



Coaster Brook Trout in Lake Huron

May 2000



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I. INTRODUCTION

*“Overseer, Norquay, Manitowaning, reports that they have a number of good brook trout streams, two of international reputation, the far-famed Blue Jay and Manitou streams. The fishing in these has apparently not deteriorated to any great extent, although there is no doubt a progressive decline owing to the greater fishing, lessened volume of water and poaching (out of season fishing), unknown when the country was unsettled. The wonder is that any fish are left. The hand of every man seems to be against the continuance of this species, as they are fished for in and out of season, low water and high, summer, fall and winter, by fair means and by foul, **and the only period of exemption is the emigratory one when the larger specimens strike for lake water, returning about July in each year.**”*

Excerpt from 100 Years of Conservation Officers, Manitoulin District- North Shore, Report of 1902 (Manitoulin Island, Ontario).

Coaster brook trout (coasters), *Salvelinus fontinalis*, are brook trout that spend part of their life in the Great Lakes. Becker (1983) defined coasters as “any brook trout that spends part of its life in Lake Superior”. For the purposes of this report the definition has been changed to include all of the Great Lakes. These large brook trout have a preference for shoreline habitat, and typically remain in depths of < 7 m. of water, or within 15 m. of shore (Newman et al, 1997). Present in Lake Superior, it was speculated that Lake Huron may have/had populations of this trophy-sized brook trout present as well. Although coasters are considered one of two native salmonids historically present in Lake Huron, Fish Community Objectives recently completed for the lake failed to address the species (DesJardine et al. 1995). The *State of Lake Huron in 1992* (Eberner, 1995) only briefly acknowledges brook trout. No current management plans exist for brook trout in Lake Huron.

The U.S. Fish and Wildlife Service (Service) role in the protection and restoration of native Great Lakes fish and wildlife resources and the habitats upon which they depend has been clearly defined (Mission Statement of Service). Loss of critical habitat, along with over harvest and the introduction of non-indigenous species, has resulted in the depletion of some fish species to levels where only a few remnant stocks remain. Funding provided by the Service's Fisheries Stewardship Program allowed the Alpena Fishery Resources Office (FRO) to conduct a study to investigate current and historical ranges of coaster brook trout in Lake Huron, to identify past and present spawning habitats, and to select candidate streams for in depth investigation. In-depth investigation of candidate streams to determine potential for restoration efforts may be necessary should an interagency effort be endorsed by the Lake Huron Committee.

According to numerous newspaper articles and interviews cited within this report coasters historically were found in small numbers in Northern Lake Huron and its tributaries. These tributaries are characterized by high groundwater input and upwellings. Anecdotal reports indicate that coaster populations may have spawned in the lake as well. Whether coasters resulted from stream populations and traveled out to the lake for greater forage, or if populations existed that spent the majority of their lives in Lake Huron (including spawning) these populations did exist. Populations were certainly enhanced through stocking efforts of

the provinces, states, and private organizations. There are documented inland populations of brook trout throughout Canada and the United States that attain large sizes due to the accessibility of a lake from their natal stream. Lake environments provide larger forage, and will therefore support larger predators (Bond, 1979). Brook trout, as do rainbow trout (*Oncorhynchus mykiss*), utilize all available food sources. Whether they are called salters or coasters all these strains of brook trout (if indeed they are different strains) are simply brook trout taking advantage of their environment.

Coaster brook trout filled a distinct ecological niche by being a large (compared to stream-run brook trout) predatory game fish found in nearshore waters of the lake and in tributaries of Lake Huron. These fish provided a unique recreational opportunity to anglers. Due to the aggressiveness of brook trout and the popularity of these game fish, populations have been diminished and in many cases extirpated from portions of the Lake Huron watershed possibly due to overfishing. Several other types of physical and biological factors may have contributed to the decline of the coaster in Lake Huron. Dams and other fish passage impediments have been a contributing factor to the decline of this lake-run trout. As the lands in northern Lake Huron are continuously being cleared for new development the increase of sediment in our rivers and streams is another potential contributor to the decline of the coaster. Sediment fills spawning beds and warms rivers by widening and shallowing them. The removal of riparian vegetation creates unstable banks, and contributors to the sediment loads and warming effect of the river/stream. However, a large contributing factor to the decline of this strain may have been through competitive interactions with non-indigenous species introduced into the Great Lakes. Species such as Pacific salmon, brown trout (*Salmo trutta*), and rainbow trout could have possibly assisted in the decline of coasters, and may be a limiting factor to the recovery of this trout (Rose 1986, Newman 1997, Newman et al. 1997). Several streams investigated in this study that formally supported brook trout and coaster populations now support non-indigenous fisheries populations.

Federal, state, tribal and provincial biologists have been studying Lake Superior coaster populations for the last ten years (Newman, personal communication). Lake Superior had historically high numbers of coasters, and efforts are underway to reestablish self-sustaining populations of this large, anadromous brook trout. This effort has assisted the investigation on Lake Huron. Assumptions were made in this study that certain biological characteristics of the coaster, such as the tendency to remain in 3-10 m. of water when out in the Great Lakes would remain consistent in both Lake Huron and in Lake Superior.

II. COOPERATORS

In order to assess the fisheries populations in the targeted streams, supplemental funding had to be acquired to purchase field equipment such as a backpack electrofisher, batteries, a charger, dip-nets, tools, and various other gear. Trout Unlimited provided funds to this study through the Coldwater Conservation Fund in 1998 and 1999. Those fiscal resources also assisted with extensive travel costs incurred for the basin-wide fieldwork.

Personal communication with agency personnel has been an excellent source of information. Michigan Department of Natural Resources (MDNR), Ontario Ministry of Natural

Resources (OMNR) and Department of Fisheries and Oceans (DFO) personnel were especially helpful in relaying information to co-workers and reporting contact information for local commercial and recreational fishers. Sportfishing clubs, and universities were contacted along with U.S. and Canadian museum personnel. Sea Lamprey Control offices, both U.S. and Canadian, were assisting the study by sharing personal knowledge of rivers and streams, providing access information, and allowing Service personnel to review weir and shocking data from the last 40 years. Technician Enterline developed a working relationship with personnel from OMNR, DFO, Canadian First Nations, MDNR, U.S. Tribal Biologists, commercial fishermen in both Ontario and the U.S., the Lake Superior Brook Trout Subcommittee representatives, and recreational fishermen around the Lake Huron basin. (See Appendix A for list of contacts.)

Outreach also consisted of publicizing the study in local newspapers, magazines, and the Internet. Study results have also been presented to universities and local community groups.

**Articles publicizing the coaster information search
have been printed in:**

The Oscoda Press (Oscoda, MI, July 1997)

The News (Alpena, Aug. 1997)

Lines to Leaders, Trout Unlimited newsletter (Sept. 1997)

Trout Magazine (Fall 1997)

The Evening News (Sault Ste. Marie, MI, December 1997)

Harold Times (Gaylord, MI, Jan. 1998)

Michigan Out-of-Doors magazine (March 1998)

Alpena FRO website

III. MATERIALS AND METHODS

The objectives of this study included: 1) a historical summary of coaster brook trout in Lake Huron, including streams thought to have supported reproduction; 2) a habitat survey of past and potential spawning streams identifying impediments to present day utilization, and; 3) a final report to present to the Lake Huron Committee describing historical record, impediments to restoration, and potential for restoration of the species in Lake Huron.

The first year (FY 97) of the study emphasized compilation of historical evidence of the presence of coaster brook trout in Lake Huron. Commercial and sport fishermen around the basin were encouraged to contribute knowledge to the Alpena FRO of these trophy brook trout. Archival information was hard to locate. Newspaper clippings, conservation reports, sea lamprey weir data, books, scientific papers, incidental reports, and interviews with fishermen were collected, compiled, and a list of historical coaster spawning streams was created. Several records exist relative to incidental brook trout catches, but few refer to coasters existing in any great number. Several streams have been reported to either have had

or presently have a spawning population, and it is along these streams and coastlines of the lake that most of these incidental catches are reported.

As a starting point, the Service Sea Lamprey Control data on brook trout in Lake Huron identified which streams held brook trout in Michigan, but failed to give the size of the brook trout encountered, unless someone took the time to note unusual size of the fish.

Several Michigan streams consistently had brook trout noted in their lower reaches:

Upper Peninsula

Caribou Creek from 1971-1994

Bear Lake Outlet in 1973 and 1987

Joe Straw Creek in 1973 and 1984

Albany Creek from 1971-1989

Trout Creek in 1972 and 1981

McCloud Creek in 1961

Susan Creek in 1961, 1969, and 1979

Lower Peninsula:

Elliot Creek in 1984 and 1993

Grass Creek 1972-1996

(U.S. Fish and Wildlife Service, Sea Lamprey Control)

One of the many challenges of this study was to determine whether a brook trout population was native, or if it could have resulted from stocking. Stocking records were obtained from MDNR personnel in both Alpena and Newberry. Those records indicated several of the catches, particularly around the Alpena and Presque Isle Counties were probably the result of stocking efforts. From 1984-1991 the MDNR planted brook trout in Lake Huron to provide a diversity of nearshore fishing opportunities to anglers. Stocking success was poor so the program was discontinued in 1991. Unfortunately, these efforts decreased the reliability of any "coaster" catches around the Rogers City /Alpena geographic area up to the present time. Stocking reports from the OMNR, and data compilation of all stocking efforts basin-wide is found in Appendix B.

In order to publicize the search for coaster information a poster was created and placed at all marinas and many bait shops around Lake Huron, including all Canadian marinas. The coaster poster was also included on the Alpena FRO Internet Homepage. People with information were encouraged to contact the Alpena FRO and report any catches. Through the use of this poster 15-20 additional reports of coaster catches were received from around the Lake Huron basin.

