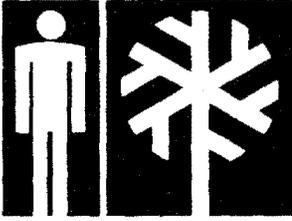


D-2174

historic resource study

february 1984

APOSTLE ISLANDS
HOKENSON FISHING DOCK



NATIONAL LAKESHORE / WISCONSIN

RECEIVED FEB 24 1984
NATIONAL INFORMATION CENTER
WASHINGTON, D.C. 20540

B&W Scans

2-14-2005

HISTORIC RESOURCE STUDY

HOKENSON FISHING DOCK
APOSTLE ISLANDS NATIONAL LAKESHORE
Wisconsin

The Hokenson Fishing Dock as an Example of a Family-managed Commercial Enterprise in the Apostle Islands Region During the Twentieth Century; with a Background of the Prehistory, Ethnohistory and Nineteenth Century History of Fishing on Lake Superior

by

David L. Fritz

TABLE OF CONTENTS

PREFACE	iii
INTRODUCTION	1
CHAPTER I: Lake Superior as a Fishing Grounds During Its Prehistory, Ethnohistory and Nineteenth Century History	3
A. Prehistory and Ethnohistory	3
B. Into the Nineteenth Century	21
CHAPTER II: The Lake Superior Fishery in the Latter Half of the Nineteenth Century	30
A. The Development of a Commercial Fishery at Duluth and Along the North Shore of Minnesota	30
B. The Early Development of Private Commercial Fishing at Bayfield	32
C. The Bayfield Hatchery	47
D. Early Legislative Attempts to Preserve the Fishery	49
CHAPTER III: The Lake Superior Fishery in the Twentieth Century, with Particular Regard to the Apostle Islands	58
A. The State of the Fishery at the Turn of the Century and the Hokenson Role In It	58
B. Perils on the Lake During the 1920's	72
C. The Role of Bayfield County Roads in the Marketing of Fish	77
D. Lake Superior Fishing Becomes Intensive: A Variety of Marketing Techniques Develop	78
E. The Heyday of the Apostle Islands Fishery: Smoked Fish, Ice Harvesting, and More Perils at Sea	81
F. The 1930's: Renewal of the Apostle Islands Fishery Through Legislation and Hatchery Replenishment	87
G. The 1940's and Early 1950's	95
H. The Mid-1950's and the Decline of the Fishery	100
I. The Retirement of the Hokenson Brothers	107
J. Recent Conditions Relating to the Apostle Islands Fishery	109
BIBLIOGRAPHY	126

PREFACE

Complementary Nature of Three Studies: Because of questions arising in the review cycle for these studies, it becomes necessary to emphasize the complementary nature of the Historic Structure Report (Historical Data Section), the Historic Furnishing Study and this Historic Resource Study. Both the structure report and furnishing study, for example, inspired factual anecdotes connected with some of the artifacts of the Hokenson fishery, anecdotes that related in an equally relevant manner to the chronological history given here. It was therefore deemed inappropriate to repeat such information in this Historic Resource Study because it was felt that the battology and/or redundancy of such data would draw this study out to unnecessary lengths. Thus, too, in discussing the tools of the fishery, and using illustrations from technical publications of the nineteenth century in the furnishing study, it was found that the advance of technology was adequately covered there, and would not need repetition in this portion of the coverage. This aspect of avoiding redundancy applies to other subject matter related to the Hokenson fishery, and the reader who familiarizes himself or herself with the three divisions, will find the answers to most of his or her questions.

The Role of the Booth Company and Others: Since the focus of the 10-238 for these three studies was declared to be the "Hokenson Fishing Dock," this resource study viewed the background for the three brothers in a way that was intended to show the surroundings and atmosphere in which the brothers functioned, that is, their milieu. It was therefore not thought germane to develop in extenso such topics as the various large companies at Bayfield or the squatter summer fishing camps on the Apostle Islands. Such things were mentioned only briefly insofar as they impinged upon the existence of the Hokenson brothers. But a brief word here will give a glimpse of the companies, yet nonetheless as a backdrop for the brothers. As it is, in the course of the chronological narrative that follows in this resource study, mention of the companies occurs frequently.

Early in the research phase for this project, in late 1978, an effort was made to run down a collection of documents that was alleged to have been assembled in the 1930's in connection with the Works Progress Administration and the Federal Writers' Project relating to the records of the Booth Packing Company and other Bayfield companies. It was felt at that time that if a large collection of documents of this nature became available to the researcher, it would be possible to provide a summary of the companies in an expeditious manner. But the staff of the Wisconsin Historical Society wrote that they had not come into possession of these papers and had no idea of their location. The researcher therefore concluded that the parameters and budgeting of the three studies did not justify further research travel to the repositories of the National Archives Record Service either in Washington or Chicago, as it was a subject peripheral to the main purpose, the Hokensons.

From the data discovered, it is known that the Booths established a company headquarters in Bayfield during the 1880's. They were not the first company to function at Bayfield, however. The Boutins had a family business that got underway at Bayfield already in 1870. Regardless of whose company it was, the role of each was similar. Basically, all of companies would do some of the actual fishing themselves; but mostly small independent fishermen would do the fishing for them. The distinctive feature of the companies was that they had one or several steamers that had larger hull capacities than the average fishing boat. These steamers did no fishing, generally speaking, but cruised around the Apostle Islands on a fixed and reliable schedule, so that independent fishermen could rendezvous with them at a predetermined hour and place to turn in their catch. That is how some independent fishermen, with small boats, could set up a squatter's camp on one or the other of the islands, and meet the steamer every other day or so. The methods of exchange between company and fisher varied from barter to shares to cash payments. There was no fixed rule. One fisherman might have been staked to a set of equipment, including nets, floats, sinkers and boat, which he would pay for with his catch. Others got a fixed cash price, so many pennies per pound. The fish were handed over to the steamer in an iced condition. A log was kept of the amounts of fish

delivered. Many of the fishermen used the steamer as a company store, getting their groceries and other supplies from the large boat. Here is where the Hokensons differed from most of the Bayfield area independent fishermen. Since the companies paid the equivalent of a cash price for the fish given to them, they usually gave a relatively low price for the fish, since the company had all of the risk for spoilage once the fish came on board the steamer. The Hokensons at first tried to market fish through the Elmore Company, but were not satisfied with the relatively low monetary return. For that reason they joined a cooperative at Cornucopia for marketing their catch independently. They were hurt occasionally because of spoilage, but mostly they made a healthy profit by getting the operative market prices in Chicago or Duluth.

All of the Bayfield-based companies had fluctuating fortunes. Even the most successful, the Boutins, the Booths and the Bodins, during their best intervals, would have an occasional bad year. Such declines might force a company to temporarily move out of one of its havens. The Boutins, for example, left Bayfield for the 1930 and 1931 seasons, made a good profit elsewhere, and came back in 1932 to re-establish their business in Bayfield. This process was not only repeated by all the other major companies, but beyond that, the minor companies, the non-survivors, demonstrated all the more that the fishing profession was intermittently a feast or a famine. Thus in recent times the Boutins too do not have a functioning corporate unit in Bayfield even though individuals from the family do some fishing for profit. Currently the Booths are not operating at Bayfield, but have establishments in Chicago and Duluth. The Bodins happen to be active in Bayfield at this writing, the only surviving company up to the present.

In actuality, the precariousness of the Bayfield fishing profession is merely one item on the universal list of risky existences for people who decide to live in a northern latitude with a severe climate. One could gather thumbnail biographies of senior citizens around the entire periphery of Lake Superior and find that nearly every individual engaged in multiple occupations in order to survive. This was the point made in the accompanying furnishing study and structure report when discussing

oral histories by Minnesota North Shore fishermen. No one was just a fisherman, nor were the Hokensons for that matter.

The diversification of occupations was part of the story for the Bayfield fish companies as well. The Boutins, for example, during the 1880's used their tugboats for delivery service and passenger carrying, as well as towing rafts of logs across the surface of Lake Superior. The adventure story of Halvor Reiten in the 1920's, found in this study, makes the same point, that Reiten's intent was not solely to engage in fishing, but to do anything that would turn a dollar. He had been frustrated by the slim profits of freighting and passenger-hauling and therefore engaged in the risky, but potentially lucrative winter fishing expedition that led to the disaster-sinking of the Thomas Friant.

During most of the history of the Bayfield fish companies, until about 1960, the town usually could support more than one company. The core personnel of each company would be relatively few in number. These people were the owners and caretakers of the company's basic equipment, its shore-based refrigeration plant, other buildings, boats and fishing gear. Looking at a typical calendar year, the company's activities would be as follows: In January, February and March, depending on the severity and variability of winter weather, the company would hire townspeople, practically men only, for the harvesting of ice from the lake's surface. The company had most of the necessary equipment, including trucks, and in the nineteenth century, wagons. But the hired extra help might provide added equipment, depending on the scale of the operation. The companies always used block ice from the lake even though refrigeration plants came to Bayfield before the turn of the century. The ice was used both for storage ashore and to supply individual fishermen with flake ice out on the lake. Likewise, refrigerator cars for rail travel were also available in the nineteenth century; but the technique for chilling freighted produce enroute during that era depended first on chipped ice rather than on an actual freezing process.

After the ice harvesting season, the companies cut back to their skeleton staff. But there was not a very lengthy interval before the field ice in the Apostle Islands channels broke up in the spring and the companies could bring aboard the necessary people for the active fishing season operations. Then, in late April or early May the steamer service commenced for collecting fresh fish from fishermen who had contracted to lower the nets for the company. This was the onset of the lake trout and whitefish season which extended from about April to October, depending on the timing of the ice breakup. In the 1930's this season was shortened somewhat, to terminate in September, because of a legal ban that forbade fishing for lake trout and whitefish during their spawning season. Doubtlessly the companies did some fishing themselves, but mostly they collected the harvest of others. In turn, most of the companies received fish from gill-nets rather than from pound-nets. The reason for this was that the pound-netters had a greater investment in the business, both in the backbreaking labor of setting the pounds as well as the extra equipment required. Yet pounds were very cost effective and efficient, so the pound-netters tended to desire the added independence and profit of marketing their fish by themselves. But a few pounds were operated for the companies.

Next in season came the biggest event of the year for the companies, the herring season. This was an indeterminate period whose duration was controlled entirely by the spawning season of the lake herring. It could extend from October to December, but be interrupted by storms at any point and terminated by the onset of bitter winter weather and the freeze-up of the harbors. Most often the schools of herring disappeared at an unpredicted and unpredicable moment, the small fish dispersing as mysteriously as they had congregated, with the spawning cycle completed.

During the herring interlude each company hired a considerable number of townspeople for work at the docks for the herring harvest. Both men and women found employment, the heavier chores going to the men. People were needed to pick the nets clean either onboard the boats or near the docks. Boxes full of herring were moved from dock to fish

house on roller slides or on mechanical belts. In the fish house, assembly line methods were used to behead, gut, salt and pack the herring, usually in half-barrels. With technology advances, machinery was invented that could behead, gut and pack the fish. Some companies came to can the fish by machine; but packing in small wooden boxes and half-barrels were always popular modes. The vast majority of the herring were salted as a best method of preservation, mainly because spoilage was the principal problem of a herring fisherman, and salt was the easiest and quickest preservation technique. Using gill-nets added to the spoilage problem: the fish were pulled from the lake either dead or in a dying condition. The cold climate of Lake Superior during the herring season helped to offset the threat of spoilage. The utilization of perhaps more than a hundred Bayfielders in the herring harvest rounded out the year for the town and gave the local economy a cash infusion at an opportune moment. After that, the fish companies became quiescent as the winter season closed in and the channels among the islands froze tightly shut. The selection in the text of this report regarding the role of the companies in Bayfield during the 1880's limns a picture that is as valid for the twentieth as for the nineteenth century. The only variables were the numbers of persons involved and the advances in technology.

Location of Traditional Fishing Grounds: There really was and is no place that can be called or identified as an habitual haven for any kind of Lake Superior fish. The fishermen had to discover year in and year out where the fish were: Even the pound-netter, who believed that lake trout and whitefish fed along shorelines during the summer, set his pounds in the usual places and discovered a wide variation in catches at the same pound from one year to the next. The fisherman learned certain things about fish habits, for example, that the lake trout and whitefish did not like to feed in shallows that were murky from storm disturbance or pollution. Scientists in recent years have learned more about fish diet, the types of plant and animal foods on which the species feed; but they cannot predict with any reliability where the plankton or copepods will be for a given season. For the most part, therefore, the fisherman would be mystified when his usual quarry did not appear in a location that he had come to believe was the natural habitat for trout or

whitefish in years gone by. Modern tagging studies have shown that lake trout do not migrate very widely, whitefish migrate somewhat more, and lake herring appear to be the most nomadic of all. Herring can be caught at any season at any place in Lake Superior, but they only congregate in commercially valuable numbers from late October until early December at spawning time. And even then the fishermen have to find the herring gathering places either by visual means or by sonar sounders.

It is certain that overfishing depletes the supply of any fish in a given location in the lake for a time. Because of their migratory habits, lake herring would ordinarily bounce back more quickly in an overfished locale, because they tend to move into the vacuum from the rest of the lake. Conversely, lake trout and whitefish would not bounce back as quickly. The real measure of what is a traditional fishing ground in Lake Superior is the range of the fisherman's boat and the availability of a safe port. In this sense Bayfield and the Apostle Islands were and are traditional fishing grounds. So it comes down to the amount of mileage a fishing boat can cover in a day's time and whether it can get the fish to market quickly enough to avoid spoilage. But the Halvor Reiten story of the sinking of the Friant makes the point that when the islands are frozen-in for winter, they too are eliminated as fishing grounds. That was why Reiten and his companions headed for Isle Royale--to fish in open waters--so that they could lay up a stock of fish to be iced on that island for several months or to market them in Duluth. There are records of Minnesota North Shore fishermen who would catch rough fish in the winter, pile them up ashore, pour cold water over them to freeze them solid, and sell them to mink farmers for feed or to dirt farmers as fertilizer in the spring. But such practices were risky and rare, and since the catch was only rough fish, a small profit was involved. Reiten's expedition was more ambitious; he was after money fish.

The Role of Island Fishing Camps and Stations: The island fishing camps were part of the cooperative fishing effort inspired by the large companies and their collection steamers. These individual fishermen would either own a plot of ground with lake frontage on one of the Apostle

Islands, or be merely a seasonal squatter on someone else's land. Elvis Moe of Bayfield had been a native-born permanent inhabitant on Sand Island, across the bay from the Hokenson dock. Moe's case was more exceptional than regular. He and his family lived on the island the year round, unlike the average fishing camp operator. Moe felt that in his case and that of his family, they were less isolated from the world than were the Hokensons. Moe even went to school on Sand Island with the other island children.

Most fishing camp people were gill-netters and marketed their fish through the companies. Their equipment might be their own or was provided company-store fashion from the Bayfield companies. The squatter-campers would set up their posts on other people's land and build a small shack for shelter at a chosen site. Doubtlessly landowners occasionally chased a shacker, but more often they were tolerated through immemorial custom. They lived this isolated existence on their chosen island from about May to October and usually got their supplies through the company steamers. Sand Island had a better than average supplied community, and a person there could buy provisions on the island. Once in a while during storms or long severe winters, the inhabitants of Sand Island would share food with one another to tide neighbors over a period of shortage. Shackers elsewhere had to be evacuated from their perches when winter came, and there were instances of short-lived starving times for them when they postponed their departure so long that they could no longer safely cross the channel over thin field ice.

The shackers were practically all gill-netters who used small (for Lake Superior) boats to get to their chosen fishing grounds. The boats were sailboats in the nineteenth century and outboard motor powered Mackinaw boats in the twentieth century. Such a fisherman could handle, at the maximum, a gang of nets, and that would have been a taxing amount of netting. He had to time the retrieval of his nets for the moment when the company steamer came for his catch. He had to have on hand enough chipped ice to cover the volume of his harvest. He had to keep a weather eye out for deteriorating climatic conditions, and be able, with a reliable motor, to run to the sheltered side of his island or his

docking place. For a single shacker it was a lonely summer existence, but many of them made it a family industry which gave them the support and comfort of friendly human numbers who could also help increase the volume of his production.

Many of the Minnesota North Shore fishermen lived an analogous existence to the Apostle Islands shackers. They too were gill-netters, had relatively small skiffs, and sold to the cruising company steamers out of Duluth. One difference in their lives was their relative invulnerability to storms. A northeaster did not hinder them too much from getting back ashore, and at the worst might drive them into Duluth. A northwester had to be calculated from experience; a North Shore fisherman knew how close or how far from the cliffs he had to be, so that the overhanging cliff protected him from being blown across the lake. Casual observers were amazed at their bravery, as often they were found several miles out in the lake, with only a set of oars to propel them homeward. A southeaster storm, rather rare, was a "piece of cake" for the Minnesotans, as it blew them home. Nevertheless storms took a few lives there over the years.

Some Correctives on Chippewa History in the Apostle Islands Area:
The prehistory section of this resource study runs into several clashes with modern anthropological discovery regarding the Chippewa. Representatives of the Midwest Archaeological Center (MWAC), take issue with the early coming of the Chippewa to Chequamegon Bay and much of the early history of the Chippewa people from earliest times, as presented here. As they rightly pointed out, the present narrative derives considerably from Warren, whose account leans heavily on the elders' tales, with all the associated evidential weaknesses of such data. Yet in some cases this is the only and best evidence that posterity has inherited from them. Be that as it may, the present author merely presented this narrative as a version of Chippewan history, and not the definitive version, and identified it for what it was worth, based on Warren and others. Warren's History of the Ojibway Nation, incidentally, is still highly respected in historical circles for its unique perspective, an insider's narrative from a half-blooded Chippewa derived from the ancient

oral traditions of their people. Warren spoke their language fluently and amazed his full blooded brethren with his mastery of their tongue. In 1847, during the negotiation of the Treaty of Fond du Lac, Warren acted as interpreter for the whites; but the Indians concluded that "he understood their language better than themselves."

Modern anthropology and archaeology have reworked and added much to the prehistory of practically all of the various Indian tribes of North America which the contemporary American layman now identifies with the hundreds of names that he most frequently hears in Hollywood movies or fiction of similar "authenticity." Thus the anthropologist too has identified Indian peoples of the prehistoric periods by more generic names that cover larger culture-segments, out of which innumerable later Indian tribes probably evolved. Thus the Hopewell Indians, the mound builders, were identified from their artifacts, camp-sites, dwelling places and mounds. Their culture was carefully delineated from this available evidence, and the differences between them and later historic era peoples was described. Without a written narrative fallen from heaven, it was impossible to state the process of how or whether the Hopewells evolved into later groups such as Iroquois, Algonkians or whatever.

Thus the Chippewa were not the Chippewa, in the anthropologist's view, until they acquired certain distinctive cultural badges such as language, pottery, dwelling styles, weapons and so on. In a sense this specific identification involves a semantic problem as well. In some cases present identification names for Indian tribes are derivatives from the spoken words of the aboriginals, transcribed sounds into written English words. Thus even the name "Chippewa" was also transcribed as "Ojibway" in a variant orthography. Yet both words ostensibly came from these people's pronunciation of the name by which they denominated themselves. Other Indian tribe names used nowadays have no relationship to the historic label by which these peoples identified themselves. Thus in the twentieth century some of them have been grudgingly compelled to call themselves by names they had never used in the historic past.

George Irving Quimby, a noted anthropologist/archaeologist, wrote as late as 1960, in Indian Life in the Upper Great Lakes, (1960/1974), that the Chippewa were established on the south shore of Lake Superior as early as 1640. According to representatives of MWAC, recent discoveries in their field tend to negate Quimby's view on dating this event. In any case, archaeology does not seem to insist on dating things with absolute precision when one is arguing about a difference of ten or fifteen years. A noted and still well reputed prestigious historian of the nineteenth century, Reuben Gold Thwaites of the Wisconsin Historical Society (WHS), considered Warren's narrative reliable in dating incidents. Quimby's outline of the Chippewan clan structure seems to follow Warren quite closely as well. Thwaites even confirmed independetly (WHS Collections, XIII, p. 404) that Chippewa were present together with Ottawas, Hurons and others on the shores of Chequamegon Bay as early as 1661. And Quimby admits the nomadic nature of the Chippewa, so it is not inconceivable to say that the Chippewa were in that region a generation earlier.

The present writer did not wish to quibble about the precise dating of Chippewa movements, but merely to provide a rough sketch of their spatial ebb and flow over the course of several centuries. Thus he does not insist that the Chippewa may have roved as far east as the Atlantic Ocean. He merely wanted to present the fact that a blooded Chippewa historian said that his people believed that they had engaged in such nomadic wanderings, whether true or not. Thus too, whether or not the people Warren was chronicling should have been called "Chippewa" before the eighteenth century is not crucial here. Warren referred to the people from which he descended as far back as legend and living memory could reach, labelling his people in the same way then as at the moment he was writing. He could not have anticipated that the modern archaeologists would have found artifacts to demonstrate that these people were culturally distinct from the old men with whom he sat around the camp fire. He only told what he heard from these elders and did not get nor give the total cultural description. Regardless of the cultural differences of these earlier peoples, so far as Warren was concerned, they were his forbears. If he was a Chippewa, so were they, to his mind.

This writer does not insist either on the accuracy of Warren's contention that the Chippewa came to the Chequamegon region as early as 1490. That too was enshrouded in the mists of elders' fireside legends. They were presented as such in the narrative and have only the value of such type evidence. Thwaites, incidentally, trustingly followed Warren's temporal computations (WHS Colls., XIII, 403-4). But the representatives of the MWAC do not contribute to the knowledge of the era by saying: "No archaeological evidence is available for placing the Chippewa, or their Algonkian ancestors, at Chequamegon at such an early date." Negative evidence does not prove (or disprove) a positive statement. We have some positive evidence, Warren's account, however weak, which is not contradicted by archaeologists who have found no evidence for it.

The same difficulty applies to the MWAC contentions regarding recent excavations at the Marina site (47AS24) near the village of La Pointe on Madeline Island, that no evidence was found of Chippewa occupation dating before 1700. The fact that they found no evidence does not mean that there is none on Madeline Island. Someone may find such evidence in the future. Also, the negative results of the dig at 47AS24 might tend to confirm Warren's contention that there was a 120 year interval when the Chippewa did not occupy Madeline Island because of their superstitious fears relating to cannibalism. Then the only problem is with fixing the dates of that interval; Warren after all, admitted that his best guess was for the interval 1490 to 1610, which he was willing to acknowledge as being subject to miscalculation.

The Warren story of the two starving white men on Madeline Island was included in this study for two reasons: It gave the account of the first contact of Chippewa and whitemen in the Apostle Islands region from a redman's perspective; and secondly, the medium of fishing provided the occasion for that meeting. This latter reason tended to emphasize the importance of fishing to the Chippewa existence. Peripherally, the story demonstrates the benevolency of the Indians toward the whitemen, which in turn provides a counterpoint to the discussion of cannibalism, to follow in due course.

Regarding the coincidence of Chippewa moving to the Bayfield Peninsula mainland in the 1850's simultaneous to the whiteman's establishment of the town of Bayfield, the intent of the text was not meant to imply a cause-effect relationship between the two events. The "equal attraction" of whites and Indians to the mainland could have been from the same cause(s) or different causes. Whatever it was that attracted them, it attracted each group equally, hence the expression.

The State of Commercial Fishing Among Native Americans in the Apostle Islands Region: As stated regarding the Bayfield fishing companies, supra, the subject of the Native Americans as commercial fishermen was also not considered to be the main focus of this study. As it stands, mention of the Chippewa occurred in the chronological narrative wherever it was deemed relevant. The present writer felt that the glimpse of the Chippewa provided in the 1885 government document was representative for the entire time span. Frank Boutin told the government investigators in 1885 that he thought that "25 percent of those engaged in the fisheries are Indians and half-breeds, . . ." This percentage, give or take a few points, sounds roughly correct for every era of the commercial fishery. A more precise delineation of the Chippewa role will have to await further study by others. The Chippewa probably fished for their own consumption over the years in the same ratio that the whites did. The text also notes, in several places, the special fishing rights of these Native Americans under the various treaties, particularly that of 1854. In the section covering recent events, the text notes how the Chippewa shared in the general fishery depression resulting from the lamprey infestation, and that it was their assertion of treaty right which may have saved the total fishery from shutdown after the lamprey was beaten.

The Problem of Cannibalism: The inclusion of several anecdotes regarding cannibalism among the Chippewa was not done for the purpose of disparaging the Chippewa nor to claim that they had a propensity for cannibalism peculiar to their tribe, or more pronounced than any white ethnic group. The instances cited were intended to make the very important and germane point that sources of nutrition in this northern

climate were and are limited, and this fact made cannibalism more likely. If there is any leit motif to the three Hokenson studies, it is this: that the Apostle Islands region exists in a geographical area with severe climatic conditions, conditions which demand that any inhabitant lay in a stock of subsistence materials against the day when weather would not permit humans to forage for food. This is why the inhabitants of Bayfield County have always been noted for the diversification of their life-sustaining activities--because they perpetually live in a nearly arctic survival situation. In fact, this cause, more than any other, explains why the Apostle Islands National Lakeshore exists at all. For as much as the white man's history in the place, just like the red man's, was such that once the food supplies and resources of the area were depleted through exploitation, there would be no other way the land could sustain life except through tourism, a resort industry, sport fishing, other forms of recreational activity, in short, the modern but milder variants of cannibalism. Thus, for now, the people of the Apostle Islands area need the National Park Service to support and guarantee their livelihood, and bolster their economy, so that they can buy foodstuffs that are largely brought in from the outside.

Additionally, there is no particular obloquy that attaches to Chippewa Indians generally because of a few instances of cannibalism among them. World War II stories abound of raft and boat survivors victimizing one another to live. There is also a more recent story of aircraft survivors atop a South American mountain cannibalizing each other. From the nineteenth century, Colorado has its legend of Alferd Packer who ate half the Democrats in Hinsdale County, an event that is celebrated annually by the students of the University of Colorado who also named the Student Union Snack Bar after Packer. So the practice of cannibalism is not a monopoly of Chippewas or red men over white men; nor was it the intent of the text to create such an impression.

As a matter of fact, the incidents herein related regarding cannibalism do credit to the Chippewa as a people, rather than doing them dishonor. The one story, from the journals of Alexander Henry, and not from the mythology of Warren, regarding a winter near Sault Ste.

Marie, shows how Ojibway, as a community group, disapproved of the lone practitioner of cannibalism, and even prescribed a death sentence as the remedy to the individual, for the interesting reason that the cannibal might continue to cultivate his culinary discovery. In an ironic twist, this tribal attitude made an eighteenth century argument favoring the death penalty, not for all the sophisticated twentieth century reasons, but merely because it was their common sense conclusion that anyone who had once committed murder, was more liable than any other member of the community to do it again. And the story does make the point, as claimed, that a starving time in a northern climate had driven one erring person beyond accepted social practice, to eat members of his own family.

The other story, from Warren, whose credibility must be considered extremely reliable, in the opinion of Thwaites and other highly reputed historians, makes superlatively important claims about the early Chippewa usage of Madeline Island. In actuality, it is neither appropriate nor accurate to write Warren off as a mere mythologist. The evidence Warren gave on Chippewa cannibalism is more certain, for example, than the claim by an archaeologist who has found a figurine buried in the mounds of the Hopewell Indians and speculates that the figure's purpose was religious. The only inexactitude in Warren's account is the precise dating of these incidents of cannibalism and the minute details of each horrible occurrence. Even here, on the latter case, Warren stated that he had heard details, but did not care to repeat them. Warren swore to the certitude of occurrence by gathering cross references from multiple narratives. Both he and the elders he talked with were reluctant to confess the crimes of their people. He wrote:

I have already stated [repeating the fact] that the old men of the tribe are not over[ly] communicative respecting the bad practices of their ancestors, which we have noted in this chapter, yet though backward to mention them, [italics added] they do not altogether deny the truth of these tales, which I have learned from the lips of old half-breeds and traders, who received the information many years ago, from old men and women whose parents had been actors in the bloody scenes and feasts of this period. I vividly recollect in my childhood while residing on the very spot where these scenes had occurred, that my mother, often stilled my importunities for a story, with tales of this period which would fairly make my hair stand on

end, and which she had learned from an old woman who was then still living, and was considered to be at least one hundred and twenty years of age, from the fact of her relating events which had occurred a century past, when she was a young woman. [111-112]

Warren gave the distinct impression that he was one of the "favored" few who received large doses of these obnoxious narrations both because he had an inquiring mind and also because he had set out specifically to interrogate the elders and put together a history of his people grounded on their oral traditions. He stated as well that his equals of a similar age were not favored with such bluntness and elaborations, and that thus most of his companions received only innuendoes of the horrors without amplifications, so that their mental images of it took on the coloring of superstition and legend. To their uninformed minds, Madeline Island was a place to be avoided because something awful had happened there; and whether their imaginations conjured up "spirits" or real horrors, their fear of Madeline Island was as real as if they themselves had had a bad experience there.

Warren explained this "superstition" by writing:

When my maternal grandfather, Michel Cadotte, first built his trading post and resided on the island of La Pointe [Madeline], seventy years ago [c. 1780], not an Indian dare stop over night on it alone, for fear of the Che-bi-ug ["souls of the victims"] which were even then supposed to haunt it. [111]

And here Warren was telling of events still alive in human memory, but removed by several generations from the actual cannibalism. These uninformed Chippewa were also receivers of an oral history tradition, even as Warren was a recipient of a more precise tradition. Their ingestion of this oral history therefore had all of the weaknesses as well as strengths of that form of historical evidence. But from the preponderance of all the stories Warren gathered, it is certain that cannibalistic practices by Chippewa Indians took place on Madeline Island at some unspecified temporal period.

Even with this grim recitation there are palliating aspects that do honor to the Chippewa as a people. First of all, the era of cannibalism was depicted as occurring under extreme duress from the tyrannical leadership of the medicine men. Digressing for a moment, there apparently was a little observed scientific phenomenon associated with cannibalism that depicted the incipient practitioners as acquiring an "insatiable longing for human flesh" that nearly compelled the continuance of the practice. At any rate, a people led by such satanic medicine men, were placed under such extreme pressure that their fear of becoming numbered among the future victims compelled their acquiescence and participation in the grisly banquets. It was a situation akin to a form of blackmail wherein the tender bodies of family children were held hostage in face of their parents, to insure that the latter would participate without protest or grumble, lest their children also die.

In further praise of the Chippewa, it must be said that this disgusting and unfortunate period in their history filled them with such revulsion for the cannibalistic practices, that the tribe developed something akin to a collective bad conscience that made recollection of such things into a veritable taboo. Warren repeatedly told of the reluctance of elders to confess it, and how some of them manufactured an alternative explanation for the flight from Madeline Island: that the coming of the white man with firearms gave them the capacity to drive back the Dakotas and the Fox, thus "explaining" their emigration from the Apostle Islands to the mainland.

Another laudatory aspect of the cannibalism story from Madeline Island is the fact that the tribe eventually became enraged at the practices of their medicine men and put them to death [Ross, 13]. In this rendition by Ross, the author also averred that a severe winter with a food shortage was the occasion for the commencement of cannibalism. Reports from still other sources invariably stated that each instance of cannibalism among the Chippewa occurred in connection with a time of starvation.

Another aspect of the cannibalism discussion needs to be emphasized. It is an axiom of historical evidence that when a witness confesses

something derogatory about himself or his group, the evidence is more credible than that given by the same individual praising himself or his people. This axiom strengthens the case for accepting Warren's testimony on cannibalism. He himself was half Chippewa and his sources were often full blooded tribesmen who collectively wished to depict their people in the most favorable light. Thus these revelations can scarcely be doubted. The only problem remains, dating them in time and placing them geographically.

Locational Placement For the Scenes of Cannibalism: As we have seen, Warren testified that his mother had indicated the place where some of these horrors had taken place. But in descriptively relating the location of the place to certain stands of trees rather than markings on a reliable map, Warren did not describe reference points that we can use today, so we cannot prove with any precision the geographical placement of the scenes by using his text.

Hamilton Nelson Ross, the best twentieth century chronicler of the Apostle Islands, wrote an entire well documented book focused on Madeline Island called La Pointe, Village Outpost (1960). Ross was extremely interested in the geographical placement of sites associated with the salient events of that island's history. With this purpose in mind, he provided nearly thirty maps, mostly drawn by himself, to illustrate the placement of sites from his historical researches.

While Ross was not particularly concerned about the subject of cannibalism, which he conceded to have occurred on Madeline Island, he provided reliable guidance for some future archaeological inquiry related to that matter. He sifted several hypotheses regarding the location of the earliest Chippewa settlements on Madeline Island [pages 11-16, 62, 176 & 177]. First, he rejected out of hand the theory of Philip Ainsworth Means that the narrowed middle section of the island, comprising several square miles, was the locus for the early Indian village. Ross said that Means had limited knowledge of the island and had "accepted hearsay evidence from persons not qualified to give it" [11]. Means had tried to conduct a survey in 1916, but failed both because of digging problems and the resentment of the local French-Ojibway.

Ross therefore accepted Warren's placement as the most reliable testimony concerning the location of the earliest Chippewa settlements on Madeline. Warren had said [96]: "Here, [Madeline Island] they chose the site of their ancient town, and it covered a space about three miles long and two broad, comprising the western end of the island." This is land adjacent to Grant's Point, and not even close to the recent MWAC dig near La Pointe, the Marina site 47AS24.

Ross told as well what the erosions of time had done to the shoreline at Grant's Point. The lake currents had apparently shortened the extension of that point by half a mile during the interval 1852 to 1939. Ross speculated that there had been an even lengthier point as far back as 1693 [Map 16, p. 44]. Striking evidence of this eroding force was the appearance, over time, of some of the ancient graves of the Chippewa. Ross told the following story about these apparitions [176-177]:

At the extreme southwest end of the island (Grant's Point) is an unmarked and unsung burying ground containing the graves of many Indians. No authentic explanation has ever been advanced either for its location or why this number of Indians were buried there, unless it bears out Warren's statement that the principal Ojibway settlement of 1490-1610 was at this end of the island, and the sand beach offered a convenient burying place. The shifting sands of the point, at times, unearth some of these graves, exposing bones, relics, arrowheads and tomahawks. One legend avers that certain unbaptized natives had been interred at the spot. Another, linked with an incident which occurred in 1900, might furnish the answer.

In that year, the Old Mission Inn was staffed by a number of Beloit College students who, impressed with the historical background of the locality, and hearing of the possible archaeological trove, decided to investigate the area. Many skulls and artifacts were unearthed, and the budding scientists were jubilant over their finds. In the midst of their attempts to classify and sort their loot, they were waited upon by a delegation of La Pointe French-Ojibway. They were asked if they would like to have outsiders appear and disinter their ancestors. When Joseph Neveaux, the leader of the committee, delivered his Parthian shot of "Besides, they all died of the smallpox," the amateurs quickly re-interred their finds, and hastened to be vaccinated.

