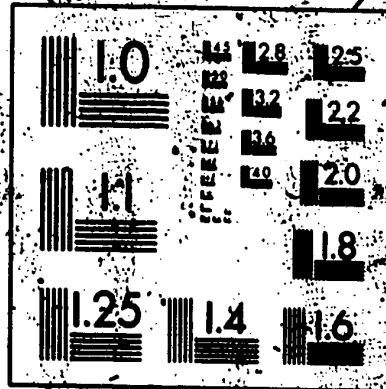


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Commercial fishery on Great Slave Lake, W.W.T.

**Author**

R. R. Wheaton and R. H. D. Harris  
Central Fisheries Research Station

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CONTENTS

A brief history of the fishery	2
The Fishermen	3
The Summer fishery	4
The Winter fishery	18
Conclusion	24
Bibliography	24

## A BRIEF HISTORY OF THE FISHERY

A biological investigation of Great Slave Lake was undertaken in 1944 by the Fisheries Research Board of Canada under the direction of Dr. D. E. Rawson to determine the commercial possibilities of a fishery. In 1945, on recommendation by Dr. Rawson, Great Slave Lake was opened to commercial fishing with a quota of three and one-half million pounds dressed weight of lake trout, Cristivomer namaycush, whitefish, Coregonus clupeaformis, and inconnu, Stenodus leucigathys mackenzi. One fish company based at Gros Cap, a harbour on the northeast shore and forty-five miles south of Yellowknife, was the sole producer until 1948.

An all-weather road from northern Alberta to Hay River, on the south shore of the lake was completed in 1948. The winter previous to the completion of the road saw a winter operation commence with fish companies based at Hay River. With the opportunity of more complete exploitation of the fish population, all the available biological data collected were reviewed. With approximately one-third of the fishing grounds of the lake being exploited and no apparent effect on the fish population, Dr. Kennedy of the Fisheries Research Board of Canada recommended an increase in the annual quota to nine million pounds round weight of lake trout and whitefish. This was enacted and in 1949 a large summer fishery developed at Hay River.

## THE FISHERMEN

Great Slave Lake has truly become a "melting pot" for fishermen of western and northern Canada. All three Prairie Provinces are well represented during the fishing seasons. Some have made the Northwest Territories their permanent home, while others return to the provinces for the intervals between fishing seasons.

A large number of fishermen from Manitoba come to Great Slave Lake in the summer. Smaller numbers return for the winter operations. Fishermen from Lake Winnipeg and Lake Winnipegosis supply the bulk of the Manitoba group. Many are of Icelandic origin.

Saskatchewan provides a larger number of fishermen in the winter than in the summer fishing season. Many of these are farmers who spend the winters fishing. These men are mostly from the settled northwest districts in the general vicinity of Cold Lake, Meadow Lake, and Prince Albert. A few residents of northern Saskatchewan, from the Lake Athabaska region, also fish on Great Slave Lake.

Alberta fishermen have the highest representation in numbers of the Prairie Provinces. These fishermen are mostly "true fishermen" who turn only to other occupations for the few months between seasons. Most of these men are from the Lesser

Slave Lake region. Others make their home in Edmonton. There are also numerous farmers from northern Alberta who spend the winters fishing.

The settlements of Yellowknife, Fort Resolution, Hay River, Providence and Fort Smith, all in the Northwest Territories, contribute men who fall under the classification of resident fishermen.

A few fishermen have also come from British Columbia, Ontario and the Yukon.

Natives are employed by some fishermen but most non-residents bring men from their own districts.

#### THE SUMMER FISHERY

The summer season extends from the fifteenth of June to the fifteenth of September. The lake, however, is often not free of ice until the last week in June. Stormy weather in September often serves to make the season shorter.

The present summer limit for the whole lake is five million pounds round weight of lake trout and whitefish combined. This limit is divided among four areas. These areas have been selected for administrative purposes, with a quota assigned to each based on all available biological data.

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During the summer fish are landed at two points on the lake--Gros Cap on the northeast shore and Hay River on the south shore. Since the two fisheries have their own peculiarities, it will be advantageous to describe the summer operation of each separately.

#### The Gros Cap Fishery

Gros Cap has been the base of summer operation for McInnes Products Corporation since 1945. It has an excellent harbour and its ideal location allows the fishermen to fish the north and east arms of the lake and the delta of the Slave River. The packed product is shipped either by freight boat to Hay River and then by truck to the railhead at Grimshaw, or in refrigerated barges up the Slave River to the railhead at Waterways.