U.S. streams where historical and current runs of large brook trout were/are believed to take place are confined to Lake Huron waters from Mill Creek in Harrisville to the St. Mary's River in the Eastern Upper Peninsula of Michigan. Reports of catches or runs of coasters in Canadian waters are quite varied. Catches have been reported in the northern reaches of the North Channel, southern Manitoulin Island, the south-east corner of Georgian Bay, and there

are reports of current runs on the western side of the Bruce Peninsula. Only one sighting has been reported of coasters in the main basin of the Canadian waters of Lake Huron.

Year two (FY 98) of the Lake Huron coaster brook trout study consisted of surveying the streams that historically supported spawning populations of coaster brook trout. Eighteen streams were surveyed. Six were in the lower peninsula of Michigan, six were in the upper peninsula of Michigan and six were in Ontario, including the lower St. Mary's River, St. Joseph Island, North Channel, and Manitoulin Island. Reports were made of current populations on the Bruce Peninsula, however, no definite information was gathered.

Eighteen streams were assessed for habitat characteristics during the 1998 field season. All streams were walked from the mouth upstream. Barriers to spawning habitat, presence of gravel/cobble substrate, and groundwater input (temperature) were identified during this survey. A viewing tube was constructed by Biological Technician Koproski to facilitate examination of the substrate. This viewing tube allowed determination of percent composition of the various categories of substrate (eg: boulder, cobble, gravel, sand and silt). Substrate size categorization and determination of percent cover and percent shading were conducted in a similar manner to a Wisconsin DNR quantification by Simonson, et al(1994).

Determination of Stream Quality for Coaster Brook Trout

The process by which streams were eliminated or determined suitable for further study:

Step 1-Initial Assessment (Spring 1998)

Streams were eliminated from a list to be electrofished if:

- Barrier to spawning habitat (natural or manmade)
- Temperature too high [$>18^{\circ}\text{C}$ at any time during the year- lethal temperature thresholds (Bennett, 1983)]
- No spawning gravel (sand and silt the only substrate)

Location of spawning salmonids (steelhead and chinook salmon) were noted along with presence of redds.

Twenty-six rivers/streams were initially assessed, based on the above criteria. Nine were scheduled for Fall 1998 electrofishing.

Step 2-Electrofishing (Late Summer/ Early Fall 1998)

Streams were not electrofished if:

- Water too low (indicating little groundwater input or upwellings)
- Temperature too high ($>18^{\circ}\text{C}$ at any time during the year)

Streams that were electrofished had a steady supply of groundwater, which kept temperatures low ($4\text{-}15^{\circ}\text{C}$). When shocked, all fish species were noted, but special attention was given to:

- Presence/absence of brook trout
- Presence/absence of competing salmonids

Eight streams were electrofished during the 1998 field season, brook trout were found in four.

Step 3- Four streams were chosen for electrofishing during the fall spawning of brook trout, to potentially discover a population of coasters:

- 1) Black River, Alcona County, Michigan
- 2) Elliot Creek, Cheboygan County, Michigan
- 3) Albany Creek, Chippewa County, Michigan
- 4) Blue Jay Creek, Rainbow County, Manitoulin Island, Ontario

The summer of 1998 was extremely dry, with very little precipitation in the Lake Huron basin. Due to these weather conditions several of the streams noted as historically supporting coasters had very low flow by mid-summer, showing little groundwater input and high temperatures. It was concluded that coasters may have utilized these streams at one point for feeding or shelter, but these streams were unable to support juveniles during instances of low water. Lake Superior studies suggest juvenile coaster brook trout remain in their natal stream for a year before swimming out to the lake (Newman, personal comm.). If this is true for Lake Huron coasters, then few of the streams surveyed would support coasters. Streams that retain low temperatures and stable flows (indicating high groundwater input) are able to support a year-round population of coldwater fish therefore electrofishing studies were concentrated on these streams. Although eighteen streams were assessed, only eight of the eighteen would possibly be able to support a year-round trout population, as indicated by the initial habitat assessment. Those eight streams were electrofished with a AbP-3™ backpack shocker using the experimental quadrapulse system. The quadrapulse system dramatically reduces damage to salmonids if used properly (O'Neal 1998). Little damage to trout was noted using this system. Voltages varied between 350-400 volts were used. Duty cycle was maintained at 20%. When the duty cycle was set higher than 20% tissue damage was incurred in the form of stunning (hard narcosis). Rate was set at 200 pps (pulses per second) for all electrofishing sites. These settings were used in low conductivity waters ranging from 60-200 uS (micro-ohm-cm).

Due to a manufacturer backorder in backpack electrofishers, Technician Enterline was unable to initiate shocking surveys until late-July 1998. Once the electrofisher was obtained the fieldwork immediately commenced, and eight streams were sampled.

Data collected during the electrofishing process included: GPS Coordinates, water temperature (°C), conductivity (uS), pH, % cover, % shading, % substrate composition (boulder, cobble, gravel, sand, silt, clay), water color, turbidity, water levels, GPS coordinate, average wetted width and depth (m), estimated area shocked (m³), actual time electrofished (seconds), number and type of fish species collected. For all brook trout captured, total fork length (mm), weight (g), removal of the adipose fin for genetic testing, scale sample, and the coloration were recorded. Electrofishing sites were also recorded with photos.

Genetic materials were taken from a representative sample of all brook trout caught while electrofishing. Thirty genetic samples were taken from six different streams. These genetic

samples were shipped to Dr. Mary Burnham Curtis of the USGS-Great Lakes Science Center in Ann Arbor, MI for analysis. Dr. Burnham-Curtis is currently analyzing these tissue samples, and results are expected September 1999. Questions this analysis will answer are: 1) Were these Lake Huron brook trout stocked by natural resources agencies, or are they in fact a wild population? 2) Are these brook trout genetically similar to Lake Superior brook trout? This is important for stocking purposes. Genetic analysis has determined that Lake Superior brook trout originated from the Lake Nipigon strain (Burnham-Curtis, personal communication). If this is true for the Lake Huron population as well, then there would be no genetic reasons to prevent stocking Lake Superior brook trout in Lake Huron waters. 3) Are “coasters” caught in the Black River, Alcona County genetically different from other brook trout, or Lake Superior coasters? If so, and if stocking of coasters in Lake Huron becomes a management tool of natural resources agencies, then a broodstock should/could be developed from the Black River population.

Four of the eight streams were targeted as potentially having a current run of coaster brook trout. These four streams were checked throughout the fall and early winter of 1998 for spawning coasters. Streams were located on Manitoulin Island, Ontario (Blue Jay Creek), the upper peninsula of Michigan (Albany Creek) and there were two in the lower peninsula of Michigan (Elliot Creek and the Black River) (See Map A). Assistance from the Blue Jay Creek lake trout hatchery manager, Mr. Paul Methner (OMNR), has been particularly helpful. Mr. Methner monitors the fish runs in Blue Jay Creek closely, and contacted the Alpena FRO when the fall brook trout spawning run started. No coasters were captured during the fall electrofishing, but in January of 1999 coasters were caught ice-fishing on the Black River, Alcona County, Michigan. Four intact specimens were collected by the Alpena FRO, and several others already gutted and frozen were viewed by Alpena FRO personnel. The fish were all 247-294 mm, all had a silvery coloring, and were caught at the first pool up from the mouth of the river. Pyloric caeca were counted, and all of the fish were brook trout. Genetic tissue samples were taken of each of the four fish, and were sent to Dr. Burnham-Curtis for analysis.

III. DATA

Following, are brief descriptions of the watersheds investigated. Data was separated into six geographic regions for ease of organization. The regions are:

- 1) Michigan, Lower Peninsula**
- 2) Michigan, Upper Peninsula**
- 3) St. Mary's River**
- 4) North Channel/Manitoulin Island**
- 5) Georgian Bay/Bruce Peninsula**
- 6) Southern Lake Huron (Ontario)**

Michigan, Lower Peninsula

Although the lower peninsula of Michigan is the most heavily populated section of the Lake Huron watershed, it also holds the greatest promise for future coaster rehabilitation. The Black River watershed in Alcona County (see map) is the only watershed where a suspected current coaster population was located. Several watersheds, such as Elliot Creek, Greene

Creek, and the Black River (Alcona County) would be candidate streams to consider if stocking efforts were proposed by management agencies. Watershed restoration efforts, some as simple as man-made barrier removal would increase the viability of coaster populations on several other streams in the lower peninsula of Michigan.

Coaster populations were documented in the lower peninsula of Michigan as early as the 1920's (Deckett 1997). Coasters were caught both in shallow portions of the lake as well as in tributaries. Catches in the tributaries was predominately in the spring and fall "*during times of high water*" (Deckett 1997). Most of the interviews mentioned that coasters "*you don't hear of anyone catching coasters any more*" (Kindt Interview). Large brook trout caught in Alpena and Presque Isle counties in the 1980-1990's were probably of hatchery origin, and coaster reports from these counties have to be discounted. Many catches were reported at times when stocking data was not available, and in streams far removed from stocking sites.

1) Mill Creek, Alcona County

Stream Characteristics:

Mill Creek is small watershed that flows through the village of Harrisville. Two barriers exist on this small creek: A fish barrier was placed by the MDNR at the mouth of the creek, and at the U.S. 23 road crossing, a culvert placed at the crossing would block anadromous fish passage. A trout stream, this creek has a very rocky substrate with minimal bedload. Unfortunately, at the MDNR barrier during high waters, steelhead and suckers can get around the barrier and do spawn upstream. When Alpena FRO personnel investigated this stream approximately 50 steelhead were trapped in the pool formed by the fish passage structure, unable to return to Lake Huron.

Historical Information	
Number of Interviews	1
Archival Data Reviewed	0

Recommendation: Mill Creek at one time may have supported a small population of coasters. It is an excellent salmonid creek. However, stocking is out of the question until the barriers are removed. I would also hesitate to recommend this small stream for stocking because of the proximity of the stream to a town. The stream would only support a small run and would be overfished quickly.