The quote both helps to confirm the center of early Chippewa settlement as well as relate to a possible correlation to the cannibalism era. The

mention of smallpox, though potentially true in whole or in part, may have been a red herring planted by Neveux to protect the graves of his Chippewa ancestors. Even though more of the Indian artifacts may have been washed into the lake in the eighty odd years since this 1900 incident, the chance is good that there are other Ojibway burial grounds in the primary search area that Warren mentioned, that is, a stretch of ground three miles long extending along the south shore of Madeline, and reaching up two miles northward toward the present village of La Pointe. Bearing in mind the considerable recorded erosion at Grant's Point, the line of probability hardly extends to the modern village. The cutoff point might be the section line between Sections 30 and 31 (T50N, R3W). Thus the Marina site (47AS24) would be outside of the primary probability area, and be futile ground for finding Warren's ancient Chippewa village and burial grounds. At best, the Marina site would correlate with Father Baraga's Mission and its associative Indian burial grounds of the nineteenth century.

Ross would also have urged archaeologists to hunt elsewhere further from the village of La Pointe for older artifacts. His maps 17, 23 and 24 emphasize that the Indian burrying ground in Section 31 T50N, R3W was used mainly in the nineteenth century after 1836. If this is the site of the Marina dig 47AS24, it has little or no potential for finding earlier remains.

Correlatively, Ross placed Michel Cadotte's first house of 1793 on Madeline Island in Section 6 (T49N, R3W), not far from Grant's Point. This coincides well with Warren's statement about dwelling as a boy (c. 1835) on the very spot where cannibalism took place. Since Warren's maternal grandfather was Michel Cadotte, this is direct linkage to the house in question.

From what Ross has told us, the most fruitful area for archaeological search may already be lost forever because of wave action at the southwestern tip of Madeline Island. Yet some of the territory for the early Chippewa village remains accessible to man, but digging it up may still run counter to Ojibway sensibilities, as it did in 1900 when the Beloit College students trespassed on sacred Indian ground.

Ross also vouched for Warren's credibility in unequivocal terms [114]: "[He] is generally regarded as an authority on matters pertaining to that tribe. In his book he recorded his method of determining when the Ojibway came to Madeline Island, when they left and when they saw a white man for the first time." As for the latter fact, Ross educed confirmatory evidence regarding early white contact. In this version, again Indian oral history, there had once been a hieroglyphic record from the Chippewa on a copper plate which told of two white men on Madeline Island about 1610. Using another historical source, Gabriel Sagard-Theodat, [15-16] Ross pointed out the generally accepted fact the Etienne Brule was the first Frenchman identified by name who travelled on the surface of Lake Superior. And Grenolle, one of Brule's companions, wrote in his diary of how earlier whites had dubbed Sault Ste. Marie with a different name, a name which the Chippewa at that place parroted to them, calling it "Sault de Gaston", after the brother of Louis XIII. Thus the evidence used in the text concerning early Chippewa history is soundly based on reliable sources that have not been contradicted in any important aspect by modern archaeological findings. And what is more, the data is integral to the thumbnail history of fishing in the Apostle Islands region, both as to fishing as a means of bringing the white and red races together at Madeline Island, as well as the occurrence of cannibalism, because fishing alone was not a totally reliable means for obtaining sustenance for inhabitants of the region.

The Role of Country Roads for Marketing Fish: In the early nineteenth century history of the commercial fishery in the Apostle Islands region, road travel was not an important means for getting the fish to market. Granted that there are isolated stories in which lone entrepreneurs moved a dogsled over the snow in the dead of winter hauling a mixed load of whitefish and lake trout to St. Paul to gain a hefty profit; but such practice was unusual and could not market fish in any great volume. Until the arrival of the railroad in Bayfield and Ashland during 1883, commercial fishermen could only market their catches at important ports such as Duluth, Bayfield, Ashland, and the Keweenaw Peninsula of Michigan. Thus they would cover their catches of fish with chipped ice while out on the lake to keep them fresh until

arrival in port. In such wise the average fisherman was limited to a small radius of action around the better ports, and so most of the fishers were clustered near a port for a home base. Also most of them were compelled to sell their fish through the companies with the concomitant cut into their profit. In this way an operation like the Hokensons was rare and unusual; and it competed successfully in an era when technology enabled them to use other forms of transport, such as the truck.

Therefore, from the 1880's to 1920, the railroads dominated as the mode for marketing fish in volume. At first there were railway cars using chipped ice to preserve the fish; but eventually refrigerator cars were invented. Also, most of the herring catch was shipped packed in salt or brine. Of course, the major distribution centers for Lake Superior fish by rail were Chicago and Minneapolis/St. Paul. Doubtlessly some fish were marketed beyond these centers or to the satellite towns around them, or even exported through Sault Ste. Marie to other ports among the Great Lakes as had happened in the 1830's.

Nonetheless the Hokenson mode of marketing was novel; yet, in microcosm, their experience illustrated the coming of age of the American trucking industry. So when they joined a cooperative based in Cornucopia, Wisconsin in the late 1920's or early 1930's, their purpose was to get fresher fish (from pound-nets) to market faster than their competitors, the companies, and reap the higher profits at their destination by eliminating at least one middleman. Balanced against these considerable benefits from trucking were the risks involved in having an occasional spoiled shipment of fish.

The fishing companies stayed with railroad shipping longer than did such independent entrepreneurs as the Hokensons. But the decline of the railroads after World War II coincided pretty closely with the era of the lamprey eel and the near destruction of the Lake Superior commercial fishery. Today, professional fishermen catch only a small volume of fish and there are innumerable scares regarding pollutants and contaminants in their produce, so that transportation is no longer an important aspect of the Lake Superior fishery.

The Annual Fishery Cycle: Using the calendar-year method of reciting fishery activities, the larger scale fishermen began the year by harvesting ice. This process is described in the furnishings study portion of these reports on the Hokenson Dock. At the same time, both private and commercial fishers did some fishing through the ice in the winter months. The method of stringing gangs of gill-nets under the ice has also been described in the furnishings study portion of these reports. Smaller scale fisherman with single lines would go well out onto the lake ice among the islands during the coldest weather, most of them having a small portable hut with stove to shelter them and warm them from the wind. Only blizzards would stop them entirely, for they would fish on days having extremely cold temperatures.

The moment for commencement of spring operations was signalled by the breakup of the lake ice. At the earliest opportunity, pound-netters would get their pile drivers out and commence setting the poles. Their start at fishing would then hinge upon the completion of their pounds. A man with few such nets was ready to tend them soonest. Gill-netters would also begin fishing quite soon after the ice breakup, but June through September were their best months in the olden days. More recently, the restriction on catches and the requirements to tag lake trout would shorten their season. Now too, fishing is forbidden during whitefish and lake trout spawning season in October. Formerly October was also a fishing month for these money fish, both with pounds and gill-nets. The herring season nearly always commenced in late October and lasted until either early December or until a major storm or the complete onset of winter conditions accompanied by the freeze-up of the intra-island waters. Sometimes a big storm would interrupt the herring season in the middle, and the fishermen could recommence their harvest after its passage. Once the herring disappeared, usually in early December, but sometimes in late November, the annual Apostle Islands fishery cycle was complete. Yet one must say that adventuresome spirits would still fish during any interval, if it were humanly possible to get their equipment into the water.

Smoked Fish: There is a discussion of smoked fish in Chapter Three of this report. The text on this subject did not intend to imply that the expectation of fire was the sole determinant for building small smokehouses; but it certainly was the most important determinant. Any large smokehouse operation would have entailed a considerable capital outlay and overhead. The larger building, the need for more combustibles, and the greater labor input, all would have required an investment beyond the means of most businessmen in the Apostle Islands region. Only a wealthy outside entrepreneur could have afforded such an undertaking. And whoever would gamble on such an enterprise, would have had to accept the possible loss of a huge smokehouse from accidental fire. There were few or none in the area capable of taking such a risk.

It should be noted that most connoisseurs of smoked fish consider it to be a delicacy and a rare treat. For this reason, as well as the higher cost of production, the finished product was a more expensive item to buy than fresh fish. Price was a natural damper on demand for it--less people could afford to purchase smoked fish, either in proximity to the fishing region or at more remote places. And the people of Bayfield were mostly in humbler circumstances and therefore would not frequently be buying luxuries ahead of necessities. Therefore the smoking of fish was less often a commercial enterprise than a pleasant hobby which would provide a delicacy for their families, neighbors, friends and fellow village dwellers. Thus it might be sold commercially in Bayfield only on special occasions, such as the town celebration of the Fourth of July. In any case, the marketing of smoked fish in Bayfield was never done in any great volume. Once, in a similar vein, during 1878, an entrepreneur by the name of Hart Pincus tried to start a caviar producing business at Bayfield but gave up after two months of discouragement. When he left town, he took 750 pounds of prepared caviar with him. Thus luxury items never fared well near the islands, at least as a commercial proposition.

Preservation of smoked fish would not have been a problem for inhibiting the industry. Once smoked, the fish could be kept almost indefinitely without refrigeration, though spoilage could occur with fish

that were less thoroughly smoked. But since they were such a savory and desirable item, people who had them seldom kept them long. Anyone who wanted to smoke fish in volume would have had a problem preserving the fish prior to the smoking process, thus adding to the cost through refrigeration or icing. And the longer such fish were kept until the smoking began, the less desirable they were for flavor. This factor also militated against large-scale smoking operations. Most often too, the man with the smokehouse used smaller fish, as there was both greater demand for eating larger fish fresh, as well as a greater potentiality for smoking the smaller varieties throughout their entire body mass.

A similar and parallel story could be told concerning the pickling of herring with a special multiple-spices recipe. Many people in the Bayfield area have always put up a few jars of pickled herring. This pickling used complicated and individuated formulae for preserving the herring. Thus the solution mixture was not so simple as mere brine or plain vinegar.

But this too was a more expensive process and it was really intended to cater to the peculiar tastes of small numbers of people such as a family.



INTRODUCTION

The selection of the Hokenson Fishing Dock for interpretive development was based on the fact that the story of commercial fishing is one of the major interpretive themes of the Apostle Islands National Lakeshore. The Development/Study Package Proposal stated the requirement that an historical study be made into the commercial fishing operation of the area and specifically the Hokenson Brothers Fishery of Little Sand Bay. The latter portion of this requirement is principally covered in the Historic Data Section of the Historic Structure Report and in the Furnishing Study for the Hokenson Fishing Dock. These two studies, while relating to the extant structures at Little Sand Bay, also provide the factual data concerning Peter Hokanson's coming to the area, the sequence of land acquisition in the Hokenson family, the development of a fishing operation by the three Hokenson brothers, the construction of the various fishery buildings, the flourishing era of the brothers' operation, the death of Leo Hokenson, and the retirement of the two surviving brothers.

Having told the Hokenson story in the Structure Report and Furnishing Study, it now remains to place their adventure into the larger context of Lake Superior commercial fishing and Apostle Islands commercial fishing. It may seem strange, therefore, that the Hokenson brothers are not frequently mentioned in this portion of the investigation; but this approach accurately reflects the fact that the Hokenson brothers were one family organization competing with many others with similar equipment.

The Hokensons differed from other family enterprises only in the practice of marketing their fish by themselves or through a cooperative organization, while many fishermen depended on established wholesalers in Bayfield or Duluth to market their fish. Other families might just as easily have been singled out as subject for study, but in this case, the Hokenson fishery structures and equipment survived the ravages of time; and the location of their endeavors on Little Sand Bay remains very much in the same isolated condition as when their fishery flourished.

Today there are still analogies between the Apostle Islands fishery of 1930 and 1980. Many of the fishing units are still family endeavors. Bodin Fisheries in Bayfield inherited the position of wholesaler from some of the earlier, but more numerous, companies. Some of the oldtimer fishermen still survive. I talked to some of these retirees: Elvis Moe, Herman Johnson, Ted Bainbridge, and Halvor Reiten, in Bayfield; Emory "Squeaky" Jones in Cornucopia; and Roy and Eskel Hokenson on Route One near Little Sand Bay. In some cases, sons, nephews or other relatives of these men carry on the fishing heritage today. A few members of the Boutin Family, so prominent in the early days, still do some commercial fishing on at least a part-time basis. "Jack" Erickson fishes for profit out of the dock at Little Sand Bay. His father before him was a fisherman. There are others still in the trade, with names like Frostman, Hadland, Hokenson, Nelson, Noring, Nourse, Bodin, La Pointe, just to name a few. Their operation is on a smaller scale now, with each lake trout being tagged and the weight of the whitefish being closely recorded; but the quantity of these two favorite fish seems to be steadily increasing.

CHAPTER I: LAKE SUPERIOR AS A FISHING GROUNDS DURING ITS PREHISTORY, ETHNOHISTORY, AND NINETEENTH CENTURY

A. Prehistory and Ethnohistory

In order to understand the twentieth century Lake Superior fishery and the men who lowered their nets for a catch as a commercial enterprise in recent times, one must, however briefly, take a glimpse at the history of fishing in the Apostle Islands environs during earlier times. Specifically, the observer wants to know what had gone before at the moment the three Hokenson brothers decided to become fishermen during the 1920's.

Not much is known about the earliest aboriginal fishers on Lake Superior. One abiding piece of evidence concerning their existence was found in the seventeenth century when Europeans (Frenchmen) explored the region for minerals. On Isle Royale, of Lake Superior, just east of the northeastern tip of present day Minnesota, an early metal hunter found various traces of the ancient miners who had removed copper ore from pits on that island. Not only had the explorer found the ashes of their reducing fires, coals, stove hammers and chips of copper, but also the scales of the fishes eaten by these unidentified primitive metallurgists.¹

Moving on to the traditions and ethnohistory of the native Americans who were first known to reside around Lake Superior, one finds more abundant tales of the Indian dependency on Lake Superior fish. To a considerable extent, this portion of the story associates itself most intimately with that portion of the Algonquian family known as the Chippewa or Ojibways. This is not to say that other Indian tribes did not inhabit the area around Lake Superior from time to time; but rather that the Chippewa, at the moment Europeans commenced their explorations of North America, were well established around the lake, and dominated the political control of the region. Thus the Ojibway history and the Lake Superior history became intertwined for at least two centuries. The poet Longfellow consecrated this relationship in 1855 with his epic The Song of Hiawatha when he wrote:

"By the shores of Gitche Gumee, [Lake Superior]
By the shining Big-Sea-Water,
Stood the wigwam of Nokomis
Daughter of the Moon, Nokomis
Dark behind it rose the forest,
Rose the black and gloomy pine-trees,
Rose the firs with cones upon them;
Bright before it beat the water,
Beat the clear and sunny water,
Beat the shining Big-Sea-Water."

In passing, it is interesting to note that Longfellow included a chapter in that poem on Hiawatha's fishing in Lake Superior. As commentary on the advent of Europeans to that pristine paradise, the poet portrays Hiawatha's principal quest as the sturgeon, "Mishe-Nahma," than which all other lake species was unworthy of Hiawatha's fishing prowess. Afterwards, when the white man came to fish, the sturgeon all but disappeared from Lake Superior.²

Returning to our present subject, the Chippewa, it is noteworthy that this tribe was one of the few to have the rare good fortune of having their history written in English by a man who was at least partially of their race and who spoke their language fluently. This man was William Whipple Warren, who completed the History of the Ojibway Nation in 1853, but failed to get it published in his lifetime. This book appeared in print only in 1885 when the Minnesota Historical Society sponsored the publication of Warren's manuscript. Warren's history, based largely on oral traditions, was put together by means of patient and long-suffering attentiveness at hundreds of Ojibway campfires over a span of years. The historical reach of his narrative was extended considerably by relying on the stories of the most venerable and ancient Chippewa warriors. Warren admitted the deficiencies of this method; and the narrative is weak in trying to date any event with precision. But Warren set it down in writing after this fashion, lest all traces of the Chippewa history be lost.

The Ojibway dependence on fish for subsistence is an integral part of the Warren history. The northern habitat of the Chippewa, the environs of Lake Superior and the northern woods of present Minnesota, Wisconsin, and Michigan, were blessed with numerous streams, lakes and other bodies of water besides the Big-Sea-Water, all filled with a copious supply of fish. In summarizing Chippewa foodstuffs, Warren wrote: "They procure food principally by fishing, also by gathering wild rice, hunting deer, and, in some bands, partially by agriculture."³

One of the clans or totems of the tribe was even named after the creatures of the deep, the Awause, or "Great Fish" clan. Of the 20 odd families in these clans, at least half a dozen were named for fish: the catfish, the merman, the pike, the sucker, the sturgeon, and the white fish.⁴

Some of the Chippewa traditions passed on by Warren are so intimately interwoven with mythology or allegory, it is difficult to sift out fiction from fact. Warren copied down one legend narrated by Chief Tugwaugaunay that purported to tell the story of creation and the role played in it by his people, the Crane Family. The sinuous narrative gives a notion of the Indian migration across the land-bridge from Asia to the heart of North America. At some date, not too far beyond the memories of living men, as Chief Tugwaugaunay related, the Crane Family was the first to lay claim to "Boweting" (Sault Ste. Marie) and the area around Chequamegon Bay on Lake Superior. At both places, according to the story, the crane chose these resting places because of the abundance of white fish and other species in the clear depths of the great lake.⁵

Fish and fishing, therefore, were an essential element near the center of Ojibway folklore. Story after story casts the dramatis personae with a fishing backdrop. One sample will suffice to characterize a large body of mythical lore:

"A party consisting of warriors belonging to the Marten family was at one time collected at Fond du Lac [Duluth]. They proceeded on the war-path against the family of the Omush-kas,

living on the north shore of the Great Lake, for this family had lately spilled their blood. They discovered a single wigwam standing on the sandy shores of the lake, and the Martens, having stealthily approached, raised the war-whoop, and as was the custom in battle (to show their greater man-hood), they threw off every article of clothing, and thus, perfectly naked, rushed furiously to the attack. The Omush-kas, head of the family occupying the threatened lodge, was busy arranging his fishnet, and not aware that war had been declared, he paid no attention to his yelling visitors, but calmly continued his peaceful occupation.

"One of the Martens, rushing into the lodge, and, throwing his arms about him, exclaimed, 'Ene-ne-nin-duk-o-nah' (a man I hold), meaning that he took him captive.

"The simple Omush-kas, looking up, merely remarked 'Let me go; you are tangling my net.' Still the Marten, keeping his hold, more loudly exclaimed, "Ene-ne-nin-duk-o-nah.' The Omush-kas, now perceiving his nakedness, grasped a sensitive part of his person, in turn jokingly exclaimed 'Nin-sah-eta-in-ne-ne-nin-duk-o-nah' ('tis only I who truly hold a man'), and the simple man continued to consider the attack as a mere farce. The war-club, however, of the enraged Marten now descended with fearful force on his head, and he died exclaiming, 'Verily they are killing me.'"⁶

The unfortunate Ojibway died because of his absorption with, and dedication to, fishing.

To return to our narrative concerning the Chippewa and their connection with Lake Superior, it should be noted that about two centuries before the time of Columbus' discovery of America, the Chippewa were in retreat from their furthest eastward advance onto the Atlantic seaboard. Though unadmitted in the compilation of Chippewa lore, the Ojibway were probably driven back by the Iroquois.

Several segments of these fleeing Algonquian people, the Chippewas included, congregated in the area around the Falls of Sault Ste. Marie. The Sault was an attractive stopping point because of the "numerous white fish that glanced and swam in the clear waters and sparkling foam of the rapids."⁷ From this point, the various branches of the Algonquian family dispersed to all points of the compass. Some of the Chippewas stayed at the Sault; but the largest contingent migrated westward along the southern shore of Lake Superior. In this migration they were resisted by the occupants of the territory, mostly Dakota Sioux and Foxes.

By the late fifteenth century or early sixteenth century, one group of Ojibway had established itself around Chequamegon Bay and the place later called La Pointe, a camp on the mainland opposite the island later called Madeline.⁸ The pressure of the Dakotas and Foxes was so considerable, that for a time the Chippewa had to withdraw to the safety of the island. The Ojibway referred to the island as "Mon-ing-wun-a-kaun-ing," "the place of the golden-breasted woodpecker." Once again, the appeal of this location was "the numerous fish as they swam about in the clear depths of the Great Lake."⁹

Warren related that the principal means of subsistence for the Chippewa who were hemmed in on the island was fishing. And he told as well about the rest of their environment, when they could get ashore, and a little about their methods at fishing: "Every stream which emptied into the lake abounded in beaver, otter, and muskrat, and the fish which swam in its clear water could not be surpassed in quality or quantity in any other spot on earth. They manufactured their nets of the inner bark of the bass and cedar trees, and from the fibres of the nettle."¹⁰

Despite harassment, the Chippewa did not abandon the Chequamegon Bay area; and it was here that the first dated contact between Europeans and Chippewa took place.¹¹ In the fall of 1659 two French fur traders, Radisson and des Groseilliers, discovered a village, or series of villages, on the southwest corner of Chequamegon Bay. The area actually had a mixed population of Ottawa, Hurons and Chippewa living together in

relative harmony. Radisson's commentary on the place took note of the fish: "in that bay ther is a chanell where we take great stores of fishes, sturgeons of a vast bigness, and Pycks seaven feet long. At the end of this bay we landed."¹²

Some historians have argued, consistent with Warren's presentation of Chippewa folklore, that white men made contact with the Chippewa before Radisson and des Groseillers. Hamilton Ross, using early French sources, wrote:

"It is generally accepted as fact that the first white man of record to see Lake Superior was Etienne Brule, in about 1622. However, the diary of Grenolle, who accompanied Brule, shows that upon their arrival at the Sault, the Ojibway were calling the rapids Sault de Gaston, after the brother of Louis XIII. This would seem to prove that some unsung white had been there before that time.

"It is believed that the map which Champlain published in 1632, and which is fairly accurate save in respect to Lake Superior, was the result of Brule's explorations. This map called the lake Grand Lac.

"An Ojibway legend which may bear considerable weight, because of its supposed hieroglyphic record on a somewhat mythical copper plate, indicated that there were two white men on Madeline Island about 1610, and there are other legendary references to traders who might have been there before 1622. The thought occurs that the two might have been Brule and Grenolle."¹³

The Ojibway legend to which Ross refers is interesting also because it has an association with fishing on Lake Superior. Warren told the story in this way:

"One clear morning in the early part of winter, soon after the islands which are clustered in this portion of Lake Superior and known as the Apostles, had been locked in ice, a party of young men of the Ojibways started out from their village in the Bay of Shag-a-waum-ik-ong, [Chequamegon] to go, as was customary, and spear fish through holes in the ice, between the island of La Pointe [present-day Madeline Island] and the main shore, this being considered as the best ground for this mode of fishing. While engaged in their sport, they discovered a smoke arising from a point of the adjacent island, toward its eastern extremity.

"The island of La Pointe was then totally unfrequented, from superstitious fears which had but a short time previous led to its total evacuation by the tribe, and it was considered an act of the greatest hardihood for any one to set foot on its shores. The young men returned home at evening and reported the smoke which they had seen arising from the island, and various were the conjectures of the old people respecting the persons who would dare to build a fire on the spirit-haunted isle. They must be strangers, and the young men were directed, should they again see the smoke, to go and find out who made it.

"Early the next morning, again proceeding to their fishing ground, the young men once more noticed the smoke arising from the eastern end of the unfrequented island, and led on by curiosity, they ran thither and found a small log cabin in which they discovered two white men in the last stages of starvation. The Young Ojibways filled with compassion, carefully conveyed them to their village, where, being nourished with great kindness, their lives were preserved.

"These two white men had started from Quebec during the summer with a supply of goods, to go and find the Ojibways

who every year had brought rich packs of beaver to the sea-coast, not withstanding that their road was barred by numerous parties of the watchful and jealous Iroquois. Coasting slowly up the southern shores of the Great Lake late in the fall, they had been driven by the ice on to the unfrequented island, and not discovering the vicinity of the Indian village, they had been for some time enduring the pangs of hunger. At the time they were found by the young Indians, they had been reduced to the extremity of roasting and eating their woolen cloth and blankets as the last means of sustaining life.

"Having come provided with goods they remained in the village during the winter, exchanging their commodities for beaver skins. The ensuing spring a large number of the Ojibways accompanied them on their return home."¹⁴

One portion of the above story refers indirectly to another major motif in the traditions of the Chippewa: The occurrence of cannibalism and occasional failure of the fish supply. The reason the Ojibways were superstitious about setting foot on Madeline Island early in the seventeenth century, was that their collective conscience bothered them about a period of cannibalism that had been perpetrated on the island. Warren referred to the interval as "a dark chapter of their history, on which the old men dislike to linger."¹⁵

In summarizing this era, Warren stated that the Chippewa had dwelt on Madeline Island for about three generations, or from about 1490 to 1610. Both the chronology and causes of the cannibalism are confused in Warren's account. One version attributes the Ojibway departure from Madeline Island to the coming of the white man and his bestowal of firearms on the Indians. These deadly weapons enabled the Chippewa to conquer and push back their old enemies, the Dakotas and the Foxes, according to this version of the story.

But because of the guilt-complex of their old men, Warren thought it more likely that the Chippewa abandoned Madeline Island before the coming of the whites, because of the cannibalistic practices that had transpired there. As Warren put it: "Whether or not these evil practices were at this particular period caused by dire necessity, either through a failure of their crops, or by being entirely hemmed in by their enemies, as to be prevented from hunting on the main shore, the writer is not able to state, though he should be but too happy to give this as a palliating excuse for the horrid custom he is obliged to relate, as once having been in such vogue in the tribe of whom he is writing."¹⁶

Elsewhere in Chippewa legend it was frequently noted happenstance that their food supply failed them, most usually in winter. Although the fish of Lake Superior probably never provided more than half of the Chippewa diet during early historic times, it is nevertheless true that both the game animals on land and the fish supply in the lake migrated from place to place at various seasons. Only in the twentieth century have various scientific studies documented the fact that the feeding grounds of fish are modified by storms, changing biological environment, temperature, spawning habits, and other factors. Also, in the past century (1870-1970), overfishing frequently depleted the fish supply in one place, so that fishermen hunted elsewhere for the finny creatures. It is unlikely, however, that the Chippewa ever had the technological capability of depleting the fish in one locale by overfishing.

Alexander Henry, a hunter-trader of the eighteenth century in the Lake Superior environs, told of a winter in which the fish supply failed because of an accident. Before the onset of the winter season, Henry and his Indian companions at Sault Ste. Marie laid in a large stock of fish to bide them over the lean months. Henry had either dried the fish or had them frozen, some 500 fish in number, and set them aside.

Fish were so abundant that Henry's companions exported several canoe-loads of fish to Michilimackinac. Despite these successes with fishing, a nocturnal fire burned down most of the dwellings at his camp, and the reserve fish supply was destroyed. As a result, the people at

the Sault were obliged to flee to Michilimackinac in order to avoid starvation. A part of Henry's company was able to make that place before the ice froze, but some of their number were caught by the weather.

These survivors were able to catch a few fish by cutting holes in the ice and spearing a few large trout; but they were never able to procure a large supply under these circumstances. They were, therefore, compelled finally to flee to Michilimackinac for food. Henry was a member of this party and was able to reach Michilimackinac only after an exceedingly arduous journey, in which the threat of starvation was always a factor.¹⁷

Alexander Henry's journal brings out, as well, the occasional correlation between Chippewa starvation times and cannibalism. Henry cited at least three instances in his own experience when the Indians resorted to eating human flesh. One case took place near Oak Bay on the north side of Lake Superior. Henry had fled to that place because of the failure of the fishery at the Sault. The fish supply was somewhat better at Oak Bay, and Henry found that some Chippewa followed him there with the same mission of obtaining food. One day a single Indian wandered into their camp talking about how he had left his family starving nearby. As Henry told the story: "The appearance of this youth was frightful; and from his squalid figure there issued a stench which none of us could support. . . . His arrival struck our camp with horror and uneasiness; and it was not long before the Indians came to me, saying that they suspected he had been eating human flesh, and even that he had killed and devoured the family which he pretended to have left behind."

As it transpired, other Ojibways found direct evidence of the young man's cannibalism by bringing back a human hand and skull that were roasting on a slow fire nearby. They confronted the youth with his crime and received a confession of guilt. Quizzically, the Chippewa decided to kill the young man, not because they considered the deed especially heinous, but rather because of a belief that someone who acquired a taste for human flesh, tended to cultivate that taste.¹⁸

Despite such isolated aberrations, the Ojibway that lived around the periphery of Lake Superior, felt themselves fortunate to live near the shores of that great lake. One Chippewa Chief, Minavavana, told Henry: "Your nation supposes that we, like the white people, cannot live without bread--and pork--and beef! But you ought to know that He, the Master of Life, has provided food for us in these spacious lakes and on these woody mountains."

As time went by, the French made repeated contacts with the Chippewa of Lake Superior. The most common point of contact was the Sault Ste. Marie, since it was closest to the French settlements on the St. Lawrence River. Here the famous Jesuit missionary, Father Rene Menard found the Ojibway. He took note of the prosperous fishing there in the fall of 1660; and passed through the Chippewa country to meet his doom in the interior of latter day Wisconsin.¹⁹

Five years later, another Jesuit, Claude Allouez, made some unusual observations along the southern shores of Lake Superior: He not only found the fishing place of the Chippewa on the southwest corner of Chequamegon Bay; but he saw that the prosperity of the place had also attracted a vast concourse of Pottawattomies, Kickapoos, Sauks, Foxes, Hurons, Ottawas, Miamis, and Illinois. All these Indians thought the place was also a safe haven from their mutual enemies, the Iroquois and the Sioux.²⁰

Father James Marquette also visited Chequamegon Bay, in 1669. He, like the other Jesuits, had kept a semi-permanent missionary station on Madeline Island. But in 1671, with the outbreak of one of the perpetual Sioux-Chippewa wars, he was driven away, together with his wards, in the direction of Sault Ste. Marie. Although this discouraged Christian proselytizing endeavors in the region for 164 years, fear of the Sioux did not dissuade the more venturesome fur traders and merchants from visiting the Chippewa along the south shore of Lake Superior during the interim.²¹

During this interval, innumerable travelogues or journals were written by people traversing the Lake Superior region. The most frequent story consisted of observations made at the Sault regarding fish catches. Dollier and Galinee left such a description for the year 1670:

"Hitherto the country of the Ottawas had passed in my mind, and in the minds of all those in Canada, as a place where there was a great deal of suffering for want of food. But I am so well persuaded of the contrary that I know of no region in all Canada where they are less in want of it. The nation of the Salteaux, or in Algonkin Waouitikoungka Entaouakk or Ojibways, amongst whom the Fathers are established, live from the melting of the snows until the beginning of winter on the bank of a river nearly half a league wide and three leagues long, by which Lake Superior falls into the Lake of the Hurons. This river forms at this place a rapid so teeming with fish, called white fish or in Algonkin attikamegue, that the Indians could easily catch enough to feed 10,000 men. It is true the fishing is so difficult that only Indians can carry it on. No Frenchman has hitherto been able to succeed in it, nor any other Indian than those of this tribe, who are used to this kind of fishing from an early age. But, in short, this fish is so cheap that they give 10 or 12 of them for four fingers of tobacco. Each weights 6 or 7 pounds, but it is so big and so delicate that I know of no fish that approaches it. Sturgeon is caught in this small river, close by, in abundance. Meat is so cheap here that for a pound of glass beads I had four minots of fat entrails of moose, which is the best morsel of the animal. This shows how many these people kill. It is at these places that one gets a beaver robe for a fathom of tobacco, sometimes for a quarter of a pound of powder, sometimes for six knives, sometimes for a fathom of small blue beads, etc. This is the reason why the French go there, notwithstanding the frightful difficulties that are encountered."²²

Father Louis Hennepin wrote about conditions at the Sault in 1679: "The Indians of Sainte Marie du Long Sault are called by us the Saulteurs [a branch of the Chippewa] on account of the place of their abode, which is near the Sault, and where they subsist by hunting stags, moose, or elk, and some beaver, and by the fishing of white fish, which is very good, and is found there in great abundance, but this fishery is very difficult to all but these Indians who are trained to it from childhood."²³

Antoine Lamothe Cadillac wrote similar sentiments about his visit to the Sault at the end of the seventeenth century:

"The great abundance of fish and the ease of catching them have caused the Indians to make a settlement in this region. It is a daily manna which never fails; there is no family which does not catch sufficient fish to live on throughout the year. Moreover, it is bathed and nourished in the purest water, the clearest and most pellucid you could see anywhere.

"I think it would be useless to explain the way in which they fish, since each tribe has its own method. But I think I ought to mention the pleasure of seeing them bring up, in one net, as many as a hundred white fish. This is the most delicate fish in the lake. They are as large as shad in France. They also catch a large number of trout, weighing up to 50 pounds; they are certainly very good eating. Finally, the sturgeon, pike, carp, herring, dory, and a 100 different kinds of fish abound at this part of the lake."²⁴

Cadillac also took note of the fact that both the French and Indians at the Sault sought variety in their diet, despite the abundance of fish. But he stated, as well, his belief in the healthfulness of both the food and the location:

"They saw a big tree and cut a log about three feet long which they hollow out for about two feet, almost like a mortar. Then they make a pestle of hard wood, about five feet long; after

this they put Indian corn into the mortar and crush it with the pestle. When it is sufficiently pounded they winnow it and the bran is separated, so that only the meal is left, which is sifted in order to remove the dust; the result is that the meal remains pure, clean, and white like rice. It is put into a cookingpot with water to boil; and at the same time they cook some white fish in another pot; when they see that the meal is half cooked they take out the fish and soak it in the boiled meal, which is reduced to a white liquid like milk. They then throw it into the pot and stir it with a wooden spoon in the same way as one does rice, until it is thoroughly cooked; and as it is the custom of the country for each person to have his dish, each fills his own dish with this broth, which the Indians call Sagamity, that is to say, different things mixed together to be eaten.

"This is not dainty food, but it is certainly very wholesome, for it always keeps the bowels open, and it is very aperitive, for one urinates as often as 50 times a day and if one never ate any other food, he would never be thirsty, as many persons have found out who have gone whole months without thinking of drinking. I can affirm that I have gone twenty days without feeling the slightest thirst; which makes me think it would be a good diet for those who suffer from gravel. In the evening they eat fish cooked in all sorts of ways--fried, roasted, boiled, smoked, or stewed; they have neither oil nor butter, but they have grease or marrow from the elk, moose or buffalo. . . ."25

Cadillac went on to tell more of the salubrity of this northern latitude, its good air and excellent food. As proof of his words he noted the appearance of old men whose grandsons were growing grey. Almost jokingly he would modify his comments concerning their great age by saying: "They have good hearing and good sight, but their memory often plays them tricks, for they sometimes claim that they are 150 or 200 years old. They tell tales and recount events which they maintain happened at that time, which is not credible; but they have this

advantage, that there is no one who can contradict them or call them liars except by inference."²⁶ More recent observers also state the healthfulness of such a fish diet and the stranger to the region is forced to ponder whether these ancient Indians might have achieved the great age they claimed.

Alexander Henry, a fur trader of the eighteenth century, was one of the few observers who set down more details of the Indian fishing methods than other early witnesses. Describing the Sault, he wrote:

"These rapids are beset with rocks of the most dangerous description and yet they are the scene of a fishery in which all their dangers are braved and mastered with singular expertness. They are full of whitefish much larger and more excellent than those of Michilimackinac, and which are found here during the greater part of the season, weighing in general from six pounds to fifteen.

