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Canadian Wildlife Service Phalarope Studies:  
Report on 2002 fieldwork in the outer Bay of Fundy

John W. Chardine

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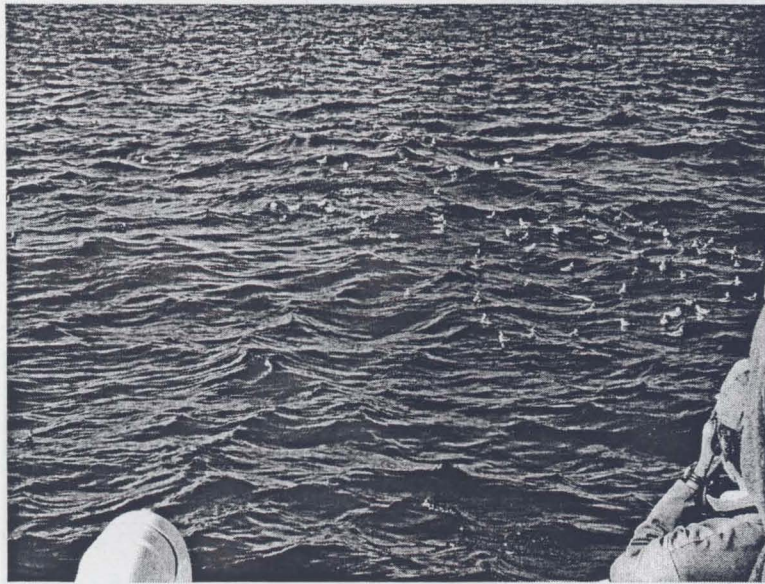
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**Canadian Wildlife Service phalarope studies:  
Report on 2002 fieldwork in the outer Bay of Fundy**

**John W. Chardine  
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**First draft September 2002; revised January 2003**

**Background**

The purpose of the Canadian Wildlife Service phalarope studies in 2002 was to (1) confirm the presence/absence of phalaropes on both sides of the outer Bay of Fundy, (2) where phalaropes were found, determine species composition, and (3) where phalaropes were found, compare densities and distribution to historical information, and (4) conduct surface plankton tows on both sides of the bay in such a way that comparisons of species composition and biomass densities can be made with historical data.

**Field team (alphabetical order):**

- John W. Chardine (CWS)
- Richard D. Elliot (CWS)
- Mike O'Brien (NS DNR; skipper of TGIFF- 35' Cape Islander)
- Julie Paquet (CWS)



The good ship TGIFF

**Field work periods:**

- Deer/Campobello Islands: 26-30 August 2002.
- Brier Island: 3-6 September 2002.

**Trip Log**

**1. Deer/Campobello Islands, New Brunswick**

**26 August**

Chardine/Elliot leave Sackville 0800 for Campobello Island. Julie had left 25 Sep for Wolfville; overnight there and drive to Yarmouth with Mike to take boat to

Campobello Island. Chardine/Elliot arrive Deer Island (via free ferry every half hour) ca. 1420. Drove circuit around Deer Island and made observations of birds feeding in Head Hr. Passage and Quoddy River. During slack high tide period, observed Bonaparte's Gulls (BOGUs) around Popes Island and to south of Casco Island, near red buoy. Observed flock of about 20 BOGUs just off Deer Island point- they dispersed over Old Sow when tide started to run.

Chardine/Elliot arrived Campobello Island (via ferry \$15 which runs every hour) at 1730. Took a look at Wilson's Beach as a possible mooring site but were not impressed by the facilities. Seiners were mostly inactive. There was no ramp to walk gear down to boat. Visited Head Hr. and was impressed with facilities, which included ramp. Spoke to whale watching person in booth by wharf- Island Cruises (506-752-1107)- who was very helpful. We used their phone to call Mike on the boat and direct him to come to Head Hr. They arrived ca. 2130 after a long day of steaming.