#### The fishermen

Thirty-five to forty fishermen is the usual number based at Gros Cap. They live in tents at the water's edge. Weather permitting, they fish every day. While in Gros Cap they may eat either at the company's cookhouse or make their own meals. When they are out on the lake meals are made on the boats with the aid of gasoline stoves.

Boats

During the summer of 1951 twenty-one boats made up the fishing fleet at Gros Cap. These boats are all owned by the company and are rented to the fishermen for the season.

Four boats have the "Lake Winnipeg" type hull. Three men operate this type of boat. They are thirty-five feet long and are powered by thirty-two horse power gasoline marine motors. The boats travel ten to twelve miles per hour on one and one-half gallons of gasoline per hour. A small cabin built over the engine has a gangway on either side. The boats may be steered from outside the cabin. Sleeping accommodations are at the aft of one bunk alongside the motor and cramped berths under the stern deck. Three forward holds allow carrying a maximum load of five to six tons.

Seventeen smaller two-man boats complete the fishing fleet. They are all typical "Lake Athabasca" type fishing boats. These are twenty-eight feet long, most of them powered with in-board motors which deliver from ten to fifteen horse power. They travel up to eight miles per hour on one to one and one-half gallons of gasoline per hour. All boats, with the exception of one, have cabins built over the engines. There is no sleeping accommodation on these boats. Two forward holds and one aft are capable of holding three to four tons.

### Nets and related equipment

All nets used on Great Slave Lake are gill-nets (see Fig. 1). These nets are designed to catch fish by the gill cover as they swim into the net, and in an effort to escape, entangle themselves in the meshes. In Great Slave Lake all the nets are anchored on the bottom when they are set.

Nets made of cotton, linen and nylon are used. The former make up the greatest bulk of the nets used at Gros Cap-- nearly ninety per cent. The thread size of the webbing varies from fine cotton (90/6) to coarse cotton (20/6). These nets seem to stand up the best to the strain of heavy trout fishing.

Nets are from twenty to eighty meshes deep. Most are thirty and forty meshes deep. The latter are deep enough to be efficient and not too cumbersome to handle. Most nets are treated with a commercial net preservative at the beginning of the season.

Each man on the boat is licensed to fish one thousand yards of gill-net. These nets must have a mesh size of no smaller than five and one-half inches, (stretched measure). This mesh size catches whitefish weighing from less than one pound to sixteen pounds and lake trout ranging from less than one pound to over sixty pounds.

