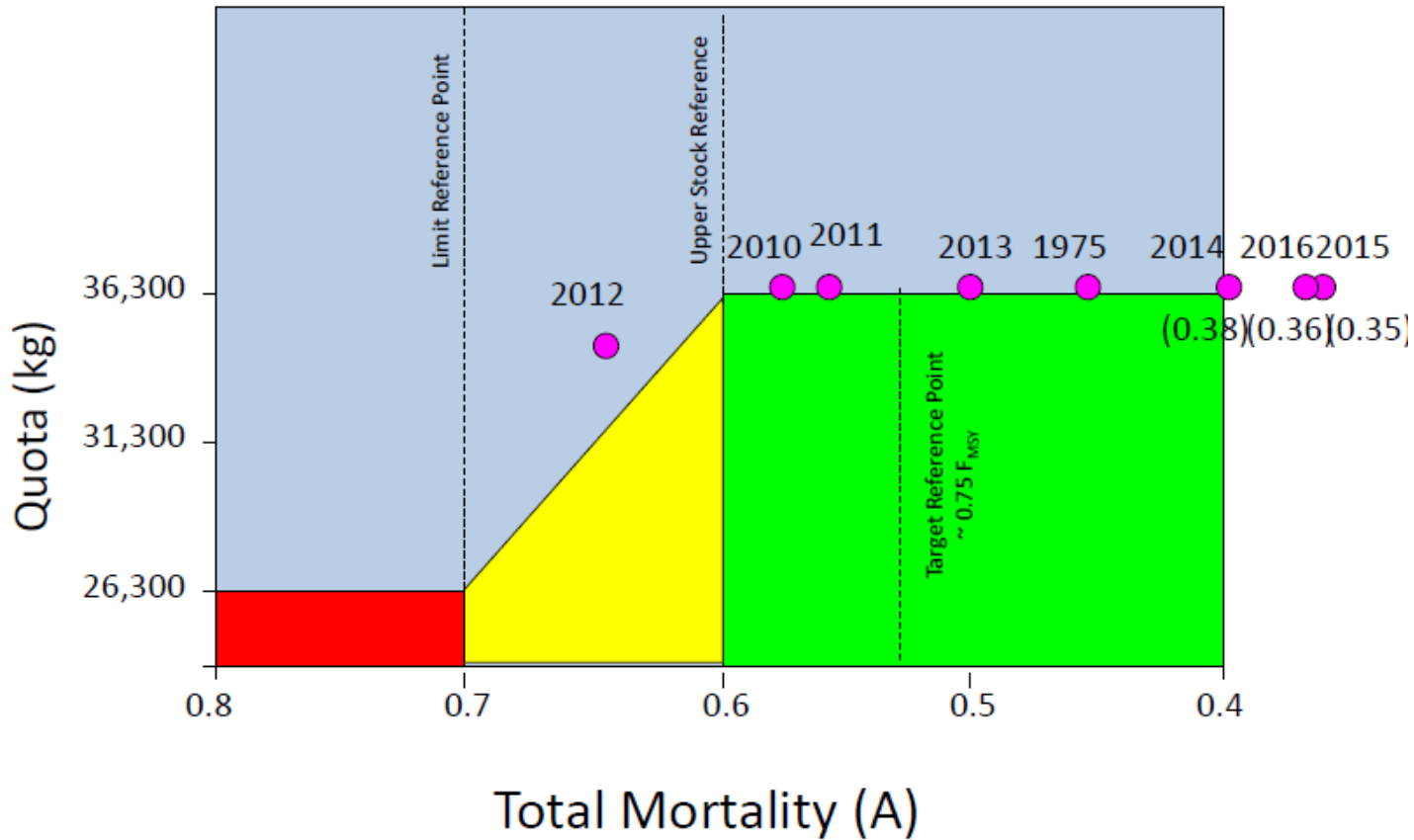


Figure 7: Harvest control scheme for total mortality. When total mortality climbs above 0.6, the Walleye quota for the Waterhen Lake fishery will be decreased to allow the stock to rebuild.

Following the implementation of the Fisheries Management Plan, a number of harvest control measures have been taken in response to the performance indicators identified in the Plan's harvest strategy for Walleye as identified in Table 3.

Table 3: *Application of Harvest Control Measures in accordance to the Lake Waterhen Fisheries Management Plan's Harvest Strategy for Walleye*

<i>Commercial Fishing Season</i>	<i>Performance Indicator</i>	<i>Harvest Control Measure</i>	<i>Management Action / Measure</i>
2012/2013	Total Mortality	When total mortality increases higher than 60 % the lake quota for Walleye will be reduced to allow the stock to rebuild.	The lake quota on Waterhen Lake was reduced from 36,300 kg (round weight) to 34,600 kg (round weight). Subsequently the Waterhen commercial gillnet fishery was closed on Sunday, January 13, 2013 when reduced quota was reached.
2013/2014	Spawning Female Age Diversity (H)	When the performance indicator "H" is above 0.58 there is no maximum gillnet mesh, but when values fall below 0.58 into the cautionary (yellow) zone a maximum mesh size regulation of 114 mm will be imposed to conserve and enhance age diversity among spawning females by protecting larger females from harvest.	During the 2013/2014 commercial fishing season a maximum mesh size regulation of 114 mm was implemented on Waterhen Lake.
2014/2015	Catch-Per-Unit-Effort	This harvest control scheme governs allowable yardage for the Waterhen Lake commercial Walleye fishery. If CPUE falls into the medium risk zone, the allowable yardage in the commercial fishery will be diminished.	During the 2014/2015 commercial fishing season total allowable yardage per fisher was not to exceed 50 nets.
2014/2015	Spawning Female Age Diversity (H)	When the performance indicator "H" is above 0.58 there is no maximum gillnet mesh, but when values fall below 0.58 into the cautionary (yellow) zone a maximum mesh size regulation of 114 mm will be imposed to conserve and enhance age diversity among spawning females by protecting larger females from harvest.	During the 2014/2015 commercial fishing season a maximum mesh size regulation of 114 mm was implemented on Waterhen Lake.

2016/2017	Catch-Per-Unit-Effort	This harvest control scheme governs allowable yardage for the Waterhen Lake commercial Walleye fishery. If CPUE falls into the medium risk zone, the allowable yardage in the commercial fishery will be diminished.	During the 2016/2017 commercial fishing season total allowable yardage per fisher was reduced from 60 nets to 45.
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Commercial Harvest Production

Waterhen Lake has been commercially fished since 1931 (see *Figure 8 & Appendix 3*).

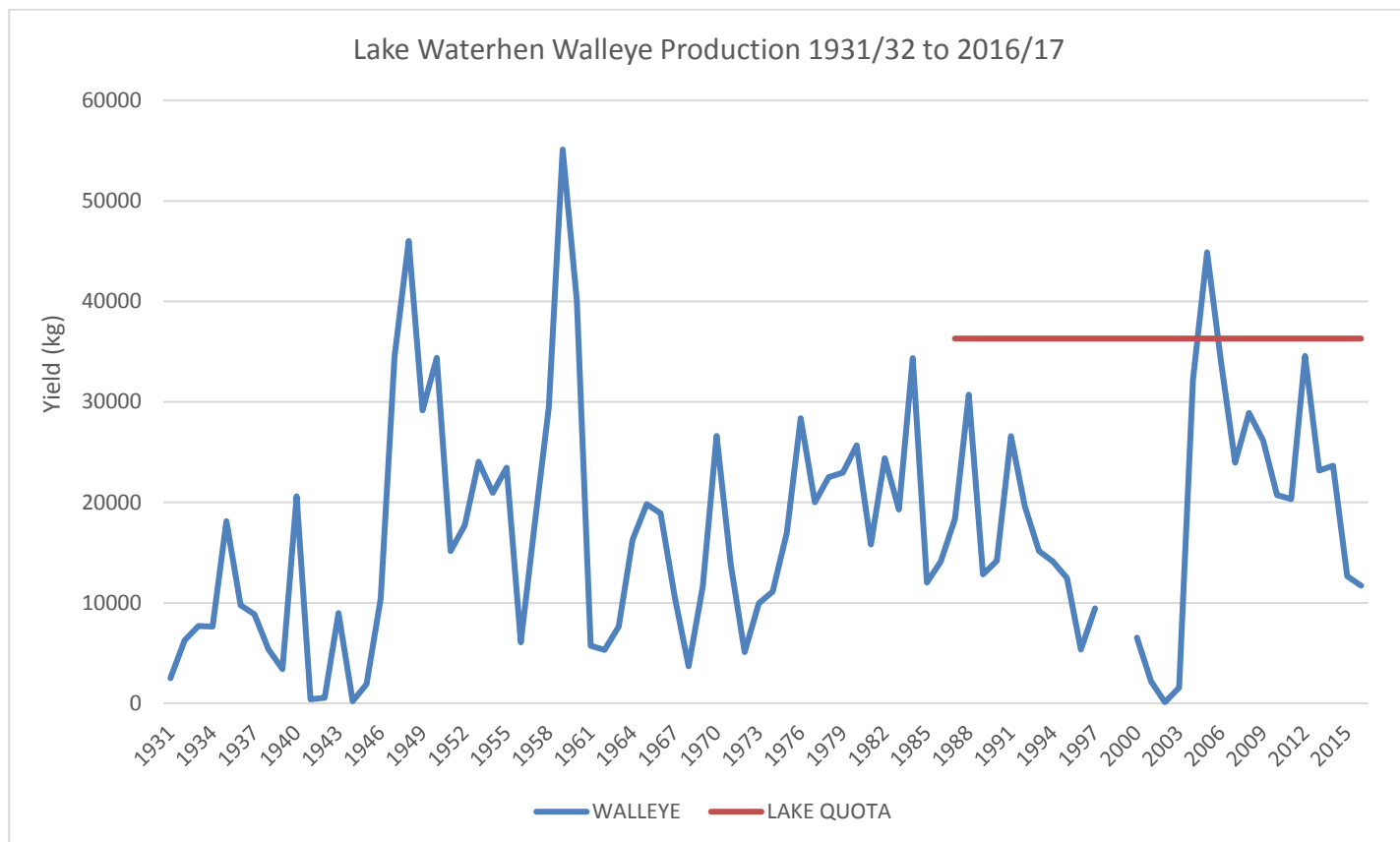


Figure 8: Lake Waterhen Walleye production from 1931/32 to 2016/17 commercial fishing season.

Since the current lake quota of 36,300 kilograms was set in 1987, the average annual commercial production (all species) from Lake Waterhen has been 67,173 round weight kilograms, ranging from 15,560 round weight kilograms (2003/2004) up to 238,831 round weight kilograms (1991/1992). During the same period, the average annual commercial production for Walleye has been 18,734 round weight kilograms, ranging from 114 round weight kilograms (2002/2003) up to 45,686 round weight kilograms (2005/2006). The average annual production of other non-quota species has been 48,439 round weight kilograms, ranging from 13,997 round weight kilograms (2003/2004) up to 212,238 round weight kilograms (1991/1992) (*Figure 9 & Appendix 4*).

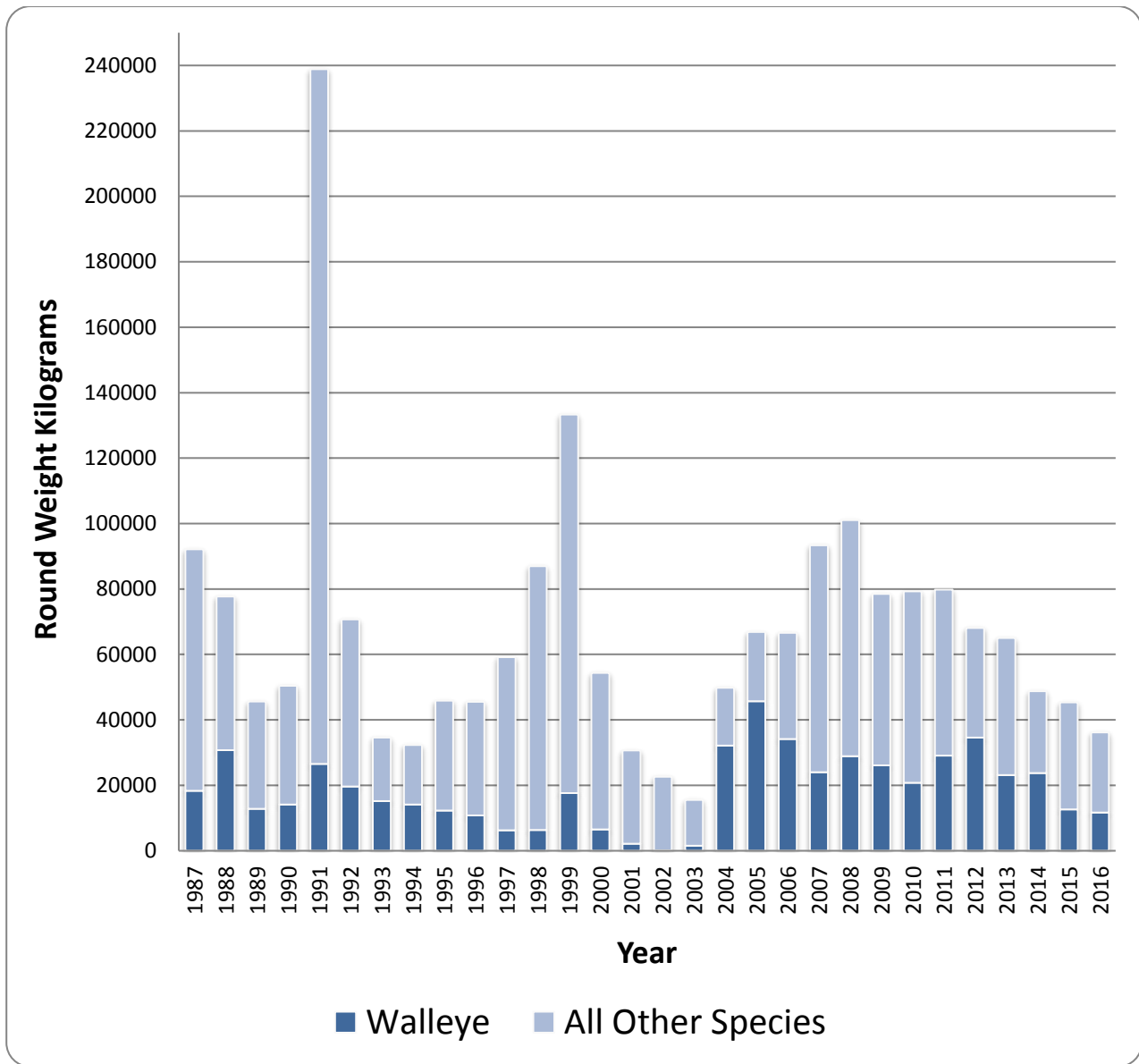


Figure 9: Waterhen Lake annual commercial production of walleye and other species from 1987 to 2016.

