





## WILL TRY NEW FISHERIES.

Sandusky Fish Company Has Decided to Test a  
Northern Lake.

The alleged scarcity of fish in Lake Erie, and the somewhat inferior variety, is causing something of an exodus of dealers from Lake Erie to the Northern United States. The Sandusky Fish company, which consists of all the firms at and in the vicinity of Sandusky, has decided to remove its entire business to the Lake of the Woods, on the boundary between the United States and Manitoba. Nine car loads of nets, a tug, etc., were shipped to Duluth a few days ago, en route to the point stated. Frank Zollinger of Sandusky, was in charge. On this lake it is stated that white fish and sturgeon exist in great quantities. The company expects to catch sufficient to meet the demands of trade, and when the rigorous northern winter sets in will come back to Lake Erie and go to work.

So far as heard no other concerns of great magnitude have arranged to go north.



All the Toledo companies will remain on Lake Erie this season, but in another year there will be no telling what will happen.

"Commercial", Toledo, O., April 14, 1894.



Lake of the Woods - 1895.

The Sandusky Fish Co., beginning this year, takes charge of all the American fishing in Lake of the Woods, except few private fishermen. That is to say, the business of the S. F. Co. and Balto. P. Co. has been combined. Peter Ditchy will have direct charge of all the fishing. They are now driving and beginning to get their nets in. Last year the S. F. Co. was especially fortunate in disposing of every carload of fish from there at a profit. The Balto. P. Co. lost on many car loads, but Mr. Stall did not say whether they lost as a whole. It was this that led to the combine, and apparently the S. F. Co. will look after dispos-



of cho fish as well as catching  
them.

Beginning this spring,  
Minn. charges a license of \$10.  
for all pounds. They give  
preference to Minn. men, but  
will not disturb those already  
in the field. There is some  
limit on the no. of nets. Mr.  
Stall said some 280 odd had  
been licensed.

(Ralphum, talk with Mr.  
Stall, Sandusky, May 1, 1895).



LAKE OF THE WOODS INVESTIGATIONS,

AUGUST, 1894.

BY

WILLIAM WAKEHAM AND RICHARD RATHBUN.



GENERAL ACCOUNT OF OUR TRIP, AUGUST, 1894.

LAKE OF THE WOODS.

( Richard Rathbun ).

Arrived at Rat portage, Saturday, August 4, 1894, about 3 A. M. by R. R. from Fort William. Went to Hilliard House. Saw load of sturgeon landed from scow of Baltimore Packing Co. of which Woolman has a record.

Hired the tug Keewatin, at the rate of \$25. per day, to work about the lake, the charter to begin Monday, Aug. 6, although we started out Sunday morning at 9 o'clock. Went down by channels leading to the south of the lake on the Canadian side. Arrived at Ricklefs about sundown the same day where we spent the night. The next morning interviewed Ricklefs and did some seining.

Ricklefs' place, Aug. 6, 1894. Some seining was done about this place in the morning. Also took photograph. Canadian part, south end of lake. Took photograph



showing buildings and steamer Keewatin. They have fish house, boarding house and ice house, all small buildings and new.

(Our party consisted of Dr. Wm. Wakeham, R. Rathbun, C. K. Macey, A. J. Woolman, U. O. Cox, and Boyd).

Next went to Budreau's and interviewed him. Small establishment. Also towed his boat and men out and watched him lift one pound.

The above are both in Canadian waters. The only other pounds in Canadian waters are 2 run by a man named Huggins on Skiff Island. Did not learn their exact position.

From Budreau's went to the mouth of Rainy River, and tied up to the wharf of the Sandusky Fish Co. Two fishing stations, the other being the Baltimore Packing Co. Remained here over night. Interviewed Charles Searles, pound net man of the Sandusky Fish Co. here, and next under Peter Ditchy in command. The latter is here only during the fishing season.



Two other of the men assisted Searles in the interview. They had both been here longer than Searles. Interviewed Charles Loiseau, the principal one of the Baltimore Packing Co., then at the mouth of the river. Did seining all about the neighborhood.

Aug. 7, Tuesday, left the river and proceeded along the south shore as far as Long Point (Asmus). Skirted the shore so as to see all the pounds, which are marked on the chart correctly as to number and relative position, but the shore line on the chart is not correct as to details.

Made first stop at Wm. Zippel's, whom we interviewed. He was the first regular fisherman on this lake. Next stop was made at Asmus's. The old man spoke only broken English, but the interviewing was done through his eldest son, a very bright man. No pounds are now worked farther west along the south shore and we, therefore, did not go farther in that direction, but turned toward



Garden Island, another station of the Baltimore Packing Co., where we arrived in the evening of the same day. The Keewatin then proceeded to War Road River from which place she was to go to Rainy River mouth, get wood, clear from Custom House, and come back to Garden Island. Woolman and his party went with her to seine. Wakeham, Rathbun and Macey remained at Garden Island, the guests of the Superintendent, Joseph Landree. This morning, Wednesday, Aug. 8, interviewed Mr. Landree. They are still fishing some of their pounds at this place, and I was to go out on their steamer, the Thistle, this morning, to see the lifting, but a heavy N.E. storm coming up, they were prevented from going out.---This is up to time of writing.

August 9, the steamer Keewatin returned to Garden Island about 6 P. M., having been to the War Road River and the mouth of Rainy River, a trip which took them over 2 days owing to the fact that they were storm bound in War Road River one day. Woolman, Cox and Boyd



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were along with her and did seining at several places. She remained here over night. At 6 A. M. the next day, August 10, we left Garden Island and went to Oak Island, where we remained only 2 or 3 hours, interviewing Mr. Rice, now in charge, and doing some seining along the shore.

We then proceeded down the lake and reached Rat Portage about 4:30 P. M.

Woolman, Boyd and Cox left the same night, and we the next night (Aug. 11) for Port Arthur, thus ending our trip to the Lake of the Woods. While in Rat Portage we interviewed the fishery overseer, Mr. Chadwick; the Collector of Customs, J. W. Colcleugh; Amos McKinnon, of the Reid Fish Company; and Edward Kipling, an intelligent half breed Indian, who is one of the gill netters in the northern part of the lake.

The office of the Baltimore Packing Co. is 210 First St., North, Minneapolis.



AUTHORITIES---LAKE OF THE WOODS,  
AUGUST, 1894.

William Zippel.---Zippel's Harbor.

Pioneer pound net fisherman on the lake.

Intends to make this his permanent residence,  
and to purchase a homestead. Has been on the  
lake 11 years, 3 years on Canada side, and 8  
years on American.

H. P. Asmus.---Long Point. Has lived  
here 4 years, and fished all the time. Con-  
siders himself a permanent settler, and has  
only the fishing to depend on. Came from  
near Hamburg, Germany, where he was interested  
in sturgeon fishing. Was 50 years old when he  
came to this country.

Charles W. Searles.---Chief net man of the  
Sandusky Fish Co., at the mouth of Rainy River.  
Experienced Lake Erie fisherman from near  
Sandusky. Came here in the spring of 1894.

John McIntyre.---A fisherman under Searles  
Has been here 2 years.

Charles Loiseau.---Employ of Baltimore Packing Co., at the mouth of Rainy River, but does not speak with authority for the Company. Has been here 3 years. Came from Wisconsin. Has been here ever since the fishery was started at the mouth of the river.

Joseph Budreau.---Stevenson's Point. Began fishing there in the fall of 1893. Had no previous experience, but was running a tug.

Charles Ricklefs.---Stevenson's point. Has been on this lake 2 years. Fished previously in Lakes Michigan and Erie; also on Lake Huron, in Canada, between Stony and Blue Points. Has been fishing 9 years.

Joseph Landree.---Supt. at Garden Island. Has been here 4 years. Fished on the west shore of Lake Michigan 20 years.

F. A. Rice.---Oak Island. In charge for Sandusky Fish Co. Came on the lake in the early spring of 1894. Is an experienced Lake Erie fisherman. Belongs at Lakeside, near Sandusky.



Edward Kipling, Sr.---A half breed. Old Hudson's Bay Co. employee. Extensive experience all through the north. Has been fishing on Lake of the Woods, more or less since 1888.

Amos McKinnon.---Bookkeeper Baltimore Packing Company, in Rat Portage. Formerly was engaged directly in the fishing; was with Mr. Reid the first year he began fishing, 1888.

J. W. Colcleugh.---Collector of Customs at Rat Portage. Was fishery overseer until a year ago. Is practically the business representative of both fishing companies. Has been here since 1883.

H. P. Steensen.---Caviar expert for Neilson at Garden Island. Was for a long time in the fish houses at Sandusky. Came from Schleswig in 1869.

C. W. Chadwick.---Rat Portage. Fishery overseer during the past year.

HISTORY   OF   FISHING,   1886-1894.

(FROM INFORMATION OBTAINED IN INTERVIEWS,  
AUGUST, 1894).



# HISTORICAL STATEMENT BY J. W. COLCLEUGH, RAT PORTAGE.

Mr. Colcleugh has been at Rat Portage since 1883. The first company that ever fished here was Kalmbach (of Duluth). He was the king of the fishing at Green Bay, Wis. He came here in August, 1883, and fished on the Canadian side, but did not make it pay. He brought a lot of caviar kegs with him, but did not know how to handle it. He did not get any sturgeon, just shipped a few whitefish, but bought them of the Indians, and would get the little silver lake trout. He brought a few nets and attempted fishing, but I guess it was a failure. He left here in March, 1884. Their fishing was just gill nets. There was no one fishing on the American side then. There was no settlement around the lake except at Hungry Hall. It was dubbed Hungry Hall by the first expedition of people who came through here, because they found it a hungry place I guess. There is a Hudson's Bay trading place there now.

Then Wm. Zippel came next, and he fished at the Little Traverse, in Canadian waters. He used ordinary gill nets, but no pound nets. And then he went to Rainy River. Then Reid and McKinnon came, I think, about 1889. They did not fish any pound nets. They fished in Canadian waters, and only fished gill nets. This, of course, is just the best of my knowledge as I remember it.\* Then in 1891, they formed the Reid Fish Company. That was the first year they fished pound nets on the American side. They located at the mouth of the river, and that was the only place where they fished. There were a few fishermen near here bringing in fish and selling them. It was at Grand Island instead of the mouth of the river that the Reid Fish Co. began to put in pound nets in 1889, and they went to the river in 1891. Asmus began in 1891, and Zippel was fishing at that time. Oak Island was not opened up until 1892. The firm was Brydges &

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\* Mr. Colcleugh is mixed in some of these statements. He can be corrected by those of others, however).



McClain then at Oak Island. Ole Johnson & Co. were fishing at Rainy River last year, on the inside of the point. They were fishing 2 pound nets. Johnson is fishing now for the Sandusky Company. Thinks he is located at Oak Island.

HISTORICAL INFORMATION ARRANGED BY YEARS  
FROM 1886 TO 1894.

Willaim Zippel seems to have been the first pound net fisherman on the Lake of the Woods.

He has been located on this lake 11 years (up to 1894), 3 years on the Canadian side, and 8 years on the American side, in his present location, Zippel Harbor, at the mouth of Winter Road River (Zippel).

1886.

Zippel began fishing this year, and fished through the ice during the winter 1886-87 with gill nets for whitefish, wall-eyed pike and lucius. Once in a while he took a sturgeon in his gill nets. A part of the fish was taken to Rat Portage, and a part was teamed to the Great Northern Railroad in Minnesota. This was the first fishing done by a white man on Lake of the Woods (Zippel). Although the notes do not say so, I remember from his account that this gill netting must have been



done off his present location on the south shore of the lake, and the dates would conform to this also (Rathbun).

Mr. Zippel did no winter fishing after the winter of 1886-87.

1887.

Mr. Zippel put in two pound nets the last of August and fished them through the fall. These were the first pounds put in the lake. He was in company with D. F. Reid. They were located on the east side of the creek at his present location, and were set in one string. The leaders were between 50 and 60 rods long; pot, 24 feet square; mesh in leaders, 7 inches; mesh in pots and hearts, 4 inches. Caught considerable many sturgeon. His catch was shipped through Rat Portage. (Zippel).

1888.

Mr. Zippel had the same number of pounds as in 1887--two, and fished them during the entire season, from the time the ice went out until it made again.

D. F. Reid set two pounds in one string on Garden Island, but only fished them between 2 and 2 1/2 months in the fall.

No others fished pounds in 1888. (Zippel).

Amos McKinnon was in partnership with Reid the first season he began fishing, under the name of the Reid Fish Co. They started in in the spring of 1888. Mr. Zippel was fishing a little then, but only a short time on the Canadian side. The first fishery of the Reid Company was located at Garden Island. We fished just around the island. Later on the Baltimore Packing Co. located at the mouth of Rainy River. This company bought out Reid in the spring of 1889. They had intended to locate on Lake Winnepeg first, but Reid induced them to locate here. Reid started in with about 4 pounds on Garden Island in 1888. (McKinnon).

Has been fishing gill nets on Lake of the Woods, Canadian side, more or less since 1888. (Kipling).



1889.

Mr. Zippel had the same two pounds as in 1888. He fished them about 2 months in the spring and about 2 months in the fall.

Mr. Reid had 6 pounds on Garden (Cornfield) Island, which were fished most of the open season. Sometime during this year the Baltimore Packing Co., of Minneapolis, bought a share in Reid's fishery, and the company so formed was called the Reid Fish Co. (Zippel).

The fishery was started on Garden Island 5 years ago (dating from 1894) by D. A. Reid. (Landree). Mr. Landree said he had been on the island 4 years. His dates do not agree, by one year, with those of Zippel. It is impossible now to say which is right. (Rathbun).

Reid had 6 pounds at Garden Island in 1889, and when the Baltimore Packing Co. went in (They bought out Reid this year) they put in 4 or 5 more, and they have been increasing every year. (McKinnon).

The first year of gill netting, 6 men were engaged in it. That was in 1889. Licenses

were not issued by the Canadian Government, however, until about 3 years ago, and between 1889 and 3 years ago there was no gill netting to amount to anything. There was only a local market then. (McKinnon). This gill netting must refer to the Canadian side exclusively. (Rathbun).

1890.

Mr. Zippel fished two pounds; and his brother-in-law, W. M. H. Gibson, fished one pound about half a mile west of Zippel Harbor.

The Reid Fish Co., I understand, had 12 pounds, all on Garden Island. (Zippel).

H. P. Asmus fished 2 pounds at Long Point during the fall. They were put in the first of August. (Asmus).

1891.

Mr. Zippel fished 2 pounds, and Mr. Gibson two, all in the same places as before.

Understands that in this year the Baltimore Packing Co. bought out Reid entirely. They fished more than 12 nets, but does not know



the exact number. Some were around Garden Island, and 6(?) on the south shore near where Haas is now located. (This year they are not fishing the nets near Haas). (Zippel).

The name Reid Fish Co. is now commonly used on the Canada side in place of Baltimore Packing Co., probably as a matter of policy. (Rathbun).

Asmus, at Long point, had 4 pounds in the spring and 5 in the fall (Asmus).

1892.

Mr. Zippel had the same 2 nets in a string, and one pound about half a mile farther east.

The Baltimore Packing Co., had pounds on Garden Island, and 4 pounds on the south shore, west of Cormorant Rock, or about 5 miles west of Long Point. At the latter place they fished only about 2 months in the fall.

H. P. Asmus began fishing at Long Point in the fall, having 2 pounds. (Zippel). This year Asmus had 6 pounds at Long Point. (Asmus).

H. Fenske had 6 pounds on the south shore just to the west of the mouth of Rainy River, and fished them in the spring and fall.

Ole Johnson & Co. had 8 pounds where Bostedt is now located, on the south shore. They were fished in the spring and fall (Zippel)

H. Fenske began fishing pounds at Oak Island this year.

1893.

Pounds were fished along the south shore of the lake, beginning at the east, as follows:

Fenske had 10 nets to the west of the mouth of Rainy River. They were in 4 strings, 2 containing 3 pots and 2, 2 pots each. He fished during the spring and fall.

Ole Johnson had 10 pounds, probably in 5 strings, in the location of Bostedt's place at present.

Zippel had 4 pounds, the same 2 in one string as formerly, and 2 single nets, half a mile apart and half a mile from the string.

Asmus came next at Long Point with 4



pounds. The above were all the pounds on the south shore. (Zippel). Asmus had 6 pounds this year (Asmus).

At Garden Island the Reid Fish Co. or Baltimore Packing Co. was fishing pounds; and at Oak Island, H. Fenske. (Zippel).

In 1893, the Sandusky Fish Co. bought out Fenske at Oak Island, and Fenske & Brydges on the south shore to the west of the mouth of Rainy River. This company did not begin fishing, however, until the spring of 1894.

In the winter of 1893-94, Bostedt bought out Ole Johnson on the south shore (Zippel).

Ten pounds were fished at Oak Island in the fall of 1893. The station has been here about 4 years. Before 1894 it was run by Fenske and Brydges (Rice).

The Sandusky Fish Co. bought out Fenske in the fall of 1893, paying him \$7,000 for his plant at the mouth of Rainy River, and \$5,000 for his plant at Oak Island. (Andrus).

Canada side.---This was the first year pound nets were fished on the Canada side. Licenses had been granted previously, but were not used. Six licenses were issued in 1893. (Chadwick).

Joseph Budreau began fishing in the fall of 1893, and that was the first pound net fishing on the Canadian shore. Had 2 pounds this year. (Ricklefs).

Budreau's statements agree entirely with those of Ricklefs.

1894.

Huggins began fishing pound nets at Skiff Island this year (Chadwick).

Heard this spring that S. H. Davis, of Detroit, intended to begin fishing in Lake of the Woods next year (Andrus).

Charles Ricklefs began fishing pounds this spring (Ricklefs).

Huggins began fishing pounds early this summer at Skiff Island (Ricklefs).

Pounds are the only apparatus used in the



southern part of the lake. Budreau has 6 pounds this year, which were set early in the spring. (Ricklefs).

A son of H. P. Asmus will put in a couple of pounds this fall (1894) about 12 miles west of Long Point (Asmus).

Our company (Baltimore Packing Co.) would not have gone in so strong this year, except that the Sandusky Fish Co. reported they were going to have 100 pounds in (McKinnon).

HISTORICAL INFORMATION FROM MR. ANDRUS,  
MINNEAPOLIS, MINN.

