

WADER RINGING IN JAMES BAY, CANADA, 1974-1976

by R.I.G. Morrison

Introduction

The Canadian Wildlife Service (CWS) began a program of research on waders in 1974. A basic objective of the work has been to identify all the areas of major importance to the birds in eastern Canada. One such area is James Bay, which is used by many waders during their autumn migration southwards from breeding grounds in the arctic to wintering grounds in South America. Owing to its remoteness, little was known of the occurrence of waders in James Bay, or of their migration pathways and dispersal routes once they left the Bay. This article is a narrative account outlining ringing and other studies that have been carried out in James Bay by the CWS over the past three years to investigate the use of the area by waders.

The Development of Ringing Studies in James Bay

Preliminary ringing studies were started in James Bay in 1974 by Guy Morrison. Aerial surveys were conducted from Churchill, on the Hudson Bay coast, to Moosonee at the south end of James Bay, to identify areas where waders concentrated and to select a location suitable for work on the ground. The site chosen for ringing studies was at North Point, in the southwest corner of James Bay, where the James Bay Goose Camp (which operates commercially as a hunting camp in September and October each year) provides excellent facilities on the coast 17 miles (27 km) N.E. of the only town in the area, Moosonee. Early thoughts about establishing a banding operation near Churchill were 'reconsidered' after the aerial survey had revealed 140 polar bears in as many miles in that area! Polar bears would be a serious nuisance and danger to a large scale operation and are fortunately rare in the southern part of James Bay. Approximately 300 waders were ringed by two people during a two week period in August 1974 (see Table 1).

In 1975 the operation was expanded, with a larger team of 5-8 working for 5½ weeks at North Point. A core of experienced personnel is essential to operate efficiently in a remote and difficult area (see below) and with relatively little wader ringing being carried out in Canada, two U.K. 'experts', James Wilson and Stuart Brown, were imported to provide the necessary experience. Between mid-July and late August, 4,028 waders were caught, processed and colour-marked (see Table 1).

This summer, a team averaging 8 people worked for 2 months from early July to early September, and a massive total of 12,402 waders were caught (Table 1). The influence of the Wash Wader Ringing Group was strongly felt, with a number of WWRG members providing the experience essential for the operation. Stuart Brown and Les Goodyer were employed for the entire period and William Dick, leader of the Oxford and Cambridge Expedition to Mauritania 1973 (see WSG Bull. 10: 4-7, 1973), volunteered his services for 6 weeks in July and August. Dr C.D.T. Minton, leader of the WWRG can perhaps claim that his influence on wader ringing studies extends even as far as the shore of James Bay, as his parting comment to U.K. participants of '10,000 or bust!' became a challenge that the team was unable to ignore.!