## **27 August**

Julie and I out in morning in AM to pick up ice. At ca. 0800 observed very large flock of Bonaparte's Gulls (BOGUs) and large gulls (*Larus*) just offshore of Wilson's Beach sitting on water. Perhaps this was a night roost? (the roost was observed on subsequent days from the boat, in roughly the same location.

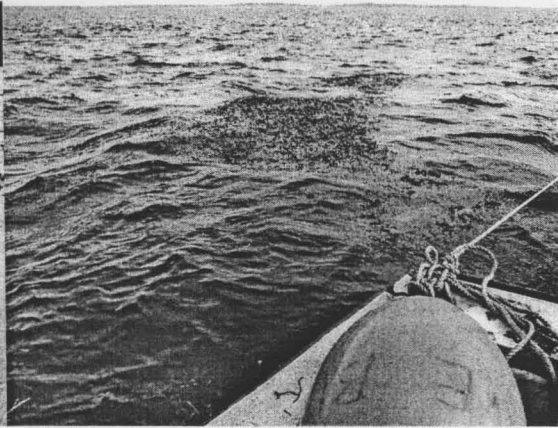
Out on water in TGIFF by 0900. Weather sunny, hazy and calm. Completed four practice tows with new net in Francine Mercier's area 7, then started the first set of tows (one per area) on the flood tide. At ca. 1054, found flock of ca. 100 large gulls and shags feeding in area 7 so towed through birds. First impression of net is that it works extremely well, although it effectively collects any seaweed floating in its path. See Appendix 1 for towing methods.

Conducted one tow per Mercier and Gaskin (1985) area on each flood or ebb tide. These periods each lasted about 3 hours and commenced 1.5 hours after either high or low tide. Thus if high tide was at 1200h, the ebb tide period ran from 1330 to about 1630, and likewise of low tide was at 1800h, the flood tide ran from 1930 to about 2230. If available, we towed first through feeding birds. In the absence of feeding birds we towed through areas showing clear signs of vertical mixing such as areas of calm water surrounded by areas of ruffled water. If these features were not present we attempted to spread tows evenly within each area.

BOGUs and large gulls (sometimes in association with cormorants and Harbour Porpoises) were observed feeding along weed lines and in ruffled water by side of upwellings.

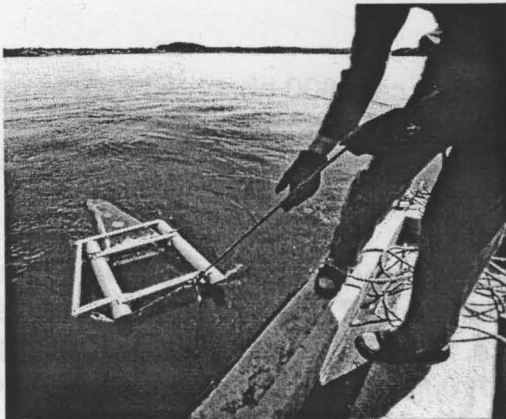


Gulls feeding in ruffled water

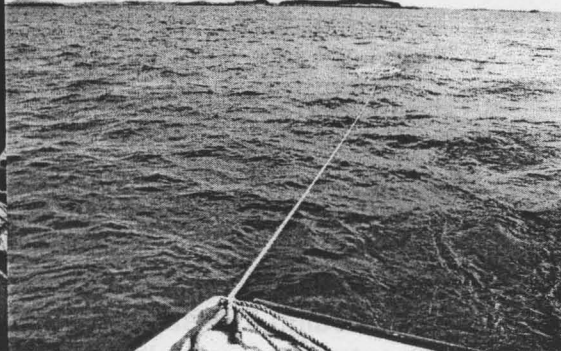


Floating weed, often seen in lines

Tows were attempted in these areas despite weed being trapped in the net. Occasionally weed would foul the flow meter- this was noted on sheets whenever it happened.



