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1981

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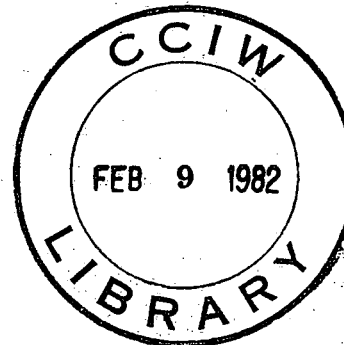


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1981

CANADIAN WILDLIFE SERVICE

J.R. Brown  
Technical Operations Division  
National Water Research Institute

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PERSONNEL

Canadian Wildlife Service

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## INTRODUCTION

The surveillance of toxic substances in Great Lakes wildlife by the Canadian Wildlife Service was continued in 1981 with the support of Technical Operations Division. The CWS has been regularly monitoring the affects of toxic substances on the Herring Gull in the four Canadian Great Lakes since 1975. These affects are reflected in egg-loading and the bird's reproductive success rate. The steadily decreasing reproductive success rate of the International Joint Commission Monitor Colony located on Agawa Rocks, over the past four years, determined that the focus of this year's studies was to be the Eastern shore of Lake Superior. The objectives of the 1981 Survey were to:

- 1) determine the extent of the reproductive problems and 2) attempt to identify the source of the problem.

This year there were two field parties: one, consisting of CWS staff, conducted surveillance duties on Lakes Ontario and Erie while another CWS biologist and a Technical Operations staff member were based in Montreal River Harbour located about 120 kilometers North of Sault Ste. Marie. This harbour was the closest practical base site to Agawa Rocks. From it, roughly two-thirds of the coastline which was under study could be reached by water without trailering. The Southern extent of the study area was Batchawana Bay, about 27 miles away from Montreal River Harbour. Twenty-two miles to the North was Cape Garagantua. By launching in Michipicoten River, the coverage could be extended South

to Cape Garagantua and West to Dog Harbour. The total length of the shoreline covered was 85 miles, most of which was uninhabited Provincial Park Land.

## METHODS

The timing and length of this Study (from the end of April to mid-July), permitted the monitoring of all aspects of the Herring Gull's reproduction from egg-laying to the rearing of three-week-old fledglings. Hence, the field party's work was often divided between observing the current events on a bird colony and preparing for studies in the immediate future. Also, the asynchrony of the colonies (the Northern colonies were much later than the Southern) required some tight scheduling of the work.

Three colonies were selected for the intensive breeding assessment which had over 100 nests and represented a section of coastline within boating distance from Montreal River Harbour (Appendix 1). The colonies were the Batchawana Islands to the South, Jordan Island to the North and in the middle, the Vrooman Islands. Seven other colonies were accurately nest-counted and marked for later chick counts (Detail Map).

A standard method of assessing reproductive success has been used by the Surveillance Program since 1975. The timing of the second visits was such that the chicks were about three weeks old. The colonies were counted twice on two successive days in order to obtain the capture/recapture ratio of the chicks. On one of the visits, the first one hundred chicks captured were weighed and wing measurements were taken for aging and conditioning data.

On two colonies in the Agawa Island group, other than the IJC colony, the nest contents were recorded. During hatching, these islands were visited every second day over a ten-day period in order to check hatching success. A census of all the colonial fish-eating birds nesting in the entire study area was also taken.

Other projects included the installation and maintenance of an Automatic 35 mm Camera System on the IJC, Agawa Island. The purpose of this system was to record the behaviour of the nesting birds with a minimum of disturbance. A portable egg candler was also experimented with as a means to determine the viability of the eggs at an embryonic stage.

In addition to the Lake Superior work, chick counts for the purpose of assessing reproductive success were repeated on the IJC colonies in Georgian Bay, Lakes Ontario and Erie. The Georgian Bay colonies selected for special chick counts in 1980 were revisited once for chick aging and conditioning data.

Also, all the known cormorant colonies in the Canadian Great Lakes and Lake Nipigon were investigated and the chicks received leg bands on most of the colonies.