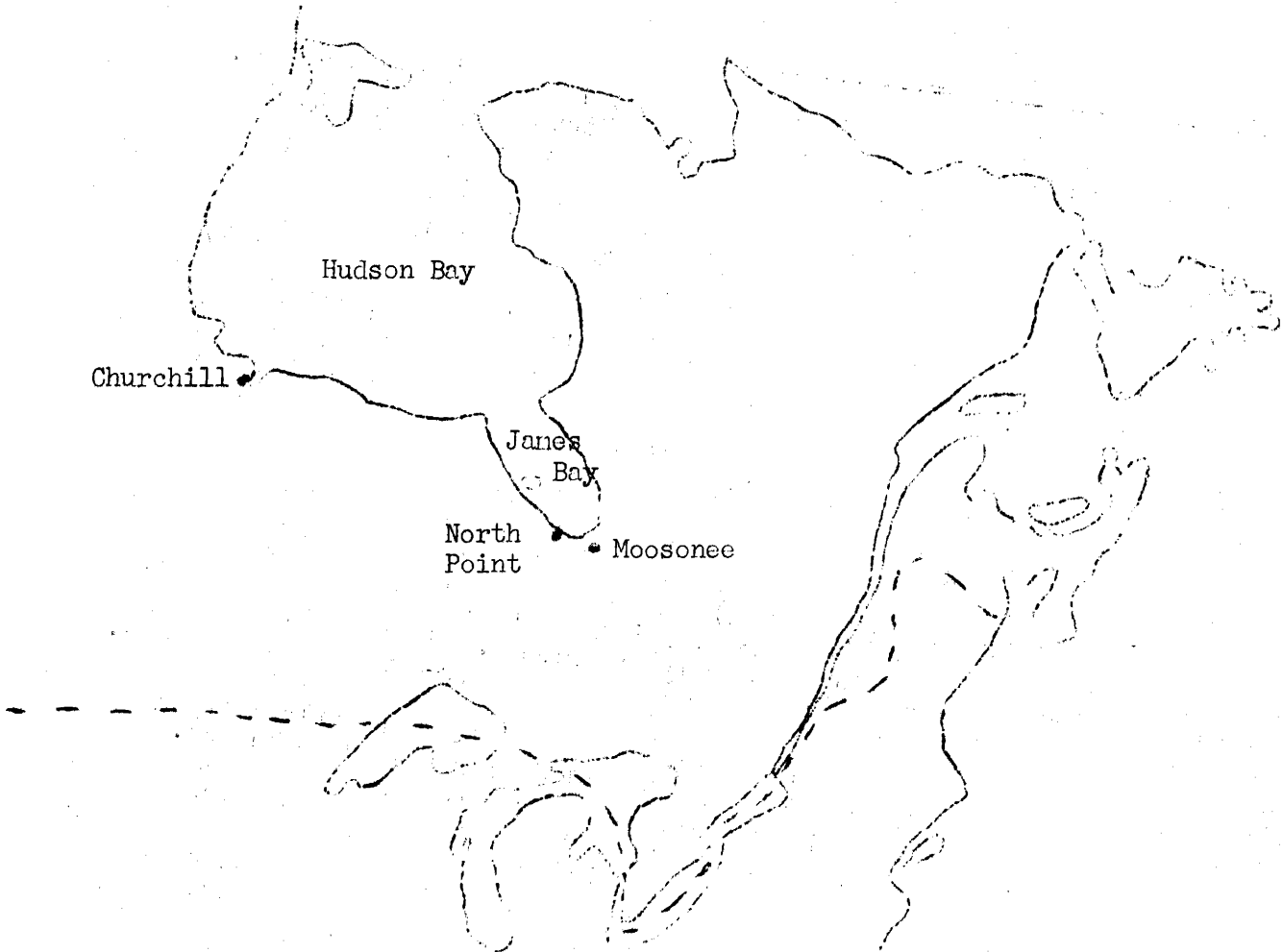
The Nature of the James Bay Coastline

The west coast of James Bay is extremely flat. Marshes and mud-flats, both of which may be several miles or more in width, stretch for approximately 350 miles (560 km) from the south to the north end of the Bay, and continue still further to and beyond Churchill, a distance of some 1,000 miles (1,600 km) from Moosonee. The coast is very remote, the only habitation being 4 small Indian villages near the mouths of major rivers between Moosonee and Churchill.

Moosonee is at about the same latitude as London, but the climate is considerably more severe. Temperatures in January average -5 to -10°F (-20 to -23°C) and the

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annual snowfall is over 100 inches (250 cm). The sea ice covering James Bay does not break up at North Point until the latter half of May, as the waders make their way northwards to the breeding grounds. July temperatures at Moosonee average over 60°F (16°C), though southwesterly winds from the interior of the continent regularly bring periods of hot, humid, unpleasant weather, with temperatures over 90°F (32°C). Such periods often end with a series of intense and very violent thunderstorms, which may be very localised and can be a distinct hazard to mist netting on the flat coastline.



MAP SHOWING LOCATION OF RINGING CAMP, TOWNS ETC.

The tidal range at North Point is about 11 feet (3 m) on high tides and only 3-4 feet (1 m) on the lowest ones. With such a flat coastline, however, the weather exerts a profound influence on the tides, and heights often bear little or no relation to those predicted. This may be a considerable problem and at time a potential danger, as storm tides may completely cover the coastal marsh leaving few or no places of refuge for anyone stranded on the shore.

The marshes in James Bay are famous for their mosquitoes, and rightly so. When the season is at its height, it is necessary to cover oneself completely from head to toe in protective clothing, including a headnet, even in the hottest weather. Switching on a headlamp on a night mist net round can be a disorientating experience, the hordes of insects swirling violently like snow in a raging blizzard. Some much quoted published statistics, invaluable for morale during bad periods, included the conservative estimate of 5,000,000 mosquitoes per acre on the Hudson Bay coast, the calculation that a man would

receive 280 bites per minute on the forearm alone during an intense attack (or 9,250 bites per minute if totally unprotected!) and that at this rate, half the total blood volume of a man would be removed by the insects in  $1\frac{3}{4}$  hours!