The first people who went in there extensively were the Reid Fish Company. They went in there from 5 to 7 years ago. The Baltimore Packing Co. bought them out about 3 or 4 years ago. The Sandusky Fish Co. went in there this last fall, and bought out Mr. Fenske, paying him \$7,000 for his plant at Oak Point and \$5,000 for his plant up at Oak Island. Fenske had gone in there only recently, within 3 or 4 years. There are

other fishermen who carry on their work independently of the above firms. Their output has heretofore gone mostly through the hands of the Baltimore Company. These men live there in the summer and in the winter go to Rat Portage. Davis of Detroit intends to begin fishing in Lake of the Woods next year, so he heard this spring. (Andrus).

There is an immense body of water there and a good opportunity for propagation and for increasing the supply. The Lake of the Woods is the best place he knows of to propagate fish (Andrus).



POUNDS---LAKE OF THE WOODS.

NUMBER AND LOCATION IN SPRING OF 1894.

CANADIAN WATERS.

Skiff Island, eastern end of Little Traverse.	
Huggins. . . . .	2
South shore near Stevenson's on Windy Point.	
Chas. Ricklefs and others; all single..	6
Jos. Budreau and others. . . . .	One string 2
pounds, remainder single. . . . .	6
-----	
Total, Canada. . . . .	14





Bostedt	1 string. . . . .	2
Sandusky Fish Co.,	1 " . . . . .	3
" "	1 " . . . . .	3
" "	1 " . . . . .	2
Unknown,	1 " . . . . .	2
"	1 " . . . . .	1
Wm. Zippel,	1 " . . . . .	1
"	1 " . . . . .	1
"	1 " . . . . .	2
"	1 " . . . . .	2
"	1 " . . . . .	1
C. Zippel,	1 " . . . . .	1
"	1 " . . . . .	4
"	1 " . . . . .	2
Haas,	1 " . . . . .	2
"	1 " . . . . .	1
"	1 " . . . . .	2
"	1 " . . . . .	2
Sandusky Fish Co.,	1 " . . . . .	3
" "	1 " . . . . .	3
" "	1 " . . . . .	3
" "	1 " . . . . .	1

H. P. Asmus,	1 string, . . . . .	1
"	1 " . . . . .	1
"	1 " . . . . .	1
"	1 " . . . . .	1
"	1 " . . . . .	1
"	1 " . . . . .	1
"	1 " . . . . .	3
		----

Total American south shore. . . . . 96

# GARDEN OR CORNFIELD ISLAND.

Baltimore Packing Co.,	1 string. . . . .	1
" "	1 " . . . . .	1
" "	1 " . . . . .	2
" "	1 " . . . . .	1
" "	1 " . . . . .	2
		----

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# MAINLAND NEAR GARDEN ISLAND.

Baltimore Packing Co.,	1 string. . . . .	1
" "	1 " . . . . .	1
" "	1 " . . . . .	1



Baltimore Packing Co.,		1 string.	. . . . .	2
"	"	1 "	. . . . .	1
"	"	1 "	. . . . .	2
"	"	1 "	. . . . .	1
"	"	1 "	. . . . .	1
"	"	1 "	. . . . .	1
"	"	1 "	. . . . .	1
"	"	1 "	. . . . .	1

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## OAK ISLAND AND ADJACENT MAINLAND.

Sandusky Fish Co.,	1 string.	1
"	"	1
"	"	1
"	"	1
"	"	1
"	"	4
"	"	4
"	"	3
"	"	1
"	"	2
"	"	4
"	"	3
"	"	3
"	"	2

Total pounds, Canadian waters. . . . .	14
" " American " . . . . .	146
	-----
Grand Total. . . . .	160

Note.---We saw personally all of the pounds on the south shore in both Canadian and American waters, except those to the west of Long Point. We also saw those on Garden Island, and many about Oak Island. We failed to see those at Skiff Island, on the mainland near Garden Island, to the west of Long Point, and a large number of those about Oak Island.

#### GENERAL NOTES ON DISTRIBUTION.

A son of H. P. Asmus will put in a couple of pounds this fall (1894) about 12 miles west of Long Point. (Asmus).

Jos. Budreay operates 6 pounds which are licensed to 6 different persons (Budreau).

The water is too deep and the bottom is not suitable for driving stakes in some places, which is the principal reason they do not fish them for sturgeon among the islands (Budreau).



They have 6 pounds, the licenses for which are issued to 6 different persons, but they are all worked together. (Ricklefs).

Their pounds are all on the south side of Garden Island and on the adjacent mainland this year. Have 7 pounds on the island (Landree).

We never fished on the mainland until this season.

We do better on the island in the fall than on the mainland adjacent. We get bigger lifts on the mainland, but on the island we get them more steady. This spring up to now (August 8) we have done better with the nets on the island than with those on the adjacent mainland. (Landree).

The Canadians are allowed to fish only a little and so far apart. There are lots of places where you cannot drive stakes here. On part of this island we cannot drive stakes as it is all rock, and cannot drive around the little islands here on account of the rocks. (Rice).

The Sandusky Fish Co. has 10 strings.

At Long Point there are 10 pots, 3 each in 3 strings and one by itself. Their pounds begin just west of Rainy River, and go as far as Long Point, as follows: The first string has 3 pots; second, 3; third, 5; fourth, 3; fifth, 3; sixth, 2; seventh, 2; eighth, 3; ninth, 3; tenth, 1.

The Baltimore Packing Co. has 18 pounds, he thinks in 8 strings.

The other persons fishing between Rainy River and Long Point are: Bostedt, 14 pounds; Chas. Zippel, 7; Wm. Zippel, 8; Haas probably 6; Asmus 9. (Searles).

Pound fishing now carried on between Rainy River and Long Point. None between Long Point and War Road River, but between the latter and the Canadian boundary there may be some.

The Baltimore Packing Co. fishes those from Garden Island. They did fish between Long Point and War Road River for about 2 months in the fall, 2 years ago. Thinks they



had 6 nets in there and only fished that one fall. It was good fishing, but the stakes would not hold on account of too much rock. (Loiseau).

Pounds; Length of leaders; Depth of water;  
Strings.

Has had leaders as long as 75 rods; now they average about 55 or 60 rods. Run in pretty close to the shore, generally into depths of 5 feet (Zippel).

Leaders, 600 to 800 feet long. (Asmus).

Start 15 or 20 rods from shore, and go out with 50 rod leaders. Pounds are all in shallow water. One string has 27 feet on the outside. One string has 5 pots; the rest have 2 and 3 pots (Searles).

Leaders from 44 to 72 rods long. In a string their inner pot will be 16 or 18 feet deep and the outer 24 feet deep (Loiseau).

Leads are 50 rods long. Some claim that a longer lead is better, and others that 10 rods is plenty long enough. Run my leaders

into about 5 feet. In some places that would not be very far off shore. The shortest would probably be 4 and the longest 6 rods from shore. The water will be 17 or 18 feet deep at the pot (Budreau).

Has 1 string of 2 pounds; the leaders have the same length in both, and both pots are in the same depth. You can go out here 3 miles and the water will not vary over 2 feet in depth (Budreau).

Leads are 50 rods long and the inner end is about 15 rods from shore. Some of my leads come close into the shore and some do not. I am not particular whether I have them in less than 6 feet or not. Four pots are in 16, and 2 in 18 feet of water (Ricklefs).

Have about 50 or 60 rod leads (Landree).

Leaders are 50 rods long. Runs them as close to the shore as he can drive his stakes, say from 10 to 15 rods, according to the bottom which is rocky. The pots are generally in depths of 25 to 28 feet, those being the depths of the inner and outer pots respectively. One string runs from 23 to 26 feet.



## GENERAL DESCRIPTION.

Uses both long and short tunnels, but likes the short tunnel best (Zippel).

Pots are 30 feet square, Use short tunnel (Asmus).

Pots 30 feet square. Use long tunnel (Searles).

Pots 30 feet square. Use short tunnel. (Loiseau).

Crib 30 feet square. Use short tunnel. The pot is 2 feet deeper than the depth of water (Budreau).

Pots 30 feet square. Use long tunnel. The pot is 3 feet deeper than the depth of water, the middle resting on the bottom. (Ricklefs).

Use long tunnel here, and the same mostly on Lake Erie, Used the short tunnel years ago on Lake Erie, but they have abandoned them. The short tunnel is the older form (Rice).

In the beginning the pots of the pounds were about the same size as now, and the leaders were about the same length (McKinnon).

MESH.

In the crib uses 3 inch mesh in some and 4 inch in others. Wants to do away with the 3 inch, and the last twine he bought measures 4 inches. The net shrinks in tarring, and in 2 seasons a 4 inch mesh will come down to 3 inches (Zippel).

The proper size mesh in a pot is not less than 4 inches; thinks he will get 4  $\frac{1}{2}$  inches. Shall perhaps buy 5 inch mesh and have thicker twine. If it is thin twine and a sturgeon gets his bill in he is liable to go right through (Zippel).

Uses 3 and 4 inch in tunnel and 4 inch in heart. Size of mesh in leaders is 7 inches. Was the same in the beginning, but one year had 6 inches. It makes no difference about the size of mesh in leader (Zippel).

The mesh in the pot is 4  $\frac{1}{2}$  inches; tunnel, 4  $\frac{1}{2}$  inches; heart, 5 inches; leaders, 6 and 7 inches. The first year we used 3 inches in the pot, 4 in the heart, and 5 in



the leaders. Prefers 4  $1/2$  inch for the pot, and catches just as many whitefish (Asmus).

Use 3  $1/2$  inch in the pot; 5 inch in the tunnel when new; 5 and 6 inch in the heart; 6, 7 and 8 inch in the leaders (Searles).

3  $1/2$  inches in the pot; 4 inches in the heart; 6 inches in the leaders (Loiseau).

All the nets we have ordered for this place have 4  $1/2$  inch mesh in the pots; that is the regulation size. Would prefer 3  $1/2$  inch mesh, in which the fish gill less. In the tunnel the mesh is about 2  $1/2$  inches; heart, about 5 inches; leaders, 6 inches. (Budreau).

The mesh in the pot is 3  $3/4$  inches after tarring; in the tunnel 4 inches; heart 5 inches; leader 8 inches. The net will shrink in tarring about  $3/4$  foot in 30 feet of net in the pot, and elsewhere about the same. (Ricklefs).

Use the same mesh they do at the mouth of Rainy River; pots, 3 inches; hearts, 5 inches; leaders, 6 inches. (Landree).

Uses here 6 and 7 inch mesh in the leaders. Their twine is about all old Lake Erie twine except the crib. If I were going to get up new twine for this place I would make it 8 inch for the leaders. There are no small fish here, and, anyway, they will lead just as well with 8 inch as with a smaller mesh (Rice).

The mesh of the heart is generally 5 inches; some 6 inches. The tunnel is 5 inches. The pot is the same as at the mouth of Rainy River; thinks 3  $\frac{1}{2}$  inches (Rice).

The mesh of their pounds on Lake of the Woods is 3  $\frac{1}{2}$  inches (1  $\frac{3}{4}$  inch bar) in the pots (A. J. Stoll, Sandusky Fish Co.)

#### MESH AND FISH; GILLING; LEADING.

The fish will gill in a 4 inch mesh. The first year I fished I had small twine, 18 thread cotton, in the crib, and they gilled very badly. Then I got 21 thread, 3  $\frac{1}{2}$  inch mesh, and they did not gill so badly. Then I got 3 inch and they did not gill at all.



and what fish we do not want we can let go. With a 3 inch mesh he gets a thicker twine, and they will not gill so much. A  $1\frac{1}{2}$  lb. whitefish will go through a 3 inch mesh, but a  $1\frac{1}{2}$  lb. whitefish will not (Zippel).

The fish do not mesh in the leaders now with the present size mesh, except occasionally a large pickerel (Lucius). We have some 7 inch leaders, and the small whitefish will go right through. Will take about 3 lb. whitefish, but no smaller ones. We used to have a great many fish gill in the  $4\frac{1}{2}$  inch mesh. The pike (wall-eyed) gill less in  $4\frac{1}{2}$  inch mesh than in a  $3\frac{1}{2}$  inch mesh. They gave up the latter size for that reason (Asmus).

Thinks all fish lead into the pounds. Suppose they sometimes work through the leaders, and through the hearts also. Would rather have the leaders, tunnels and hearts large enough so they can get through if they want to than to have them gill.

Very few gill in the crib when they lift it. Moon-eyes are the worst fish to gill.

The jackfish are too large as a rule to gill, but they will get fast by the teeth sometimes.

With a 3  $\frac{1}{2}$  inch mesh a whitefish weighing 1 lb. would go through all right. They do not market those small whitefish. Thinks if they enlarge the mesh of the pots too much too many fish will gill. If anything, it would be better to have a finer meshed pot so that the fish could not gill. They can throw out the small whitefish without injuring them much if they are careful about handling them. He gives his men orders to be careful about handling them (Searles).

A 3  $\frac{1}{2}$  inch mesh will let through quite a good sized whitefish. Do not market anything under 1 lb. dressed. Will not get many much smaller than 1 lb. dressed. In a 3  $\frac{1}{2}$  inch mesh a whitefish weighing  $\frac{3}{4}$  lb. would go through all right. In a 4 inch mesh they would gill too much. Almost the biggest whitefish will gill in a 4 inch mesh. The jackfish (Lucius) gill the worst, and get caught by the teeth (Loiseau).



All fish will lead, but the small fish will go through the leaders. They will lead all right, however. Hardly ever find fish meshing in the leaders, except the jackfish occasionally. Yellow pike will mesh in the pot sometimes, but not very often, and that is only when they lift the net (Loiseau).

Our pounds will not hold the small whitefish; but sometimes when we are lifting the net we will see a whole school of little ones about 8 inches long. They are not so abundant in the spring and see them mostly in the summer and fall. Our mesh will not hold a smaller whitefish than 2  $\frac{1}{2}$  lbs. round (Budreau).

We use 4  $\frac{1}{2}$  inch mesh in the pots. That is the regulation size. It is an awful bad thing in the spring, for it takes about an hour to ungill the fish. I have seen as many as 100 gilled in it, weighing about 2 lbs. I would call 3  $\frac{1}{2}$  inch mesh about right. That would let the small fish go through, and keep the bigger ones from gilling. A whitefish

weighing 1 1/2 lbs. round will go through a 3 1/2 inch mesh (Budreau).

I do not fancy such a large lead as 6 inches; a whitefish in the fall will go right through it. All the fish generally lead, and a great many go through the leader, for when we lift it in the fall we will find the fish gilled all over it. Never see many whitefish gill, mostly pickerel (Stez.) and jackfish (Lucius). Have seen a few whitefish gill. (Budreau).

Thinks 3 1/2 inch would be the right mesh for a pound net pot, after it is tarred. Whitefish weighing 1 1/2 lbs. round would go through that size mesh. (Budreau).

Has no trouble from fish meshing in his nets. Does not think a fish will lead over 50 rods (Ricklefs.).

I would use small mesh in the pots here for our own convenience, on account of the gold eyes meshing in the size we now use, 3 1/2 inches. They would mesh in a 4 inch net. We would save the marketable fish in a 4 inch



mesh, but the pickerel (*Lucius*) would gill a good deal, as they do in the mesh we are now using.

It would not be well to fish pots in which the fish would gill at all, as we can let the small ones go without injuring them a particle. We hardly ever would get any small ones in the pot. Would not find more than 1 or 2 in a day that got in, that were too small for market. They can sort them out just as well when they are taking them into the boat as to wait until they get them ashore, and better.

Whitefish do not gill very badly. Little whitefish that could go through our meshes will stay there until we pull them out. But the gold eyes (moon eyes) are a regular nuisance by gilling so much. (Rice).

Has heard the question discussed a good many times among the fishermen, claiming that the small mesh for leaders that they are using on the other side of the line was much better on account of not gilling so many fish (Chadwick).

## RELEASING FISH ALIVE.

The following relates to pound catch at Garden Island, August 8, 1894 (Richard Rathbun):

Three sturgeon were thrown overboard at the pound, being taken out by hand, not gaffed. The waste fishes were bunted at the side of the pot, and then tossed over the side by shaking up the net. All escaped alive, and it was readily done.

## POUNDS. SEASONS.

Do not fish in the summer at all. In the fall do not put in a net until about August 25, and keep it in until October 25. Has never fished in November. The ice comes on about the first of November and they have to take the nets out (Asmus).

May 20 is the earliest they put in pounds. Keep them in until about July 15. Set them again about August 20, and keep them in until it freezes up, about November 5. I have fished during the summer, but it does not pay



on account of the nets rotting so quickly, although we can catch the fish all right. The caviar is not good, and it will not pay to fish unless you can get the caviar (Zippel).

October 28 is the latest Mr. McIntyre has ever fished here (Searles).

We were catching a few whitefish when we were pulling our twine out this spring. We commenced to set the nets about May 12, and had them all set but one by June 10. We were all through pulling our nets by July 4. We made the second last shipment June 24. (Searles)

They fished 20 nets at Oak Island, and drove, set and pulled them in a month. Were done pulling by the last of June. Pulled the last net the last day of June [Searles).

We will commence to set about the last week in August providing it keeps cool, but if it keeps hot will not commence quite so soon (Searles).

In 1893, they fished until about July 10. When the water gets warm and the fish begin to decrease, out comes the twine. The fish

deteriorate, and it does not pay to handle the pounds in warm weather (Searles).

They fish here as soon as the ice goes out. Do not fish in the summer. Lay up from about July 15 to August 15, and fish from then to about November 1. Last year had ice about November 20. Cannot fish into november because they would not have time to get their stakes out before the ice formed. The ice would break the stakes. Do not fish during the summer on account of hot weather, and the fish are not of much account. It would also rot their nets. Does not rot their nets in the spring and fall (Loiseau).

Had nets in one summer and got a few wall-eyed pike, Lucius, and whitefish (Loiseau).

I keep my pounds in the entire season. Never fish in the winter. We had a few of our pounds blown out by storms in the fall (Budreau).

Set their nets as early as the ice will permit, May 25 to June 1. They stop fishing the first of July, because of the rotting of



the nets, etc. (Ricklefs).

Budreau fishes the whole season through. (Ricklefs).