## OPERATIONS

Two launches were utilized this year. One was the THUNDERBIRD, a 17-foot launch with a 110 hp inboard-outboard engine and the other a 17-foot MonArk boat (S.A.B. #2) powered by a 70 hp outboard engine. The THUNDERBIRD was used for the majority of the Lake Superior work. As in past years, extensive use was made of these vessels this season. The total mileage of the THUNDERBIRD was 970 miles and of the MonArk, 965 miles.

Unlike some of the other scientific projects supported by Technical Operations, the CWS requirements are very time-dependent. The birds lay eggs only once a year so a day or two delay may result in no data on a particular event (such as hatching success) for that year. Personnel must be flexible and equipment must be reliable and safe. It is in this context that the following recommendations are made:

1. Boat Compasses of a higher quality should be installed in the launches and professionally swung with the engine running. The frequent fog conditions this year made running on compass bearings a necessity. In such conditions, the Pocket Orieteering or Boy Scout type compass was a more preferable instrument than the magnetic compasses equipped with the boat
2. A collapsible canvas or plastic cover for the cockpit. The Spring water temperature in Lake Superior is around 4°C. Often several hours are spent in the boat in seas which may throw up

a good spray. The crews of these boats have put up with cold, wet conditions for several years with no cases of severe exposure so far, however, with an increasing amount of time spent in Lake Superior, the risk is more prominent. A cover might be critically important for someone who is thoroughly wet and enroute to shore.

Also, a cover would increase the security of the boat while it is unattended. Both launches have dome fasteners for such a cover mounted on them.

3. The MonArk should have a larger engine of perhaps 90 hp equipped with power tilt. Because of the remoteness of some of the bird colonies, the launches used by CWS carry an extra complement of emergency gear in addition to that required by law. Each boat is equipped with a spare 10 hp engine, a VHF marine radio, a 2-man life-raft (THUNDERBIRD only), enough freeze-dried food to last 2 people 10 days, sleeping bags for all occupants, tenting capacity for all occupants, a first-aid kit, charts and navigational instruments. Sometimes the field party must carry additional gear if overnight camping is planned. For sufficient range, the MonArk usually carries five to six full tanks. While most of the preliminary survey work requires only two people, the minimum number of personnel required to do a reproductive assessment is four, sometimes five on the larger colonies. Any fewer results in researchers being on the colony too long which may dramatically increase fledgling mortality. With this complement of personnel, equipment and fuel, the MonArk equipped with a 70 hp engine has difficulty planing on calm waters and

often fails to lift if a moderate sea is present. A slight increase of engine size to 90 hp (still well within the boat manufacturer's limits) would not seriously increase fuel consumption and provide the extra power needed to operate the boat properly in rough weather.

The THUNDERBIRD currently is equipped with power-tilt for its lower unit. Since the bird colonies are often in shallow, uncharted waters, a power-tilt feature provides propeller protection while retaining manoeuverability. The MonArk should also be equipped with such a unit.

## VEHICLES

Two Technical Operations vehicles were utilized for this project---a Dodge Van 80-126 from April 21 to June 4 and a Dodge Crewcab 80-125 from June 4 to July 10. Both vehicles towed the THUNDERBIRD while the MonArk was towed by a CWS vehicle. When towing the heavy weight of the THUNDERBIRD, the crewcab proved to be much superior in handling and pulling power. Its winch was essential for retrieving the boat on one occasion.