"The method of taking them is this: each canoe carried two men, one of whom steers with a paddle, and the other is provided with a pole ten feet in length, and at the end of which is affixed a scoop-net. The steersman sets the canoe from the eddy of one rock to that of another; while the fisherman in the prow who sees through the pellucid element the prey of which he is in pursuit, dips his net and sometimes brings up at every succeeding dip as many as it can contain. The fish are often crowded together in the water in great numbers, and a skillful fisherman in autumn will take five hundred in two hours.

"This fishery is of great moment to the surrounding Indians, whom it supplies with a large proportion of their winter's provision; for having taken the fish in the manner described, they cure them by drying in the smoke, and lay them up in large quantities.

"There is at present a village of Chippewa of fifty warriors seated at this place; but the inhabitants reside here during the summer only, going westward in the winter to hunt. The village was anciently much more populous."²⁷

Henry told also about other Indian fishing methods which do not, strictly speaking, apply to Lake Superior. Many of Henry's observations were made at Michilimackinac, between Lakes Michigan and Huron, but similar methods were followed on Lake Superior. Henry described the fishing through holes in the ice with set lines and baits at depths as great as 50 fathoms.²⁸ By this means they would catch trout weighing from 10 to 60 pounds. The quality of the achievement was diluted somewhat by the intrusion of modernity--the European traders were already providing metal hooks and manufactured twine for the aborigines.

Similarly, with spearing through the ice, the primeval Indian spear was now tipped with a spearhead of iron. Otherwise the Chippewa ice fisherman followed his ancient technique with his old 10-foot spear:

"This instrument is lowered into the water; and the fisherman, lying upon his belly, with his head under the cabin or cover, and therefore over the hole, lets down the figure of a fish in wood and filled with lead. Round the middle of the fish is tied a small packthread; and when at the depth of ten fathoms [sixty feet] where it is intended to be employed, it is made, by drawing the string and by the simultaneous pressure of the water, to move forward after the manner of a real fish. Trout and other large fish, deceived by its resemblance, spring toward it to seize it; but by a dexterous jerk of the string it is instantly taken out of their reach. The decoy is now drawn nearer to the surface, and the fish takes some time to renew the attack, during which the spear is raised and held conveniently for striking. On the return of the fish the spear is plunged into its back; and, the spear being barbed, it is easily drawn out of the water. So completely do the rays of the light pervade the element that in three fathoms [eighteen

feet] of water I have often seen the shadows of the fish on the bottom, following them as they moved; and this when the ice itself was two feet in thickness."²⁹

The cabin or cover under which the Indian ice-fisher worked had a two-fold function: it both sheltered the spearsman from the weather, and wholly excluded light for deceiving the fish. The shelters consisted of small branches of trees covered with skins. The whole affair needed to be only two feet in height since the spearsman lay prone.

Alexander Henry also described another unusual mode of Indian winter fishing that is especially interesting, insofar as it has been imitated all the way up to the present, by European descendants who live along the shores of Lake Superior.

"The white fish is taken in nets which are set under the ice. To do this, several holes are made in the ice, each at such distance from that behind it as that it may be reached under the ice by the end of a pole. A line of sixty fathoms [360 feet] in length is thus conveyed from hole to hole till it is extended to the length desired. This done, the pole is taken out, and with it one end of the line, to which the end is then fastened. The line being now drawn back by an assistant who holds the opposite extremity, the net is brought under and a large stone is made fast to the sinking line at each end and let down to the bottom, and the net is spread in the water by lighters on its upper edge, sinkers on its lower, in the usual manner. The fish, running against the net, entangle their gills in the meshes and are thus detained till taken up."³⁰

From the above description it is obvious that the Indians were capable of making a primitive version of the gill-net. Needless to say, modern fishermen have copied this design and have only improved on it through the quality of material from which it is made.

Having considered the nearly perpetual bonanza of fish catches at the Sault for a 100-year span, our attention reverts to the Apostle Islands and the outpost at La Pointe which had been established in 1693. Despite the fact that missionaries had deserted the Chequamegon Bay environs as a permanent station by this time, French merchants and fur traders found the island locale a useful point of contact between the red and white races. It was 1693 when Count Frontenac, Governor of New France, sent Pierre La Sueur into the Lake Superior country to construct a stockaded fort on Madeline Island. This fort was one of several in the region that were intended both to secure France's sovereignty against England as well as to protect French fur traders and merchants from hostile Indians.

From La Sueur's time onward to the end of the French regime in Canada, there was an almost continuous military presence at the post of La Pointe on Madeline Island. The known military commanders at this fort were as follows:

Pierre Le Sueur	1693-1698
Paul Le Gardeur de St. Pierre	1718-1720
Rene Godefroy de Linctot	1720-1726
Louis Denis de la Ronde	1727-1741
Philippe Louis Denis de la Ronde	1741-1743
Louise Chartier de Lotbiniere la Ronde	1743-1748
Joseph de la Margue, Sieur Marin	1749-1750
Joseph Gaultier, Chevalier de la Verendrye	1751-1755
Pierre Hertel de Beaubassin	1756-1758
Corne de la St. Luc	1758-1762 ³¹

Le Sueur was the nominal commandant of the garrison at La Pointe during the interval indicated. Most of the time he was absent from his post, having adventures ranging far and wide over the North American continent and the Atlantic Ocean. He was present, however, at the moment in 1698 when the stockaded fort was temporarily closed down. Although the next 20 years was the only significant interval in which the French did not keep soldiers near Chequamegon Bay, it is nevertheless

probable that French voyageurs and coureurs de bois maintained a presence in the area. The reason for the official abandonment of the fort was the glut of the French fur market and the consequent plummet of market prices.³²

The advent of St. Pierre's incumbency at La Pointe inaugurated the golden age of the Lake Superior fur trade. Even though fur was the raison d'etre for the post, the location always depended on the plenitude of fish as a portion of the food supply.

B. Into the Nineteenth Century

English interest in the region after the French and Indian War also hinged upon the fur trade, as it did with their successors, the Americans. This new era found Alexander Henry as one of the most prominent names in the trade. The efforts of individuals, such as Henry, eventually evolved into the establishment of the great fur companies. But the one name more than any other that established considerable renown in the Apostle Islands region, was that of Cadotte. The first famous member with that name was Jean Baptiste Cadotte, who married an Ojibway maiden at the Sault in 1761 and established himself at La Pointe as a fur trader in 1765. He was a partner of Alexander Henry.

The elder Cadotte had an equally famous son, named Michel, who also based his fur trading business at La Pointe, and lived to a great age until 1837. Michel married the daughter of Chief White Crane, who was baptized a Christian and took the name "Madeleine." It was from her that present-day Madeline Island of the Apostles took its name. This island, of course, was the location of La Pointe, the headquarters for the fur trade in the area.

Early in the nineteenth century two Bostonians of prominent family came to the Chequamegon Bay region to engage in trade. As fate would have it, these two brothers, Truman Abraham Warren and Lyman Marcus Warren, took an interest in and married two of Michel Cadotte's

daughters. William Whipple Warren, the historian of the Ojibway Nation, was born of the union of Lyman Warren and Marie Cadotte in 1825. By blood, William Whipple Warren was seven-sixteenths Chippewa, and it is well known that he mastered their language so thoroughly that many Indians of that tribe admitted that he understood their language better than they, and frequently served as an interpreter.³³

The above tracing of the descendancy of the Cadottes/Warrens is important to this study since the first professionally commercial fishing enterprise on Lake Superior grew out of these early fur trading organizations. John Jacob Astor's American Fur Company got a foothold in the Apostle Islands after the War of 1812, and by 1824 Lyman Warren was its factor at La Pointe. Astor himself retired from the organization in 1834 and Ramsay Crooks took over the leadership of the American Fur Company at that juncture. Crooks could perceive the imminent decline of the fur gathering industry at that early date, and immediately decided to diversify his business by entering the commercial fishing field. His move was partially tactical, for he perceived that if he tried to retrench the fur collecting trade by letting people go, these unemployed men would join rival organizations destructive of his own. By diversifying, he would keep his own people happy, content, and gainfully employed.

Though the fur company had a very wide-ranging geographic field, the fishery established in 1835 covered Lake Superior only. Two major fishing stations were set up at the western end of the lake, one at Grand Portage, the other on Isle Royale. Grand Portage had an average of about 20 working people during the few years the fishery lasted. Each post had one or two coopers making the shipping barrels, while the rest of the company engaged in handling the boats or the nets. The Isle Royale fishery had a larger compliment, between 25 and 35 men. The other large fishery base was at La Pointe in the Apostle Islands, and it was also the headquarters of the Lake Superior end of the operation. La Pointe had between 30 and 40 working personnel. Lesser stations around the lake were as follows: Fond du Lac near present-day Duluth, Isle Encampment about 45 miles up the North Shore from the former place, Keweenaw Point and Grand Island on the southeastern shore, White Fish

Point near the eastern end of the lake, Montreal River just north of the Sault, and the Sault itself.³⁴

Lyman Warren was the factor and inspector in charge at La Pointe, but he got into trouble because of fish spoilage and was replaced in 1838 by Dr. Charles W. Borup. All of the Lake Superior catch was shipped to market in company vessels via the Sault and was forwarded to final markets by William Brewster who was stationed at Detroit. Brewster was also the agent who funnelled supplies back to the working portions of the organization. He shipped packing salt for the fish, corn, flour, cheese, lard, blankets, knives, trinkets, twine for nets, floats, sinkers, and other provisions toward the Lake Superior posts.

The fishermen used mainly gill nets, but a few seines were included to catch white fish, trout, and pickerel. The fish were salted and packed in barrels that grossed 200 pounds each. All stations combined contributed less than 1,000 barrels to the export total in 1835; but in the following year, they exceeded the 1,000-barrel sum. Despite a slow start, 1837 produced more than 2,000 barrels of fish. In 1838 the catch was variously reported at between 3,000 and 4,000 barrels. The increase continued in 1839 when somewhere between 4,000 and 5,000 barrels of salted fish were shipped. When the fishing season of 1840 opened, the men manning the nets indicated that it would be another bonanza year. But they were running counter to the national trend which was then falling into a deep economic depression. Before the season was well underway, William Brewster at Detroit notified the Lake Superior fishers that he could not even market the fish he had on hand.³⁵

Aside from an instance in 1837 when great quantities of fish spoiled because of carelessness in packing, the universal indications had augured well for the success of the new industry. Up until that year, Brewster had been able to market siscowet, their best quality deep-water trout, at \$14.00 a barrel. Late in the year, because of the bank panic that had occurred in the spring, hard cash was scarce. By the end of the year, because of slackening demand, Brewster was forced to bring the price of the better quality fish down to \$10.00 a barrel.³⁶

After 1837, Brewster's marketing problems got worse. Despite this, Crooks stressed, in an 1838 letter, that the American Fur Company's success in the trade of Lake Superior depended mainly on the prosperity of the fisheries.³⁷ By 1839, the usual markets in Michigan and Ohio along the lakes were unable to absorb the large quantities of fish caught. The same year, Brewster made a concerted effort to expand sales into central Indiana and inland Ohio. His early attempts with small quantities of fish were successful. Often he resorted to barter to dispose of the fish. More than 1,000 barrels were shipped from Cleveland via the Ohio Canal to Portsmouth, Ohio. The ship captain who boated this quantity down the Ohio River, wrote the bad news about sales to his fur company contact: "The Farmers and Mechanics have such an abundance of fresh meat that they do not wish to purchase fish. But we hope in 2 or 3 Months hence, they will meet with a market."³⁸

But in the spring of 1840 the situation had further deteriorated. Brewster wrote from Detroit in May that he had not sold 100 barrels of fish during this, the best marketing season. Still he continued to ship quantities of fish down the Ohio River and further onto the Mississippi. In early 1841, 1,200 barrels of fish were sent into the south, to Memphis, Natchez, Little Rock, and New Orleans. There was even a trial shipment of 25 barrels to Natchitoches in 1841. This attempt succeeded, as did a few other spot attempts in the south. Yet, by January 1842, buyer resistance was practically universal. Before that, in July 1841, Charles W. Borup at La Pointe had already seen the writing on the wall. He ordered fishing stopped, except for a few boats at Isle Royale.

The financial difficulties of the American Fur Company were closely intertwined with the fate of the Lake Superior fisheries. In addition, the central commodity, (fur), of the organization was nearly depleted in all of the territory of the Old Northwest. Besides, silk hats had become part of American fashion, replacing beaver, and Americans had little ready cash to pay for furs.

The company's liabilities mounted as their sales declined. In 1842 they had a debt of \$300,000. On September 10, 1842, the officers filed

for bankruptcy. The company name lived on into the 1860's; and had a real existence of sorts, as the receiver made a noble effort to pay off 100 cents on the dollar for company debts.³⁹

One indication of the changing fortunes of the American Fur Company is a tabulation of the merchandise charged against the La Pointe post during this boom and bust period:

1835: \$30,000	1840: \$45,000
1836: \$59,000	1841: \$20,000
1837: \$29,000	1842: \$13,000
1838: \$46,000	1843: \$12,000
1839: \$46,000	1844: \$10,000 ⁴⁰

Since most of the business at La Pointe during this interval was fishing, the figures give an approximate idea both of the success of the La Pointe station and the company in general. In 1837 the American Fur Company had sales totalling \$300,000, and their profit was \$45,000. Thus, the expenses at La Pointe consisted of about 11 percent of their total business. The company made a larger profit in 1840 and La Pointe activity constituted about 20 percent of the business. This latter year was the peak fish production year for Lake Superior and the La Pointe station produced about half of the catch.⁴¹

Despite the failure of the American Fur Company to establish a permanent commercial fishery, an historian of the La Pointe outpost assures us that fishing did not end altogether in the Apostle Islands. Hamilton Ross, the historian in question, wrote about this trying time along the south shore and stated: "This, of course, resulted in loss of employment to nearly all of the personnel. There is little or no information regarding the fate of the formerly prosperous village. It is possible that there was no general exodus because wherever they might go, conditions were the same. They could at least subsist at La Pointe with fish, game, berries, wild rice, and maple sugar for food, and the endless forests for fuel and housing."⁴²

Just when it seemed that fishing would drop back merely to a subsistence occupation, metallurgists took increased interest in northern Wisconsin for extracting copper and iron ore. The ingress of technical people and miners gave new incentive for the local fishers to recommence their trade for profit. By 1848 the La Pointe production of salted fish had revived to the number of 1,000 barrels. The entire business was very much localized, with holdover coopers from the previous era making the barrels, and a few new fishermen from the neighborhood doing the fishing.⁴³

There had been a time in the dim past when French adventurers were seeking mineral wealth around Lake Superior; but had despaired of removing the wealth they knew to be there, since they thought there was an insufficient food supply to feed a work force. Now the new extractive industries provided an occupation for part of the little village of La Pointe, then numbering 500 people.⁴⁴

CHAPTER 1: FOOTNOTES

1. William W. Warren, History of the Ojibway Nation (Philadelphia: Collins Printer, 1885, Vol. V of the Collections of the Minnesota Historical Society, St. Paul; reprint ed., Minneapolis, Minn.: Ross & Haines, Inc., 1974), p. 99; hereafter cited as Warren.
2. Henry Wadsworth Longfellow, Song of Hiawatha (Boston: Houghton Mifflin Co., 1883; reprint ed., New York: Bounty Books, division of Crown Publishers, 1968); poetry selection from pp. 27-28; on fishing, pp. 73-82.
3. Warren, p. 40.
4. Ibid., pp. 44-45.
5. Ibid., p. 87. Details of the Chippewa migration are related in Chapter IV, pp. 76-94.
6. Ibid., pp. 84-85.
7. Ibid., p. 87.
8. Hamilton Nelson Ross, La Pointe--Village Outpost (Ann Arbor; Edwards Brothers, Inc., 1960), pp. 37, 43, hereafter cited as Ross; Reuben Gold Thwaites, ed., Collections of the State Historical Society of Wisconsin (Madison: Democrat Printing Co., 1895), "The Story of Chequamegon Bay," by the editor, p. 404, hereafter cited as WHS.
9. Warren, pp. 88, 96.
10. Ibid., p. 97.
11. Ross, pp. 19-20; Pierre Esprit Radisson, Voyages of Pierre Esprit Radisson (New York: Peter Smith, 1943), p. 175; WHS, XI, pp. 66, 67 and 70.
12. Ross, p. 20.
13. Ibid., pp. 14, 16. Ross derived his data regarding Brule and Grenolle from Gabriel Sagard-Theodat's Le Grand Voyage du Pays des Hurons, (Paris, 1865), p. 74; and the same author's Histoire du Canada, (Paris reprint, 1866, p. 716. The former volume is a reprint of a Paris edition of 1632.
14. Warren, pp. 121, 122.
15. Ibid., p. 108.
16. Ibid., p. 110.

17. Milo Milton Quaife, ed., Alexander Henry's Travels and Adventures in the Years 1760-1776 (Chicago: Lakeside Press, 1921), Chapter 7, pp. 63-71, hereafter cited as Henry.
18. Henry, pp. 198-201; other instances of cannibalism are cited on pp. 206 and 212.
19. Warren, p. 404; Ross, p. 29.
20. WHS, XIII, pp. 404-6.
21. Ibid., pp. 406-7.
22. Louise Phelps Kellogg, ed., Early Narratives of the Northwest, 1634-1699, "The Journey of Dollier and Galinee, by Galinee, 1669-1670," (New York: Charles Scribner's Sons, 1917), p. 207.
23. Walter Havighurst, ed., The Great Lakes Reader, (New York: Collier Books, a Division of Macmillan Publishing Co., Inc. 1966), p. 28.
24. Milo Milton Quaife, ed., The Western Country in the 17th Century; the Memoirs of Antoine Lamothe Cadillac and Pierre Liette, (New York: The Citadel Press, 1962), "The Memoir of Lamothe Cadillac," p. 12-13; hereafter cited as Cadillac.
25. Cadillac, pp. 13-14.
26. Ibid., p. 15.
27. Henry, pp. 60-61.
28. Ibid., p. 55.
29. Ibid., pp. 65-66.
30. Ibid., pp. 56-57.
31. Guy M. Burnham, The Lake Superior Country in History and in Story, (Ashland, Wisconsin: Ashland Daily Press, 1930; reprint ed., Ann Arbor: Browzer Books, 1975), pp. 75-87; hereafter cited as Burnham; also Ross, p. 57.
32. Louise Phelps Kellogg, The French Regime in Wisconsin and the Northwest, (New York: Cooper Square Publishers, Inc. 1925; reprint ed., 1968), pp. 298, 299.
33. Warren, p. 14.
34. Grace Lee Nute, "The American Fur Company's Fishing Enterprises on Lake Superior," Mississippi Valley Historical Review, (December 12, 1925): pp. 483-503; hereafter cited as Nute, Lake Superior Fishing.

35. Ibid., pp. 494-7.
36. Ibid., pp. 496-7.
37. Crooks to Stephen A. Halsey, November 20, 1838, from Nute, Lake Superior Fishing, p. 498.
38. Ibid., p. 499.
39. Ross, pp. 105, 109.
40. Ibid., pp. 98, 105.
41. Ibid., p. 105; Nute, Lake Superior Fishing, 483-504, passim.
42. Ross, p. 105.
43. Ibid., p. 113.
44. Henry, pp. 224-5; David Dale Owen, Geological Survey of Wisconsin, Iowa and Minnesota (Philadelphia, 1852), p. 437; hereafter cited as Owen, Geology.

CHAPTER II: THE LAKE SUPERIOR FISHERY IN THE LATTER HALF OF THE NINETEENTH CENTURY

A. The Development of a Commercial Fishery at Duluth and Along the North Shore of Minnesota

A fishery analogous to that at La Pointe grew up at the same time near the western end of the lake, then called Fond du Lac, but soon to be known as Duluth. About 1850 there were only two fishermen at that place. In any case, there were only about 300 people living at the tip of the lake in 1854; so these were the only potential customers for a commercial fisherman. But that year, with the signing of the Chippewa Treaty of September 30, mining prospectors started to filter into the area, legally, particularly along the North Shore of Minnesota.¹

The copper mining camps near the Keweenaw Peninsula of Michigan soon became a marketing place for fish caught in western Lake Superior. But the lion's share of fish-for-sale were shipped via the Sault, as they had been during the heyday of the American Fur Company fishery. Additionally, during the 1850's, there were known instances in which frozen fresh fish were shipped overland in the winter to St. Paul from both Duluth and Bayfield. These towns were established in 1854 and 1856 respectively. Still the magnitude of the fishery operation was stunted mainly by a lack of rapid overland transportation, and secondarily by a dearth of population around the lake. Yet the fishery grew slowly.

In 1855, \$20,000 worth of fish was shipped through the Sault to the lower lakes. The 1857 census of the North Shore indicated there were 89 full-time fishermen in Lake County and 10 more in St. Louis County. The Panic of 1857 affected commercial fishing in the area because mining failures reduced the population. The year 1860 saw at least 438 barrels of fish shipped from Superior to the lower lakes. There was no growth to the industry during the Civil War. Thus, only 356 barrels of fish were shipped over the lake in 1864.²

The year of destiny for DuLuth, at least so far as fishing was concerned, was 1870. It was then that the Lake Superior and Mississippi Railroad was completed to DuLuth. Even the construction phase gave impetus to more fishing, since the road gangs had to be fed. Construction began at both ends of the line, and for this reason, DuLuth blossomed to 1,100 people in 1869. With completion of the railroad in 1870, DuLuth's population tripled to 3,130. Entrepreneurs anticipated that the new railroad would find a considerable market for Lake Superior fish in southern Minnesota and Iowa. At the same time there were more fish eaters nearby in the newly burgeoning lumber camps of northern Minnesota.³

Fish production statistics for DuLuth in 1870 are fragmentary. It is known that at least 869 barrels of fish were landed at two docks in the city, and about half of these were shipped south by rail. Only about 6.5 percent of the salted fish were shipped over the lake via the Sault, so one must conclude that a high proportion of the catch was being eaten locally.

The opening of the DuLuth rail line, together with the completion of a wagon road from Bayfield, attracted some fish traffic from the latter place in winter. This was used only when the over water route was frozen shut among the Apostle Islands. The Bayfielders, most notably the Boutin brothers, sent their fish to a St. Paul market.

The 1870 Census revealed that there were at least 32 full-time fishermen along Minnesota's North Shore at that time. One historian of that fishery suspected that there was a considerably larger number of part-time fishermen living in that region. These men brought their catch to DuLuth. The city had at least two fish marketing companies, one of which was Bradshaw, Bly and Company. Most of the Minnesota fishermen used gill nets and small skiffs for their work. The steep rocky bottoms of the Minnesota waters precluded the use of pound nets there.⁴

B. The Early Development of Private Commercial Fishing at Bayfield

As has been stated earlier in this narrative, subsistence fishing continued at La Pointe after the failure of the American Fur Company in 1842. One writer revealed that the La Pointe output of fish in 1848 amounted to 1,000 barrels.⁵ The St. Paul Minnesota Pioneer of January 30, 1850 told the story of a Frenchman who brought a load of fish overland on dog sled from the Chequamegon Bay area. It took the man 12 days to make the 175-mile trip, and he sold the trout he had for 37 cents each and the white fish for 25 cents.⁶

Since various forms of mining started to expand in the region, La Pointe fishermen were able to market some of their produce via water to the ports of the Upper Michigan Peninsula. There was one pressure, however, that tended to diminish the population at La Pointe--that was the Treaty with the Chippewa of 1854, whereby the Indians were induced or enticed to move to newly forming reservations. Since some of them left the island for a place due west of Madeline Island on the mainland, there was an equal attraction for whites to settle nearby. Thus, in 1856, the City of Bayfield was established directly opposite the southern end of Madeline Island on the Bayfield Peninsula. Most of the waters among the Apostle Islands were sheltered from the brunt of either northeaster or northwester storms, so that Bayfield became a relatively safe haven for boats even without a breakwater. For this reason, many fishermen shifted their home port from the island to the mainland.⁷

An early recorder of the Bayfield fishing industry during this era was the Reverend James Peet, a Methodist minister. Peet did some fishing for himself on occasion, and once went out with a commercial fisherman in the latter's sailboat: "Saw the Sun rise from the Lake, then went out with some fishermen to see them take up their Nets--they got some 4 or 5 barrels full." In early December of 1857, he wrote in his diary that he could see 23 fishing boats on the bay and that "they are getting very good hauls now, I understand." A week later, he could see 29 fishing boats on the adjacent waters. It is both surprising that the catch was so good so late in the season, and that the boats were so

numerous. Doubtlessly some of the vessels were home ported elsewhere. But if so, they risked being ice-bound for the winter months at Bayfield.⁸

Peet told us something, as well, about the size of the young community, and his views of their social life. From the beginning, Peet did not approve of the "popery" he witnessed in the place; and when he gave a sermon on this "evil," he drove one member of the congregation out of the church. But mostly the young Methodist preacher was horrified at the drinking, gambling and dancing in Bayfield; and when he chose these subjects for sermons, most of the town got wind of it and declared him to be a persona non grata. After nearly two years of labor in the Lord's vineyard, Peet confided to his diary that he thought he did not have a single friend in Bayfield.⁹

The town had grown considerably during Peet's tenure there. At first, in July 1857, Peet counted 35 houses in town, and guessed there were 250 inhabitants. Later he had to revise this figure downward when he helped gather the census figures. On March 4, 1858, he found that there were 61 adult males, 37 adult females, and 54 children in Bayfield, for a total of 152 persons. In checking older records at that time, he learned that the town had grown from 112 persons since the previous fall. By the time he left, in mid-1859, there were few signs of growth in Bayfield. The town population was stagnant at about 115 and there were 20 fewer adult males or working men about town. For the first time his enumeration stated how many people lived on farms nearby, 45 in number.¹⁰

It was not the hostility of Bayfielders that finally drove Reverend Peet out of town, but rather the lack of financial support from his flock. Peet was continuously absorbed in the worldly necessity of making a living; and bemoaned the fact that he was unable to spend more time on the care of souls. After he left Bayfield, he compared the people there with his beloved Minnesotans. Bayfield had, in Peet's estimation, dismal spiritual conditions, and there was far too much "opposition from the wicked" and "few to stand by me." He far preferred Minnesotans, who were "a more religious people."¹¹

Peet was not the only one who left the area. The town of Ashland was almost completely deserted during the Civil War. Only one family, that of Martin Roehm, stayed in Ashland from 1863 to 1865. Bayfield was more populous for the time being because of its sawmill and fishing industry.¹²

It was the lumber industry and its accompanying railroads that eventually brought booming times to the Chequamegon Bay area and made demands for the expansion of the supportive fishing industry. The early sawmills had to rely too extensively on ships to transport the lumber to market and could not carry the requisite volume. Aside from the Lake Superior and Mississippi Railroad into Duluth, the first rail line to Chequamegon Bay was that of the Wisconsin Central which opened at Ashland on June 2, 1877. Bayfield got its first rail connection on October 12, 1883, when the Chicago, St. Paul, Minneapolis and Omaha ("The Omaha") completed its roadbed on the Bayfield Peninsula. So the growing fishery of the Apostle Islands region did not gain access to a national market until 18 years after the Civil War.¹³

So far as can be determined, the key year for Bayfield's blossoming was 1870. At that point, the town had 300 inhabitants; and one source says that none of them were professional fishermen. Doubtlessly the impetus for an influx of professionals at that moment was the completion of the Lake Superior and Mississippi Railroad into Duluth. Bayfielders could land their catches directly at the docks in DuLuth.¹⁴

Whatever the reason, Bayfield had a sudden large increase in the number of fishermen in 1870. The most significant part of this growth was a fishing family, the Boutins. Among eight brothers, the leaders were Nelson and Frank, who quickly formed a fishing company called N & F Boutin. Nelson, the elder, had been born in Canada East on August 17, 1831. The family moved first to Detroit in 1837. The next move, in 1848, was to Mackinac Island, Michigan. By that time, the family was definitely in the fishing business. During the next 5 years, the Boutin family, father and sons, moved frequently around the shore of Lake Michigan, as they sought the best fishing grounds. Their stops included

Whiskey Island and St. Helena Isle in the northern part of the Lake; but their major stopover point was in Manitowoc County, Wisconsin, just south of Green Bay. Nelson Boutin made a small move northward for a time to Kewaunee County, Wisconsin, also close to Green Bay; and while there, he was elected to the Wisconsin legislature. The family had one other stopover at Two Rivers, Wisconsin before returning to Manitowoc.¹⁵

The migratory moves of the Boutins closely resembled the flight of their prey in the lake, the white fish and the lake trout. Already at this early date, 1870, inspectors from the federal government were taking note of the decrease in abundance of the food fishes of the Great Lakes. The United States Commissioner of Fish and Fisheries sent investigators to Lake Michigan in 1871 and 1872 to verify the decrease, assess its causes, and make proposals for correcting the situation. The conclusions drawn were applied only to Lake Michigan. The researchers discovered that the number of fishermen and equipment had multiplied; that the lake generally was overfished; that fishermen were taking many immature fish; that many wasteful practices were being followed, such as the discarding of sturgeon without making any use of them whatsoever; and that too little was being done to regulate fishing or propagate replacement fish. The investigators did not apply these conclusions to Lake Superior, as that lake had not been inspected; but the implication was that no such exploitive practices had as yet been exercised on the largest of the Great Lakes.¹⁶

So it came to pass in 1870 that the Boutin family came en masse to Ashland/Bayfield to fish. There were eight brothers who participated, at least for a time, in a very large fishing enterprise. Their names were: Benoni, Edward, Felix F., Nelson, Frank, Duffey, Joseph C., and Solomon D. The leadership for fishing was taken up by Nelson and Frank, and the company came to be called N & F Boutin. By 1880 it was a \$200,000 a year business, handling about 1,500 half-barrels of fish in the summer and 100 tons of fresh fish in the winter. They employed about 100 men. During the 1880's Nelson and Frank split up to separate companies, the former teamed up with a man named Mahan, while Frank ran his own operation. As time passed, some of the brothers drifted into

other occupations; Duffey, for example, was keeping a saloon in Bayfield in 1880. Most of the brothers had sons who also followed the fishing vocation; and after 100 years, there is still one or the other Boutin descendant in Bayfield who is at least a part-time fisherman.¹⁷

It would be a mistake to say that the Boutins were the entirety of the Bayfield fishing story, but they certainly were a very significant part of it. If they were employing 100 men, as one source states, they were controlling more than half of the Bayfield fishing output. One table from the Fish and Fisheries Report for 1887 showed that Bayfield had 182 full or part-time fishermen in 1885. This number exceeded those at Duluth, 157, the next largest fishing station. The Keweenaw Peninsula, Michigan, was third with 128 total fishermen. These three stations had 23 percent, 20 percent, and 16 percent, respectively, of the fishery work force on the American side of Lake Superior.¹⁸

The Bayfield Press or Bayfield County Press, established in 1870, and founded by Sam S. Fifield, gives us a continuing picture of the state of the fishery over a 100-year span. A December 1870 number tells us that 250 men were constantly employed in the fish trade, and that the year's production was 15,000 half-barrels of white fish and trout, selling at 5 dollars each. That was a hefty price of 5 cents a pound, a price that was not matched in all places on Lake Superior in 1930.¹⁹

The issue of April 8, 1871 told of the Boutins' fishing success already in the early spring with 2,000 "halves" of the two favorite brands of fish. The same article stated that 50 fishermen and families would soon arrive from the Keweenaw Peninsula in Michigan. The Ashland Daily Press of June 27, 1874 told of the dominant position of the company of N & F Boutin, and that Bayfield was the center of the Lake Superior fisheries. The Bayfield Press of June 20, 1877 revealed that a few Bayfield wholesalers were sending their pickup steamers as far as Washington Harbor on Isle Royale. One steamer, the Marco Polo, gathered 36 halves from the various fishermen near that island, and delivered them to N & F Boutin. The same article stated that many fish were very large, requiring only 15 fish to fill a half-barrel.

A July 1877 article in the Bayfield paper told of wholesaler competition by relating the progress of the firm of O'Malley and Shaw. The same issue stated that Jake Brown had purchased a boat that could carry 100 halves, and that he was going to enter the competition with the Boutins and others.²⁰ A week later the paper told about the remarkable success of pound nets on the south side of Chequamegon Point.²¹

The Bayfield County Press of December 5, 1877 summarized the type of year endured by the firm of N & F Boutin: They employed more than 80 men; had 21 boats, 12 pound nets, and more than 1,000 gill nets. Their boats and steamers ranged from the Apostle Islands to Isle Royale and took in 11,000 half-barrels of trout and white fish in the previous 6 months. The average price garnered for the fish was \$3.25 per halve. Most of the fish were shipped out by water, with Buffalo and Chicago as destinations.²² Most of the fish were cleaned, dressed and salted; but plans were underfoot to take advantage of the new rail connection at Ashland. The latter place would soon have refrigerator cars for shipment to Chicago, and these fish would be sent fresh.²³ Until that time, Bayfielders used every available market. In early January 1878, Bayfield wholesalers shipped 5 tons of fresh fish to Duluth aboard the Amethyst.²⁴

The Boutin company marketed about an equal volume of fish to their 1877 performance in 1879. That year they had 94 men in their employ, 22 pound nets and 1,300 gill nets in use, collected fish with two schooners, and had a large number of sailboats that did the actual fishing. Their fish sold for an average of \$3.75 per half barrel, and most of their fish were salted, as they used 2,000 barrels of salt.²⁵

One portion of the Commissioner of Fish and Fisheries Report for 1887 gives an interesting bird's eye view of the Bayfield fishery of that era. Though somewhat lengthy, the narrative concerning the Apostle Islands region because of its pithiness and factuality, is worthy of verbatim quotation:

"20. BAYFIELD, BAYFIELD COUNTY, WISCONSIN, AND THE SHORE BETWEEN SUPERIOR AND THE APOSTLE ISLANDS.

The main shore. - This strip of coast, about 70 miles in extent, is bold and rocky, with small bays and sandy beaches scattered at intervals throughout its length. It is a heavily wooded region, with no post-office-settlements, and, in fact, only two places of human habitation, the largest of which is a few miles off the mouth of the Bois Brule River, where an English colony has established itself to engage in agriculture. At the mouth of the Iron River a farm has been cleared, and one man divides his time between agriculture and fishing. The waters abound in fish, and fishermen from both Duluth and Bayfield have pounds and gill-nets along the shore. Four or five crews of Duluth gill-net fishermen occasionally come as far east as the Apostle Islands, but the pound-net fishing from Duluth has thus far not extended beyond the mouth of Iron River, while Bayfield pound-net fishermen have gone as far west as Flag River, only 8 miles distant, [and about 30 miles due west of Bayfield], and have nets scattered along the coast from there to Bayfield.

