

THE NINETEENTH-CENTURY FISHERIES OF THE HUDSON'S BAY COMPANY TRADING POSTS ON LAKE SUPERIOR: A BIOGEOGRAPHICAL STUDY

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Trading post personnel maintained records of natural and cultural phenomena, including data on fish and fishing. The Hudson's Bay Company posts on the north shore of Lake Superior developed a diverse fishery based on a rather complex association of species and stocks, especially lake trout, whitefish, and herring. In part learning from the Indians, the fishermen gained a fairly sophisticated understanding of the seasonal and spatial occurrences of fish aggregations. These are here summarized in text and table form and provide baseline data for fisheries which since the 1800s have been degraded and changed.

Les employés des comptoirs consignaient régulièrement les divers phénomènes culturels et naturels, y compris ceux qui relevaient des poissons et de la pêche. Les comptoirs de la Compagnie de la Baie d'Hudson au littoral nord du lac Supérieur ont développé une industrie de la pêche diversifiée basée sur des rapports assez complexes entre les espèces et les stocks de poissons, surtout de touladi, de grand corégone, et de cisco de lac. Tirant leurs connaissances en partie des Indiens, les pêcheurs ont réussi à bien comprendre les détails des occurrences spatiales et saisonnières des agrégations de poissons. Les données de leurs observations se présentent dans ce travail sous forme de textes et de tableaux, et fournissent les renseignements de base pour les pêcheries qui, depuis le 19^e siècle, subissent des transformations et tiennent aujourd'hui une place moins importante dans l'industrie de la pêche.

In line with the increasing interdisciplinarity of modern science, the biologist is now exploring the domain of the historian. Few are the world's ecosystems that have not felt the touch of man and, with this contact, undergone change. To assess the degrees of change and to achieve control and balance, the initial states of the affected system must be determined. In seeking these baseline data, the biologist must often turn to musty archives, forgotten texts, and fading maps. The necessity of viewing the present in the context of the past in hopes of guiding the future has become most evident in the field of Great Lakes ecosystem management.

The intricate patterns of species interactions within the Great Lakes have been disturbed in the past 100 years by a variety of human-induced ills: overfishing, pollution, and the introduction of exotic species, to name but a few. The resultant losses of clear water, of harvestable resources, of habitat diversity, and of recreational areas are being detailed, and a variety of national and international, public and private organizations are attempting to co-ordinate efforts toward large-scale rehabilitation (Ryder and Edwards, 1984). Obviously we will not be able to recall species from extinction; we cannot redig marsh areas now covered with concrete. Severely stressed ecosystems cannot be returned to their pristine states. Yet knowledge of these past states can in some instances help us to find a new ecological balance compatible with society's continuing development.

Using the records of the Hudson's Bay Company as source material, the following article presents an essentially descriptive account of the biogeographical conditions of the fish

species of nineteenth-century Lake Superior: their seasonal distribution, spawning location and time, physical appearance, abundance, and interaction. The records afford a glimpse of the pre-stressed aquatic community. As the major means of subsistence, fish were frequently mentioned in the post journals, annual reports, and correspondence. Daily catches were usually noted, and the productivity of the fall fishing stations was dutifully recorded.

This essay is divided according to the three major posts, at the Pic, Kaministikwia, and Michipicoten rivers, each of which engaged in widespread fisheries (Figure 1). The importance of the fall fishing season (September to November), and the large-scale spawning movements occurring at this time, dictated further seasonal subdivisions. Presence and absence of species are noted. Fishing patterns and qualitative estimates of fishing intensity are outlined (Table 1). Special attention is given to localized concentrations, and inferences regarding regional abundance differences are drawn. Such is the background information the modern ecologist must draw on in assessing the current and future status of the lake's species.

HISTORICAL INTRODUCTION

The original documents of the Hudson's Bay Company are now housed in the Provincial Archives of Manitoba, with microfilm copies retained in the Public Archives of Canada in Ottawa and the Public Records Office in London, England.¹ The authors of this material were not scientists, but many were well-educated men and acute observers of nature. They took a keen interest in the habits of the animals around them, knowing that both the economic welfare of their company and the physical survival of the post inhabitants depended on this knowledge. It was in their own interest that the company's directors frequently stressed the importance of maintaining detailed post records.

A number of fur-trading interests preceded the Hudson's Bay Company to Lake Superior country. Posts had been maintained by Montreal-based firms since the early eighteenth century. Finally, in 1804, the rival XY and North West companies merged and vigorously sought to undermine Hudson's Bay Company interests in western Canada. The British firm countered by creating posts between Lake Superior and Lake Athabasca in close proximity to those already established by the North West Company (Public Archives of Canada, 1974). The small establishment of Pointe de Meuron challenged the monopoly of the North West Company post near the mouth of the Kaministikwia River. From 1797 to 1803 and again from 1816 to 1821, Hudson's Bay Company employees resided a short distance from the fort at Michipicoten. The amalgamation of the two companies in 1821 brought the North West Company post under Hudson's Bay Company jurisdiction. In addition to the major posts of Michipicoten House, Pic Post, Fort William, and Fort Sault Ste Marie, seasonal outposts were maintained at the Agawa River, on Batchawana Bay, and at Red Rock.² This last outpost generally sought supplies of whitefish from Nipigon Bay and was further supported by a post on the northwestern shore of Lake Nipigon. Men of Sault Ste Marie turned to the St Mary's rapids in October to supply whitefish, both for their personal needs and for the foreign market (Fort Sault Ste Marie Journal, 21 September 1824): 'There are but few fish yet in the Rapids according to report and the few that are caught some petty traders from the American side immediately trade being encamped on the island for that purpose.'