Info Note: *During the 2013/2014 commercial fishing season, fishers decided that once 18,000 kg of Walleye had been harvested they would move their fishing efforts to Chitek and Inland lakes; and then return to Waterhen Lake in March to fish the remainder of the unharvested portion of the lake quota. The harvest level of 18,000 kg on Waterhen Lake was reached in December but the fishing for Walleye on Chitek Lake was so productive that most fishers decided not to return to Waterhen Lake and continued to fish on Chitek Lake for the remainder of the 2013/2014 commercial fishing season. Therefore the lower production level of Walleye during in 2013/2014 was not due to a lack of ability to harvest Walleye on Waterhen Lake but rather a choice not to harvest.*

Info Note: *During the 2014/2015 commercial fishing season, Waterhen Lake fishers decided to direct more effort into fishing on Chitek and Inland Lake due to the success rate at both of these “hatch-and-catch” fisheries. Therefore the lower production level of Walleye coming from Waterhen Lake during the 2014/2015 commercial fishing season was due to a choice to intentionally target Chitek and Inland fish stocks rather than focus on harvesting Waterhen Lake certified Walleye stocks. Waterhen Lake fishers did, however, confine their fishing efforts on Waterhen Lake to supply the necessary amount of MSC-certified Walleye to the Manitoba Liquor and Lotteries Commission (MBLL) casino restaurants to fulfill their contractual obligations.*

Landed Value

The landed value for all species since the current lake quota of 36,300 kilograms was established has averaged \$105,649 per year, ranging from \$9,069 (2003/2004) up to \$347,111 (1991/1992). In terms of Walleye, the annual landed value has been \$65,756 based upon a range of \$475 (2002/2003) up to \$142,237 (2005/2006) (*Figure 10 & Table 4*).

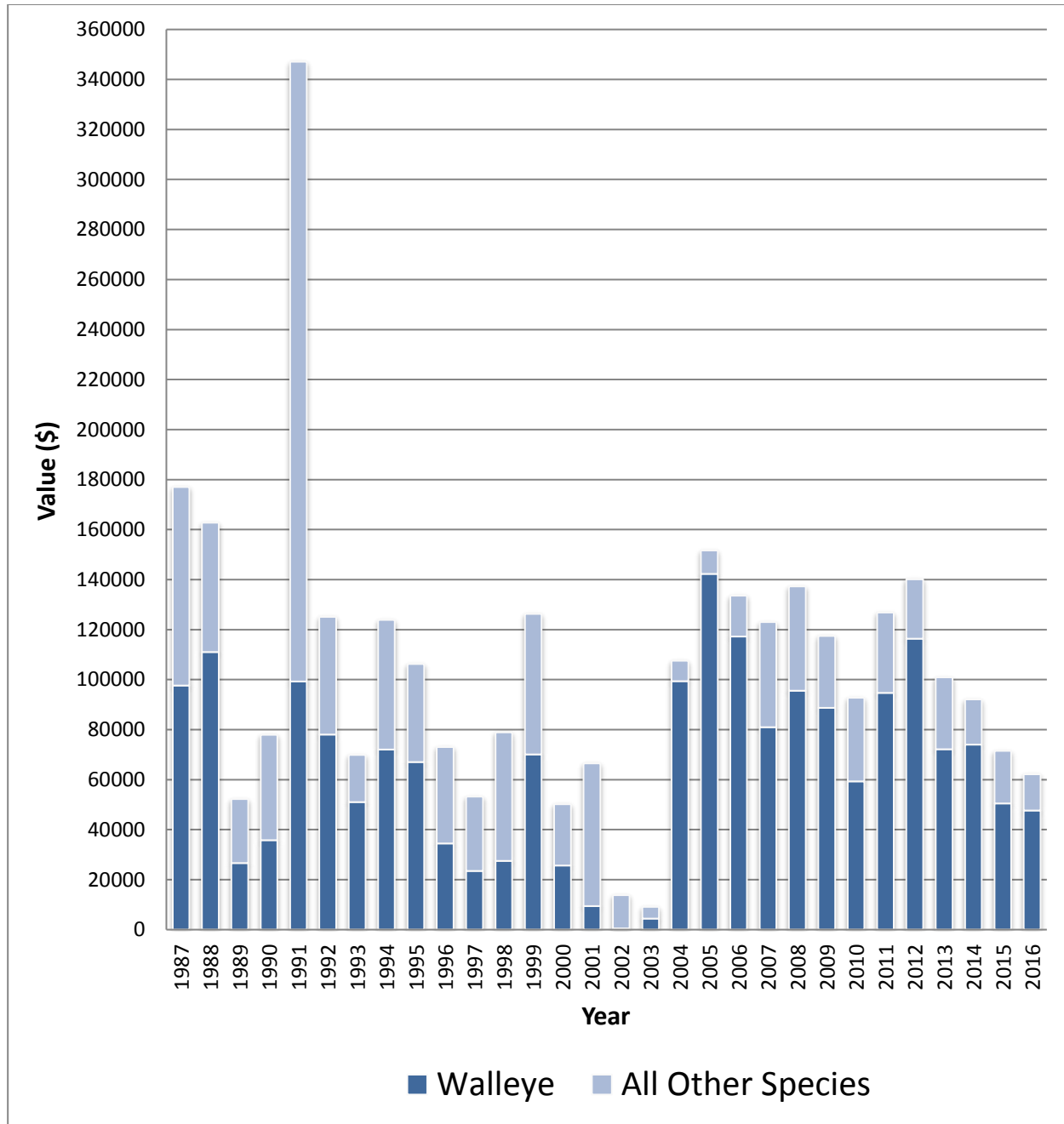


Figure 10: Landed value (\$) of Walleye, non-quota species and total from 1987 to 2016.

Table 4: The landed value of Walleye, all other species and total (all species combined) from 1987/1988 to 2016/2017.

Fishing Season	WALLEYE Value (Cnd \$)	ALL OTHER SPECIES Value (Cnd \$)	TOTAL VALUE (Cnd \$)
1987/1988	\$97,677	\$79,291	\$176,968
1988/1989	\$111,044	\$51,689	\$162,733
1989/1990	\$26,586	\$25,682	\$52,268
1990/1991	\$35,812	\$42,075	\$77,887
1991/1992	\$99,286	\$247,825	\$347,111
1992/1993	\$78,064	\$47,045	\$125,109
1993/1994	\$51,018	\$18,865	\$69,883
1994/1995	\$72,008	\$51,856	\$123,864
1995/1996	\$67,030	\$39,255	\$106,285
1996/1997	\$34,423	\$38,619	\$73,042
1997/1998	\$23,476	\$29,674	\$53,150
1998/1999	\$27,455	\$51,391	\$78,846
1999/2000	70,062	\$56,187	\$126,249
2000/2001	\$25,680	\$24,420	\$50,099
2001/2002	\$9,444	\$57,034	\$66,478
2002/2003	\$475	\$13,489	\$13,964
2003/2004	\$4,446	\$4,631	\$9,077
2004/2005	\$99,360	\$8,205	\$107,565
2005/2006	\$142,237	\$9,401	\$151,639
2006/2007	\$117,241	\$16,320	\$133,562
2007/2008	\$80,935	\$42,198	\$123,133
2008/2009	\$95,603	\$41,763	\$137,366
2009/2010	\$88,666	\$29,592	\$118,258
2010/2011	\$59,340	\$34,403	\$93,744
2011/2012	\$81,452	\$31,824	\$113,275
2012/2013	\$102,728	\$23,634	\$126,362
2013/2014	\$68,055	\$29,080	\$97,135
2014/2015	\$72,172	\$18,330	\$90,502
2015/2016	\$50,437	\$21,038	\$71,475
2016/2017	\$47,652	\$14,425	\$62,077
Average Per Year	\$64,662	\$39,975	\$104,637

Stocking

Waterhen Lake has been stocked with Walleye and Lake Whitefish fry as follows:

Table 5: *History of stocking efforts in Waterhen Lake*

Year	No. of Lake Whitefish (Fry)	Year	No. of Walleye (Fry)
1993	2,000,000	2003	2,500,000
		2011	1,200,000 (originally for Chitek Lake)
Total (to date)	2,000,000	Total (to date)	3,700,000

Stock Assessment

1. Annual Index Netting

Starting in 2009, Wildlife and Fisheries Branch (Central Region) implemented an annual index netting program for Waterhen Lake to be carried out each fall (September) when water temperatures fall to between 10 and 15 degrees centigrade. Index nets used in the sampling program are the North American standard gillnets as described in Bonar *et al.*, 2009 (**Appendix 5**) which are set for approximately 16 hours covering two crepuscular periods.

Initially, the program was based on using 13 sets of gangs (mean walleye per net = 8.84, $\sigma = 5.00$); however, based on preliminary fishery data collected in the fall of 2009, to detect a 20 % decline in Catch-per-Unit Effort (CUE) from the previous sampling year at a power of 80 % ($\alpha = 0.1$), the Branch decided that it would need 30 sets using a pairwise design and an assumption of a correlation of 0.5 within sites, between years. Therefore, starting in 2010, 30 index nets would be set at the same 30 sites (including the initial 13 sites) each year.

Weight and length is recorded for all fish caught; while for Walleye weight, length, sex, maturity and stomach contents, if identifiable, are recorded. For age determination otoliths are taken from Walleye. Otoliths are broken and burned before the annuli are counted under 30X magnification.

Since 2016, the administration and implementation of the annual index netting program, as well as, the overall management of the Waterhen Lake fishery has been transferred from the Central Region

to the Sustainable Fisheries Planning Program (Sustainable Fisheries Unit, Wildlife and Fisheries Branch).

2. Commercial Catch Sampling

Info Note: *Commercial catch sampling is a management tool used by Manitoba Conservation and Water Stewardship (Fisheries Branch) to assist fisheries managers as part of the overall stock monitoring program. Commercial catch sampling is undertaken to collect ageing structures (e.g. fin spine/ray, otoliths, scales, cleithrium) for different commercial harvested fish species. Commercial catches provide information necessary to determine year class strengths in the fishery and will be used to monitor fish populations in the lake.*

To better understand the stock structure of Northern Pike in Waterhen Lake and to ensure commercial sex ratio of Northern Pike is adequately represented in the Branch's stock assessment, the assessment team recommended that commercial catch sampling should be conducted. Therefore, starting in the winter of 2014, Manitoba Sustainable Development (Wildlife and Fisheries Branch) implemented a commercial catch sampling program to better understand the stock structure of Northern Pike in Waterhen Lake. This is achieved through the collection of *cleithra* taken from Northern Pike caught in commercial gillnets set in Waterhen Lake. Northern Pike are also collected opportunistically during lake patrols from fishers lifting their nets, or from nets seized during enforcement activities. For Northern Pike sampled from the commercial fishery sex, age and length are recorded as well as the mesh size of the commercial gillnet.

3. By-Catch Monitoring

In an effort to assess and monitor the level of by-catch, particularly discarded by-catch, occurring in the Waterhen Lake commercial gillnet fishery the department has implemented the following measures:

i. On-site (Bore Hole) Inspections

On-site (bore hole) inspections were begun in the 2010/2011 commercial fishing season. Conservation Officers undertake on-site (bore-hole) inspections as part of their compliance monitoring patrols during the commercial fishing season. The officers complete a Commercial Fishery Patrol Report (**Appendix 6**) that documents all aspects of the patrol: date, time, weather, officers, locations and observations. Under observation, officers record the number of fish and species of fish discarded at each basin hole. Conservation Officers will forward copies of these reports to the Sustainable Fisheries Unit (SFU) for analysis and compilation.

Table 6: Results of commercial on-site (bore hole) inspections on Waterhen Lake recording the number of fish and species of fish discarded at each basin hole.