The islands. - The Apostle Islands are a group of 25 islands of various sizes lying a few miles to the northeast of Bayfield. The largest of these is Magdalene Island, which is about 10 or 12 miles long and 2 miles wide, having about 200 inhabitants, scattered along different coves, about 30 of whom engage in the fisheries from Bayfield. The only village on Magdalene Island is named La Pointe. It is located about 3 miles distant from Bayfield, and is one of the oldest settlements about Lake Superior. For many years it was the leading trading post of the region, and the headquarters of the Hudson Bay Company, who purchased from the Indians salt fish and large quantities of furs. At one time the town is said to have contained upwards of 1,500 inhabitants. Within the last 20 years business

interests of all kinds have declined, and to-day they are represented only by the small operations of a single trader, and the population has decreased to 15 or 20 families.

Fish-dealers were formerly located there, buying and shipping considerable quantities of salt fish, but no dealers had been there for some years prior to 1885; the entire catch going to Bayfield. The other islands are practically uninhabited, though formerly several of the larger ones had one or two houses; in 1885 there were three families on Basswood Island, where there is an excellent red sandstone quarry. A small amount of logging is done here in winter, as well as on one or two of the other islands. During the summer months a majority of the islands are visited by fishermen from Bayfield, Duluth, and Ashland, for engaging in the pound and gill-net fisheries. They build rude shanties to live in during the fishing season, but all take their departure before winter sets in, and leave their places deserted. The waters in the vicinity are at present more extensively fished than those of any other portion of Lake Superior, and 42 pound-nets were located among the islands in 1885, besides 31 more which were set along the shore of the mainland in the immediate vicinity.

The village of Bayfield. - Bayfield, a village of some note, about 60 miles in a straight line east of Duluth, occupies a desirable location on the east side of the peninsula of Bayfield, 10 miles from its outer extremity and a little to the southward of the Apostle Islands. In 1870 it had a population of about 300, none of them professional fishermen, but the number has increased slowly year by year. The extension of the Chicago, St. Paul, Minneapolis, and Omaha Railroad reached the town in 1883 and gave it a new impetus. Two years later it had a population of 1,250, a majority of whom were dependent upon the fisheries, although a large saw-mill furnished employment to quite a number of men.

Description of Bayfield fisheries. - Owing to its location in the immediate vicinity of excellent fishing-grounds Bayfield has for quite a number of years been largely interested in fishing, and the fisheries occupy the attention of a majority of the citizens. According to the estimates of Mr. Frank Boutin, 25 percent of those engaged in the fisheries are Indians and half-breeds, and the remainder are chiefly Canadians and Americans. The fisheries are prosecuted during the entire year, though there is little activity in winter. The season practically opens with the first breaking up of the ice in spring, when the gill-net fishermen, who formerly were the most numerous class, begin catching whitefish and trout among the Apostle Islands and along the shore of the mainland both east and west. By the middle or last of May many of these, with a large number of additional men, begin setting pound-nets about the islands and along the shores for a distance of nearly 100 miles. The pound-net fishery began to be important about 1880, and since then the number of nets has increased annually until Bayfield has become the center of one of the most important pound-net fisheries on the whole chain of lakes. By the last of July the greater part of the pound-net fishing is over, and one after another the nets are removed, the fishermen again starting out with their gill-nets. By the first of October all of the pound-nets have been taken up and gill-net fishing occupies the attention of a majority of the people.

Shipments and preparation of Bayfield fishery products. - Until recently almost the entire catch of fish from both pounds and gill-nets was salted and shipped to other towns on the lakes, including Chicago, Detroit, Cleveland, and Buffalo. No fresh fish were shipped prior to 1876, but from that date until 1883 a small quantity was shipped annually. The introduction of the first collecting steamer, the N. Boutin, and the building of the railroad gave an impetus to this industry, and in the spring of 1884 a second collecting steamer was purchased. An important trade in fresh fish was soon developed. During the year 1884

about 60 tons were shipped, nearly all of which went to St. Paul and Minneapolis. The quantity of salt fish shipped during the same year was 13,000 half-barrels. The succeeding season the fresh-fish trade was much more extensive, and a large percentage of the catch that otherwise would have been salted was packed in ice and sent into the interior, chiefly to St. Paul and Minneapolis. No smoked fish have been put up in the village for shipment, the business being confined wholly to a few smoked by the Indians and other fishermen for family use. About 30 barrels of oil were made by the pound-net fishermen in 1884, but no isinglass or caviare has been prepared since 1878, when Hart Pincus came to Bayfield for that purpose, but after remaining about two months he became discouraged and left the place, taking with him 750 pounds of caviare put up during his stay.

Statistics of fisheries. - In 1885 there were 182 men engaged in fishing, 27 others in collecting, preparing and shipping the fish, and 6 others in making barrels and boats for the fish trade; these, including their families, making a total of 615 persons dependent upon the fisheries. If we exclude the 20 pound-nets owned by Ashland parties, there were 124 pound-nets owned and operated by Bayfield fishermen in addition to 2,000 gill-nets and eight seines. The total production of the Bayfield fisheries was 640,000 pounds of fresh fish and 2,192,000 pounds of salt fish, with a total value of \$60,080.

Bayfield fish trade. - Two steamers were employed in collecting the fish, one of these fishing for several months in the fall. There were also two schooners engaged in transporting the nets of the fishermen to and from the fishing grounds, in supplying salt and barrels to the camp, and in bringing back cargoes of salt fish. Three firms, Boutin and Mahan, Rich and Atwood, and Frank Boutin, each had an extensive fishing business, the two former handling both fresh and salt fish and the last-named

salt fish only. These parties control the entire catch of the Bayfield fishermen and all of the salt fish of Ashland, sending their tugs and sail boats for a distance of 30 or 40 miles to the westward and 50 or 60 miles along the eastern shore. They handled in 1885 over 600,000 pounds of fresh and frozen fish and upwards of 22,000 half-barrels of salt fish. The firms furnished barrels and salt, delivering them at the fishing stations to be filled, and freighting the catch to the town. In 1884 the price paid to the fishermen for filling was \$3.50 to \$4.00 per half-barrel for Nos. 1 and 2 whitefish, \$1.50 to \$1.75 for No. 3 whitefish, \$2.50 to \$3.00 for trout and siscowet, \$1.50 for sturgeon, \$1.00 to \$1.25 for herring, \$2.00 for pike, and \$3.00 to \$3.50 for Nos. 1 and 2, \$1.00 for No. 3, \$2.00 for trout, siscowet, and pike, \$1.00 for herring, \$1.50 for sturgeon, and \$1.00 for suckers.

Gill-net fishing in open water. - The following account of the gill-net and pound fishing is largely obtained from information kindly furnished by Messrs. Nelson Boutin and J.W. Atwood. Prior to 1870, when Mr. Boutin came to the region, there had been three or four crews of gill-net fishermen, in addition to the Indians that fished for home supply. From that time the gill-net fishery gradually increased until about 1883, when it began to be superseded by the pound-nets. In 1885 there were about 15 crews that fished gill-nets exclusively, and 27 others that were interested in both gill-net and pound-net fisheries. The season opens about the 1st of April and continues until the ice forms and prevents the boats from getting out. In the early spring they fish about the islands, and later along the shore between Bayfield and Carp River, remaining till October, when they return to the islands to fish till the close of the season, or, as is frequently the case, proceed to Isle Royale and remain there until stormy winter weather drives them home. As many as 30 boats, with a total of 75 or 80 Bayfield fishermen, visited Isle Royale in the fall of 1883, and 20 boats were there in 1884, but as they met with poor success the latter year, very few made the trip in 1885.

Three men ordinarily constitute a crew for gill-net fishing, but at least one-third of the boats carry only two. They average from 40 to 80 nets to the boat. A few of the boats have nets made of fine twine for spring fishing and coarser ones for the trout fishing in the fall. This is especially true of those visiting Isle Royale, but most of those fishing along the southern shore and among the islands have only one set. The nets are 65 fathoms long, [390 feet] and vary from 4-1/2 to 5-1/2 inches in mesh. Some of them are rigged like the old-fashioned Lake Michigan nets, with stones and floats, and the others in the more modern style, with leads and corks. Fifteen or 20 nets constitute a gang, each crew usually having four gangs, and keeping three in the water at one time. The boats are mostly mackinaws, and smaller than those about Duluth. They are worth about \$100 each. In former years it is estimated that the average gill-net crew caught between 400 and 500 half-barrels for a year's fishing, but in 1884 the catch did not exceed 300 half-barrels to the boat. In 1885 it was much better and is estimated at 500 half-barrels.

Gill-net fishing through the ice. - The ice fishing with gill-nets varies considerably from year to year. It ordinarily begins early in January and lasts for six, eight, or even ten weeks. Two or three men constitute a crew, running from 40 to 50 nets. These are set in lines of four nets each, at right angles to the shore; the gangs are half a mile apart, and are left in the water four or five days before hauling. Only fine nets are used, as the sediment would collect too readily on coarse twine, making the nets more noticeable and keeping the fish away. One crew of men ordinarily secures an average of 300 pounds of fish daily, working about four days in a week. The marketable catch is about one-half trout and one-half whitefish, in addition to quantities of suckers and "lawyers," which are commonly thrown away. Some of the crews have small canvass tents or huts mounted upon runners and provided with stoves, and they move them from hole to hole on the ice, thus protecting

themselves from the winter's cold. Others have horses and sleighs for visiting their nets, driving to and from the fishing-grounds, while others still are obliged to go afoot and work without shelter, and, of course, can fish only during moderate weather. Some years, from 20 to 25 crews are engaged in net-fishing through the ice, but the fishermen are not disposed to do much at this season, unless necessity compels, and during the winter of 1884-5 only about 10 crews were thus employed, and some of these fished only for a short time.

Pound-net fishery. - The first pound located at Bayfield was set by Mr. Boutin, who came here from Ashland in the spring of 1871. The industry was not important until about 1880. Several new nets were purchased in that year, and in 1883 the number had reached 25 or 30, exclusive of those owned by Ashland fishermen. In 1884 not less than 80 new ones were employed, and the following season 10 or 12 more were added. They are set in water varying from 12 to 60 feet in depth, the deepest ones in 1885 being only about 40 feet; but one of the dealers intended making and setting a 75-foot net that fall. The nets are of the ordinary pattern, with 40 to 80 rod leaders of 6-inch mesh, a heart of 5-inch mesh, and usually a 28-foot pot of 3-inch mesh. They are provided with tunnels 10 feet square at the mouth, 16 feet long, and having an inner opening of 2 by 6 feet. The nets are usually set between the 15th of May and the 1st of June. Some of the men fish gill-nets before the season opens, and a few continue to fish them in connection with the pounds. Most of the fishing is over by the first of August, and half of the nets are taken out. The remainder are fished until the last of September, when the fishermen fit out for the gill-net fishery. Of late there has been a tendency to prolong the pound-net season, and on September 5, 1885, fully half of the nets were still in the water. In 1884, for the first time, a pound-net was fished in winter, and, though not successful, there was a growing inclination to set pound-nets

during the spawning season of the whitefish. It seems probably that within a comparatively short time a majority of the nets will be fished in fall and early winter, as well as at other seasons. The nets are usually purchased from the dealers, some of the fishermen paying cash, but a greater number getting them on credit and paying for them in fish. A few, however, are owned by dealers and other capitalists. These are fished on shares, the net taking from two-fifths to one-half of the catch. Three fishermen usually constitute a crew, fishing from two to five nets, and where more are worked additional men are required. They set their nets about the islands and in the sandy reaches and bays along the main shore, building shanties nearby where they camp during the season, and are visited regularly by the collection boats, which take their fish and furnish them with supplies and provisions. The dealers estimate the average catch for each pound fished in 1884 at 125 barrels, or about \$200. The marketable catch averages 90 percent whitefish, 7 percent trout, and 3 percent sturgeon, in addition to considerable quantities of small whitefish, and a good many sturgeon thrown away. Mr. Boutin thought that the catch of 1885 would not be more than a quarter that of the previous year. This small yield he believed in no way indicated a scarcity of fish, but was accounted for by the fish remaining in the deeper water, where the gill-nets have caught larger quantities than usual. The heavy thunder storms during the pound-net season may have had a decided influence in keeping the fish out of the shoaler water.

Seine fishery. - The seining of fish at Bayfield began about ten or twelve years ago, with small seines 330 to 495 feet in length and 12 to 18 feet deep. They are hauled during the four or five weeks between the 5th of June and the middle of July. The catch is principally whitefish, though considerable quantities of herring are also taken, but owing to the small demand, few are saved. The fishing is at present chiefly in the vicinity of Bark Point and Sand River, along the western

boundary of Ashland [Bayfield] Peninsula. The fishermen seldom make blind hauls, as in other places, but have a man on the lookout on some elevated point of land to watch for fish, and when a school is seen it is surrounded by the seine and hauled ashore. The average catch is estimated at about 100 half-barrels of salt fish, though formerly it is said to have been three times that quantity. In 1885 there were 13 seines owned at Bayfield, but only eight of 10 of them were fished to any extent during the season, and the catch, owing to the absence of the fish from the shore waters, was unusually light.

Hand-line fishing through the ice. - There is considerable hand-line fishing or "bobbing," as it is locally called by Indians and others, through the ice in winter. The former take fish for their own use, but a few of the whites make it a business, freezing their catch and selling to Duluth dealers. The catch is usually small, but sometimes a man will get 300 to 400 pounds in a day.

Spearing. - In the morning each "bob" fisherman, by means of a little home-made wire spear used through a hole in the ice, provides himself with herring enough to serve as bait for the day's fishing. The spearing of trout through the ice by the Indians is also quite common in certain localities. They usually have a brightly-painted decoy resembling a fish, which they dart into the water through an opening in the ice, and the trout are attracted toward it and speared.

Other fisheries. - No trammel-nets have been fished in the locality, and fykes have been employed in only one instance, this being in the spring of 1884 when a small number were fished at the mouth of one of the larger streams without success."²⁶

The same report gives conflicting evidence concerning the inaugural date for pound-nets in Lake Superior. The authors, Hugh M. Smith and

Mervin-Marie Snell, toured the entire lake shoreline seeking information about the fisheries.²⁷ At Whitefish Bay on the eastern end of the lake, a longtime fisherman told them that the first pound-net was set in Whitefish Bay during 1864 by Captain Bean who had had previous experience with this apparatus on Lake Michigan near Mackinac Island.²⁸ When Smith and Snell moved on westward to Chequamegon Bay, they heard a different story from Nelson Boutin of Bayfield, that a man named St. Germain set the first Lake Superior pound-net off Ashland in 1869. Doubtlessly both sources spoke from their own limited experience and were accurate. Boutin himself then commenced setting pound-nets at Ashland in 1870; but found the location inconvenient, and moved his pounds nearer Bayfield the following year. Boutin, like Captain Bean, the pound-netter at Whitefish Bay, had learned how to construct the apparatus on Lake Superior. As the report stated, "He set three nets along the shore in the immediate vicinity of the village, [Ashland] and in three weeks caught 1,100 half-barrels of large fish, throwing away as many more of a size that would now be considered marketable."²⁹

C. The Bayfield Hatchery

Even though there was no systematic method of compiling fishery statistics for Lake Superior in the nineteenth century, newspaper stories and occasional reports in government documents made it abundantly clear that the lake was being exploited with little concern for the future. But it did not take long before awareness grew among the citizenry that unless steps were taken, a valuable food resource would be destroyed. Surprisingly, one early initiative was taken by the fishermen themselves.

In early 1886, after various federal investigators had combed lakeshore communities for data regarding the fishery, a group of Duluth fishermen formed themselves into an association for the promotion of wise fishery legislation and sent a petition to Professor Spencer F. Baird, the U.S. Commissioner of Fish and Fisheries. In the petition, the suppliants sought reasonable and uniform regulations for the governance of Lake Superior fishing, and the establishment of a fish hatchery in the vicinity.

The fishermen offered their labor in whatever way necessary for the construction of the hatchery, and volunteered to act as the collectors of spawn. They stated their observation that yearly catches were declining by a third for several years hand running and that under such circumstances the fishing industry was no longer proving remunerative. Their principal interest was in seeding the lake with larger deposits of white fish and lake trout small fry. The petition was signed by the officers of the association and 156 of their member fishermen.

Surprisingly, the U.S. Fish Commission responded rapidly to these troubled fishermen. Before 1886 was over a hatchery had been established at Duluth; R.O. Sweeney, a former Minnesota state fish commissioner was put in charge; and the institution was boasted of as "one of the largest and best appointed establishments of its kind in the United States."³⁰

But the Wisconsin fishermen were no less public spirited. In their case, private enterprise stepped in to save the diminishing fish population. The man of the hour was Captain Robinson Derling Pike, son of one of the earliest Bayfield pioneers, Elisha Pike. The elder Pike acquired a whole section of land south of the village of Bayfield, which land had an ideal setting for a lumber mill on the stream that came to be named Pike's Creek. The younger Pike inherited the site, and in 1875 and 1876 laid plans to build his own private fish hatchery. In 1877 he had a functioning hatchery. In 1895, R.D. Pike, along with Isaac Wing and William Knight, offered to donate the hatchery and 600 acres of land along the creek to the State of Wisconsin. The offer was accepted by the state and that same year the legislature appropriated \$20,000 for the construction of a larger hatchery. During the last year as a private enterprise, the Salmo Hatchery, as the place was then called, seeded more than 64 million fry in Lake Superior. Under state auspices during the following year, the production of fry was 11 million greater. During both of these years, the percentages of white fish and lake trout predominated; these two species constituted about 60 percent of total production. Significantly, Pike had greater concern for the replacement of lake trout; since the trout were 34 percent of his effort. In 1896 the

state hatchery emphasized replacement of white fish, as they added up to 36 percent of the total seeding. It is interesting to note the other varieties of fish raised at the hatchery, since they show concern for more than just the big money varieties. Several million brook trout and rainbow trout fryes were released, as were smaller quantities of black bass, white bass, wall-eyed pike, yellow perch, black-spotted trout, and even carp. It should be mentioned that not all of these latter varieties were released in Lake Superior, since the State of Wisconsin had a railway car called the "Badger" for transporting fish to lakes all over the state.³¹

In order to get an idea of the progress made at the Salmo Hatchery during the first 15 years, one can compare the early statistics with the production for 1909 and 1910. In the former year the total volume was 142 million fry; while in the latter year the figure had declined to 106 million. The principal reason, as stated by the Wisconsin Commissioner of Fisheries in his annual report, was that the United States Bureau of Fisheries had been unable to supply the state with whitefish eggs. In that category, production had declined dramatically from more than 17 million to less than 2 million. Lake trout production remained practically level between 22 and 26 million fry. The greatest change in conservation strategy, however, was in the new emphasis on replenishing fish in small lakes. Most particularly, there was a concentration on wall-eyed pike. In 1909 the hatchery produced 85 million wall-eye fryes and in 1910 there were nearly 71 million.³²

D. Early Legislative Attempts to Preserve the Fishery

Despite the considerable strides being taken in Wisconsin to replenish the food-fish supply, the State Commissioner of Fisheries was dissatisfied in 1910 with the neglect of interstate and international control of the fisheries on Lake Superior. For Wisconsin fishermen believed that their state was doing its duty in propagating fish for the future; while other states were either not following their example or their fishermen were exploiting Wisconsin waters.³³

The Bayfield County Press commented from time to time on various legislative experiments designed to stop overfishing and wasteful practices. An issue of June 1895 expressed some doubt as to the efficiency of a one-mile limit rule banning nets, since the wording was ambiguous and did not make clear whether the mile limit was drawn around every island in the Apostles or just along the mainland. The law also made Chequamegon Bay a temporary fish sanctuary, as the use of nets was totally banned there. Probably the most efficacious portion of the law was that it made the capture of small whitefish of less than a pound illegal. This Wisconsin law must have been severely restrictive, as it delineated open and closed seasons on various species of fish. For example, it stated that "The use of nets is prohibited in catching fish and only whitefish may be caught with a net from November 1st to December 8th in each year."³⁴

Compilations of available statistics indicate that the years 1890 to 1896 were banner ones for the capture of lake trout, whitefish and lake herring on Lake Superior. Though there are gaps in the tables, indicating a lack of information, the few available figures show a decided decline for whitefish and herring between 1897 and 1902. From 1890 to 1910 the Canadian and Michigan fishermen dominated the lake trout and whitefish catches. During this period the Wisconsin fishermen concentrated on lake herring and had their greatest success for that era in 1896 when they took more than five million pounds of herring.³⁵

By 1899 the Wisconsin netters had grown increasingly angry about the closed season on trout and whitefish. The Bayfield County Press printed their grievance in the issue of January 21, 1899. Canadians and Michiganders were making huge hauls of those two species, and were probably taking fish that might have been caught by the Wisconsinites. The article read in part:

"The fishermen of this vicinity are circulating a petition which will be presented to the legislature this winter, asking for the abolishment of the close season for whitefish and trout in the outlying waters of the state. A large portion of the outlying

waters of the state are on Lake Superior and the harbors and bays connected therewith. The fishermen have always been opposed to this close season and are going to make a strong effort to have it done away with. Superintendent Nevin, [the state commissioner] in his paper read before the American Fisheries Society which met at Omaha last July, considers that the close season for fishing on the Great Lakes as being in the interest of the syndicate of fish dealers, who, while the fishing is closed for 30 days, are given an opportunity to dispose of their frozen fish which they have stored in their freezers in the northwest, to the disadvantage of the small fishermen on the lakes."³⁶

The Bayfield County Press continued to harp on this theme in the following weeks, stating that the closed season was preventing the securing of spawn. The article gave statistics for 1897 and 1898 which indicated that about 28 million fry, both whitefish and lake trout, were sewn in 1897, while only about 10.5 million were sewn in 1898. About a year later one of their headlines read: "Lake Superior Whitefish Decreasing Very Rapidly." The same article expressed doubts about stocking methods and locations, and advocated the establishment of an interstate protective association.³⁷ The fishermen were unhappy, as well, with the unresponsiveness of state and federal bureaucrats to their complaints and suggestions.³⁸

But the United States government had one modest success with fish propagation in 1901, when it was learned that their seedings of 1897 were thriving. One particular variety, the Steelhead Salmon from the Pacific, was being caught in increasing numbers, and some of them weighed as much as five pounds. The United States Fish Commission had sewn them near the Canadian Shore; but Bayfield fishermen were taking them near the Apostle Islands. A correspondent for the Bayfield County Press speculated that the new variety was also propagating naturally. The article also urged the return of small steelheads to the lake for continued reproductive replenishment.

Despite the positive note regarding the steelheads, the outlook was grim in 1901 for the most reliable food fish, the whitefish. Another Press article in 1901 developed data from the U.S. Fish Commission report. The article stated generally that the reproductive cycles of the various fish species in the lake were, at best, imperfectly understood. Thus much of the article was mere speculation, without scientific basis. Yet it touched on certain facts that were insightful. One guess was that some sort of bacterial disease was attacking the young fry planted by the hatcheries.

The article mentioned that the U.S. Commission dumped 183 million whitefish fry into Lake Superior in Wisconsin waters alone during the previous year. The writer stated that Canada and the other states adjacent to the lake may have equalled this fry planting figure. The author's guess was that disease was the entire explanation for the fish depletion, as most fish were cannibalistic and would spread a disease by eating their own kind.³⁹

Other speculations in the article were probably closer to the truth: At that point in time Lake Superior was being polluted in two ways, by sawdust and sewage. The latter mode was not a serious threat to the fish, as it polluted in modest amounts mostly near Duluth.

But sawdust was something else. Many sawmills dumped all of their sawdust into the lake for a number of years. One story about the Bayfield sawmill makes the point well:

"In those days the sawmill had no burner or refuse consumer so a great deal of the sawdust was dumped into the lake to get rid of it. On a calm day around the docks the lake would appear like a vast sawdust field. A lady tourist with a small frizzle-haired dog with a large red ribbon tied with a bow at his neck came down to the mill and then walked out on the dock. The dog was here and there, much to the amusement of a number of boys that had been in swimming but a short time before.

The dog had been walking on sawdust for quite a while and I presume he thought all around was sawdust. So he jumped off the dock and what he thought was a sawdust field below. But it happened to be the lake.

He was certainly some surprised dog and the way he pawed around trying to get his feet on that sawdust was a caution. The lady was frantic and thought sure her doggie was a goner. She screamed and cried and the dog whined pitifully, to the tremendous amusement of the boys.

She finally pleaded with them to do something to save her dog. So one of them jumped in and grabbing the dog by the ribbon held him up so that another boy could reach down and rescue him. He was a sorry looking pup, and I am afraid the silk ribbon was ruined forever. The boy that jumped in the water was given a dollar, and remarked that he wished some more ladies would bring their dogs down to visit the sawmill."⁴⁰

While the above story does not address the problem of sawdust as a threat to the fishery, it does illustrate the fact that the lake was used for a time as a dumping grounds for sawdust. Later on, as the twentieth century unfolded, scientific studies revealed that sawdust persisted underwater in the same way that solid wood was preserved underwater. Even though thoughtful fishermen suspected that the presence of sawdust was deleterious to fish, it was many years before specific studies clarified the influence of sawdust. One recent study, concentrating on herring in their larval stage, concluded that a higher silt or organic matter level in a given shoal was probably harmful to egg viability in that area.⁴¹

By extension, sawdust might have had a similar effect on the successful breeding of other species. Similarly, largely through the trial and error method, hatchery people came to learn that the viability of their young fish was much enhanced by keeping the small fry in the hatchery until they could be classified as fingerlings. Once the policy was adopted of sewing fingerling lake trout or whitefish, it became

patently clear that the hatchery fish were maturing in greater numbers in the waters of Lake Superior, and that the hatchery was indeed fulfilling its objective of reviving the fishery.

An article in the Bayfield County Press at the turn of the century recited the various concerns of the men in the fisheries. The author looked to the data turned up by the U.S. Fish Commission and speculated that the new theories about bacterial causality in fish mortality might bring an explanation for the decline in fish population. The article decried the lack of scientific literature on bacteria and fish, and almost comically mused that "the fish is an elusive patient." He cited one instance proving that parasites were a cause of havoc to fish: scientists in Yellowstone Park had found a worm that burrowed into the flesh of trout. Turning to other aspects of the declining fish population, the author stated that 183 million whitefish fry had been planted in Lake Superior, and that even though this was the greatest planting ever, previous seeding of fry had given no indication of revival in whitefish numbers. Something was killing the fry. Perhaps it was merely cannibalism, or maybe it was bacterial disease. The author did not know. Several paragraphs of the piece were dedicated, as well, to the subject of sewage and sawdust as water pollutants harmful to aquatic life. The writer appealed for action of an indefinite variety, and amazingly, all of his suspicions were headed in the right direction. Years later, ichthyologists answered many of these questions with their experiments in the Great Lakes.⁴²

FOOTNOTES FOR CHAPTER II

1. Matti Kaups, "North Shore Commercial Fishing, 1849-1870," Minnesota History 46 (Summer 1978): p. 48; hereafter cited as Kaups, North Shore.
2. Kaups, North Shore, pp. 49-52.
3. Ibid., p. 54.
4. Ibid., pp. 54-55.
5. Owen, Geology, p. 437.
6. Kaups, North Shore, p. 46.
7. Ross, pp. 115-122.
8. James Peet Diary, Northeastern Minnesota Historical Collections, University of Minnesota at Duluth, Main Library, Accession No. 23-632: entries for July 3, 1856, September 3, 1857 on fishing, December 7, 1857, December 14, 1857, and August 10, 1858; hereafter cited as Peet Diary.
9. Peet Diary, entries of August 30, 1857, February 2, 1858, February 1858, April 1859, and April 30, 1859.
10. Peet Diary, entries of March 4, 1858 and March 24, 1859.
11. Peet Diary, entries for April 9, April 18, September 3, 1858; March 15, April 27, April 30, May 15, December 31, 1859.
12. Ross, p. 124.
13. Kaups, North Shore, p. 54; Ross, pp. 13, 137.
14. U.S. Congress, House, Report of the Commissioner of Fish and Fisheries, 1887, Misc. Doc. 133, 50th Cong., 2d. sess., 1887, Appendix I, Fisheries of the Great Lakes, Part III, The Fisheries of Lake Superior, page 49; compiled by Hugh M. Smith and Mervin-Marie Snell, with introduction and a description of fishing vessels and boats by J.W. Collins; hereafter cited as Smith-Snell, Lake Superior.
15. A.T. Andreas, compiler, History of Northern Wisconsin, (Chicago: The Western Historical Company, 1881), p. 83; hereafter cited as Andreas, North Wisconsin.
16. U.S. Congress, Senate, Report of the Commissioner of Fish and Fisheries for 1872 and 1873, Misc. Senate Doc. 74, 42nd Cong., 3d. sess., 1874, Appendix A, The Fisheries of the Great Lakes, and the species of Coregonus or White Fish, Part I, Report on the Fisheries of the Great Lakes; the Result of Inquiries Prosecuted in

1871 and 1872, by James W. Milner, pages 14-34; hereafter cited as Milner, 1872/3 Report.

17. Andreas, North Wisconsin, p. 83.
18. SmithSnell, Lake Superior, table, p. 37.
19. Bayfield County Press, December 3, 1870; hereafter cited as BCP.
20. BCP, July 4, 1877.
21. BCP, July 11, 1877.
22. BCP, December 5, 1877.
23. BCP, December 19, 1877.
24. BCP, January 16, 1878.
25. BCP, November 8, 1879.
26. SmithSnell, Lake Superior, p. 48-53.
27. Ibid., p. 33, 54.
28. Ibid., p. 67.
29. Ibid., p. 33-34.
30. Ibid., p. 36-37.
31. Bayfield Progress, February 16, 1911; Burnham, p. 345.
32. Bayfield Progress, February 16, 1911.
33. Ibid.
34. BCP, April 27 and June 15, 1895.
35. Norman S. Baldwin and Robert W. Saalfeld, Commercial Fish Production in the Great Lakes, 1867-1960 (Ann Arbor: Great Lakes Fishery Commission, University of Michigan, 1962), also known as Technical Report No. 3, and Supplements (1961 to 1968) and 2 (1969 to 1977) thereto; Tables 95, 98 and 99, pages 146, 150 and 153; hereafter referred to as Baldwin and Saalfeld.
36. BCP, January 21, 1899.
37. BCP, February 4, 1899, and undated copy from 1900 derived from Marjorie Benton clipping collection, Bayfield, Wisconsin.
38. Ibid.

39. BCP, undated 1901 clipping from Marjorie Benton collection, Bayfield, Wisconsin. The BCP article was derived from the Milwaukee Sentinel, date unknown.
40. Burnham, p. 284.
41. Emory D. Anderson and Lloyd L. Smith, Jr., "Factors Affecting Abundance of Lake Herring (*Coregonus artedii* Lesueur) in Western Lake Superior, Transactions of the American Fisheries Society 100 (No. 4, 1971): 691-707, especially page 706; A.H. Lawrie and Jerold F. Rahrer, Lake Superior; A Case History of the Lake and its Fisheries (Ann Arbor: Great Lakes Fishery Commission, University of Michigan, 1973), also known as Technical Report No. 19, pages 1, 12-14, 48.
42. BCP, undated 1901 article from Marjorie Benton clipping file, Bayfield, Wisconsin.

CHAPTER III: THE LAKE SUPERIOR FISHERY IN THE TWENTIETH CENTURY, WITH PARTICULAR REGARD TO THE APOSTLE ISLANDS ENVIRONS

A. The State of the Fishery at the Turn of the Century and the Hokenson Role In It

The narrative to this point has shown that the Bayfield area commercial fishery was a going concern when the calendar turned the corner into the present century. All three of the Hokenson brothers, of prime relation to this study, were born in the 1890's; and the two surviving brothers, Roy and Eskel, tell that they did not engage in fishing at first, as a business. Since they lived near the shore of Lake Superior, they had many occasions as boys or young men, to fish for sport or to supplement the family diet by fishing. It was not until several years after World War I that they began to think seriously about fishing as a commercial enterprise. Thus the brothers real role, once they did engage in commercial fishing, was to become one unit in a very large industry; an industry that had been flourishing for a considerable period of time, and an industry that fluctuated so much in production, that even as early as 1885 observers were fearful for its continuance and survival. Despite these fluctuations, the industry did flourish for the most part until after World War II. Then the inroads of the sea lamprey became a factor to be reckoned with, as that parasite nearly destroyed the lake trout and whitefish population in Lake Superior. This problem also seems to have been solved and the fishery hopefully may remain a permanent commercial enterprise in the region.

Statistically, there was no systematic keeping of records concerning the fishing catch on Lake Superior. The few statistics that we do have concerning Wisconsin commercial fishermen before 1900, at least tell us that a healthy fishery was in operation. For example, the annual harvest of lake herring by Wisconsin fishermen from 1893 to 1896 averaged 1376.85 tons per annum.¹ This was an amazing figure when one considers that the herring season lasted little more than the month of November. And this herring harvest took place before the twentieth century bonanza.