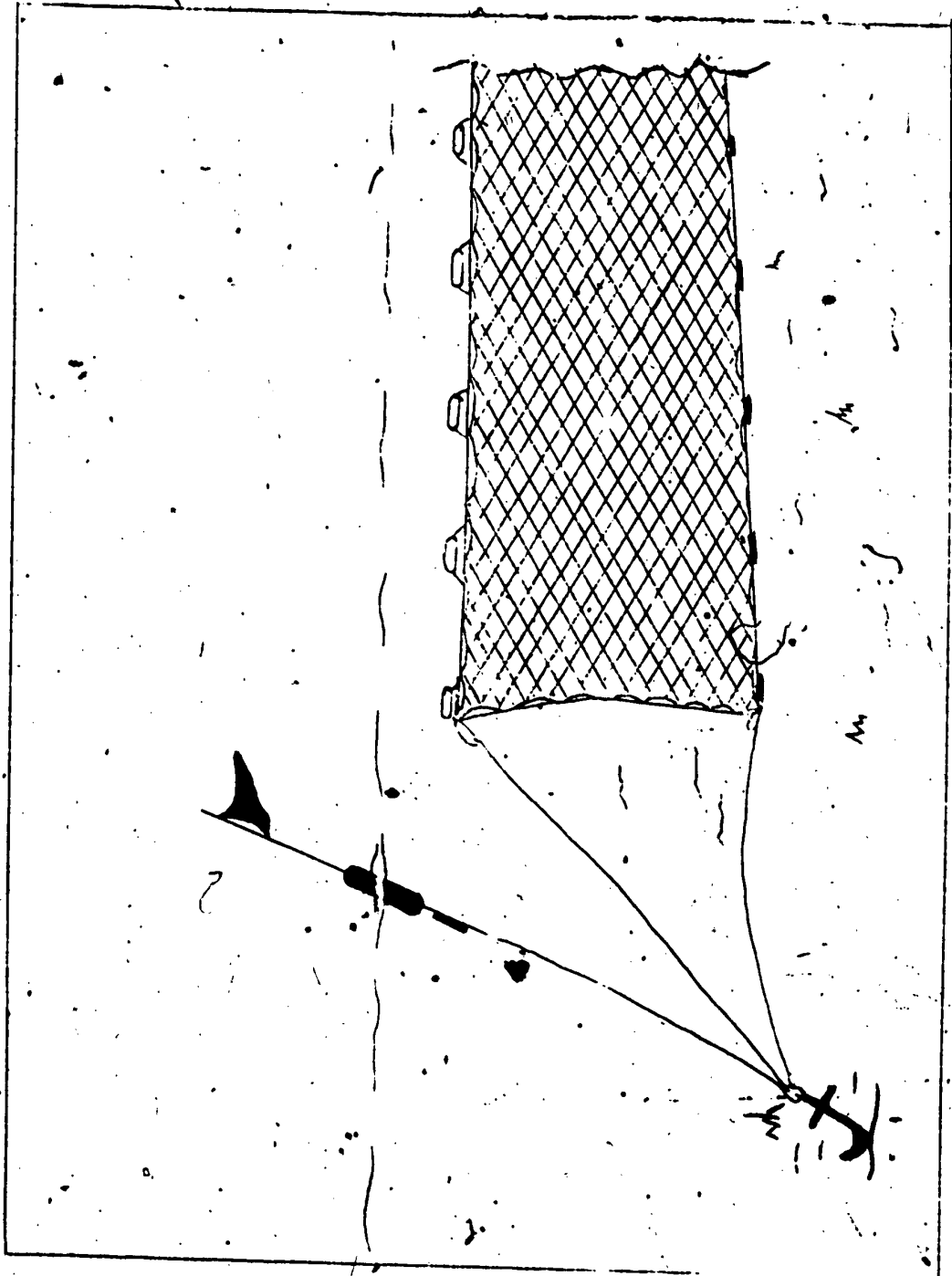


Fig. 1. Gill-net.

Each gill-net is one hundred yards in length. At Gros Cap nets are tied together in groups of three which are termed a "gang". Net trays, rectangular wooden boxes with flaring sides, are made to hold one gang of nets each.

To mark the end of a string of nets set in the water, wooden buoys are used. These float on the surface with a tall upright to which a flag is usually attached. This facilitates locating the nets.

#### Setting of nets

Prior to setting nets for the first time, fishermen "box" their nets. In this procedure the nets are placed in net trays in such a way that they do not become tangled when the nets are being set.

Net setting is accomplished from the stern of the boat with the net tray placed along one side of the cabin. An anchor and a buoy are thrown overboard. These are attached by manilla rope to the end of the net. Power is now used to move the boat in the direction desired. One man handles (spins) the net as it comes from the net tray while another who is standing on the stern of the boat spreads the net to insure that it is tangle free before it enters the water. The third man operates the motor and steers the boat. On two-man boats the man who spread the net also has to steer the boat.

The whole operation of setting one gang of nets can be accomplished in five minutes providing that tangles and snarls in the net do not have to be dealt with. When the last of the net is reached, an anchor and buoy are attached and then thrown overboard. Buoys at both ends of the net enable fishermen to lift from the most favourable direction with respect to the wind.

#### Lifting of nets

Fishermen usually set out very early in the morning. Upon arriving at the first "gang" to be lifted, the boat runs up to the down-wind buoy which is hauled on board by one of the men. The net anchor is then pulled up and both buoy and net anchors are detached from the net. The net is now ready to be pulled into the boat.

Only one of the boat crews at Gros Cap uses the "walking method" of pulling their nets. Description of this method will be found in the discussion of the Hay River fishery.

All the remaining crews use the "pull and pick" method. On a three-man boat one man stands in the bow and pulls the net into the boat. This can be a back-breaking job when the net has been set in deep water. A second man "tails" the net into a net tray and also helps the third man pick out the fish. On a two-man boat one pulls the net into the boat while the other picks out the fish and also directs the net into the net tray. Power

is often used in rough weather to facilitate pulling by taking the strain off the net.

To speed the setting operation, tangles in the net caused by the fish themselves are usually picked out as the fish are removed from the net. As the fish are removed they are thrown into one of the holds. Some fishermen separate the whitefish and trout into different compartments as they are picked from the net. Periodically, ice which is carried by all boats, is scattered on top of the fish.