2) Sturgeon Point Creek, Alcona County

The only information gathered about Sturgeon Point Creek was a letter written by Herbert Deckett to the Alpena FRO on August 9, 1997. In the 1920's he caught coasters in Sturgeon Point Creek in "*times of high water*". There was a steamboat wreck north of Sturgeon Point in Lake Huron, half way to the Village of Alcona, and the coasters would "*stay around the old boiler*". Mr. Deckett used to row out to the wreck and catch coasters there in the late 1920's- 1935.

Historical Information	
Number of Interviews	1
Archival Data Reviewed	0

Recommendation: This stream was not investigated due to lack of current sightings.

3) Black River, Alcona County

According to anecdotal sources the Black River has supported a run of coasters since the 1920's. Reports indicate runs were particularly strong in the late 1960's, and then again in the late 1970's. Catches in the 1990's have yielded brook trout from 19-21 inches long, weighing 1-2.5 pounds. No brook trout were captured during Service electrofishing surveys, but four large brook trout were caught by anglers in February of 1999 at the railroad trestle in the Black River. Four specimens were frozen for us, and two other fishermen allowed us to inspect their fish. These brook trout were coasters. All had a silvery sheen, pyloric caeca ranged between 23-32 (which confirms they are brook trout and not splake), and all had blocky tails. Length ranged from 247-294 mm. Genetic tissue samples were taken from each fish, and mailed to Dr. Burnham-Curtis for genetic testing. Results are expected in the fall of 1999.

Mr. Deckett used to catch coasters in the Black River from the 1920's until 1935, and he reported: *"The coasters ran up the Black River after heavy thunder storms in the summer and the water was high from run-off. I have caught quite a few there, you can tell them from the local trout, they were bigger and heavier."* (Herbert Deckett, 1997)

"I used to catch coasters in the Black River in Alcona County about 18 years ago (1979), they were big, built like footballs." (Sonny Dietz, 1997)

Historical Information	
Number of Interviews	6
Archival Data Reviewed	0

Electrofishing Data

Variables	Measurement	Variables	Measurement
GPS Coordinates	4448.878 N 8319.934 W 4445.477 N 8320.278 W	Water Flow	moderate
Effort (seconds)	1027	Water Levels	normal
Average Depth (m)	.3	Clay (%)	0
Average Width (m)	7.5	Silt (%)	5
Conductivity (uS)	6	Sand (%)	15

pH	190	Gravel (%)	30
Temperature (°C)	6	Cobble (%)	40
% Cover	8.3	Boulder (%)	10
% Shading	20	Dates Electrofished	11/2/98, 11/12/98
Color	35	Total Area Electrofished (m ²)	110
Turbidity	colorless		

Species Present	# Captured	Average Fork Length (mm)
RBT	45	138
LND, STT, SFS, BLM, SLS		

Stream Characteristics: The south branch has colder temperatures, but agriculture in the headwaters has contributed to organic and silt input into the river. The north branch is warmer. Reaches in both branches of the river have clean cobble areas and colder temperatures which are conducive to support salmonid populations. The main branch, upstream from the town of Black River has clean gravel/cobble habitat and a riffle/pool/run configuration.

Recommendation: Further study of the brook trout run in the Black River, including a telemetry study, is recommended before any stocking takes place in Lake Huron. The Black River supports a brook trout run, along with several other salmonid species. From the information gathered through this study I would consider the Black River a historic coaster spawning river. Competition between the exotics and the brook trout is a concern.

Devil's River, Alpena County, Michigan

Coasters were "common" in the Devil's River in the late 1960's and early 1970's, according to anecdotal information compiled through interviews. A large coaster was 21-23 inches long, but typically were 14-16 inches. During the 1980's several were caught in the 12-15 inch range, but numbers of coasters had gone down. One gentleman speculated that the increase in the beaver population cut off spawning sites. Throughout the 1990's several brook trout were caught each year in Sea Lamprey traps, however size of trout were not recorded.

"There used to be a good coaster run in the Devil's River, my son used to catch them before school (late 1960's, 1970's). Typically they were 21-23 inches long. There was a terrible storm in 1978 that tore out a lot of the natural cover and sediment from agricultural fields filled the spawning beds. Beaver dams have cut off spawning sites." (Bill Bartow, Ossineke High School teacher, 1997)

Historical Information	
Number of Interviews	3
Archival Data Reviewed	1

Stream Characteristics: The river branches quickly from the mouth, and the branches are quite different. The north branch originates from Devil’s Lake which is shallow, and has a top-draw dam. Therefore the north branch is very warm, and would not support brook trout. The south branch and its tributaries have traditionally supported brook trout. Upon examining the headwaters it was noted there is a lot of agricultural activity on the south branch, and cattle are not fenced out of the river. This excess organic input has led to dramatic filamentous algal growth downstream and a heavy silt/sand bedload. Reaches of the south branch do support limited numbers of trout, and there is rocky substrate on the lower reaches. Steelhead were observed spawning in the main branch, in the lower north branch, and in several miles of the lower south branch on April 27, 1998.

Recommendation: From the information gathered through this study I would consider the Devil’s River a historic coaster spawning stream. If restoration was implemented on the south branch of the Devil’s River (ie.- fence out the cattle, allow riparian to establish, and remove the excess sand/silt bedload) this river may once again support a coaster population. Concerns remain about the competition at the juvenile level with rainbow trout (*Oncorhynchus mykiss*) and chinook salmon (*Oncorhynchus tshawytscha*), since populations are established in this watershed. The rusty crayfish is an exotic species that was found in the main branch in high concentrations, and may be of concern to fisheries production.

5) Thunder Bay River and surrounding area, Alpena County

Incidental catches in the Thunder Bay River were reported in 1944, and from 1992-1997. All were caught in shallow water. Two were caught in late fall/early winter, but the most recent catches were in the summer months. Sizes ranged from 14-25 inches, and the coasters were typically three pounds.

“From Presque Isle Harbor down to Thunder Bay I have caught 12-13 coasters in the last 5 years. You can see them in the Presque Isle Harbor against the rocks, but they won’t bite. I have caught several at Rockport (just north of Thunder Bay) in 6-7 feet of water. My most recent coaster catch was in July 1997 just outside of the Thunder Bay Marina. It was 14 inches long.” (David Konieczny, Alpena 1997)

Historical Information	
Number of Interviews	4
Archival Data Reviewed	0

Stream Characteristics: The Thunder Bay River is too warm and turbid to support a brook trout population, but there are several little creeks in Alpena County that may support a small

population of brook trout. Occasional incidental catches have been reported in Alpena County, but I believe the recent catches are brook trout that were planted by the MDNR in the late 1980's, and early 1990's (Appendix B).

Recommendation: I would not consider coaster rehabilitation a high priority in the majority of Alpena County (excluding the Devil's River) because the required habitat or and/or access to that habitat is not present.

6) Rogers City, Presque Isle County

Several incidental coaster catches were reported in Swan Bay from 1980-1993, and one catch was reported in 1997. The coasters caught were typically about 22 inches long, and weighed from 3-4 pounds. The majority were caught in 6-7 feet of water, but one was reportedly caught in 30 feet of water in June while the fisherman was trolling for brown trout.

Historical Information	
Number of Interviews	2
Archival Data Reviewed	0

Recommendation: Stocking reports by the MDNR would suggest that "coasters" caught in this area of the lake were probably a result of the stocking effort in the 1980's to establish a lake population of brook trout. This effort was discontinued in the early 1990's.

7) Grass Creek, Cheboygan County

Stream Characteristics: This creek was not electrofished. Grass Creek maintained cold temperatures throughout the year, but the substrate is all sand and grass. The only data located pertaining to brook trout in Grass Creek were from Service Sea Lamprey Control data. Brook Trout were documented in the creek from 1972-1996. A Fisheries Biologist wrote during a stream electrofishing survey on August 14, 1996: *"30 brook trout were encountered, the larger brook trout had silvery sides- Are these coaster brook trout?"*

Historical Information	
Number of Interviews	0
Archival Data Reviewed	1

Recommendation: Coasters may use/have used Grass Creek as a food source and/or shelter during warm summer months, but I have doubts that coasters historically spawned in this creek. Due to the recent report I would not discount the possibility of a current coaster population utilizing this creek.

8) Greene Creek, Cheboygan County

The only reports of coaster activity in Greene Creek was from the Service Sea Lamprey Control records. On 2 September, 1970, during a 70% Bayluscide treatment a Fishery Biologist noted: *"Approximately 50 large coaster brook trout and 20 splake were encountered in the first half mile up the mouth."* Sea Lamprey Control personnel were inclined to believe there would be a good chance to find a current coaster population in Greene Creek. Greene Creek was investigated on May 28, 1998, and the decision was made to return and electrofish it in the fall. Upon returning on September 9, 1998 high filamentous algae growth was observed, and an increase in organic debris (since May). Rainbow trout were present in large numbers at the electrofishing site (the deepest pool in the lower reach of the creek), but no brook trout were captured.

Historical Information	
Number of Interviews	1
Archival Data Reviewed	1

Electrofishing Data

Variables	Measurement	Variables	Measurement
GPS Coordinates	4538.23N 8414.04W	Water Flow	moderate
Effort (seconds)	638	Water Levels	low
Average Depth (m)	.3	Clay (%)	5
Average Width (m)	2	Silt (%)	10
Conductivity (uS)	130	Sand (%)	20
pH	8.8	Gravel (%)	25
Temperature (°C)	14.5	Cobble (%)	30
Cover (%)	35	Boulder (%)	10
Shading (%)	80	Embeddedness (%)	40
Color of Water	colorless	Dates Electrofished	9/9/98
Turbidity	clear	Total Area Electrofished (m ²)	26

Species Present	# Captured	Average Fork Length (mm)
RBT	12	7 @ 129mm, 5 were young-of-the-year (YOY)
BLD, WHS, FAM, RBD, MOS, SFS, EMS		

Stream Characteristics: Upstream from U.S. 23 Greene Creek has a slow flow, and an abundance of beaver activity. The headwaters of Greene Creek, which historically were wetlands, have been ditched and drained by a developer (Perry Smeltzer, NRCS, Cheboygan District Office, personal communication Fall 1997). There is a 2 foot high concrete spillway

where U.S. 23 crosses the creek, which would act as a barrier to coasters. Downstream from U.S. 23 Greene Creek has a high gradient and a gravel/cobble substrate.