They keep enough pounds in during the summer to make a shipment a week (McKinnon).

We fish the summer through, and have about the same number of nets in the summer except for a short time. The nets we put in in the spring we take up just long enough to clean them and set them back again. We begin to set as soon as the ice is out, practically. We generally break up fishing about November 1. Sometimes we may fish until the 10th and one year we fished until the 17th, which is the latest we ever saw boats running here (Landree).

Until last year they never seemed to care whether they fished all the year or not. That is, they didn't take their nets out at all, but fished all the season through. This is the earliest season for 4 or 5 years, and they began fishing earlier. Began to drive and get their nets in about May 5. This is the first season they have broken off entirely

during the summer. The Reid Co. is about the only one that is fishing now (Colcleugh).

Fish from the time we can get the twine in, after the ice goes out, until about June 20 or 25, according to the weather. We expect to remain out until about September 1. Can fish here until about October 25, which is as late as they dare fish, as they are liable to get blown out or frozen up after that time (Rice).

Have no trouble from storms here (Rice).

We do not get our nets in until June to make a lift (Rice).

They can fish pound nets during open water with the exception of November (Chadwick)

#### ROTTING OF THE NETS.

The water here contains something that rots the nets. It is not the green stuff, but the red stuff. The middle part of the net rots the worst. You cannot tell by the looks that it is rotten, but only as you take it out and handle it (Zippel).



I generally fish a pound out in 1 year's fishing, spring and fall. If I use it the next year it is simply on the ends. I have used up nets enough here to buy a good farm. Have fished the same pounds on Green Bay, Wis., as long as 9 seasons (Zippel).

Was going to try galvanized wire for a leader, but it costs too much. Do not think it would be much of a success, as it would catch the slime to such an extent as to make a regular wall. If the leader gets so full and dirty the fish will not lead (Zippel).

The water does not injure the pounds in the spring and fall as much as it does now. Thinks it is due to little red worms. It occurs about half way up in the pot and leaders, but it is not so much in the pot. Has more trouble with the leader and heart than with the pot, because the fish keep the pot clean. Does not think the green stuff does any particular harm (Asmus).

The reason the other parties give for taking up their nets in the summer is to save

their twine. The nets we are fishing now will be in poor condition for the fall fishing, by keeping them in through the summer (Landree).

There is some kind of stuff that eats their nets. It started about the middle of June, and rots the nets. I brought some old twine from home that had a thick coat of tar, and in about 3 weeks it ate the tar clean off. Thinks it must be an alkali of some kind. It is not the green stuff in the water, but a red animal substance. It strikes the nets about half way down and at the surface they are not injured much. The green slime does not do any harm. There seems to be a streak through the nets at a certain distance down that is the worst. The net seems to be rotten, as the mesh looks perfectly sound, but you can take hold of it and pull it right apart. Does not think it is here at all when the water gets very cold. It comes with the warm water and goes with it. Zippel will not set in the fall at all without he knows the slime is gone. Does not see any of it in Rainy River (Searles).



I expect to make my nets last 1 1/2 years; that is, a season and a half. After that they begin to rot so that you cannot depend on them. There seems to be a live insect in the water that eats them. They are red looking. The best time to see them is after they take the twine out and it gets dry. When I take my nets ashore I dry them and wash them off clean, and lay them on the shore and let the sand scour them, that is if I intend to use them again. I intend to tar them every summer. The tar costs about \$10 a barrel. Tarring nets is a very disagreeable job (Ricklefs).

The water here is very hard on the nets. They will only last about one season; and in order to have them last that long, they have got to be taken out about July 1, washed and tarred, and not returned until about August 15. The damage is done during the summer months. Something in the water rots the nets. Thinks it must be the green that causes it, as it forms a slime on the nets (Budreau).

This time of year (August, summer) the

nets are better out of water, because they will rot. A net will not last out a year if they keep it in steady (McKinnon).

#### CATCH OF INNER AND OUTER POUNDS COMPARED.

When I have 2 or 3 pounds set in a string the inner one generally fishes best in the spring, and the outside ones in the fall. But get the sturgeon better in the inner ones (Zippel).

The inner pots fish best in the spring for sturgeon, and the outer in the fall for wall-eyed pike. The inside pot is the best for whitefish both spring and fall (Asmus).

Their inner pots fish the best in the spring; in the fall there isn't much difference in them. In the spring the inside is the best for all the fish they catch (Loiseau).

Sometimes the inner and sometimes the outer pots fish the best, according to the wind and how the fish run. As a general thing the inner are best in the spring, and the



outer later in the season. The inner is generally the best for sturgeon the first part of the season.

Thinks the reason they do not run their strings longer is that they have formed a combine not to do so (Searles).

The outside nets of some of the strings are very near the middle of the lake, as they sometimes set 5 or 6 in a string. When they have 5 or 6 pots, as a rule the inside one fishes the best in the spring, and the outside in the fall, making them think that the sturgeon go into deeper water then, as the water gets colder. On an average, however, the inside net catches the most fish (Ricklefs).

In the spring fishery you do not get many sturgeon in the outside net (2 in a string), but in the fall get the most in the outside net (Budreau).

Thinks that on an average the inside pots of a string are a little the best for all kinds of fish. There is not so much difference up here as there is at the mouth of Rainy River (Rice).

POUNDS - WHEN LIFTED.

Budreau says he gets better fishing and keeps nets in better shape by lifting every day or two. When fish are plentiful he lifts that often, but the net he lifted to-day while we were present had not been lifted since Saturday.

POUNDS - OVERFISHING.

Thinks they have fished for sturgeon too extensively on the American side for the good of the fishing. There has been too many nets. There are at least 94 pounds on the American side from the mouth of Rainy River to and including Long Point. The old fishermen say there has been a decrease in the fishing, and that the nets are too thick along the shore. The big firms try to crowd the little ones out, and the little ones kick.-(Ricklefs).

Too many nets on American side.- There is no question in anybody's mind here but what you have twice or three times too many



nets on your side of the lake.--(Chadwick).

Pounds too near together.-- The pound nets are too near together.

Fish wasted.-- They waste fish and no attempt is made at replenishment, and for that reason they are doing harm.--(Andrus).

#### NUMBER OF POUNDS TO AN INDIVIDUAL.

As it is at present I think a poor man can make his living with 1 pound. A person can fish 2 or 3 much cheaper in proportion, however, because he has to have his boat and crew just the same, unless two or more fishermen double up on the work. I think there should be a limit to the number of nets one man can fish. It takes 2 men to fish a pound net after it is set, and 1 man might do it if he was a good man. But they count on about 6 men to operate their 6 nets.--(Ricklefs).

He could not make less than 6 pounds pay on account of the amount of outfit required, which would be the same for 1 pound as for 6.--(Budreau).

I had 9 men this spring to work 8 pounds.

It would take just about as many for 6. If they would fish only 2 or 3 pounds a piece they could make it pay. I never would have put in more than 3 or 4, but others came driving around me so that I have to put more in for protection. If the nets were farther apart and fewer of them they would do better fishing.-(Zippel).

#### FAVORABLE WINDS.

The pounds fish best when the wind is blowing on the shore. All fishing is better then.-(Searles).

The pounds fish best with winds blowing on the shore, principally north winds.-(Loiseau).



GILL NETS.

SOUTHERN PART OF LAKE.

Are used only to a very slight extent in the southern part of the lake, and generally then only for domestic use.

Ricklefs says they cannot compete with pounds here. A few sturgeon could be caught in the fall with them, but as a whole it would not pay well. Would wear out 2 or 3 gangs, before you would wear out 1 pound.

A man set a gill net here last fall just before I set my pounds, and he caught 238 sturgeon in one night.-(Budreau).

We had a gill net in under the ice last winter, and in about a month it was all rotten, although it was properly cared for.-(Budreau).

The Indians use gill nets under the ice in winter when the whitefish are running.-(Budreau).

The manager tried 2 or 3 nets one summer; caught only a sucker and a small whitefish.-(Landree).

During the winter of 1886-87, Zippel fished gill nets under the ice for whitefish, pike and pickerel. Once he tried 2 nets with 10 and 11 inch mesh for sturgeon, but took nothing.

Has fished gill nets in the winter, but at no other times. When we first came here had a 4 inch mesh and would get it full of perch. Last winter we fished about to January 1, and then it got too cold. Had 5 1/2 inch mesh and got whitefish, pike, pickerel, and a few buffalo and suckers. The fish are plenty under the ice in December. Have one sturgeon gill net (10 inch mesh) out now, (August 7). Had it out 1 night last week and caught 2 sturgeon.--(Asmus).

Thinks the reason they do not fish gill nets in the spring and summer is because the twine rots so quickly.--(Asmus).

Heard of a few other trials by the whites, but only on a small scale and without success.

The Indians use gill nets, small ones, on a small scale, during the open season, in different places. Thair fishing here is largely for the moon-eye.--



## NORTHERN PART OF LAKE.

### EXTENT OF FISHERY.

Mr. Chadwick said he had issued about 25 gill net licenses of 1,500 fathoms each.

About 8 or 10 persons fish under the ice in winter.--(Kipling).

The Baltimore Packing Co. is taking fish in 1894 from 8 gill netters.--(McKinnon).

### LOCALITIES.

Kipling says gill nets are used mainly in Big Stone Bay, Clearwater Bay, Yellow Girl and Whitefish Bay, which is about all, except on a small scale for domestic use.

To the above Chadwick adds Matheson Bay, Point Portage Bay, Ptarmigan Bay, and to some extent around the eastern end of Big Narrows Island. Does not know of a gill net south of French Portage.

There are some people fishing in Whitefish Bay, setting in 39 fathoms.--(McKinnon).

### LOCALITIES OF FISHERMEN.

The gill net fishermen all belong north

of French Portage, although they may run down below. Most of them live here in town (Rat Portage), but a few of them are gradually going out and locating on good fishing grounds, and doing a little farming in connection with it.-(Chadwick).

#### CONCERNING LOCALITIES, DEPTH, &C.

Depth.- Get from 12 to 14 and 20 fathoms in the places where they fish, but 20 fathoms is deeper than I have been fishing in. They have that depth in Big Stone Bay. It is 20 to 25 fathoms at the Big Narrows.-(Kipling).

Bottom.- The bottom is soft mud. In some places will find rocks, but not often. The sinkers will sink into the bottom.-(Kipling).

Places and manner.- In the middle of the summer try to fish the gill nets in as deep water as they can get. In the spring and fall generally go where the water is shallow, about 1 or 2 fathoms.-(Kipling).

Always fish on the bottom. Some tried floating their nets this summer, but couldn't



get any fish at all. When he fished for moon-eyes on Lake Winnepeg he set at the surface.--(Kipling).

In Whitefish Bay some people are fishing in 39 fathoms, where they get trout.--(Kipling).

The Indian gill netting is on a very small scale.--(Kipling).

The fishermen set their nets in different depths. They set now in deep water, and later on quite near the shore in shallow water.--(McKinnon).

#### DESCRIPTION.

, When Kipling first came here he used stone sinkers; now he uses lead. His nets measure from 200 to 500 and 600 feet long each. Uses 8 to 20 nets.

In the beginning, according to McKinnon, they would use on an average 5 or 6 nets apiece, each net being about 600 feet long. Now they use 3 lb. nets, with 63 to 65 sinkers to a net, the latter 9 feet apart.

Mesh.-- The legal mesh is 5 inches for whitefish and salmon trout.--(Chadwick).

They use from 5 1/4 to 6 inch mesh; all want 6 inch now. They claim that they catch too many suckers with the small mesh.--(McKinnon).

Kipling uses 5, 5 1/2, 5 3/4 and 6 inch mesh. Could get more fish with a smaller mesh, but the small ones would die in the water before we could bring them up. You will get more fish from a 5 1/2 than a 6 inch mesh.

Boats.-- For lifting gill nets in the summer uses a small clinker built sloop, about 14 to 20 feet long, and about 18 inches draft.--(Kipling).

#### WHEN LIFTED; CONDITION OF FISH.

Hauls sometimes once, sometimes twice a day. The fish spoil very quickly here if not taken out.--(Kipling).

#### SEASON.

Begins to fish just as soon as the ice is out, but does not get much then. Continues fishing until November.--(Kipling).

About 8 or 10 persons fish in the winter



under the ice; catch about the same kinds of fish as in the summer. Fish mostly in shallow water and in the same places as in the summer. Use only about 5 or 6 nets in the winter. Haul them once a day. We could leave them, however, 2 days if we wished.--(Kipling).

Previous to this they have not allowed us to fish in the winter with gill nets, but Sir Charles told me last winter that he should give them the same privileges for fishing in the winter that other places had. Winter fishing has not been carried on to any extent in the past on account of not getting permission to do it. The Indians fish at any time.--(Chadwick).

Budreau also referred to the fact that there had been no legal gill netting in winter on the Canadian side.

#### CATCH.

The gill nets are used for pickerel and whitefish, and also for jackfish when they can get a market for them.--(Chadwick).

They catch a great many suckers and lawyers.--(McKinnon).

The catch of the gill nets is very small compared with the pounds. About  $1/4$  of the catch of whitefish might be taken in the gill nets. A smaller proportion of the wall-eyed pike is caught with gill nets than with the pounds. There are more of them toward the shallow part of the lake.--(McKinnon).

Trout are taken by the gill nets.--  
(Kipling).

#### SHIPPERS.

Gill net fish are handled by the Baltimore Packing Co., the Buffalo Fish Co., and I think also by the Sandusky Fish Co., although I have nothing in my notes to indicate the last.--  
(Rathbun).



MISCELLANEOUS FISHING METHODS.

SEINES.

Are not used practically, but heard that they had been tried at times.

Zippel said 2 men had started in with one in the spring of 1892, but were not successful.

Asmus once used one near his point and caught many small wall-eyed pike, but it did not pay.

Searles hauled one inside of the fish house at the mouth of Rainy River spring of 1894, and caught jackfish, buffalo, wall-eyed pike and one whitefish.

Tried one once, but got nothing.

Tried once at Garden Island, but got only buffalo. Then used the net for other purposes.--(Landree).

Asmus said that, in 1890, a Swede used one on Garden Island for some time and did pretty well, catching 8 or 9 sturgeon that spring and 700 wall-eyed pike.

### FYKE NETS.

They are not used in the lake.

Zippel spoke of 2 men who fished one once and caught bullheads and lawyers. Did not amount to anything.

Asmus once tried one for 3 weeks.

Budreau said they used them 6 years ago near Rat Portage, but Colcleugh had not heard of them.

Ricklefs said the Davis Fish Co. tried them this spring, but no one else seems to have heard of this fact.

Fyke nets would scarcely be used in a lake like this, where the fishing is almost exclusively for a few kinds of the choicer fishes for distant markets.

I do not see that their use would occasion any harm.

### HOOKS AND LINES.

Have never been used extensively.

Found that Zippel was using hooks at the time of our visit, in order to procure fish for his own use. Had caught 2 sturgeon the day



before.

Set lines are used for sturgeon at Long Point and Asmus says they work very well. Our neighbor here fished about 10,000 hooks this spring, starting in about June 1, and continuing 2 weeks. One party caught 1,800 lbs., and the other 2,000 lbs. of sturgeon. About July 1 we took about 1,300 lbs. sturgeon in 2 lifts on 1,800 hooks. We are about the only ones who have used them around here.

The Indians use trot lines some, but do not make a business of it.

Fishing with single hooks has been tried but not successfully.

There is no sport fishing in the southern part of the lake, and apparently not very much at Rat Portage, unless it may be in the River

#### SPEARS.

Only heard of their being used to a slight extent by the Indians to supply their own wants. Kipling said they spear the lake trout in shallow water when they are spawning in October. Ricklefs said they spear a few

sturgeon among the islands.

#### EXPLOSIVES.

Did not hear of their being used to catch fish, except when the R. R. was being constructed the employees did occasionally.



FISHES; GENERAL INFORMATION.

FISHES - CATCH AT DIFFERENT SEASONS &C.

WILLIAM ZIPPEL.

When I first put pounds in in the spring, get yellow pike, whitefish, jackfish and all other kinds of scale fish which occur here. Sturgeon are most plentiful during June. The best fall month for sturgeon is September. Get the most whitefish in the fall in October. When the cold weather comes the fish leave the shore. Has fished until November 15, but the fish leave the shore when the water gets cold.

Get most of the whitefish when we set in the first part of May, until the sturgeon come in, when the latter drive the whitefish off. (See under whitefish).

H. P. ASMUS.

Begin fishing in the spring as soon as the ice leaves. This year it was about May 15 or 20; last year we made the first lift June 1. Keep the nets in generally until



the first of July, but this year took them out June 25. Has never fished through the summer, but there are lots of fish here as we have tried it with hooks.

We have better scale fishing here in the spring than sturgeon. In the spring we do not get as good sturgeon fishing here as they have at the mouth of the river. Have better sturgeon fishing here in the fall than at the mouth of the river. We get about as many sturgeon in the fall as in the spring, but they do not at the mouth of Rainy River.

In the fall we get sturgeon, pike, whitefish and pickerel.

The first thing in the spring we get pike mostly, the first one or two lifts; then the sturgeon come on and chase the scale fish out. When we get many sturgeon get very few scale fish. We pull our nets up as soon as the sturgeon slack up. Do not catch much of any whitefish in the spring, principally sturgeon and yellow pike.

In the fall the main fish are whitefish and pike. The best part of the fall is from the first of October until we stop. The

best run of whitefish is when we have to take up the nets, just before it freezes up.

CHARLES W. SEARLES.

In the pound nets they take sturgeon, whitefish, wall-eyed pike, and jackfish. Once in a great while they ship some buffalo to make out a car load.

CHARLES LOISEAU.

In the spring the first fish we get are pike, whitefish, and pickerel or jackfish. The sturgeon come in between June 1 and 10, and remain about 3 weeks in abundance at the longest. Would get them through the summer if we fished for them. In the fall they get a little run of sturgeon about September 1, and they last, perhaps 15 or 20 days, and then they get whitefish. We had nets in one summer and got a few pike, pickerel and whitefish.

JOSEPH BUDREAU.

Our principal fishery is sturgeon in the



spring and summer, and whitefish in the fall - say from October 1 to November 1. We also get quite a number of wall-eyed pike, principally in the spring. We also get the jackfish, &c.

CHARLES RICKLEFS.