During the same era, the two other principal money fish, whitefish and lake trout, also had good results. In whitefish, the Wisconsin fishermen averaged about 160 tons per year. In lake trout, they took an average of 712 tons per year.² This presaged the average production of those three types of fish over the long span of years from 1908 to 1977. Thus the herring production from 1893 to 1896 was nearly the equivalent of the annual yield for the twentieth century years. But the comparative statistics for whitefish and lake trout reveal the expected decline from nineteenth to twentieth century yields. Among Wisconsin fishermen on Lake Superior, the average annual yield for whitefish for the twentieth century was only about half the nineteenth century yield, when one uses the available statistics from 1892 to 1897. Similarly with lake trout, the Wisconsin fishermen in the twentieth century took less than one-third the annual tonnage of fish compared to their nineteenth century brethren.³

The Bayfield County Press over the years provides a running commentary on the state of the fishery in the Bayfield Peninsula environs. The number for June 7th 1902, for example, tells of the birth of the fishing village of Cornucopia about 13 miles west of Bayfield. An Iowa firm purchased 25,000 acres of land around Siskiwit Bay, and it was their intention of bringing a hundred families from Iowa to form a farming community. Already at the time of the article's composition, a lumber mill employing twenty men had been erected, and there were plans to put up a church, a school, a hotel, and three stores immediately. The author of the article did not foresee that the farming endeavor would eventually take second place to commercial fishing.⁴

A theme that recurred in the Bayfield newspaper was the story of the Chippewa Indian role in the fishery. Available evidence from that paper indicates that the Chippewa fishing was not a large scale operation, but that at widely scattered intervals there were misunderstandings about the fishing privileges enjoyed by the Native Americans. A 1904 story, for example, tells how four male Indians were arrested for fishing without licenses beyond what was thought to be the limits of the reservation. Two of the arrestees were freed immediately, and the other two were acquitted in court. The case demonstrated the Chippewa Treaty right to fish in the Lake Superior waters adjacent to their reservation holdings.⁵

The first noteworthy appearance of one of the Hokenson brothers upon the Lake Superior scene was that by Eskel in September 1905 when he happened upon some of the survivors of the Sevona. The Sevona was an iron ore carrier out of Superior, Wisconsin that got caught in a September storm. Battered by mid-lake waves, she ran for shelter among the Apostle Islands. The ship ran aground near Sand Island and broke in two. One group of survivors came ashore in lifeboats near Little Sand Bay, and it was here that thirteen year old Eskel Hokenson saw some of the soaked and shivering crew members. Those survivors were taken into the homes of neighbors; some of whom were fishermen, lumberjacks, or homesteaders like the Hokensons. The shipwreck victims were given shelter, dry clothes and hot meals, and were eventually given transportation to their desired destinations.⁶

The connection of this disaster to the Hokensons and the fishery is clear. This was one demonstration among many on Lake Superior, that showed even the young Hokenson boys that storms on the lake could attack seafarers at almost any time, even during the relatively safe month of September. The lesson of the Sevona was reinforced many times over the years, both by shipwrecks of large commercial ships, as well as more personal adventures that betook acquaintances, friends, relatives and themselves. The Hokensons could visit at any time the shack on Sand Island where editor Sam Fifield converted the wooden hatch covers of the Sevona into the walls of his summer place. This cottage on Sand Island still stands.⁷

In the same era with the Sevona disaster, one large commercial fishery company was making a name for itself in the Apostle Islands environs. In 1904 during the herring run, the A. Booth Packing Company of Bayfield added a new innovation to its operation. Booth had commenced a canning operation that averaged 2,500 cans of pickled herring daily in season. To do this, the Booth company had to add a dozen men to its usual complement of 16 men. Their intention was to utilize the canning process for other varieties of fish as well, since a Bayfield County Press article stated that the canning operation would be functional during eight months of the year. The article also admitted that most of Booth's packaging still consisted of kegs.⁸

It is disputed how long the Booth company had been active in Bayfield. Several historical studies state that the A. Booth Packing Company was established in Bayfield in 1880. Another version stated that "In 1892, the Chicago firm of Booth Fisheries moved north and became the main one on both the north and south shores." For most of its years in Bayfield, the company was known as Booth Fisheries Corporation. There are still branches of the Booth operation in Duluth and Chicago.⁹

For most of the years that the commercial fishery prospered on Lake Superior, the Bayfield area and the Apostle Islands region dominated the Wisconsin portion of the catch. An article in the January 6th 1910 Bayfield Progress illustrates this principle. About 86.8% of the Wisconsin catch in herring was marketed through Bayfield. Bayfield also got 87.3% of the lake trout caught by Wisconsin fishers that year. Similarly nearly all of the Wisconsin whitefish from Lake Superior were marketed through Bayfield. All told the catch at Bayfield for 1909 was valued at \$43,188. About half of this sum came from trout sales, 42% came from herring sales, and the remaining 8% included sale of whitefish, pike, suckers, siscoes, sturgeon and pickerel. The fishing fleet had about 157 men who spent one to eight months of the year on the fishing avocation. There were 55 fishing boats, 830 gill nets for trout, 364 gill nets for herring, and 36 pound nets in operation.¹⁰

Basically, the yield for whitefish was in a prolonged slump during this era. From 1908 until 1935 the average annual yield of whitefish in Wisconsin waters was only about 30 tons per annum. During the same era the lake trout average yield was about eight times as great by weight. An article in the Bayfield County Press during 1900 speculated on this whitefish decline. W. D. Tomlin, secretary of the Fisheries Association, said that in the Duluth area he thought that sewage and other water pollutants accounted for the decline. Implicit in the article was an understanding that fishermen were overfishing certain areas and that restocking the lake with small fry was the answer. But even here the author of the article had a premonition that stocking methods were not correct. The writer thought it unwise to dump the fry in the wake of a steamer; and he thought the depth of 100 to 150 fathoms was not the best

choice. Such complaints doubtlessly led to the more scientific methods of later years where the hatchery fish were kept until they became fingerlings or yearlings and the optimum depth for planting was found for each species. The most significant complaint of the article, however, was the notion that the variance in fishing laws of the several states along the shores of Lake Superior was the greatest cause of mischief to the fishery. The author of the article therefore proposed the necessity for an interstate protective association. This crying need was not met until after World War II when the inroads of the lamprey eel made it patently clear that there had to be an international protective association. The culmination of this trend was the establishment of the Great Lakes Fishery Commission in 1955.¹¹

During the first decade of the twentieth century, Wisconsin fishermen on Lake Superior enjoyed a profitable trade selling lake trout; but the brief herring season, even then, seemed to attract more publicity, since such large volumes of fish were taken in a two to six week season. In 1911, for example, the Bayfield County Press boasted proudly of the achievements of the Booth and Boutin companies during the past herring season. By weight, Booth's marketable herring constituted two-thirds of their produce for 1910. This is not to say that the herring catch was as valuable as the trout. Booth processed more than a million pounds of herring, while S. L. Boutin Company handled nearly a million and a quarter pounds of herring. In other words, the two companies processed about 1113 tons of herring, the lion's share of that fish taken in Wisconsin waters. Booth Fisheries had twenty boats on the lake supplying them with fish, utilizing fifty men as crew members. There were a hundred men employed for the 32 day season in the sheds and packing houses of Booth. S. L. Boutin had about 540 half-barrels packed with salted herring during the herring run and sold another 60 tons as fresh frozen. Boutin paid fishermen \$3.50 a day for their services; while dresser/packers were given 35¢ for each half-barrel packed. A speedy packer could fill a half-barrel in forty minutes. Occasionally a dresser/packer made more than \$5 per day. In summing up the herring season, the newspaper article rejoiced over the fine catch in herring, in contrast to a less successful season in trout and whitefish.¹²

The Bayfield newspapers during those years gave evidence that commercial fishing was expanding its facilities westward from the Apostle Islands toward Duluth. Booths, for example, built a fish house and dock at Port Wing in 1910. In 1911 the Jones brothers of Cornucopia were operating a tug tramp for gathering the catches of neighboring fishermen. Emory Jones, who still claimed to be active as a dock operator in Cornucopia in 1978, comes from that well-known fishing family of the Joneses.¹³

The recurrent quarrel between the Chippewa Indians and neighboring whites over fishing privileges surfaced again in 1913. In this case, Indian policemen confiscated the fishing tackle of several Ashland fishermen who invaded reservation territory in the Kakagon Sloughs, part of the Bad River Indian Reservation. The Chippewa marshalls were retaliating for an arrest of several Indians "two or three years ago" by Game Warden George Buchanan, who had pressed charges against them for fishing out of season. The whites seemed to take the Chippewa reprimand with good grace when the editorial writer summarized the incident by saying: "There has been little trouble in enforcing the order and Sunday's episode shows that the Indians still propose to keep the reservation hunting [and fishing] grounds to themselves."¹⁴

The Indians' rights under the 1854 treaty were often appealed to in disputes over fishing. But sometimes it took years for the Chippewa petitioners to receive redress for grievances. In 1915 there was a bill in the Wisconsin legislature to repay a Red Cliff Indian named Mike Morrin \$4,000 for nets confiscated in 1907 by a deputy game warden.¹⁵

The year 1913 found one Bayfield paper again boasting of the herring harvest. According to the County Press, the 1913 catch in the Bayfield vicinity was "hundreds of tons!" and Booth's new shed and dock often had more fish available than it could readily process. The article editorialized that the abundant herring catch meliorized an otherwise dismal economic year in the area, since wage scales in lumbering were down for the 1913-1914 season. The statistical summaries of herring catches from recent technical reports do not agree precisely with the

Bayfield paper's contemporary observation. The available records show that Wisconsin fishermen had better herring yields in 1903, 1896 and 1895; but basically 1913 was a good year. The following year was still better, and this record was not equalled or surpassed until 1940.¹⁶

The years before World War I were years in which the Hokenson brothers made a noble attempt at farming at a homestead about two miles south of Little Sand Bay, the later site of their fishery. Their father, Peter Hokanson, had passed away in 1910, after gallantly making an attempt to become a farmer when in his early 70's. With his demise, at age 74, the eldest son, Eskel, tried to take hold and run the farm. At first, after 1911, his new stepfather, Christian Melde, tried to help the young men with their agricultural enterprise. But Melde was a natural storekeeper who gravitated as a matter of course to the grocery business in the town of Bayfield. By then Eskel was old enough and mature enough to take the reins from his stepfather and run the farm.¹⁷

While the Hokensons tried to make a go of their farm, Lake Superior continued to demonstrate its unforgiving severity to fishermen. The Bayfield paper reported the drowning of three fishermen in April of 1915: Charles Russell, Chauncey Wright and Nels Teigen. Again in December of 1917 another fisherman perished in a freak accident. A fire aboard the Herring King out of Bayfield drove its two occupants into the lake and just as a rescue boat arrived, one of the men, John Gordon, went under and perished from the effects of the frigid water, even though he had to swim only a short distance. His partner, Clarence Russell, was able to abandon the flaming Herring King and swim successfully to the rescuing Goldish.¹⁸

And yet the Apostle Island fishery was prosperous in the decade 1910-1920. In herring, for example, Wisconsin fishermen on Lake Superior averaged 946.5 tons per annum. The whitefish fishermen were struggling, however, and the yield averaged only about 17.5 tons per annum. The lake trout yield was good at 270.6 tons per annum. In 1917, three Bayfield companies marketed 82% of the Lake Superior herring taken by Wisconsin fishermen. S. L. Boutin Company packed 800,000

pounds of herring, while Booth Fisheries and another company packed about 600,000 pounds. Boutins employed 175 men for 25 days and paid them between \$4 and \$8 per day. Boutins used two steam tugs and six gasoline propelled craft for their at-sea operations. Booth's and the other company used 150 men for a week longer than Boutin's and paid between \$4 and \$6 per day. More than \$40,000 in total wages were paid out by the Bayfield companies during the herring run, and the catch was valued at double that amount.¹⁹

When the United States entered World War I in 1917, two of the Hokenson brothers, Eskel and Roy, joined the army and went off to war. Their brother, Leo, stayed home to run the farm. Late in 1918 when the Bayfield paper was printing lists of returning soldiers, its pages were also reciting the facts on the annual herring run. The difference this time was that, because of the war, a few girls were employed as "panners" on the dock. The girls would use pans to transfer the herring from the nets to other receptacles. A typical panner performed about 3,200 scoops a day; and for this tedious chore the girls were paid the munificent sum of three dollars. They were at the bottom end of the pay scale wherein other dock laborers received \$5 per day and up; while fishermen received \$7.50 to \$9 per day. In the sheds, dressers received \$5 to \$10 per day; but they were paid fifty to sixty cents per half barrel.²⁰

In December 1918, when the herring run was over, the Bayfield County Press printed an alphabetical listing of the 1100 men from the county who had served in the armed forces, the list included "Roy Hockanson" and "Eskil Hockanson." This misspelling of the family name prompted Eskel's wife (in 1978), when queried on the subject to explain how the boys' mother had made an effort to standardize the spelling of the name for official records. A visit to the Register of Deeds' Office both in Bayfield and Ashland, Wisconsin will confirm, after browsing in the alphabetical register, that there were at least twenty different spellings of the Hokenson name. Their father, Peter Hokanson (sic), was correctly identified with his last name spelled with an "a" after the Swedish custom, since he was "Peter, the son of Hokan." The next

generation, Eskel, Leo and Roy, settled upon a different spelling with an "e."²¹

Also listed among the returning soldiers was the cousin of the three Hokenson brothers, Halvor Reiten. Reiten too, for a time was a fisherman; and he later designed and helped build the Hokenson fishing vessel, the Twilite.²²

These men did not go into professional fishing immediately after the war. The Hokensons continued their noble effort with the poor soil in a northern clime for a few more years. But they could not help noticing the continuing success of the fishery: An interesting number of the Bayfield County Press in February of 1919 gave the statistics provided by James Nevin, Wisconsin State Conservation Commissioner. The figures are not entirely apropos, since they mix Lake Michigan catches with those of Lake Superior. But the statistics provided, comparing 1916 with 1917, show that whitefish prices went up from 11¢ to 15¢ a pound because of greater scarcity of that commodity, thus illustrating the law of supply and demand. Oddly, even though the trout catch was more abundant, it too went up from 10¢ to 12¢ a pound; but that was due both to the inflationary pressures of a wartime economy; as well as increased demand because of the relative cheapness of fish compared to meat. In the same way, the average prices of all species of fish went up from 4.5¢ to 6¢ per pound. Herring also increased from 2¢ to 3.5¢ per pound. The article went on to bemoan the decline in whitefish production and attributed it principally to overfishing and the taking of whitefish weighing less than a pound. Needless to say, the author advocated a larger role for the fish hatcheries, and legislation to control unwise fishing practices.²³

At about this time too, greater emphasis was being placed on improved methods of fish preservation enroute to market. More and more use was being made of refrigerator cars on the railroads, and ice packing was becoming as frequent as packing in salt. Mostly, however, the Bayfielders relied on a natural supply of ice, rather than the artificial way. In February of 1919 there was concern that the several companies in Bayfield would not put by a large enough quantity of ice from the lake

because of a premature thaw. A sudden "cold snap" in late February produced a ten-inch layer of ice among the islands. The Press editorial only begged indulgence that consumers accept these thinner cakes of ice.²⁴ The ice cutters had to work quickly, however, since navigation reopened at the end of March, after only two short months of closure.²⁵

During 1919, the Bayfield newspaper continued to refer to local participation in the Great War. There were articles about heroes, and routine notices about returning soldiers. In the July 4th issue, a brief note stated: "Eskel Hokenson, who has been in the service for some time, serving for several months overseas, arrived home this week with his honorable discharge from the service."²⁶ Eskel returned to the Russell homestead of his deceased father to take hold of farming operations once again. His activities and those of his brothers went on in anonymity, but occasionally a note in the Bayfield paper brought them some attention. One item in the November 12, 1924 number wrote: "Several nimrods from this [Russell] vicinity are out hunting at Sand Bay, including Len, Bob and Sebastian Feldmeier, Roy, Eskel and Leo Hokenson, Harvey Soetebeer and Russell Aiken."²⁷ There was a followup piece on the success of the hunting party; and one note even told of Eskel being confined to the house for several days with a severe cold. The paper regularly told, as well, of social events among the Russell few, particularly the activities of the Wednesday Club and the Sunnyside Club, and the progress of a real estate development organization at Little Sand Bay, Called the South Shore Club. This was how the Hokenson brothers acquired the lots on Lake Superior that later became their fishing dock and buildings. One of the three Hokenson brothers, unspecified by first name in the Press article in 1925, ran unsuccessfully for constable in the Russell area.²⁸

In the decade of the 1920's, even though herring catches were lower than average, the general prosperity of the fishery did attract the interest of the Hokenson brothers. Early in the decade they acquired some land directly on Little Sand Bay, and at first did some fishing merely to supplement family diet. Then, the death of several farm animals and the generally limited success of tilling the soil, persuaded

them that diversification into fishing was a necessity for survival. Late in the decade they commenced construction of their dock, ice house, and twine shed. As they worked on building construction, they participated at least part time in the commercial fishery.²⁹

A few items in the Bayfield County Press gave year to year information on domestic events in the lives of the Hokensons. A July 1928 paragraph told of the completion of Roy and Irene Hokenson's "cottage" on Little Sand Bay. Another item during the same month told of the release of Mrs. Eskel (Florence) Hokenson from the Pureair Sanatorium after nearly two years. It is a reminder that tuberculosis was still a health threat during that era. Social notices in the paper kept neighbors aware, as well, of the growth of the Leo Hokenson family. There were items about a fruitless fishing expedition near the Pageant Grounds where Leo took his five year old son Bobby; and a notice about the arrival of Leo's second child, Elaine, in October of 1928.³⁰ Roy Hokenson got his name in the paper now and then for trapping bounty animals such as bobcats and coyotes.³¹ A notice was printed too, in 1930, of the arrival of Eskel's new daughter, Marjory.³² During the same period Leo Hokenson became one of three supervisors for roads in Russell Township. His interest, as that of his brothers and neighbors, was the improvement of Highway 13 to Superior, which was frequently characterized as being "mostly mud."³³

Roads were not the only requirement for assisting the fishing industry in northern Wisconsin. Numerous experiments were conducted in the 1920's to increase the dwindling fish population in Lake Superior. For some reason, little was ever done to assist the propagation of lake herring. It may have been nothing more complicated than herring migration that accounted for the cyclical disappearance of the herring in certain locations. The decade of the 1920's was a poor one for herring catches in Wisconsin waters, while North Shore fishermen in Minnesota had a bonanza in that commodity. Curiously, when herring production on the Wisconsin shore improved during the 1930's, Minnesota catches remained high.³⁴

More attention, however, was always given to the big-money fish, lake trout and whitefish. Before 1920, fishermen around Bayfield discovered a strange new trout in their nets, one that resembled a salmon. These fishermen corresponded with Federal officials and learned that a limited seeding of salmon trout had been made near Duluth a few years previously. The size of the specimen caught was sufficient evidence that this variety could thrive in Lake Superior. The Bayfield fishermen therefore petitioned Federal officials to supply salmon trout eggs to the Bayfield hatchery. As a result, a half-million such eggs were shipped from Seattle to the hatchery in the spring of 1920, but most of the fingerlings were placed in fresh water lakes and streams. Still, some of them got into Lake Superior from the streams.³⁵

Late the same year Wisconsin fishermen got more help from the Federal government in the form of ten million whitefish eggs and five million silver trout eggs for the hatchery at Salmo (Bayfield). The fry from this shipment were to be planted into streams flowing toward Lake Superior during the spring of 1921. Superintendent Ripple of the Salmo hatchery thought that fishing results would be noticeable within four or five years. In actuality, whitefish production in Wisconsin waters of Lake Superior did not rebound until after 1936, and lake trout production remained so steady as to hardly give any evidence of beneficent results from the hatchery's work.³⁶

In the 1922-3 hatchery season the Salmo plant nurtured ten million white fish fry and fourteen million lake trout fry. Superintendent Robert Ripple was still experimenting with the survivability of fry versus fingerlings by isolating small batches of the latter in natural ponds, and counting them after a year's time. The resultant survival rate of 65% confirmed his hypothesis that fingerlings did better than fries in a natural habitat.³⁷

During 1923 some Bayfield fishermen expressed the view that whitefish were bouncing back as a result of the Salmo hatchery's work. Theodore Boutin, for example, made a single haul of 6,300 pounds of whitefish in October and sold them for \$900. By 1925 hatchery officials

had solidified their conclusions regarding the superiority of planting fingerlings over fry. For the 1925 season there were 8.5 million lake trout, 3.5 million brook trout, 2 million brown trout, .5 million salt water salmon and a million silver trout for planting. Most of the silver trout and some of the others were destined for small lakes, but the preponderance were to be seeded among the Apostle Islands. Later in the year the hatchery discontinued permanently its policy of propagating rainbow trout, since the rainbows preyed too voraciously on the brown trout.³⁸

Despite hatchery efforts, Bayfield area fishermen were worried about their livelihood. In February of 1927 they banded together to form the Northern Wisconsin Commercial Fishermen's Association. Their goals were to lobby for legislation favorable to their interests and to secure conservation laws. Twenty fishermen attended a meeting at the Pageant Inn to elect Oscar Bodin as president of the new organization. Carl Hanson became vice president, G. G. Boutin secretary-treasurer, and the directors were Henry Johnson, Martin Erickson and Charles Benson.³⁹

There were no immediate visible results from the formation of the fishermen's association, but the hatchery continued to provide active assistance to their concerns. In 1928 the Salmo hatchery provided 17 million fingerlings for planting among the Apostle Islands. During that era, however, the fishermen themselves did act in concert with state officials. Not only did they strip females of eggs and males of milt for the hatchery, but they also volunteered their time for the distribution of the young fish. This practice continued for many years, and the fishermen always did it gladly and willingly because it was to their own advantage.⁴⁰

In June of 1928 a larger fishing organization, the Wisconsin Federation of Commercial Fishermen met at Two Rivers, Wisconsin, to promote conservation and protective legislation for the fishery. One indication that the convention was trying to put commercial fishing onto a scientific basis was the presence on the program of the noted academician, Dr. John Van Oosten of the University of Michigan. One

indication of Van Oosten's influence was the preliminary questionnaire sent to attending fishermen seeking their advice on facets of projected legislation. The questionnaire sought to learn the types of equipment used, the nature of legislation desired, opinions regarding the hatchery, mesh sizes, and minimum sizes of the catch. At last knowledgeable people in Wisconsin were putting their heads together. It was only a first step, however, since there were still no inter-state or international meetings.⁴¹ The urgency of the 1928 meeting at Two Rivers was emphasized by a Bayfield Press article two months later that proclaimed in a front page headline "Commercial Fishing Is Passing on Lakes." The Press actually derived the substance of the article from the July issue of Outdoor America. The author attacked the general overfishing in all of the Great Lakes and also suggested the necessity for international regulation.⁴²

An illustration of the lack of uniformity of fishing laws even within a single state was illustrated by a fishermen's meeting held at Cornucopia in February of 1929. 44 fishermen met there to protest the lengthier season allowed for Green Bay fishermen regarding herring. In reaction to Section 29.33, subsection 7a and b, of the Wisconsin Fish and Game Laws, they drafted, besides their complaints, a set of six proposals to remedy their grievances. Five of the proposals related to mesh sizes, while the sixth suggested limiting the minimum size of trout to one and one-half pounds and herring to not less than ten inches.⁴³

Some legislative progress was made for Wisconsin commercial fishermen in 1929. In February H. W. Mackenzie, Chief Warden of the Wisconsin Conservation Commission, solicited fishermen's views in Bayfield regarding mesh sizes for nets and minimum sizes for whitefish and lake trout. In March, it was discovered that the commission had come up with a bill that displeased members of the Wisconsin Federation of Commercial Fishermen. The fishermen drafted their own bill, and in sum, stated that the commission's version amounted to property confiscation, unjust taxation, and too radical a change generally. Emory Jones, a Cornucopia fisherman during this era, stated that generally state officials involved in fishery legislation were very receptive to suggestions from professionals like himself, and would embody such ideas into law. Jones said that most

of the time fishermen got what they wanted in legislation. As time passed, the fishermen, as well, came to accept the notion that overfishing was not in their best interests.⁴⁴

B. Perils on the Lake During the 1920's

Just as during other periods, the decade of the 1920's had its violent storms and close calls for men who made their living on the surface of Lake Superior. In 1923 two Apostle Island fishermen had a very narrow escape. T. S. Coville of Ashland and Alec Riken of Bayfield were fishing out on the ice near Madeline Island in late April of that year. Suddenly they became aware that the spring thaw was causing their ice floe to drift off toward the middle of Lake Superior. Even though they had to abandon their automobile, fortune was on their side as the ice floe drifted past Outer Island and they were able to get ashore. They took shelter in the Outer Island Lighthouse and waited for rescue. But after two days the wind direction changed and they saw the ice floe returning with their automobile still standing on the surface. As the prevailing wind was stiff and steady toward the mainland, they climbed back onto the ice and were able to drive their vehicle home to Ashland.⁴⁵

Halvor Reiten, cousin to the Hokenson brothers, related a parallel story to the one above, telling the tale of several Bayfield fishermen at some unspecified date. They too became aware that the spring thaw was breaking up the ice pack among the Apostle Islands. They had an ancient vehicle that carried their fishing equipment and catch. The direction of the ice drift obliged them to drive the auto in a different, more distant direction than the way they had come onto the ice. As they proceeded, they burned out one of the forward gears in the transmission of the car. Then one by one, they burned out each of the other forward gears. In desperation they tried to drive the old vehicle in reverse. For some reason this gear still functioned. All told, they drove about ten miles in reverse gear and eventually reached land safely.⁴⁶

But Halvor Reiten's greatest adventure was a personal escapade in January 1924 when he survived the sinking of the Friant. The story has been frequently told in the Bayfield area. It made the Bayfield paper at the time; and a local historian repeated the epic in the same paper thirty years after the event. Again, in 1976, Reiten consented to make a tape recording of the adventure for the Northeast Minnesota Historical Center at Duluth. The text of the narrative is quite a classic because of Reiten's ability as a story teller. A sprightly little old man of more than eighty winters, Reiten spins a yarn with a twinkle in his eye and a gift for the well-turned phrase on his tongue. The story pours out as if the events depicted occurred yesterday. At least two of the crew members of that 1924 saga still survive, and this writer had the privilege of talking to both of them in 1978. These two were Halvor Reiten of Bayfield and Emory "Squeaky" Jones of Cornucopia.

In outline, the story proceeds as follows: Halvor Reiten became partners with Captain Einar Miller in the purchase of the steamer Friant in early 1923. The boat was to have multiple purposes; but the original idea was to provide both freight and passenger services between Bayfield and Duluth, with stops, as needed at the intervening ports of Cornucopia, Port Wing, Orienta and Superior.

Apparently the volume of business was not sufficient, or otherwise the owners were ambitious; for during the winter of 1923-1924 the partners decided to engage in gill-net fishing for lake trout along the south shore of Lake Superior. Aware that the south shore usually freezes over in January, they intended to use Two Harbors in Minnesota as their home base. They settled on this hazardous enterprise despite the fact that most lights and other navigational aids had closed down in mid-December. Halvor Reiten said later that it was the prospect of trout prices going up to forty cents a pound that enticed them. There was a nine man crew that included Miller as master, Reiten as fireman, and Sherman Bolles of Ashland as Chief Engineer. The rest of the crew were from Cornucopia, and four of these were Joneses. Among these was Emory "Squeaky" Jones, who, like Reiten, is still around spinning sea yarns.

Einar Miller had to run the 110 foot Friant out of Bayfield harbor on the 3rd of January 1924, because the ice was forming rapidly among the Apostle Islands. He hustled the Friant around the Bayfield Peninsula to Cornucopia harbor where they picked up the fishermen. There too they had to hurry, as the port was freezing up rapidly. Even though the Friant had a thin coating of iron plating to protect it against sheet ice, its progress through the water drove a wedge of ice through the port side hull in the after section. This event occurred as the steamer was rounding Bark Point west of Cornucopia. This difficulty forced them to turn back to Bark Bay which they made at 1300 hours on the 4th. Here the vessel froze into the ice. The temperature had gone down to 23 degrees below zero and the wind was screaming. As Reiten described the wind: "it began cracking around us like artillery fire."

On the 5th of January, despite being frozen in, the crew was able to get the Friant to list to starboard while they patched the leak. Sometime that evening, Saturday, the wind shifted and came from the southeast, putting a considerable strain on the anchor chain. "That anchor chain was just like a fiddle string," said Reiten. The captain started up the engine to take the strain off the chain. Soon the ice started to break up. For a time the rudder was frozen in place, but the crew used steam hoses to free it. Then the Friant got underway and re-rounded Bark Point and passed Port Wing. Now it was Sunday, the 6th of January.

Reiten said that the southeasterly wind was at hurricane force for a time, and attributed its intensity to the rapid temperature rise from 20 below to 20 above. Some time during Sunday afternoon the crew of the Friant discovered a new, larger leak in the hull on the starboard side amidships. Probably a chunk of ice had jammed through the bulkhead on the earlier occasion, but had frozen into place. Now with the thaw and vessel motion, the ice had melted out of the hole. By 1530 hours the water was rising rapidly inside the vessel, despite the use of pumps and pails. Briefly the captain thought of making a "blanketing bolt," using a tarp on the outside to seal the hole with water pressure holding the tarp in place. Other solutions ran through their minds as the water rose in the bilge. One idea was a forlorn hope that the ice breaker Wallin would

come to assist them. Finally the rising water put out the fire in the boiler. Miller ordered the crew to abandon ship.

As the crew worked to lower the lifeboat which would hold nineteen persons, Reiten decided to change his clothes. He had gotten soaked to the skin performing his duties in the deepening bilge water. "You talk about a quick change act in the theatre. I never put clothes on so dang fast and put all new clothes on - top to toe - clean new underwear and everything. I stepped aboard the life boat like a president of a corporation. I was the best dressed ship wrecked man you ever saw in your life." The men abandoned ship at about 1600 hours on the 6th of January.

Shortly before the Friant sank, the wind had changed once again, this time back to the northwest again. The nine men in the lifeboat knew they could not use the wind to return to the Wisconsin shore because they would doubtlessly run into the ice field. So they had to buck the wind and row into the storm toward the North Shore of Minnesota. As they rowed away, they saw the Thomas Friant go down bow first. "She was at an angle, about a thirty degree angle or so, the hind doors of the house on her, poof, went out like that from the air pressure that was trapped in there and she started down you know, just like a man down a ski slide." These were part of Reiten's recollections fifty years later.

Halvor Reiten said it was a funny sensation to see that boat disappear, since it was sort of his home with all his possessions on it. He felt very lonely at that moment. After fifty years he could still remember Captain Miller's big pocket watch hanging on a hook in the wheelhouse, swaying with the rising waves. He thought for a moment of taking the watch off the hook, but his mental processes vetoed the motion when a contrary thought predicted that Miller would salvage the vessel and recover his watch. Now Reiten thinks that some scuba diver will get it, a real prize, stored in a vault sixty to seventy fathoms deep.

As for the survivors, their task was still cut out for them. The lifeboat crew guessed they were halfway between Port Wing on the South

Shore and Two Harbors of the North Shore. Reiten told how the nine men rowed for eight and one-half hours straight. The lifeboat was an old iron one. As Reiten told the story, he nodded toward another boat like it in his boatyard and said, "they row hard."

He added: "Nine men. Nine men - four oars. Two men to an oar. And I was the best dressed guy so I was steering. But I traded off some times with the nearest oarsman because I had to move to keep warm. Winter time, sixth day of January, 1924. No Coast Guard then, no radio, or radar or any kind of that stuff. In fact you didn't even have a lighthouse lit on Lake Superior at that time. And gradually the lights on the north shore kept winking out until it was black as the cat in the coal bin. Except for one light and center of civilization worth going to. That was the only thing we had to guide us. So we headed for that. And we made shore, the wind kept dying down, dying down, dying down, right along and we made shore by where this slip is right now. It was dark, oh boy, it was dark."

Reiten fleshed out the ordeal in the lifeboat by telling how the spray of the waves froze on their backs and gave them a protective coating of ice against the northwester. On landing, they fired some flares, but learned later that the people who saw the flares thought someone was celebrating. Halvor Reiten had to climb a twenty foot cliff on his own and then found the source of the brilliant light they had seen from the lake. It was a group of fishermen playing cards opposite a large window that fortunately had no curtains. Their light in the window had been a beacon of salvation to the nine Wisconsin fishermen.

Reiten drew out the story to include details about every helpful person along the way who got them safely back to Bayfield. He can still tell the tale with great verve.⁴⁷

Even though there was no loss of life involved in the sinking of the Friant, this event was a financial disaster for Einar Miller and Halvor

Reiten. Since they were operating during a forbidden period, they could get no insurance, and lost everything. The Friant and its equipment was valued at \$16,000. Half of that debt fell on the shoulders of Reiten, who paid off his indebtedness over the next twenty years.⁴⁸ The disaster drove Halvor out of the fishing business altogether, and henceforth he concentrated his energies on boat building and running a boatyard. On occasion, over the years, his innovative spirit caught the imagination of the local paper, which told of his exploits. In 1927 he caught public attention with his ice-crossing vehicles. In January he tested an old Ford touring car with runners in front on a trip out to Bass Island. A year later, Halvor was the builder but not the designer of a sled-boat that receive its locomotion from an airplane propeller. The vessel was also equipped with an outboard motor for those occasions when it went through the ice or when used in warmer weather.⁴⁹

C. The Role of Bayfield County Roads in the Marketing of Fish

During the 1920's the road system around Bayfield was improving to some extent, helping to break down a bit of the rural isolation for people in the northern sector of the Bayfield Peninsula. Highway 13, which wended westward from the town of Bayfield, received regular attention in the pages of the Bayfield County Press as it inched slowly toward Duluth. A coded map printed in the paper during 1925 showed that the entire route was complete, but that very little of it was first class. Only a few short stretches were classified as "Macadam/ Gravel/Shale/etc." More commonly the symbols indicated "All Weather Earth." And there were at least two intervals characterized as "Heavy Clay (Avoid During Rains)." The road passed through Cornucopia, Herbster, Port Wing, and met the main road to Duluth from Wisconsin on the southeast edge of Superior.⁵⁰ After 1925 most of the interest in Highway 13 was directed toward its improvement. A few ambitious critics tried to promote the re-routing of the road closer to the lakeshore to make it a more scenic drive. The road was not very close to the shore during the last third of its extent between Bayfield and Superior, on both ends.

The significance of Highway 13 increased as more fishermen from the South Shore villages needed access to markets for their fish. Most of the fishermen who used the port of Bayfield as their base, marketed their fish with one or the other of the large companies in town. During the late 1920's a third company was set up in Bayfield by a Chicago businessman and city official, Mr. Howard W. Elmore. He formed the Bayfield Fish Company in competition with the Booth Packing Company and the Boutins. The latter company fell upon hard times and moved their business out of Bayfield for 1930 and 1931 to Chassel, Michigan. In 1932 the Boutins returned, bringing a load of timber and lumber to Bayfield aboard the Elsie Nell for the purpose of repairing their buildings and dock at Bayfield.⁵¹

D. Lake Superior Fishing Becomes Intensive: A Variety of Marketing Techinques Developed

H. W. Elmore, mentioned above, diversified his interests into commercial fishing during 1926. Although his principal investments were in Chicago, he had had a summer home in Bayfield for several years. Studying the Apostle Islands scene for a number of years, he concluded that Bayfield could use a third fishing concern. He at first leased facilities in Bayfield; then, in 1927, he built a small plant in Red Cliff, north of Bayfield. Then, in 1928, he constructed a \$40,000 refrigerator plant and warehouse on the waterfront at the foot of Second Street in Bayfield. The establishment measured 38 by 70 feet and had a twenty ton Frick refrigerator on the ground floor that kept two sharp-freezing rooms at subzero temperatures and an "ante-freezing chamber" in which a temperature of many degrees below freezing could be maintained. The second floor held offices and equipment storage rooms. On the dockside, a sheltered porch eighteen feet wide ran the length of the building. Here fish could be cleaned and prepared before freezing. The entire edifice was made of fireproof brick, steel and concrete.⁵²

When the Hokenson brothers commenced fishing for profit in the late twenties, their first marketing outlet was with H. W. Elmore. But they

quickly came to the conclusion that they could get better prices for their lake trout and whitefish elsewhere. Roy Hokenson said that for a brief interval he and his brothers were getting only two to four cents a pound for their "money" fish. This discouraging return forced the brothers to turn to the port of Cornucopia as a potential outlet.⁵³

Emory Jones of Cornucopia told something of the marketing practices at that fishing village. He said there was always a limited market for Lake Superior fish in the towns of Norther Wisconsin. Notices to that effect appeared regularly in the Bayfield newspaper. Jones complained in afteryears about the risks the fishermen took; sometimes they would lose the total value of a rail shipment to Chicago, if the refrigerator car failed to keep the fish fresh enroute. Similarly, shipping the fish either to Bayfield or Duluth added to the time lost by commercial fishermen, if they carried the produce over water to port in their own boats.⁵⁴

Emory Jones stated that the fishermen around Cornucopia, including the Hokensons, finally put their heads together and devised a plan to form a cooperative association for marketing their fish. They received the active support of Hermann J. Ehlers, manager of the Flieth Ehlers Mercantile company of Cornucopia. Ehlers would call the Chicago market directly by telephone to find out the current price per pound on lake trout and whitefish. One item in the Bayfield paper in 1931 told how the Cornucopia fishermen shipped their fish to Chicago by truck, using three drivers on the two day trip. As Jones explained, this was done strictly by "gentlemen's agreement" with Ehlers. In time, Ehlers was able to come up with an even better arrangement. He was dealing with a man named Sachs in Chicago, and Sachs did not know that every fisherman in Cornucopia was marketing through Ehlers. So Sachs thought he could get a corner on the market by temporarily giving Ehlers two cents more than the Chicago price. In time Sachs thought other local fishermen would come to him and he would eventually have all of the Cornucopia fish. He was unaware that he already had the entire market from the start. After six months of overpaying Ehlers, Sachs had to admit he had been duped by the "country bumpkins." At that point Sachs good naturedly admitted defeat and agreed to continue buying all

the Cornucopia fish that Ehlers provided at the standard Chicago market price.⁵⁵

Grace Lee Nute, who wrote one of the better histories of Lake Superior, told of this propensity of Finns and Scandinavians to organize cooperatives. Her focus was on Minnesota fishermen and the North Shore. She wrote:

"Almost from the beginning they had such an organization, called the Duluth Fishermen's Union. They met once in while to organize opposition to some pending legislation or to make contracts. Theodore Thompson of Larsmont was chairman and D. W. Tomlinson was secretary. About fifty per cent of the fishermen of the American north shore belong today [1944] to the North Shore Fishermen's Trucking Association, whose trucks gather up the fish along the shore. It has been in operation about ten years. The truckman hauls with his own truck at a commission of twenty per cent of the value of the fish sold. The fishermen feel that they get better prices by thus combining in their own sales agency."⁵⁶

While the cooperative at Cornucopia did not have identical methods to the North Shore operation, it too functioned to garner better prices.