MB. Conservation Commercial On-Site (Bore Hole) Inspection Results - Waterhen Lake										
Patrol Date	Fish Species									
	Lake Whitefish	Northern Pike	Walleye	Sauger	Yellow Perch	Cisco (Tullibee)	Burbot (Myria)	Mullet	Other	Total
Sep. 16 2013	0	0	0	0	0	0	0	0	0	0
Sep. 17 2013	0	0	0	0	0	0	0	0	0	0
Jan. 4 2013	2	33	8	0	0	0	0	3	0	46
Jan. 18 2014	0	0	0	0	0	0	4	0	0	4
Jan. 23 2014	0	0	0	0	0	0	1	0	0	1
Feb. 7 2014	0	0	0	0	0	0	0	0	0	0
Mar 11 2014	0	0	0	0	0	0	3	0	0	3
Mar 17 2014	0	0	0	0	0	0	0	0	0	0
May 14 2014	0	0	0	0	0	0	0	0	0	0
Jan. 13 2015	0	0	0	0	0	0	0	0	0	0
Jan. 14 2015	0	0	0	0	0	0	0	0	0	0
Jan. 17 2015	0	0	0	0	0	0	0	0	0	0
Jan. 26 2015	0	1	0	0	0	0	0	2	0	3

ii. Commercial Log Books

Commercial log books are one of the data collection tools used in the Waterhen Lake commercial fishery. A proportion of Waterhen Lake commercial fishers have agreed to complete and return commercial log books to departmental officials for analysis. The commercial log books record harvest that is either retained catch not sold through the Freshwater Fish Marketing Corporation or non-marketed catch that is either discarded by-catch or culled catch. The data collected through these log books is important to monitoring overall catch, particularly with regard to by-catch, and the assessment process.

iii. Freshwater Fish Marketing Corporation (FFMC)

The Freshwater Fish Marketing Corporation (FFMC) is planning changes to its Fish Purchase System (FPS) to capture the following data:

- a) non-marketable discarded by-catch; and
- b) fish culled due to being deemed not fit for human consumption.

4. Creel Surveys

Info Note: A creel survey is a technique used by fisheries managers for estimating fishing effort by interviewing anglers and surveying their catch through the collection of data specific to the number of fish caught on a particular river/stream/lake or in a particular area.

Creel surveys conducted in the Waterhen Lake area include:

i. *1977 & 1978 Angler Creel Survey:*

Source: Valiant, H. 1978. *Angler creel census in the Lake Winnipegosis, Waterhen, Lake Manitoba, and Dauphin areas in 1977 and 1978.* Manitoba Department of Mines and Natural Resources, Environment MS Report No. 78-68, 88pp.

An intensive summer angler creel census was carried out in 1977 in Lake Winnipegosis, Lake Waterhen, Lake Manitoba, Dauphin River and the Fairford-St. Martin area to determine the quantity of Walleye and other fish species taken by anglers. In 1978, the census was repeated in part of the Waterhen and in the Fairford-Dauphin River area to provide information about year-to-year changes in angling pressure and production.

Specific locations surveyed in 1977 included all 10 access points on the Waterhen River; while the 1978 census included the three most popular angling sites in the Waterhen system plus Dauphin River and Fairford.

Data collection in 1977 was carried out from the opening day of Walleye season (May 14 in all areas except streams entering Lake Winnipegosis, where the season opened June 1) until September 9, except at the Sclater and Mossey rivers, three heavily used access points in the Waterhen, the Narrows and Dauphin River. In the first five areas, the data collection period was extended until September 30 and in the last two areas, the data collection period was extended until October 9. In addition, sampling at one minor Waterhen access point, LePerre's South Dock, did not start until June 1; consequently no data was available for the month of May at this particular site.

Each of the access points was surveyed as a unit, that is, a separate sampling survey was designed and carried out and a production estimate was obtained for each access point. The design sampling and analysis procedures were as follows:

- From previous creel census information, the number of sampling days required to get +/-20% precision was determined,
- On each of these sampling days, a complete count of the catch of a given fish species was obtained,
- From the sample of complete daily counts, an average catch per day was calculated. This mean catch per day was multiplied by the total number of days in the sampling period to give an estimate of total catch during the sampling period.

Data collection in 1978 was carried out from May 13 to October 31 at the Waterhen access points.

Each access point was surveyed on a randomly selected set of days throughout the sampling period, such that on each sampling day, a complete daily count of each attribute measured was obtained: each party of anglers was interviewed as it left the access point and the number of anglers, number of hours spent fishing, number of each species of fish, anglers' place of residence and whether or not the party had been interviewed previously on that fishing trip was recorded for each party. Walleye taken through the access point were also sub-sampled at approximately 10 % intensity to provide length, weight and age information, except in the Waterhen area in 1978, where this information was not obtained.

Results:

- Recreational Harvest:

Table 7: *Estimated 1977 production by fish species (measured in pounds)*

	May 14-31	June 1 - Sept. 9	Sept. 10-30	Oct. 1-10	Total
Walleye	19,300	16,900	6,000	-	42,200*
Sauger	200	200	0	-	400
Pike	1,900	2,500	100	-	4,500
Perch	200	800	100	-	1,100

*The total is incomplete, since the September 10-30 totals refer only to a subset of the access points, as described in the above text.

Table 8: *1977 versus 1978 production by fish species (measured in pounds)*

		Walleye	Sauger	Pike	Perch	Angler-Hours
Leperre's North Star North Skownan	To Sept. 30, 1977	22,000	200	3,600	700	55,000
Leperre's North Star North Skownan	To Sept. 30, 1978	15,000	-	1,300	300	31,000

- Angler-Hours:

Table 9: *Estimated 1977 Angler-Hours & Number of Walleye per angler-hour*

Area	Sampling Period	Angler-Hours	No. of Walleye Per Angler Hour
Waterhen	May 14 – Sept. 9	78,000	0.44

- Angler’s Place of Residence:

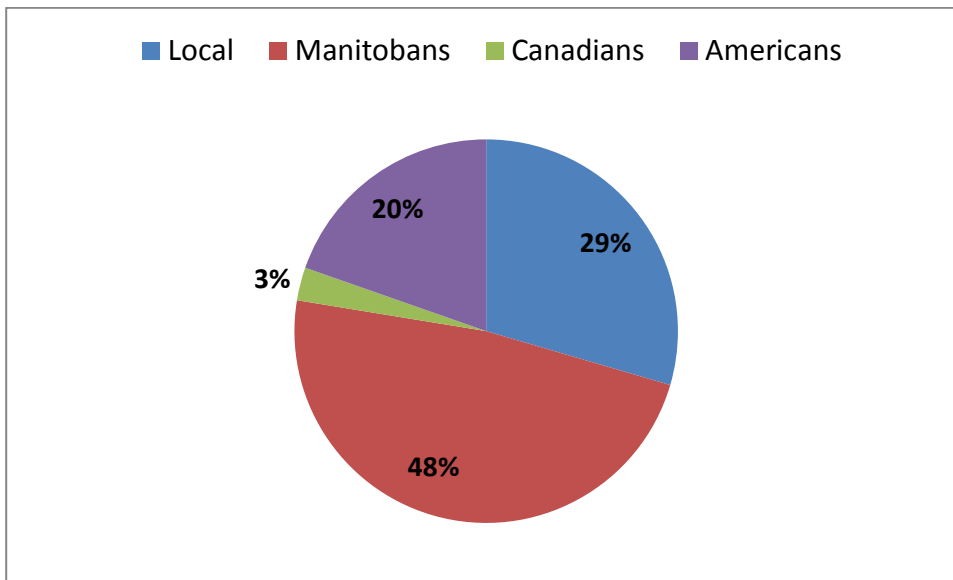


Figure 13: *The percentage of anglers by their place of residence surveyed in the 1977 angler creel census in the Waterhen area.*

5. 2010 Survey of Recreational Angling

The eighth national survey of recreational angling in Canada was conducted in 2010. As with previous surveys, the federal Department of Fisheries and Oceans conducted the survey in cooperation with provincial and territorial agencies. A detailed description of the 2010 survey results relating to Waterhen Lake and Waterhen River can be found in Tables 10 and 11.

Table 10: Results of the 2010 Survey of Recreational Angling for Waterhen Lake

Fish caught by species in Waterhen Lake in 2010											
	Walleye	Pike	Channel catfish	Smallmouth bass	Perch	Lake trout	Rainbow trout	Brown trout	Brook trout	Other species*	Total fish
Resident	10,948	942	-	-	-	-	-	-	-	912	12,802
Canadian nonresident	-	-	-	-	-	-	-	-	-	-	-
Other nonresident	-	-	-	-	-	-	-	-	-	-	-
Total	10,948	942	-	-	-	-	-	-	-	912	12,802
Fish kept by species in Waterhen Lake in 2010											
	Walleye	Pike	Channel catfish	Smallmouth bass	Perch	Lake trout	Rainbow trout	Brown trout	Brook trout	Other species	Total fish
Resident	6,147	-	-	-	-	-	-	-	-	-	6,147
Canadian nonresident	-	-	-	-	-	-	-	-	-	-	-
Other nonresident	-	-	-	-	-	-	-	-	-	-	-
Total	6,147	-	-	-	-	-	-	-	-	-	6,147

* Other species caught were Freshwater Drum

Table 11: Results of the 2010 Survey of Recreational Angling for Waterhen River.

Fish caught by species in Waterhen River in 2010											
	Walleye	Pike	Channel catfish	Smallmouth bass	Perch	Lake trout	Rainbow trout	Brown trout	Brook trout	Other species*	Total fish
Resident	28,401	4,767	2,190	-	1,424	-	-	-	-	205	36,987
Canadian nonresident	586	-	-	-	-	-	-	-	-	-	586
Other nonresident	2,474	51	-	-	-	-	-	-	-	338	2,863
Total	31,460	4,818	2,190	-	1,424	-	-	-	-	543	40,435
Fish kept by species in Waterhen River in 2010											
	Walleye	Pike	Channel catfish	Smallmouth bass	Perch	Lake trout	Rainbow trout	Brown trout	Brook trout	Other species	Total fish
Resident	13,952	-	-	-	512	-	-	-	-	-	14,464
Canadian nonresident	586	-	-	-	-	-	-	-	-	-	586
Other nonresident	430	-	-	-	-	-	-	-	-	-	430
Total	14,968	-	-	-	512	-	-	-	-	-	15,479

* Other species caught were Freshwater Drum and Bullhead

Research Studies / Independent 3rd Party Assessments

In the last few decades, several research projects and independent third party assessments have been carried out on Waterhen Lake and/or its tributaries. For a complete bibliography of each research project and assessment survey, as well as, the key finding of each study / survey, please refer to **Appendix 7**.

Appendix 1: *Historical Summary of Stocking Efforts, Test Netting and Commercial Harvest on Archies, Chitek, Crab and Inland Lakes.*

I. Background

In the mid 1970s the Fisheries Branch began looking for potential resource development opportunities in the region. A study area was established that encompassed a section of the province lying east of Lake Winnipegosis, north of Waterhen Lake, west of Provincial Highway # 6, and south of Provincial Truck Highway # 327.

There was a large number of water bodies located throughout the study area with very little in the way of defined stream channels connecting them, so access by fish was limited. The water bodies investigated in this study included:

- Chitek Lake (52 25' Latitude 99 25' Longitude).
- Inland Lake (52 17' Latitude 99 42' Longitude).
- Crab Lake (52 16' Latitude 99 21' Longitude).
- Archies Lake (52 13' Latitude 99 20' Longitude).
- Spruce Lake (52 08' Latitude 99 26' Longitude).
- Barker Lake (52 20' Latitude 99 26' Longitude).
- Allen Lake (52 22' Latitude 99 09' Longitude).
- Katimak Lake (52 53' Latitude 99 21' Longitude).
- Kawinaw Lake (52 50' Latitude 99 30' Longitude).
- Unnamed Lake # 1 (52 15' Latitude 99 21' Longitude).
- Unnamed Lake # 2 (52 16' Latitude 99 27' Longitude).
- Unnamed Lake # 3 (52 12' Latitude 99 18' Longitude).
- Unnamed Lake # 4 (52 13' Latitude 99 17' Longitude).
- Unnamed Lake # 5 (52 13' Latitude 99 16' Longitude).
- Unnamed Lake # 6 (52 15' Latitude 99 15' Longitude).

Chitek Lake, along with other water bodies situated within a study area (i.e. Inland Lake, Crab Lake, Archies Lake, Spruce Lake, Barker Lake and Allen Lake) had traditionally been used by Skownan and Mallard communities; and, therefore, was targeted as a possible aquaculture opportunity for Waterhen Lake commercial fishers. The other lakes had been traditionally frequented by either Duck Bay / Camerville residents, while the Katimik-Kawinaw Lake area was looked upon as being within the Easterville community area of influence.

Since this report focuses only on those lakes that are regularly used by Waterhen Lake commercial fishers, the others (i.e. Katimak Lake, Kawinaw Lake and Unnamed Lakes # 1, 2, 3, 4, 5, 6) are excluded from the scope of this summary report. Furthermore, since Allen Lake, Baker Lake and Spruce Lake have not been actively stocked or commercially utilized by the Waterhen Lake commercial fishers; these water bodies are also not included in any further details of the report.

II. Chitek Lake

In September of 1976, a sampling program was initiated on Chitek Lake (located 35 kilometres air miles north of Skownan First Nation) which consisted of setting gill nets of 100 yards of 3-inch mesh size and 50 yards of 2-inch mesh size set on the west shore of Hunters Island Point (see **Figure A**). A minnow type trap net measuring 6 feet x 8 feet x 14 feet constructed of 3/8 inch mesh material was set in the same location.

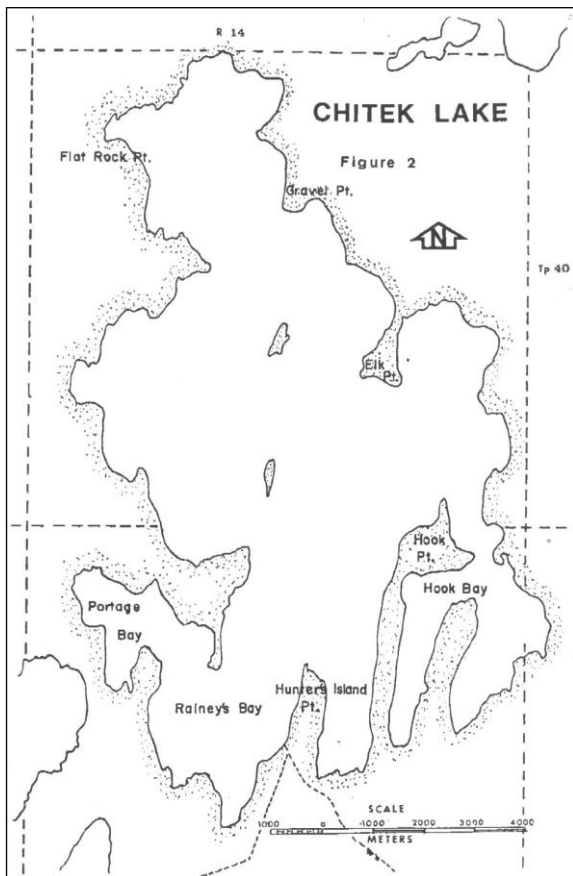


Figure A: Map of Chitek Lake

The lake was sounded with a Furuno FG 200 echo sounder mounted on an inflatable Bon-Air boat. The 39 transects made were used to produce a final contour map. A water sample was also collected from Rainey's Bay which was later analyzed using a Model DR-EL Hach Kit. Dissolved oxygen concentration was monitored on Chitek Lake as well as the other lakes using the Hach dry chemical method.