### Netting Operations

Owing to the very flat terrain and unpredictable tides, cannon netting is not a reliable trapping method, though some catches were made on a series of gravel ridges which were used as roosting islands by the birds on the highest tides. In 1975, approximately 25% (c. 1,000 in 4,000) of the birds were caught in cannon nets, and in 1976 about 5% (c. 600 in 12,000). Mist netting was the most important technique, and in 1976 over 12,000 birds were trapped in this way (c. 11,800 waders and c. 500 passerines) during the 8-9 week period. Generally, from 70-80 nets (900-1,000 m of netting) were set up in to six lines, within a  $1\frac{1}{2}$  mile ( $2\frac{1}{2}$  km) stretch of coastline. Nets were operated continuously, personnel being divided into two teams of four as a night shift and a day shift, the teams changing shift once per week. Peak catches, which were over 500 birds, required the assistance of all hands! A variety of nets was used, including 4-shelf monofilament nets of very low visibility which caught well even during daylight, but which suffered the disadvantage of being rather difficult to extract birds from. The nets were rarely closed, except for periods of particularly bad weather. Small numbers of birds were caught using walk-in traps, by clap-netting and by dazzling with lights at night. After capture, birds were returned to the buildings at the Goose Camp for processing.

An essential feature of operating on the scale achieved was the use of two Honda motor tricycles. These machines have large balloon tyres; they are ideal for operating over saltmarshes and even float, a property which may at times prove to be of considerable value! Without them, it would not have been possible to tend the number of nets utilized in an efficient manner with only a small team.

### Some Preliminary Results

A total of 16,727 waders has been captured on ringing operations in James Bay from 1974-1976 (Table 1). All birds were weighed and measured (with the exception of several hundred which were only weighed during peak catching periods), ringed, colour-ringed and dyed with picric acid. In addition, birds were examined for moult and a collection of feather parasites made. Many aspects of the biometrics, weight changes and moult of waders are currently being analysed, a few of which are mentioned below.

By far the most numerous bird caught was the Semipalmated Sandpiper (Calidris pusilla). It is a species which was, in fact, rather difficult to keep out of the nets, even when the latter were furled! A preliminary analysis of the 1975 data indicates that the average bill length of birds decreases during July and August, probably as a result of the presence of an increasing proportion of smaller birds from the western and northern parts of the breeding range. Changes in the sex ratio and in feather wear may also be contributing factors. The occurrence of a small proportion of birds which had apparently moulted their outer primaries in spring was noted. In 1975, 62 sightings of colour-marked Semipalmated Sandpipers were reported, ranging from eastern Canada and the eastern seaboard of the U.S.A. to South America (Table 1). This year, approximately 300 'bird-days' of sightings have already been received.

Unlike their counterparts in Europe, races of the Dunlin Calidris alpina in North America undergo a complete wing and body moult before the main autumn migration to the wintering grounds. Complete documentation of the moult in James Bay was made in 1975 and 1976.

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TABLE 1. TOTALS OF WADERS CAPTURED IN JAMES BAY, 1974-1976, AND SIGHTINGS OF COLOUR-MARKED BIRDS IN 1975.