Their only important fishes are sturgeon, whitefish, and wall-eyed pike. The sturgeon is the most important fish as a whole, and the whitefish next.

JOSEPH LANDREE.

One season with another the fishery is about an even thing. In the spring we get generally about half and half scale fish and sturgeon. We begin to get the most of our sturgeon here the latter part of August and in September. We do the best of our fishing here in the fall.

J. W. COLCLEUGH.

The shipment of whitefish as compared to sturgeon would be about  $1/3$ . But they have

not been fishing for scale fish until the past year or two. That is the sturgeon has been the principal fishery. In 1883 they shipped small quantities of whitefish, and they have always shipped some scale fish. In 1889 the Reid Co. shipped the first car load lot. Kalmbach and Dunn did not ship many from Zippel.

JOS. BUDREAU.

Does not think there would be any big fisheries here except for the sturgeon, because the scale fish that are caught here in the spring do not amount to much. There would be only a few weeks in the fall that would amount to anything.

#### RELATIVE IMPORTANCE OF STURGEON AND SCALEFISH.

If you prohibited sturgeon fishing you would stop the biggest fishing done on the lake. Doesn't think there would be any big fisheries here except for the sturgeon, because the scale fish caught here in the



spring do not amount to much. There would be only a few weeks in the fall that would amount to anything.--(Budreau).

CATCH OF POUND NET AT GARDEN ISLAND,

AUGUST 8, 1894.

(Richard Rathbun).

Went out in sail boat and lifted pot (inner) of pound farthest west on south side of island, about 2:30 P. M. The net had not been hauled for several days. The catch consisted mainly of sturgeon, 114 in number, one of the men estimating the total weight at about 3000 lbs. (about 26 lbs. each). I think this estimate not too large, though a very rough guess. The remainder of the catch would not have amounted to much more than a Lake Erie box of fish. It consisted as follows: about 6 whitefish (3 lb.); mostly buffalo; perhaps 24 moon-eye (Hiodon); 5 or 6 Lucius; there may have been some suckers, but could not make out. Several of the Lucius had gilled and were dead. There were also perhaps 2 dozen other gilled fish, all of which

seemed to be the same, but they were very rotten and went to pieces. They told me they were tullibees, but it was impossible to make a specimen of them. Saved one large moon-eye and 2 lampreys from sturgeon. After catch had been taken on board found one large green Argulus in the bottom of boat at stern. Could not tell what it had come from. Had no means of preserving.

The following were from two pounds, one on Garden Island, the other on the mainland opposite, August 9, 1894:

Besides the sturgeon there were about 1 dozen whitefish, 8 Lucius, 6 yellow pike and 1 tullibee. The latter was about 11 inches long and looked something like a Lake Erie herring. I have not identified it, but have saved the specimen. The fishermen called it "tullibee" (and they make the "u" long).

#### KINDS OF FISHES TAKEN. (ANDRUS).

The larger percentage of the fish they catch there, next after sturgeon, are pike-perch. Probably catch a million lbs. of



sturgeon a year. The yellow pike perch is the most valuable one. The pike perch spawn before navigation opens, and before they can get the nets in. Their spawning season does not, therefore, need to be protected by law. They get lots of buffalo, but throw them away. They get a good many red-horse, but do not use them. There is an opportunity for putting up a smoke house on Oak Point for fish which they could not afford to ship fresh. Could dress them and smoke them there, which would be cheaper than icing. In this way the fish at present thrown away as waste fish could be utilized.-(Andrus).

In Lake of the Woods they do not get any herring or catfish, but get suckers.-(Andrus).

#### FISHES - DECREASE.

I think they will kill all the fish out of Lake of the Woods, if they keep on as they are doing. They used to be abundant down around here, but of late years they are failing and they do not see them as they used to. (Kipling),

None of the fishes have decreased except the sturgeon.--(Zippel).

Last fall (1893) we had the best small fish fishing we have had here, and also sturgeon fishing. This year it was not so good as we had too much south wind. For fishing here we want about 2 days of south wind and then several days of north wind.--(Asmus).

#### PREPARATION OF FISH --- LAKE OF THE WOODS.

All whitefish are dressed before shipping from here, unless receive order to ship round. (Landree , Baltimore Packing Co.).

First few shipments of whitefish and pike in the spring we do not dress, but afterwards we do.--(Searles, Sandusky Fish Co.).

All his whitefish are dressed before shipping. Wall-eyed pike have been shipped round, this year.--(Zippel).

Ship some pike round, but, as a rule, dresses them, unless ordered otherwise.--(Landree, Balto. Packing Co.).

We dress about all our scale fish after the weather gets warm. We shipped one or two



batches of pike round.-(Rice, Sandusky Fish Co.).

Ship wall-eyed pike both dressed and round, according as the market requires it.-(Ricklefs).

FISHES - GENERAL.

A REPORT ON THE SPECIES OF FISH RECEIVED AT  
SANDUSKY BY THE SANDUSKY FISH CO.

FROM LAKE-OF-THE-WOODS,  
BY CLOUD. RUTTER.

NOVEMBER 1.

Made some specific notes on *coregonus*  
*quadrilateralis* and *Stizostedion vitreum* from  
Lake-of-the-Woods.

The following species were seen:

1. *Coregonus quadrilateralis*.
2. *Salvelinus namaycush*.
3. *Stizostedion vitreum*.
4. *Coregonus artedi*. (?)

Others are sometimes sent and I shall go  
again Saturday to see another lot.

The foreman of the Sandusky Fish Co. said

that the one herring was the first that he had seen from there.

The whitefish are all gilled and gutted, but I sent one which had a part of the gills remaining.

NOVEMBER 3.

The total list of species from Lake-of-the-Woods that I have seen is as follows:

1. *Stizostedion vitreum*.
2. *Stizostedion canadense* (one).
3. *Coregonus quadrilateralis* (specimen sent).
4. *Salvelinus namaycush*.
5. *Coregonus artedii* (?) (specimen sent).
6. *Lucius lucius*.
7. *Perca flavescens*.
8. *Ictiobus velifer* (specimen sent).
9. *Acipenser rubicundus* (dressed but not skinned, so if there were another species, I could not be certain of the identification).

I was told that *Pomoxis sparoides* is sometimes sent down.

Made some notes on *Stizostedion*, *Ictiobus* and *Lucius*.



STURGEON; ACIPENSER RUBICUNDUS (RICHARDSON).

IMPORTANCE.

Thinks there would be no pounds fished in Lake of the Woods if it were not for the sturgeon.--(Searles).

STURGEON; DISTRIBUTION, MOVEMENTS, SEASONS.

Run up Rainy River as soon as the ice is out, commencing the first of May and coming back in June and July. Along the south shore and at his place get them a little later than at the mouth of the river. They are moving from east to west along that shore in June. Does not know what occurs in the fall.

Do not occur around the War Road River that he knows of.--(Zippel).

Occur all along the shores of the lake as far down as he knows. Has seen them jumping all the way up from Rat Portage. Does not think they frequent very deep water.

When the wind is off shore, the sturgeon are also off shore.

Do not get many sturgeon at first early in the spring.--(Searles).

The sturgeon must come in schools the way they get them, as they come by jerks. Get a big run; then they are scattered, and then get another big run.--(Loiseau).

Get them as soon as we put the nets in in the spring, as soon as the ice permits, and the good run continues about 4 weeks. This year it wound up about June 18. In the fall the run doesn't last nearly as long. Last year got my nets in September 18, and only got 2 good lifts, which was as soon as they were put in.

Do not take sturgeon down among the islands in the winter, but do at other times.

Generally in schools in the spring and fall, but in the summer generally go singly. In the summer may lift one day and get not over a dozen or two and probably the next day will get 150 out of the same net (This looks like summer schooling).

Sturgeon do not travel much. You have got to go where they are. If you fish them out of one place, you have got to go somewhere else.



During this spring's fishing the winds were very unfavorable. We got no west winds at all while the run was on. We want west, southwest or northwest winds; a wind blowing on the shore.-(Budreau).

Occur all through the lake, but seem to be most abundant in the Big Traverse, which has shallow water. The Indians take them up among the islands.

Are in schools at certain times. Has taken (About June 6, 1894) as high as 230 out of one net which had been fishing 3 days.

Pike generally make first run in the spring; about a week after the sturgeon come on, and remain throughout the season. Their spring fishing (1894), began about May 20 and continued to the last of June. Was best June 1 to 20.

Do not get as many sturgeon in the fall as in the spring. Some say they go into deeper water, and he thinks so himself. Not their nature to be in cold water, &c.

Mr. Ricklefs says the sturgeon are the principal fish in the spring; whitefish in the fall.

During the summer might catch an abundance with favorable winds; those blowing on the shore.

Thinks they belong naturally on the bottom. At times of the year they seem to come to the surface -- that is in the summer, about August 1; and especially on calm days you see them jumping. Do not seem to lead into the pounds then. They jump all around the nets, but do not catch any to speak of; that is between July 1 and August 25 to September 1.

The bottom in front of his station is all sand, so far as he knows, and that is the only bottom on which he has seen sturgeon.--(Ricklefs).

I have seen sturgeon jumping all over the lake where I have been. They are not as abundant at Oak Island as at the mouth of Rainy River, but we have steadier fishing here, although no such hauls as they have there. We catch a different class here from that at the mouth of the river; they are fatter and heavier for their length.

Caught a few as soon as our nets were in, but do not know how the fishing would have been earlier, because we didn't get our nets



in last spring to lift until June.

Sturgeon most abundant in the spring; whitefish in the fall.

We will get a run of sturgeon sometimes for a while and then it will slack off, but will catch a few all the time. There are no regular runs of fish here as in Lake Erie. There doesn't seem to be any regular run of scale fish. But the sturgeon generally go with the wind. They seem to work on to a lee shore every time. It is the same way in Lake Erie; a north wind was always better for them than anything else; and it is the same with other fishes.

Doesn't think sturgeon stay right on the bottom here because you see them jumping. They jump at any time after the water gets warm, but see none jumping in ice water.-(Rice).

Are some sturgeon in the northern part of the lake, but doesn't think them as abundant there as in the southern part. Are mostly in shallow water, and always near mouth of Rainy River, where the fresh water is coming down. Takes none in his gill nets.-(Kipling).

Ship the most in the spring. This year

our first shipment was made May 18.--(McKinnon).

Ship the most in the spring, the principal run coming then. Hardly twice as many taken in the spring as in the fall, but last year (1893) there was a tremendous spring run; the first was June 3. In the summer the run would be much smaller. They knock off from about July 5 to August 20. The last haul of the pounds on the American side would be about November 5.--(Colcleugh).

Winnepeg River.-- Occur in Winnepeg River, in which the passage was clear until they built a dam below Rat Portage; it has a small fish way. There are plenty of sturgeon right below the falls where they put in the water power here. I fancy there is a migration of fish between Lake Winnepeg and Lake of the Woods.--(Colcleugh).

Small Lakes.-- There are little lakes and such places about this country, which are full of sturgeon and have never been fished.--(Colcleugh).

Habits, spawning.-- The sturgeon travel long distances. They return to the same spawning grounds to spawn where they were



born. In different parts of the lake they get sturgeon of somewhat different variety, a certain amount of localization.--(Steensen).

Sturgeon fishing season.-- At the mouth of Rainy River they begin to take sturgeon as soon as they can get their pounds in in the spring -- May 10 to 15. Here at Garden Island they do not begin to take them until later -- the last of May, and they reach Oak Island still later. They catch them a week later in the fall at Garden and Oak Islands than at the mouth of Rainy River.

Rainy River sturgeon.-- Only a part of the sturgeon in the lake go up Rainy River. Those taken at the mouth of the river he thinks must come down from Rainy Lake. They come down from the lake as soon as the ice is out sufficiently so that they can get over the fall.--(Steensen).

Sturgeon, habits.-- Sturgeon go in droves. Catch large numbers at a time, and then many have scarcely any.--(Steensen).

## STURGEON -- HISTORY.

I understand it is only a few years since the sturgeon became valuable. A few years ago they used to take out the eggs and bury the flesh, but to-day they are the most valuable fish in Canadian waters. The Canadians are not much interested in this fishery, except that it gives employment to our men.-(Colcleugh).

## STURGEON -- EXTENT OF CATCH.

In what we call the spring run, generally figure on about 1,000 lbs. a day to each net.

We got 279 sturgeon at one lift of one net this spring.

During the summer have got on an average 4,000 lbs. a week out of 6 nets.

In the summer sometimes get only a dozen or two to a lift of each net, and the next day may get 150 from the same net.-(Budreau).

He is doing better fishing here than any of the others according to the number of nets. His spring catch of sturgeon in 6 nets was 55,000 lbs., dressed, from about May



20 to last of June.--(Ricklefs).

The first season we were here we caught 288 sturgeon out of 1 net.--(Landree).

His catch so far this year has amounted to 7,500 lbs. of fish, and 62 kegs of caviar.--(Budreau).

From Garden Island, August 10, 1894, a shipment was made to Rat Portage of 20,145 lbs. dressed sturgeon, the catch of 7 pounds on the adjacent mainland and 2 pounds on the island, one lift of each. Of this catch 561 sturgeon were from 6 of the mainland nets, and 114 from one of the island nets when I was present. (Rathbun)

#### STURGEON -- DECREASE.

Not half as abundant as they used to be. Began to get scarce last year. With 16 nets now will not catch as many as with 6 nets 3 or 4 years ago. (Zippel).

Does not notice and has not heard that they are decreasing. Can't tell, as more nets are being used. Last fall (1893) had the best fishing we have had here. Thinks

they will decrease in time at present rate of fishing.--(Asmus).

Still abundant. Does not see much difference in their numbers.--(Searles).

Have decreased about  $1/3$  since he has been here (3 years). Cause, overfishing. All the eggs are taken out of the lake.--(Loiseau).

Rather thinks them decreasing judging from this year's catch. The Baltimore Packing Co. made 234 kegs of caviar last year (1893) and only 147 kegs this year (1894), with same number of nets. Last year, however, was better than the year before. Smaller catch the past spring may have been due to adverse winds.

Sturgeon will not last more than 3 or 4 years more here; the caviar business is using it up.

At Garden Island they were taking immense quantities of sturgeon 4 or 5 years ago. Now they do not get them to amount to anything, and haven't for the past 2 years.

Thinks they have the nets in in the lake a little too thick.--(Budreau).



Not as plenty as when we first came here, although we get good lifts yet. The first summer we were here we caught 288 sturgeon out of one net.--(Landree).

Thinks it will take a good many years to thin out the sturgeon, as we are fishing only in one corner for them. They are all around these islands.--(Rice).

Have always been abundant, and they are taking them just about the same. Does not know that they are taking too many.--(McKinnon).

Thinks they are just as abundant as formerly, if not more so. There may be a decrease some time, but the fishermen say not. It stands to reason that in the course of a few years they will kill out the sturgeon if they keep on fishing as they are doing.--(Colcleugh).

The caviar business will have to be stopped or the sturgeon business will stop. If the caviar business goes on as it is now, it will certainly destroy the sturgeon.--(Andrus).

Settlers and local fishermen along Rainy River as far up as Ft. Francis complained that their supply of sturgeon was being cut off by the nets. Prior to the time of the pound net,

sturgeon could be speared in the spring at any point along Rainy River, but they are so rare now that the fishermen maintain the supply for home consumption cannot be obtained.-- (Woolman).

# STURGEON -- SIZE.

Run as high sometimes as 200 lbs., round; we have taken such; would be 5 1/2 or 6 feet long. The average weight of our catch has been about 30 lbs. each, dressed; this year do not think it will go above 20 or 22 lbs. This is the first year I have noticed the decrease in size.

Have seen them here 1 1/2 feet long. Sometimes get as many as 8 or 10 such in one pound. Never saw any very young sturgeon or fry.--(Zippel).

The largest we ever took (caught in 1893) weighed 158 lbs. round and 98 lbs. dressed; was about 6 or 7 feet long; ~~Run in~~ the average size would be about 35 lbs. dressed.-- (Asmus).

Sometimes we catch lots of small ones from 2 feet up. Has seen them here as small



as 8 inches. Then they are all back bone and side fins and look like a corncob. Along the last of the fishing we get quite a lot of them.-(Searles).

They have taken them 7 feet long and weighing 150 lbs. The average size of the sturgeon would be about 5 1/2 feet. In the fall they are shorter. Do not see many young sturgeon. Might occasionally get a few.-(Loiseau).

Our catch averaged 35 lbs. apiece this spring. Have weighed some here 140 lbs. - about 5 1/2 feet long. Smallest I have seen was about 1 1/2 foot; there were quite a few of them. Do not find any other small sturgeon than the rock sturgeon.-(Budreau).

Average weight about 30 lbs. dressed, based upon this spring's catch. They market them from 4 to 6 1/2 and 7 feet. Not many smaller than that. Average between 5 and 6 feet. Probably 1 1/2 foot is the smallest he has seen here. Has seen them as small as 6 inches on the Great Lakes.-(Ricklefs).

Average weight here (Garden Island) about 17 lbs. dressed, there are more small ones

now than formerly.--(Landree).

A 100 lb. sturgeon is pretty large (about 5 1/2 or 6 feet), but once in a while get a larger. Run about the same here as in Lake Erie. Never saw one here under 2 feet.--(Rice).

The largest sturgeon taken in the Lake measure about 6 feet long and weight about 150 lbs.--(Steensen).

There is no limit on the size of sturgeon to be taken; they throw overboard the small sturgeon.--(Andrus).

#### STURGEON - SIZE. (RICHARD RATHBUN).

Following relates to sturgeon taken in pound net at Garden Island, August 8, 1894.

The size of the sturgeon ranged from about 3 1/2 to 5 1/2 feet. It was estimated that some of the largest weighed nearly if not quite 125 lbs. Precise care was not exercised in cutting off the heads and tails, more of the length being wasted in some cases than in others. Made measurements of two that had been cut as follows:

Body cut for market,	3 ft. 7 inch.
Head	1 " 2 "



Tail, to tip of upper fluke,	<u>10 in h.</u>
Total - - - - -	5 ft. 7 inch.
Body cut for market,	2 ft. 3 inch.
Head,	9 "
Tail, to tip of upper fluke,	8 "
Total, - - - - -	<u>3 " 8 "</u>

675 sturgeon shipped from Garden Island  
August 10, 1894, weighed 16,745 lbs., dressed,  
an average of 24.8 lbs. apiece, dressed.-  
(Rathbun).