Recommendation: At one time this creek may have supported coasters. It currently has the substrate and water temperatures to adequately support a small population. Restoration of the wetlands in the headwaters would restore full biological function to Greene Creek, and curb the source of organic input causing summer algal blooms.

9) Elliot Creek, Cheboygan County

Anecdotal sources indicated that Elliot Creek may be a coaster spawning stream with a current run. A fisherman we encountered while assessing the creek admitted that he catches large brook trout toward the mouth of the creek every year. Sea Lamprey Control personnel mentioned Elliot Creek as being a potential spawning stream as well. This creek supports a healthy and plentiful brook trout population, and a limited rainbow trout population. Elliot Creek was electrofished twice, in August and November of 1998. No large brook trout were found, but further investigation is necessary before discounting Elliot Creek as a current coaster spawning stream. It was stocked with brook trout in 1984 and 1993 by the MDNR (strain unlisted).

Historical Information	
Number of Interviews	2
Archival Data Reviewed	0

Variables	Measurement	Variables	Measurement
GPS Coordinates	4537.57N 8424.31W 4538.82N 8424.12W	Water Flow	pools & riffles
Effort (seconds)	2081	Water Levels	normal
Average Depth (m)	.3	Clay (%)	5
Average Width (m)	3.5	Silt (%)	5
Conductivity (uS)	120	Sand (%)	30
pH	8.6	Gravel (%)	30
Temperature (°C)	14.5(8/25), 4(11/12)	Cobble (%)	25
Cover (%)	70	Boulder (%)	5
Shading (%)	90	Embeddedness (%)	30
Color of Water	colorless	Dates Electrofished	8/25/98, 11/12/98
Turbidity	clear	Total Area Electrofished (m ²)	122

Species Present	# Captured	Average Fork Length (mm)
BKT	20	10 @ 107, 10 @ 82
RBT	7	103
CHS	1	373

MUW, RBD, LND, BRS		
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Stream Characteristics: Elliot Creek is located entirely on State of Michigan land, and is a small watershed. The watershed consists of a large cedar swamp, and the mouth of the creek is all sand and sedges. There are no barriers on this creek, and the swamp provides a great deal of groundwater, keeping the creek cold year-round. Cobble/gravel/boulder substrate prevails, and there is an abundance of fish cover in the form of overhanging banks and large woody debris (LWD).

Recommendations: This would be an ideal stream to attempt to restore a coaster population if one does not currently exist.

10) Cheboygan River, Cheboygan County

An anecdotal source said coasters have been caught out of the Cheboygan River from the late 1950’s until present day. Typically they were 17-18 inches long, and in the 1950’s it was common to catch 5-6 fish/day during the steelhead run in the spring. Catches today are incidental. Coasters were also caught in Duncan Bay, and the source suspected the coasters spawned in Elliot Creek and/or Greene Creek.

Historical Information	
Number of Interviews	1
Archival Data Reviewed	0

Stream Characteristics: This river was not surveyed because of its large size. The Alpena FRO trawls at the mouth of this river twice a year (spring and fall) for ruffe, and have electrofished the river while assisting U.S. Fish and Wildlife Service Sea Lamprey Control, but have never captured any brook trout. A dam, 2.5 miles upstream from the mouth of the river blocks fish passage.

Michigan, Upper Peninsula

The upper peninsula of Michigan has many streams reported to have supported coaster runs. Several of these creeks looked promising at first, but as the dry summer continued many of these creeks dried up. I concluded that coasters may have utilized these creeks, following steelhead or suckers up the creek in the spring to feed on eggs, but these creeks would not currently support brook trout on a year-round basis. Albany Creek was certainly the exception. Located almost entirely on State of Michigan land, this creek has strong groundwater discharge, and an intact riparian corridor, which keeps the stream cool with a strong flow year-round.

There is great potential in the Eastern Upper Peninsula to hold coaster populations. There are many little creeks that coasters at one time utilized if not for spawning, for feeding and shelter. There would be a lot of community support in this area for the re-establishment of the coaster.

1) Carp River, Mackinac County

The main branch of the Carp River is a large and turbid with marginal trout habitat. Anecdotal sources have reported one coaster catch in 1997. Brook trout have been stocked in the river and in a tributary, Taylor Creek, since 1980. Any “coaster” catches in the Carp River can likely be attributed to the MDNR’s stocking efforts.

Historical Information	
Number of Interviews	1
Archival Data Reviewed	1

Stream Characteristics: This river is turbid and deep for many miles upstream of the mouth. It is possible to shock the riffle between I-75 and the mouth of the river when the water is low, but that is the only reach on the lower portion of the river where backpack electrofishing is feasible. For these reasons the Carp River was not investigated for coasters.

2) Pine River, Mackinac County

Archival references have documented catches out of the Pine River in 1983 and 1992. The MDNR has been stocking the Pine River, and tributaries of the Pine River consistently since 1980; thus any coaster catches in this watershed must be attributed to the aforementioned stocking efforts. “Coasters” caught in this watershed have attained large sizes, as documented below:

1992-- Sault Area Fishing Tournament (Sault Ste. Marie, MI):

"Brook Trout, 16.3 in. 6/14/92 Pine River Don Ferraro

Brook Trout, 16.3 in. 6/21/92 Pine River Steve Baril

Brook Trout, 16.9 in. 6/21/92 Pine River Steve Baril"

MDNR Files, Newberry, MI

Historical Information	
Number of Interviews	1
Archival Data Reviewed	2

Stream Characteristics: The Pine River is very deep and turbid many miles upstream from the mouth. A stream electrofisher would not be feasible, and visibility would be difficult with a boat electrofisher, therefore the Pine River was not investigated.

3) Trout Creek, Chippewa County

Anecdotal evidence has suggested there was a run of coasters in Trout Creek from 1960-1970.

Historical Information	
Number of Interviews	2
Archival Data Reviewed	0

Stream Characteristics: Alpena FRO personnel walked this creek. There is one riffle just upstream from the mouth, and the rest is silt and muck. There are several beaver dams upstream, which has impounded quite a bit of water. Due to the lack of fisheries spawning habitat the creek was not electrofished.

4) Albany Creek, Chippewa County

Anecdotal and archival evidence suggests a coaster population was present in Albany Creek from at least the late 1950's until present day, although numbers of fish have dropped considerably. The strongest runs were in the 60's and 70's, but coasters were caught consistently until the late 1980's. Several incidental catches were reported in the 1990's. Catch sizes were reported from 2 lbs. to almost 7 lbs., and the holes in Albany Creek just upstream from the mouth at one time were reported to hold up to 50 fish apiece. Coasters were caught at all times of the year: during the spring steelhead run, all through the summer months in and just out of the mouth of Albany Creek. The run was said to have *“started at the end of June, peaked in August, and was done by the end of September”* (Pedelco, 1997). When asked about the decline of numbers of the coasters, concerns from over-fishing to sea lamprey to dynamiting were suggested. One observation that was repeated by several of the gentleman interviewed was that as soon as the steelhead and pink salmon populations started to increase in Albany Creek, the coaster numbers decreased.

Historical Information	
Number of Interviews	6
Archival Data Reviewed	2

Variables	Measurement	Variables	Measurement
GPS Coordinates	4558.33N 8404.62W 4548.40N 8404.73W 4558.82N 8404.87W 4558.82N 8404.91W	Water Flow	moderate
Effort (seconds)	1184(average)	Water Levels	low
Average Depth (m)	.3	Clay (%)	0
Average Width (m)	5.7	Silt (%)	10
Conductivity (uS)	130	Sand (%)	30
PH	8.8	Gravel (%)	30
Temperature (°C)	18.5 (summer) 6 (winter)	Cobble (%)	20
Cover (%)	50	Boulder (%)	10

Shading (%)	75	Embeddedness (%)	35
Color of Water	colorless	Dates Electrofished	8/5/98, 8/6/98, 11/9/98
Turbidity	clear	Total Area Electrofished (m ²)	150 (average)

Species Present	# Captured	Average Fork Length (mm)
BKT	9	88
RBT	46 7	YOY Yearling
MOS, ABL, EMS, LND, BLD, ATS, BNT, MUW, BRS, YEP		

Mr. White caught coasters at the mouth of Albany Creek in the 1960's through the mid-1970's. The coasters were typically 2-2.5 pounds, but some he caught were up to 5 pounds. He caught them in June, at the end of trout season. Mr. White never saw a lot of them, in 2-3 holes he saw 10-12 fish. In the mid 1970's he started noticing more pink salmon, and fewer coasters. (Interview with Dennis White, Sault Ste. Marie)

From 1958-1994 Mr. Pedelco caught coasters out of Albany Creek. In the 60's and 70's there were typically 250 fish within the first .25 miles upstream. The holes were 5-6 feet deep. The run started at the end of June, peaked in August, and ended in September. The biggest he ever caught was 21.25 inches, and was 4 pounds. *"During the 1960's the steelhead run started in Albany Creek. Sea lamprey were taking a toll on the brook trout population- most fish had at least three lamprey scars. The run suddenly stopped in 1969, because people were dynamiting the creek. Where a hole had held 50 fish, it now held 2-3."* (Interview with Jim Pedelco, MDNR Detour Field Station, Fire Officer)

Stream Characteristics: Albany Creek contains excellent brook trout spawning habitat, and is a historic coaster spawning stream. Numbers of brook trout were artificially increased in the 1980's due to MDNR stocking, but there was a population of brook trout present before stocking efforts began. Numbers of large, coaster brook trout caught have declined drastically in the late 1990's. Competition with exotic salmonids, large populations of sea lamprey in northern Lake Huron, and over fishing are all possible contributing factors to the decline of the brook trout population. Albany Creek has strong groundwater input (the watershed is a cedar swamp), and is able to maintain cold temperatures and adequate flows in the driest of summers. There is one barrier on this creek about a mile upstream from the mouth, a sea lamprey barrier that is lowered at the end of August. The best pools and spawning substrate is downstream from the barrier.