Emory Jones related more of the Cornucopia marketing history of the 1930's. He said that the combination of a fishing boom on Lake Superior and the national Depression, often made it impossible to market all of their catch in Chicago for cash. Jones stated that it was the depressed price of lake trout to only four or five cents a pound that compelled him to resort to barter. Jones would load up his pickup truck with iced fish and drive off to the nearby towns of northern Wisconsin. Many of his customers had no cash, so he would accept almost anything in payment: chickens, eggs, milk, vegetables, clothing, firewood, tools, or used equipment. Oftentimes Jones had no personal use for some of these acquisitions, but he could market many of them at his own roadside stand. Emory Jones said that often on these fish-bartering expeditions

he would return home with his pickup truck more heavily laden than when he started out. Jones called the Depression years in Cornucopia the most prosperous years of his life. His family had an abundance of food and everything else necessary to sustain life. He said that by 1936 the cash market for fish had recovered and he could again sell everything he caught.⁵⁷

As the 1930's progressed and the most prosperous fishing decade of the 1940's commenced, marketing of fish continued to be done in a variety of ways. Shipping by railway refrigerator cars to large urban markets such as Chicago and St. Paul, continued to be a major distribution mode. But it was also an era when independent or large-scale trucking made inroads into the onetime railroad monopoly. One 1940 article in the Bayfield Press illustrates this phenomenon. According to the article, Thomas Jones and Sons of Cornucopia broke a local fishing record when their family boats and equipment took more than 60,000 pounds of fresh fish in three days' work. They shipped their catch by truck to various market centers. In the three day bonanza, the family took 25,250 pounds of fresh fish on the best day. About sixty percent of the haul was lake trout and all of their luck was attributed to the efficiency of pound nets. The Joneses broke the family record of thirty years standing by taking 7,500 pounds of money-fish from a single lift of one pound net. That was nearly four tons of fish from one net on a single day! The family spokesman, E. N. Jones, said that this achievement was made despite the fact that the family business had not increased the number of its pound nets during the previous ten years. He added: "This catch offers conclusive proof that the supply of trout in these waters is increasing, rather than becoming depleted."⁵⁸

E. The Heyday of the Apostle Islands Fishery: Smoked Fish, Ice Harvesting, and More Perils at Sea

The decade of the 1930's, as has been indicated above, was a revival time for the commercial fishery in Wisconsin waters of Lake Superior. There finally was a noticeable increase in whitefish production as a result

of all the hatchery fingerling seeding. The annual catch average was 44.75 tons, up from 34.8 tons in the previous decade. Lake trout were more steady, but high in production: 257.5 tons per annum as compared with 243 tons per annum during the 1920's. Herring, as always, had the greatest volume of production. But it too increased, and dramatically, from a 458 tons per annum rate in the 1920's to 1095 tons per annum rate in the 1930's.⁵⁹

For the Hokensons this was the decade when they entered commercial fishing heart and soul. In collaboration with their boat-builder cousin, Halvor Reiten, they built their 38 foot, diesel powered fishing boat, the Twilite. During the spring and summer months the brothers towed a pound-net boat behind the Twilite, using the smaller rowboat to service their pound nets. In the fall they would not need a pound boat, as they harvested the spawning herring by means of gill-nets. The herring season would sometimes commence in late October, but most certainly by the first week in November. Depending upon the weather, the herring rush could last up to six weeks; but it was invariably over by Christmas. Then, when the inland waters among the Apostle Islands froze over for the winter months, the Hokensons would engage in some through-the-ice fishing. They would either string gill nets in a line under the ice or do some "bobbing" with hooks. At the opportune moment the Hokensons would cut a quantity of lake ice for their ice house, to complete the annual fishery cycle.⁶⁰

The large fishery companies in Bayfield harvested the ice on a larger scale than such private operations like that of the Hokensons. H. W. Elmore and his Bayfield Fish Company would have as many as 25 men working for several weeks to transport 800 tons of ice to the warehouse. The Booth Packing Company had a larger operation, with forty men loading 2200 tons of ice into their sheds. Ice cakes weighed between 400 and 500 pounds, and were cut from the lake surface several hundred feet from shore and rafted through a narrow channel the workmen had cut through the ice field leading to the ice-house chute. At shore, a team of horses provided the power for pulling the cakes up the chutes by wire cable. Booth had sixteen men in the ice house skidding the ice cakes into position in tiers.⁶¹

Another fishery-associated industry that always existed along the Lake Superior littoral was the avocation of smoking fish. It never became a major business that provided large quantities of smoked fish for distant patrons. The nature of the art was such that smoking could only be done on a limited scale. Mostly fishermen or people who lived close to the lake could participate. Each smokehouse was unique and reflected the particular objectives of the builder/designer. Most of them were made of wood that eventually dried out and would catch fire from repetitive use. It seems that the builder expected his smokehouse to burn down in time. So he built on a small scale to restrict his loss.

Occasionally a Bayfield Press article described such smokehouse procedures. In 1928, Ed Baldwin of Bayfield had his operation written up in the local newspaper. Ed's smokehouse was six feet by eight feet and six feet tall. It was made of some unspecified type of wood and had a sheet-iron covering to fireproof it somewhat. The fish to be smoked were attached to nine boards that were each six inches wide. Nails were driven into the boards as pegs for the fish. Baldwin was smoking herring, and the capacity of his house could accommodate 350 pounds of the small fish at a time. He had four different fires burning simultaneously, using a mixture of green and dry hard and soft maple as the combustible. It took five hours to smoke a batch of herring, and Baldwin completed 15 batches over a three-week span. He apparently was marketing the smoked herring to his neighbors, with a modest supply for his own family. Baldwin purchased fresh herring from the nearby Booth Fish Company dock during the regular herring run of November. He intended to fish for herring through the ice when the regular herring season terminated.⁶²

Over the years Bayfielders continued to smoke whatever kind of fish they took from the lake waters, but always in limited amounts. One very popular smokable fish peculiar to Lake Superior was the Siscowet, a type of lake trout. For years fishermen debated with scientists concerning the distinctiveness of the Siscowet and finally the academics came to admit that the fishermen were right, that the Siscowet should be acknowledged as a subspecies of the *Salvelinus Namaycush* or lake trout. A noted

American ichthyologist of the nineteenth century, G. Brown Goode, used the description of a colleague to tell about the Siscowet:

"This fish, like the former species, came frequently under my eye during my late northern tour; and I rejoice in the possession of a barrel of him in his pickled state, which I procured at the Sault Ste. Marie, on the strength of which I can recommend him to all lovers of good eating as the very best salt fish that exists in the world. He is so fat and rich that when eaten fresh he is unsufferably rank and oily, but when salted and broiled, after being steeped for forty-eight hours in cold water, he is not surpassed or equaled by any fish with which I am acquainted."⁶³

Roy Hokenson, in telling about the Siscowet, echoed the above quotation from Goode in many particulars, but stated that people on the Bayfield Peninsula had come to prefer the Siscowet in its smoked variety. He said that any of the cooking methods that were used for the fatty fish, usually resulted in the loss of much of the nourishment of the fish. Frying would result in the substance of the fish melting away to a fraction, leaving only a very small portion. There are stories abroad in northern Wisconsin that at one time the Chippewa used Siscowet as candles, merely adding a wick to them. The very name "Siscowet" is supposed to be a Chippewa word for "cooks itself." Most fishermen say that the Siscowet is caught in very deep water, beyond forty fathoms, and that the cold at this depth necessitates the fish's development of greater fatty composition to survive. Regrettably, they have always been and remain, a very scarce fish. As Goode wrote: "If one barrel of Siscowet to fifteen Namaycush are caught, they are said to be very abundant." When this writer visited Bayfield on the Fourth of July 1978, vendors were selling limited quantities of the smoked Siscowet on the street. Several people stated they were a rare delicacy.⁶⁴

In every era the threat and actuality of storms on Lake Superior were a continual reminder that making a living on the lake was a dangerous business. Giant storms in 1927 and 1929, for example,

imperiled the lives of innumerable seamen on Lake Superior. The Bayfield paper characterized the November 1927 storm as the worst experienced there since 1905. Fortunately, neither storm took any lives on Lake Superior, but the toll on Lake Michigan was more than fifty when three vessels went down, including a car ferry. Material and monetary losses were considerable in both storms around the Apostle Islands. The 1927 northeaster took a thirty foot chunk out of the city dock and undermined the storage shed on the old Boutin dock north of the Booth Fish Company slip. The shed fell into the water just when men from the Booth dock were trying to rescue a touring car. They were lucky to escape with their lives. In the same storm several hundred feet of railroad roadbed washed into the lake, isolating several refrigerator cars on a safe stretch of track. Both in 1927 and 1929 Bayfield fishermen lost valuable time during the herring season because of these storms, but in neither case did the delay affect overall production. Yet a lot of gill-nets were lost or torn to pieces, and many docks among the islands were damaged or destroyed. The 1927 storm was particularly damaging to the town of Bayfield because the storm blew directly down the North Channel between Stockton, Michigan and Madeline Islands. Thus, in this instance, these islands did not function as a breakwater to protect the mainland.⁶⁵

As destructive as the above storms were, lesser storms hit Bayfielders more emotionally when they took lives of friends or neighbors. Jack Erickson of Bayfield stated that in recent times excellent weather forecasting almost gave too much warning for fishermen. He said that if a successful fisherman stayed ashore for every weather warning he heard on the radio, he would hardly ever go out on the lake. Erickson stated that the old timers had many personal rules of thumb, as well as visual, oral and other cues. At times they put to sea knowing in their bones that trouble was brewing. They just kept an alternative plan at the back of their heads to run for shelter when a real blow began.⁶⁶

Once in a while the fishermen did not make it. Herman Johnson of Bayfield recalled an instance that happened fifty years previously, in 1928. On this occasion it was a spring squall off Sand Island, just after the ice had broken up. There were at least four different Sand Island

fisherman in separate boats setting gill-nets in the morning hours of April 25th, when the squall came up, accompanied by blowing snow. Herman Johnson says he can remember the tragedy as it if were yesterday. As the storm came up, all of the fishermen tried to start up their outboard motors. Everyone succeeded except Harold Dahl. All wanted to propel their boats into leeward waters behind Sand Island. Johnson said he could see Dahl struggling fiercely to start his outboard motor. Johnson would get a glimpse of Dahl when either his own boat was atop a swell or Dahl's was. Johnson kept looking back as his own boat reached smoother water in the lee of the island. Once he saw Dahl's boat rise atop a giant wave; then the billow descended, and Dahl was out of sight. When the next wave arose, Johnson looked where he expected man and boat to be. There was nothing. Another fisherman, Louis Moe, was closer to Dahl, and tried unsuccessfully to rescue the helpless Dahl. Moe did not see the hapless fisherman go down either: one moment he was there, struggling with his motor, the next instant he was gone.⁶⁷

The same storm nearly drowned three other fishermen off Port Wing nearby. They spent a bone-chilling night out on the lake and were rescued by a Coast Guard cutter. Variants of this theme were repeated endlessly on Lake Superior. In January of 1932 two of the Boutin brothers drifted for six days in a powerless boat. Shifting winds variously blew them toward lake center or back shoreward. Finally they drifted ashore safely near Ontonagon, Michigan, more than sixty miles east of their home. During their ordeal Allison and Wilfred Boutin had only a can of sugar for food; but their main problem was the cold at night. They had a small stove onboard, into which they slowly pushed pieces of broken up fish-boxes and portions of the boat's floorboards. When the wood was gone they took old rags and a jacket, soaked these small parcels of cloth into the crankcase oil, and let them smoulder slowly in the stove. Huddling close to this dismal fire, they ended up with blackened faces. Yet they lasted five nights this way. Several times the winds almost drove their boat into cliffs on the south shore, but at the end a lucky current drove them past a formidable stone wall onto the only available sandy beach west of Ontonagon, at Union Bay. They still had to walk an agonizing mile on shore to find a cottage. Their appearance

was such that when they knocked on a cabin door, the proprietor slammed the door in their faces. But as fortune would have it, the cabin dweller knew their grandfather, and finally took them in. After several days of recuperation, the Boutin brothers were safely returned to their families. Through it all, Wilfred lost sixteen pounds, and both young men nibbled at snacks during the entire trip home.⁶⁸

While the perils at sea received frequent mention in the pages of the Bayfield County Press, this area contributed a small part of the total chronicle regarding the general story of hazzards on Lake Superior. One author found the largest of the Great Lakes to be such a rich vein from the larger cache of maritime disasters, that he contributed articles on the subject to the magazine Inland Seas for a period of fifteen years. This man, Julius F. Wolff, Jr., wrote about storms, shipwrecks, collisions, Coast Guard rescues, and assorted other Lake Superior mishaps from earliest historical times to the present. Wolff merely echoed the sentiments of many a Bayfield Peninsula fisherman: that Lake Superior could rival the ferocity of storms on any of the seven seas, and scare the breath out of any old salt or fresh water seaman.⁶⁹

F. The 1930's: Renewal of the Apostle Islands Fishery Through Legislation and Hatchery Replenishment

Although hatcheries in Minnesota, Wisconsin and Michigan had been replenishing the stock of commercial fish in Lake Superior for more than a half century, the improvement in the abundance of whitefish and lake trout became most apparent during the 1930's and 1940's. The whitefish increase was most dramatic in the latter decade, when the Wisconsin yield peaked at an average of 206 tons per year. Lake trout too improved in yield; but their production in Wisconsin waters of Lake Superior had always been consistently high. The lake trout average for the 1940's was 291 tons per annum, up from 257 tons during the 1930's. All of this improvement in the volume of money fish doubtless could be attributed mainly to the widening of knowledge concerning the life cycles and feeding habits of these fish, from fingerlings to spawning adults.⁷⁰

Despite the advancing degree of sophistication in scientific methods for replenishing fish populations, there were still some puzzling blank spots in the scientists' knowledge. The most intriguing mystery was the ebb and flow of lake herring production. From 1908 onwards, when regular tabulation of Lake Superior statistics began, there was a steady, but broken, increase in the annual yield of lake herring. The most noticeable decline in herring production for Lake Superior was in the decade of the 1920's. But when herring reappeared in greater numbers thereafter, no-one could offer any explanation, such as hatchery replenishment, since there was none, for the revival; The only sources of evidence were the observations of the commercial fishermen. Emory Jones of Cornucopia thought there was an unknown cyclical flow relating to the reproductive system of the herring. Other fishermen speculated that November storms would protect the herring from overfishing in any given year, thus allowing the adult fish to recuperate and spawn for an extra season. It was thought, as well, that storms forced the herring to change their spawning grounds, and thus be more abundant in locations where they had never spawned before. This migration seemed to apply more to herring than to trout or whitefish, since the two money fish did not range over as wide a geographic area as the herring.⁷¹

New puzzles were added to the herring question in the mid-1950's when the little fish started to disappear as precipitously as the whitefish and lake trout. But unlike these valuable fish, the herring were too small to be victimized by the lamprey eel. So there was no visible cause for their demise. Once again speculation was rampant: most commercial fishermen blamed the herring disaster of the 1950's on smelt, who had first become visible in Lake Superior in the 1930's. According to this hypothesis, the ever increasing smelt were feeding on the ova of the herring. Emory Jones thought that the dumping of taconite tailings along the Minnesota North Shore was an adequate explanation for herring decline. Later in this study we will treat briefly the more scientifically based hypothesis concerning this problem.⁷²

During the 1930's the various Wisconsin fish hatcheries engaged in a vigorous struggle to replenish the favorite food fish of the lake country.

There were a number of these hatcheries around the state, and most of them had the responsibility to look after the game fish in the thousands of smaller lakes scattered throughout Wisconsin. Thus even the hatchery at Salmo near Bayfield provided fingerling german brown and brook trout for streams and small lakes. But Salmo also contributed several million lake trout fingerlings yearly to Lake Superior. Both the Bayfield Fish Company (H.W. Elmore), the Booth Fish Company and the Boutins donated their boats and crews free of charge to perform this service.⁷³

The State of Wisconsin was also experimenting with legislative methods of conserving commercial fish during those years. Sometimes, when the new laws were explained to Bayfielders, a stringent interpretation would throw a scare into Lake Superior fishermen. Once, in 1930, the Ashland Press told its readership that ice fishing was now banned in Ashland County waters. A closer reading of the text of the new law and a clarifying statement from the state conservation commission revealed that the ban on ice fishing applied only to inland waters and not to the surface of Lake Superior.⁷⁴

Bayfield fishermen were always active in defending their interests. When problems were greatest, they formed ad hoc organizations and sent delegates to state or regional conventions on fishing. In April of 1928 35 fishermen met at the Bracken Hotel in Bayfield to select two delegates to attend a regional meeting to be held in June either at Milwaukee or some other place. The organization, calling itself the Northern Wisconsin Commercial Fishermen's Association, had members who came from as far as Houghton Point on the east to Port Wing on the west. They elected J.O. Bodine to represent the pound-net fishers and Charles Benson to represent the gill netters. The regional meeting had been called by Governor Green of Michigan and was actually held in Two Rivers, Wisconsin instead of Milwaukee. Henry O'Malley, the U.S. Fish Commissioner was also in attendance as were Canadian representatives. Every state adjacent to any of the Great Lakes sent delegates. The Bayfielders were aware that other states had stricter laws at the time on the taking of lake trout and whitefish. Wisconsin, for example, permitted the taking of twelve-inch trout and thirteen-inch whitefish. Their

neighbors, Minnesota and Michigan, did not allow the netting of such small money fish. Two effects of talking in assembly with fishermen from other states was to impress on the Wisconsinites the necessity for uniformity of legislation and the necessity for recognition that the taking of such "small" fish would mean the eventual destruction of their livelihood. The Wisconsin fishermen went into the meeting seeking a pound and a half minimum limit on trout and whitefish; but speaking with fishermen from lakes that had already suffered a serious diminution of trout and whitefish supply, convinced them that weight-measure was not a practicable means of control, and that they would have to increase the minimum length by several inches. Within three years the Wisconsin legislature would accept a minimum of 17 inches for lake trout and 16 inches for whitefish.⁷⁵

The meeting that was eventually held in June of 1928 at Two Rivers, Wisconsin was very much a fact-finding seminar at which scientists, legislators, administrators and members of the Wisconsin Conservation Commission plied the fishermen with inquiries about the details of their profession and their preferences on legislative modifications.⁷⁶

The resultant Wisconsin legislative effort was nevertheless haphazard and uncoordinated with neighboring states; but during the 1930's the first extensive effort was made to base fish conservation laws on scientific methods. Dr. John Van Oosten of the United States Department of Fisheries was in the vanguard of this movement and he had attended the meeting at Two Rivers. Van Oosten conducted experiments that lasted several years, using the waters of several of the Great Lakes to ascertain the truth behind popular theories and fishermen's hypotheses. Van Oosten wrote up the results of his researches for a number of professional journals, such as the Transactions of the American Fisheries Society as well as for government documents. In time, his method of experimentation became the rule rather than the exception. Studies were done on every major species of food fish to ascertain their spawning habits, feeding practices, and general life cycle.⁷⁷

Since this academic and legislative work was of such commanding importance to fishing communities, the Bayfield paper continuously commented on it. In January 1930 the states of Wisconsin and Michigan got together with the U.S. Bureau of Fisheries to conduct an investigation of Lake Michigan's west shore from Kenosha north. The knowledge gained would doubtlessly benefit Lake Superior fishermen as well. Most of the \$24,336 was provided by the Federal agency, and Dr. John Van Oosten was the scientist in charge. An article on the subject in the Bayfield paper stated that Van Oosten had previously completed a similar survey of Lake Erie.⁷⁸

Van Oosten stated his eleven-fold objectives to the newspapers:

- "1. experiments to determine the size of net meshes for chub net fishing, and the effects of various sized meshes on immature lake trout and immature chub population. This experiment will be very detailed and will determine the percent by the weight of fish and number, and will also determine if possible, the correct size mesh for chubs which will take less than 10 percent trout. The direct purpose is to recommend the most satisfactory mesh.
2. experimental chub nets to determine the effect of the method of stringing on the taking of trout;
3. experimental nets to test newly developed net preservatives;
4. small mesh nets to locate yearling trout;
5. to correlate depths, temperatures, bottom materials, and chemical conditions of water with the distribution of trout and chubs;
6. to study the food of trout and chubs;

7. to study races or species of trout;
8. examine fishermen's bait nets to ascertain percent of commercially important immature chubs, wastage of chubs valuable as food for trout;
9. examine destruction of immature trout by hooks;
10. examine lifts of commercial chub nets as to species and maturity;
11. tagging trout and whitefish to study migration."⁷⁹

All of the above experiments were intended to provide data for the several states in their commercial fishery legislative programs. The state of Wisconsin sought input, as well, from all of the commercial fishermen of the Wisconsin shore of Lake Superior. In January 1931 the Wisconsin conservation director, Paul D. Kelleter presided over a meeting with fishermen at Bayfield. The state officials were mainly interested in learning whether there was a need to restrict the present open season for lake trout and whitefish, or whether there was any need to change the mesh sizes for pound and gill-nets.⁸⁰ The Bayfield area was an ideal location to make such an inquiry, since more than eighty percent of all the nets in Wisconsin/Lake Superior waters were owned and set by Bayfield fishermen.⁸¹

The fishermen at Bayfield were surprisingly conservation-conscious in their proposals to the state: They urged that the minimum size of lake trout be increased to 17 inches and whitefish to 16 inches. Additionally they wanted the mesh of gill nets for lake trout and whitefish increased to 4-1/4 inches. Other resolutions concerning mesh size of gill-nets for herring tended in the same direction. If such gill-nets for small fish were lowered in water that provided more than 10% of small lake trout, or whitefish, the fishermen was to cease fishing those waters. Similarly the fishermen wanted submarine pound-nets banned, a closed season on lake trout and whitefish during their spawning seasons, and that the dumping

of ash, oil, cinders or other deleterious substances into the waters of Lake Superior be prohibited. Regarding the anti-pollution proposal, the fishermen also sought uniformity among the Great Lake states and coordination with the Federal government. The fishermen were easy on themselves regarding commercial fishing licenses, proposing that such licenses cost only a dollar and apply to men older than eighteen years. The conservation department accepted these proposals from the fishermen and incorporated them nearly verbatim in the bill before the Wisconsin legislature.⁸²

In July of 1931 an issue of the Bayfield County Press announced the passage of the commercial fisheries bill practically as proposed by the Apostle Island fishermen the previous January. Another article in the same paper mentioned an attempt in 1931 to regulate Wisconsin fish and game regulations via a standing commission. The article pointed out that the average legislative session in Madison dealt with hundreds of bills relating to fish and game. The 1929 legislature, for example, analyzed 225 bills affecting fish and game, about one-seventh of the bills introduced in that session. The establishment of such a commission would be both time and money efficient, eliminating piecemeal regulation by lawmakers who were, for the most part, unfamiliar with fishery problems. The author argued that Wisconsin already had an Industrial Commission that functioned very well; and that a similar conservation commission could "make rules and regulations relating to fish and game, setting up a certain standard for them to follow which would conserve our fish and game supply and insure our citizens continued opportunity for fishing, hunting and trapping." All such rulings would be subject to the approval of the governor and subject to review by the courts with authority to set them aside.⁸³

This commission would also be required to respond to popular petition, and through hearings, could correct abuses and adjust complaints. The law, as drawn up, was imitative of other states' practice, and a major part of its intent was to bring consistency and continuity to fishing regulations among the states. The Wisconsin Conservation Commission was eventually given such powers during the

1930's to issue day-to-day or season-to-season regulations regarding fishing. Nevertheless, as the years passed, fishermen continued to make new proposals for further legislation.⁸⁴

Emory Jones of Cornucopia, in a recent interview, gave a glimpse into the methods used in those days to regulate fishing on Lake Superior. Without remembering the exact time-frame, he related how his fellow fishermen entrusted him with positions of honor, representing them before state legislators. It was either the late 1930's or early 1940's (the Bayfield paper shows that Jones was an association officer during that interval), when Emory Jones went to a meeting in Madison at the start of a legislative session. He was to confer with members of the state Fishery Commission and expected a host of other fishermen to be there conferring with the bureaucrats. To his surprise, he alone, Emory Jones, was the sole advisor to the group. Jones could remember one man in particular, whom he could not identify by name, but was, in Jones' words, "a lawyer who headed the biggest law firm in Madison." This man told Emory: "You've been fishing for a long time, so you ought to know what should be done. Just tell us what you want."

In summary, Jones told the Madison lawyer that the mesh of the various nets was the major item to regulate, as mesh-size determined fish-size. Jones told the lawyer that net-width did not matter so much, since, wide or narrow, a fisherman could reel in only so many linear feet of netting per day. And the unwieldiness of a wider net worked against itself, since then the fisherman could not lower as many linear feet in a day's time. The same limitation of man-hours-per-day restricted any fisherman in the number of linear feet of netting he could manage. Similarly, the very size of a man's boat controlled the number of boxes of nets he could hold. There might be enough space for the clean nets, but if the catch was heavy, he might not be able to reel in all of the netting with its heavy burdens. Frequently during the short herring season, this problem became a reality: a fisherman might not be able to walk around the interior of his boat, since the space was taken up by nets filled with fish. And then he would have the additional logistical problem when he reached port, of having his family or hired help pick the laden

nets of their burdens before the fish would spoil. So Jones gave the appropriate net mesh numbers to the commission members, and the resultant legislation followed his ideas almost exactly.⁸⁵

Both the Hokensons and other commercial fishermen of the Apostle Islands region spoke of the close cooperation between themselves and state officials during the 1930's and 1940's in the gathering of spawn during October and November of each year. Trout and whitefish were protected by a closed season from late September to mid-November. The state utilized a system of special permits to catch specimens of spawning fish during the closed season.

The volunteer fishermen who took spawn had to make several preliminary net-lifts to discover the day when the whitefish and trout were ready for spawning. All of the fish caught in the early lifts had to be returned to the lake, if they were still alive. Gill nets usually killed the fish, and these would be kept. So most of the spawning samples were taken with shorter lengths of gill net so as not to deplete the stock during the spawning season. Finally, when the fish were mature for spawning, the fishermen "milked" the females for ova and the males for milt. Ova and milt were mixed together in a container. Hatchery personnel supervised mixing procedures, but after years of practice, most commercial fishermen of the area knew the practices as well as a trained hatchery man. The fishermen were allowed to keep the fish which had provided offspring, since these mature creatures had surrendered the product for which they had been taken. One year, 1938, a newspaper article told how Evar Bodine caught 1200 pounds of fish under special permit.⁸⁶

G. The 1940's and Early 1950's:

The 1940's were indeed the halcyon days for the Apostle Islands fishery. Whitefish averaged 206 tons per annum in the Wisconsin waters of Lake Superior, more than double the annual average for the entire twentieth century up to that time. Lake trout had a similar record: 291

tons per annum, 44% higher than the typical year. Lake herring were the biggest bonanza of all: The average annual tonnage for Wisconsinites of Lake Superior was 2727. That figure was also nearly double the average yield of the small fish during a typical twentieth century season.⁸⁷

Part of the explanation for the extraordinary fish yield was the spur of patriotism during the war years. Younger fishermen could be exempted from the draft for working in a crucial food-producing industry. The profit incentive was not wanting either, since increased demand has always encouraged higher prices. Already for the 1941 herring run, Booth Fisheries had revived an older attempt to can the small fish. Salted herring were sealed in six-pound tin cans rather than the traditional small wooden pails. Of course this was only a small portion of the total yield. But it demonstrated the diversification and modernization of methods on the Bayfield Peninsula.⁸⁸

The 1942 herring run saw three companies functioning at Bayfield: Booth Fisheries, Silver Moon Foods (the successor to H.W. Elmore's Bayfield Fish Company), and the Hadland Fish Company. Hadlands added new machines that would scale, behead and fillet the herring. The efficiency of these machines hinged upon the dexterity of the operators who had to learn the art of speedily feeding fish into them. Despite these new methods, storms interfered toward the end of the season, and herring production in Wisconsin waters of Lake Superior declined by nineteen percent for 1942 from the previous boom year of 1941.⁸⁹

The 1940's saw Bayfielders utilizing still other modernized equipment for fish processing. Joe Le Bel of Bayfield came up with a conveyor belt system that would transport herring aboard the fishing boats to fish boxes on the docks. Unfortunately Le Bel's device still required hand laborers who worked at tables beside the conveyor belt, picking the herring from the mesh of the gill nets. In 1947 Le Bel added another "endless belt" that carried the small fish at the correct angle for an operator to feed it into a beheading machine and a device that removed the intestines. Another mechanism split the herring longitudinally along

the back bone and could process five tons of fish per day. In 1949 Le Bel moved the machine inside to the warm interior of his boat factory and boasted that seven operators could dress a hundred fish in a minute with it.⁹⁰

A 1946 Bayfield Press article provided a thumbnail sketch of the history of the Apostle Islands fishery. Most of the information has been incorporated in this narrative, but the changes in the several Bayfield fish companies gave an indication that economic prosperity was not guaranteed in the profession. Booth Fisheries Corporation was the oldest and longest survivor in 1946, having then been in business for 65 years. The S.L. Boutin Company and the Bayfield Fish Company had been succeeded by the Hadlands and the La Pointe Fisheries respectively. The newest company was Otto L. Kuehn's. These companies frequently suffered the fate of their client fishermen who used the companies to get credit for nets, boats and other equipment. All of them, both capitalists and lone fisherman alike, had difficulty getting insurance that would protect them from marine disaster, storms, or other unforeseen events. Most professionals who followed the fishing enterprise agreed that the fishery was a good hedge against recession or depression. And it had a few subsidiary industries such as box factories, cooperage businesses, dry docks, boat body shops, machine shops, a frozen locker plant, a float and lead factory, and bulk storage gas and oil companies. Additionally, the herring season gave a thousand people seasonal work; 250 men were employed the year around with the fishery; and there were between 75 and a hundred fishing vessels employed around the Apostle Islands region. All in all, during 1946, the local fishery generated as much as a half million dollars in annual revenue.⁹¹

The Hokenson brothers, of course, shared in this general prosperity of the fishery in the 1940's and early 1950's. Besides the retrospective recollections of Roy and Eskel about this period of their lives, we have one contemporaneous document that fills in some details about the thriving state of their occupation. It is from an article in the October 1953 issue of the Wisconsin REA News. Because of the specificity of many of its factual notations, it is worthy of quoting in toto:

"SCRAPBOOK OF A FISHERMAN'S WIFE

MRS. HOKENSON'S ALBUM RECORDS FISHING LIFE ON LAKE SUPERIOR

A family scrapbook is, of course, a record of a family's work and play. Mrs. Leo Hokenson's photo albums, in addition to chronicling the high-chair to high-school progress of daughter Elaine and son Robert, tell the story of an occupation which is unusual to 99 percent of state electric co-op members.

For the Hokensons, who live on Rt. 1, Bayfield, are fishermen, and have been for the past 27 years. It's a family operation, with brothers Leo, Roy and Eskel. Leo's son Robert and Eskel's son Gary, all pitching in. The Hokensons use pond [sic] nets to catch the Lake Superior whitefish and trout off Sand Bay.

"Pond nets are twine traps which corral the fish and hold them, alive and undamaged, until the men raise the nets," explained Mrs. Hokenson. "We like them better than gill nets because the fish tend to fight these and frequently end up in bad shape."

Fishing season starts for the Hokensons as soon as the ice leaves Lake Superior. The nets, which have been tarred so they won't rot, hang from poles set in about 40 feet of water. Twelve nets are being used by the Hokensons this year. A pile driver built on a raft sets the poles each spring. They are removed in the fall by a winch and stored on the beach for further use.

"The poles have to be made of peeled hardwood, and it is getting mighty hard to find trees which are thin at the bottom but still tall enough to be used," remarked Mrs. Hokenson.

Fishing is done with two boats, the large, diesel-powered "Twilite," and a smaller boat which the men tow behind the "Twilite"...The small craft is used when the fishermen go out over the pond nets to lift them.

As soon as the fish are brought to shore, they get packed in ice for a quick trip to nearby Cornucopia. From there they are shipped by truck to Ashland, and then on to a dozen-and-one markets in the Midwest.

In the past, the Hokensons have fished for herring, but, because the season runs through November and December, the job is considerably more dangerous than summer fishing. The boats ice over, and severe storms have a way of blowing up suddenly.

"Sometimes when the men were fishing herring, they didn't know whether or not they would get back to shore," Mrs. Hokenson said.

Countless factors make up the difference between a good and bad fishing year. Back in 1944 the fish came in so fast that thousands of dollars worth were taken out of Sand Bay in two weeks time. For the last few years, however, fishing has been poor. Mrs. Hokenson gives several reasons for this.

Violent thunderstorms of the past two seasons have tended to keep the fish away from the shore and the nets. Last year, a steady wind brought the sewage from Duluth's St. Louis river straight into the Sand Bay area. Floods in the Bayfield vicinity this season clouded the shore water with red silt.

Mr. and Mrs. Hokenson have seen bad years come and go. Next season may bring ideal conditions and a heavy run of fish. In the meanwhile, they are counting their blessings, which include a new home with electricity near Sand Bay. The

Hokensons have been members of the Bayfield Electric co-op for the last six years and Leo is on the board of directors."⁹²

The article was accompanied by six photos, depicting various facets of the fisherman's trade, including a picture of the three Hokenson brothers on their dock, a shot of Eskel's son Gary in a makeshift boat, a picture of ice cutting on the lake, a shot of ice-loading into the ice house, a photo depicting the lifting of a pound net, and a shot showing Jeanette Hokenson (Leo's wife) with her granddaughter Nancy in the new home financed by the fishery.