#### STURGEON - MATURE OR CAVIAR SIZE.

Can take caviar from about 15 to 20 lb.  
sturgeon, which is the smallest, about 4 feet  
long.-(Zippel).

Can get caviar in none smaller than 4 or  
4 1/2 feet.-(Asmus).

Cannot get caviar from sturgeon 3 1/2  
feet long. In Lake Erie do not take them  
unless the fish is 4 feet long; it is about  
the same here.-(Searles).

Seth Green claims that a sturgeon attains  
its growth in 3 years.-(Searles).

A sturgeon to furnish caviar has got to be about 5 feet.--(Rice).

Ordinarily 5 feet is the smallest from which caviar is taken; once in a while from 4 feet.--(Ricklefs).

Mr. Steensen says that sturgeon 4 feet and smaller are too young to spawn or yield caviar, and he is undoubtedly correct. They apparently require to be some larger than the above figure judging from the fish seen today. (Richard Rathbun, Garden Island, August 8, 1894).

Fish were dressed at Garden Island, August 9, that did not measure over 3 1/2 feet and which, in consideration of their size, had quite large reproductive organs.--Rathbun).

#### STURGEON -- MARKET SIZES.

Sometimes market a sturgeon as small as 3 feet round, but do not want them any smaller.--(Zippel).

The smallest we market would weigh 6 to 8 lbs., dressed; about 3 or 3 1/2 feet long, round.--(Asmus).



Do not intend to take any unless they will dress about 20 lbs.--(Searles).

The smallest we send to market would be about 3 1/2 or 4 feet long, round.--(Loiseau).

Do not take out any less than 3 1/2 feet, round; probably 2 1/2 feet, dressed.--(Budreau).

Do not market many smaller than 4 feet.--(Ricklefs).

Throw back everything under 3 feet.--(Landree).

Save nothing 4 feet.--(Rice).

#### STURGEON - SPAWNING PLACES (AND SEASON).

Go pretty close inshore here to spawn and also up Rainy River. Spawn mostly on soft gravelly bottom; on this shore in depths of 4 to 10 feet. Never saw eggs lying on the shore.--(Zippel).

Thinks they spawn mostly in Rainy River. Great Many go up in the spring all the way to the Sault, about 40 miles up. Rainy River would be a good place for a hatchery; thinks they could get plenty of spawn there.--(Asmus).

In the lower part of Lake Erie they spawn

where there are big boulders mixed in, but more often on the fine gravel.--(Searles).

Does not know where they spawn, but it is said they go up the river, went up there this spring to Big Forks and saw any amount of sturgeon.--(Loiseau).

Generally spawn around rocky, shallow and reefy places.--(Budreau).

Thinks they go up Rainy River to spawn, but doesn't know of their taking them along that river. Does not know much about Big Grassy River, except that the mouth is all grown over with grass.--(Ricklefs).

Go on the south shore and to the streams to spawn. All that are spawning go for the river mostly.--(Landree).

Thinks they spawn on the sand banks in the river. Go up Rainy River early in the spring. Doesn't know when they come down. Never saw any at Oak Island with ripe spawn and thinks they do not spawn around the island.--(Rice).

Run up Rainy River to spawn the latter end of May, and come down as soon as they are done spawning, commencing about June 10.



They come down in a rush and will keep on that way until about June 20, when the run is out. Also go up Pine River to the falls, and up American River, about 60 miles to the falls. Some spawn in the lake also. Has seen them along some of the Rocky Islands the first part of June, when they were spawning.- (Kipling).

Spawning places.- They spawn on reefs on clay bottom. Doesn't think they spawn much up Rainy River.

Eggs eaten by whitefish, suckers, buffalo.- Whitefish, suckers, and buffalo go after sturgeon eggs, and you will always find them abundant in the places where the eggs occur. The sturgeon roots in the bottom like a hog, and takes into his stomach whatever he can get in that manner.

Sturgeon eats whitefish eggs.- He feeds on eggs of whitefish.- (Steensen).

#### STURGEON - SPAWNING SEASONS AND HABITS.

From about June 10 to July 10. From June 20 to 25 the caviar eggs are sometimes very nearly ripe. The spawn found in the

fall lasts through the winter.

Get the most females in June and the most males in the fall, but in the early spring they are all mixed together.--(Zippel).

Sturgeon eat their own eggs, have seen them in their stomachs. Lawyers also eat sturgeon eggs.--(Zippel).

Thinks they spawn both spring and fall. Main part of spawning in June. About the latter part of June and first part of July the spawn is gone out of the sturgeon. Get a good many large females in the spring sometimes without caviar.

Catch more females than males in the spring; not many males taken then.--(Asmus).

Spawn in Lake Erie in May; here the same time and early in June. Saw spawn sturgeon here first of June this year. No ripe spawn here in the fall.

The females come first, and the males come on after the run falls off. In the last 4 or 5 lifts they made, they caught more male fish than all the rest of the spring.--(Searles).

Spawn pretty nearly all the season, but



mostly in the spring; from as soon as the ice goes out until about June 20 or 25.

During the spring females much more abundant than males. Get the males from June 25 to September 1. Never saw eggs or milt running, except when you tear the fish by gaffing.--(Budreau).

Thinks they spawn in the rivers about the last of June. Once in a while, but not often, get one with spawn running; generally in June.

Get bulk of males from June 15 to 30; not many before that. In the fall both sexes mixed in about equal numbers. In the spring they are separate.--(Ricklefs).

We do the best of our sturgeon fishing here in the fall. The sturgeon go on the south shore to spawn in the spring is the reason we do not get them here then. They go to the streams to spawn. We get the biggest share of our caviar in the fall, but we have done better this year with caviar than we have ever done before, but then we have fished on the mainland more this season.--(Landree).

All the sturgeon that are spawning go for the river mostly, and that leaves these that

are not spawners; they do not care where they go, and so we get that kind. Perhaps out of a couple of hundred in the spring we would not get over 2 or 3 packages of caviar, while at the river they might put up 15 or 20 packages from the same number. The caviar is the principal part of the fishery and what they make their money on.--(Landree).

We get very little caviar for the amount of sturgeon we take here. They had about all spawned when we came here. Along toward the last of our fishing we might get a boat load of sturgeon, and only get 2 or 3 caviar sturgeon among them, having 50 or 60 in the boat. The sturgeon do not seem to get here until after they spawn.--(Rice).

Caught sturgeon in May in which the eggs were not large enough for caviar, and caught others at the same time that had spawned.-- (Rice ).

Thinks probably the close season should be the month of June.--(Colcleugh).

Sturgeon spawning.-- The sturgeon spawn mostly the latter part of June and first part of July in Lake of the Woods. Occasionally



find a spawner at other times during the entire open season.--(Steensen).

Has never been able to find out when sturgeon spawn. They tell me they will spawn from January to December. That is practical fishermen tell me they find them in all stages, but it may be that it takes them a long time to mature and that they may only drop their roe at certain seasons. They go up Rainy River principally in the spring I believe, but do not know what month. The class of people who are on Rainy Lake would not observe as much in 10 years about the fish as the fishermen would in one year, as they are not a very intelligent class.--(Chadwick)

#### STURGEON SPAWNING (ANDRUS).

The spawning season for sturgeon begins about the first of June, and they spawn all through the summer. About the first of June they begin to take them in their pound nets. It is at that time they begin to run to get upon the spawning grounds on the sand in 5 or 8 feet of water, and it is while they are running up into that shallow water on the sand

that the bulk of them are taken. He took an ounce of sturgeon spawn and counted it; found that the average weight of spawn in an average sturgeon is 8 lbs., and that would be equivalent to 350,000 eggs.

They tell me that the sturgeon spawn all the season through; that is during the warm weather. The season is, therefore, if the fishermen's statement be true, a very long one; during all of which caviar can be obtained; but the bulk of it is from about the middle of May to the first of July.

#### STURGEON - SPAWNING (RICHARD RATHBUN).

From pound net catches August 9, 1894. Endeavored to record the number of each sex as the sturgeon were being dressed, but found it impossible, as the reproductive organs are sometimes so immature as to require careful examination with a lense, and they were working too fast for me. The females, however, appeared to be greatly in the majority. Fish were dressed that did not measure over 3 1/2 feet and which in proportion to their size had quite large reproductive organs. Whether



they would become mature in another season could not be told. There were no ripe sturgeon in either lot, either male or female, but in nearly all the fish the reproductive organs were quite large. It would be interesting to know whether sturgeon spawn every year. If they only spawn in the spring and these fish have spawned this year their organs must develop and ripen rapidly.

The eggs are in every possible stage of development at this season, from so small that it required a lense to make them out, up to the caviar.

#### STURGEON - CAVIAR AND SPAWN GENERALLY.

(RICHARD RATHBUN).

Relates to the sturgeon taken in pound at Garden Island, August 8, 1894.

The total number of sturgeon was 114. Of these 26 yielded caviar. The latter were all large. They can distinguish between those not containing caviar and those which may have it. The former are more or less hollowed out on the lower side, broadly grooved lengthwise as it were. That is to

say, not filled out on the ventral side. The latter are plumper there, but not all contained caviar. Some were males; others were females with very immature spawn, just small, soft, yellowish or straw-colored eggs, although the ovaries as a whole were very large. The man could not distinguish between many of these and the others containing caviar until he had cut them open.

The sizes ranged from 3 1/2 to 5 1/2 feet.

The smaller fish showed only small and very immature reproductive organs. In the larger they were in all stages from immature to the better class of caviar taken at this season. None were ripe or nearly ripe. In the larger the reproductive organs, male and female, were large and full, rounding out the belly, and in all earlier stages of development.

The amount of caviar taken from the 26 fish weighed about 130 lbs., an average of over 1 lb. apiece for the entire catch. Mr. Steensen says that this is over 15% better than the average for the entire year at Garden



and Oak Islands, as far as quantity is concerned. The yield of caviar is not as great at these islands as it is along the south shore of the lake, especially toward the mouth of Rainy River. (Mr. Steensen says that the United States now gives the biggest yield of caviar, more than any other country).

At this season the caviar is all relatively poor, small, and ranks as No. 2. The grading is due to size. The caviar has to be handled very soon after the fish is taken. If the trip is a short one to and from the net, or the weather sufficiently cold it is not taken out until the fish are landed. If the weather is warm and the trip long, they must take the caviar out and separate it on the boat.

All the ovaries taken out to-day contained more or less of the yellow matter composing the ovaries in its early stages. The color is different shades of yellow, from bright to straw color. The eggs are dark gray to blackish, varying in relative abundance according to stage of maturity; the yellow matter predominating in some, and in others

being reduced to  $1/2$ ,  $1/3$  or even less. As the ovaries become more mature, the eggs are larger, the yellow matter reduces, and finally about or entirely disappears. The eggs cannot be used when they are nearly ripe.

To-day the ovaries were removed to the extent of filling a large wooden basket at a time. There were about 4 such baskets altogether. The eggs were then worked through a coarse round sieve (4 mesh to 1 inch). One ovary is taken at a time. The sieve is put upsidedown over a large galvanized iron can. There is a large cake of ice in the can. The ovary is worked over the sieve, something after the manner of kneading bread, by the hand, back and forth. Most of the eggs work loose and pass through into the can. If done when fresh the shells do not break. Some of the eggs remain in the yellow substance, and the working has to be stopped before the yellow substance breaks apart too much. It should not go through. Skill has to be used in this process. The object is simply to extricate the eggs from their surrounding substance. To have the eggs go through and nothing else.



In this Mr. Steensen was very successful.

In the spring and fall the eggs are No.1, larger, and the yellow substance is reduced to a minimum. There is less difficulty in sifting them.

The above work was done in the fish house among the sturgeon. Absolutely, cleanliness is requisite in the entire process of making the caviar, and Mr. Steensen was very careful to have all his utensils clean, as well as his hands. The former were thoroughly scrubbed and rinsed after he was through with them.

The eggs were then transferred to a larger can of some sort (probably this transfer was made simply because of the quantity of eggs. The can is after the style of the garbage cans of Washington, but with plain sides), and were taken to another building where the "secret" process is gone through. I was allowed to be present. He weighed the can and contents. The latter was about 215 lbs. He then sifted in 28 lbs. of Livonia salt (only German salt can be used successfully. It is very pure, made from rock salt) and stirred thoroughly, nearly 1/2 hour, picking out some particles of the yellow substance

which had worked through, and finally skimming off the scum of the surface with his hands. Four square sieves (12 meshes to 1 inch) were then placed on a low rock stand along one side of the room, and the contents of the can were poured in. They filled them from  $3/4$  to nearly full, the liquor passing through into the floor. He said they were drained for a couple of hours and then transferred to the kegs which he keeps stored in the ice house pending shipment.

They are shipped to Sandusky or Minneapolis from here, when 12 or 15 kegs have been made, depending upon which place they happen to be sending a car load of sturgeon at the time. It all gets to Sandusky finally, however, and all goes to Neilson, who ships it to Germany for final preparation. Neilson practically controls all the caviar trade in this country. Here (and it is probably the same elsewhere) he has a man at each principal fishery whose business it is to look after the caviar and sounds -- Garden Island, Oak Island, Mouth of Rainy River. At smaller fisheries the fishermen must attend to it themselves.



Much more money was made out of caviar originally as the fishermen's price was very low, but now the fishermen are making more out of it and Neilson less relatively.

Garden Island, August 9, 1894.- Two lots were brought in to-day. One from one pound on the west shore contained 90 sturgeon, of which 12 had caviar. The other from one of the pounds on Garden Island near the fish house had 20 sturgeon of which 3 contained caviar.

Out of 391 sturgeon landed later the same day 94 furnished caviar.

#### CAVIAR - QUALITY; SEASONS.

In the spring and fall get all No. 1. In the summer get hardly any and it would be No. 2 and 3, the difference being in the size. (Zippel).

Some of the caviar is black and some gray. Ripe and running eggs are about the same color. Find them with yellow eggs, but they are not ripe. When the sturgeon is very fat it makes the eggs yellow.-(Zippel).

The Sandusky Fish Co. got No. 1 caviar during all the time they fished this spring. Begin to get No. 2 first part of July and until first part of September. Then get No. 1 again. All No. 2 during the summer; No No. 2 in the spring or late in the fall.- (Searles).

They take the caviar before the eggs are ripe. When the spawn is ripe it is a dark color. Can make caviar from the ripe spawn when running from the fish. Bystander thinks to make good caviar the spawn should be nearly ripe.- (Searles):

Spring caviar is best; best when it is ripest. Not good in the summer.- (Loiseau).

There are 2 grades called No. 1 and 2; no other difference than size. Ripest and best in the spring; small in the summer, and good again in the fall.- (Budreau).

During the season he fishes get very few sturgeon with No. 2 caviar. During the fall is all first class. Summer caviar called No. 2 because of small size. Caviar wants to be black in order to be good.- (Ricklefs).

Caviar is No. 1 here in spring and fall, and No. 2 in summer. Will get some No. 2



here in spring and is the same on Lake Erie.--  
(Rice).

Ripe spawn is not good for caviar. Must be hard enough to rub through the sieve, in extricating the eggs from the fat, which occurs in greater or less quantities, dependent upon the ripeness of the ovaries.--(Steensen).

#### CAVIAR - RELATIVE QUANTITY SPRING & FALL.

Get about  $2/3$  of our caviar in the spring and  $1/3$  in the fall; using the same number of nets. In the spring about  $1/2$  the sturgeon have caviar. In the spring it takes about 12 sturgeon to a keg of 150 lbs. of caviar, in the fall about 16 sturgeon to the same amount.--(Zippel).

In the spring about  $1/2$  the sturgeon have caviar; in the fall about  $1/4$ . Will average about 12 lbs. of caviar to a fish in the spring; not over 8 in the fall. The caviar will run up to about 20 lbs. to a fish.--(Asmus).

Generally about  $2/3$  caviar sturgeon in the spring, and about  $1/2$  in the fall. In the summer not many caviar sturgeon; get

generally principally male sturgeon then.-  
(Budreau).

Get caviar from about  $2/5$  of the sturgeon in the spring, and from about  $1/2$  in the fall, but do not catch as many sturgeon in the fall.-  
(Ricklefs).

Get the biggest share of our caviar here in the fall, and do the best of our sturgeon fishing here in that season. The spawners go to the south shore in the spring, &c. (Landree. See further under spawning season and habits).

Taking all the year through (Spring, summer and fall) not over  $1/10$  of the sturgeon brought in at Garden Island furnish caviar. At some season the percentage will be much less than this. In the spring they get the largest per cent; the least generally from the middle of July to the last of August; after which until October 1 it gets better again. After October 1 ~~it gets better again~~ the sturgeon go into deeper water.- (Steensen).

Get very little caviar for the amount of sturgeon we take here. Along toward the last of our fishing we might get a boat load of 50



or 60 and find only 2 or 3 caviar sturgeon among them. The sturgeon do not seem to get here until after they spawn.--(Rice).

#### CAVIAR - QUANTITY TO A FISH.

From a 4-foot sturgeon would get about 8 lbs. of caviar, cleaned. From a 30 lb. sturgeon would get about 10 lbs. caviar. The amount will run up to about 20 lbs. to a fish.--(Asmus).

(See also under relative quantity of caviar, spring and fall).

#### CAVIAR - AMOUNT TAKEN AND SHIPPED.

One spring, with 2 pounds, we took out 133 kegs of caviar. Two years ago it averaged about 6 kegs to a net through spring and fall. The same year Fenske got about 150 kegs from 6 nets.--(Zippel).

In 1893 the Baltimore Packing Co. made 234 kegs, and this year only 147 kegs. Have the same number of nets in and thinks 1 more.--(Budreau).

The caviar in a keg weighs from 120 to 150 lbs. The kegs weigh about 30 lbs.- (Steensen).

The out put on caviar from Lake of the Woods that went through the firm of Nielsen Bros., of Sandusky, last year, 1893, amounted to 800 or more kegs, containing 140 lbs. net, each. They paid \$25. a keg to the fishermen, and received 50 cents per lb. when sold for exportation. The day before he left Rat Portage Nielsen Bros. sent away from there 3 car loads of caviar.- (Andrus).