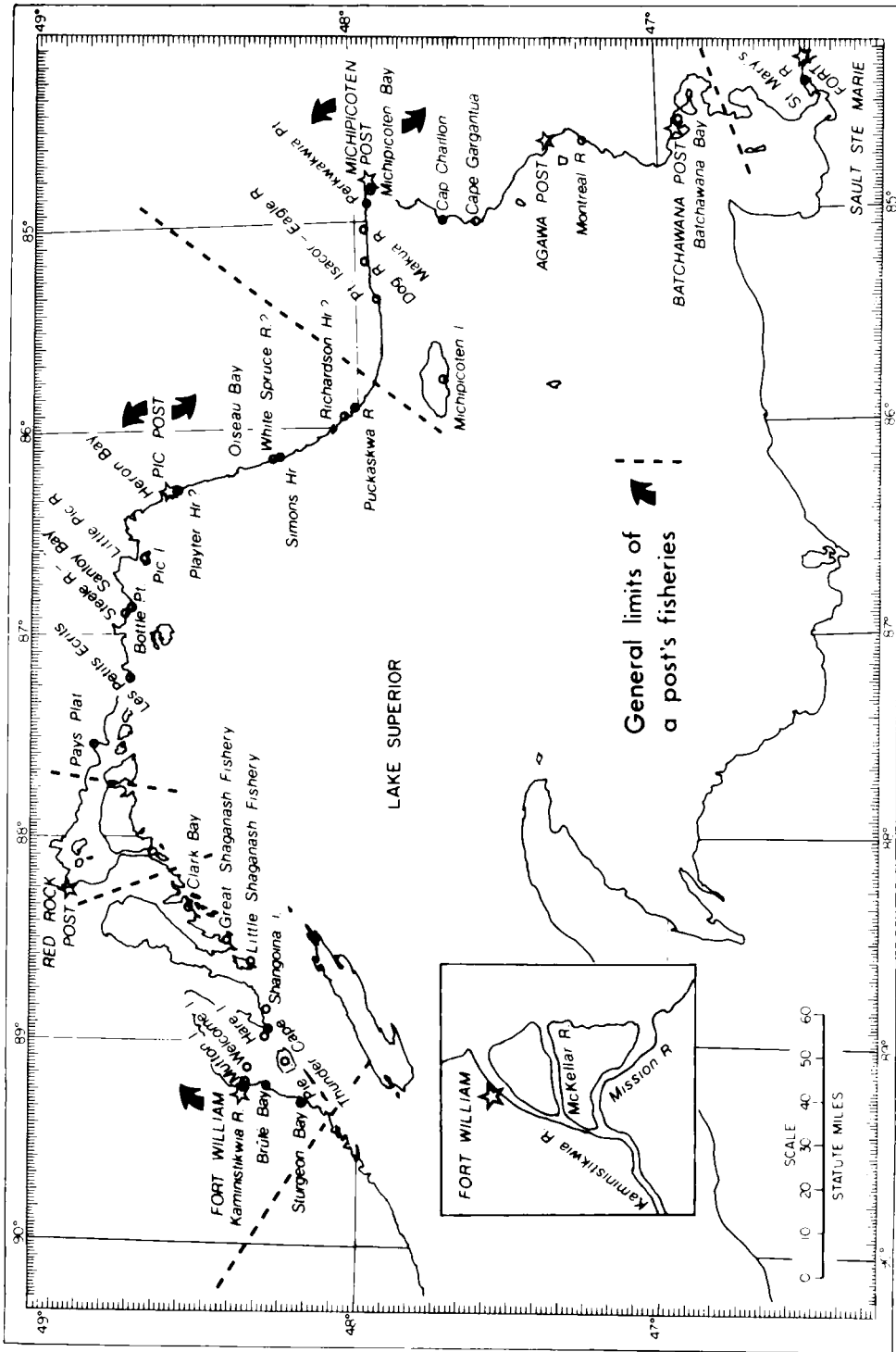


FIGURE 1. Location of the fall lake trout fishing stations associated with the Hudson's Bay Company trading posts on Lake Superior, 1800-60.

TABLE 1

DATA ON FISHERIES OF LAKE SUPERIOR IN THE NINETEENTH CENTURY AS RECORDED BY PERSONNEL OF THREE HUDSON'S BAY COMPANY TRADING POSTS

Fishing season	Species	Fishing ground	Fishing period		Characteristics*
			Start	Finish	
<i>Pic Post at Pic River</i>					
December to August	Lake trout	Pic River near-shore	2nd week May	1st-2nd week July	1/S, G, HL
	Herring	Little Pic and Pic River mouths	7 May	Late July or early August	1/S
		Heron Bay	?	?	?
	Whitefish	Little Pic River near-shore	June	?	1/S, G
	Sucker	Post vicinity	April	Summer	U/S
	Redhorse	Post vicinity	Spring	Summer	U/S
	Walleye	Post vicinity	Spring	Summer	U/S
	Sturgeon	Post vicinity	Spring	Summer	U/S
	Pike	Post vicinity	Spring	Summer	U/S
	Perch	Post vicinity	Spring	Summer	U/S
September to November	Lake trout	Pays Plat	Late August to early September	October	1/S, G
		Bottle Point and Santoy Bay	?	?	1/S, G
		Steele River	Mid-September	Late October	S, W
		Pukaskwa River	Early September	Early October	U/S
		Richardson Harbour	Early September		U
		Les petits Ecrits	September	?	U
		White Spruce River	September	?	U
		Pic Island	?	?	U
	Whitefish	Oiseau Bay	November	?	U/G
		Bottle Point	Late November	?	U/G
	Walleye or pike	Pic River area	September	?	U/S
	Sturgeon	Pic River area	September	?	U/S, HL
	Whitefish	Pic River area	September	?	U
Trout	Pic River area	September	?	U	
<i>Fort William at Kaministikwia River</i>					
December to August	Lake trout	West Pie Island	Winter	?	U/HL
		Welcome Island area	Winter	?	U/HL
		Pie, Shangoina, and Welcome islands	End May	Early July	1/S, G
		Current River	May	?	U/G, HL
	Whitefish	Near-shore	Late June to early July	?	1/S, G
		Near-shore	Mid-August	?	1/S, G
		Kaministikwia River	Late June	Early July	1/S
	Sturgeon	Kaministikwia River (Mission River)	Mid-May	?	At river mouth S, G
Sucker	Kaministikwia River	2nd-3rd week July	?	In rapids	
	Kaministikwia River	Early May	Mid-July	1/G	
September to November	Lake trout	Mutton and Welcome islands	Early September	End September	Small fish G
		Pie Island	End September	2nd week November	Large fish 1/G
		Thunder Cape	?	End October	1/G
		Hare Island	?	1st week November	1/G