Plankton net ready



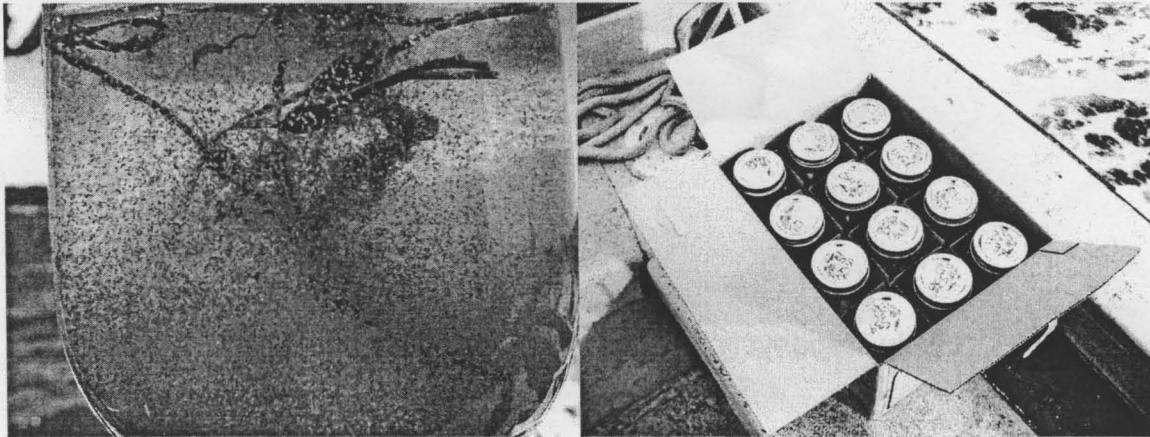
Net being towed behind TGIFF

Completed two sets of tows this day; one on flood and one on ebb tide. Completed last tow by 1905; in by about 1945. All tows individually numbered and data recorded on special-purpose recording sheets (Appendix 3). Other details to be found in Chardine 2001-> field notebook. No phalaropes seen this day.

### **28 August**

Continued systematic tows around Deer/Campobello Islands all day (0630-2100). Completed three sets (two ebbs and a flood tide). Conditions calm and clear with only high, thin cloud. In afternoon, found a large feeding flock of over 1000 large gulls and BOGUs in area 7. These feeding flocks appear to be very transient and move around quickly at scales of 100s of meters, presumably chasing prey that make it to the surface and therefore accessible to them. Also towed through flock

of BOGUs and HERGs feeding off Deer Island Point amongst upwellings and currents. No phalaropes seen.



Zooplankton collected off Deer Island

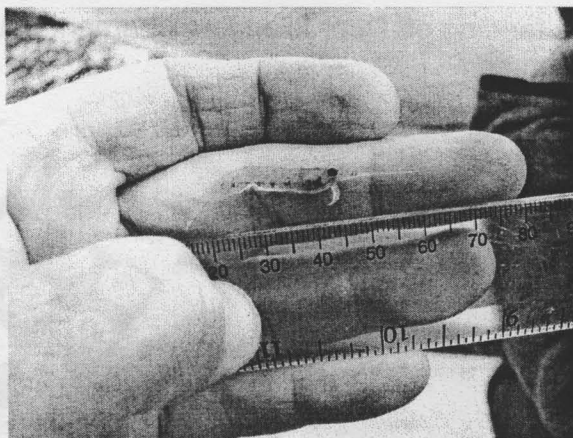
Sample jars

### 29 August

Continued tows around Deer/Campobello Islands all day (0650-2030). Completed three sets of tows (two ebb and one flood tide). Conditions very similar to yesterday. Between morning sets of tows, conducted census of kittiwake nests at Whitehead Island. Counted total of 68 apparently active sites (details in Chardine 2001-> field notebook). Also estimated 5 Black Guillemot apparently active sites. No phalaropes seen.