(See further under Rathbun's notes).

#### CAVIAR - MARKETS; PRICES.

All goes to Germany.

The caviar washigher 5 years ago than at present. They corner the market.- (Zippel).

The caviar all goes to Nielsen in Sandusky, by whom it is shipped to Europe, and the most of it comes back to this country again.- (Steensen).

Last year Nielsen Bros. paid \$25. a keg to the fishermen, and received 50 cents a pound when sold for exportation.- (Andrus).



### SOUNDS.

The sounds are preserved inconjunction with the caviar. They are, however, taken from fish of all sizes. At Garden Island great care is taken in their preparation. They are all sent to Germany. They are now worth only \$1.25 per pound. Used to be worth \$2.50.

### FOOD.

Examined the stomachs from 55 sturgeon from the lot brought in to Garden Island, August 9, 1894. Only those which looked more or less distended were taken. The nets had not been lifted for several days, making it possible that many of the sturgeon had been long enough in captivity to have digested all the food in their stomachs. That was evident from the results of the examination. In fact, in most cases where food was still present, digestion was far advanced, and in only a very few was the food at all nearly fresh.

Twenty-one of the stomachs were entirely empty. The remainder contained the following

some having only one kind and others more or less of a mixture:

Crayfishes, from 1 to 6 to a stomach.

Insect larvae, apparently all of one species, from 2 or 3 to an ounce to a stomach.

Small bivalves; only a very few specimens altogether; very small species.

Small gastropods of 2 or more species; only a very few specimens altogether.

One specimen contained a very little dirt; and several specimens had from 1 to a few very small grains of gravel.

There was the single vertebra of a small fish.

I took great pains to look for eggs, and found only 1, a very small one in the whole lot. Could not say whether it belonged to a fish or a crayfish. This is not, of course, the season when the sturgeon could have obtained the eggs of any of the market fishes.

Budreau says they feed on some kind of vegetation and little shells along the beach. Will take in gravel, mud, etc.

Ricklefs says he has found Mud, gravel,



and crayfishes in their stomachs. Gravel is sometimes as large as No. 5 shot, and from that down.

Neither of the above has seen any fish eggs in their stomachs.

When the wind is playing inshore and stirring up the bottom, they come in shore a good deal more, and think this is on account of their feeding.

According to Rice they feed on water bugs, insects and worms (larvae). Has also found snails, and little clams in them; and perch spawn in them on Lake Erie.

Steensen says they feed on whitefish eggs.

#### STURGEON - HANDLING AND PREPARATION.

(RICHARD RATHBUN).

The following notes relate to the catch of the pound on Garden Island, August 8, 1894, when I was present:

The process of gaffing the sturgeon was very interesting to witness. Very hard work. Three men gaffing. Proper way to gaff front of body near head. Said to fight and struggle

too much if gaffed toward tail, but often necessary to do so. They made the water fly in all directions, and I got thoroughly wet through although up on stern seat. The boat was pretty full and the catch was a large one for one net. They have often made larger, however, up to 288 sturgeon from 1 net.

Came back to station. They were all gaffed into fish house. Those containing caviar were cut open and the caviar taken care of by the man who attends to that business. The fins are cut off with a knife, the head and tail chopped off. They are gutted and cleaned out and thrown into a large bin containing ice awaiting shipment. The sounds are saved.

The Indian squaws took charge of the entrails and heads which were carried off to their tepees. They eat everything in a very disgusting way; were a nuisance about the fish house. Two of the young Indians assisted in the cleaning.

#### STURGEON - PRICES FOR FLESH.

Take a sturgeon that weighs 200 lbs. --



all they get is 1 1/4 cents a pound -- \$2.25  
for that sturgeon -- but they pay the fisher-  
men 3/4 of a cent per lb. for catching them,  
dressed. It takes about 17 or 18 fish to  
make a keg of caviar.-(Andrus).

WHITEFISH; COREGONUS LABRIDORICUS (RICHARDSON).

Two specimens obtained in Sandusky from the Sandusky Fish Co., were identified by B. W. Evermann as the above. This is the "Sault Whitefish" and the "Musquaw River Whitefish". The Coregonus clupeiformis may also occur in Lake of the Woods, but no specimens have been determined.

WHITEFISH - KINDS; CHARACTERISTICS.

Are a darker color here and not as long in proportion as the Lake Erie whitefish.  
Are more of a pumpkin-seed shape. Not as good as the Lake Erie.-(Searles).

Better than the Winnepeg whitefish, but not as good as the Lake Superior.-(Andrus).

IMPORTANCE.

Are next in importance to the sturgeon in the pound net catch.-(Ricklefs).

Are the principal fish Kipling takes in his gill nets.



Whitefish

Shipments are about 1/3 as numerous with  
 The whitefish are caught in Lake  
 Winnipeg in large volume by each fisherman,  
 but they make much less than they could  
 in the Great Lakes on acct. of expense  
 of shipping to market. (C. M. Clark)

ABUNDANCE.

The large catches of w.f. in Lake Winnipeg, as  
 make the general output much greater  
 than they can dispose of, and there is  
 consequently a great waste. They are frozen  
 and are sometimes kept so long they are  
 not fit to eat. (P. H. Davis)

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The abundance of w.f. in Lake Winnipeg, this  
 and Lake Manitoba has kept down the  
 price of w.f. from the Great Lakes, which  
 would otherwise have gone up to 25c  
 a lb. The total output is now two feet.  
 There are no better w.f. than those from  
 Lake Winnipeg. (W. S. Robbins)

WHITEFISH - DISTRIBUTION.

Are taken to a greater or less extent at

Shipments are about  $1/3$  as compared with sturgeon. Have only been fishing for scale fish the last year or two.-(Colcleugh).

Our principal fishery in the fall say from October 1 to November 1, is for white-fish.-(Budreau).

#### ABUNDANCE.

Searles thinks they are as abundant as in Lake Erie.

Fall of 1893, Budreau caught 1,000 lbs. a day on an average from 1 net last two weeks of October.

Spring 1894, Ricklefs caught about 3,500 lbs.

5,000 lbs. at Rat Portage during this week from 3 day's gill net catch at North end of Lake.-(McKinnon).

#### DECREASE.

No decrease has been noticed.

#### WHITEFISH - DISTRIBUTION.

Are taken to a greater or less extent at



all of the fisheries. See under season, abundance, spawning.

Thinks they go into the deep water down among the islands in the summer. About 30 miles south of Rat Portage is the best gill net ground.--(Budreau).

Thinks they are more abundant among the islands than in the southern part of the lake.--(Ricklefs).

This spring took some with a seine inside of the fish house at the mouth of Rainy River.--(Searles).

Do not catch very many at Oak Island. Out of all of our nets we only got 700 or 800 lbs. in one lift this spring. (Rice. He did not begin fishing until late, and had not been there in the fall).

About  $1/4$  of the catch of whitefish might be taken in the gill nets.--(McKinnon).

Seems to ascend the river to spawn (?) as it is scooped out of the rapids at the Soo with dip nets in the spring.--(Woolman).

#### SEASONS.

Spring and fall.-- Get the most when we

set in the first part of May, until the sturgeon come, which drive them off, but get them more or less all the spring. Get them again the last part of September and until the last part of October; most in October.--(Zippel.-- His meaning is not clear. Do not know whether spring or fall are best with him).

Do not catch much of any in the spring. Get mainly whitefish and pike in the fall. First part of October and then on until we stop is best. Best run is when we have to take up our nets, just before it freezes up. Has seen them in November.--(Asmus).

Did not get many here last spring. Were catching a few when we pulled our twine out. Supposes fall is best. Forepart of October said to be best, but get more or less until we close up.--(Searles).

Take them in the first spring catch in the pounds. Also follow after the sturgeon in the fall.--(Loiseau).

Get very few in the spring. Ordinarily do not get many until fall, October 1 to November 1. November best month if we could fish then.--(Budreau).



Quite plenty for a few lifts in the spring; and also during the fall.--(Landree).

Not many in the spring; the last of Sept. and forepart of October is the best time for whitefish here.--(Rice).

Gill-net season.-- Takes only a few in his gill nets during the spring; not until June and July, when the water begins to get warm. Catch them through the summer; best fishing about August. Got more this month than altogether before. Get some in October.--(Kipling).

Summer.-- Have been getting whitefish right along now (August 6, 1894); last week got a few pounds, but it is something I never saw before.--(Budreau).

Caught a few in the pounds one summer.--(Loiseau).

, Winter.-- Caught them in gill nets through the ice during the winter of 1886 - 87.--(Zippel).

Caught them in gill nets in December, 1893.--(Asmus).

No whitefish taken here from November 1 to May 1.--(Colcleugh).

## WHITEFISH - HABITS.

Do not come in schools here, but heard they do at Oak Island.--(Asmus).

Occur in schools the same as in Lake Erie, and also get a few all the time.--(Searles).

Get large runs together and between they are scattered.--(Loiseau).

Come here in schools, but in the fall generally get them right along every day, and they are massed right on the shore. The wind does not effect the catch of whitefish on this shore. Will catch as many with a south as with a north wind. They are on the bottom mainly.--(Budreau).

Will catch a good many at one time, and then get hardly any for a time. They are on the bottom.--(Ricklefs).

## WHITEFISH - SPAWNING.

Season.-- Commence about October 10 and continue some into November.--(Zippel).

Commence the latter part of October, and continue into November. Has seen them spawn-



ing ? November 5 or 10.--(Asmus).

Very late, after the fishing season is over.--(McIntyre, Searles).

Begin about November 1, Saw spawn running freely fall of 1893.--(Budreau).

Just about the time we leave them, first part of November. The boats sometimes get them with spawn running.--(Landree).

Mainly begin about October 20, but a few stragglers spawn as early as October 1. The water gets pretty cold here the latter part of October or 1st of November.--(Kipling).

Spawning places.-- Close inshore.--(Zippel).

Thinks on the sand beaches in shallow water. About November 5 or 10, 1892, we had 2 or 3 days with not a breath of wind. Just at night they would be just as thick as they could lay on the water. It was on the sand beach here at the west.--(Asmus).

Probably spawn on the reefs about here, and there are reefs all over the lake.--  
(McIntyre, Searles).

Knows several places where the Indians fish with gill nets in the winter, when they are running, and they generally go off the

reefy points, like the little island directly off this place. Thinks there is a spawning ground right off Stevenson's Point.--(Budreau).

### SIZES.

Perhaps in a ton would not have 1/2 dozen weighing under 2 lbs. Get more small ones the latter part of June and July than in the fall.--(Zippel).

Average here 5 to 6 lbs. Caught one 13 lbs., round, 11 lbs., dressed.--(Asmus).

Average about 3 1/2 lbs.; 100 weighed last year gave that average. Get a few small ones about 1 1/2 lbs.--(Searles).

Average 4 to 5 lbs. No very small ones.--(Loiseau).

Average about 4 lbs. Caught one yesterday, 8 1/2 lbs.; last spring 11 1/2 lbs. Large ones very scarce. See little ones, more in summer and fall than spring.--Budreau).

Average about 3 3/4 to 4 lbs. Mostly of same size in this part of lake. Hardly ever sees one less than 3 lbs.; largest he has seen 7 lbs.; rare. Gill nets take as small



as 1 1/4 to 1 1/2 lbs.--(Ricklefs).

In gill nets weigh 2 1/2 to 6 or 7 lbs.; very few under 2 lbs. Catch some as small as 6 or 8 inches entangled, etc. In Lake Winnipeg average larger, 4 or 5 lbs., dressed; has seen them weighing ten or 12 lbs. there.--(Kipling).

Average about 4 lbs., dressed, from gill nets at North end; some as small as 2 or 2 1/2 lbs. Sometimes a few about 1/2 lb. Pound net fish run about same.--(McKinnon).

At Selkirk, Lake Winnipeg, will weigh 22 lbs.--(Colcleugh).

#### WHITEFISH - MINIMUM SIZE.

Proper market size not less than 2 or 2 1/2 lbs., dressed.--(Zippel).

We will take no smaller than about 3 lbs.--(Asmus).

Weighing less than 2 1/2 lbs., round, not fit for market.--(Searles).

Do not market under 1 lb. dressed.--(Loiseau).

Do not take under 2 lbs., round.--(Budreau).

### WHITEFISH - SIZE AND MESH.

1/2 lb. will go through a 3 inch mesh;  
a 1 1/2 lb. will not.--(Zippel).

Prefers 4 1/2 inch mesh for pots, will  
go through a 7 inch mesh lead.--(Asmus).

3 1/2 inch mesh will let through quite  
a good-sized whitefish.--(Loiseau).

Our nets will hold nothing smaller than  
2 1/2 lbs., round. Rarely gill in the leader  
sometimes do.--(Budreau).

Can squeeze a 2 or 2 1/2 lb. through a  
3 3/4 inch mesh pot very easily.--(Ricklefs).

### WHITEFISH - RELEASING ALIVE.

Can throw the small ones out alive from  
pounds without trouble, if one is careful,  
and we do so.--(Zippel).

Generally throw the little ones back  
(from pounds).--(Searles).

### WHITEFISH - PREDACEOUS.

Eat sturgeon eggs, and you will always  
find them abundant in places where those eggs  
occur.--(Steensen).



TULLIBEE; COREGONUS TULLIBEE (RICHARDSON).

The tullibee occurs in this lake and is captured to some extent in the pound nets, but it does not seem to be very abundant. Opinions differ so greatly about the species that very little reliable information could be obtained from the fishermen regarding it. Some describe it as always being small, not exceeding 7 or 8 inches long, and generally escaping from the pounds when they are being lifted.

Woolman says, common, reaching 1 1/2 to 2 1/2 lbs., and shipped as whitefish.

Mr. Bûdreau says that a few are taken in his pound nets, generally in the fall with the whitefish, and that he ships them with the whitefish. They grow to weigh 1 1/2 to 2 lbs.

Most of the pound net men report them in small numbers, but one cannot be sure of their identification in all cases.

Mr. Zippel used to catch them on the Canada side, and says they were plentiful about 12 miles south of Rat Portage.

Mr. Searles says they are rare, and that

they got some the last of June.

Mr. Rice reports their being taken once in a while at Oak Island, or at least a species which appears to be this one.

Mr. Landree gave us the most information about them. He says that a few are taken in the pounds, the largest he has seen not weighing 2 lbs. They very seldom get as large as that, but are generally about 10 or 12 inches long.

During the winter of 1893-94 he was fishing gill nets on Rainy Lake, and obtained quite a number. They seem to be more abundant there than in Lake of the Woods. Obtained specimens weighing about 2 or 2 1/2 lbs., but could not say anything about the abundance of small specimens, as they would have escaped through the mesh.

He describes the tullibee as being flatter and sharper on the bottom than the common whitefish. He has eaten them and does not think them as good as the whitefish.

In a pound net which I saw them lift on the south side of Garden Island, August 8, there were about 2 dozen fish, which appeared



to be of one species, and all of which had meshed. They were very rotten and went to pieces on the least handling. They told me they were tullibeas, but I could not make a specimen of any of them.

On August 9, at Garden Island, however, I succeeded in getting a specimen of the tullibee, the only one brought in from a lift of two pounds. It has been saved, but was not identified. It measures about 11 inches long and looks something like a Lake Erie herring.

The fishermen make the "u" long in the tullibee.

WALL-EYED PIKE - STIZOSTEDION VITREUM.

SAUGER - STIZOSTEDION CANADENSE.

On November 3, 1894, Cloud. Rutter saw and identified, at the Sandusky Fish Co., Sandusky, one specimen of the S. canadense in a shipment just received from Lake of the Woods. This is all we know of the occurrence of that species in that lake.

Mr. Searles and Mr. Rice, two old Lake Erie fishermen were questioned, at the Lake of the Woods, regarding the blue pike, but neither had seen this variety there.

Mr. Woolman, in his report, states that he saw and examined more specimens of canadense than of vitreum while on Lake of the Woods, and says that both species go to market together.

#### IMPORTANCE; ABUNDANCE; DISTRIBUTION.

Got more pike here this year than whitefish; last year whitefish were most abundant.-(Searles).



Get quite a number.--(Budreau).

Is one of the three most important fishes in the lake (Sturgeon and Whitefish). Pretty abundant in the spring. Caught about 2,500 lbs. spring of 1894.--(Ricklefs).

Quite abundant. Have caught as high as 9,000 or 10,000 lbs. a week.--(Landree).

Whitefish are the principal fish he takes in gill nets; then pickerel (wall-eye) and next jackfish. In some places in the spring get yellow pickerel mostly in the gill nets.--(Kipling).

A smaller proportion is caught with gill nets than with pounds. There are more of them toward the shallow end of the lake.--(McKinnon).

Used to use a seine on the sand bar at Long Point, and caught lots of little "Green Bay Pike", as we called them. Pike were also seined in large numbers on Garden Island by a Swede.--(Asmus).

Seined this spring inside of the fish house at the mouth of Rainy River.--(Searles).

Very abundant at the second falls from here on the Winnipeg River. Four of us

caught 229 there in a few hours in 1893.-  
(Colcleugh).

### DECREASE.

No decrease has been noticed.

### WALL-EYED PIKE - SEASON.

This is one of the species he obtains when he first puts his pounds in in the spring.-  
(Zippel).

Take pike in the fall in the pounds.

The first thing in the spring take pike, mostly the first one or two lifts; then the sturgeon come on and chase the scalefish away. The spring catch is principally sturgeon and pike. In the fall the main fish are white-fish and pike.

Fished gill nets during December, 1893, 5 1/2 inch mesh. Pike were among the fish taken.- (Asmus).

They are here the year round. Get the best run first in the season, and get them last in the fall also; and catch more or less of them all the time the nets are in.- (Searles).



Among the first fish they get in the spring. Had the nets in one summer and got a few.- (Loiseau).

Get them principally in the spring, but get some in the fall, although not as many as in the spring. Get them as soon as the nets are in. The biggest run comes from about May 10 to June 1. Get very few in the summer, perhaps 1 or 2 at a time in the net.- (Budreau).

The pike are generally the first run, and about a week after that the sturgeon come on.

The best season is early in the spring, when the season first opens. They get them abundant for about a week, and get them scattering all the rest of the season. In the fall for a week or two, about the middle of September, they are more abundant, but much less so than in the spring.- (Ricklefs).