TABLE 1 (Concluded)

Fishing season	Species	Fishing ground	Fishing period		Characteristics*
			Start	Finish	
		Shangoina Island	6 October	20 October	Large trout 1/G
		Grand and Little Shaganash area	?	?	?
		Clark Bay	?	?	?
		Sturgeon Bay	?	?	?
	Whitefish	Shangoina Island	22-25 October	Late November	1/G
		Pie Island	?	2nd week November	?
		Kaministikwia River	End of August or early September	?	At mouth 1/s
		Kaministikwia River	30 September-7 October	4th week October	In rapids 1/s
	Sucker	Kaministikwia River	September	?	U/S
	Pike or walleye	Kaministikwia River	September	?	U/S
<i>Michipicoten Post at Michipicoten River</i>					
December to August	Herring	Perkwakwia Point and Michipicoten River, nearshore	20 May	Mid-July	1/S, G
		Michipicoten River	June	Early July	1/S
	Whitefish and trout	Perkwakwia Point	July	August	G
		Dog River	Mid-July	?	?
		Eagle River	?	?	?
	Sucker		Spring	?	U/G
	Sturgeon	Michipicoten River	Mid- to late June	?	U/G
September to November	Lake trout	Dog River	September	Late September to early October	1/S, w
		Makua River	September	?	1/S, w
		Cape Gargantua area	?	?	?
		Cap Chaillon	?	November	1/S, G
		Point Isacor	?	November	?
		Michipicoten Island	Early September	?	?
	Whitefish	Michipicoten Bay	Mid-September	?	1/S, G
		Michipicoten River	23 September-3 October	Late October to early November	1/S

*Characteristics: size of fishery: 1 = major fishery; U = minor fishery; type of gear: s = seine; G = gillnet; HL = hooks and lines; w = weir.

Partly in response to the success being enjoyed by the rival American Fur Company, the Hudson's Bay Company entered the fisheries on a commercial basis in 1839 (Weiler, 1973). The intensity of the fall fishing was rapidly escalated. In 1839 Fort William sent 593 barrels of fish to market and cured 110 barrels for home use (Fort William Journal, 30 November 1839). Each barrel contained about 200 pounds or 91 kg of fish. Michipicoten House shipped 800 barrels to the American market in 1840 (Keith, 1841). At Pic Post, where the fisheries were smaller, 127 barrels were procured during the fall of 1840. Fish were shipped on the Company's schooner *Whitefish*, which began regular tours of the various stations. New stations were vigorously developed until the late 1850s, when the fish trade fell into decline.

Various authors have reviewed the fishing activities of the Lake Superior fur trading

establishments. Nute (1926 and 1944) chronicled the American Fur Company's involvement in the industry. Details of the Hudson's Bay Company fisheries are presented by Weiler (1973), Campbell (1976), and Marsh (1976). The annotated bibliography of White (1977) lists sources relevant to fisheries on both sides of the lake. In addition, faunal analyses have been completed at some former post sites (Burns, 1972 and 1973; Cloutier, 1976; Hamalainen, 1976). Unfortunately, in the acidic soils of the pre-Cambrian shield bones are subject to rapid decay and are seldom identifiable to species.

A SEASONAL SUMMARY

The company fisheries were conducted at all possible times of the year in order that fresh supplies of fish might be obtained. Every winter, holes cut through the ice permitted fishing with hooks and lines and (in the case of the Indians) with fish spears. After ice break-up, lines with 30 or more salmon hooks (for lake trout, *Salvelinus namaycush*) and cod hooks (for sturgeon, *Acipenser fulvescens*, and large pike, *Esox lucius*) were set near the shore. The net fisheries employed gillnets in the near-shore zones of the lake, and seines of various lengths were plied from the shore or from small flat-bottomed boats. In the Michipicoten Post Journal (4 April 1821) it is recorded that 'Kirkup in the evening finished the trout seine 32 fathoms long, 61 mesh deep of a four inch mesh,' and in the Report of the same post for 1817-18 there is a note that 'four men [went] to haul the seine (upwards of seventy fathoms in length).' Gillnets were strung with cedar floats and stones and dipped in boiled larch bark, a strengthening and darkening agent. Knitting new nets from imported twine was a major chore during the winter, for nets and lines were frequently swept away in the stormy waters of autumn.

To secure supplies of fish sufficient for winter consumption, it was often necessary to establish distant fishing stations close to spawning grounds of lake whitefish, *Coregonus clupeaformis*, and lake trout. Early in September supplies of salt and barrels were ferried to the various stations in readiness for the arrival of the fishermen. Typically, a station was managed by two or three company employees with Indian helpers. Shortages of men occasionally made it impossible for a post to spare more than a single crew. After remaining at one station until the fish retreated to deep water, the fishermen would pack their gear and move to another where spawning continued to a later date. In those years when the fish were tardy or were driven from the shores by high winds, it might prove necessary for the crews to encamp into November, waiting out the end of the run or hoping for the return of the fish. In better years fishing would end sooner, frequently forced to a halt by lack of salt or barrels.

Although the majority of the fish were put into 'pickle,' some were preserved frozen in the cold weather of the late autumn. Usually, such fish were suspended on a scaffold with stakes piercing their tails (Pic Post Report, 1833). By hauling ice from the lake in late winter, each post could maintain fish in cold storage until the hot months.

PIC POST FISHERIES

December to August

Lake trout, perhaps predatory upon herring, *Coregonus artedii*, which moved inshore concurrently, formed a significant portion of the spring catch at Pic Post. Common lean lake trout were joined by the siscowet, *Salvelinus namaycush siscowet*, a variety distinctive in its obesity, dissolving into pools of grease when cooked. Although normally deepwater

residents, siscowets moved into shallows close to the Pic River, departing somewhat before the general retreat of other lake trout and herring (and usually no later than mid-July). Increasing surface temperatures may have triggered these movements. (Occasional references are also made to the 'Macqua,' a 'breed' of siscowet designated *Salmo ursinus* by Chief Factor Barnston [1874]. He found it unique in head and body form and exceedingly corpulent.)