Recommendation: I recommend further investigation of Albany Creek through late fall/early winter electrofishing surveys to attempt to locate a current coaster population. I would strongly consider coaster restoration in Albany Creek.

5) Joe Straw Creek, Chippewa County

Anecdotal evidence from one interview suggests a that there was a small run of coasters in Joe Straw Creek from 1960 to the 1970's.

Historical Information	
Number of Interviews	1
Archival Data Reviewed	0

Stream Characteristics: This creek was not electrofished. The creek was assessed on 16 June and again on 6 August, 1998, and both times it was noted that there was very little flow in this creek, and that the substrate was composed of muck and sand.

6) Bear Creek (outlet of Bear Lake), Chippewa County

Interview:

Charlie (Chuck) Payment- *“Used to have a couple of pairs of coasters run up Bear Creek, but not as many as ran up Caribou Creek (1965-1971).”* (6/25/97)

Historical Information	
Number of Interviews	1
Archival Data Reviewed	0

Biological Observations: Bear Creek has a high gradient cobble/gravel substrate, with plentiful cover and shading due to a healthy riparian bank. Unfortunately the flow was extremely low. There was not enough water to electrofish, there were apparently low invertebrate populations, and the rocks were covered with organic matter. Warm temperatures out of Bear Lake would likely preclude coaster use. Sea Lamprey Control informed us that the creek often dries up in late summer/early fall.

Recommendation: This would not be a good stream to consider for coaster restoration.

7) Caribou Creek, Chippewa County

Anecdotal evidence suggested that there was a run of coasters out of Caribou Lake from 1965-1971. Fish caught were typically 3-5 pounds.

Historical Information	
Number of Interviews	1
Archival Data Reviewed	0

Stream Characteristics: This creek was not electrofished. The majority of the substrate is comprised of sand and silt. Coasters may have followed the sucker run in the spring.

Alpena FRO personnel walked the creek up to the first lake. Reported catches of coasters in Caribou Creek are possibly results of MDNR stocking efforts.

Recommendation: This would not be a good creek for coaster restoration. Temperatures are warm and the spawning substrate is not present.

St. Mary’s River, Proper

Incidental catches of coasters on both the Ontario and Michigan shorelines has been the norm. During the 1850’s Theodore Roosevelt’s nephew caught coasters in the rapids (Roosevelt 1865), but the destruction of the majority of the rapids in the river for shipping purposes has severely limited success rates of many species of fish in the St. Mary’s River. Reports of coaster catches on the St. Mary’s were from the 1960’s to present day. Coasters were typically 1-2 pounds, but several fishermen reported catches up to 5.5 pounds.

Historical Information	
Number of Interviews	3
Archival Data Reviewed	1

Stream Characteristics: The St. Mary’s River was not assessed in this study because of its size.

Tributaries of the St. Mary’s River, Ontario

1) Root River, tributary of the St. Mary’s River

Archival evidence documents the catch of two large brook trout in DFO sea lamprey control devices (traps and electrical barriers) in 1965. According to Ontario Natural Resource personnel brook trout are found in both the upper and lower reaches of the Root River.

Historical Information	
Number of Interviews	2
Archival Data Reviewed	1

Variables	Measurement	Variables	Measurement
GPS Coordinates	4634.98N 8416.70W	Water Flow	pools and riffles
Effort (seconds)	762(average)	Water Levels	normal
Average Depth (m)	.4	Clay (%)	5
Average Width (m)	4.2	Silt (%)	10
Conductivity (uS)	55	Sand (%)	20
pH	9.25	Gravel (%)	30
Temperature (°C)	15 (site 1) 19 (site 2)	Cobble (%)	25
Cover (%)	70	Boulder (%)	10

Shading (%)	45	Embeddedness (%)	35
Color of Water	colorless	Dates Electrofished	8/11/98
Turbidity	clear	Total Area Electrofished (m ²)	701

Species Present	# Captured	Average Fork Length (mm)
BKT	1	72- unclipped
RBT	7	YOY
	3	Yearling
	1	205
MOS, EMS, BLD		

Stream Characteristics: The Root River is a very large watershed with extensive tributaries. Crystal Creek is a large tributary of the Root River that supports a population of brook trout, and it is shallow enough to survey with a backpack electrofisher. There are no impediments to fish passage from the mouth of the Root River up to Minehaha Falls on Crystal Creek. Electrofishing surveys were conducted on two sites below the falls. The substrate of Crystal Creek just downstream from Minehaha Falls in Kinsman Park was ideal for a trout stream heavily comprised of boulder, cobble, and gravel. This stream section had a high gradient, with groundwater visibly seeping into the stream. This creek was electrofished at two stations, and a small brook trout was captured. The rest of the salmonids captured were rainbow trout, and they were plentiful.

Recommendation: Crystal Creek should be considered for coaster restoration.

2) Garden River, tributary of the St. Mary's River

Archival data from DFO files indicated that large brook trout were caught in an electrical sea lamprey barrier placed at the mouth of the Garden River in the mid-1960's. An interview with a retired OMNR Conservation Officer indicated that the Garden River used to hold healthy brook trout populations, but now the first 20-30 miles of the river are heavily utilized by rainbow trout and salmon (Oswald Interview, 1997). If the brook trout are still there, they now have a lot more competition.

Historical Information	
Number of Interviews	1
Archival Data Reviewed	1

Stream Characteristics: A dark, deep river, the Garden River is too large of a watershed to sample with a backpack electrofisher.

Recommendation: Further investigation should be done on this river. It may prove to be a good river for coaster restoration.

3) Echo River, tributary of the St. Mary's River

“Five large brook trout (>14 inches) were caught by sea lamprey barriers; 4 in an electric barrier, and one in a trap between 1966-1967 at the mouth of the Echo River.” (DFO, Sea Lamprey Control)

Historical Information	
Number of Interviews	0
Archival Data Reviewed	1

Stream Characteristics: The Echo River is located on First Nations Garden River Indian Reserve property. Permission for access was not provided.

4) Two-tree Creek, St. Joseph Island

Anecdotal sources were optimistic at the possibility of locating a coaster population in Two-Tree Creek. DFO Sea Lamprey files documented catching four large brook trout at the mouth of the creek in 1966. There was a rumor of a coaster caught out of the Two-Tree in 1996. The main branch was reported as turbid, but a tributary of the Two-Tree was reported as being clear and maintaining a brook trout population (DFO, personal communication).

Historical Information	
Number of Interviews	2
Archival Data Reviewed	1

Variables	Measurement	Variables	Measurement
GPS Coordinates	4613.62N 8402.88W	Water Flow	moderate
Effort (seconds)	833	Water Levels	low
Average Depth (m)	.4	Clay (%)	60
Average Width (m)	1.95	Silt (%)	20
Conductivity (uS)	190	Sand (%)	5
pH	9	Gravel (%)	5
Temperature (°C)	23	Cobble (%)	10
Cover (%)	20	Boulder (%)	0
Shading (%)	50	Embeddedness (%)	25
Color of Water	colorless	Dates Electrofished	8/10/98
Turbidity	slightly turbid	Total Area Electrofished (m ²)	56

Species Present	# Captured	Average Fork Length (mm)
EMS, BLD, STS, MOS, LND, MUW, CRC, BRB,		

SEL, RBD		
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Stream Characteristics: Although this river may have been good for brook trout at one time, the water is too turbid from agriculture and a clay streambed to provide good trout habitat. Coasters may have utilized the upper reaches of this stream, but passage is blocked due to a perched culvert at a road crossing. Much of this stream has been ditched, providing little variance in habitat. Warm temperatures have resulted from a lack of a riparian corridor. Recommendation: I would not consider this stream for coaster restoration unless drastic habitat restoration efforts were completed.

5) Kaskawong River, St. Joseph Island

The upper reaches of the Kaskawong River were reported to currently hold brook trout through anecdotal sources. A large brook trout was caught at the mouth of the Kaskawong in a DFO sea lamprey electrical barrier in 1969 (DFO records, Sault Ste. Marie, ONT).

Historical Information	
Number of Interviews	1
Archival Data Reviewed	1

Stream Characteristics: There is an electric barrier at the mouth of the river, and a lot of swamp not too far upstream from the mouth. This river was not investigated due to the presence of the electrical barrier, and no reports of current coaster catches.

North Channel/Manitoulin Island

The North Channel of Lake Huron has great potential for holding coaster populations, but the rivers were too large to assess with our limited resources. Brook trout are present in the headwaters of a majority of these rivers, and the tributaries may be able to support coasters, providing access to these tributaries is available. Many have dams or waterfalls that are barriers to anadromous populations. Heavy industry (pulp mills) on two of the rivers (Thessalon and Spanish Rivers) may act as impediments as well.

Manitoulin Island has two famous brook trout watersheds: Blue Jay Creek and the Manitou River, and both can be considered historic coaster spawning streams. There are too many reports of large brook trout being caught out of the mouths of these streams and in Michael’s Bay to ignore. At one point the Mindemoya River and Providence Bay held some coasters as well. Structure in both of these bays has been gradually depleted as the logging era on Manitoulin Island came to an end. Two concerns are raised when considering coaster restoration on southern Manitoulin Island: 1) An active brook trout stocking program by the OMNR in many of these rivers has been ongoing since the turn of the century. Genetic swamping of native populations by the hatchery stock has certainly occurred, therefore coaster broodstocks could not be developed from current populations in this area. Any introduced coasters would be genetically polluted by hatchery stock in future generations. 2) Competition at the coaster juvenile level with exotic species such as rainbow trout and

salmon (which are currently flourishing in these watersheds) is an additional concern (Newman, et al. 1997).