### 30 August

Last day at Deer/Campobello Islands. Conducted one set of tows in morning (0700-0851). Observed large flock of gulls feeding off Deer Island Point. Towed through these birds and confirmed presence of *Meganyctiphnes* shrimp by collecting some in tow. Birds were feeding in ruffled water surrounding round areas of flat water upwelling. Also towed through another large and active feeding flock of gulls in areas 7-8. At this time observed large black areas on sounder, which I assume were the *Meganyctiphnes*. The areas went deep into the water and were pointed at the top. It is presumably where these areas come up to the surface that they are available to gulls and feeding commences. Apparently *Meganyctiphnes* are able to swim against the tidal upwellings (at least better than copepods) and avoid being at the surface, however, when the upwellings are too strong they are available to gulls for apparently brief periods of seconds to minutes. No phalaropes seen.



Likely *Meganyctiphanes norvegica*: food for gulls etc.

Packed up and left Head Harbour by late morning. Off Campobello Island by about noon. To Sackville by supper time.

## **2. Brier Island, Nova Scotia**

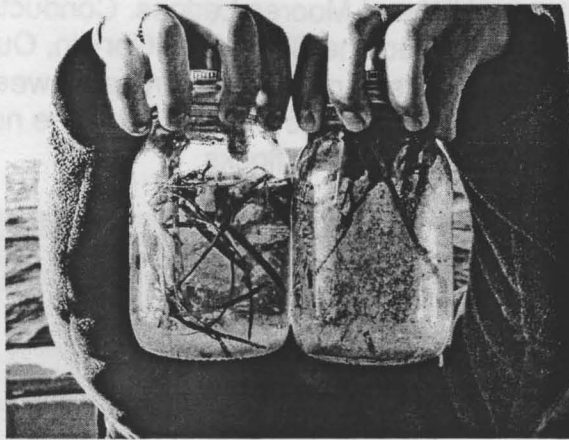
### **3 September**

Chardine/Elliot leave Sackville for Brier Island at 0700. Picked up Julie Paquet on way, and then Mike O'Brien in Melanson, Nova Scotia. Shopped on way and arrived ferry crossing to Long Island 1500. Out in boat by 1625 for initial survey west of Brier Island over Northwest and Moores Ledges. Observed first flock of several hundred phalaropes at  $44^{\circ} 19.14' N$   $66^{\circ} 22.45' W$  feeding along weed line on flood tide (weighpoint 178). Weed line ran in ne-sw direction and the position of the birds was between the two ledges. The species ratio of this flock was estimated to be 3:1 Red-necked to Red. Conducted some bird/no bird tows. Bird tows were through feeding phalaropes in weed lines. No-bird tows were in waters ca. 100m either side of weed line. Also present in area were gulls, gannets, puffins, Greater Shearwaters and terns (ads and juvs). No phalaropes were seen once we reached shallow water over NW Ledges. Observed gannets feeding over shallow water.

Between 1748-1839 conducted focal bird scoring of species composition of phalaropes observed on way to Moores Ledge: results were 77 Red-necked and 160 Reds (about 1:2).

At 1831 Observed ca. 10 young Black Terns at  $44^{\circ} 20.11' N$   $66^{\circ} 22.28' W$ .

Into port on Long Island by 2030.



Bird (left) and no-bird tows

#### **4 September**

Conducted transect marine bird survey over NW and Moores Ledges today (see Appendix 3). Conditions were changeable, cloudy with sunny periods, wind light early, strengthening through day and calming by evening. A few spots of rain. Transects ran in east-west and west-east direction between  $66^{\circ} 20'$  and  $66^{\circ} 30'$  W starting at  $44^{\circ} 22'$  N, south to  $44^{\circ} 15'$  N and covered the area in which Brown and Gaskin (1988) reported seeing most phalaropes in their study. Observers were Chardine (port quadrant) and Elliot (starboard quadrant) with Paquet recording. Cruising speed was ca. 6-7 knots and it took about 1 hr to complete transect (shorter ones off Brier Island took less time). Observers' eyes were about 3-4 m above water. Transects were numbered 1 to 7 from north to south and were completed in the following order: 1,3,5,7,6,4,2. All marine birds were recorded as far out from vessel as species identification could reliably be made (about 200 m each side of vessel). Weighpoints were recorded for every group of birds. groups were defined as those separated by ca. 1 minute of cruising. Tide was rising in AM to 0930, falling to 1540, then rising again to 2145.