Each year the herring would crowd the shore zones. At the peak of their spring run, countless numbers were swept into special small-mesh seines plied in Heron Bay (Herring Bay) and about the mouths of the Little Pic and Pic rivers. Such was the abundance at the former location that 3,000 fish might be gathered in a single haul (Logan, 1846). The failure of these fisheries usually came in late July or early August.

Herring served as trout bait or were salted (and occasionally smoked) if in surplus (Journal, 1 June 1831). Those preserved in spring were consumed during summer months, although, not surprisingly, trout and whitefish were thought more palatable. In years of plenty it was not uncommon to feed herring to the post dogs or to distribute them among the local Indians.

Small and rather inconstant supplies of spring-caught whitefish (i.e. lake whitefish and perhaps some round whitefish, *Prosopium cylindraceum*) increased to sizeable proportions in June as fish moved to the shores about Little Pic River. One instance is described in the post Journal for 17 June 1840: 'Sent off John Mathieson, Joseph Montpeau and 6 Indians with a boat and the seine to Little Pic River about 20 miles from this to try and salt a few barrels of whitefish, as to this season the Indians say they are plenty.' From time to time, an exceptional specimen would merit special note (Journal, 18 May 1835): '9 trout, a sturgeon, 14 herring and 2 whitefish, one of which measures 27 ins. in length and its weight as it came out of the nets 21 lbs., the largest of the kind I ever saw.' This is still but half the weight of the largest known whitefish, taken off Isle Royale, Lake Superior, in 1818 (Van Oosten, 1946).

Less migratory but also less abundant stream and near-shore species were caught too. 'Red suckers,' seined during spring and summer, undoubtedly refer to the longnose sucker, *Catostomus catostomus*, which assumes a distinctive mid-lateral coloration at spawning time. There is also reference to 'red carp' (Journal, 10 April 1830), possibly a sucker, but perhaps a redhorse species, *Moxostoma macrolepidotum*, a fish whose laterally compressed body lends it the general form of the carp. Gourlay (1822) reported two species of 'carp,' as well as suckers, but the true carp, *Cyprinus carpio*, is exotic to North America and was unknown in Lake Superior until 1915.

Other, less common species included perch, *Perca flavescens*, incidental catches of which were taken off the mouth of the Pic River; walleye, *Stizostedion vitreum*, known to the fur traders as 'pickerels' or 'dorees'; and northern pike, which the renowned naturalist Louis Agassiz (1850) sought in the Pic River. The post Journal of 1–2 May 1828 records the netting of a pike and a jackfish (both names probably refer to *E. lucius*), but from the dearth of catches it must be concluded that the pike was a rare component of the piscine community. Sturgeon, for which coarse nets woven from no. 4 twine were used, were also elusive (Journal, 27 April 1832): 'Seined morning and evening but caught nothing. Tried the drag seine as sturgeon are leaping in the river but caught none, no one here except myself know how to use it, never having fished in that way, they are awkward.' Seldom were more than a dozen fish taken in a year.

September to November

Fall fishing was devoted almost exclusively to filling salt barrels with lake trout. Seining stations were of necessity established at great distances from the post, for no spawning trout would visit the silt-ridden waters of the Pic. As Bigsby (1850) observed: 'The River Peck takes its name from an Indian word, signifying mud, as it pours out an ash-coloured, and when swollen, a reddish-yellow water, tinging the lake for a mile or two round its mouth, and derived from beds of yellow and white clay some distance up the river.' In consequence, sufficient supplies of trout were far from guaranteed, and at least two, and sometimes three, stations were established. One, at Pays Plat, was 95 km from the post, which says a great deal about its value, both as a breeding ground for fish and as a safe harbour for fishermen, unrivalled by points further east. Normally, the Pays Plat fishery lasted many weeks (Journal, 29 October 1845): 'In the evening the fishermen arrived in the boat with 40 barrels salt trout. The trout are spawning much later this fall than usual, which is the cause of their being so long filling the casks. On the first instant [1 October] last fall, they had secured and brought home 70 barrels.'

Another fishery, known as 'la peche a la gros truite a l'ance aux Bouteille' (Journal, 8 October 1829), encompassed Bottle Point, the shores of Santoy Bay, and the Steele River. In 1830 a weir was erected in the river, an innovation modelled on those employed by Indians and white men west of the Rocky Mountains (Michipicoten Post Journal, 5 September 1829). It was tended from mid-September to 21 October and by 5 October had yielded half of its total complement of 23 barrels. Annual spawning dates varied, however, and occasionally lake trout failed entirely to enter the rivers (Journal, 2 November 1833): 'Cadrant and party arrived. They only pickled 30 casks, 26 less than last autumn. The constant stormy weather was against them and at Bottle Bay River, the trout failed, few or none entered that river to spawn. Cadrant in a gale of wind lost a net and 3 cod lines, which were carried away.'

Other sites were more remote and less popular. Occasionally a seine fishery was maintained at the Pukaskwa River, much praised in the twentieth century for its large and abundant spawning lake trout (Gøodier, 1981). When David Thompson (1822) called at Pic Post in early September, he found all hands 'absent to salt trout in the Bay of Islands near the Otter Head' (possibly Richardson Harbour). In 1827 fishermen abandoned a station located at 'a bay this side of the White River.' The Journal (16 October 1827) reported that 'they had no success at this fishing as the trout had done spawning, consequently left the shallows for the deep.' Les Petits Ecris was another infrequent fishing site, lacking the late-spawners of 'Old Sansregrette's Fishery' (probably referring to Simons Harbour), to which all fishing efforts were usually shifted after the first week of October (McIntosh, 1828; Swanston, 1828). References are also made to minor stations located a little north of Sansregrette's, possibly at the White Spruce River (Journal, 22 September 1827), as well as at Pic Island (Journal, 1833) and a place 19 km west of the post known as Isle Rouge (Journal, 1840).