This initial investigation produced only a small quantity of minnows, consisting of Fathead Minnows (*Pimephales promelas*) and Brook Sticklebacks (*Culaea inconstans*). No large fish species were encountered.

Chitek Lake was initially stocked in 1977 with 2.4 million Walleye (*Sander vitreus*) fry. Monitoring of fish survival and growth was done between 1977 and 1982 on an annual basis using small fyke nets initially and then gill nets (see **Table I**). The test netting was usually done in the fall of the year and usually involved one overnight set.

Table I: History of Experimental Netting on Chitek Lake (Sept. 1976 to Aug. 1982).

Date	Type of Nets	Location of Set	Catch
Sept. 30 1976	Minnow trap	Rainey's Bay	Fathead & Stickleback minnows
"	100 yards – 3"	"	Nil
"	50 yards – 2"	"	Nil
Aug. 4 1977	Minnow trap	Rainey's Bay	Fathead & stickleback minnows
"	Minnow trap	Hook Bay	Fathead & stickleback minnows
Aug. 5 1977	Minnow trap	Hook Bay	9 Walleye & minnows
"	Minnow trap	Rainey's Bay	minnows
Aug. 5 1978	50 yards – 1 ½"	East Shore	Nil
"	50 yards – 2"	"	30 Walleye
"	50 yards – 3"	"	Nil
Sept. 27 1979	25 yards – 3"	Hunter's Is. Point	38 Walleye & 1 Northern Pike
"	25 yards – 2"	"	2 Walleye
"	25 yards – 1 ½"	"	1 Walleye
Aug. 27 1980	100 yards – 3 ¾"	Hunter's Is. Point	319 Walleye & 1 Northern Pike
June 1 1981	25 yards – 4 ¼"	Hunter's Is. Point	23 Walleye
"	25 yards – 4 ¼"	South Island	4 Walleye
Jan. 4 1982	50 yards – 1 ½"	Hunter's Is. Point	2 Walleye (yearling)
Aug. 31 1982	80 yards – 4 ¼"	Hunter's Is. Point	Nil
"	25 yards – 2"	Hunter's Is. Point	1 Walleye (yearling)

Trap nets in Chitek Lake, 82 days after stocking (August 5, 1977) produced nine Walleye fingerlings which averaged 11.8 cm in length. On August 5, 1978, 30 Walleye were captured and ranged in length from 24.8 to 28.8 cm (average 26.8 cm).

Although Northern Pike (*Esox lucius*) were not captured during the initial investigations, they were evident in 1979 when one large, adult specimen was captured. Walleye stomachs, also revealed the presence of Central Mudminnows (*Umbra limi*), which were not encountered during initial investigations.

Chitek Lake was test netted more thoroughly in late September of 1983. Four sets were made with a gang of gill nets consisting of 100 yards x 1 1/2", 200 yards x 3-inch, 75 yards x 4 1/4" and 400 yards of 5", 5 1/4" and 5 1/2" combined. The sets were made in four different locations in the south and near Hunter's Island Point and Rainey's Bay over a 24 hour period (see **Table II**). The fish caught were sampled for length, weight, sex and maturity. Three aging structures (scales, otoliths and dorsal spines) were collected from the first 137 walleye caught. Scales were collected from all other species.

Table II – Chitek Lake Walleye from experimental nets in 1983 (all meshes combined).

	Males			Females				Total			
	Age Class			Age Class				Age Class			
	0+	1+	2+	0+	1+	2+	6+	0+	1+	2+	6+
Frequency	1	2	133	1	5	160	2	2	7	293	2
Mean Lgth (cm)	16.2	34.6	37.7	19.6	29.6	38.2	57.7	17.9	31	38	57.7
Mean wt. (g)	50	560	718	110	318	722	2460	80	387	720	2460
No. Mature	0	1	130	0	0	9	2	0	1	139	2

On September 19th and 20th, 1984, experimental nets consisting of 125 yards x 1 1/2", 100 yards x 2", and 150 yards x 3" were split into three separate gangs and set at three different locations but all in the vicinity of Hunter's Island Point. Length, weight, sex, maturity and scale samples were collected from about half of the walleye caught (see **Table III**).

Table III – Chitek Lake Walleye from experimental nets in 1984 (all meshes combined).

	Males			Females				Total			
	Age Class			Age Class				Age Class			
	1+	2+	3+	1+	2+	3+	5+	1+	2+	3+	5+
Frequency	7	12	111	8	17	67	1	15	29	178	1
Mean Lgth (cm)	33.7	38.5	42.8	32.7	38.2	44.3	46.2	33.1	38.3	43.4	46.2
Mean wt. (g)	446	691	1052	433	712	1177	1320	439	703	1099	1320
No. Mature	3	12	108	0	1	66	1	3	13	174	1

In 1985, Chitek Lake was again stocked with 2.8 million Walleye fry. Since that time the lake has been more or less continually stocked with between 2 and 3.5 million fry Walleye fry annually (see **Table IV**). On October 10, 1985, 25 yards of 1 ½” mesh sized gill nets and 25 yards of 4 ¼” mesh sized gill nets were set for a 48 hour period about half way up the west side of Hook Point. The fifty yards of gill nets set in October 1985 produced 19 Walleye and one Northern Pike. The Walleye ranged in length from 41.4 to 53.0 cm (mean 46.8 cm) and in weight from 1040 grams to 2040 grams (mean 1477 grams).

Table IV - Annual Stocking of Walleye Fry in Chitek Lake.

Year	No. of Walleye Fry
1977	2,400,000
1985	2,800,000
1986	3,500,000
1990	6,000,000
1991	180,000
1992	2,000,000
1994	3,000,000
1995	4,000,000

1996	3,000,000
1997	3,000,000
1998	2,000,000
1999	2,000,000
2000	3,000,000
2001	1,000,000
2002	4,000,000
2003	1,250,000
2005	1,000,000
2007	1,000,000
2008	2,000,000
2010	1,000,000
2014	1,400,000
Total (to date)	49,530,000
Average Per Year	2.36 million

Testing netting was conducted on Chitek Lake in 2006, 2007, 2008 and 2009. In 2006 and 2008, however, cold weather thwarted proper test netting and not enough fish were caught to warrant keeping samples. Chitek Lake was successfully test netted in 2007, however, when two gangs of gill nets consisting of 50 yards of 3" and 50 yards of 2" were set on the west side of the north end of Chitek Lake on January 24th, 2007. These nets were lifted the following day and produced 15 walleye, which ranged from 1 to 3 years of age (see **Table V**).

A winter sampling protocol designed to provide defensible data was developed in 2010 and 2011. Since then this sampling protocol has been implemented on an annual basis with varying degrees of success.

Table V – *Chitek Lake Walleye from experimental nets in 2007 (all meshes combined).*

Fish #	Age	Weight (g)	Fork Length (cm)	Remarks
1	3	510	340	
2	2	310	300	
3	2	330	300	
4	2	310	290	
5	2	340	296	
6	3	400	320	2004 age class
7	3	460	350	
8	2	350	300	
9	2	260	292	
10	2	320	310	
11	2	340	310	
12	2	270	292	
13	2	340	306	
14	2	300	290	2005 age class
15	1	100	216	2006 age class

The commercial fishery on Chitek Lake was initially set up as an experimental fishery. An experimental fishery is used for special circumstances, primarily to authorize new harvesting opportunities not currently permitted in regulation. It allows a licence to be issued on a water-body that is not listed on the *Commercial Harvest Schedule* or for a special fishery (e.g. spring mullet). This management approach can also be issued in situations where a change in the management of the fishery (quota, mesh size, etc.) occurs, but a variance has not yet been issued (or is not the appropriate mechanism to authorize the fishery).

The initial experimental commercial fishing season on Chitek Lake was set for January 1st, 1981 and ended March 31st that year, with a Walleye quota of 13,600 kilograms and a minimum mesh size of 4 ¼". Four fishers participated but because catches were poor three fishers quickly dropped out. The final harvest production from Chitek Lake in 1981 was only 260 kilograms of Walleye and 576 kilograms of Northern Pike.

Based largely on the poor results from the preceding winter an open water experimental fishing season was established from June 15th to August 6th, 1981, with a lake quota of 13,600 kilograms and a minimum mesh size of 4 ¼". Eight fishers participated in this summer fishery and harvested 17,359 kilograms of Walleye and 105 kilograms of Northern Pike.

Another commercial fishery was again attempted in the winter of 1981-82 in which five licensed fishers caught 1,509 kilograms of Walleye and 105 kilograms of Northern Pike. Two commercial fishers participated in an open water fishery in May of 1982 but harvested only 319 kilograms of Walleye.

In the winter of 1983-84, three commercial fishers harvested 1,527 kilograms of Walleye as well as 12 kilograms of Northern Pike. The fishers agreed to pull out and report their findings to the rest of the Waterhen Lake fishers at a general meeting so that a course of action could be decided on. It was decided at that fishers' meeting to allow the fish to spawn for the first time in the spring of 1985 and then to harvest them the following winter. Subsequently, there was no commercial fishing season on Chitek Lake in 1984-85.

The winter fishery on Chitek Lake was re-opened in 1986 which commenced on January 7th, 1986, and closed March 31st, 1986. During this season 47 fishers participated and harvested 12,265 kilograms of Walleye and an additional 2,443 kilograms of Northern Pike. Following the success of this fishing season, the fishers agreed that a fund should be set up, to be called the Chitek Lake Management Fund, and that a 5 cent fee per kilogram would be donated to the fund by the fishers from Chitek Lake Walleye production. The money has been used to cover transportation costs associated with flying in Walleye fry for stocking in Chitek Lake, Inland Lake, Crab Lake and Archies Lake; as well as, improving access into Chitek Lake.

Chitek Lake continued to operate as an experimental fishery until 1989 when Chitek Lake was added to Manitoba's *Commercial Harvest Schedule* by authorizing a winter fishery open from December 11th, 1989, and closing on April 15th, 1990. The annual lake quota for Walleye and Northern Pike in aggregate was unlimited and the minimum gill net mesh size limit was set at 102 mm (4"). In 1990, the closed time for the Chitek Lake fishery was adjusted to open on January 1st, 1990, and close on March 31st, 1991 with an unlimited annual lake quota for Walleye and Northern Pike in aggregate and a minimum gill net mesh size limit of 102 mm (4"). The Chitek Lake fishery season was again varied in 1991 to open on December 2nd, 1991, and close on March 31st, 1992.

From 1993 to the present day, according to the *Commercial Fishing Season Variance Harvest Schedule*, the winter fishing season on Chitek Lake has been open from "to when ice first makes after December 1st to March 31st with an unlimited annual lake quota for Walleye and Northern Pike in aggregate and a minimum gill net mesh size limit of 102 mm (4"); unless varied as the following **Table VI** illustrates:

Table VI – *Season Dates, Net Size and Number of Nets.*

Year	Season Opens	Season Closes	Net Size (mm)	Number of Nets
2012/2013	Dec. 18, 2012	March 31, 2013	76	16
2013/2014	Dec. 11, 2013	March 31, 2014	76	16
2014/2015	Feb. 02, 2015	March 31, 2015	76	16
2015/2016	Jan. 04, 2016	March 31, 2016	76	16
2016/2017	Dec. 19, 2016	March 31, 2017	76	16

Table VII – *Annual commercial harvest production for Chitek Lake from 1981 to 2016 (kilograms – measured round weight).*

Season	Walleye (kg)	Northern Pike (kg)	Other (kg)	Total Production (kg)
1981 (winter)	260	576	0	836
1981 (summer)	17,359	105	0	17,464
1981-82 (winter)	1,509	105	0	1,614
1983-84 (winter)	1,527	12	0	1,539
1984	no commercial fishing season			
1985 (winter)	12,265	2,443	0	14,708
1986 (winter)	7	270	0	277
1987 (winter)	460	583	0	1,043
1988 (winter)	8,911	706	3 (perch)	9,620
1989-90 (winter)	73,201	38	0	73,239
1990-91 (winter)	20,232	10	0	20,242
1991-92 (winter)	73	0	0	73
1992-93 (winter)	2,729	0	0	2,729
1993-94 (winter)	10,240	0	0	10,240
1994-95 (winter)	4,416	61	0	4,477

1995-96 (winter)	0	0	0	0
1996-97 (winter)	0	0	0	0
1997-98 (winter)	0	0	0	0
1998-99 (winter)	115,689	0	0	115,689
1999-00 (winter)	65,640	28	69 (mullet)	65,737
2000-01 (winter)	38,950	0	11 (perch)	38,961
2001-02 (winter)	46,215	0	0	46,215
2002-03 (winter)	35,272	0	0	35,272
2003-04 (winter)	13,539	0	0	13,539
2004-05 (winter)	27,250	0	0	27,250
2005-06 (winter)	143,915	0	0	143,915
2006-07 (winter)	210,152	0	0	210,152
2007/08 (winter)	9,144	0	45 (perch)	9,189
2008/09 (winter)	50,012	0	104 (perch)	50,116
2009/10 (winter)	60,419	0	0	60,419
2010/11 (winter)	37,555	0	0	37,555
2011/12 (winter)	23,553	43	0	23,596
2012/13 (winter)	19,595	694	5,534 (perch)	25,832
2013/14 (winter)	65,984	618	5,461 (perch) + 102 (mullet) + 23 (lake whitefish)	72,188
2014/15 (winter)	28,309	127	430 (perch)	28,866
2015/16 (winter)	18,404	373	561 (perch)	19,344
2016/17 (winter)	10,550	267	1,173 (perch)	11,989

III. Inland Lake

Inland Lake (located approximately 35 kilometres north of Skownan First Nation) was stocked by aircraft in 1979 with 30,000 Smallmouth Bass (*Micropterus dolomieu*) fingerlings. This was done prior to any formal investigation of fish stocks although dissolved oxygen was measured in February 1978 to determine wintering capability.