If the catch is considered good, the net is usually set again at or near the same place. If the fishing is light according to the fisherman's own opinion, all nets are left on board and he proceeds to different fishing grounds.

#### Placing of nets

Each fisherman appears to have his favorite fishing grounds for different times throughout the season. This is especially evident at the start of operations when each boat sets out for the grounds found favorable the preceding year. If this proves unrewarding the fisherman may have other alternatives. If these alternatives do not produce good fishing the fisherman may succumb to "fishing fever". This entails setting near some other fisherman who is catching large quantities of fish. This approach is looked on with disdain by some fishermen. Others will tolerate this action.

Fishermen have the freedom to tell one another where their nets are set and how much fish they are catching. Some prefer to keep this information to themselves to preserve good fishing that they may be enjoying. Often fishermen work together to "find the fish".

The prime characteristic in the choice of their fishing grounds is the availability of the fish. Each fisherman has his own level of what he may describe as a "satisfying amount of fish". This amount, however, is quite variable. If the fishing is generally light, a certain amount of fish is satisfying. This same amount two or three days later, when word is received that someone is catching a greater amount, may no longer be enough and force a move.

In looking for new fishing grounds depth soundings are made and usually the type of bottom is noted. A few "test nets", as they are called, are set to see how plentiful the fish are in the immediate area. These nets are usually well scattered. After these nets are lifted the fisherman decides where he will set most of his nets. The depths fished vary from fifteen to two hundred feet. When the lake trout commence spawning in the latter part of August and during September, the fishermen concentrate their nets on the shallow reefs.

The fishermen at Gros Cap may be separated into two types. One group fish mostly within a twenty-five mile radius of

Gros Cap. The remaining group fish farther away, some as far as one hundred and twenty miles. Fishermen who fish long distances away from base camp have greatly increased expenses and often are only able to lift their nets every two days. A much more rewarding catch must be made. The fishermen fishing close to camp are able to lift their nets every day pending favorable weather and can make a profit on a smaller amount of fish caught since they make more lifts and have lower expenses.

#### Handling and care of fish

Fishermen close to Gros Cap usually bring fish back to the camp in the round state. In this case all trout and some whitefish, if required by the buyer, are dressed. In this operation the fish are eviscerated with special knives. Fishermen fishing some distance from Gros Cap usually dress their fish on the trip back to camp. In rough weather fish are brought back to Gros Cap in the round state.

When the fish are dressed they are covered with ice and the holds are covered to keep out the water and sun. Some boats have horizontal partitions in the holds which help to prevent crushing of the fish on the bottom. Soft fish, however, are utilized at Gros Cap where they are filleted.

In general, fishermen operating close to base camp and lifting their nets every day have the best quality product. These fish are often used for fresh shipments when required by the buyer. The production of larger boats fishing long distances from Gros Cap is generally all used for frozen fillet product. This quick freezing treatment preserves in excellent condition, fish which would not stand shipment as fresh fish.

#### THE HAY RIVER FISHERY

The first summer operation from Hay River took place in 1948. In 1951 there were four companies based at Hay River. All the fish was shipped by truck to Grimshaw, Alberta where it was loaded on refrigerated cars for the remainder of the trip to the market. These were all fresh shipments. From Hay River fishing was done on the south, west and northwest shores of the lake.

#### Fishermen

Nearly eighty fishermen fished from Hay River during the summer of 1951. A good proportion are resident fishermen whose homes are located in Hay River, others live in cabooses on the various fish companies properties. When fishing is done away from Hay River, most of them eat and sleep on their boats although some make camp on shore.

Boats

During 1951 forty boats were in operation from Hay River. Unlike at Gros Cap, many of the fishermen own their boats. Of the forty boats, three are four-man boats, eighteen are three-man boats and nineteen are two-man boats.

These boats are all sizes and shapes. The smallest are converted life-boats of about twenty feet in length. The largest boats are Lake Winnipeg type fishing boats in excess of forty feet. Converted automobile motors and standard marine motors power these boats. Several of the smaller boats have no sleeping accommodation. On the larger boats, where the cabin stretched completely across the boat, there is sleeping accommodation for three. Most of the boats have their holds forward although a few have stern holds.

Nets and related equipment

Nylon nets are strongly favored by the Hay River fishermen. During the summer of 1951 nylon made up seventy per cent of the nets used. Nets with a depth of forty meshes made up seventy-five per cent of the nets used.