Notable observations during count were

- three sightings of Great Skuas
- 2-3 sightings of Pomarine Jaegers
- a few Manx Shearwaters
- many Greater Shearwaters and a few Sooty Shearwaters
- many puffins
- many Wilson's Storm-Petrels

#### **5 September**

Devoted day to phalarope species composition, tows through birds and no-birds, and a count of phalaropes along an extensive weed line. Sunny with cloudy periods, light/moderate through winds. Brought Gary Thurber out with us in early AM (helped with tows). In AM on rising tide found large numbers of phalaropes

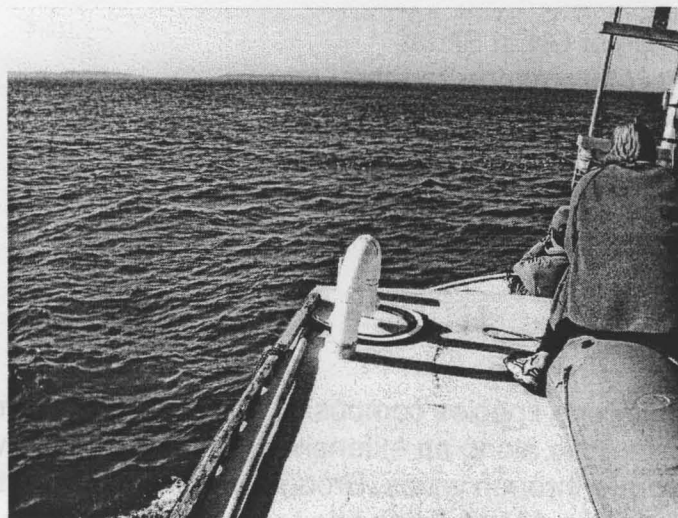


on same weed line between NW and Moores Ledges. Conducted bird/no-bird tows to about 1030 along this weed line. Then took Gary in. Out again on ebb tide by 1150. Observed large flocks of phalaropes on same weed line so steamed by side of phalaropes up to Moores Ledge where there were no more birds while Richard called-out species composition in flocks.



Phalaropes on water off Brier Island feeding in weed streaks

From start of count, observed flocks of phalaropes flying south in same direction as vessel. Richard avoided counting these birds. Returned south along line of birds and inshore of them. Richard conducted count of birds with Julie recording; John recorded species composition. Count finished when we ran out of birds off Brier Island. Returned along roughly same line and found no birds! Situation had changed very quickly. Decided to go to west side of ledges where upwelling was predicted to occur on ebb tide. Found a few small flocks of phalaropes, some weed streaks. Conducted more tows in birds and outside of birds.



## Counting phalaropes: 5 September 2002

Observed Right Whale off west of Brier Island (wp = 561).

Afternoon on low tide was very quiet on water in same areas that were full of birds (phalaropes, shearwaters, gulls, storm-petrels) in morning, and where we had seen birds on previous days. Weed was observed but it was dispersed and did not appear to be concentrated due to convergence. This observation is a very clear indication of how changeable the situation is with respect to phalaropes and other birds using area west of Brier Island. In by 1730 today as area was essentially clear of birds.

### **6 September**

Windy overnight and through morning (from nw). Sea conditions were rough to west of Brier Island. Out at 0900 in boat to have a look at conditions. Steamed to area between ledges where we had seen birds previous days and in particular, previous morning at same tide state but in much calmer conditions. In the stormy conditions this AM we observed virtually no marine birds of any species in this area, and no lines of weed. Conducted five no-bird, control tows in area where we had seen many phalaropes yesterday. Finished tows by 1107 and came in. Left Long Island by 1230 and to Sackville by supper time.