“Twenty large brook trout (>14 inches) were caught between 1967-1970 at the mouth of Blue Jay Creek. Ten were caught in an electric sea lamprey barrier, and ten were caught in a sea lamprey trap.” (Department of Fisheries and Oceans, Sea Lamprey Control)

“In the 1940’s my grandfather and I used to fish Providence Bay and the Mindemoya River and we used to catch 5 pound brook trout. Back then, there was a lot of structure in the bay. The Mindemoya River is warm, but it has huge spring holes, and the big brookies lived along the shore of the bay in about 10 feet of water. The structure (of the bay) today has changed dramatically.” (Smith Interview, 1997)

“Around 1971 it was quite common to catch coasters in the Manitou River, they would hold in stream pools, would spawn in October, and would typically be around 5-6 pounds, they would also run up with the rainbow trout in the spring, but they haven’t been seen in years.” (Hayes Interview, 1997)

1) Thessalon River, North Channel (Bridgeland)

Archival data from DFO Sea Lamprey records documents the catch of one large brook trout (>14 inches) in an electric lamprey barrier on October 6, 1987 at the mouth of Bridgeland Creek, a tributary of the Thessalon River. Anecdotal evidence describes the current state of Bridgeland Creek: *“The Thessalon River itself is meandering and muddy, but a tributary, Bridgeland creek used to hold some sizeable brook trout, 3 pounds and up. The only time you saw the brook trout was in the spring, during the rainbow trout run. You would always catch these large brook trout during the rainbow run. There is good reef habitat out in Lake Huron, just off the mouth of the Thessalon River.”* (Babbit Interview, 1997)

Historical Information	
Number of Interviews	1
Archival Data Reviewed	1

Stream Characteristics: The DFO may be placing a sea lamprey barrier or deflecting weir at the mouth of Bridgeland Creek in the near future. The main branch of the Thessalon River is too deep and turbid to hold trout populations. The Bridgeland Creek tributary is short. The creek was easily accessed from the old salmon hatchery. Substrate in the creek was comprised of boulders, cobble, and gravel, but the water was quite warm and would not support brook trout. Alpena FRO personnel spoke to local Bridgeland residents, including DFO personnel, and they reported brook trout were no longer present in Bridgeland Creek. There are strong runs of steelhead and salmon, but no brook trout. Bridgeland Creek is fed by a lake that has a top-draw dam, which accounts for the warm water temperatures.

Recommendation: I would not consider this creek for coaster restoration.

2) Spanish River, North Channel

OMNR personnel out of the Espanola office caught a coaster in a gillnet during fisheries assessment activities 10 miles upstream from the mouth of the Spanish River in the 1980's.

Historical Information	
Number of Interviews	1
Archival Data Reviewed	0

Stream Characteristics: The Spanish River is very dark and deep, and was therefore not assessed. There is a large pulp mill located at the mouth of this river. The first 10 miles of this river is anoxic due to the decomposition of the wood pulp released into the river for the past 100 years.

3) Shrigley Creek/Shrigley Bay, Southern Manitoulin Island

One anecdotal report given by a retired commercial fisherman discussed catching coasters in Shrigley Bay in the 1920's. The fisherman stated that an over-abundance of beaver dams blocked fish passage in the creek, and the coasters disappeared (Witty Interview, 1997).

Historical Information	
Number of Interviews	1
Archival Data Reviewed	0

Stream Characteristics: This creek was not assessed due to logistical and financial matters.

4) Mindemoya River, Providence Bay, Southern Manitoulin Island

Anecdotal reports of coaster catches in the Mindemoya River and Providence Bay go back to the 1930's and 1940's. Five pound brook trout were claimed to be caught out in the bay during summer months in around 10 feet of water. One observation was that as a result from the logging era, there was a lot of structure in the bay. That structure is no longer present. The Mindemoya River is rumored to have large upwellings; there are several in Providence Bay as well (Smith Interview, Methner Interview, 1997). Anecdotal catches have been reported in the 1990's, but none have been substantiated (Witty Interview, Methner Interview, 1997).

Historical Information	
Number of Interviews	4
Archival Data Reviewed	0

Stream Characteristics: Although this is a warm river (source of the river is from a top-draw dam), this watershed has been reported as having many upwellings. There is a waterfall that acts as a natural barrier about ¼ of a mile from the mouth. There is heavy agricultural use on this watershed, and the waters are warm with a lot of clay substrate.

Recommendation: I would not recommend this river for coaster restoration, however the bay may be a good candidate. Field investigation of Providence Bay such as mapping of substrate and upwellings is recommended.

5) Timber Bay Creek, Southern Manitoulin Island

“In between Michael’s Bay and Providence Bay are 2 great brook trout streams- Housing and Timber Creeks. We stocked Timber Creek around 1995 with surplus brook trout. Timber Creek was stocked many years ago, but it now has restricted access. A big developer now owns a large chunk of property that encompasses these creeks.” Paul Methner, OMNR Manager of Blue Jay Creek Hatchery-(8/27/97)

Historical Information	
Number of Interviews	2
Archival Data Reviewed	0

Stream Characteristics: Timber Bay Creek is rumored to be a good trout stream, and potentially may be a good coaster stream, but the creek is located entirely on a privately-owned reserve, and access is poor. Timber Bay Creek was not assessed.

Recommendation: Even if this is the best of trout streams, I would not consider it for coaster restoration because of the lack of access, and the private ownership.

6) Manitou River, Michael’s Bay, Southern Manitoulin Island

According to anecdotal sources, coasters were commonly caught in the Manitou River and in Michael’s Bay from the 1930’s through the early 1970’s. The coasters “typically” weighed 5-6 pounds. Coasters would run up the river to spawn in October, and would follow the steelhead run up in the spring (Hayes Interview, Collins Interview, Salinger Interview, 1997).

Historical Information	
Number of Interviews	2
Archival Data Reviewed	3

Variables	Measurement	Variables	Measurement
GPS Coordinates	4539.47N 8204.00W	Water Flow	Moderate
Effort (seconds)	1285	Water Levels	pools and riffles
Average Depth (m)	.2	Clay (%)	0

Average Width (m)	19.8	Silt (%)	10
Conductivity (uS)	130	Sand (%)	15
pH	8.9	Gravel (%)	10
Temperature (°C)	17	Cobble (%)	50
Cover (%)	30	Boulder (%)	15
Shading (%)	5	Embeddedness (%)	20
Color of Water	colorless	Dates Electrofished	8/18/98
Turbidity	clear	Total Area Electrofished (m ²)	509

Species Present	# Captured	Average Fork Length (mm)
RBT	5	YOY
	1	78
EMS, MOS, LND, CRC, CYP		

Following are several excerpt from 100 Years of Conservation Officers, Manitoulin District-North Shore describing fishing conditions on the Manitou River:

Report of 1902: *“We find in Lake Manitou quite a number of large speckled or half speckled trout of excellent quality, up to four pounds in weight, and which seem to be a cross between salmon and brook trout varieties. They are quite red in color and owing to the very deep, cold water seem to thrive in the lake as well as smaller ones do in spring brooks. They are seldom taken by line or trowl, usually in the spring run of suckers, and therefore in bad company.”*

Report of 1907: *“Overseer, William Hunter, Tehkummah, reports that there do not seem to be as many trout in the Manitou River as there should be. There are no fishways on the river, and when the water is low the fish cannot get up from Lake Huron, as there is a dam at Michael’s Bay, but no fishway.”*

Stream Characteristics: There is good rock substrate for spawning purposes, but the water temperature is warm. The river is fed from Lake Manitou, and the dam on the lake is a top-draw dam. A local farmer remarked that the steelhead have a heavy spawning run up the Manitou in the spring. Once he started seeing the steelhead, he stopped seeing the brook trout. One site was electrofished and several rainbow trout were caught, but no brook trout.

Recommendation: Further investigation of this river is necessary. There may be some strong upwellings that would support a coaster population.

7) Blue Jay Creek, Michael’s Bay, Southern Manitoulin Island

According to anecdotal and Conservation Reports, coasters have been caught out of Blue Jay Creek since 1902. Strong year classes were reported from the 1950’s through mid-1970’s. Present-day catches are reported, but the catches are incidental. The DFO captured 20 large (>14 inches) brook trout at the mouth of Blue Jay Creek from 1967-1970. Fisheries Biologists from the OMNR caught a coaster in 1996 during assessment activities in

Michael's Bay. The sizes of the coaster catches ranged from 3-6 pounds, averaging 3-4 pounds (Methner Interview, Collins Interview, Witty Interview).

Historical Information	
Number of Interviews	6
Archival Data Reviewed	1

Variables	Measurement	Variables	Measurement
GPS Coordinates	4539.87N 8159.14W 4540.08N 8159.31W 4539.07N 8159.22W 4535.72N 8205.13W 4536.52N 8202.75W 4539.07N 8159.22W	Water Flow	Moderate
Effort (seconds)	4483	Water Levels	low
Average Depth (m)	.43	Clay (%)	15
Average Width (m)	5 sites 7.1, 1 site 36	Silt (%)	10
Conductivity (uS)	135	Sand (%)	20
pH	8.8	Gravel (%)	30
Temperature (°C)	8/98- 13.3 11/98- 5	Cobble (%)	15
Cover (%)	40	Boulder (%)	10
Shading (%)	40	Embeddedness (%)	20
Color of Water	Colorless	Dates Electrofished	8/19/98 11/6/98
Turbidity	Clear	Total Area Electrofished (m ²)	6 sites at 1143

Species Present	# Captured	Average Fork Length (mm)
BKT	1 5 6 3	143 109 79 YOY
RBT	1 8 1 170	405 139 83 YOY
CHS	4 10	102 YOY
MUW, JOD, SLS, RBD, BLM		

Stream Characteristics: Through interviews and discussions with natural resources professionals, I believed Blue Jay Creek to be the most promising brook trout creek in Ontario. The Blue Jay has had a reputation for good brook trout fishing for the last 100 years. Brook trout have been planted in this creek since the turn of the century to mitigate the effects of the high angling pressures. Large brook trout have been caught out of these waters. This creek naturally supports and in-stream brook trout population that typically weigh 1-2 pounds, so distinguishing a coaster in this creek will be more difficult. A majority of the creek is protected from development by alder swamps which comprises a majority of the riparian streambank. In-stream cover in the form of large woody debris (LWD) and overhanging banks abound, and temperatures are held constant year-round from the massive groundwater inputs and upwellings. Electrofishing was attempted at the mouth of the creek, but the holes were too deep for a backpack electrofisher, and the boat we were using could not get upstream from the first riffle. The creek was electrofished upstream, near the hatchery, but no large brook trout were captured. Downstream it was observed that there was an abundance of both juvenile and adult steelhead. Are the steelhead out-competing the brook trout? That seemed to be the case in the lower reaches, however we can not conclude that this is the accurate situation with our surveys.