Whitefish formed a small part of the autumn catch, although they normally spawned in November in Oiseau Bay (known as Louison's Bay). The frequent failure of the Pic River region to yield whitefish in November may have been the consequence of unusually late spawning periods (Journal, 3 November 1883): 'La perdrix Blanc and an Indian who had remained at Ance a la Bouteille to catch whitefish arrived. He did not catch a single one. He tried several places but no fish spawns or else they had done and retired to deep water,

however, on enquiry from the Indians I was told whitefish spawns late in the season about the commencement of December.' This contrasts with the Fort William and Michipicoten House fisheries which could expect earlier whitefish catches.

In autumn, limited seining in and about the Pic River yielded 'dorees' and suckers. Some sturgeon, whitefish, and trout were also captured with nets and lines. Often, local efforts were suspended entirely in order that all nets might be pressed into the service of the distant stations.

FORT WILLIAM FISHERIES

December to August

Winter fishing commenced as soon as the ice was firmly set on Thunder Bay. Venturing offshore, fishermen set trout lines along the west end of Pie Island or ranged them northward toward the Welcome Islands. Nevertheless, some Indian families chose to abandon the fort for the bay's north end and its apparently superior fishing localities. Those remaining about the post tended to spear trout with only meagre success. The general scarcity of the species suggests that wintering grounds were located in the deeper eastern waters or to the south, outside Thunder Bay entirely. Other Indian camps existed at Black Bay and McNab Point (Point Brule), but probably none depended on a steady supply of fish.

Fishermen regularly crossed to the Welcome Islands, fishing grounds enjoyed for their proximity to the fort and their relative importance (especially for suckers) in the lean winter months. One such instance is recorded in the post Journal for 26 December 1831: 'Visinau went to Welcome Islands in order to mark out the usual places where the company sets nets under the ice, before the freeman and Indians take possession of the best stands.'

Lines and nets were moved inshore as the ice grew thin in April, until it was finally too weak to walk on. As soon as the lake opened, trout lines and nets were set opposite the mouth of the Current River. A near-shore gillnet trout fishery was begun the last week of May and continued throughout June. By the first week of July fish grew scarce at Pie, Shangoina, and the Welcome Islands, presumably when the trout returned to the deeper waters of the bay. An especially large summer run characterized the Shangoina Islands; Swanston (1835) identified a fishing station on the west side of the main island. June 1837, for example, was a good season, and 63 barrels were salted.

Two summer runs of whitefish, one in late June or early July and another in mid-August, would converge on certain shores of Thunder Bay (Journal, 25 August 1826). In great numbers they congregated at the entrance to the Kaministikwia River; 'five thousand ... were taken in one morning before breakfast' (Mountain, 1844). A typical spawning scenario is described in the meteorological records for 1839: 'June 21: The small whitefish come to the entrance of this river in shoals; June 26: Heavy rain during the night. The whitefish have departed from the entrance of the river; June 29: Perfectly calm at sunset. The whitefish have returned. Took 2506 this morning in 2 hauls with the seine ... July 3: The whitefish have again disappeared from the entrance of the river.'

Herring, unlike whitefish, never formed a significant part of Fort William's summer fisheries. Indeed, the trout-line fisheries would collapse periodically from a scarcity of herring bait. Unlike the Pic and Michipicoten rivers, no inshore movements were noted.

In the first half of May sturgeon were caught in nets set near the mouth of the Kaministikwia River (somewhat later than at the Pic River). When not flooded, the Mission

River (known as 'Big Forks') was a favourite seining spot in June, although around mid-July sturgeon entered the upstream rapids to spawn. Truly large specimens were occasionally captured; entries for 1823 record several specimens over 30 kg.

In general (Report, 1828), the Kaministikwia River abounded 'with all kinds of fish, peculiar to the country, such as sturgeon, whitefish, perch, pike, pickerel, suckers and a few catfish.' Suckers were common from early May until mid-July. Those still prevalent after mid-May most likely were white suckers, *Catostomus commersoni*, which characteristically spawn at a later date and for a longer period than longnose suckers. Catfish may refer to the brown bullhead, *Ictalurus nebulosus*, or the channel catfish, *Ictalurus punctatus*, although Scott and Crossman (1973) record the presence of these species south of Sault Ste Marie only. Perhaps it was the burbot, *Lota lota*, that was being referred to.

September to November

Although limited numbers of local suckers and walleye were available in early autumn, the major fishing efforts were directed toward lake trout and whitefish. Nets set off Mutton (or Sheep) Island were tended every two or three days (weather permitting) and so provided supplies of fresh fish. In Thunder Bay there were two runs of lake trout. Trout at Mutton Island were a smaller, early-spawning variety and usually departed their grounds in the last week of September. At this time fishing was discontinued and men and nets were dispatched to aid those already engaged at Pie Island, where large trout were moving inshore. This variety seems to have been relatively scarce at Mutton Island and the nearby Welcome Islands fishery. After 1830 two or three stations were maintained annually at Pie Island, most likely along its north shore (Journal, 12 September 1835). Other stations were established at Thunder Cape (Cape Tonnerre) and Hare Island (Rabbit Island). Usually, nets were set first at the Cape and later, as this fishery began to fail, shifted to the island grounds. In addition, an Indian fishery was recorded at Sturgeon Bay (Journal, 17 September 1839), and trout would also approach the McKellar River (at the mouth of the Kaministikwia River), although it is not known if they entered the stream itself (Journal, 8 November 1839).

In 1839, the first year of commercial fisheries, Fort William managed 17 stations. The most productive in the 1840s were the 3 established on Shangoina and its neighbouring islands, to which attention is drawn in earlier reports (Journal, 15 October 1836): 'It is astonishing what a number of trout there are of this season amongst these islands, many of them weigh from 15 to 20 lbs and very few less than 10 lbs.' Most barrels at Shangoina were filled after the large trout commenced spawning. The season terminated after 20 October (earlier than at Hare and Pie islands, where trout may have composed separate stocks), and the fishermen would then turn their attention to whitefish. The combined yield of trout and whitefish from the Shangoina Island waters in 1839 was 21,500 kg, as compared with 7,700 kg from the Pie Island stations.