## Appendix 1. Methodology for use of plankton net

Net rigging: The net was towed from the starboard side of the vessel. Half inch rope was used to tow the net. One end was tied to a cleat on the starboard aft corner of the vessel, 84 cm above the water. The other end was tied to a shackle at the net end. The length of the rope from cleat to shackle was 13.25 m. The net was tied to the shackle by two lengths of stainless steel wire; the distance from the shackle to the net was 112 cm. The fin was attached to the net to provide the greatest degree of sideways force to the net and keep it as far out as possible. As a result of this rigging, the net towed just outside wake of boat.

Setting of net: Tows were 5 minutes in duration. The net was dropped over the starboard-aft side of the vessel and the rope allowed to pay out on its own until the net started to tow. At this point the tow was considered to have started. Speed over the water was 1-2 knots as measured by the sounder and reported by Skipper Mike O'Brien. At about 4 minutes 30 seconds, the vessel was stopped and the net was reeled in at a rate roughly equivalent to the motion of the vessel. As soon as the net came along side, the end of the tow was considered to have occurred. A weigh point and time was recorded on the vessel GPS (Garmin 76S) at the beginning and end of the tow.

Sample preparation: The net was lifted up onto the gunwales of the vessel and the cod-end carefully unscrewed. If there was excessive weed collected in the cod-end, it was discarded, although some weed was retained to indicate that it was a weed tow. We assumed that anything attached to the weed was washed off by the flow of water through the net. The complete contents of the cod-end was transferred to a 1 l or 0.5 l mason jar. Great care was taken to wash the walls and mesh of the cod-end, as plankton often adhered there. This was done using seawater and a spray bottle or glass beaker, over a bucket to catch the water that drained out of the cod-end

Four percent formaline was used to preserve specimens. This was achieved by adding 100 ml of 40% formaldehyde solution to a full 1l mason jar, or 50 ml to a half-full mason jar. 1l jars were preferred, because weed was often associated with the sample; 500 ml jars were too small. A card label written in pencil was added to the sample jars and the sample number was written on the jar cap.

The decision where to start a tow was determined as follows:

### 1. Deer/Campobello Islands

- when an area was entered, we scanned for birds on the water (usually gulls) and a tow was attempted through the birds.
- in the absence of birds on the water, we scanned for indication at the surface of upwelling or convergence (smooth and ruffled water, weed lines) and a tow was conducted through these phenomena.

- in the absence of the above "control" tows were conducted to some degree at random within the area, although we attempted to even out the spatial distribution of subsequent tows.