### SUMMARY

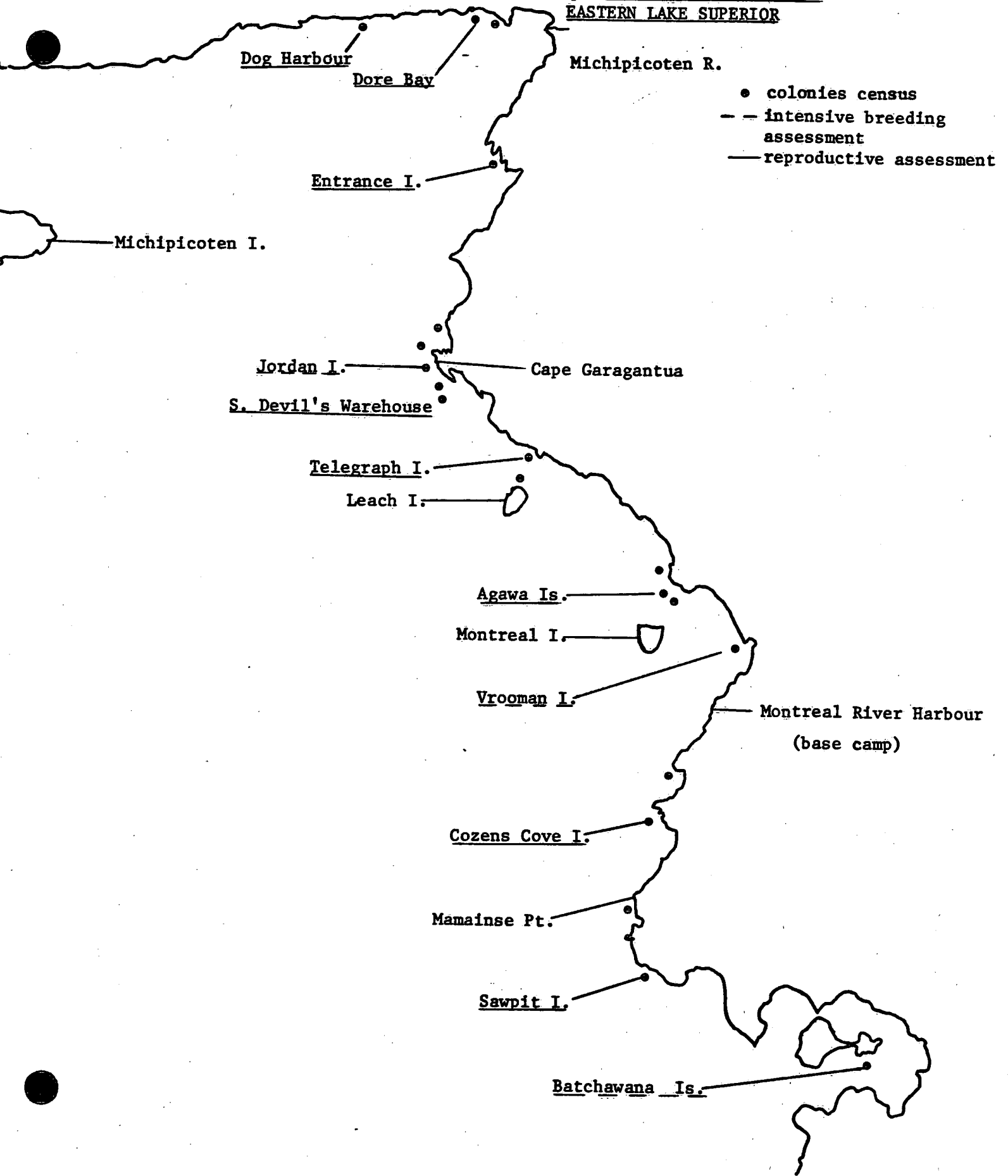
The fledgling success data (the number of three-week-old chicks that survived per nest) derived from the reproductive assessments identified the main problem area to be the section of coastline from Montreal River Harbour to slightly South of Cape Garagantua (CWS unpublished data). Chick disappearance occurred sometime between hatching and three weeks afterward except on Jordan Island where a large number of nests appeared to be neglected after egg-laying. CWS staff are uncertain of the exact cause of this problem though several theories related to toxics, predation and food stress have been put forward. It has been indicated that more extensive studies in Lake Superior are planned for 1982.