H. The Mid-50's and the Decline of the Fishery.

Despite the thriving condition of the Lake Superior fisheries during the 1940's, there were ominous signs that became visible already during the previous decade. Fishermen in the other Great Lakes noted the presence of the sea lamprey (*petromyzon marinus*) during the early 1930's and the first recorded instance of the lamprey in Lake Superior was 1946.⁹³ A speculative guess theorized that the sea lamprey migrated through the lakes either by attaching themselves to the hulls of upbound ships or by swimming. The fishermen would either find the parasites attached to the bodies of whitefish and lake trout when the money fish were netted, or find scar-tags where the predators had been attached. The nature of the lamprey infestation was such that the parasite population tended to multiply at such a rate that it would eventually destroy totally the species of fish it attacked. Catches of lake trout and whitefish nosedived dramatically in all of the Great Lakes where the lamprey spread. Lake Ontario's production declined steadily during the 1930's. Lakes Michigan and Huron were decimated during the 1940's. Lake Erie had lost its lake trout population in the nineteenth century, but it had a dramatic drop in whitefish production in the mid-1950's, as did Lake Superior.⁹⁴

The gathering gloom among fishermen galvanized them and political agencies into action when the extinction of commercial fishing on the Great Lakes became a real possibility during the 1950's. At first the

cooperation between Americans and Canadians was informal, such as in the formation of the Great Lakes Sea Lamprey Committee in 1946. This latter organization merged with the Great Lakes Lake Trout Committee to form the Great Lakes Lake Trout and Sea Lamprey Committee in 1952. The following year this organization changed its name to the Great Lakes Fishery Committee. In 1953 the Canadians set up the Great Lakes Federal-Provincial Fisheries Research Committee. But the real culmination of all this worry and concern was the establishment of the international Great Lakes Fishery Commission in 1953. This organization was well funded to do effectual research and to implement procedures found necessary by research.

Experiments for lamprey control ranged over a wide variety of methods, including mechanical traps, electric barriers and chemical additives to spawning streams draining into the various lakes. In studying the life-cycle of the lamprey, scientists narrowed down the number of streams feeding into Lake Superior that were suitable for lamprey reproduction. This reduced the number of suspected tributaries from 1293 to 267. 97 of these streams received intensive concentration from electric barriers. Some of these barriers were operated for as much as eight years, from 1953 to 1960. But the most effective countermeasures were discovered to be in the chemical realm. During the 1950's more than six thousand different chemicals were tested against the lamprey larvae. Out of this group, ten chemical compounds with selective toxicity were found to be effective antidotes for the larvae. The final choice, and most effective agent, was found to be 3-trifluoromethyl-4-nitrophenol (TFM). Even after discovering the effectiveness of this compound, biochemists had to determine by bioassay the minimum concentration necessary to kill all lamprey larvae and the maximum concentration that could be used without causing significant mortalities of other fish. Because of its commercial value, the lake trout was used as the test-fish together with the lamprey larvae. Eventually, in 1958, the scientists came up with successful formulæ. Because of variations in stream alkalinity or acidity, the proper ratio of TFM-to-water differed from stream to stream. Occasionally there was a mishap and valuable fish were killed. But by 1961, after tests in certain

select streams, the lamprey was found to be virtually extinct. Across the board, scientists believed they had eliminated about 86% of the spawning lampreys by 1962. Lampricide was used in 116 of 119 Lake Superior tributaries known to contain sea lampreys. When the program was found to be so successful, scientists concluded that fewer and fewer treatments of streams would be necessary; yet a few select streams were kept under active treatment indefinitely. The beauty of the technique was that it could be revived at a moment's notice when lamprey abundance was deemed a threat to the fishery.

When the sharp drop in sea lamprey numbers became apparent in the spring of 1962, state officials in Michigan and Wisconsin closed down commercial lake trout fishing in mid-1962 except for fishing by permit to obtain the number of fish needed for biological and statistical data. Tabulation of data in Lake Superior between 1963 and 1970 reveals that lake trout population had almost completely recovered by the latter date. Despite this, state officials still restrict catches of lake trout in Wisconsin waters. This writer noted when accompanying a pound net fisherman in the summer of 1978 that the fisherman was obliged to tag each and every trout with a state-supplied metal label until the tags were used up. Then his quota was exhausted and he was no longer authorized to take lake trout for the rest of the season. The available published statistics for the years 1963 to 1971 reflect this tight control by showing that commercial fishermen in Wisconsin waters took only an average of 22 tons of lake trout, when the average for most of the twentieth century had been 198 tons; and one interval, 1936 to 1956, averaged 269 tons per annum.⁹⁵

Lake whitefish catches did not improve as rapidly as for trout during the same interval, but the removal of the sea lamprey as a threat did permit whitefish recovery. Since controls were not as stringent on whitefish catches, the yield for them was greater than lake trout for the most recent years that we have statistics available. Thus, from 1961 to 1969 Wisconsin Lake Superior fishermen averaged 37 tons of whitefish per annum, as compared with 84 tons per annum in the twentieth century, and 166 tons per annum from 1936 to 1956.⁹⁶

Another puzzling change in the Lake Superior ecosystem was a decline in the lake herring population at the same time that the lamprey made its inroads during the 1950's. Commercial fishermen simply noted the correlation between the rapid multiplication of the rainbow smelt (*Osmerus mordax*) population and the decline of herring, and concluded to a cause-and-effect relationship. Scientists have learned that the connection is a bit more sophisticated than smelt eating smaller or ovular herring. Van Oosten did a study of the dispersal of smelt through the Great Lakes in 1936, and at that time it was by no means patently clear that the smelt was a threat to the life cycle of any other fish.⁹⁷ Yet Van Oosten was suspicious of tinkering with the natural environment in any body of water. In another article during 1937, he wrote:

"The last item that I wish to mention briefly is the introduction of exotic forms. Such introduction can upset and complicate the best planned management program. We are at present undergoing a bitter experience with the introduced smelt in the Great Lakes and the time has arrived when some definite decision must be made concerning this species. Shall we attempt to exterminate it and bring forth curses on our heads from the sporting populace, or shall we protect the species, permit the introduction of small meshed gill nets to take the adults and threaten the existence of the larger and more valuable native species by wiping out their young? I believe it would be good policy never to introduce into the Great Lakes an exotic form but rather to cultivate the highly prized native species of which there is no dearth of variety."⁹⁸

Von Oosten's warning went unheeded and the rainbow smelt multiplied beyond belief. Only on Lake Michigan did the commercial fishermen take an early interest in catching smelt. They started harvesting the sharp-jawed small fish in volume starting with the 1934 season. For this reason Lake Michigan smelt never multiplied to the extent of the other lakes.

Elsewhere commercial fishermen had mostly contempt for the smelt which they considered a "rough" fish, fit only for fertilizer or animal food. But during the 1950's the rest of the Great Lakes fishermen entered the fray when the abundance of smelt became so obvious as they intruded into other types of netting.

Lake Superior fishers first actively pursued smelt in 1952. The crop expanded year after year until 1964 when more than a thousand tons were taken from the lake. About half of this amount was caught in Minnesota waters. Since then, it is difficult to guess accurately how great smelt production is on Lake Superior, since sport fishermen may be taking greater numbers of smelt than the professionals. The reason for this boomtown type craze is that smelt have a short but hectic spawning season in the spring, between April 15th and May 15th, when they swarm along the beaches, practically swamping boats and breaking dip nets and minnow seines. So rabid have the Minnesota amateur "smelters" become, that the city of Duluth has major crowd control problems during the season. One Minnesota DNR official estimated that the 1977 smelt run attracted between 25,000 to 30,000 fishermen, who took in 250 tons of fish during a two week interval.⁹⁹

Commercial smelt fishermen expanded into the business when they discovered that consumers were acquiring a taste for the fish; and in one place a devotee stated that the taste compared favorably with that of brook trout.¹⁰⁰ There were also a number of mink farmers along the Minnesota North Shore who provided a ready market for large volumes of this available fish. In time, the price of smelt became competitive with and even exceeded herring prices.

A few professionals went after smelt with pound nets. One Minnesota fisherman, Milford Johnson, told how he stumbled into smelt fishing when his gill nets became fouled with the little intruders during his quest for herring in the late 1950's. Smelt were so abundant that there were more of them in his nets than the sought after herring. He soon recognized that the process of picking the nets free of smelt was so time consuming as to render the amount of profit nugatory.

The best means of maximizing catch-efficiency for smelt was for him to convert to pound nets. A friend taught him how to construct the pounds; but he had to move to Wisconsin waters where there was a shallow, soft bottom amenable to pound net poles. Once Johnson got into the business, he saw how profitable it could be. A single pound could produce as much as 25 to 30 tons of smelt per day. The only problem was that he could not empty the pounds fast enough. During the twenty day season he was unable to service all of his dozen pounds every day. The mere chore of transferring the fish from the pound to his fishing boat became a herculean labor.

At first Johnson used an industrial track with roller wheels for sliding 25 pound boxes of fish from pound boat to trawler. Scooping was done with dip nets that were inadequate to handle such large volumes of smelt. In time, other smelt fishermen designed a 36 inch power scoop for emptying the pounds. This process cut time consumption to a minimum. The scoop could transfer 15 tons of smelt in four to five hours.

On occasion, the trawler would not finish emptying a single pound, before the ship, filled with smelt, had to return to port. Then a second trip to the same pound became necessary. Even at three cents a pound, the fisherman could turn a \$900 profit from a single day's trip. Regrettably, the smelt run was so short lived that it constituted only a seasonal occupation. Even though a few smelt could be caught the year around, the payoff was mostly concentrated during the spawning season, so as to render pursuit at other seasons unprofitable.¹⁰¹

As has been said, this coincidental increase in smelt and decrease in lake herring continued to puzzle scientists. A 1937 study of smelt in Green Bay, Lake Michigan, by Edward Schneberger, tended to show that smelt were not a threat to lake trout, as no trout fry were found in smelt stomachs. On the contrary, there was evidence to show that the trout preyed on smelt. In fact, more recently, Apostle Islands fishermen say that the taste of trout has deteriorated from the time that trout commenced feeding more on smelt than on herring.¹⁰²

A 1969 study by Burbidge summarized findings by scientists up to that time concerning smelt. His colleagues had concluded as early as 1929 that smelt were: "...an enemy of all smaller fishes, including the young of the commercial species, as well as a competitor for the food of the adults of the larger species."¹⁰³ Another researcher found, in 1930 that smelt consumed, in addition to zooplankton, many of their own young. A variety of studies, ranging from 1936 to 1965, indicated that smelt seldom ate fish, but fed primarily on zooplankton and bottom fauna.¹⁰⁴ Thus the tendency of the evidence over the years leaned in the direction of indicating that the relationship between lake herring and smelt was one of competition for the same type of food, rather than direct predation of one upon the other.

A 1971 study on lake herring in western Lake Superior tended to confirm the above conclusions. In this study, Anderson and Smith concluded that the cause of herring abundance-decline was not due to overfishing nor predation on adult herring by other species, but rather the competition for food in the larval stage of herring development and the over-selectivity of herring larvae for one type of zooplankton, to wit, copepods.¹⁰⁵

Other studies on the herring versus smelt controversy showed that the problem was even more complex and sophisticated, depending upon the relative strength of each species in a certain locale, and the abundance of zooplankton for each species to feed upon; A 1974 comparative study between the Apostle Islands region and the Black Bay region (Ontario, Canada) reached the following conclusions:

"The stock of lake herring (*Coregonus Artedii*) in the Apostle Islands (Wisconsin) region of western Lake Superior has diminished severely during the past 30 yr, and predation by rainbow smelt (*Osmerus mordax*) on herring larvae has been considered a possible cause of this decline. In contrast, the herring stock in Black Bay, (60 km to the northeast), has remained nearly stable despite the presence of large numbers of smelt and high commercial production of herring. Predator-

prey interactions were studied in both areas during 1974. Herring larvae and smelt were about 120 and 3 times as dense, respectively, in Black Bay as in the Apostle Islands region. Substantial predation by smelt on young herring was evident in Black Bay, where 17% of 1196 smelt stomachs examined contained herring larvae. From calculations of the relative densities of the two species, and of the daily ration of the predators, we estimated that smelt consumed 3.3-11% of the herring larvae. Nevertheless, the herring stocks have sustained average historical levels of commercial production. In contrast, no herring larvae were found in the stomachs of 1711 smelt collected in the Apostle Islands region. We conclude that predation by smelt on herring larvae is not the major factor controlling or suppressing herring stocks in either region."¹⁰⁶

Therefore, even though smelt in Black Bay preyed on herring larvae to a considerable extent, this phenomenon was more a function of relative herring abundance than any smelt propensity to dominate herring. Thus, even in Black Bay, smelt were not reducing herring abundance. It is also true, however, that herring outnumbered smelt by a ratio of about forty to one in Black Bay.¹⁰⁷ Having said all this, it still holds true that the best general explanation for the supplantation of herring by smelt is caused by means of the rivalry of the two species for the same food supply, zooplankton. Doubtlessly, selective overfishing of herring enabled smelt to get the edge in certain areas; and, by the same token, future uncontrolled fishing for smelt could help to tip the balance in the other direction in favor of lake herring. In either case, the history of the rivalry between smelt and herring demonstrates the wisdom of Van Oosten's 1937 observation that it was dangerous to tamper with the ecosystems of any of the Great Lakes by introducing exotic forms.

1. The Retirement of the Hokenson Brothers

Needless to say, the decline of the fishery during the 1950's had a profound effect on the lives of the Hokenson brothers. With the other

Wisconsin commercial fishermen on Lake Superior, they first took note of the rapid decline in whitefish production. 1949 had produced one last bonanza year in whitefish yield, when Wisconsin fishermen had the best yield on record, 767,000 pounds. The following year was not a bad one, but production declined by 32%. Then, in 1951, the inroads of the lamprey became ever more apparent. The yield was 183,000 pounds, being only 24% of the peak production two years earlier. The whitefish rebounded briefly in 1955 and 1956 when catches exceeded half a million pounds each year in Wisconsin waters. In 1957 the yield fell to nearly half the previous years' total, and in 1958 the Wisconsinites took only 88,000 pounds of whitefish.¹⁰⁸

The destruction of the Lake Superior lake trout was more sudden. For twelve years, from 1945 till 1956, lake trout production was nearly level on Lake Superior Wisconsin waters, averaging about 518,750 pounds per annum. Then, in 1957, lake trout yield dove precipitously to 287,000 pounds. To this day lake trout production has not wholly recovered from the predation of the sea lamprey, even though catches have been somewhat restricted by bureaucratic controls after the defeat of the lamprey. The best year since the lamprey, for example, was 1977 when 229,000 pounds of lake trout were caught in the Wisconsin waters of Lake Superior.¹⁰⁹

The near disappearance of these two money fish from Lake Superior played a large role in driving the Hokenson brothers into retirement. As we have seen, the brothers had drawn back in their participation in the hectic fall herring season. Their advancing years and the hazards of foul weather late in the year, first compelled them to withdraw from the competition for herring. As fortune would have it, herring production also began a gradual decline during the mid-1950's.

The brothers were rather philosophical about the decline of the fishery; but a more difficult blow for them to sustain was the sudden and unexpected death of one of their number, Leo Hokenson, on November 19, 1957. Although Leo was 61 years of age at the time of his passing, he was a relatively young and vigorous man at the time of his death, and

one can detect the closeness of the three brotherly comrades when one hears the two survivors speak of his departure. His illness came unexpectedly and was apparently misdiagnosed. In two days time, before anything effectual was done for him, Leo was gone. Both Roy and Eskel referred to him in the fondest terms as a most beloved brother.¹¹⁰

After the death of Leo, Roy and Eskel Hokenson continued to fish commercially for a few more years before they terminated their fishing endeavors. As yields of whitefish and lake trout continued to drop, the brothers selected their retirement moment in mid-1962 when the Great Lakes Fishery Commission closed down commercial fishing altogether. The bureaucracy was trying to allow the fish population to rebound from the scourge of the lamprey; but the brothers were sufficiently advanced in years to call it a career. Eskel was then seventy years of age and Roy sixty-three. The brothers had saved well for their old age and each owned a home close to Lake Superior, unencumbered by debt. Roy's homestead is within the Apostle Islands National Lakeshore right at Little Sand Bay, and he and his wife Irene have lifetime tenure adjacent to the Hokenson Fishing Dock property. Eskel and his wife Florence live two miles away on the original Peter Hokanson homestead, enjoying a well earned retirement.¹¹¹

J. Recent Conditions Relating to the Apostle Islands Fishery

The Apostle Islands fishery, as has been stated, continued its slow controlled revival in the years that followed the sea lamprey infestation and the smelt competition with herring. From 1969 to 1977, whitefish production has averaged 106 tons per year in Wisconsin waters, which is better than the average annual yield for this century. Lake trout yield has not been as good, averaging 65 tons per annum from 1970 to 1977; but quotas are still imposed on that variety. Lake herring production continues to go down, and the real remedy for its revival has not as yet been discovered or applied. The average annual yield for herring in Wisconsin waters of Lake Superior has been 84 tons per annum, and the latest available year-statistic, 1977, indicates that only 37 tons were taken

by Wisconsinites. If the solution to the herring problem lies in the removal of rainbow smelt from the lake, available statistics give no comfort. From 1970 to 1977 an average of 197 tons of smelt per annum have been taken from Lake Superior by Wisconsin commercial fishers. But the appeal of smelt at the market may be declining; since the figures for 1976 and 1977 indicate that only 105 tons and 127 tons respectively, were taken commercially in those years.¹¹² Thus the relative strength of the various species in Lake Superior waters continues to fluctuate, as it has in the past; and we know that man has, and will continue to have, a role in changing the relative balance in the ecosystem of these fish species of the lake.

A 1975 article in the Ashland Daily Press agonized over the mysterious decline of lake herring in Lake Superior. Bruce Swanson, a spokesman for the Wisconsin Department of Natural Resources, (the DNR) admitted that they did not as yet have a scientific explanation for the herring's disappearance. He stated that the U.S. Fish and Wildlife Service and the Great Lakes Fishery Commission were both doing extensive research on the subject, but had no satisfactory solution to date. Swanson repeated all of the old hypotheses about smelt predation on herring fry or larvae and the rivalry between smelt and herring for food; but said that these theories were inadequate.

The only new possibility mentioned in the article was a discovery that some herring were afflicted with parasites and had cysts in their stomachs. If this problem was not clarified and a remedy imposed soon, the herring would disappear altogether. The newspaper article was interesting as well because it indicated that the several political entities near Lake Superior had drifted back into their old ways of imposing a variegated rather than a uniform control program: Ontario had poundage quotas on herring; Minnesota had a fixed closed season on the small fish; and Michigan had both quotas and a closed season. Wisconsin was experimenting with small closure areas, but there was very little herring fishing going on in that state. Yet, despite the lack of uniformity, all of the controls functioned in the direction of conservation. The article writer stated, in addition, that there really was no overfishing of

herring, both because it was unproductive to do so, and because the overhead cost for equipment and boat operation was prohibitive. Furthermore, if overfishing was occurring, the average age of the caught fish would decline; and this was not the case. DNR research showed that there was a normal proportion of older fish present, but that the numbers of all year-groups were decreasing equally.¹¹³

Because of the declining state of the Lake Superior fishery in recent times, the debate over solutions has sifted out to a rivalry among interest groups, the principal ones being Native Americans, sport fishermen, and commercial fishermen. Coincidentally, a correlative discussion arose concerning contaminants or pollutants in the lake, because this subject affected all three groups, or anyone who wished to benefit from the fish in the lake.

During the prosperous years of the fishery, as we have seen, the Native Americans, in this case Chippewa, were lost from view since they were never numerous and were not considered a threat for depleting the abundant supply of food fishes. But when the fish became scarce, anyone who fished Lake Superior was considered a competitor for a sparse and valuable commodity. As we have also seen, the Chippewa did assert, from time to time, their special fishing rights under the Treaty of 1854. Though they were often challenged in the assertion of these rights, they usually won when the issue went into the courts. Despite this, no really precise or careful delineation of Indian prerogatives was ever drawn. Then, in the early 1970's during the time of fish scarcity, several court challenges took place. The most relevant instance to this discussion was Richard Gurnoe's claim to a right for Native Americans to fish within the one-mile limit of Lake Superior waters adjacent to the Red Cliff Reservation. Gurnoe won his case, on appeal, with the State Supreme Court; but even here, the court averred that the interest of conservation or fish depletion placed a limiting factor even on the Indians.

Gurnoe and his fellow Chippewa fishermen, of course, contended that their operation was so small as to be no menace to the fish supply. At a 1975 symposium held at Northland College in Ashland, Gurnoe briefly described the nature and extent of Red Cliff Indian fishing:

"We are known as skiff fishermen. We use a 12, 14 or 16 foot boat. What has hurt us is the cost of boats, nets, workers, prices.

The Indian fisheries is [sic] not what it is blown up to be. We have only two boats well enough equipped to catch all kinds of fish. There are 16 individual fishermen and most of them (11) are part-time. I had to take a part-time job driving a bus to help meet expenses. We are using poor quality nets with a poor production return. We do not have depth sounders. So, we can't make it fishing. It costs about \$100 a day for us to fish. Mother Nature sure can be cruel to commercial fishermen. As far as us making it we can't. It's just too tough with small boats and poor nets."¹¹⁴

The last topical discussion of the day at the Northland symposium dealt specifically with the Native American Treaty rights. Different speakers dealt with the legal background, the historic cases and law, and the position of the Wisconsin Department of Natural Resources. The consensus of the discussants was that the Indians were also bound by the conservation features of laws regulating the fisheries, but that state agencies had not made their case to demonstrate that the Native Americans had indeed substantially depleted fish supplies. Surprisingly, the majority admitted that the Chippewa legal position was stronger than anyone else's, in that the Indians could assert a bona fide legal right to fish, while the others were only pleading for a "privilege". John Wiley, Director of the Wisconsin Judicature, asserted that, "based on a recent federal court decision, they would have to eliminate sports fishing, then non-Indian commercial fishing, before eliminating Indian fishing."¹¹⁵ In another forum, interrogating Eskel Hokenson on this question, at his home, the present writer learned that many commercial fishermen felt indebted to the Chippewa for asserting their fishing rights. For, as Eskel Hokenson said, if the Indians had not made an effort to defend their right to fish, no one would have been able to inspire an effort to revive the fishery through better management and regulation, restocking, and scientific research.¹¹⁶

The rivalry between sport fishermen and commercial fishermen in recent years has probably been more intense and bitter than any competition between Indians and whites over fishing rights. Probably because of the near-demise of the commercial fishery, sport fishermen claimed a certain ascendancy in the field. They could claim, after all, with a certain amount of persuasiveness, that overfishing was the cause of the present problem; and, since commercial fishermen had brought these things upon themselves, the fish that were left should be reserved for the true sportsmen, who only pursued the finny creatures for the adventure, rather than for the extinction of the fishery. Despite the simplistic nature of this contention, articles appeared in northern Wisconsin newspapers relating the story of the competition between sport and commercial fishermen. The Ashland Daily Press used an Associated Press release out of Washington in late 1977 to summarize the conclusions of a General Accounting Office report on this subject. The report painted a gloomy picture of fishery prospects, mentioning that the commercial fishing industry on the Great Lakes had declined by 83 percent since 1930, in so far as the lakes once had 5,284 full-time and 1,617 part-time commercial fishermen; but now had only 137 full-time and 1,043 part-time fishermen. The report stated further: "All eight Great Lakes states favor recreational fishing over commercial fishing and have established regulations restricting or prohibiting the commercial catch of certain high-value species desired by recreational fishermen."¹¹⁷

The GAO report explained that it was the planting of exotic species such as coho and chinook salmon during the late 1930's that drew recreational fishermen in such numbers to the Great Lakes, and made them, in time, a lobbying force of considerable influence. The report also developed the theme of contaminants in the lakes. Residual deposits of certain pesticides were discovered in the fatty tissue of several food fishes; and adverse media publicity tended to tarnish the image of the once wholesome fishery products. Naturally, this summation of the fishery's ills included mention of overfishing, the depredations of the sea lamprey, and the difficulties of hatchery replacement of fish stocks. In the latter problem, hatchery people were compelled to confess that artificial reproduction of food fish was not as efficient as natural

reproduction, since the hatchery varieties were protected from predation in a sheltered environment and often were unable to fend for themselves among the hazards of the Great Lakes environment. It took several generations of acclimitization for the hatchery-bred fish to develop their natural defenses against predators.¹¹⁸

The Bayfield newspaper, of course, expressed more concern for the welfare of the commercial fishery than did other regional papers. One or the other article in its pages argued in favor of the professionals over the sportsmen since the former were providing a necessity of life, while the others merely fished for their own amusement and recreation.¹¹⁹ The Bayfield County Press therefore lobbied against any state legislation that seemed inimical to the interests of commercial fishermen. In early 1976, for example, the editor railed against Senate Bill 694, which he characterized as a veiled attempt to outlaw the use of gill-nets, which presently produced about 69% of commercial fish value. The general outline of the bill would empower the Department of Natural Resources to allow fish harvesting only by contracts to be administered by a new body, the Great Lakes Fishery Council. One feature of the bill would ban gill-nets above sixty fathoms. The editor noted that most fish were caught in less than fifty fathoms of water and that the proposed license fees would be exorbitant. The article noted that the Northwest Wisconsin Sportsmen's Federation sponsored the bill. The editor was willing to concede that some form of "limited entry" to fishing grounds was necessary for conservation purposes, and that presently only twenty commercial fishermen were licensed in the Bayfield area, thus already preventing further overfishing.¹²⁰

Generally Bayfield fishermen objected only to legislation that was unreasonable or overly restrictive. In February of 1976 the Lake Superior section of the Great Lakes Fishery Advisory Council met in Bayfield to discuss the various issues of concern to commercial fishermen. Basically the group favored the continuance of the fish refuge around Gull Island and quarreled only with the size of the refuge. The fishermen were exercised though, that sport fishermen from Michigan waters were invading the Gull Island refuge in trolling boats, thus

depleting the stock of lake trout. The meeting's agenda ranged over the entire field from mesh of herring gill-nets, to poundage quotas on siscowets, linear footage limits on gill-nets, the regulations for marking net-buoys, and whether quota controls on lake trout and whitefish should be exercised through logging-by-weight or tagging individual fish. The Bayfield members of the council for 1976 were Jack Erickson of Bayfield, Richard Gurnoe of Red Cliff, Wilfred Peterson of Bayfield, and Roy Maday of Bad River. Ron Poff was present at the meeting, representing the Wisconsin Department of Natural Resources.¹²¹

One issue the Bayfielders did not discuss was the problem of contaminants in Lake Superior. Granted that the Apostle Islands region was not immediately affected by pollutants, the effects of media publicity tended to frighten fish consumers even on the Bayfield Peninsula. Scientific studies as recently as 1973 continued to defend Lake Superior as one of the cleanest bodies of water in the world. A Great Lakes Fishery Commission Technical Report went so far as to maintain that "Lake Superior is generally regarded as being in a pristine state not far removed from the composition of rain water".¹²²

Yet it was a well know fact for years that industries along Minnesota's North Shore were dumping taconite tailings into Lake Superior. There were also Canadian industries disposing of wastes into Thunder Bay. During 1977 various cities along the Lake Superior littoral reacted to a Federal Drug Administration proposal to lower the minimum standard levels of polychlorinated biphenyls (PCB's) in food fish from the Great Lakes. A Superior, Wisconsin newspaper explained that

"PCB's are present in the natural environment, entering surface waters from the atmosphere and other sources. But they also have been used in a number of industrial processes including the manufacture of carbonless duplicating paper, marine paints, heat transfer fluids, transformer fluids and sealants. Municipal wastes also contain PCB's from industrial and domestic sources."

PCB's are not, for the most part, biodegradable. Hence there has been some danger attached to the methods for safe disposal of PCB's. Recently researchers discovered a secure and economical means for incinerating PCB's.¹²³

The FDA proposal regarding PCB's was to lower the standard from five parts per million (ppm) to two ppm. Several state agencies from Wisconsin reacted violently to the proposal, pointing out that such a low requirement would effectually destroy commercial fishing in Wisconsin by affecting 75% (by weight) of the state catch. Specifically, on Lake Superior, it would have removed large trout and siscowet from the list of edible fish, and severely impaired the marketability of all other lake trout, whitefish, chubs, smelt and suckers. Anthony Earl, Wisconsin's Department of Natural Resources Secretary sent a strong protest to the FDA, citing the incompleteness of medical evidence regarding PCB's, and speculated that other states adjacent to the Great Lakes would voice similar protests against this radical lowering of standards. Even though the change was not adopted, the publicity surrounding alleged adverse effects from high fish consumption was sufficient to put a damper on fish marketability. The mere instruction to avoid the fatty tissue of fish, or to limit one's diet to a single fish meal per week, was enough to damage the industry. Secretary Earl both pointed out the deleterious economic effects on the State of Wisconsin, as well as mentioned the corrective measures the state was taking. Most particularly, Wisconsin had legislated controls on the proper disposal of PCB's and PCB products.¹²⁴

PCB's were not the only pollutants in Lake Superior causing problems. One study undertaken by the Great Lakes Environmental Contaminants Survey (GLECS) discovered high levels of mercury, DDT, and PCB's in lake trout. GLECS was a joint venture between the Michigan DNR, the FDA, the Michigan Department of Public Health and Agriculture, and the U.S. Fish and Wildlife Service. One suspicious finding of this particular GLECS paper was that these same contaminants did not lodge at high level dosages in the tissue of chubs, lake herring, and whitefish. The study had limited applicability, however, since it included only lake trout taken in the Isle Royale environs. The study

concluded that 75% of these trout exceeded FDA standards for mercury, 50% exceeded the standards for DDT, and 17% exceeded the standards for PCB's. The researchers theorized that the source of the pollution was from Canadian industrial plants adjacent to Thunder Bay.¹²⁵

When the results of the GLECS study were announced in Duluth, Charles Burrows of the Minnesota Department of Natural Resources thought it essential to reassure Minnesotans that the health threat to themselves was minimal, since lake trout were not known for migratory habits. Thus the problem was confined to the Isle Royale region; but it would influence Duluth fishermen not to catch their trout near that island. Despite the felicitous tones used by Burrows, he did pass on the usual warnings that pregnant women, especially, should avoid contaminated fish, that fatty fish were more likely to contain toxic substances, and that restricting one's diet to a weekly fish meal would enhance the margin of safety against accidental poisoning.¹²⁶

As can be seen from an analysis of the current state of the Lake Superior fishery, the industry is burdened by severe problems. Doomsayers and optimists vie with one another in predicting opposite views concerning the future of commercial fishing on Lake Superior and in the Apostle Islands region. Yet the hopeful thought survives, that man, who brought many of these problems upon himself through the advance of technology, may, through new scientific breakthroughs, conquer these obstacles, and revive a fishery that was once a major food supplier for thousands of people around the country.

CHAPTER III FOOTNOTES

1. Baldwin & Saalfeld, Table 95, p. 146.
2. Ibid., Table 98, p. 150; Table 100, p. 153.
3. Ibid., Tables 98,99, 100; pages 150-4.
4. BCP, June 7, 1902.
5. BCP, September 30, 1904, article derived from the Ashland Press; "Treaty With the Chippewa, 1854," from Charles J. Kappler, Indian Affairs; Laws and Treaties, Vol. II, Treaties, (Washington: Government Printing Office, 1904; reprint ed., New York: Interland Publishing Inc., 1972), p. 648-52.
6. Julius F. Wolff, Jr., "1905 - Lake Superior at Its Worst," Inland Seas 18 (Fall 1962), p. 192-3; interview with Eskel Hokenson by David Fritz, Route 1, Bayfield, Wisconsin, July 11, 1978; Walt Harris, The Chequamegon Country, 1659 1976, (Fayetteville, Ark.: Walter J. Harris, 1976), P. 227; hereafter cited as Harris.
7. Lawrence Rakestraw, "Forest and Cultural History in Apostle Islands and Pictured Rocks National Lakeshore, Lake Superior," (Houghton, Mich.: Michigan Technological University, 1975), typescript, page 43; hereafter cited as Rakestraw.
8. BCP, October 23, 1904.
9. Harris, p. 319; Ross, p. 168; Rakestraw, p. 37; June Drenning Holmquist, "Commercial Fishing on Lake Superior in the 1890's," Minnesota History 34 (Summer, 1955), p. 243-9.
10. Bayfield Progress, January 6, 1910.
11. BCP, undated 1900 article in clipping collection of Marjory Benton, Bayfield, Wisconsin; B. G. H. Johnson, Bernard R. Smith and J. James Tibbles, Control of the Sea Lamprey (Petromyzon Marinus) in Lake Superior, 1953 - 70, (Ann Arbor: Great Lakes Fishery Commission, University of Michigan, 1974), also known as Technical Report No. 26, p. 2.
12. Bayfield Progress, January 19, 1911.
13. BCP, January 19 and July 13, 1911; interview with Emory Jones by David Fritz at Cornucopia, Wisconsin, on July 17, 1978.
14. Bayfield Progress, June 19, 1913.
15. BCP, March 26, 1915.
16. BCP, December 12, 1913; Baldwin & Saalfeld, Table 95, p. 146-7.

17. Peter Hokanson Death Certificate, February 26, 1910, Volume 4, page 34 of Deaths, Bayfield County Courthouse, Register of Deeds Office, Washburn, Wisconsin; interviews with Roy Hokenson, July 10 and 11, October 16, 1978, January 16, 1979, by David Fritz, at Little Sand Bay, Wisconsin; interviews with Eskel Hokenson, July 11, 1978 and January 16, 1979, Route 1, Bayfield, Wisconsin.
18. BCP, April 16, 1915, December 14, 1917.
19. BCP, December 14, 1917.
20. BCP, November 15, 1918.
21. Interview with Florence Hokenson by David Fritz, July 11, 1978, at Route 1, Bayfield, Wisconsin; and BCP, December 6, 1918.
22. BCP, December 27, 1918; and interview with Halvor Reiten by David Fritz, July 13, 1978, at Bayfield, Wisconsin.
23. BCP, February 21, 1919.
24. BCP, February 28, 1919.
25. BCP, March 28, 1919.
26. BCP, July 4, 1919.
27. BCP. November 12, 1924.
28. BCP, November 12, 19, 26, 1924, April 9, 1925; the story of the 4th of July celebration is in the issue of July 9, 1925; a story about the Wednesday Club is in the issue of November 26, 1925.
29. For more precise information, dates, etc., concerning the Hokensons' entry into commercial fishing, consult the Historic Structure Report (Historical Data Section) and Historical Furnishing Study for the Hokenson Fishing Dock.
30. BCP, July 19, August 23, October 11, 1928.
31. BCP, February 27, September 25, 1930.
32. BCP, September 11, 1930.
33. BCP, March 24, 1932.
34. Baldwin & Saalfeld, Table 95, p. 146-7.
35. BCP, April 23, 1920.
36. BCP, December 10, 1920; Baldwin & Saalfeld, Tables 98, 100 and 101, pages 150-1, 153-5.
37. BCP, December 8, 1922.