Test netting was done in May and August of 1980 to assess the previous year's stocking success. Twenty-five yards each of 1 ½", 2", 3", 3 ¾", 4", 4 ¼" and 5" was used in May and 100 yards of 3" was used in August. This test netting resulted in 43 Yellow Perch (*Perca flavescena*) which averaged about one-half kilogram.

In October 1981, 85 yards of gill nets (60 yards of 3 ¾" and 25 yards of 4") was set from a fixed-winged aircraft. In 1981 the test nets produced only three large Yellow Perch.

Inland Lake was stocked with 2.4 million Walleye eggs from the Dauphin River Hatchery on May 23, 1984. The eggs were distributed on a clean gravel beach located on the west side of the lake. Since that time Inland Lake has been more or less regularly stocked with Walleye fry, except in 1986 when 5,000,000 Lake Whitefish (*Coregonus clupeaformis*) was released into the lake (see **Table VIII**).

Table VIII - Annual Stocking of Inland Lake.

Year	Amount Stocked	Fish Species
1979	30,000 (fingerling)	Smallmouth bass
1984	2,000,000 (fry)	Walleye
1986	5,000,000 (fry)	Lake whitefish
1990	6,000,000 (fry)	Walleye
1992	2,000,000 (fry)	Walleye
1997	3,000,000 (fry)	Walleye
1999	2,000,000 (fry)	Walleye
2000	3,000,000 (fry)	Walleye
2001	1,000,000 (fry)	Walleye
2002	4,000,000 (fry)	Walleye
2003	1,250,000 (fry)	Walleye
2006	1,500,000 (fry)	Walleye

2008	300,000 (fry)	Walleye
2010	1,000,000 (fry)	Walleye
2014	1,000,000 (fry)	Walleye
Total (to date)	28,050,000	Walleye
	30,000 (fingerling)	Smallmouth bass
	5,000,000 (fry)	Lake whitefish
Average Per Year	1.87 million	Walleye

The commercial fishery on Inland Lake, which first occurred in 1988, has always operated as an experimental winter fishery. At the annual commercial fishers meeting, held prior to the start of the commercial fishing season, commercial fishers and Departmental officials decided on the following dates, minimum mesh size and number of nets for the commercial fishing season on Inland Lake:

Table IX – *Inland Lake Commercial Fishing Season Dates, Net Size and Number of Nets.*

Year	Season Opens	Season Closes	Net Size (mm)	Number of Nets
2012/2013	Jan. 13, 2013	March 31, 2013	57	10
2013/2014	Jan. 13, 2014	March 31, 2014	57*	10
			76	16
2014/2015	March 1, 2015	March 31, 2015	57*	10
2015/2016	Jan. 18, 2016	March 31, 2016	57*	10
2016/2017	Jan. 16, 2017	March 31, 2017	57*	10
			76	16

* 57 mm nets no deeper than 16 mesh & no net sizes between 57 mm & 76 mm.

Based upon Inland Lake’s production history the most significant fish species harvested have been Walleye and Yellow Perch; with Northern Pike and Lake Whitefish representing minimal portions of the overall catch (see **Table X**).

Table X - Commercial harvest production on Inland Lake from 1988/89 to 2016/17 as per Freshwater Fish Marketing Corporation delivery records (kilograms – measured in round weight).

Year	Walleye (kg)	Yellow Perch (kg)	Northern Pike (kg)	Lake Whitefish (kg)	Total (kg)
1988/89	2	135	884	54	1,075
1989/90	0	15	22	1	38
1990/91	no commercial deliveries				
1991/92	2,318	305	216	0	2,839
1992/93	102	902	5	0	1,009
1993/94	38	1,283	0	0	1,321
1994/95	4,416	0	61	0	4,477
1995/96	no commercial deliveries				
1996/97					
1997/98					
1998/99	100,841	0	0	0	100,841
1999/00	28,149	1	3	0	28,153
2000/01	69,726	0	0	0	69,726
2001/02	9,668	0	0	0	9,668
2002/03	34,184	0	0	0	34,184
2003/04	51,210	6	0	0	51,216
2004/05	34,386	2	0	0	34,388
2005/06	17,172	21	0	0	17,193
2006/07	3,336	15	0	0	3,351
2007/08	5,884	1,523	9	0	7,416
2008/09	7,491	16,392	0	11	23,894

2009/10	19,723	18,302	0	0	38,025
2010/11	3,514	12,065	0	0	15,579
2011/12	14,244	30,311	168	11	44,734
2012/13	4,302	35,789	122	0	40,213
2013/14	1,559	12,189	35	10	13,793
2014/15	34,321	19,775	177	0	54,273
2015/16	17,379	28,412	937	19	46,754
2016/17	7,166	20,978	235	0	28,379

During the first ten years of operation (1988 to 1997), annual harvests did not exceed 5,000 kilograms; with no deliveries occurring in 1990, 1995, 1996 and 1997. Since 1998 to the present, annual harvests have averaged 34,831 kilograms being comprised mainly of Walleye with Yellow Perch becoming more prevalent since 2007 (see **Figure B**).

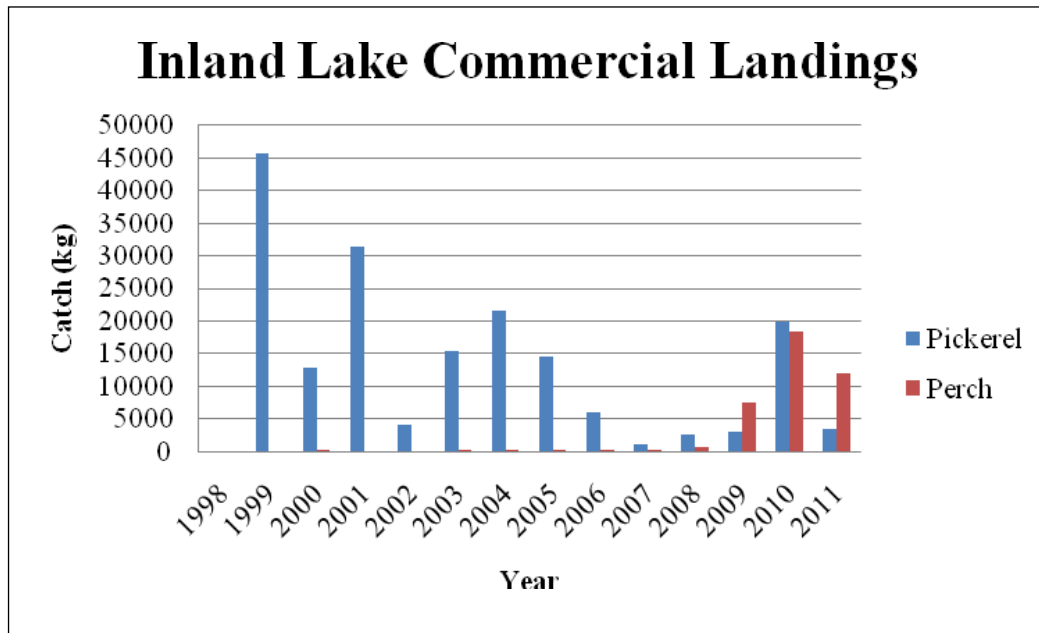


Figure B – Commercial landings on Inland Lake 1999 to 2011

Yellow Perch recently invaded Inland Lake and began to show up in significant amounts in 2008. Yellow Perch catch peaked in 2009/2010 at 18,302 kg. Walleye catch was also high in 2010 due to a successful fry stocking in 2009. In 2011, the Yellow Perch catch decreased because the Walleye crop was not very strong and effort diminished. In response to the increase in the Yellow Perch

population, the Branch implemented an experimental 64 millimetre (2 ½”) minimum mesh gillnet fishery to control the number of sized Yellow Perch that prey on Walleye fry. This 64 millimetre experimental fishery operated only during the month of February, 2012 (February 1st, 2012, to and including February 29th, 2012) when Walleye are believed to be least active.

Test net sampling was carried out on February 4, 11, and 23, 2011 with North American standard nets set overnight, because February was thought to be the time of winter when Walleye were least likely to occur as by-catch. All Yellow Perch in the 2.5” mesh were of market size or better and only one Walleye was caught in the 3” mesh. Nets were set in deeper water on the 23rd in order to try and catch Walleye to determine which meshes would gill Walleye. No Walleye were caught when targeted. A one year old Walleye was caught in the 3” mesh on February 4, 2011 and two young-of-the-year Walleye were caught in 1.5” mesh in 2011 sampling.

In an effort to reduce the number of Yellow Perch in Inland Lake as well as improve potential success rates of any future Walleye stocking efforts, the department implemented an experimental 59 millimetre (2 5/16-inch) minimum gill net salvage fishery to run from February 1st, 2012 to, and including, February 29, 2012 . The total allowable number of gill nets allowed to be used per fisher was set at six nets per fisher. The season for the experimental small mesh fishery was subsequently extended to be open on March 6th, 2012 to, and including, March 31, 2012.

IV. Crab Lake

Crab Lake (located approximately 30 kilometres west of Highway # 6 and approximately 10 kilometres south of Chitek Lake) was initially stocked on May 19, 1984 with 2.1 million Walleye fry distributed in the middle of the lake from the aircraft pontoons. A one metre diameters fyke net constructed of 3/8” oval nylon mesh was set along the west shore of the lake on September 18, 1984 and lifted two days later. The 1984 fyke net set produced 20 Walleye fingerlings, average size 15 to 20 centimetres.

A second stocking was made in Crab Lake on May 15, 1985 1 million Walleye fry from the Dauphin River Hatchery was released into the lake. On October 10, 1985 a small mesh fyke net and 25 yards of 2” gill net were set at the same location as the 1984 test netting and removed two days later. In 1985 no Walleye fingerlings were captured in the fyke net but 36 yearling Walleye were caught in the gill net. These Walleye averaged 27.7 centimetres in length and 255 grams (range 220 grams to 320 grams).

Following 1985, Crab Lake has been stocked with Walleye fry an additional five more times (see **Table XI**).

Table XI - Annual Stocking in Crab Lake

Year	No. of Walleye Fry
1984	2,100,000
1985	1,000,000

1986	500,000
1999	500,000
2000	1,000,000
2001	500,000
2008	200,000
2014	300,000
Total (to date)	6,100,000

The commercial fishery on Crab Lake, which first occurred in 2000, has always operated as an experimental winter fishery. Commercial harvest production figures from the Freshwater Fish Marketing Corporation indicate that Crab Lake is not commercially fished every year.

Table XII – Crab Lake Commercial Fishing Season Dates, Net Size and Number of Nets

Year	Season Opens	Season Closes	Net Size (mm)	Number of Nets
2000/2001	Dec. 15, 2000	Dec. 31, 2000	76	6
2006/2007	Dec. 04, 2006	March 31, 2007	76	6
2012/2013	Dec. 03, 2012	Jan. 02, 2013	57	10
	Dec. 03, 2012	Jan. 02, 2013	76	10
2014/2015	Dec. 15, 2014	Dec. 30, 2014	76	10
2015/2016	Dec. 07, 2015	Feb. 01, 2016	76	10
2016/2017	Dec. 05, 2016	March 24, 2017	76	10

Based upon Crab Lake’s production history the only fish species harvested is Walleye, except for one season where Northern Pike constituted a small portion of total deliveries (see **Table XIII**).

Table XIII - Commercial harvest production on Crab Lake as per Freshwater Fish Marketing Corporation delivery records (kilograms – measured in round weight).

Year	Walleye (kg)	Northern Pike (kg)	Yellow Perch (kg)	Total Annual Production (kg)
2000	5,619	0	0	5,619
2001	5,766	0	0	5,766
2002	2,617	0	0	2,617

2003 - 2005	no commercial deliveries			0
2006	6,890	51	0	6,941
2007 - 2008	no commercial deliveries			0
2009	10,254	0	0	10,254
2010	1,359	0	0	1,359
2011	2,759	0	0	2,759
2012	no commercial deliveries			0
2013	no commercial deliveries			0
2014	2,505	0	348	2,853
2015	413	0	2004	2,417
2016	no commercial deliveries			0
Total (to date)	38,182	51	2,352	40,585

V. Archies Lake

Archies Lake (located 28 kilometres west of Highway # 6 and approximately 10 kilometres south of Chitek Lake) was initially stocked with 1.5 million Lake Whitefish fry from the Grand Rapids Hatchery on May 19th, 1982.

In 1985, Archies Lake was stocked with 1,000,000 Walleye fry and subsequently again in 1989, 1999, 2000 and 2001 (see **Table XIV**).