CHRONOLOGY FOR TECHNICAL OPERATIONS FIELD PARTY

- April 21 - 22 - Preparations
- April 23 - 24 - Egg collection at Double Is., an IJC colony in Georgian Bay
- April 25 - May 8 - Work out of Montreal River Harbour. Install automatic camera. Egg collection and nest count at Agawa Is., IJC colony. Mark nests on Vrooman, Batchawana and Jordan Islands for reproductive assessment. Test egg candler
- May 8 - 10 - Leave
- May 13 - 15 - Retrieve camera. Open eggs on Vrooman and Batchawana Islands
- May 16 - 18 - Nest count on Double Is. and the Grant Islands (in order to assess affect of 1980 adult bird collection there)
- May 19 - Census colonies in Eastern Lake Superior to the South of Montreal River Harbour
- May 22 - 31 - Hatch check on smaller Agawa Islands
- May 22 - Egg-opening on Jordan Island
- May 23 - Census coastline from Michipicoten River to Dog Harbour
- May 28 - Census coastline from Montreal River Harbour to Squaw Island
- May 29 - Hatch check Batchawana and Vrooman Islands
- May 31 - Census coastline from Michipicoten River to Squaw Island
- June 1 - 10 - CCIW vehicle transfer and arrange for August volunteers to help with reproductive assessment

- June 11 - 18 - Georgian Bay reproductive assessment including Nottawasaga, West Mary, Little Saddlebags, Pumpkin Point, Double, Herbert, Manitoba Castle and Snakes Islands
  - June 19 - 22 - CCIW preparation for Lake Superior reproductive assessments
  - June 23 - 26 - Lake Superior reproductive assessments including Sawpit, Cozens, Agawa and Small Agawa Islands
  - June 27 - 30 - Reproductive assessment on Granite Is. and coromorant banding on Gravel Island at the mouth of Black Bay
  - July 1 - Cormorant banding on Lake Nipigon and Cone Island at the entrance of Thunder Bay
  - July 2 - Cormorant banding on Pinnacle Rock at the entrance of Thunder Bay
  - July 3 - 6 - Reproductive assessment in Eastern Lake Superior. Colonies counted were Dog Harbour, Dore Bay, entrance, Devil's Warehouse and Telegraph Islands
  - July 7 - 10 - CCIW dismantle field gear
- End of assignment

CWS INTENSIVE STUDY AREA  
EASTERN LAKE SUPERIOR



Michipicoten R.

Dog Harbour

Dore Bay

Entrance I.

Michipicoten I.

Jordan I.

Cape Garagantua

S. Devil's Warehouse

Telegraph I.

Leach I.

Agawa Is.

Montreal I.

Vrooman I.

Montreal River Harbour  
(base camp)