Under the incentive of a favourable market, the Hudson's Bay Company expanded operations northeastward from Shangoina to include the Little and Great Shaganash fisheries and the Clark Bay station (Great Britain, 1863). When Stevenson (1865) called at the Little Shaganash fishery, he observed that 'there were a lot of old empty fish barrels there, and the remains of wigwams, lodges, canoes, and sweating houses.'

Closely following the retreat of the Shangoina Island trout came a run of large whitefish, each averaging 3.6 kg, with some weighing 7 or 8 kg (Journal, 1840, thermometrical chart). Spawning began in the last week of October and normally continued until the last week of

November, later than at any other station (Journal, 21 November 1837): 'Returned from Shangoinas (after 5 days) with 580 whitefish. It appears that owing to high water in the lake the whitefish did not spawn on the usual shallows therefore they were not so abundant as in former season.' Large spawning runs also visited the northern shores of Pie Island, but were not always consistent in their dates of arrival: 'The Indians arrived from the Pattie with 1130 whitefish, they report that the fishermen there only began to catch fish in any quantity this morning' (Journal, 5 November 1836). '[At Pattie] ... the whitefish had finished spawning and left the shallows for the deep' (Journal, 8 November 1837).

A river-spawning whitefish stock was attracted to the Kaministikwia River, approaching its mouth as early as the end of August. Once in the 1850s, 30 barrels were scooped up in a single seine haul (Thunder Bay Historical Society, 1923). Upstream movements began the first week of September or later (Journal, 9 September 1818). During the first week of October, as a rule, large numbers of whitefish began appearing at the foot of the rapids situated 18 km beyond the fort site. Spawning peaked about a week later, but occasionally continued into the last week of October (Journal, 3 October 1830): 'This is generally about the time the fish fails here [at the Fort]. The whitefish are gone up the river to spawn in the shallows and rapids, hence very few will be got this season at the entrance of the river with the seine.' At times seining was pointless even at the rapids, as the fish slipped away into fast currents. Yet extremely large hauls were possible; 11,000 fresh fish and 5 salted barrels were once obtained in only nine days (Journal, 21 October 1831).³

It is not unreasonable to infer that river-spawners composed a stock at least partially discrete from those of the main lake, an inference based not only on their significantly earlier spawning period but also on their smaller average size of 0.5 kg (Report, 1825; Journal, 14 October 1836). An analogous situation involving the existence of sympatric populations of 'dwarf' and 'normal' whitefish in the area of Munising Bay, Lake Superior, has been described by Edsall (1960).

The Fort William journals make no reference to spawning herring. This is curious in light of the great importance of the twentieth-century herring fisheries and the extensive spawning and movements known to occur within Thunder Bay each November and December (Goodier and Spangler, 1981). Such a resource could have greatly augmented the post's winter stores. Perhaps the company did not consider the fish worth the risk involved in sailing the rough waters of late autumn; or perhaps recent patterns of herring movement did not exist at the time of the company's operations.

MICHIPICOTEN POST FISHERIES

December to August

At Michipicoten Post, as at Pic Post, herring were extremely plentiful, especially throughout June and early July. Inshore movements near Michipicoten River began somewhat later than those at the Pic; comparing four years for which dates of first netting are known for both locations, there is a difference of approximately a week to ten days. The herring would be captured first in nets sunk at Perkwakwia Point (known as Gros Cap or Doghead Point) or near the Michipicoten River mouth and would then invade the river itself, an unusual habit for this species (Journal, 10 July 1831): 'We continue to obtain by means of the seine abundance of herring at the entrance of the river, into which contrary to their usual course they have not ascended this year, the consequence probably ... of the augmented waters from the interior which renders the river water fouler and colder than

usual – qualities which I am apt to think are offensive to this kind of fish.’ It is not known what distance herring would ascend the river, but great quantities could be had at various sites, as the following entry illustrates (Journal, 20 July 1838): ‘A great haul of herring, but we intend to salt no more – we have salted 55 barrels altogether.’ As herring are usually fall-spawners, it is tempting to dismiss as a mistake the observation that herring were spawning upstream. Certainly, such a phenomenon is unknown today in the Michipicoten region, although Todd (1980) has described a population of *C. artedii* that spawns during the spring near Copper Harbour, Michigan.

In July whitefish and lake trout moved to the near-shore area of Perkwakwia Point. Both there and near the river mouth, nets were initially set deep and progressively moved into shallower waters (Journal, 23 July 1818). The Perkwakwia Point fishery provided the greatest abundance of the two species in Michipicoten Bay, but it was not the only site exploited in the vicinity of the post (Report, 1817–18): ‘[If] additional men were sent here by the 15th July they would be in time for the principal fishery at a small river about 18 miles from here [probably the Dog River]. Another of the fishing places is a little short of 25 miles from hence [probably the Eagle River], there are several other fishings that [are] pretty nigh us ... To all these places the N.W. C^o always send from here.’

In Michipicoten Bay lake trout and herring ran consecutively, rather than concurrently as was their habit in the vicinity of the Pic River. (Lake trout may have fed on herring as they vacated the river and shores.) This prolongation of the fishing season granted Michipicoten Post a more certain store of fresh fish than was enjoyed by the other posts. Whitefish tended to outnumber lake trout, and the supply, while not large, was steady and generally continued throughout August (Journal, 28 July 1830): ‘Seined 110 whitefish ... The number of whitefish is considered extraordinary at this season. If I had men we might be enabled to salt several barrels of whitefish.’

Spring, in contrast, could loom as a time of hunger, despite the availability of ‘carps’ and ‘suckers’: ‘[We] employed fishing, opening up part of a sturgeon net for twine to sling floats and stones for nets, as well as to bark the remainder of the sturgeon nets, again upon other lines. Necessity now forces us to try every means to procure subsistence. Only two fish today’ (Journal, 18 May 1801). ‘Altho we have six nets in the water there are only two of them that are the proper size for catching carp [sic], the only kind of fish caught here in the spring’ (Journal, 24 April 1818).