38. BCP October 19, 1923, April 2, August 6, 1925.
39. BCP, February 18, 1927.
40. BCP, May 10, 1928.
41. BCP, June 7, 1928.
42. BCP, August 2, 1928.
43. BCP, February 14, 1929.
44. BCP, February 7, March 14, 1929; interview with Emory Jones by David Fritz, Cornucopia, Wisconsin, July 17, 1978.
45. BCP, April 20, 1923.
46. Interview with Halvor Reiten by David Fritz, Bayfield, Wisconsin, July 13, 1978.
47. A background article on the Friant is in the BCP for April 27, 1923. The fishing expedition plans are outlined in the BCP for January 4, 1924. The story of the disaster was related in the BCP January 11, 1924 and retold by Eleanor Knight in the BCP issues of January 7, 14, and 21, 1954. A complete narrative by Halvor Reiten is in the Northeast Minnesota Historical Center's Oral History Project, University of Minnesota at Duluth Main Library, Catalog # S 2212, recorded sometime during 1976 in Bayfield by Jeff Pope. Also this writer got a few incidental details of the adventure in interviews with Halvor Reiten at Bayfield on July 13, 1978 and January 17, 1979.
48. Related in notes by Jeff Pope appended to Halvor Reiten interview # S 2212, Northeast Minnesota Historical Center's Oral History Project, University of Minnesota at Duluth Main Library.
49. BCP, January 27, 1927, January 19, 1928.
50. BCP, April 16, 1925. Further articles on the road's progress appeared in the BCP between 1919 and 1925.
51. BCP, September 27, 1928 and October 31, 1929 on Elmore; issue of May 12, 1932 on Boutins.
52. BCP, May 10, and September 27, 1928.
53. Interview with Roy Hokenson by David Fritz at Little Sand Bay on July 10, 1978.
54. Interview with Emory Jones by David Fritz at Cornucopia, Wisconsin on July 17, 1978. The BCP issue of June 3, 1926 cites an example of C. B. Ladd of Russell motoring a load of lake trout and whitefish to Park Falls, Wisconsin. The issue of October 29, 1931. relates that "Cornucopia fishermen are shipping their fish to Chicago by

truck. Four tons are hauled to a load and the trip is made in less than two days with three men as drivers."

55. Interview with Emory Jones by David Fritz at Cornucopia, Wisconsin, July 17, 1978; also BCP, October 29, 1931.
56. Grace Lee Nute, Lake Superior, (Indianapolis: Bobbs - Merrill, 1944), p. 194.
57. Interview with Emory Jones by David Fritz at Cornucopia, Wisconsin, July 17, 1980.
58. BCP, July 4, 1940.
59. Baldwin & Saalfeld, Tables 95, 98, 100 and 101, pages 146-7, 150-1, 154-5.
60. Interview with Roy Hokenson by David Fritz at Little Sand Bay, July 10, 1978.
61. BCP, February 2, 1928,
62. BCP, December 15, 1928.
63. G. Brown Goode, American Fishes, (Boston: L. C. Page & Co., 1887), p. 466-7; hereafter cited as Goode.
64. Interview with Roy Hokenson by David Fritz at Little Sand Bay, July 10, 1978; also Goode, p. 466-8.
65. BCP, November 17, 1927 and October 31, 1929.
66. Interview with Jack Erickson by David Fritz at Little Sand Bay, July 13, 1978.
67. Interview with Herman Johnson by David Fritz at Bayfield, July 14, 1978; also BCP, May 3, 1928.
68. BCP, January 28, 1932; Ashland Press, January 15 and 18, 1932; BCP, January 20, 27, February 3, 1955.
69. Interview with Emory Jones by David Fritz at Cornucopia, Wisconsin, July 14, 1978. The articles by Julius F. Wolff, Jr. are all in Inland Seas. They include: "Some Shipwrecks on the Pioneer North Shore of Lake Superior," (Summer 1961), p. 114-122; "1905 - Lake Superior at Its Worst" (Part 1, Fall 1962), p. 190-8; (Part 2, Winter 1962), p. 273-9; "The Coast Guard Comes to Lake Superior, 1874 - 1875," (Spring 1965), p. 14-21; "A Coastal Packet on Lake Superior," (Fall 1966), p. 179-84; "Before the Days of Radar: Ship Collisions on Lake Superior," (Summer 1969), p. 137-48; "The Shipwrecks of Lake Superior, 1900 - 1909," (Part 1, Summer 1971), p. 130-142; (Part 2, Fall 1971), p. 174-187; (Part 3, Spring 1972), p. 51-63; and "One Hundred Years of Rescues: The Coast Guard on Lake Superior," (Spring 1976), p. 32-51.

70. Baldwin & Saalfeld, Tables 98 and 100, pages 151, 154.
71. Ibid., Tables 95, 96; pages 146-8. Interview with Emory Jones by David Fritz at Cornucopia, Wisconsin, July 17, 1978.
72. Interview with Emory Jones by David Fritz at Cornucopia, Wisconsin, July 17, 1978.
73. BCP, July 4, 1929, May 1, 1930. An article of May 10, 1928 mentioned the seeding of 17 million lake trout, the largest seeding in a decade.
74. BCP, January 2, 1930.
75. BCP, April 19, 1928, February 12, 1931.
76. BCP, June 7, 1928.
77. A few of the John Van Oosten articles include: "The Age, Growth, and Sex Ratio of the Lake Superior Longjaw, Leucichthys Zenithicus (Jordan and Evermann)," Papers of the Michigan Academy of Science, Arts and Letters 22 (1937), p. 691-711; and three articles in the Transactions of the American Fisheries Society: "The Dispersal of Smelt, Osmerus Mordax (Mitchill), in the Great Lakes Region, 66 (1937), p. 160-171; with Ralph Hile, "Age and Growth of the Lake Whitefish, Coregonus Clupeaformis(Mitchill) in Lake Erie," 77 (1947), p. 178-249; "Mortality of Smelt, Osmerus Mordax (Mitchill) in Lakes Huron and Michigan During the Fall and Winter of 1942 - 1943," 74 (1944), p. 310-337.
78. BCP, January 30, 1930.
79. Ibid.
80. BCP, January 22, 1931.
81. BCP, May 29, 1930.
82. BCP, February 12, 1931.
83. BCP, April 16, July 9, 1931.
84. BCP, April 16, 1931, April 28, 1932, and undated 1938 issue from Marjory Benton clipping collection, Bayfield, Wisconsin.
85. Interview with Emory Jones by David Fritz at Cornucopia, Wisconsin, July 17, 1978; BCP, November 6, 1941 and undated 1938 issue from Marjory Benton clipping collection, Bayfield, Wisconsin.
86. BCP, undated 1938 issue from Marjory Benton clipping collection, Bayfield, Wisconsin; also interview with Roy Hokenson by David Fritz at Little Sand Bay, July 11, 1978; and interview with Eskel Hokenson by David Fritz at Route 1 Bayfield, Wisconsin, same date.

87. Baldwin and Saalfeld, Tables 95, 96, 98, 99, 100, pages 146-8, 150-4.
88. BCP, October 23, November 13, 1941.
89. BCP, October 15, 1942, concerning draft deferments; undated 1942 article from Marjory Benton Collection about new herring machines; November 5, 1942 concerning government orders; December 17, 1942 concerning storms and a summary of the fishing season.
90. BCP, November 28, 1946, November 27, 1947, November 24, 1949.
91. BCP, undated 1946 article from Marjory Benton collection, Bayfield, Wisconsin.
92. "Scrapbook of a Fisherman's Wife; Mrs. Hokenson's Album Records Fishing Life on Lake Superior," Wisconsin REA News, (October 1953), p. 12.
93. A. H. Lawrie and Jerold F. Rahrer, "Lake Superior, A Case History of The Lake and Its Fisheries," (Ann Arbor: Great Lakes Fishery Commission, University of Michigan, 1973), also known as Technical Report No. 19, p. 33; hereafter cited as Lawrie and Rahrer; C. W. Creaser, "The Lamprey Petromyzon Marinus in Michigan," Copeia 157 (1932); C. L. Hubbs and T. E. B. Pope, "The Spread of the Sea Lamprey Through the Great Lakes," Transactions of the American Fisheries Society 66 (1937), p. 172-6.
94. Baldwin & Saalfeld, Tables 5, 6, 24, 58, 60, 79, 81, 98, 100, and two supplements thereto; pages 9-10, 30-1, 81-2, 85-6, 118-9, 121-2, 150-1 and 153-4.
95. B. G. H. Johnson, Bernard R. Smith and J. James Tibbles, "Control of the Sea Lamprey (Petromyzon Marinus) in Lake Superior, 1953 - 70," (Ann Arbor: Great Lakes Fishery Commission, University of Michigan, 1974), p. 54; hereafter cited as Johnson, Smith and Tibbles; Baldwin & Saalfeld, Supplements 1 & 2 to Table 100, pages 153-4.
96. Johnson, Smith and Tibbles, p. 54; Baldwin & Saalfeld, Supplements 1 and 2 to Table 98, pages 150-1.
97. John Van Oosten, "The Dispersal of Smelt, Osmerus Mordax (Mitchill) in the Great Lakes Region," Transactions of the American Fisheries Society 66 (1937), p. 160-171.
98. John Van Oosten, untitled article from Marjorie Benton clipping collection, Bayfield Wisconsin, from Transactions of the American Fisheries Society 66 (1937), p. 138.
99. Matti Kaups, "Evolution of Smelt-O-Mania on Lake Superior's North Shore," Journal of Popular Culture 11 (No. 4, 1978), p. 959.
100. Ibid., p. 973.

101. Interview with Milford Johnson, Jr., by Barbara J. Sommer, July 14, 1977, North Shore Commercial Fishing, Oral History Project, Catalog # S 2207, Accession # 2209, University of Minnesota at Duluth, Main Library.
102. Edward Schneberger, "The Biological and Economic Importance of the Smelt in Green Bay," Transactions of the American Fisheries Society 66 (1937), p. 139-142.
103. Richard G. Burbidge, "Age, Growth, Length-Weight Relationship, Sex Ratio, and Food Habits of American Smelt, Osmerus Mordax (Mitchill) from Gull Lake, Michigan, Transactions of the American Fisheries Society 98 (1969, No. 4), p. 631-640.
104. Ibid., p. 631.
105. Emory D. Anderson and Lloyd L. Smith, Jr., "Factors Affecting Abundance of Lake Herring (Coregonus Artedii Lesueur) in Western Lake Superior," Transactions of the American Fisheries Society 100 (1971, No. 4), p. 691-707.
106. Wayne R. MacCallum, James H. Selgeby and Donald V. Swedberg, "Predation by Rainbow Smelt (Osmerus Mordax) on Lake Herring (Coregonus Artedii) in Western Lake Superior, Journal of the Research Board of Canada 35 (1978), p. 1457.
107. Ibid., p. 1457-1463.
108. Baldwin & Saalfeld, Table 98, p. 151.
109. Ibid., Table 100, p. 153-4 and Supplements 1 & 2 thereto.
110. Interviews of Roy and Eskel Hokenson by David Fritz at Route 1, Bayfield, Wisconsin, January 16, 1979.
111. Interviews of Roy and Eskel Hokenson at Route 1, Bayfield, Wisconsin, October 16, 1978 and July 11, 1978 respectively.
112. Baldwin & Saalfeld, Tables 96, 98, 100 and 101 and Supplements 1 & 2 thereto; pages 146-8, 150-1, 153-5.
113. Ashland Daily Press, November 7, 1975.
114. Donald G. Albrecht, ed., The Chequamegon Bay Apostle Islands Fishery; Proceedings of a Symposium Held at Northland College May 15, 1975, (Ashland, Wisconsin: Northland College, 1975) p. 26; hereafter cited as Symposium; Ashland Daily Press, "Report Calls For Bay Fishery Management," October 10, 1975; Duluth News Tribune, "Red Lake Band Takes Fish Rights to Court," October 31, 1975.
115. Symposium, p. 35.

116. Interview with Eskel Hokenson by David Fritz at Route 1, Bayfield, Wisconsin, July 11, 1978; Duluth News Tribune of November 8, 1975, "Indian Fish, Game Law Voided by State Law," concerning fishing regulations/litigation in Minnesota waters; Ashland Daily Press of November 17, 1975, "Wardens to Quit Working if Indians Get Unrestricted Rights;" Duluth News Tribune of February 26, 1976, "Chippewas Eye DNR Challenge to Fishing Ban," in which an Indian spokesman, Franklin Basina, stated that the Chippewa had established bans similar to those of the state wherein fishing was forbidden in spawning grounds during the known spawning seasons; Duluth News Tribune, of February 25, 1976, "Fishing to End in Apostles Area," concerning closure of trout spawning grounds near Gull and Michigan Islands during the spawning season; and The Daily Press (Ashland) of October 20, 1977, "DNR Studies Gull Island Trout."
117. Ashland Daily Press, October 18, 1977, "Great Lakes Commercial Fishing Outlook is Bleak."
118. Ibid.
119. BCP, January 29, 1976, "Needed: A New Concept of Commercial Fishing."
120. Ibid., "Senate Bill Would Ruin Commercial Fishing."
121. Duluth Times, February 1, 1976, "Fish Refuge Size Reduction Asked."
122. Lawrie & Rahrer, p. 22.
123. Superior Evening Telegram, June 3, 1977, "DNR, Health Officials Oppose PCB Proposal."
124. Ibid.
125. Duluth News Tribune, March 9, 1976, "DNR Officer Finds Trout OK To Eat."
126. Ibid.

BIBLIOGRAPHY

I. Primary Sources

1. Courthouse Records

Register of Deeds Office, Bayfield County Courthouse, Wisconsin, Volume 4, page 34, Death Certificate of Peter Hokanson, dated February 26, 1910.

2. Diaries

Peet, James. Diary. University of Minnesota at Duluth, Main Library. Northeastern Minnesota Historical Collections. James Peet Diary, 1856 - 1865; accession # 23-632.

3. Interviews

Bainbridge, Ted. Bayfield, Wisconsin. Interviewed by David Fritz, NPS, on July 13, 1978.

Benton, Marjory. Bayfield, Wisconsin. Interviewed by David Fritz, NPS, on July 19, 1978.

Erickson, John. Bayfield, Wisconsin. Interviewed by David Fritz, NPS, on July 13, 1978.

Hokenson, Eskel. Rural Route 1, Bayfield, Wisconsin. Interviewed by David Fritz, NPS, together with his wife, Florence, on July 11, 1978 and January 16, 1979.

Hokenson, Roy. Little Sand Bay, Russell Township, Bayfield Peninsula, Wisconsin. Interviewed by David Fritz, NPS, together with his wife, Irene, on July 10, 1978, July 11, 1978, October 16, 1978 and January 16, 1979.

Johnson, Herman. Bayfield, Wisconsin. Interviewed by David Fritz, NPS, on July 14, 1978.

Johnson, Milford, Jr. Interviewed by Barbara J. Sommer, July 14, 1977. North Shore Commercial Fishing Oral History Project, Northeast Minnesota Historical Center, University of Minnesota at Duluth Main Library. Catalog # S2207, accession # 2209.

Jones, Emory. Cornucopia, Wisconsin. Interviewed by David Fritz, NPS, on July 17, 1978.

Moe, Elvis. Bayfield, Wisconsin. Interviewed by David Fritz, NPS, on July 14, 1978.

Nelson, Julian. Bayfield, Wisconsin. Interviewed by David Fritz, NPS, on January 16, 1979.

Reiten, Halvor. Bayfield, Wisconsin. Interviewed by David Fritz, NPS, July 13, 1978 and January 16, 1979.

Reiten, Halvor. Bayfield, Wisconsin. Interviewed by Jeff Pope, 1976. From the Northeast Minnesota Historical Center, Oral History Project, University of Minnesota at Duluth Main Library. Catalog # S2212, accession # 2203.

Pycha, Richard L. Marine Biologist. U. S. Fish and Wildlife Service, Ashland, Wisconsin. Interviewed by David Fritz, NPS, June 21, 1978.

Sheridan, Charles. Journalist and photographer, Washburn, Wisconsin. Interviewed by David Fritz, NPS, on July 18, 1978.

4. Published Primary Sources

Collections of the Minnesota Historical Society. St. Paul: 1885.

Collections of the State Historical Society of Wisconsin. Madison: 1888 - 1895.

Kappler, Charles J., compiler. Indian Affairs; Laws and Treaties. Vol. 2: Treaties. Washington: Government Printing Office, 1904; reprint ed., New York: Interland Publishing, Inc., 1972.

Milner, James W. "Report of the Fisheries of the Great Lakes; the Result of Inquiries Prosecuted in 1871 and 1872." Report of the Commissioner of Fish and Fisheries for 1872 and 1873. Washington: Government Printing Office, 1874. Milner's report as Part I of Appendix A. Pages 1-75. The Commissioner's report is otherwise known as Miscellaneous Senate Document 74, 42nd Congress, 3rd session.

U.S. Congress. Senate. Indian Affairs; Laws and Treaties. Vol. 2: Treaties. S. Doc. 319, 58th Cong., 2nd sess., 1904.

U.S. Congress. Senate. Report of the Commissioner of Fish and Fisheries for 1872 and 1873. Misc. S. Doc. 74, 42nd Cong., 3rd sess., 1874. Appendix A: "The Fisheries of the Great Lakes, and the Species of Coregonus or White Fish;" Part I: "Report on the Fisheries of the Great Lakes; the Result of Inquiries Prosecuted in 1871 and 1872 by James W. Milner." Part I: pages 1-75.

U.S. Congress. Senate. Report of the Commissioner of Fish and Fisheries, 1873 - 1875. Misc. S. Doc. 108, 43rd Cong., 2d sess., 1876. Appendix A: "Sea Fisheries and the Fishes and Invertebrates;" Part I: "Historical Observations on the Conditions of the Fisheries Among the Ancient Greeks and Romans, and On Their Mode of Salting and Pickling Fish." by J. K. Smidth. Pages 3-20.

U.S. Congress. Senate. Report of the Commissioner of Fish and Fisheries, 1875 - 1876. Misc. S. Doc. 107, 44th Cong., 1st sess., 1878.

Appendix B: The Inland Fisheries. Part II: "Fisheries of Chicago and Vicinity," by E. W. Nelson; pages 783-800.

U.S. Congress. House. Report of the Commissioner of Fish and Fisheries, 1887. Misc. H. Doc. 133, 50th Cong., 2nd sess., 1888. Appendix I: "Fisheries of the Great Lakes in 1885;" Part III: "The Fisheries of Lake Superior;" compiled by Hugh M. Smith and Mervin-Marie Snell, with introduction and a description of fishing vessels and boats by J. W. Collins; 31-70.

U.S. Congress. Senate. The Fisheries and Fishing Industries of the United States. Misc. S. Doc. 124, 47th Cong., 1st sess., 1887. Edited by George Brown Goode, Assistant Director of the U. S. National Museum. Section I: Natural History of Useful Aquatic Animals (1884). Section II: A Geographical Review of the Fisheries Industries and Fishing Communities for the year 1880 (1887). Section III: The Fishing Grounds of North America With Forty-Nine Charts (1887). Section V: History and Methods of the Fisheries, in two volumes, with an atlas of two hundred and fifty-five plates (1887).

Wisconsin Magazine of History. Madison: 1917 -

5. Newspapers

Ashland Daily Press, October 10, 1975. Article: "Report Calls For Bay Fishery Management."

Ashland Daily Press, November 17, 1975. Article: "Wardens To Quit Working if Indians Get Unrestricted Rights."

Ashland Daily Press, October 18, 1977. Article: "Great Lakes Commercial Fishing Outlook is Bleak."

Ashland Daily Press, November 17, 1977. Article: "Chequamegon Region Good for Ice Fishing."

Bayfield County Press, 1870 - 1977.

Bayfield Progress, 1910 - 1915

Benton, Marjory. Bayfield, Wisconsin. Newspaper Clipping Collection, mostly from the Bayfield County Press, with a few articles from the Bayfield Progress.

Duluth News Tribune, February 25, 1976. Article: "Fishing To End In Apostles Area."

Duluth News Tribune, February 26, 1976. Article: "Chippewas Eye DNA Challenge to Fishing Ban."

Duluth News Tribune, October 31, 1975. Article: "Red Lake Band Takes Fish Rights to Court."

Duluth News Tribune, November 8, 1975. Article: "Indian Fish, Game Law Voided by State Law."

Duluth News Tribune, March 9, 1976. Article: "DNR Officer Finds Trout OK To Eat."

Duluth Times, February 1, 1976. Article: "Fish Refuge Size Reduction Asked."

Superior Evening Telegram, February 4, 1977. Article: "Trout Fishermen Owe Thanks to Fish Hatchery."

Superior Evening Telegram, February 16, 1977. Article by Donna Sanders, "Is Food of Future Underwater?"

Superior Evening Telegram, June 3, 1977. Article: "DNR, Health Officials Oppose PCB Proposal."

II. Secondary Sources

1. Books

- Andreas, A. T., compiler. History of Northern Wisconsin. Chicago: The Western Historical Company, 1881.
- The Book of Fishes. Washington, D. C.: National Geographic Society, 1924.
- Burnham, Guy M. The Lake Superior Country in History and in Story. Ashland, Wisconsin: Ashland Daily Press, 1930; reprint ed., Ann Arbor: Browzer Books, 1975.
- Fries, Robert F. Empire in Pine; The Story of Lumbering in Wisconsin. The State Historical Society of Wisconsin, 1951.
- Goode, G. Brown. American Fishes. Boston: L. C. Page & Co., 1887.
- Harris, Walter J. The Chequamegon Country, 1659-1976. Fayetteville, Ark.: Walter J. Harris, 1976.
- Havighurst, Walter., ed. The Great Lakes Reader. New York: Collier Books, a division of Macmillan Publishing Co., Inc., 1966.
- History of the Great Lakes. Chicago: J. H. Beers & Co., 1899; reprint ed., Cleveland: Freshwater Press, Inc., 1972.
- Hubbs, Carl L., and Lagler, Karl F. Fishes of the Great Lakes. 2nd ed. Bloomfield Hills, Michigan: Cranbrook Institute of Science, 1958.
- Kellogg, Louise Phelps., ed. Early Narratives of the Northwest, 1634-1699. New York: Charles Scribner's Sons, 1917.
- Kellogg, Louise Phelps. The French Regime in Wisconsin and the Northwest. New York: Cooper Square Publishers, Inc., 1925; reprint ed., New York: Cooper Square Publishers, Inc., 1968.
- Longfellow, Henry Wadsworth. Song of Hiawatha. Boston: Houghton Mifflin Co., 1883; reprint ed., New York: Bounty Books, division of Crown Publishers, 1968.
- Nesbit, Robert C. Wisconsin, A History. Madison: State Historical Society, University of Wisconsin Press, 1973.
- Nute, Grace Lee. Lake Superior. Indianapolis: Bobbs-Merrill, 1944.

- Nute, Grace Lee. The Voyageur. New York; D. Appleton & Co., 1931; reprint ed., St. Paul: Minnesota Historical Society, 1955.
- Owen, David Dale. Geological Survey of Wisconsin Iowa and Minnesota. Philadelphia: 1852.
- Quaife, Milo Milton., ed. Alexander Henry's Travels and Adventures in the Years 1760-1776. Chicago: Lakeside Press, 1921.
- Quaife, Milo Milton., ed. The Western Country in the 17th Century; the Memoirs of Antoine Lamothe Caddillac and Pierre Liette. New York: The Citadel Press, 1962.
- Quimby, George Irving. Indian Life in the Upper Great Lakes; 11,000 B. C. to A. D. 1800. Chicago: University of Chicago Press, 1960.
- Radisson, Pierre Esprit. Voyages of Pierre Esprit Radisson. New York: Peter Smith edition, 1943.
- Ross, Hamilton Nelson. La Pointe - Village Outpost. Ann Arbor: Edwards Brothers, Inc., 1960.
- Sagard-Theodat, Gabriel. Histoire du Canada. Paris reprint: 1866. (reprint of 1632 edition).
- Sagard-Theodat, Gabriel. Le Grand Voyage du Pays des Hurons. Paris: 1865.
- Smith, Alice Elizabeth. The History of Wisconsin. Madison: State Historical Society of Wisconsin, 1973. Vol. 1: From Exploration to Statehood.
- Thwaites, Reuben Gold. Wisconsin, The Americanization of a French Settlement. New York: Houghton Mifflin Co., 1908.
- Tuttle, Charles R. An Illustrated History of the State of Wisconsin. Boston: B. B. Russell & Co., 1875.
- Warren, William W. History of the Ojibway Nation. Philadelphia: Collins Printer, 1885; Volume V of the Collections of the Minnesota Historical Society. St. Paul; reprint ed., Minneapolis, MN.: Ross & Haines, Inc., 1974.

2. Articles

- Armstrong, Benjamin G. "Reminiscences of Life Among the Chippewa." Wisconsin Magazine of History Part I: 55 (Spring 1972): 175-196; Part II: 55 (Summer 1972): 287-309; Part III: 56 (Autumn 1972): 37-58; Part IV: 56 (Winter 1972-3): 140-161.
- Fifield, Sam. "Among the Historic Apostle Islands." National Magazine (July 1898): 364-372.

- Flanagan, John T. "From La Pointe to the Falls of St. Anthony in 1846." Minnesota History 41 (Fall 1968): 137-144.
- Gates, Paul W. "Frontier Land Business in Wisconsin." Wisconsin Magazine of History 52 (Summer 1969): 306-327.
- Helgeson, Arlan. "Nineteenth Century Land Colonization in Northern Wisconsin." Wisconsin Magazine of History 36 (Winter 1952-3): 115-121.
- Holmquist, June Drenning. "Commercial Fishing on Lake Superior in the 1890's." Minnesota History 34 (Summer 1955): 243-9.
- Kane, Lucile. "Settling the Wisconsin Cutovers." Wisconsin Magazine of History 40 (Winter 1956-7): 91-8.
- Kaups, Matti. "Evolution of Smelt - O - Mania on Lake Superior's North Shore." Journal of Popular Culture 11 (No. 4 1978): 959-975.
- Kaups, Matti. "North Shore Commercial Fishing, 1849 - 1870." Minnesota History 46 (Summer 1978): 42-58.
- Kaups, Matti. "Norwegian Immigrants and the Development of Commercial Fisheries Along the North Shore of Lake Superior: 1870 - 1895." Norwegian Influence on the Upper Midwest; Proceedings of an International Conference, University of Minnesota, Duluth, May 22-24, 1975. Duluth: Continuing Education and Extension, 1976; pages 21-34.
- Landon, Fred. "By Canoe to Lake Superior in 1838." Inland Seas 29 (Spring 1973): 33-46.
- Lawrence, Lee E. "The Wisconsin Ice Trade." Wisconsin Magazine of History 48 (Summer 1965): 257-267.
- Marvill, Lewis. "First Trip by Steam to Lake Superior." Inland Seas 22 (Winter 1966): 301-4.
- Metcalf, I. S. H. "These Lampreys" Inland Seas 6 (Winter 1949-50): 26-8.
- Nute, Grace Lee. "The American Fur Company's Fishing Enterprises on Lake Superior." Mississippi Valley Historical Review 12 (December 1925): 483-503.
- Nute, Grace Lee. Caesars of the Wilderness; Medard Chouart, Sieur Des Groseilliers and Pierre Esprit Radisson, 1619 - 1710. New York: D. Appleton - Century Co., 1943; reprint ed., New York: Arno Press, 1977.
- Nute, Grace Lee. "The Papers of the American Fur Company: A Brief Estimate of Their Significance." American Historical Review 32 (April 1927): 519-538.

Pett, Mrs. W. F. "A Forgotten Village." [La Pointe] Wisconsin Magazine of History 12 (September 1928): 3-18.

Rakestraw, Lawrence. "The Apostle Islands National Park Movement, 1929 - 1932." Inland Seas 32 (Winter 1976): 263-9.

Rankin, Ernest H. "Henry Rowe Schoolcraft Visits Lake Superior." Inland Seas 20 (Fall 1964): 201-210.

Rankin, Ernest H. "Lake Superior - 1854." Inland Seas 19 (Winter 1963): 311-7.

Scott, William E. "Fishing in Lake Superior." Inland Seas 2 (Spring 1946): 81-5.

"Scrapbook of a Fisherman's Wife; Mrs. Hokenson's Album Records Fishing Life on Lake Superior." Wisconsin REA News (October 1953): 12.

White, Peter. "Development of the Lake Superior Region." Inland Seas 11 (Summer 1955): 92-102.

Wolff, Julius F., Jr. "A Coastal Packet on Lake Superior." Inland Seas 22 (Fall 1966): 179-184.

Wolff, Julius F., Jr. "Before the Days of Radar: Ship Collisions on Lake Superior." Inland Seas 25 (Summer 1969): 137-149.

Wolff, Julius F., Jr. "The Coast Guard Comes to Lake Superior, 1874-1875." Inland Seas 21 (Spring 1965): 14-21.

Wolff, Julius F., Jr. "1905 - Lake Superior at Its Worst." Inland Seas 18 (Fall 1962): Part I: 190-8. Part II: Inland Seas 18 (Winter 1962): 273-9.

Wolff, Julius F., Jr. "One Hundred Years of Rescues: The Coast Guard on Lake Superior." Inland Seas 32 (Spring 1976): 32-51.

Wolff, Julius F., Jr. "The Shipwrecks of Lake Superior." Part 1: Inland Seas 27 (Summer 1971): 130-142; Part 2: (Fall 1971): 174-187; Part 3: (Spring 1972): 51-63.

Wolff, Julius F., Jr. "Some Shipwrecks on the Pioneer North Shore of Lake Superior." Inland Seas 17 (Summer 1961): 114-122.

3. Technical Reports

Albrecht, Donald G., ed. The Chequamegon Bay Apostle Islands Fishery; Proceedings of a Symposium Held at Northland College May 15, 1975. Ashland, Wisconsin, Northland College Press, 1975.

- Anderson, Emory D., and Smith, Lloyd L. "Factors Affecting Abundance of Lake Herring (Coregonus Artedii Lesueur) in Western Lake Superior." Transactions of the American Fisheries Society 100 (No. 4, 1971): 691-707.
- Bailey, Merryll M. "Age, Growth, Maturity, and Sex Composition of the American Smelt, Osmerus Mordax (Mitchill), of Western Lake Superior." Transactions of the American Fisheries Society 93 (1964): 382-395.
- Baldwin, Norman S., and Saalfeld, Robert W. Commercial Fish Production In the Great Lakes, 1867-1960. Ann Arbor: Great Lakes Fishery Commission; University of Michigan Press, 1962. Also known as Technical Report No. 3. With Two Supplements: #1 of 1970, covering 1961 to 1968; #2 of 1979, covering 1969 to 1977; both utilizing same Table Numbers as the basic document.
- Beil, Joseph., and Dryer, William R. "Life History of Lake Herring in Lake Superior." Fishery Bulletin 63 (No.3, 1964): 493-530.
- Burbridge, Richard G. "Age, Growth, Length-Weight Relationship, Sex Ratio, and Food Habits of American Smelt, Osmerus mordax (Mitchill) from Gull Lake, Michigan." Transactions of the American Fisheries Society 98 (No. 4 1969): 631-640.
- Creaser, C. W. "The Establishment of the Atlantic Smelt in the Upper Waters of the Great Lakes." Papers of the Michigan Academy of Science, Arts and Letters 5 (1925): 405-424.
- Creaser, C. W. "The Lamprey Petromyzon marinus in Michigan." Copeia 157 (1932).
- Douglas, Frederick J. and Rakestraw, Lawrence. "A Forest Type Map of Pictured Rocks and Apostle Islands National Lakeshores from the Original General Land Office Survey Records." Houghton, Michigan: Michigan Technological University, 1976. (Mimeographed).
- Dryer, William R. "Age and Growth of the Whitefish in Lake Superior. U. S. Fish and Wildlife Service, Fishery Bulletin 63 (No. 1, 1963): 77-95.
- Dryer, William R. "Bathymetric Distribution of Fish in the Apostle Islands Region, Lake Superior." Transactions of the American Fisheries Society 95 (1966): 248-259.
- Dryer, William R.; Erkkila, Leo F.; Tetzloff, Clifford L. "Food of Lake Trout in Lake Superior." Transactions of the American Fisheries Society 94 (1965): 169-176.
- Eschmeyer, Paul H. "The Reproduction of Lake Trout in Southern Lake Superior." Transactions of the American Fisheries Society 84 (1954): 47-74.

- Eschmeyer, Paul H.; Hile, Ralph; and Lunger, George F. "Status of the Lake Trout Fishery in Lake Superior." Transactions of the American Fisheries Society 80 (1950): 278-312.
- Hale, John. "Some Aspects of the Life History of the Smelt (Osmerus mordax) in Western Lake Superior." Minnesota Department of Conservation, Division of Game and Fish, Section of Research and Planning, Investment Report 204 (1959): 1-22.
- Hankinson, T. L., and Hubbs, C. L. "The Establishment of Smelt in the Great Lakes Waters." Copeia 109 (1922): 57-9.
- Hile, Ralph. Collection and Analysis of Commercial Fishery Statistics in the Great Lakes. Ann Arbor: Great Lakes Fishery Commission; University of Michigan Press, 1962. Also known as Technical Report No. 5.
- Hile, Ralph., and Van Oosten, John. "Age and Growth of the Lake Whitefish, Coregonus clupeaformis (Mitchill) in Lake Erie." Transactions of the American Fisheries Society 77 (1947): 178-249.
- Hubbs, C. L., and Pope, T. E. B. "The Spread of the Sea Lamprey Through the Great Lakes." Transactions of the American Fisheries Society 66 (1937): 172-6.
- Johnson, B. G. H.; Smith, Bernard R.; and Tibbles, J. James. Control of the Sea Lamprey (Petromyzon marinus) in Lake Superior, 1952-70. Ann Arbor: Great Lakes Fishery Commission, University of Michigan Press, 1974. Also known as Technical Report No. 26.
- King, George R., and Pycha, Richard L. Changes in the Lake Trout Population of Southern Lake Superior in Relation to the Fishery, the Sea Lamprey, and Stocking, 1950-70. Ann Arbor: Great Lakes Fishery Commission; University of Michigan Press, 1975. Also known as Technical Report No. 28.
- Koelz, Walter N. "Fishing Industry of the Great Lakes." Department of Commerce, Report of the U. S. Commissioner of Fisheries for 1925. Washington: Government Printing Office, 1926. Appendix II, pages 553-617.
- Lawrie, A. H., and Rahrer, Jerold F. Lake Superior; A Case History of the Lake and its Fisheries. Ann Arbor: Great Lakes Fishery Commission, University of Michigan Press, 1973. Also known as Technical Report No. 19.
- MacCallum, Wayne R.; Selgeby, James H.; and Swedberg, Donald V. "Predation by Rainbow Smelt (Osmerus mordax) on Lake Herring (Coregonus artedii) in Western Lake Superior." Journal of the Research Board of Canada 35 (1978): 1457-63.

As the Nation's principal conservation agency, the Department of the Interior has basic responsibilities to protect and conserve our land and water, energy and minerals, fish and wildlife, parks and recreation areas, and to ensure the wise use of all these resources. The Department also has major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

Publication services were provided by the graphics staff of the Denver Service Center. NPS 2174