Recommendation: This river has the structural and hydrological attributes necessary to support a successful brook trout population, however due to the stocking efforts of the OMNR I would be reluctant to consider coaster restoration in Blue Jay Creek. Genetic swamping would result with the resident populations.

Ontario, Georgian Bay/Bruce Peninsula

Commercial fishermen used to catch coasters in their nets during the fall spawning run in the northern tip of Georgian Bay, but the majority of the bay does not have the tributaries to support a coaster population. The Bruce Peninsula has several productive brook trout streams and there are undocumented reports of a coaster population; however permission for access was not acquired.

Excerpt from *Interview with Mr. Charlie Parr, January 29, 1979-* “ *And they used to get trout at what they used to call Lottie Wolf Rock (Georgian Bay). They were little trout about 18-20 inches long, spotted. Little wee heads on them. They were different altogether from the ones over on the other (Meaford) shore.*

Q. All through this area?

A. Just in this area near Lottie Wolf Rock. They were spotted trout. Small and stocky...they looked more like brown trout; they had a heavy back on them. But they were lake trout. They'd get them about...the 5th of October they used to go over and fish them.” (Loftus, 1980)

Excerpt from *Interview with Ivan “Doc” Tigert, Lion’s Head, February 3, 1979-* (Discussing commercial fishing near Fitzwilliam Island, east of Manitoulin Island)

Q. “What different types of trout did you get?

A. We got redfins. And they talked about the black trout. And I’ve heard about people talk about the coasters, the one’s we used to catch right on the shore here in June.

Q. Would you get coasters at the same time that you fished floating hooks?

A. Yes.

Q. Some people called that the “strawberry run”.

R. I used to call it the “grasshopper run”. You’d open them up and they were right full of grasshoppers. They were right close to shore. And from here on up it was just barren, dry rock and the grasshoppers used to be thick up there... We used to go in there and set shallow for the trout and you could smell the strawberries and the farmers were cutting the hay.” (Loftus, 1980)

Historical Information	
Number of Interviews	3
Archival Data Reviewed	3

Ontario- Southern Lake Huron

The majority of the streams in Southern Lake Huron contain agriculture in their headwaters which warms the water, and increases organic input into the watersheds. Most of the streams have a short run up from the mouth before anadromous fish populations are blocked by naturally occurring waterfalls. Throughout the course of this study only one report of coasters was given for the Ontario side of Southern Lake Huron.

Historical Information	
Number of Interviews	1
Archival Data Reviewed	0

IV. CONCLUSIONS

Four streams in Lake Huron were found to be exceptional brook trout streams, and would be the best streams to consider for restoration, should this become a goal of the Committee (streams denoted below with *). Six streams I would consider historic coaster spawning streams, and they are:

- 1) Black River, Alcona County, Michigan*
- 2) Devils River, Alpena County, Michigan
- 3) Greene Creek, Cheboygan County, Michigan
- 4) Albany Creek, Chippewa County, Michigan*
- 5) Manitou River, Rainbow County, Manitoulin Island, Ontario
- 6) Blue Jay Creek, Rainbow County, Manitoulin Island, Ontario*

Streams that may have been historic spawning streams that require additional investigation are:

- 1) Elliot Creek, Cheboygan County, Michigan*
- 2) Timber Bay Creek, Rainbow County, Manitoulin Island, Ontario

- 3) Large Rivers in the North Channel, such as the Root, Echo, Garden, Thessalon, and Spanish Rivers
- 4) Creeks on the south side of the Bruce Peninsula

This study has confirmed that coaster brook trout were present in the waters of Lake Huron naturally, historic spawning stream have been identified, and streams that should be considered for restoration if such efforts are deemed necessary by the Lake Huron Committee. Should restoration be considered? The results from genetic analysis should assist in the answer to this question. If these brook trout are genetically similar to the coasters and brook trout in Lake Superior, then if stocking is recommended for management/recovery, Lake Superior coasters would be acceptable strains to use. If, however, the Lake Huron coasters are a different strain (from Lake Superior strains), then attempts should be made to initiate a Huron brood stock.

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ACKNOWLEDGEMENTS

Thank you to John Collins, a retired OMNR officer from Manitoulin Island. Mr. Collins provided coaster references from "Interviews with Lake Huron Commercial Fisherman".

Paul Methner, Manager of Blue Jay Creek Hatchery, Tekummeh, Manitoulin Island, Ontario. Many thanks to Paul and his staff for providing stocking information, insight, boat and fuel, and access to various reaches of Blue Jay Creek.

Many thanks to the staff at the DFO office in Sault Ste. Marie, ONT who allowed me to raid 40 years worth of records and maps. Special thanks to Jerry Weise.

Thank you to Steve Scott from the Newberry, MI MDNR office, and Debbie McConnell from the MDNR office in Alpena, MI for allowing me to peruse records.

Thank you to Ellie Koon and Timothy Sullivan from the USFWS Ludington Biological Station in Ludington, MI and to John Weiser in the Marquette Biological Station in Marquette, MI for allowing me access to sea lamprey control records.

Thank you Roger Carlin, Alcona Township Supervisor, for contacting the Alpena FRO to inform us that coasters were being caught ice-fishing in the Black River.

Thank you most of all to all of those who allowed me to interview them, and provided me with information about coasters in Lake Huron.

Appendix A

Appendix A- Stocking Data

Lake Huron Stocking Program (State of Michigan)

<u>Year</u>	<u>Species</u>	<u>Location- County</u>	<u># Stocked</u>
1998	BKT	Carp R.- Mackinac	6500
1997	BKT	Carp R.-Mackinac	4940
1996*	BKT	Sturgeon R.-Cheboygan	1000
1995*	BKT	Sturgeon R.- Cheboygan	1586
1995*	Splake	Mullet Lake-Cheboygan	63800
1995*	BKT	Carp R.- Mackinac	5000
1995*	Splake	Lake Huron, Burlee Pt. Bridge	18750
1995*	Splake	Lake Huron, Lakeside Road Access, Mackinac	18750
1995*	BKT	Carp R. Bridge- Mackinac	5000
1995*	BKT	Silver Cr.- Mackinac***	700
1994	Splake	Mullet Lake- Cheboygan	70000
1994	Splake	Hessel Lakeside Road Access- Mackinac	35000
1994	BKT	Carp R.- Mackinac	4500
1993	Splake	Twin Lakes- Cheboygan	6500
1993	Splake	Mullet Lake- Cheboygan	50000
1993	Splake	Burlee Point- Mackinac	44000
1993	BKT	Carp R.- Mackinac	5000
1993	BKT	Silver Creek- Mackinac***	700
1992	BKT	Sturgeon R.- Cheboygan	664
1992	Splake	Mullett Lake- Cheboygan	37000
1992	Splake	Twin Lakes- Cheboygan	7000
1992	BKT	Taylor Creek- Mackinac**	400
1991	BKT	U.S.23- Alcona	500
1991	BKT	Rockport- Alpena	20000
1991	BKT	Sturgeon R.- Cheboygan	1500
1991	Splake	Mullett Lake- Cheboygan	30000
1991	Splake	Twin Lakes- Cheboygan	7000
1991	BKT	Eagle Bay- Huron	135000
1991	BKT	Lighthouse Park- Huron	15000
1991	BKT	Carp R.- Mackinac	9500
1991	BKT	Silver Creek-Mackinac***	600
1991	BKT	Taylor Creek- Mackinac**	12150
1990	BKT- Hybrid	Rockport, Alpena	28500
1990	BKT	Sturgeon R.- Cheboygan	1371

1990	BKT- Hybrid	Grindstone City- Huron	16900
1990	BKT- Hybrid	Lighthouse Park- Huron	15000
1990	BKT- Hybrid	Carp R.- Mackinac	9500
1990	BKT- Hybrid	Silver Creek- Mackinac***	700
1990	BKT- Hybrid	Taylor Creek- Mackinac**	400
1990	Splake, MI	Lake Esau- Presque Isle	15000
1989	BKT	Sturgeon R.- Cheboygan	2200
1989	BKT	Pine R.- Chippewa	900
1989	BKT- Assinca	Carp R.- Mackinac	7000
1988	BKT- Assinca	Rockport- Alpena	20000
1988	BKT	Sturgeon R.- Cheboygan	1000
1988	Splake- MI	Mullett Lake- Cheboygan	56100
1988	Splake- MI	Twin Lakes- Cheboygan	6000
1988	BKT- Hybrid	Albany Creek- Chippewa	100000
1988	BKT- Hybrid	Pine R.- Chippewa	1020
1988	BKT- Hybrid	Eagle Bay P.A.S.- Huron	17900
1988	BKT- Hybrid	Lighthouse Pt.-Huron	15000
1988	BKT- Hybrid	Taylor Creek- Mackinac**	330
1988	BKT	Steele's Creek- Mackinac	100000
1988	Splake MI	Lake Esau- Presque Isle	14500
1987	Splake MI	Harrisville Harbor, Alcona	# not available
1987	Splake MI	Mullett Lake- Cheboygan	50000
1987	Splake MI	Twin Lakes- Cheboygan	6000
1987	BKT Hybrid	Albany Creek- Chippewa	80000
1987	BKT	Pine R.- Chippewa	900
1987	BKT	Eagle Bay P.A.S.- Huron	15000
1987	BKT	Lighthouse Park- Huron	15600
1987	Splake MI	Harbor Beach- Huron	55000
1987	Splake MI	Pinnebog R.- Huron	15000
1987	Splake MI	Port Austin- Huron	35000
1987	Splake MI	Tawas R.- Iosco	25817
1987	Splake MI	AuSable R. Harbor- Iosco	32332
1987	BKT Hybrid	Steeles Creek- Mackinac	102000
1987	BKT Hybrid	Presque Isle Harbor- Presque Isle	30000
1987	BKT Hybrid	Shoepac Lake- Presque Isle	35000
1987	Splake MI	Lake Esau- Presque Isle	15000
1986	BKT- Hybrid	Pine River- Chippewa	828
1986	BKT- Hybrid	Taylor Creek- Mackinac**	300
1986	BKT- TEMISC	Presque Isle Harbor- Presque Isle	14850
1985	BKT	Sturgeon R.- Cheboygan	2000
1985	Splake MI	Twin Lakes- Cheboygan	6000