Infrequent catches of sturgeon were made throughout June, but serious efforts to obtain this species were generally frustrated until the latter part of that month (Journal, 29 June 1797): ‘Set the large marsh net below the fall opposite the House for sturgeon.’ A single reference is made to a ‘Jack or pike fish’ (Journal, 28 April 1828). We find also the only known description of a freshwater drum, *Aplodinotus grunniens*, from Lake Superior (Journal, 22 June 1798): ‘[We] got a sort of fish in the river which I believe is called a sheepshead and is generally caught in saltwater at home. It weighed about 5 lbs had a very round back, and sharp prickly fins from the shoulders to the tail. It tastes something between a trout and a sturgeon. They are very rare here about but are often caught as I am informed about Michilimackinac.’

September to November

Known simply as Trout River until the 1820s, the Dog River was an unsurpassed fishing ground. In 1829 the introduction of a fishing weir proved a great boon, ‘not only with respect to the productiveness (equivalent to the usual result of at least three fisheries [27

nets] and the labour of 6 men during a period of 40 days) of the experiment (which occupied a period of 22 days and the labour of one man with his family) but also productive of immense saving of labour and considerable expense of fishing tackle.' In all, 36 barrels of trout were obtained (Journal, 26 September 1829). On another occasion 1,412 lake trout filled 19 barrels, giving an average weight of 1.2 kg per fish (Journal, 21 September 1840).

The duration of annual spawning could vary widely. In 1830, 1839, and 1840 a general retreat occurred by 23 September. This is earlier than dates typically recorded during more recent investigations (Loftus, 1958), but reports of later spawnings also appear in the post journals. On 25 September 1799 it was noted that 'the fish were not plentiful till the last four days.' Again, on 3 October 1801: 'It was near a fortnight [after 9 September] ere the fish were plentiful enough to admit of [the men] curing any during which time they could not get sufficient for their subsistence. Tis but these few days past they became numerous.'

Other weirs were erected at the Makua River, site of a spawning run almost as productive as that of the Dog River. We learn also (Journal, 22 October 1828) of an unsuccessful attempt 'to make a fall fishery at Montreal River (which got a great name last year for being abundantly stocked with excellent trout) which entirely failed and where too much time was lost.' The Montreal River grounds were more favoured by native fishermen and in recent memory have known spectacular lake trout spawning (Goodier, 1981). Apparently, however, stream-spawning stocks were not confined to such large streams (Journal, 10 September 1830): 'Sent Mr. Robertson to order McKay to establish a Barriere at a small rivulet (a little beyond his station [at the Dog River]) where I hear trout cast their spawn.'

Two fishing stations were located about Cape Gargantua, one at a place known as the Stoney Islands (Journal, 19 September 1827). Cap Chaillon periodically supported a station at a site known as 'Mousseau's ascent to his Sugar Bush' (Journal, 6 October 1828), while Indian fishermen worked about Point Isacor, or the 'Ecores' (Journal, 2 September 1830). During the heyday of the commercial fisheries, the quest for productive grounds also dispatched men to Michipicoten Island, outfitted with 'a lake boat with jib and main sail and spars' (Journal, 9 September 1858).

The inhabitants of Michipicoten House, like those of Fort William, identified two varieties of lake trout, distinguished by size and spawning sequence. Small trout of both river and shore were followed by a second movement of larger shore-spawning trout, which often continued until the last week of November. At Cap Chaillon, for example (Journal, 16 October 1839), there was 'collected a very superior lot of rich trout and whitefish ... [Boucher] reports that some kind of trout have not concluded casting their spawn but his salt and barrels were spent.' South of Michipicoten Bay, trout spawned until a later date (Journal, 1839, thermometrical chart): 'September 4–6 Small trout collecting at small rivers to cast their spawn ... September 13 Small trout began spawning ... September 23–24 Small trout in this vicinity done spawning ... October 18–19 Spawning of small trout about ended ... November 18–20 Large trout and Tittamingue cease spawning in this vicinity altho not elsewhere.'

The whitefish that congregated along the shores of Michipicoten Bay, prior to entering the river, tended to be the region's smallest. However, at an average weight of 0.7 kg each (based on journal entries 30 September and 1 October 1820, 29 September 1838, and 16 and 17 October 1840) they were heavier than fish of the Kaministikwia River stock. Such was the plentitude that the Michipicoten Post inhabitants permitted themselves the luxury of using whitefish as cattle feed (Keating, 1825).

Upstream movements usually commenced in late September or early October, although

the run began as early as 10 September in 1859. Seining operations extended 16 km upstream to Scott Falls, but it is likely that only a small percentage of the stock managed the full journey (Journal, 9 October 1829): 'The seine was worked today in different places of the River down from the Grand Peche and only procured one Titamingue and two pickerel fishes. Hence we presume the fish have got up amongst the rapids and dispersed here and there.' As in the Kaministikwia River, rapid waters were preferred. There were years when the river would attract whitefish over three weeks, and in 1830 it supported a seine and weir fishery from 23 September to 10 November. Because of their sensitivity to turbid waters, however, whitefish avoided the river in times of storm. The damage could be dramatic (Journal, 25 October 1829): 'In the evening the gale increased to a perfect hurricane, rolling the water of the lake into the river at a most rapid and alarming rate flooding and scooping off its banks everywhere – so much so that a strong quay at the end of our Mess House was demolished and the House itself partly undermined.' Natural modifications of the river bottom (including spawning beds) were therefore common in the Michipicoten River and other rivers of the North Shore (Journal, 25 September 1828): '[The Tinsmith is] very expert at working the seine, by which some years ago a great number of whitefish used to be caught during the spawning season in this river – an alteration since in the bed of the river occasioned by a flood or flush of water seems to have given occasion to the fish to resort elsewhere.' The Dog River was likewise susceptible to the power of wind and water to interrupt normal spawning patterns in which whitefish arrived to cast spawn a short time after the lake trout had departed (Journal, 27 September and 29 October 1831).

Herring were occasionally captured in seines plied in October in the Michipicoten River, but were never abundant (as they were in July) and were not reported to spawn. Also from the river came small 'toulibee,' and Factor George Keith defined a variety of fish known as 'ciskeche' (Journal, 17 October 1831), 'a small species about the same size and bearing considerable resemblance to the herring.' Traditionally, the names cisco, herring, and tullibee have all been applied to *Coregonus artedii*. Some biologists have seen fit to recognize a number of different subspecies within Lake Superior (Jordan and Evermann, 1908; Koelz, 1927). While it is no longer fashionable to grant these forms subspecific status, it is possible that they represent phenotypically different stocks of ciscoes which were perhaps familiar to the fishermen of Michipicoten Post.