The fishermen from Lake Winnipeg use much taller buoys than other fishermen. They have been used to fishing out of sight of land and the large buoys make the nets much easier to locate. They often set nets on Great Slave Lake more than ten miles from shore where a compass and tall buoys are necessities.

### Setting of nets

Net setting is a very standard operation and is the same for Hay River as that described for Gros Cap. Unlike at Gros Cap, however, the fishermen tend to combine their nets into longer gangs. Gangs of six, nine and twelve nets are common, with larger gangs of fifteen nets occasionally observed. Net anchors are usually placed at intervals of every three nets. Buoys marking long gangs may number from two to four or five.

During setting operations some of the more careful fishermen frequently check the depth and type of bottom, but due to its uniformity on the Hay River fishing ground, most of the fishermen sound infrequently.

### Lifting of nets

The Lake Winnipeg fishermen have introduced to Great Slave Lake their "walking method" of net lifting. A flat deck surface is essential for this operation. One man standing at the bow of the boat grasps the net and walks back with it to the cabin. In so doing he moves the boat forward. Another man steps ahead of the first one at the bow and seizes the net and in the same manner walks back to the cabin. The other man or men pick out the fish and tail the net into the net tray. This method of net lifting helps alleviate the hardships encountered in the "pull and pick" method. It is also much faster. The walking

method has prompted the term "merry-go-round boats" by the other fishermen, but no attempt has been made to copy their method.

As the fish are picked from the nets they are thrown directly into the holds and are iced periodically.

#### Placing of nets

As at Gros Cap, most of the fishermen have their favorite grounds. However, the location of the fish companies' barges determine in part where the fishermen fish. All fish is brought by the fishermen to the company barges where it is packed and transported by large freight boats to Hay River. Some of the larger fish boats freight their own fish when it is profitable. The barges are moved around the lake to different harbours as the companies desire it. The fishermen, in general, travel very short distances from the barges and are able to lift their nets every day.

Availability of fish is the criterion used by the fishermen to determine where to set their nets. In late August and September, the lake trout spawn on the south shore of the lake between Hay River and the Mackenzie River. The fishermen take advantage of the concentration of fish. At this time all fish are taken directly into Hay River by the fishermen themselves.

Handling and care of fish

Great care is taken of the fish caught. All shipments are "fresh" and the buyers cull all soft fish as they would not stand the long trip to the market. Fishermen try to lift their nets every day, weather permitting. The fish is brought from the grounds to the barge in the round state.

As at Gros Cap, the larger boats have more soft fish than the small boats. Larger holds result in more fish being crushed by the weight of fish on top of them. Some fishermen fill individual fish boxes and ice each box. Much less soft fish is landed this way.

## THE WINTER FISHERY

The winter season usually starts in December and extends to the end of March, however, on occasion the lake has insufficient ice cover until later in December. A mild spring may also serve to cut the season short. This makes the highway to the railhead impassable for truck travel.

The present winter limit is four million pounds (round weight) of lake trout and whitefish. All fish caught during the winter is shipped out from Hay River to Grimshaw, Alberta by truck via the Mackenzie Highway.

### The fishermen

The number of fishermen present during a winter season varies considerably. As many as eight hundred and as few as two hundred and fifty fishermen have spent the winter fishing on Great Slave Lake. A good percentage of those are farmers.

They live on the ice in cabooses which are built on skids to facilitate their movement when necessary. The average caboose is twelve feet long and six feet wide and is made of siding or plywood. They are insulated and heated by means of oil or wood-burning heaters. Accommodation for as many as three may be found in one caboose although the usual number is two. Meals are made with the aid of gasoline stoves.

### Nets and related equipment

Nets used in the winter are the same as those used in the summer fishery. Less nylon netting, however, is fished in the winter. To make holes in the ice three pieces of equipment are generally used. These are a needle bar, ice chisel and a shovel.