They did their biggest fishing for pickerel at the mouth of the Rainy River, before we came here to Oak Island. Did not catch very many there after I left there, and we didn't catch many here.- (Rice).

In some places in the spring they get mostly yellow pickerel in the gill nets.- (Kipling).

#### HABITS.

Seem to run about even. Do not school the way whitefish do, and are a more steady traveler.- (Searles).

#### SIZE.

Range a pretty fair size; no larger than in Lake Erie. Common run here averages larger than in northern part of lake, but we have no such large individuals here as there.- (Searles).

Average about 2  $1/2$  lbs. See some little ones, about 8 inches.- (Budreau).

Average about 1  $1/2$  to 2 feet long; about 6 lbs. weight, round, about 3  $1/2$  lbs., dressed.- (Ricklefs).

#### MINIMUM SIZE.

Proper market size not less than 2 or 2  $1/2$  lbs., round.- (Zippel).



### SIZE AND MESH.

Gill less in 4 1/2 than 3 1/2 inch mesh.-  
(Asmus).

Will mesh in the pot sometimes, but not very often, and that is only when lifting the net.--(Loiseau).

Can squeeze a 2 or 2 1/2 lb. pike through a 3 3/4 inch pound mesh. They gill easier than whitefish, but go through the mesh easier.--(Ricklefs).

### SPAWNING.

Spawn in the spring, beginning in April, and continuing through May.--(Zippel).

They may spawn before we get here. Never saw them here with ripe spawn, and it is possible the bulk of the spawning may be done before the fishing begins.--(Searles).

Spawn in the spring as soon as the river opens up, which is about 2 weeks before the Lake opens up. This is before fishing begins. Spawn in marshes and grassy places.--(Loiseau).

Spawn in the fall, about same time as whitefish. Also have ripe spawn in the

spring.--(Budreau).

Thinks they spawn twice a year, spring and fall.--(Ricklefs).

FOOD.

Live on all classes of small fishes. In a pike weighing 5 lbs. will find fish weighing  $3/4$  lb. Sometimes they will have a perch in them, and the perch will have some minnows inside of it.--(Ricklefs).



LAKE TROUT.

Lake trout do not seem to be anywhere abundant in the main part of the Lake of the Woods, although they are reported to be more plentiful in some of the smaller connecting lakes. However, so little fishing has been done in those places, that scarcely any information could be obtained on the subject, and none that was reliable.

As is to be expected, from the slight depth and condition of the water, trout are very scarce in the southern part of the lake, in the pound net region, and yet a few specimens are secured there every year. Budreau had never taken any. Asmus caught one in 1894, the only one he has ever taken. Zippel catches half a dozen to a dozen a year. Ricklefs, Landree, Loiseau and Rice each report the capture of from 1 to 4 during the spring of 1894 in their pounds nets.

Size.- Zippel states that those which he had taken weighed from 4 lbs. up, the largest having weighed 17 lbs. They were all in good condition. He has never shipped

them, but uses them at his own house.

Kipling says, speaking for the gill netters, that the lake trout do not occur abundantly in the main part of Lake of the Woods. Some people are now (August) fishing in Whitefish Bay, in 39 fathoms, where they are getting them. He takes but a few in his own gill nets, perhaps 3 or 4 a month.

Mr. Colcleugh states that the best fishing grounds for lake trout have never been opened up for licenses. Thinks one of the best places is in Whitefish Bay. They occur in the Winnepeg River below Rat Portage. They do not take many in the gill nets. Not more than 200 or 300 lbs. have been shipped away this season altogether so far.

Size.- Mr. Colcleugh reports a trout dipped up underneath the falls in the Winnepeg River, below Rat Portage, which weighed 14 lbs., after it was dressed. Mr. Kipling says that the trout will weigh up to 4 lbs. on Silver Lake, where he used to fish, and at Yellow Girl he got some weighing from 16 to 20 lbs.

Mr. McKinnon states that lake trout are



occasionally in the gill nets, and they are bringing in some now (early in August).

They are quite numerous in Whitefish Bay, where they are now setting in 39 fathoms.

Spawning.- According to Kipling, the salmon trout spawn in Lake of the Woods beginning the latter part of September. The height of the spawning period is about October 1. The Indians go for the spawning trout about October 18. They come out of the small lakes around Lake of the Woods on to their spawning grounds in shallow water, and at that time the Indians spear them. Thinks that lake trout keep rather to the one lake in which they occur, and do not travel much.

Market.- The lake trout from here are classed as whitefish in shipping. The Reid Co. buys them here (Rat Portage). Some are sold in town, some are shipped to Manitoba and some across the line.-(Colcleugh).

Silver Lake.- According to Mr. Colcleugh: Silver lake has a trout weighing about 2 1/2 lbs. (Kipling says up to 4 lbs). They are speckled, but their head is a little different-shaped -- sharper than in the lake trout.

The spots are very bright and red. They may be a variety of Lake trout, but are different. They are dark on the back, but light on the belly, with the red spots. They are called Silver Lake Trout. The same trout is taken in the Winnipeg River between Lake of the Woods and Lake Winnipeg.



JACKFISH, ESOX.

The most common name for this species, through this part of Canada is jackfish, and the Americans on Lake of the Woods generally call it the same.

This is one of the common fishes of the lake and is taken in both the pound nets and the gill nets. It seems to be captured generally in greatest abundance in the spring, but forms a part of the catch at all seasons, It is among the first fishes taken in the pounds in the spring, and is one of the worst species to gill in the pots.

I saw a few specimens taken from a pound on Garden Island, August 1894, and Mr. Loiseau reports its capture in small numbers in pound nets at the mouth of Rainy River during the summer. Mr. Asmus states that he took them in gill nets fished off Long Point, during December, 1893. They were seined inside of the fish house at the mouth of Rainy River in the last of April, 1894, according to Mr. Searles.

The gill netters take them in the north-

ern part of the lake, and Mr. Kipling states that they are third in importance in his catch, being exceeded by whitefish and wall-eyed pike.

Mr. Colcleugh records them from the Winnipeg River below Rat Portage, and says that in the spring the bay at Rat Portage is alive with them.

Lake of the Woods, with its many shallow, weedy places and tributaries, and other suitable conditions is undoubtedly well adapted to the life of this species, and it is probably even more abundant than would be indicated by the number taken by the fishermen, as the apparatus is not generally set in the places most favorable to it.

Zippel states that it spawns beginning in April and continuing through May, close in shore in the shallow places and at the mouth of Rainy River. It undoubtedly finds appropriate spawning grounds in all parts of the lake.

A large quantity of jackfish is shipped to market, according to Mr. Colcleugh, and yet, owing to the fact that it is a fish which rapidly softens and is difficult to get to



market in good condition, a large proportion of the pound net catch, at least, is thrown away. The Baltimore Packing Co. we were told, is chiefly interested in shipping them, sending them to Minneapolis. The Sandusky Fish Co., during the spring of 1894, made only occasional shipments, to help make out a car load. According to Mr. Rice they are more of a winter fish.

Mr. Ricklefs states that the Baltimore Packing Co. markets about half as many jackfish as whitefish, obtaining the most of their supplies in the spring; but I do not know on what authority he speaks.

Mr. Budreau states that in his 6 pounds he does not get over 2,000 or 3,000 lbs. in a season. He had made sales during June and July, 1894, as follows: June 7, 625 lbs.; June 23, 125 lbs.; June 28, 165 lbs.; July 4, 35 lbs.; a total of 950 lbs.

#### MASKINONGE.

Reported, but no specimens seen. Said to be taken in the pound nets occasionally at Garden Island and Oak Island. Mr. Colcleugh

reports them abundant at certain seasons in the lower part of the lake, where they are taken by trolling. The highest weights we heard of were 35 and 38 lbs.

Mr. Woolman says, in his report, overgrown specimens of the jackfish are not infrequently called muskallunge, and he does not include the latter in his list.



MISCELLANEOUS FISHES.

COREGONUS. SP.

Species known locally as Cisco and herring were reported, but none were seen.--(Woolman).

CALICO BASS.

While on the lake in August we heard of this species only at Oak Island, where Mr. Rice said a few were taken in the pounds. While at Sandusky, in September, Mr. Stoll showed us several boxes just from Lake of the Woods. The fish were of unusually large size, fine appearing and in good condition. Mr. Stoll thought they would readily find a market.

SUCKERS.

Abundant, and several species seem to be represented. We heard of the following names: Red horse, black, red-fin, white, sturgeon-nosed, mullet. Seem to take the greatest numbers in the pounds in the spring. Gill netters also take them. Sandusky Fish

Co. has shipped some to make out a car load occasionally. Otherwise regarded as a waste fish.

#### BUFFALO.

One of the commonest species taken in the pounds, but did not hear of them in connection with the gill nets at the lower end of the lake. Regarded as a waste fish, except that, during the spring of 1894, the Sandusky Fish Co. shipped some occasionally, together with suckers, to make out a car load.

#### YELLOW PERCH.

We took very many young specimens in the collecting seine on the southern shores of the lake, but the species is very poorly represented in the pound net catch, and is not made use of. I cannot say why more are not so caught, unless the mesh is too large for them. None of the pound net men report the capture of more than a very few during any season. Kipling never takes them in his gill nets. Colcleugh reports them abundant about



Rat Portage.

MOON-EYE (Hiodon).

Called also Gold-eye. One of the most common species. Taken abundantly in pounds, but did not learn of its capture by the market gill netters. Is caught by the Indians during the summer for their own use, in small gill nets set close by the shore. No other use is made of the species.

Woolman identified the several specimens he took as Hiodon tergisus. They came from several localities. Evermann identified one specimen from Gardan Island as Hiodon alosoides.

LING (Lawyer).

Seems to be common in all parts of the lake, and is taken abundantly in both pounds and gill nets. Not used.

BULLHEADS.

Reported to be abundant in suitable places. May be taken occasionally in pounds

and by hooks. No present value.

ROCK BASS ; SUNFISHES.

Said to occur, but taken to slight extent only in the pounds (rock bass), and not meriting consideration.

BLACK BASS.

We obtained no information to show that the black bass occurred in Lake of the Woods.



PHYSICAL INFORMATION.

TEMPERATURE.

The temperature of the surface water taken at intervals during our trip in the Keewatin ranged from 66° to 72.5° F.

DEPTH OF WATER; CHARACTER OF BOTTOM.

Between here and Garden Island you will not find any water over 35 feet deep. The bottom is mostly of mud and clay, and in some places sand and gravel. Along the south shore the shores are mostly all sand.-(Zippel).

At the point right off Rat Portage at Coney Island, there is a depth of 200 feet.-(Colcleugh).

They get 27 feet of water about 300 rods from shore, and it is less than that nearer shore. It goes out gradually for 300 rods to 27 feet.-(Searles).

The Indians claim they have sounded 900 feet in some places in the lake, and did not reach the bottom.-(Rice).

### LEVEL OF WATER.

The height of the water in Lake of the Woods will vary about 4 feet. It is highest in August, and gets lower again in the fall; continues to lower during the winter, being lower at the close of winter than when the ice first forms. It begins to rise as soon as the rivers begin to run.-(Kipling).

The lake has raised 3 feet since they drove the twine in the spring. It was just about the same last year and 2 years ago it was higher yet. About the middle of June it begins to rise, and in the fall it goes back again.-(Searles).

### ICE &C.

There is not much open water in the lake in winter, but there are lots of places where there are narrows and a strong current, and it does not freeze, but nearly all the lake freezes over. The ice will get from 2 to 3 feet thick. It freezes up in the fall about November 15 or 20, and the ice generally gets out about May 15, The ice is generally smooth here.



Do not get more than 2 1/2 feet of snow here generally (Kipling).

In the winter, over the ice, he brings his fish up to Rat Portage with dogs and sometimes with ponies.--(Kipling).

Years ago last winter the ice was 52 inches thick; last winter it was 35 inches thick.--(Asmus).

The frost got out of the ground here about June 1 this year.--(Searles).

LAKE OF THE WOODS - CONDITION OF WATER;  
LOWER ORGANISMS.

(Richard Rathbun, Garden Island, Aug. 9, 1894).

The condition of the water in Lake of the Woods in the summer, is something remarkable for so large a sheet of water, and makes it resemble more a small shallow mill pond. The upper stratum of water becomes charged with microscopic algae to such an extent, as to give it a dense bright green color. This, however, is the case to any degree only in the southern part of the lake, in the Big Traverse, where the water is relatively shallow, and where there are probably no strong currents. This body must be regarded as to a large extent stagnant. The greenness was most intense, so far as we saw toward the southern shore, but it reached pretty well across to Garden Island, and about Garden Island there was more or less of the green stuff. Nowhere through the lake where we went was the water clear and colorless, but we could not stop to examine its character.



As it was thrown up by the prow of our steamer, as we passed up from Garden Island to Rat Portage, it had a slightly yellowish appearance (light yellowish olive). In the Big Traverse it was green, very green, especially in the southern part.

These algae seem distributed through the water as deep as we could see, but furthermore they formed a green scum on the surface everywhere, in irregular patches of all sizes from very small up to the size of our steamer and bigger. We passed through them all the way from Ricklefs place to Asmus' at Long Point, and along the line across the Big Traverse, but as we approached the northern side of the Traverse, the intensity became much less.

Prof. Macmillan, of the University of Minnesota, who has been camped on Garden Island all summer studying the botany of the region, has also made a study of this subject, and proposes to publish upon it. He says that the material consists of a mixture of unicellular and filamentous algae. There is considerable blue green algae belonging in

the group of Nostoe and in the genus Oscella-  
ria. Also of the bright green algae there  
is considerable Ulothrix. The principal  
forms appear to belong to Nostoe and Ulothrix,  
but he has had no means of microscopical  
examination with him, and cannot say posi-  
tively what they are until he has examined  
them in the laboratory. The spores rest  
upon the bottom during the colder part of the  
year. The surface appearances began between  
July 2 and 10 this year. How long they may  
continue he could not say. A fisherman told  
us that they went with the first frost and he  
gave the date, which will be found in one of  
the interviews. Prof. Macmillan says that  
they occupy a belt of water at the surface  
about 8 or 10 feet thick. We had no means  
of determining. The water was rendered  
opaque by them. The green stuff could be  
seen all through, and the crest of water  
thrown up by the prow of our boat and of the  
barge towed alongside was intensely green, a  
beautiful bright color. One man said he  
had used the substance for making green  
paint. The patches on the surface are dense



and very bright, and very numerous. They succeed one another in close succession, and may be more or less touching. I imagine that their size and distribution may be more or less influenced by the wind and waves, the latter tending to break them up in regular sized patches. I suppose also that a heavy sea and wind would tend to dissipate them from the surface temporarily, but I had no chance of observing that.

The impression one has with regard to this rich growth of algae is that it must form the basis for rich food for fishes. The Big Traverse would seem to constitute a nursery for such species as prefer this character of water, and there is much other vegetation around the sides of the lake, such as the pickerel and pike might like to breed in. This is noticeably so in the bay inside of the point at the mouth of Rainy River. The same features occur inside of the islands at Ricklefs, in the neighborhood of Windy Point; at the mouth of Grassy River and War Road River, and, in fact, at numerous places all about the lake. One would expect to find a

rich fauna here, and it undoubtedly exists. Woolman's seining was not continued long enough to bring out all the fishes. Cray fishes are very abundant, and form a large part of the food of the sturgeon. We took several very small bivalves, and at least two species of snails from sturgeon stomachs, and I also saw the broken valves of Unios on the shore. A thorough natural history survey of the lake would undoubtedly repay the labor.

#### CONDITION OF WATER - GREEN MATTER.

Gets his water for drinking out around Stevenson's Point, not depending on wells. Has been on the lake the past 7 years, and drank the water, and it is not injurious. Has seen it on the surface here just like a thick cream and it is very green. We have often painted paddles with it without mixing it with anything. This green has just come on within the last week, and it will last until about October 1. Thinks it is a vegetation that comes up from the bottom. Will find it clear across the lake to Clearwater Bay and Whitefish Bay, where you do not get it.- (Budreau).



Begin to see the green stuff the latter part of June and it is thickest about the middle of August. As soon as the frost comes it settles down. We have frost here about the latter part of September. The frost seems to kill it and it settles to the bottom.--(Asmus).

We have never been troubled with the green in the water around here yet.--(Rice).

POLLUTIONS &C.

Occasionally the pounds suffer from floating logs, which may go adrift, but this happens so seldom that it need not be taken into account in this connection. Some rafting is done across the lake, mainly, I believe, from Rainy River.

There are 6 saw mills in operation at Rat Portage, and Mr. Colcleugh was certain they allowed their sawdust to slide from the bank into the water. There are no market fishing grounds near enough to Rat Portage, however, to be injured in any way by this cause.



OFFAL.

All whom we questioned considered it bad to throw the fish offal back in the water. At each place they claimed to dump it back on the land or in a marsh. Some complained that others dumped it in places (marshes, etc), where it drained into the lake. The lake is so small and shallow that the dumping of refuse in it to any extent could not help doing much harm. We saw no indications that it was done, but it would be well to cover the case in any regulations.

Dead fishes, as I saw the nets hauled, were thrown in the boat and carried ashore.

The Indians dispose of most of the sturgeon refuse at some places.

FISHING FIRMS; FISHERMEN; MARKETS.

(Richard Rathbun).

There are 2 large firms controlling the catch and most of the fishing on this lake -- The Sandusky Fish Co. and the Baltimore Packing Co., the latter being called the Reid Fish Co. on the Canada side. Mr. Reid, formerly on this lake, is now on Lake Winnipeg.

Peter Ditchy is in charge of the fishing on this lake for the Sandusky Fish Co. He was here for the first time last spring, and remained as long as the Company fished its nets. He is expected to return as soon as the fall season begins. Charles Searles remains in charge at the mouth of Rainy River in Ditchy's absence. He is getting the nets ready for fall fishing during the summer intermission, tarring, mending, etc. This Company does not fish in the summer, but the Baltimore Company does to quite an extent, and apparently also those who sell to them.

Of the Baltimore Packing Co., the President is J. F. Locke, of Chicago, the manager



E. T. LeClair, of Minneapolis. Paul Marshall has charge of the fishing on the lake, and Angus McKinnon is the book-keeper at Rat Portage. They have the steamer Minnetonka to collect and carry fish to Rat Portage. Their fishing tugs are the Thistle, at Garden Island, Pearl at Rainy River mouth, and Cruiser at Rat Portage.