CONCLUSION

Fisheries of the Hudson's Bay Company posts were generally limited to river and near-shore areas, exploiting both resident species and migrant fish populations that occasionally entered shallow waters. Locally exploited non-migratory species included sucker, walleye, perch, and sturgeon. Sturgeon were highly prized at the Michipicoten and Kaministikwia rivers when they moved into zones of rapid water in late June and mid-July, respectively. Although they were not excessively fished during the years of the company's fisheries, ruthless exploitation in the late 1800s preceded dramatic population failures. The low catchability of other species reveals the small size (and possible precariousness) of the widely scattered populations of the rugged north shore. Many have been irretrievably lost.

Of the seasonal migrant fish populations, herring, whitefish, and lake trout periodically formed extremely large spawning and feeding aggregations. Journal entries do not reveal apparent coregonid or salmonid depletion by the early commercial fisheries, although the

expansion of the fisheries after 1839 was significant in its sequential exploitation of grounds farther and farther from the trading posts. With the subsequent rise of fishing towns in the 1880s, such opportunistic fishing became more earnest, and it has been linked by some writers to a sequential fishing-up of certain fish stocks (Lawrie and Rahrer, 1973).

Every year the company's fishermen estimated optimal spawning times and planned their operations accordingly. Yet dates and supply were far from certain due to the combined effects of primitive fishing techniques, natural fluctuations in population abundances, and conditions of weather. River flooding played no small role in disrupting normal migration patterns. Hunger at the posts was a fear that was occasionally realized.

Variations in the patterns of intraspecies migration suggest factors operating in addition to those of climate. It has long been known that within a single lake coregonids and salmonids can develop a variety of stocks differing in appearance, breeding habits, and general behaviour. It seems in fact to be the nature of the rugged Superior shore, with its broken series of shoals and bays, to promote stock isolation.

Fishermen from both Pic Post and Fort William caught lake trout from mid-May to early July, whereas Michipicoten House enjoyed later-summer fishing. Fall fisheries sought trout in rivers or on spawning grounds sheltered by islands and bays. Spawning rivers included the Montreal, Makua, Dog, Pukaskwa, Little Pic, and Steel, but farther west none were noted, and it is unlikely that Fort William employees river-fished for lake trout. Spawning in rivers tended to occur at an earlier date than along the main shore. Obvious at certain scattered locations (in the Thunder and Michipicoten bay areas, for example) were two distinct and consecutive influxes of trout, the second distinguished by larger-sized fish. Modern fishermen report such intraspecific varieties as still existing today on a few shoals and banks (Goodier, 1981).

Every May, herring fisheries were established from Pic Post and Michipicoten Post, beginning later but lasting longer at the latter, where fish reportedly ascended the Michipicoten River. It is possible that movements of herring and predatory lake trout were causally linked at some locations. The success of the spring herring fisheries was not repeated in the fall (although, undoubtedly, reported whitefish catches contained some herring). It is possible that herring spawned at a depth or at a late date unsuited to primitive netting methods, since twentieth-century fisheries have reaped great benefits from spawning stocks of herring.

Lake whitefish moved to inshore waters earliest at Pic River, somewhat later in Thunder Bay (end of June), and last around Michipicoten Bay (July). The heaviest concentrations occurred about the major rivers. Although relatively sparse at the Pic, spawning was intense in the Michipicoten and Kaministikwia rivers near the end of September. River fish were smaller in size and spawned earlier than those of the main shore; they may have composed separate stocks.

Fisheries management organizations have recently given much consideration to stock discreteness, a factor generally ignored in earlier stocking ventures. It was with this in mind that the Stock Concept International Symposium (STOCS) was convened in 1980 and sought a synthesis of current research (Great Lakes Fishery Commission, 1981). It was there noted that the mapping of former spawning grounds could permit more enlightened stocking strategies to be designed; sites that once supported spawning fish seem the most likely to do so again. In this essay, data have been presented from the earliest possible sources.

Current fisheries rehabilitation efforts are focused on the lake trout, a fish extremely

selective of spawning site and prone to forming discrete breeding stocks. Formerly decimated by the exotic parasitic sea lamprey, plantings of young fish on former grounds (including many of those noted in this essay) are slowly restoring the population. River plants have so far been unsuccessful, however, and it is possible that the river trout, once so familiar, have been lost forever from the gene pool. In fact, for reasons that still remain unclear, restoration progress has been slower than was originally hoped for. Baseline studies, such as this one, suggest that breeding stocks are best drawn from original native stocks from the same lake and that their progeny be carefully replanted according to original habitat and habits.

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NOTES

- 1 Primary source documents of the Hudson's Bay Company consulted for this paper include:
 - Hudson's Bay Company Archives: Public Archives of Canada, MG20 HBC 1M79, 1M80, 1M117, 1M118, 1M131, 1M152, 1M153, 1M779, 1M781, 1M783 (microfilm);
 - Hudson's Bay Company Archives: Public Archives of Manitoba, MG1 C1, Fort William Collection;
 - Ontario Archives, n Mss., Hudson's Bay Company, General Box 2 (Michipicoten Post Journal 1835–1837);
 - Fort Friendship, Wawa (Pic Post Journal 1845–1847, privately owned).
- 2 In the late 1800s there were 150 people connected with the post on the Agawa River according to Bussineau (n.d.). No information pertaining to its fisheries is available. The post was abandoned in 1844 (Collins, n.d.). The Batchawana post was established prior to 1814 (Franchère, 1854). In 1824 it was abandoned as an unprofitable venture, but it was reopened some years later (Fort William Report, 1824).
- 3 The Kam River whitefish run ceased prior to 1920. McNab (1920 and 1921) attributes its loss to the effects of dredging and dumping of grain screenings into the river (at the rate of 500,000 bushels each fall).

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