A needle bar is a six foot long highly tempered steel bar with a three sided pointed end. It weighs about fifteen pounds and its action is similar to the kitchen ice pick. The ice chisel is the same length as the needle bar but has a flared chisel cutting end. This is mainly used in trimming around the edges of

the hole. Any type of scoop shovel serves to remove the chipped ice from the holes. A small toboggan or sleigh is used to carry this equipment. An ingenious invention called a "jigger" is used to set the net under the ice (Sprules-1949)

#### Setting of nets.

The first task in setting gill-nets under the ice is to cut a hole through the ice. This is accomplished by means of a needle bar. A round hole of two and one-half to three feet in diameter is made in the ice. At the beginning of the season this task may be relatively simple when the ice cover may be less than one foot thick. Toward the end of the season, however, ice may reach six feet in depth and manual labor is then involved. After the hole is made the "jigger" is shoved into the hole pointing in the direction the fisherman plans to set his net. The "jigger" is then run out by one man and followed by another. "Jiggers" are easily followed by the noise they make under the ice. When the "jigger" has gone out one hundred yards from the end hole it is located exactly and a hole is made in the ice to retrieve it. Thus, two holes have been made with a small rope strung under the ice between them. The net is then attached to the small rope, (running line) and with one fisherman pulling on it the net is pulled under the ice. Anchors are then attached to both ends of the net and with the anchor lines fastened to stakes beside the

holes, the net is then lowered to the bottom. Most fishermen set their nets in lines with two nets anchored at one hole, but running in opposite directions. To set two nets this way only three holes need be made.

#### Lift of nets

Nets are lifted on the average every three days during the winter. Often in this interval the original holes have frozen over to a depth of one foot or more. When the fisherman prepares to lift, the holes are opened and smoothed around the edges to prevent sagging the net. The anchor line is then retrieved by means of a hook of heavy wire. At an end hole, one end of the net is pulled up and attached to a running line. The hole at the other end of the net is then opened and the anchor line pulled up. The net is released from the anchor line and lifting is commenced. The net is pulled out short distances at a time with one man pulling on the lead line and the other on the cork line. This spreads the net as it is pulled out. The fish are picked out and are thrown to one side. The term "basin hole" is used because the margins suggest a basin. After the end of the net has been reached one man returns to the end hole and grasping the running line, pulls the net back under the ice in the same manner as it was set.

### Placing of nets

Once a fisherman decides where he wants to fish, a snowmobile pulls his caboose to the desired place. Nets are usually set in lines radiating out from a caboose like spokes on a wheel. These lines are called "strings" and may be made up of from ten to fifteen nets. Most fishermen visit their nets on foot, although some are fortunate in having dogs or snowmobiles. Fishermen with the latter conveniences are able to fish a considerable distance from their caboose. Most fishermen stay in one place until the catch drops below an economical minimum. Most, however, are constantly moving a few nets every day when these nets fail to catch a certain amount.

Several areas of the lake are known to be spawning grounds of whitefish which spawn as late as January. Until these were protected by a later opening date, a large December production was made on these grounds. In general, the availability of fish for the winter is much lower than that for the summer.

### Care and handling of fish

Most of the fish caught during the winter fishery is shipped fresh. The fisherman has to guard against the fish freezing before it is picked up and transported to Hay River. This is accomplished by burying the fish in snow beside the basin holes. If the snow is soft and fluffy the fish can be

kept fresh for several days in this way. However, if the snow is hard and packed, the fish will not stay fresh as long. The fish which are to be frozen are laid out on the ice immediately after removal from the nets and allowed to freeze. After they are frozen they are usually piled and left uncovered awaiting transportation.

#### Transportation of fish

Fish is transported from off the lake to Hay River by snowmobile and airplane. The former is by far the most common. Some forty to fifty snowmobiles operate on the lake during a winter. There are usually two or three airplanes, although there have been as many as six in operation during a winter season.

Well travelled snowmobile trails go to different parts of the lake and although close to shore at the beginning of the season, these trails become more direct as the ice farther from shore becomes thick enough for travel. Snowmobiles can carry up to two and one-half tons of fish. On the return trip they carry wood, groceries, etc., to the fishermen. Usually one snowmobile looks after six or seven cabooses. This entails bringing groceries, etc, picking up the fish and moving the fishermen. Long trips, up to two hundred miles from Hay River, have been made by snowmobile. These long trips are made much more economically with ski-equipped aircraft. The larger airplanes land on marked landing strips on

the ice to which fish is brought by snowmobile. Some of the lighter aircraft land beside cabooses and pick up the fish directly from the fishermen. Flying, however, has its limitations with weather, something that rarely prevents snowmobiles from travelling.

#### CONCLUSION

This paper has described the commercial fishery on Great Slave Lake, N. W. T. Each year some changes take place; new fishermen appear, others leave; new boats are brought in or are built; new fishing methods are tried--but the basic picture herein described has prevailed for the first seven years of the fishery. The Great Slave Fishery has become a thriving addition to Canada's fresh water fishing industry.

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