1985	BKT Hybrid	Pine R.- Chippewa	900
1985	Splake MI	Highbanks Lk.- Chippewa	1000
1985	BKT Hybrid	Silver Creek- Mackinac***	400
1985	BKT Hybrid	Taylor Creek- Mackinac**	350
1985	BKT Hybrid	Presque Isle Harbor- Presque Isle	8900
1985	BKT Hybrid	Shoepac Lake- Presque Isle	1500
1984	Splake MI	Twin Lakes- Cheboygan	6000
1984	BKT- Assinica	Presque Isle Harbor- Presque Isle	8000
1984	BKT- Hybrid	Shoepac Lake- Presque Isle	1500
1983	BKT	Sturgeon R.- Cheboygan	1500
1983	BKT Hybrid	Pine R.- Chippewa	16500
1983	BKT	Edgerly Springs- Chippewa	200
1983	Splake MI	Highbanks Lake- Chippewa	1000
1983	BKT Hybrid	Carp R.- Mackinac	9000
1982	Splake MI	Twin Lakes- Cheboygan	850
1982	BKT	Pine R.- Chippewa	16800
1982	Splake MI	Highbanks Lake- Chippewa	1000
1982	BKT	Carp R.- Mackinac	9500
1981	BKT	Sturgeon R.- Cheboygan	1600
1981	Splake MI	Highbanks Lake- Chippewa	1000
1981	BKT	Silver Creek- Mackinac***	400
1981	BKT	Taylor Creek- Mackinac**	400
1980	BKT	Silver Creek- Mackinac***	300
1980	BKT	Taylor Creek- Mackinac**	500
1980	BKT	Sturgeon R.- Cheboygan	2364

*1995-1996 stocking records on the MDNR Internet Home Page

** Taylor Creek is a tributary of the Carp River

*** Silver Creek is a tributary of the Pine River

Additional Brook Trout Stocking Data for the Eastern UP:

MDNR Stocking Records

- Caribou Creek: stocked 1961-1994
- Beavertail Creek: 100-300 BKT stocked annually 1947-1960, 1961-1965 “fair trout fishing upstream, downstream swamp and sluggish water”
- Biscuit Creek (tributary of the Pine River): discontinued BKT stocking after 1965
- Priestess Creek: planted BKT in 1949, only year stocked
- Flowers Creek: stocking discontinued in 1954 due to inadequate harvest and limited flow in late summer
- Hessel Creek: 200 brood stock BKT planted in 1975
- Nunn’s Creek: BKT planted until 1964

**Lake Huron Stocking Program
Brook Trout Plants on Manitoulin Island, Ontario**

<u>Location</u>	<u>1998</u>	<u>1989</u>	<u>1988</u>	<u>1987</u>	<u>1986</u>	<u>1982</u>	<u>1979</u>
Manitou R.*	500						500
Silver Cr.		3000					
Hares Cr.			50	50			
Grimesthorpe Cr.		3000					
Bridal Veil					10	110	
Barr's Cr.		1500					
Bickles Cr.		1000					

<u>Location</u>	<u>1978</u>	<u>1977</u>	<u>1976</u>	<u>1975</u>	<u>1974</u>	<u>1973</u>	<u>1972</u>
Manitou R.*	3000	3200	3000	1500	5000	8000	5000
Blue Jay Cr.*	3000	3500	3000	1000	5000	6000	7000
Silver Cr.	2000	1250	1000	3000	3000	3000	3000
Hares Cr.	500	1000	500	2000	2000	1000	1000
Norton	500	1000	500	500	2000	2000	2000
Grimesthorpe Cr.	1000	1000	1000			2000	2400
Bagerow Cr.	500						
Bass Cr.	500						
Bridal Veil	500	500			500	500	300
Mindemoya R.*						3000	4400
Vidal Bay Cr.				500			

<u>Location</u>	<u>1971</u>	<u>1970</u>	<u>1969</u>	<u>1968</u>	<u>1967</u>	<u>1966</u>	<u>1965</u>
Manitou R.*	4500	3000	5000	2500	3000	4000	
Blue Jay Cr.*	5000	5000	5000	2500	5000	4000	
Silver Cr.	2000	2000	3000	4000	8000	5000	8000
Hares Cr.	1000	1000	1000	1000			
Norton	2000	2000	1900	1000	2500		2875
Grimesthorpe Cr.	2000	2000	2500	1000			2500
Bridal Veil			1000				
Mindemoya R.*	1500	1500		2000	2500	2500	
Spring Bay Cr.				1000	5000	2500	2500
Barr's Cr.				2000		2500	3000
Scott's Cr.	2000	2000	2500	2000	2500	2500	3000

<u>Location</u>	<u>1964</u>	<u>1963</u>	<u>1962</u>	<u>1961</u>	<u>1960</u>	<u>1959</u>	<u>1958</u>
Manitou R.*	3000	6000	5000	4000	3400	8000	5000
Blue Jay Cr.*	5000	6000	3400	3850	5000	2000	5000
Silver Cr.	8000	10000	10000	8000	10000	8000	5000

Hares Cr.	1500	2000				700	500
Norton	2500						5000
Grimesthorpe Cr.	2500	2500	3000	3000	2500	5000	
Bagerow Cr.	2500	2500			2500		2500
Mindemoya R.*	2500	5000	4000	5000	5000	2500	
Spring Bay Cr.		2500	3000	3000	2500	2500	2500
Dewars Cr.						2000	
Barr's Cr.	2500	5000		4000	2500	2000	2500
Scott's Cr.	2500	5000	8000	4000	5000	5000	2500
Sloss Cr.						3000	
Mac's Cr.				2000			
Shrigley Cr.*					5000		
Brown's Cr.					2000		1000
Lake Manitou*	6650						

<u>Location</u>	<u>1957</u>	<u>1956</u>	<u>1955</u>	<u>1954</u>	<u>1953</u>	<u>1952</u>	<u>1951</u>
Manitou R.*	8000						
Blue Jay Cr.*	8900						
Silver Cr.	8000	6000	5000	6000	12000	10000	10000
Hares Cr.	2000	2500					
Grimesthorpe Cr.	2500	2500	2500	2500	6000	6000	5000
Bagerow Cr.	1800	2500	2500	2000	8000	8000	10000
Mindemoya R.*		5000	5000	4000	8000	7000	5000
Spring Bay Cr.	6000	2500	2500	2500	6000	6000	
Dewars Cr.		2500	1500	1500			
Barr's Cr.	1000	2500	2500	2000	6000	6000	5000
Scott's Cr.	8000	5000	4000	2500	5500	6000	5000
Mac's Cr.	2000	2000	2000		2500		
Shrigley Cr.*		10000	5000	5000	6000	6000	8000
Brown's Cr.				1000			
Timber Bay Cr.*					5000	5000	

* Denotes watersheds referenced as historic coaster spawning streams

Appendix B

Appendix IV.
Cooperators Involved in Lake Huron Coaster Brook Trout Study

<u>Organization</u>	<u>Location</u>	<u>Contact Person</u>
Chippewa-Ottawa Treaty Management Authority	Sault Ste. Marie (SSM), MI	Mark Ebener
Assembly of First Nations	SSM, ONT	Doug Belanger
Chippewa of Bruce Peninsula	Bruce Peninsula, ONT	Dr. Steve Crawford Patrick Nadjiwon
Department of Fisheries and Oceans (DFO)	SSM, ONT	Robert Young
Ontario Ministry of Natural Resources (OMNR)	SSM, ONT	Dave Reid, Sue Greenwood Lloyd Mohr
OMNR	Nipigon, ONT	Robert Swan
OMNR	Tehkummah, ONT Bluebird Creek Hatchery	Paul Methner
U.S. Fish and Wildlife Service (USFWS)	Sea Lamprey Control Ludington, MI	Ellie Koon
USFWS	Sea Lamprey Control Marquette, MI	Bob Kahl
USFWS	Ashland FRO Ashland, WI	Lee Newman
Michigan Dept. of Natural Resources (MDNR)	Newberry, MI	Steve Scott
MDNR	Alpena, MI	Jim Johnson
MDNR	Gaylord, MI	Steve Swan
Trout Unlimited	Highland Park, IL	Edward Michael
Trout Unlimited (National)	Arlington, VA	Joe McGurrin
Lake Superior State University	SSM, MI	Roger Griel
University of Michigan	Museum of Zoology Lansing, MI	Doug Nelson
Royal Ontario Museum	Toronto, ONT	Erling Hohlm
Soo Area Sportsman's Club	SSM, MI	Charlie Norton
Commercial Fisherman	Detour, MI	Leonard Dutcher
Commercial Fisherman	Gore Bay, ONT	Williard Witty
Recreational Fisherman	Ossineke, MI	Clarence Kindt
Recreational Fisherman	Ossineke, MI	Bill Bartow (High School Teacher)
OMNR-Retired	Manitoulin Island, ONT	John Collins