Table XIV - Annual Stocking in Archies Lake

Year	Amount Stocked	Fish Species
1982	1,500,000 (fry)	Lake whitefish
1985	1,000,000 (fry)	Walleye
1999	500,000 (fry)	Walleye
2000	1,000,000 (fry)	Walleye

2001	500,000 (fry)	Walleye
Total (to date)	3,000,000 (fry)	Walleye
	1,500,000 (fry)	Lake whitefish

In January of 1984 a 50 yard piece of 3” mesh gill net was set for one night to check on stocking success and in October of 1985, 100 yards of 3 ¾” inch, 50 yards of 4 ¼” and 50 yards of 5 ¼” were set for 48 hours.

No fish were caught in Archies Lake in 1984 but in 1985 the test net produced 51 Lake Whitefish. These Lake Whitefish averaged 39.6 centimetres and 614 grams.

The commercial fishery on Archies Lake has always operated as an experimental winter fishery. Commercial harvest production figures from the Freshwater Fish Marketing Corporation indicate that Archies Lake is not commercially fished on a regular basis and characterized by long periods of time where no harvesting occurs on the lake (see **Table XV**).

Table XV - Commercial harvest production on Archies Lake as per Freshwater Fish Marketing Corporation delivery records (kilograms – measured in round weight).

Year	Walleye (kg)	Yellow Perch (kg)	Northern Pike (kg)	Lake Whitefish (kg)	Total (kg)
1986	3	2	3	22,375	22,383
1987	no commercial deliveries				
1988	51	0	0	0	51
1989 to 1999	no commercial deliveries				
2000	3,224	0	0	0	3,224
2001 to 2009	no commercial deliveries				
2010	27	1,314	0	0	1,341
2011	no commercial deliveries				
2012	no commercial deliveries				
2013	no commercial deliveries				

2014	no commercial deliveries				
2015	0	1,230	0	0	1,230
2016	no commercial deliveries				

Appendix 2: Management Adjustments on Waterhen Lake

Management Milestones	
<i>Year</i>	<i>Description</i>
1972	Lake quota for Walleye, Sauger and Northern Pike reduced from 45,360 kilograms (100,000 pounds) to 34,020 kilograms (75,000 pounds).
1979 / 1980	Northern Pike and Sauger removed from quota. Only fish species listed under the quota is walleye.
1980	Lake quota for Walleye reduced from 34,020 kilograms (75,000 pounds) to 27,300 kilograms (60,186 pounds).
1983	Lake quota for Walleye increased from 27,300 kilograms (60,186 pounds) to 30,900 kilograms (68,122 pounds).
1987	Lake quota for Walleye increased from 30,900 kilograms (68,122 pounds) to 36,300 kilograms (80,000 pounds) – <i>Commercial Fishing Season Variance (CFSV) # 87/7</i> .
1992 & 1993	An <i>experimental 3” (76mm)</i> fishery for Northern Pike and Yellow Perch operated on Waterhen Lake from January to March.
1994 & 1995	Discontinuation of experimental fishery because of concerns over the harvest of small Walleye.
1996	A 3” (76 mm) Yellow Perch fishery was authorized under <i>Commercial Fishing Season Variance (CFSV # 96/1)</i> from January 15 th , 1996 to March 15 th , 1996. A number of management measures designed to protect walleye stocks were implemented: <ul style="list-style-type: none"> • lake zoning that would preclude the 3” (76 mm) mesh nets from designated areas of the lake; and, • establishment of a 10% tolerance limit on the number of Walleye harvested.
1997	A 3” (76 mm) Yellow Perch fishery was authorized under <i>Commercial Fishing Season Variance (CFSV # 97/1)</i> from January 15 th , 1997 to February 28 th , 1997. A number of measures designed to protect Walleye stocks were implemented: <ul style="list-style-type: none"> • lake zoning that would preclude the 3” (76 mm) mesh nets from designated areas of the lake; and, • establishment of a 10% tolerance limit on the number of Walleye harvested.

1998	<p>A 3” (76 mm) Yellow Perch fishery was authorized under <i>Commercial Fishing Season Variance</i> (CFSV # 1998/1) from January 15th, 1998 to February 28th, 1998. A number of measures designed to protect Walleye stocks were implemented:</p> <ul style="list-style-type: none"> • lake zoning that would preclude the 3” (76 mm) mesh nets from designated areas of the lake; and, • establishment of a 10% tolerance limit on the number of walleye harvested.
2000	<p>A 3” (76 mm) Yellow Perch fishery was authorized under <i>Commercial Fishing Season Variance</i> (CFSV # 2000/1) from January 28th, 2000 to March 2nd, 2000. A number of measures designed to protect Walleye stocks were implemented:</p> <ul style="list-style-type: none"> • lake zoning that would preclude the 3” (76 mm) mesh nets from designated areas of the lake; and, • establishment of a 10% tolerance limit on the number of Walleye harvested.
2001	<p>A 3” (76 mm) Yellow Perch fishery was authorized under <i>Commercial Fishing Season Variance</i> (CFSV # 2001/3) from February 12th, 2001 to March 15th, 2001. A number of measures designed to protect Walleye stocks were implemented:</p> <ul style="list-style-type: none"> • lake zoning that would preclude the 3” (76 mm) mesh nets from designated areas of the lake; and, • establishment of a 10% tolerance limit on the number of Walleye harvested.
2002	<p>A permanent year-round Carp and Sucker fishery for Waterhen Lake was authorized under <i>Commercial Fishing Season Variance</i> (CFSV # 2002/4). The minimum gill net mesh size limit is 8” (203 mm) with an unlimited annual quota.</p>

Lake Quota	
<i>Year</i>	<i>Limit</i>
Prior to 1972	45,360 kilograms (100,000 pounds)
1972 to 1980	34,020 kilograms (75,000 pounds)
1980 to 1982	27,300 kilograms (60,186 pounds)
1983 to 1986	30,900 kilograms (68,122 pounds)
1987 to present	36,300 kilograms (80,000 pounds)

Mesh Size	
<i>Year</i>	<i>Mesh Size Extension</i>
1915 to 1927	108 mm (4 ¼")
1927 to 1934	102 mm (4")
1934 to 1936	108 mm (4 ¼")
1936 to 1945	102 mm (4")
1946 to 1948	83 mm (3 ¼")
1949 to 1960	102 mm (4")
1961 to 1970	108 mm (4 ¼")
1971 to 1994	102 mm (4")
1995 to present	95 mm (3 ¾")

Commercial Fishing Season	
<i>Year</i>	<i>Dates</i>
1917 – 1922	November 20 th to last day of February.
1922 – 1928	November 15 th to last day of February.
1928 – 1934	November 11 th to March 15 th .
1934 – 1935	2 nd Monday in December to 2 nd Saturday in March.
1936 – 1947	November 11 th to 2 nd Saturday in March.
1947 – 1948	November 10 th to February 15 th .
1950 – 1951	November 11 th to February 15 th , extended to March 12, 1951.
1952 – 1953	November 11 th to February 15 th , extended to February 28 th , 1953.
1953 – 1954	November 11 th to February 15 th , extended to March 6 th , 1954.
1954 – 1955	November 11 th to February 15 th , extended to March 12 th , further to March 26 th , 1955.

1955 – 1956	November 11 th to February 15 th , extended to March 10 th , further to March 17 th , 1956.
1956 – 1957	November 11 th to February 15 th , extended to March 9 th , 1957.
1957 – 1958	November 11 th to February 15 th , extended to March 8 th , further to March 15 th , 1958.
1958 – 1959	November 11 th to February 15 th , extended to March 14 th , 1959.
1959 – 1960	November 11 th to February 15 th , extended to March 12 th , 1960.
1960 – 1961	November 1 st to March 11 th , 1961.
1961 – 1968	First day that ice makes after November 1 st to March 10 th .
1968 – 1969	First day that ice makes after November 1 st to March 10 th , extended to March 31 st , 1969.
1969 – 1970	First day that ice makes after November 1 st to March 10 th , extended to March 31 st , 1970.
1970 – 1971	First day that ice makes after November 1 st to March 10 th , extended to March 31 st , 1971.
1971 – Present	First day after November 1 st that ice makes to March 31 st .

Appendix 3: Lake Waterhen Walleye & other species production from 1931 to 1986

Year	WALLEYE		Other Species (Combined)		Total	
	Marketed Wt	Round Wt	Marketed Wt	Round Wt	Marketed Wt	Round Wt
1931	2,495	0	7,620	0	10,115	0
1932	6,260	0	1,905	0	8,165	0
1933	7,711	0	3,629	0	11,340	0
1934	7,620	0	4,128	0	11,748	0
1935	18,144	0	14,696	0	32,840	0
1936	9,752	0	22,816	0	32,568	0
1937	8,845	0	33,611	0	42,456	0
1938	5,352	0	18,189	0	23,541	0
1939	3,402	0	21,636	0	25,038	0
1940	20,593	0	8,890	0	29,484	0
1941	408	0	22,680	0	23,088	0
1942	544	0	68,130	0	68,674	0
1943	8,981	0	34,337	0	43,318	0
1944	227	0	5,398	0	5,625	0
1945	1,905	0	48,580	0	50,485	0
1946	10,433	0	66,950	0	77,383	0
1947	34,518	0	113,489	0	148,007	0
1948	45,994	0	51,800	0	97,795	0
1949	29,166	0	42,003	0	71,169	0
1950	34,382	0	58,196	0	92,578	0
1951	15,150	0	73,346	0	88,496	0
1952	17,735	0	30,572	0	48,308	0
1953	24,040	0	32,885	0	56,926	0
1954	20,956	0	30,073	0	51,029	0
1955	23,451	0	51,710	0	75,160	0
1956	6,078	0	7,303	0	13,381	0
1957	17,781	0	53,116	0	70,896	0
1958	29,484	0	98,248	0	127,732	0
1959	55,111	0	40,279	0	95,390	0
1960	40,098	0	53,841	0	93,939	0
1961	5,715	0	26,127	0	31,842	0
1962	5,307	0	34,246	0	39,553	0
1963	7,620	0	49,941	0	57,561	0
1964	16,284	0	34,609	0	50,893	0
1965	19,822	0	66,361	0	86,183	0
1966	18,915	0	57,289	0	76,204	0
1967	10,569	0	38,964	0	49,532	0
1968	3,674	0	33,974	0	37,648	0
1969	11,657	0	50,938	0	62,596	0
1970	25,823	26,612	41,495	58,023	67,318	84,635
1971	13,080	13,817	21,225	26,674	34,305	40,491
1972	4,885	5,102	22,497	30,949	27,383	36,051
1973	9,344	9,940	24,496	34,281	33,840	44,221
1974	10,772	11,120	15,444	22,436	26,216	33,556

1975	16,822	16,958	29,523	37,454	46,345	54,412
1976	27,392	28,367	20,846	23,432	48,238	51,799
1977	19,363	20,003	52,339	64,089	71,702	84,092
1978	21,795	22,527	64,500	83,542	86,296	106,069
1979	22,143	22,944	60,335	75,972	82,478	98,916
1980	24,563	25,678	61,475	73,497	86,037	99,176
1981	15,404	15,811	42,289	48,528	57,692	64,338
1982	24,180	24,388	56,688	66,945	80,868	91,333
1983	19,156	19,277	17,084	23,677	36,240	42,953
1984	34,052	34,361	37,672	52,627	71,724	86,988
1985	11,849	12,011	29,437	38,146	41,286	50,157
1986	13,667	14,128	36,536	49,622	50,203	63,750

Appendix 4: Waterhen Lake annual production (All Species) from 1987/88 to 2016/17 (measured in round weight – kilograms).

Waterhen Lake - FPMC Production Records - Round Weights (kg)													
Year	Suckers	% of Annual Harvest	Perch	% of Annual Harvest	Pike	% of Annual Harvest	Sauger	% of Annual Harvest	Walleye	% of Annual Harvest	Whitefish	% of Annual Harvest	Total
1987	20,400	22.1%	5,535	6.0%	34,517	37.5%	246	0.3%	18,354	19.9%	13,019	14.1%	92,157
1988	1,448	1.9%	5,348	6.9%	26,237	33.8%	420	0.5%	30,717	39.5%	10,596	13.6%	77,689
1989	7,584	16.6%	4,310	9.4%	19,302	42.3%	340	0.7%	12,831	28.1%	1,219	2.7%	45,627
1990	0	0.0%	3,798	7.5%	26,272	52.1%	548	1.1%	14,175	28.1%	3,397	6.7%	50,453
1991	34,311	14.4%	23,416	9.8%	146,881	61.5%	1,643	0.7%	26,593	11.1%	3,072	1.3%	238,831
1992	0	0.0%	5,065	7.2%	44,382	63.0%	366	0.5%	19,610	27.8%	1,040	1.5%	70,462
1993	0	0.0%	4,424	12.8%	13,986	40.5%	68	0.2%	15,142	43.8%	607	1.8%	34,554
1994	0	0.0%	10,184	31.5%	7,887	24.4%	55	0.2%	14,117	43.7%	34	0.1%	32,318
1995	34,213	49.3%	5,972	8.6%	14,776	21.3%	106	0.2%	13,173	19.0%	772	1.1%	69,461
1996	39,915	57.6%	6,123	8.8%	9,842	14.2%	62	0.1%	12,100	17.5%	727	1.0%	69,294
1997	37,162	62.8%	4,606	7.8%	9,430	15.9%	67	0.1%	6,249	10.6%	439	0.7%	59,154
1998	67,215	77.3%	5,601	6.4%	6,192	7.1%	61	0.1%	6,316	7.3%	594	0.7%	86,921
1999	100,902	75.7%	5,953	4.5%	6,780	5.1%	18	0.0%	17,604	13.2%	1,918	1.4%	133,357
2000	38,449	70.7%	1,094	2.0%	5,700	10.5%	4	0.0%	6,529	12.0%	2,531	4.7%	54,351
2001	15,419	50.3%	10,205	33.3%	1,867	6.1%	0	0.0%	2,173	7.1%	953	3.1%	30,628
2002	15,843	61.1%	1,121	4.3%	4,471	17.2%	0	0.0%	114	0.4%	777	3.0%	25,920
2003	11,966	76.0%	63	0.4%	1,658	10.5%	0	0.0%	1,562	9.9%	309	2.0%	15,736
2004	10,868	21.8%	185	0.4%	4,834	9.7%	1	0.0%	32,172	64.5%	1,505	3.0%	49,847
2005	11,328	17.0%	70	0.1%	9,319	13.9%	1	0.0%	45,686	68.4%	421	0.6%	66,826
2006	12,295	18.5%	112	0.2%	19,732	29.6%	1	0.0%	34,163	51.3%	186	0.3%	66,591
2007	25,609	27.4%	517	0.6%	42,739	45.8%	1	0.0%	23,979	25.7%	500	0.5%	93,391
2008	42,708	42.3%	146	0.1%	26,702	26.4%	6	0.0%	28,933	28.6%	2,562	2.5%	101,076
2009	32,183	41.0%	151	0.2%	17,149	21.8%	11	0.0%	26,156	33.3%	2,319	3.0%	78,521
2010	23,110	29.1%	313	0.4%	31,837	40.1%	13	0.0%	20,743	26.2%	3,277	4.1%	79,301
2011	21,473	26.9%	306	0.4%	24,564	30.7%	19	0.02%	29,116	36.4%	4,343	5.4%	79,821
2012	6,491	10.0%	64	0.0%	23,989	35.0%	7	0.0%	34,584	51.0%	2,969	4.0%	68,104
2013	6,972	11.0%	118	0.0%	30,588	47.0%	10	0.0%	23,163	36.0%	4,145	6.0%	64,996
2014	5,403	11.0%	73	0.0%	17,423	36.0%	12	0.0%	23,655	48.0%	2,383	5.0%	48,949
2015	15,851	32.5%	185	0.0%	17,928	37.0%	3	0.0%	12,650	26.0%	2,206	4.5%	48,823
2016	9,304	18.0%	139	0.0%	19,818	39.0%	11	0.0%	19,377	39.0%	2,191	4.0%	50,840
Total	641,450		105,015		592,407		4,090		548,573		61,706		1,950,899
% of Annual Total		33%		6%		31%		0%		27%		3%	100%
Aver per Year	22,119		3,751		21,865		141		18,916		2,282		69,675