	1974			1975			1976			GRAND TOTAL	
	AD.	JUV.	TOTAL	AD.	JUV.	TOTAL	SIGHTINGS	AD.	JUV.		TOTAL
Semipalmated Plover	-	2	2	40	14	54	5	77	72	149	205
Killdeer	-	-	-	1	2	3	-	1	-	1	4
American Golden Plover	-	-	-	1	1	2	-	7	2	2	4
Black-bellied Plover	-	-	-	1	-	1	-	-	-	7	8
Ruddy Turnstone	-	-	-	19	27	46	-	42	53	95	141
Common Snipe	-	-	-	1	1	2	-	-	17	17	19
Spotted Sandpiper	-	-	-	-	2	2	-	2	4	6	8
Solitary Sandpiper	-	-	-	-	2	2	-	-	1	1	3
Greater Yellowlegs	-	-	-	2	-	2	-	10	2	12	14
Lesser Yellowlegs	2	-	2	8	31	39	1	47	18	65	106
Red Knot	-	-	-	15	40	55	-	6	26	32	87
Pectoral Sandpiper	-	-	-	32	3	35	-	84	11	95	130
White-rumped Sandpiper	17	-	17	616	1	617	2	448	11	459	1,093
Baird's Sandpiper	-	-	-	-	74	76	1	27	1	28	29
Least Sandpiper	-	18	18	2	1	3	-	401	36	437	433
Dunlin	24	-	24	162	1	163	-	-	312	339	624
Short-billed Dowitcher	1	-	1	1	-	1	-	-	6	6	8
Stilt Sandpiper	-	-	-	-	-	-	-	1	-	1	1
Semipalmated Sandpiper	29	204	233	2,343	538	2,881	62	7,045	3,475	10,520	13,634
Buff-breasted Sandpiper	-	-	-	-	2	2	-	-	-	-	2
Marbled Godwit	-	-	-	-	3	3	-	-	5	5	8
Hudsonian Godwit	-	-	-	-	6	6	-	4	-	4	10
Sanderling	-	-	-	26	3	29	3	70	45	115	144
Wilson's Phalarope	-	-	-	-	-	-	-	-	4	4	4
Northern Phalarope	-	-	-	-	7	7	-	10	19	29	36
TOTALS	73	224	297	3,270	758	4,028	74	8,282	4,120	12,402	16,727

Data on weight gain, turnover rates, moult and migration were obtained from many other species. The value of colour-marking is well illustrated by the studies.

Other studies carried out by the CWS have included work on the food resources and feeding ecology of waders on the James Bay coast and on breeding populations near North Point. Studies on the feeding ecology of the Hudsonian Godwit Limosa haemastica were carried out in 1976 at a second camp at Longridge Point about 30 miles (50 km) north of the ringing operation. Current information indicates that the majority of Hudsonian Godwits may fly directly from staging areas on the west coast of James Bay to South America. James Bay is also an important migration area for the North American race of the Knot Calidris canutus rufa. This sub-species appears never to have recovered completely from excessive shooting in the days of market hunting, and pressure on the habitat used during migration by those remaining is increasing. Considerable excitement occurred in August, when a possible sighting was made of two Eskimo Curlews Numerius borealis, a species which has been considered on the verge of extinction, if not actually extinct, since it was practically wiped out mainly through excessive shooting in the late nineteenth and early twentieth centuries.

Work at North Point in 1975 resulted in the first breeding records for James Bay of two species of waders, the Marbled Godwit Limosa fedoa and Wilson's Phalarope Phalaropus tricolor, both of which were found breeding again in 1976.

It is planned to continue the work in 1977, with a third year of the intensive banding operation and further studies of the feeding ecology of waders on the James Bay coast.

REFER OVER PAGE FOR TABLE 1.

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#### CATCHING BREEDING WADERS ON THEIR NESTS

by Klaas Koopman and Jan Hulscher

In the WSG Bulletins 16, 17 and 18 methods for finding nests of waders and catching breeding birds are described. In 1975 and 1976 we caught several waders in Friesland in the north of the Netherlands, and perhaps it is worthwhile reporting on our methods and experiences.

#### Locating nests

In our study area most wader species breed in pastures, Oystercatchers and Lapwings on arable land too. Densities are relatively high: for Godwit and Lapwing 10-60 (mean about 35), for the Oystercatcher 10-40 (mean 25) pairs/100 ha. When the vegetation is not too tall an experienced observer can locate Oystercatchers, Lapwings and Godwits whilst they are sitting on the nest. If the vegetation is rather tall the observer must scan the field first and take in the positions of all the birds present, then he must enter the field and take in those birds that rise but were not seen before. These birds come from the nest. A bird that has already been incubating several days, will either walk over a short distance before it rises, or rise directly from the nest. Ruff, Redshank and Snipe always rise directly from their nest. Birds coming from the nest can be recognised by their particular flight: a low flight over a short distance. The non-breeding bird of an Oystercatcher pair is often on guard, for instance standing on a fence pole or polderdike. The partner usually breeds in its immediate neighbourhood in the tall grass. If one enters the field the incubating bird is bound to rise.