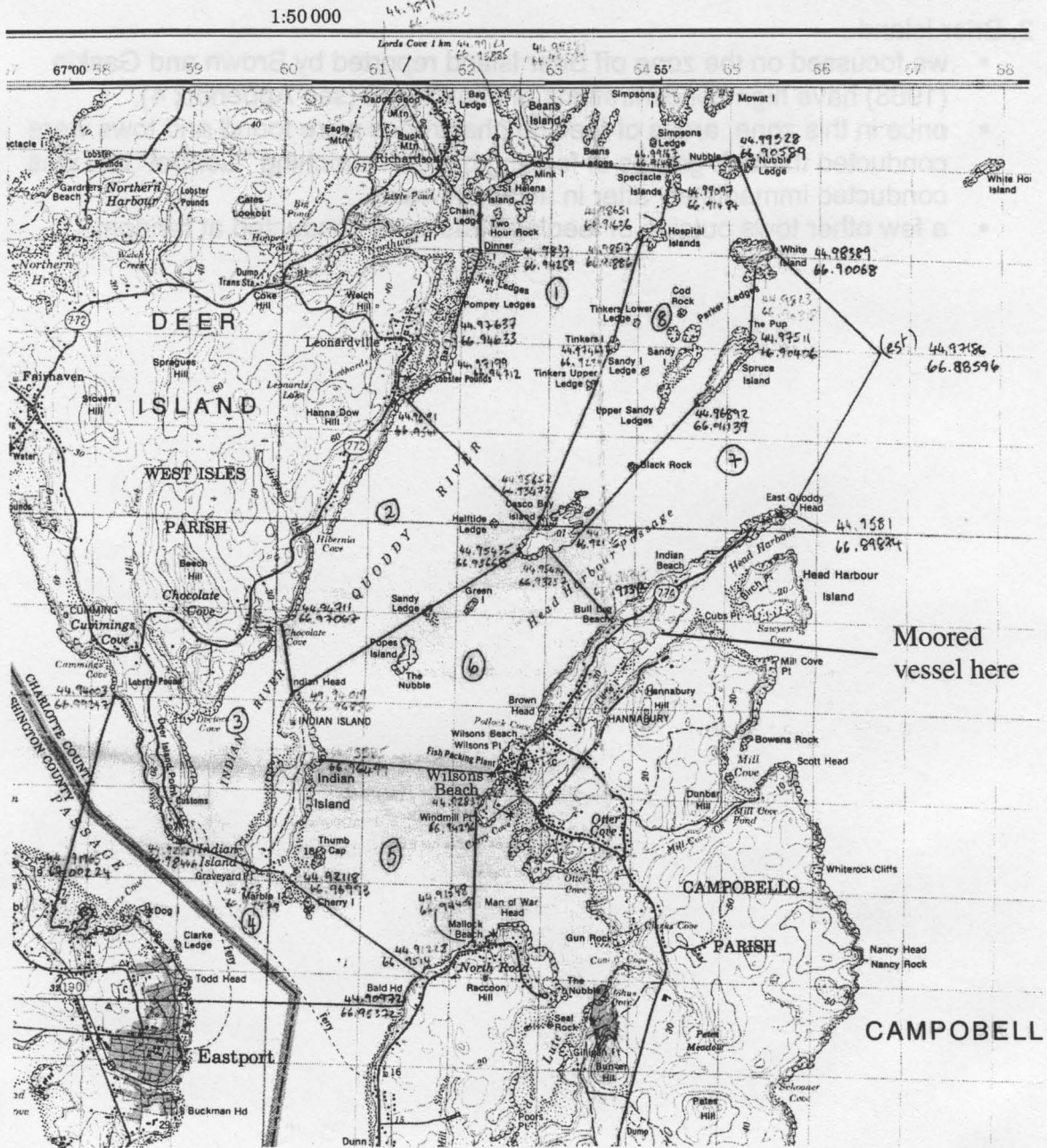
## 2. Brier Island

- we focussed on the zone off Brier Island reported by Brown and Gaskin (1988) have high concentrations of phalaropes (see Appendix 4).
- once in this zone, areas of feeding phalaropes were found and tows were conducted through groups of feeding birds. A matching "Control" tow was conducted immediately after in adjacent water.
- a few other tows outside of feeding birds were conducted at random