Appendix 5: Waterhen Lake Sampling Protocol


Gear: North American standard gillnet (Appendix A, Table A.3 in Bonar et al 2009).

Feature	Description
Net type	Monofilament, 8-panel, sinking
Panel sizes	3.1 m (10 ft) long x 1.8 (6 ft) deep (Benthic) or 6 m (20 ft) deep (Pelagic)
Mesh bar size	19, 25, 32, 38, 44, 51, 57, 64 mm (0.75, 1.00, 1.25, 1.50, 1.75, 2.00, 2.25, 2.50 in)
Monofilament diameters corresponding to mesh sizes	0.28, 0.28, 0.28, 0.33, 0.33, 0.33, 0.40, 0.40 mm (0.011, 0.011, 0.011, 0.013, 0.013, 0.013, 0.016, 0.016 in)
Mesh order	38, 57, 25, 44, 19, 64, 32, 51 mm (1.50, 2.25, 1.00, 1.75, 0.75, 2.50, 1.25, 2.00 in)
Hanging ratio	0.5
Soak time	Set late afternoon and retrieved the following morning, so that sample period encompasses both crepuscular periods. For sensitive species or populations, 2 hr sets during daylight
Catch per effort	Fish per net-night

Time of year:

Sampling will occur in the last week of September and first week of October corresponding to water temperatures between 10°C and 15°C.

Appendix 6: Commercial Fishery Patrol Report

Commercial Fish Patrol Log  Manitoba Conservation														
REGION:			Officers:		Area:									
Date:														
Patrol Time					Weather	sky								
start:						wind								
conclude:						temp								
Operator /Fisherman										Fish				
Licence #	Name		Location / GPS		Area	Time	Whitefish	Pike	Pickereel	Sauger	Perch	Tulibee	Myria	Other
	hired hand					#nets	comments:							
	helpers													
	hired hand					#nets	comments:							
	helpers													
	hired hand					#nets	comments:							
	helpers													
	hired hand					#nets	comments:							
	helpers													
	hired hand					#nets	comments:							
	helpers													
	hired hand					#nets	comments:							
	helpers													

Appendix 7: Waterhen Lake Research / Assessment Bibliography

I. Research Studies:

- Derksen, A.J. 1979. *A summary report of mercury contamination in fishes from Manitoba waters to March, 1971*. Manitoba Department of Natural Resources. Fisheries Branch MS Report No. 79-55, 43 p.
 - The report is a summary of test results for total mercury residues in fishes from various Manitoba waters taken from December 1969 to March 1st, 1971. Most data for fish from various waters were grouped into major drainage or river systems. The major river systems considered in the report were the Saskatchewan, Churchill, Nelson, Hayes, Winnipeg, Red and Assiniboine Rivers. Data for Lake Winnipeg fish were treated separately. A number of other waters (which included Waterhen Lake), although they may be connected with one of the above drainages, were grouped together as miscellaneous waters.
 - Mercury contamination in fishes was examined from the viewpoint of being greater 0.50 ppm and more than 0.25 ppm. Fishes which contained more than 0.25 ppm mercury were considered to possess elevated levels of mercury, while those with more than 0.50 ppm were deemed contaminated.
 - The mercury concentration in fish from Waterhen Lake were as follows:

Species	No. of Samples	Hg – ppm (Mean)
Northern Pike	1	0.20
Walleye	1	0.33
Yellow Perch	1	0.15

- Edwards, G.A. and W. N. Howard. 1980. *Little Waterhen River Fish Movement and Walleye Tagging Study, 1971-1972*. Manitoba Department of Natural Resources. Fisheries Branch MS Report No. 80-8, 53 pp.
 - Fluctuating Walleye stocks in Lake Winnipegosis and the contention by Lake Winnipegosis commercial fishers that Walleye were migrating downstream from and out of Lake Winnipegosis led to the fish movement study.
 - Tagging was conducted from June 2, 1971 to June 6, 1972. Two trap nets were used for the project. The traps were set facing one another in the river which served to trap fish which moved either upstream or downstream. The trap nets, located at the mouth of the Little Waterhen River near Skownan First Nation, were removed during freeze-up for the months of November and December, 1971, and were reset on January 18, 1972. The trap nets were again removed during the spring break up from April 11 to May 4, 1972.

- Results:
 - For most Little Waterhen River species, abundance was greatest in the open water period.
 - During the entire project 5,349 Walleyes were caught in the traps; 1,394 moving upstream and 3,955 downstream. Of these fish, 1,327 were tagged from the upstream trap and 3,653 from the downstream trap for a total of 4,980 tagged fish. The difference of 369 fish was caused by the recurrence of tagged fish in the traps.
 - Greatest Walleye numbers were captured during the summer and fall of 1971. During this period, 4,676 Walleyes were captured which represents 87.5% of the total number caught during the project. Most of these (78.7%) were captured in the downstream trap.
 - A total of 4,860 Northern Pike were captured from both traps for the whole project with 74.5% being caught in the downstream trap and 25.5% in the upstream.
 - An insignificant number of Sauger was caught during the project. Only 44 were captured and 20 of these caught in the downstream trap during May of 1972.
 - Throughout most of the year, Lake Whitefish movements were minimal. During September and October of 1971, 640 were captured in the upstream trap which represented almost 87% of the 737 Lake Whitefish caught during the project. Only 20 Lake Whitefish were captured in the downstream trap throughout the year.
 - The Cisco catch totalled 3,169 fish for the whole project, and 81% of them were captured in the downstream trap.
 - Only 492 Yellow Perch were captured during the project. Yellow Perch movement was light and random throughout most of the year.
 - Only 164 Goldeye (*Hiodon alosoides*) were captured and 160 of these were caught during the summer of 1971.
 - The suckers captured during the project were comprised of two species; the White Sucker and Shorthead Redhorse. No separate tally of each sucker species were kept, however, White Suckers represented the highest percentage of the total catch (approximately 95%). Suckers were the most numerous fish caught in the traps; more than 133,000 suckers were captured.
 - A total of 12,389 Burbot (*Lota lota*) were captured during the project; with 69% captured in the downstream trap. Major Burbot movements occurred in the late fall, winter and early spring. During the other four months a total of only 38 Burbot were captured.
 - Four other fish species were captured during the project:
 - ✓ Five Common Carp were captured during June and July of 1971.
 - ✓ One Channel Catfish (*Ictalurus punctatus*) appeared in June of 1971.
 - ✓ Three Quillback (*Carpoides cyprinus*) were caught in July 1971.
 - ✓ 54 Freshwater Drum (*Aplodinotus grunniens*) were captured during June, July and August of 1971; 49 of these moving upstream.
 - Tagging Results:
 - ✓ Waterhen Lake reported the highest number of Walleye recaptures (22.8% of the total tagged) followed by the Waterhen River (6.8%). Lake Manitoba and Lake Winnipegosis produced only 4.3% of the total tagged.
 - ✓ Of the 4,980 Walleyes tagged, 1,808 (36%) were recovered between 1971 and 1976. Only 1,686 of the recaptured were returned with known recovery dates. Lake Manitoba and Lake Winnipegosis commercial fisheries were the most lax at providing complete recapture information.

- Inland Waters Directorate, 1988. *Historical Streamflow Summary Manitoba to 1987*. Water Survey of Canada, Environment Canada, Ottawa.
- Valiant, H. 1978. *Angler creel census in the Lake Winnipegosis, Waterhen, Lake Manitoba, and Dauphin areas in 1977 and 1978*. Manitoba Department of Mines and Natural Resources, Environment MS Report No. 78-68, 88pp.
- Valiant, H. and T. I. Smith. 1979. *Angler Creel Census in the Lake Winnipegosis, Waterhen, Lake Manitoba, and Dauphin Areas in 1977 and 1978*. Manitoba Department of Natural Resources. Fisheries Branch MS Report No. 79-68, 88 pp.
 - An intensive summer creel census was carried out in 1977 in Lake Winnipegosis, Lake Waterhen, Lake Manitoba, Dauphin River and the Fairford-St. Martin area. In 1978, the census was repeated in part of the Waterhen and in the Fairford-Dauphin River area.
 - In a stratified sampling procedure, all fishing parties were interviewed on each sampling day as they left the angling site. Catch by species, hours spent angling, number of anglers per party and angler's place of residence were recorded. For each area, a sample of walleye were measured, weighed and scale samples taken.
 - Angler's place of residence were as follows: Local residents ranged from 0.6% to 54.9%; other Manitobans ranged from 48.0% to 91.1%; Canadians (non-Manitoban) ranged from 0.3% to 8.1%; and Americans ranged from 5.8% to 19.6% of the total numbers of anglers sampled for each area.
 - Success in 1977 ranged from 0.12 to 0.57 Walleye per angler-hour over the selected areas.
 - In 1978, production at Dauphin River was similar to that estimated for 1977, while Waterhen production declined. It appeared that this decrease was due to decreased effort by anglers. Total estimated angler-hours went from 55,000 in 1977 to 31,000 in 1978.
 - Average number of walleye caught per angler-hour, however, increased from 0.36 in 1977 to 0.60 in 1978.
- Pellissier, Tim. *The age structure of Northern Pike (Esox lucius) in Waterhen Lake and what it means for the sustainability of the fishery*. University of Winnipeg, Honour BSc Thesis (2012).
 - The fundamental aim of the project was to obtain demographic information about Northern Pike in Waterhen Lake as a preliminary step towards the eco-certification of the fishery under the Marine Stewardship Council (MSC) program.
 - This included determining the age distribution (i.e. using opercular bones to estimate fish age), size and sex structure of the population, as well as, the age maturity of the stock and the age of recruitment to the fishery.

- Conclusions:
 - The operculum is a reliable aging structure for Northern Pike in Waterhen Lake.
 - Male Northern Pike in Waterhen Lake appear to reach sexual maturity at 2 years of age or less; females at 2-3 years of age or less. Age of maturity is lower than was expected based on latitude alone, possibly representing an adaptation to fishing pressure.
 - Gill-net mesh size does not significantly affect the vulnerability of larger Northern Pike to capture, but it does significantly affect the vulnerability of smaller Northern Pike to capture.
 - Mesh size regulations currently in place on Waterhen Lake were determined to be sufficient to prevent the harvest of pre-productive Northern Pike on Waterhen Lake.
 - The length of the operculum is strongly associated with both the total length and body mass of Northern Pike.
 - Lee's Phenomenon (i.e. the larger members of each class experience higher mortality resulting in lower than expected back-calculated lengths for the smaller survivors) is apparent in this population, possibly indicating the effect of the fishery on Northern Pike mortality.
 - Further research targeting 1- and 2-year old Northern Pike, as well as, an assessment of the status of older age classes of Northern Pike on Waterhen Lake, is recommended.

- Geisler, Marianne E. *Age and Growth Analysis of Walleye (Sander vitreus) in Waterhen Lake*. University of Winnipeg, Honour BSc Thesis (2012).
 - The objective of this thesis research was to assess the age, size and sex structure of Walleye in Waterhen Lake. The specific objectives of this study were five-fold:
 - To assess the age structure of male and female Walleye in Waterhen Lake.
 - To assess the age of maturity in male and female Walleye in Waterhen Lake.
 - To assess the vulnerability of different age/size classes of Walleye to gill-nets of different mesh size.
 - To assess the current harvest policy with respect to mesh size restrictions – i.e. are walleye being harvested before they reach maturity.
 - To develop statistical models of the relationship between the dimensions of opercular bones and the length and mass of Waterhen Lake Walleye. This will allow future workers to collect discarded heads from the commercial fishery to assess the age and size structure of fish in the harvest.