Of the Sandusky Fish Co., the steamers are the Chieftain, Beaver and Ada.

The Buffalo Fish Company takes some fish from the Lake of the Woods. The gill netters, Bilodeau and Giguere, of Norman, sell their fish to that company. The American consul at Rat Portage, G. C. Frisbie, says that to-day (August 10), that firm shipped 9,200 lbs. of whitefish, pickerel and jackfish to that company. They filled 72 boxes and were iced. At this rate their catch must be considerable in the course of a year.

#### MARKETS -- LAKE OF THE WOODS.

They generally ship the sturgeon in bulk and the whitefish and pickerel in boxes. They

have shipped them in bulk, but it is not very satisfactory for such small fish. We used to ship whitefish here in the round, but now do not, except frozen fish.-(Colcleugh).

They ship fish from here to Montreal; just commenced this spring - only whitefish and yellow pickerel. Does not think there is any demand for sturgeon in Montreal.

They smoke small quantities of sturgeon here, but smoke them principally in Minneapolis and Sandusky.-(Colcleugh).

Baltimore Packing Co. take from Jos. Budreau, Asmus, Zippel, Haas and Huggins. Also this year from 8 gill netters.

Sandusky Fish Co. take from Ricklefs and Bostedt.-(McKinnon).

We freeze simply the surplus fish and that would be taken to Rat Portage and stored there until called for. We simply use an ice freezer.-Landree).

Ricklefs Bros. sell to the Sandusky Fish Co.-(Ricklefs).

Jos. Budreau sells to the Baltimore Packing Co. Ricklefs). Budreau confirms this statement.



We ship sturgeon to Mr. Neilson as well as to Minneapolis. We only ship one car load a week to Minneapolis, mixed sturgeon and small fish, and the rest goes to Neilson. All the caviar goes to Neilson, whether directly or through Minneapolis.--(Landree).

The caviar all goes to Neilson, in Sandusky, by whom it is shipped to Europe. The most of it comes back to this country again.--(Steenson).

All of the sturgeon sounds also go to Europe, where they are used for clarifying beer, wine, etc., and is made into fine gelatine.--(Steensen).

Thinks Neilson takes the sounds as well as the caviar.--(Rice).

We do not freeze any fish here at Oak Island.--(Rice).

NEEDS OF THE REGION; DEVELOPE THE FISHING;  
BREEDING STURGEON.

(CHADWICK).

The depression in the lumber business has caused quite a number of people to be out of employment in the winter months. They will never settle up this country except by the development of the mines. An Indian could go to work for a fishing company for a week and make enough money to buy him pork enough to last him a year. There is no way you can get settlers in here quicker than granting them fishing privileges. The drawback with our country is that both Ontario and Manitoba insist on preserving everything. If these theorists who claim they can breed fish by the millions, can do half what they claim they can, there is no reason why Lake Ontario should not be built up again in her fisheries. As far as the Lake of the Woods is concerned, I will undertake to keep the supply of fish up without its costing the government one cent if they would give me the privilege of fishing. That is if they would give me the license fees. I would enforce



the regulation that sturgeon under a certain size should not be taken, and that sturgeon should be bred with the revenue out of the licenses. There is no question in my mind but what some of those small lakes could be swept of all the fish that prey upon the sturgeon spawn and sturgeon put in there to breed. If you could breed all the spawn successfully from one pair of sturgeon it would go a long way toward keeping up the supply of the lake.

The sturgeon used to go up Rainy River in shoals to breed, way up past the rapids. The Indians used to catch them as fast as they could pull them out. If it was proven that the sturgeon did not go up the river to spawn there could be a part of the lake fenced in. As the lake is so full of islands there would be no trouble to fence in 10 or 15 acres between the islands. Would keep the predaceous fishes out with a wire net, and sweep them out with a seine to get them out. There would be no trouble to get out such a large per centage of the fish that prey on the sturgeon spawn as to make it all right. You might be able to breed stur-

geon in this way where you would not be able to breed them in the hatcheries, and with these pound nets and tanks you could transport 50 or 100 sturgeon to any point you wished without injuring them at all. You could take them out of the net without injuring them, by lowering the side of the pound net and having a connection with a barge, because here it would be only transporting them from one part of the lake to another, or from one part of the lake to the river. Or you could get a scoop net and pick the fish right out of the pound net and put them into a tank of water. We do not want to fish this lake out in a few years, but want to make it a permanent business.



SETTLEMENT.

The land around Lake of the Woods has not been opened up for settlement, although they understand it has been purchased of the Indians.- (Searles).

IMPORTANCE OF FISHERY TO RAT PORTAGE.

Thinks it is a god send for the place to allow fishing here.- (Colcleugh).

LAKE OF THE WOODS --- LITERATURE.

I could not get track of any papers bearing upon the Lake of the Woods than I was already acquainted with.

U. S. Engineer's Report of Boundary Survey.

Lawson's Geology.

Possibly the mine reports of the Canadian Government.

Maps.- A Series of maps published by the Department of the Interior of Canada:

Map of the country between lakes Superior and Winnipeg, plotted and drawn by J. Johnston, Chief Draughtsman, Ottawa, Sept. 1, 1894.

The above is a good general map.



REGULATIONS -- CLOSE SEASON.

A close season would do good from May 1 to August 1. The pickerel and pike fishing does not pay very well. They could catch them in the fall.

By having the above close season they would get more fish during the time they fished than they do now. The sturgeon should not be caught until after they had spawned. Would not get so much caviar in the spring of course.--(Zippel).

Would not have any net fishing in the lake from June 20 to September 1, for sturgeon. About June 25 the caviar is ready to drop, and they get the most of their caviar then.

But let them use all the hooks they please during that season. We have probably caught 300 or 400 sturgeon on hooks, out of which only 3 or 4 had caviar.--(Asmus).

Does not think a close season is proper, if they let them fish on the other side and not on this. Thinks it would be a good thing providing they do not put in hatcheries. Be-

believes in artificial propagation and no close season.

If you stop sturgeon fishing you would stop the biggest fishing that is done in this lake.

Does not know of any way to preserve the sturgeon unless they had only a certain time to fish for them.--(Budreau).

Thinks it would be good to have a close season from July 1 to September 1. Would give the caviar a chance to mature.--(Ricklefs).

As far as sturgeon are concerned, I think a close season would be a benefit.--(Colcleugh).

Probably the close season should be June. The spring season is from opening of Navigation to July 5; with a close season in June, therefore, there would not be much use in putting in nets. If the close season was in May would not affect the fishing so much. Thinks that would be about the proper month. A June close season would destroy the spring fishing.--(Colcleugh).

So far as a close season is concerned, there is a natural one in the fall. In Lake



Winnepeg they have a close season from October 20 to November 20.--(Colcleugh).

REGULATIONS - LIMIT NUMBER OF NETS.

To preserve the sturgeon, would make them fish fewer nets. 25 nets between the mouth of Rainy River and Long Point would be enough. Limiting the number of nets and having a close season would be sufficient regulation.--(Zippel).

Thinks companies along the shore fish too many nets. They should not be too close together. Would be better not to have them nearer than a mile apart.

There should be a law that would help the fishermen as well as the fish.--(Asmus).

Nets should not be set closer than  $1/2$  mile apart. Allow only two nets in a string.--(Budreau).

Think there are too many nets fished. Number should be limited. About 50 would be plenty for the south shore between mouth of Rainy River and Long Point. That would put them half a mile apart, and they should be that at least.--(Ricklefs).

REGULATIONS - SIZE OF MESH IN POUNDS. LENGTH  
OF STRINGS.

Thinks a 3 1/2 inch mesh in the pot  
would be the right thing, after it is tarred.-  
(Budreau).

Thinks 3 3/4 inch mesh is about the right  
size for the pots, and will not take any small  
fish.-(Ricklefs).

There should be 50 rods of lead and only  
1 pot; no strings.-(Ricklefs).

REGULATIONS - LICENSE SYSTEM.

Believes in a license system as a means  
of restricting the number of nets.-(Budreau).

Believes in a license system for limiting  
the number of nets.-(Ricklefs).

Thinks they ought to lease grounds on the  
American side the same as on the Canadian or  
similar, so that a firm could lease 1 or 2  
miles, and then they would not fish them as  
close. It seems to me that on the American  
side every available foot is taken up with  
nets, or soon will be.-(Colcleugh).



REGULATIONS - RELEASE SMALL STURGEON.

Would throw overboard the small sturgeon.-  
(Zippel).

Thinks the small sturgeon, say up to 3  
or 3 1/2 feet, should be thrown back into the  
lake.- (Budreau).

Would not have any sturgeon saved under  
4 feet.- (Ricklefs).

REGULATIONS - MISCELLANEOUS.

Thinks it is a good idea to protect the  
sturgeon some way so as not to catch them all  
off at once; but doesn't know hardly what to  
do.- (Asmus).

Does not think there should be any pro-  
tection in this lake for a while yet, because  
there are hundreds of miles of grounds that  
have never been fished at all yet.- (Budreau).

REGULATIONS - (STEENSEN).

Protection, close season.- There should  
be a close season to protect the sturgeon  
from July 1 to September 1. This would cover

a part of the spawning.

Limit on size.- No sturgeon should be taken under 4 feet long. They are now taken down as small as 2 feet. A 4-foot sturgeon is about 7 or 8 years old. Must be over 4 feet long, and from 10 to 12 years old before they will begin to yield their first caviar.

Being ruined.- The way the thing is carried on now, the fishery will be ruined in this lake in 5 years.

#### REGULATIONS - (ANDRUS).

Limit number of nets and have license.- His idea is to let each man have not over 10 pound nets, charging him \$25. for each net and compelling him to set them a certain distance apart.

No tax.- The American fishing is carried on without a dollar of tax to the fishermen. The State of Minnesota does not get a dollar in return.-



REGULATIONS - (CHADWICK).

Following are Canadian regulations:

A gill net or pound net shall have meshes not less than 4 inches (ext.) for the pots and hearts and 7 inches in the leader. The American leaders are only 4 1/2 inches, and they claim they are a great deal better on account of not gilling so many. No license shall be issued to any one to fish with pound nets and gill nets at the same time. No company, firm, trader, or person shall be interested in more than one license. That is not more than one pound net or gill net license shall be givento each company or person. That, however, is a farce. No man can fish just one pound net and keep the appliances for it without losing money. The above instructions were issued on the 11th of April, 1894. It looks to me as if it would be a great deal better to give a man enough pound nets to make a business of it and let him hire the other men. They get over the restrictions by clubbing together and fishing several nets together.

POUNDS - CANADA SIDE (CHADWICK).

They (the Government?) have not arrived at any conclusions as to whether they should limit the number of licenses. They only had 6 licenses last year, and I did not think 14 would be too many to grant, or even 25.

Thinks the pound nets had better be increased and the gill nets decreased.



LAKE OF THE WOODS.

(MEMORANDUM FURNISHED BY H. M. SMITH, 1894).

Commercial fishing in the American waters of this lake began in 1882, when a Mr. William Zippel established a station. At the present time there are seven fishing firms., located at Rainy River, Buffalo Point, Garden Island, Oak Island, Big Island and Burton Island. About \$60,000 is invested in the industry in buildings, ice houses, apparatus, vessels, boats, etc.

When the fishery was inaugurated, gill nets were employed in the capture of the fish, but they were soon abandoned owing to the presence of a green "scum" in the water which caused the rotting of the nets in about two weeks. Pound nets, to the number of 60 are now used, and by frequent tarring last about a year. The nets are set in 20 to 40 feet of water, and have 75-rod leaders. Seventy-five men find employment.

The fish have to be carried a distance of 80 miles to Rat Portage, on the Canadian Pacific Railroad, where they are shipped in

bond to Minneapolis and Chicago. Two steamers, of 25 tons' capacity, and three barges, of the same size, are used in transporting the catch from the fishing stations to the railroad.

The principal fish caught are sturgeon, whitefish, and yellow pike. Large quantities of other fish are taken, especially buffaloes, but no effort is made to save them. The fish are all shipped in a fresh condition, although up to 5 years ago they were all salted. The annual catch amounts to over 1,500,000 pounds. The fishing season extends from May 15 to November 1.



NOTES ON RAINY LAKE AND RIVER.

RAINY LAKE AND RIVER (ANDRUS).

Mr. Fenske recently located a fishery and put up a house at the Big Fork, Rainy River, with the idea that he could get his sturgeon out of Rainy River and out of Big Fork and Little Fork. The river is from 300 to 400 yards wide, but it is a muddy river and not very deep. It is a good river for buffalo and the cheaper kinds of fish. Sturgeon run clean up to Fort Francis. There are two rapids in Rainy River, Little Sevier Falls and Manitou Rapids, one of 3 and the other of 4 foot fall. In Rainy Lake, the waters on the American side is deeper, but the bottom is rocky and unsuitable for driving piles or for locating pound nets.

At Namekan there are lots of sturgeon.

There are lots of bays and water courses that put down into the State of Minnesota from the Rainy River. They run down in there 4 or 5 miles. Three years ago the Baltimore Packing Co. went up into those waters.

There is a lake that puts down in there from what is practically a bay, -- called Bigwood



Lake -- and up in there they established a fishing station for the purpose of taking out whitefish. They found them in great abundance, and they are a fine flavored fish. The Booth Packing Co made some arrangements with them whereby they went in there and the Baltimore Co. went out -- and they took lots of fish there.

In the tributaries of Rainy Lake system in northern Minnesota there is some beautiful fishing. In Pigeon River there is no commercial fishing to amount to much. There is a little island called Pete's Island, where they get some fine fishing.

#### STURGEON.

Fenske went up to Rainy Lake this spring to fish sturgeon. Does not know what he did there. He had previously tried in Rainy River, but without success. From Rainy Lake sturgeon would have to be shipped via. Towers, Minnesota.-(Steensen).

## STURGEON.

Has heard the natives say there were places where there were lots of sturgeon in Rainy Lake.--(Landree).

## WHITEFISH, STURGEON, TRAPS.

They do not do any fishing in Rany River. Whitefish run up the river.

They tried to fish in Rainy Lake this spring, but did not get anything. Were fishing for sturgeon with trap nets, which are similar to a short tunnel net, only there is a cover to the top of it, and it is sunk under water. The one we used was 12 feet square. There was a lot of sturgeon up there, but they said the water was too high this spring.

There is no way of getting fish out of there very well.--(Loiseau).

## RAINY RIVER.

No fishery is carried on in Rainy River.--(Searles).



RAINY LAKE; LEVEL OF WATER.

A man came down from Rainy Lake about a week ago and said that lake had lowered about 3 feet within a short time.--(Searles).

WHITEFISH.

Last winter (1893 - 94) we were fishing gill nets on Rainy Lake. Got a few white-fish, but did not get much of anything.--(Landree).

No. 79.

Copy.

CONSULATE OF THE UNITED STATES,  
Winnipeg, May 13, 1895.

Honorable EDWIN F. UHL,  
Assistant Secretary of State,  
Washington, D. C.

Sir:

In reply to your despatch No. 56 of date 26th ultimo; I have the honor herewith to transmit a statement from Mr. Geo. C. Frisbie, U. S. Consular Agent Rat Portage, Ontario, showing the product of fisheries from the American side of Lake of the Woods, for the year 1894; also product of fisheries from the Canadian side of the Lake of the Woods for the year 1894. These statements I am satisfied can be relied upon as correct.

I have the honor, Sir, to be

Your obedient servant,

M. M. DUFFIE,

U. S. Consul.

Enclosure:

Statement of Mr. Frisbie, two pages.



product of Fisheries from the American side of the Lake of the Woods for the year 1894, shipped in Bond via. Rat Portage, Ontario, to the United States.

	Sturgeon	White	Pickarel	Pike : Jackfish	Carp	Trout	Fish Eggs
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
May 19 to June 30	473,080	64,327	90,635	92,878	36,825		89,700
July	78,489	3,321	4,773	3,308			3,160
August	105,265	3,466	12,701	6,848			300
September	297,220	121,438	120,639	43,024	43,795		25,660
October	90,272	181,834	126,603	56,031	15,900	7,164	33,750
November	14,941	29,010	32,574	23,769			2,550
Balance frozen		7,622	17,179	5,116		4,337	
Total	1,059,267	411,018	405,104	231,474	96,520	11,501	155,120

Fish Sounds 4,063 lbs.

A large per centage of the scale fish shipped in November were caught previously and frozen.

Last shipment of fresh fish November 14, 1894.

Some scale fish were caught through the ice and taken out by teams to points in Minnesota during the winter. Amounts not known.

(Signed) G. C. FRISBIE,

United States Consular Agent,  
Rat Portage, Ontario.



product of the Fisheries from the Canadian side of the Lake of the Woods  
for the year 1894, shipped from Rat Portage, Ontario.

	Sturgeon	White	Pickarel	Pike Jackfish	Trout	Mixed Scale fish.	Fish Eggs
May and June	lbs. 99,716	lbs. 4,289	lbs. 9,913	lbs. 7,648	lbs.	lbs. 30,000	lbs. 6,750
July	23,744	10,609	358	673		34,400	
August	31,624	22,906	4,846	3,441	4,271	51,948	
September	78,016	104,829	17,287	9,484	2,340		9,900
October	13,599	152,834	14,563	19,094	6,535		1,500
Balance frozen	1,549	65,195	37,067	17,328	17,288		
Total	248,248	360,662	84,034	57,668	30,434	116,348	18,150

2,000 lbs. Bullheads or Mud pouts.  
392 lbs. Maskinonge.

The actual figures may exceed these, as there were some scale  
fish shipped to Canadian points and I could only get the  
amounts approximately.

(Signed) G. C. FRISBIE,

United States Consular Agent,  
Rat Portage, Ontario.



STURGEON PARASITES.      When at Garden Island, Lake of the Woods, we saved 55 stomachs of sturgeon, which we cut open to ascertain their food, as explained in other notes. In none of these stomachs did I see a single parasite. In stomachs empty of food they should have been plainly visible had they occurred at all, but such stomachs contained only a thick yellow mucus. In the food which has been saved some parasites may be found, but I did not observe any. We did not examine the intestines, and I can say nothing about them.      (Richard Rathbun.)