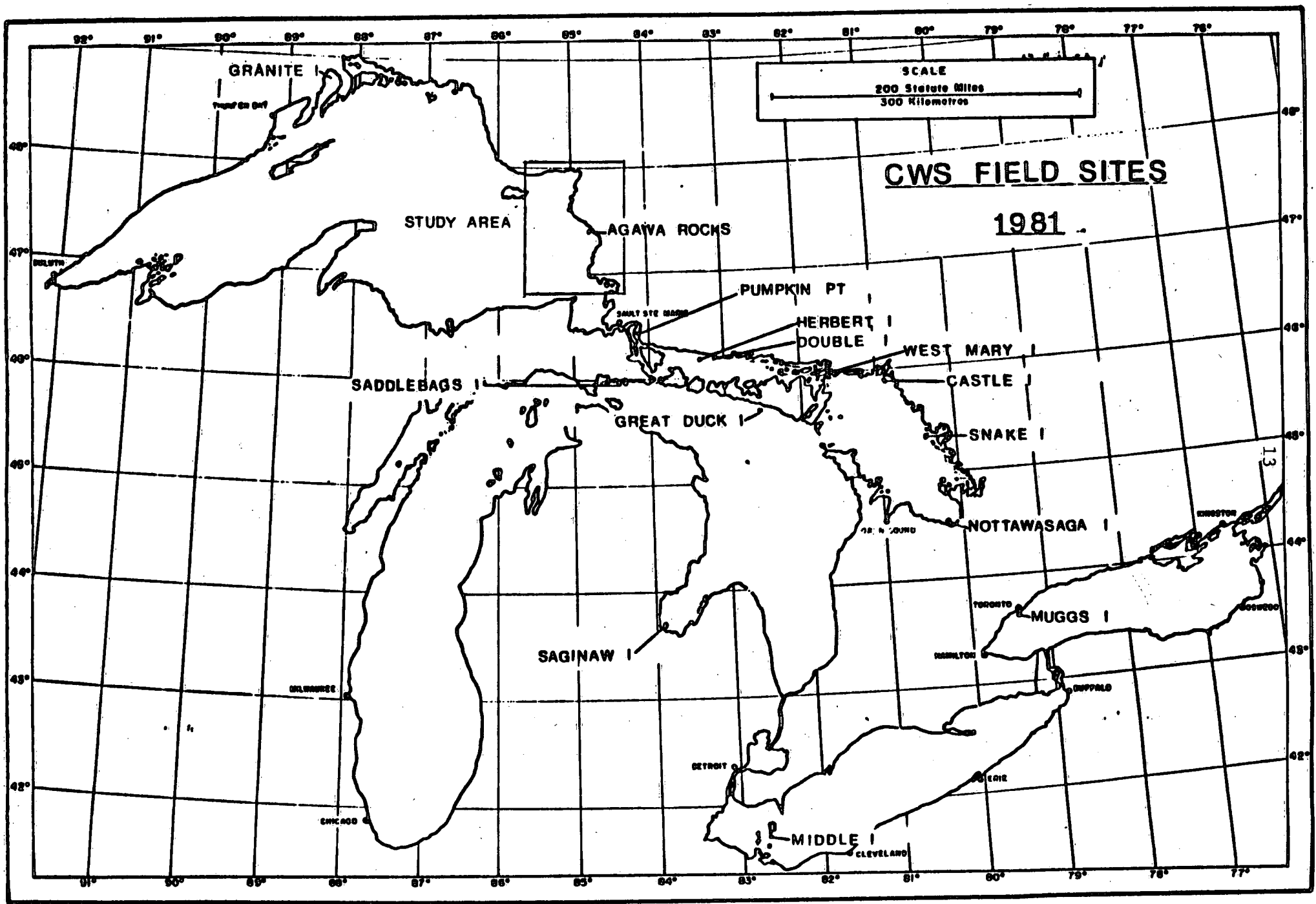
Cozens Cove I.

Mamainse Pt.

Sawpit I.

Batchawana Is.





APPENDIX 1

PROTOCOL FOR INTENSIVE BREEDING ASSESSMENT

1. On the egg pick-up visit, mark all 1 and 2-egg nests. Over 50 nests should be marked. Perform an additional visit if necessary. (This may not be feasible for the smaller colonies.)
2. Return 15 days later. This should ensure that the minimum age of any embryo is 10 days.

Take 50 eggs/colony (1 egg/nest) from marked nests which now have three eggs. (It may not be desirable to take this number of eggs from the smaller colonies--25 eggs is probably acceptable.) The eggs must be quickly opened in order to determine whether or not the embryo is alive. The egg should be classed as live, dead, fresh (apparently infertile) and addled. Addled eggs can be opened under water and the presence/absence of an embryo determined. If possible, distinction should also be made between truly infertile eggs and those where development has at least proceeded to the blastodisk state (germ spot) with a clear centre and opaque edges (area pellucida and area opaca). Once all the eggs have been opened, the age of the dead embryos should be determined and all embryos inspected for obvious anomalies. The embryos should then be frozen in individual jars without any fluid. All yolk

contents from live eggs should be pooled; likewise for dead or apparently infertile eggs.

3. 28 days after visit 1, all marked nests are checked for pipping\*. Visits must be continued until the fate of all these eggs can be determined (i.e. pip vs. died before pipping). If it is deemed that some of the eggs have died, they must be collected, examined and frozen for analysis.
4. If possible, the hatch rate is also determined. Any chick clear out of its shell is hatched.

\*Pipping is cracks on an eggshell caused by the chick trying to break out

Canadian Wildlife Service data from unpublished report

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