 - Conclusions:
 - Opercular bones are a valid aging structure for Walleye, having a high correlation with ages determined from otoliths, a known valid aging structure.
 - Male Walleye from Waterhen Lake mature at an age range of 1-4 years and female Walleye mature from 4-6 years and therefore first spawn at age 2-5 years (for males) and 5-7 years (for females).
 - Back-calculation of length-at-age underestimates mean empirical length-at-capture due to Lee's Phenomenon.
 - Current harvest policy at Waterhen Lake which enforces a minimum mesh size of 3.75 inches (95 mm) may be sufficient to prevent recruitment overfishing of the Walleye fishery, but analysis of a larger sample size is recommended.

- With this initial study of the Walleye fishery complete, Waterhen Lake could become eco-certified after a five-year assessment period which will determine sustainability.

II. Independent 3rd Party Assessments / Surveys:

- Pre-assessment Final Report for the Waterhen Lake Walleye Commercial Gillnet Fishery:
 - In 2009, Manitoba Water Stewardship contracted TAVEL Certification Inc. (division of Moody Marine Ltd.) to conduct an Marine Stewardship Council (MSC) eco-certification pre-assessment survey of the Waterhen Lake Walleye commercial net fishery. (Pre-assessment of the fishery was completed August 2010).
 - The pre-assessment report set out the results of a pre-assessment of the Walleye (*Sander vitreum*) commercial gillnet fishery conducted in Waterhen Lake, Manitoba in relation to the Marine Stewardship Councils (MSC) Principles and Criteria for Sustainable Fishing (the ‘MSC standard’). The principle aim of the pre-assessment was to advise Manitoba Conservation and Water Stewardship (Fisheries Branch) of the possibilities for MSC certification by identifying the potential issues related to each MSC Performance Indicator (PI) (i.e. specific areas against which the fishery is assessed), that may prevent or complicate a certification.
 - The pre-assessment survey concluded that, at the time the pre-assessment was undertaken, the Waterhen Lake commercial Walleye gillnet fishery was considered unlikely to pass a full certification assessment. However, it was recognized that the Manitoba Conservation and Water Stewardship (Fisheries Branch) was in the process of developing a management plan for the fishery. It was therefore recommended that a new management plan be to address the following deficiencies highlighted in the pre-assessment report:
 - Current management strategy not responsive to stock changes.
 - Limited biological reference points.
 - Limited information on removal of fish by other sources (recreational, sustenance harvest, harvest for sustenance, etc.).
 - No strategy to manage non quota “retained” species & discarded species (by-catch).
 - No information on effects of fishery on the lake’s ecosystem or habitat.
 - Once the management plan had been adopted and implemented, the fishery would be ready to enter the full certification assessment process using the Risk Based Framework. For those areas that were identified as being data deficient it was recommended that, either through the management plan or other initiatives, programs were developed that improved the level of understanding.

- *Pre-assessment Report for the Chitek Lake Walleye Commercial Gillnet Fishery:*
 - In 2010, Manitoba entered into a contract with Moody Marine Ltd. to undertake an eco-certification pre-assessment evaluation of the Chitek Lake Walleye commercial gillnet fishery under the Marine Stewardship Council's (MSC) "Hatch and Catch" fishery criteria. (Pre-assessment of the fishery was completed March 2011).
 - "Hatch and Catch" fisheries, also known as Culture-based fisheries, refers to fishery production systems that involve the release of fish either as eggs, larvae or young fish and subsequent recapture from the wild. Based on the MSC requirements of enhanced fishery definitions the Chitek Lake Walleye fishery was classified as a "Hatch and Catch fishery, since the fishery is based on Walleye eggs and milt being collected from Lake Manitoba, hatched in a hatchery, and released as fry into Chitek Lake.
 - In addition to the same management deficiencies as identified in the pre-assessments of other commercial fisheries (i.e. Lake Winnipeg, Manitoba's Northern Lakes and Waterhen Lake), the pre-assessment of Chitek Lake using Lake Manitoba Walleye fry identified the following additional factors that needed to be addressed prior to this fishery proceeding any further through the MSC certification process:
 - The use & operation in the collection of spawn do not have a negative impact on the habitat structure & function of the source lake.
 - Evidence that there are natural reproductive components of the stock.
 - Evidence that the translocation of fish ensures that the diversity, structure & function of the ecosystem.
 - Collection of spawn does not lead to the depletion & decline of the parent stock.
 - Measures are put in place to promote greater understanding of incidental mortality.
 - Monitoring of retained & discarded by-catch during collection activities.
- *Full Eco-certification Assessment of the Waterhen Lake Walleye & Northern Pike Commercial Gillnet Fishery:*
 - On December 20, 2012, Manitoba contracted Intertek Moody, Marine Limited to undertake an independent third-party assessment of the Waterhen Lake Walleye and Northern Pike commercial gillnet fishery against the Marine Stewardship Council (MSC) principles and criteria for sustainable and well-managed fisheries. (Full assessment of the fishery was completed on April 25, 2014).
 - The fishery attained a score of 80 or more against each of the MSC Principles and did not score less than 60 against any Performance Indicator (PIs). It was therefore confirmed that the Waterhen Lake Walleye and Northern Pike Gillnet Commercial Fishery be certified against the Marine Stewardship Council Principles and Criteria for Sustainable Fishing and, as such the certified fishery has the right to claim that it is a "*Well Managed and Sustainable Fishery*".
 - The fishery attained a score of below 80 against three PIs. This leads to conditions for continuing certification that the client is required to address. The conditions are applied to

improve performance to at least the 80 level within a defined period. As a standard condition of certification, the client has developed an ‘Action Plan’ to address the conditions for continued certification. The conditions relate to:

Condition number	Condition	PI	Related to previously raised condition?
1	The harvest strategy for Northern Pike is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points.	1.2.1 (Pike)	No
2	For Northern Pike, well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.	1.2.2 (Pike)	No
3	Research results are disseminated to all interested parties in a timely fashion.	3.2.4 (Both)	No

- Manitoba Conservation and Water Stewardship (Fisheries Branch) Action Plan to meet Conditions of Certification:

Condition 1	Northern Pike: There is a robust and precautionary harvest strategy in place
Performance Indicator	<p>PI 1.2.1 The fishery has a research plan that addresses the information needs of management</p> <p><u>Issues at Scoring Guideline 80</u></p> <p>a. The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points.</p> <p>b. The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives.</p>
Score	70
Rationale	Issue b. As the harvest strategy has been designed to respond to walleye management it cannot be said that it is responsive to the state of the Northern Pike stock. The fishery does not meet Scoring Guideline 80.
Condition	By the fourth annual audit, the following Scoring Guideline 80 scoring issues must be met: The harvest strategy for Northern Pike is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points.
Milestones	<p>At the first annual audit the client will present the Certification Assessment Body with evidence that there has been formal consideration of a harvest strategy for Northern Pike.</p> <p>At the second annual audit the client will present the Certification Assessment Body with evidence that the defined harvest strategy has been formally accepted by Manitoba</p>

	<p>Conservation and Water Stewardship and data and analysis are underway to provide the basis for development of biological reference points to support the strategy.</p> <p>At the third annual audit the client will present the Certification Assessment Body with the analytically determined biological reference points.</p> <p>At the fourth annual audit the harvest strategy for Northern Pike will reflect findings on the stock status in relation to the defined reference points.</p>
Action Plan	<p>In the first year of certification, Manitoba Conservation and Water Stewardship (Fisheries Branch) will undertake the following activities:</p> <ul style="list-style-type: none"> • Expand the effort to increase the sample size of Northern Pike as part of the Branch’s on-going annual indexing program. • Start an annual commercial catch sampling program for Northern Pike as part of the Branch’s data collection activities in support of effective monitoring and analysis that is part of a formal harvest strategy for sustainable management of the Northern Pike fishery. • Discuss with the Waterhen Lake commercial fishers a precautionary approach to fishery management of Northern Pike. <p>In the second year of certification, Manitoba Conservation and Water Stewardship (Fisheries Branch) will draft a harvest strategy in full consultation with the Waterhen Lake Fishermen’s Association including related associated specific harvest control rules & other management actions for Northern Pike. Manitoba Conservation and Water Stewardship (Fisheries Branch) will analyze data and information from Waterhen Lake and other sources to identify potential limit and upper stock reference points for Northern Pike together with related stock performance indicators.</p> <p>In the third year of certification, Manitoba Conservation and Water Stewardship (Fisheries Branch) will provide the Certification Assessment Body with the outcome and results of discussions with Waterhen Lake commercial fishers and other stakeholders on potential harvest control rules, biological reference points and performance indicators.</p> <p>In the fourth year of certification, Manitoba Conservation and Water Stewardship (Fisheries Branch) will provide the Certification Assessment Body with evidence of the use of biological reference points to inform the management decision making process as part of a formal harvest strategy, together with evidence of the defined harvest control rules.</p>
Consultation on condition	<p>No consultation is required on meeting this condition as the client is solely responsible for meeting this requirement of certification.</p>

Condition 2	There are well defined and effective harvest control rules in place
Performance Indicator	<p>PI 1.2.2</p> <p><u>Issues at SG80</u></p> <p>Well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.</p> <p>The selection of the harvest control rules takes into account the main uncertainties.</p> <p>Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules.</p>
Score	70
Rationale	Issue a. As harvest control rules are not well defined for Northern Pike they do not ensure that exploitation rates for Northern Pike may be adjusted if required.
Condition	By the fourth annual audit, the following Scoring Guideline 80 scoring issues must be met: For Northern Pike, well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.
Milestones	<p>At the first annual audit the client will present the Certification Assessment Body with evidence that there has been consideration of the appropriateness of existing Harvest Control Rules for Northern Pike and, that options have been identified.</p> <p>At the second annual audit the client will present the Certification Assessment Body with evidence that the identified options have been discussed with stakeholders and may be implemented according to the status of the stock in the context of the harvest strategy.</p> <p>At the fourth annual audit there will be evidence that the harvest control rules required by the strategy have been implemented as required and in accordance with the stock status.</p>
Action Plan	<p>In the first year of certification, Manitoba Conservation and Water Stewardship (Fisheries Branch) will undertake the following activities:</p> <ul style="list-style-type: none"> • Expand the effort to increase the sample size of Northern Pike as part of the Branch’s on-going annual indexing program. • Start an annual commercial catch sampling program for Northern Pike as part of the Branch’s data collection activities in support of effective monitoring and analysis that is part of a formal harvest strategy for sustainable management of the Northern Pike fishery. • Discuss with the Waterhen Lake commercial fishers a precautionary approach to fishery management of Northern Pike. <p>In the second year of certification, Manitoba Conservation and Water Stewardship (Fisheries Branch) will draft a harvest strategy in full consultation with the Waterhen Lake Fishermen’s Association including related associated specific harvest control rules & other management options/actions for Northern Pike. Manitoba Conservation and Water Stewardship (Fisheries Branch) will</p>

	<p>also analyze data and information from Waterhen Lake and other sources to identify potential limit and upper stock reference points for Northern Pike together with related stock performance indicators.</p> <p>In the fourth year of certification, Manitoba Conservation and Water Stewardship (Fisheries Branch) will provide the Certification Assessment Body with evidence of the use of biological reference points to inform the management decision making process as part of a formal harvest strategy, together with evidence of the defined harvest control rules.</p>
Consultation on condition	No consultation is required on meeting this condition as the client is solely responsible for meeting this requirement of certification.

Condition 3	The fishery has a research plan that addresses the information needs of management
Performance Indicator	<p>PI 3.2.4</p> <p><u>Issues at Scoring Guideline 80</u></p> <p>A research plan provides the management system with a strategic approach to research and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.</p> <p>Research results are disseminated to all interested parties in a timely fashion.</p>
Score	70
Rationale	Issue b. Research results are disseminated to all interested parties in a timely fashion. The auditors have not seen any evidence to indicate that the results of the research are disseminated or that they are available to <u>all</u> interested parties.
Condition	By the second annual audit, the following Scoring Guideline 80 scoring issues must be met: Research results are disseminated to all interested parties in a timely fashion.
Milestones	<p>At the first annual audit the client will present the Certification Assessment Body with evidence that there has been consideration of how to disseminate research results in a formal established approach.</p> <p>At the second annual audit the client will present the Certification Assessment Body with evidence that research results are being disseminated in a formal established way.</p> <p>By the third audit the required minimum score for PI 3.2.4 is 80.</p>
Action Plan	Monitoring and research results will be disseminated to the general public through the Manitoba Conservation and Water Stewardship, Fisheries Branch website, which, within one year of Waterhen Lake becoming certified, will include a section dedicated to Waterhen Lake eco-certification. This website will include, in addition, materials related to certification efforts on Waterhen Lake

including the management plan, the action plan, the certification assessment report and annual audit reports.

Where University research is involved, theses and peer-reviewed publications will be prepared by the home organization and be available through normal University channels. In addition, these documents, links to these documents or citations for these documents (depending on copyright restrictions) will be made available to the public on the Conservation and Water Stewardship, Fisheries Branch website.

For directly involved stakeholders and interested parties, all monitoring and research results and associated materials, including University based research projects, will be presented, discussed and distributed at the annual Waterhen Lake commercial fisher association meeting, which will be followed by a general public meeting to be held in the Waterhen Lake area.

These materials will also be made available upon request to the Department of Manitoba Conservation and Water Stewardship, Fisheries Branch or to interested parties that attend the Fisheries Branch head office in person.

The approach stated above will provide the venue to disseminate and share information to all involved stakeholders and interested parties in a timely fashion and ensure the materials are widely and publicly available.

Consultation on condition

There is no consultation required on meeting this condition since Manitoba Conservation and Water Stewardship, Fisheries Branch is solely responsible for meeting this requirement of certification.