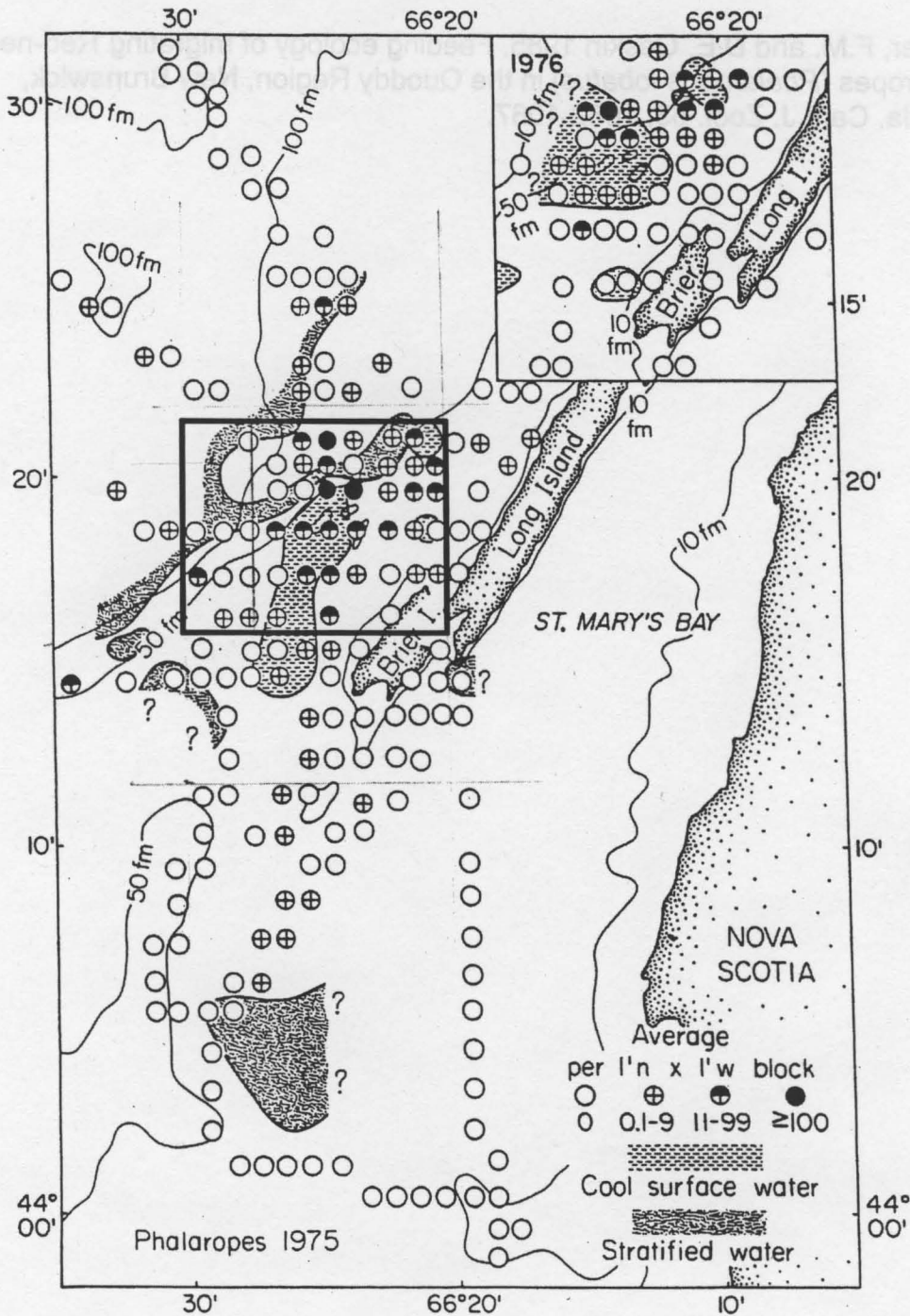
Appendix 2. Deer/Cambobello Island study area and Areas referred to by Mercier and Gaskin 1985.

Gaskin S





Appendix 4: Area (heavy-lined box) west of Brier Island, Nova Scotia over which marine bird transects were run on 4 September. The figure is from Brown and Gaskin 1988 and shows average densities of phalaropes per 1' block.



Literature cited

Brown, R.G.B. and D. E. Gaskin. 1988. The pelagic ecology of the Grey and Red-necked Phalaropes *Phalaropus fulicarius* and *P. lobatus* in the Bay of Fundy, eastern Canada. *Ibis* 130:234-250.

Mercier, F.M. and D.E. Gaskin 1985. Feeding ecology of migrating Red-necked Phalaropes (*Phalaropus lobatus*) in the Quoddy Region, New Brunswick, Canada. *Can. J. Zool.* 63: 1062-1067.

