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SHOREBIRD STUDIES IN WESTERN ALASKA, 1976-1978

by Robert Gill, Jr.

Introduction

Beginning in 1975 with the advent of oil and gas exploration over much of Alaska's outer continental shelf, the U.S. Fish and Wildlife Service and numerous other investigators initiated studies of major faunal groups and habitats likely to be adversely affected by petroleum development. Among those studies involving shorebirds was one begun in March 1976 of shorebird use of littoral areas along the Alaska Peninsula. This study (Gill et al. 1977, Gill 1978), centered at Nelson Lagoon (Figure 1), investigated habitat partitioning by post-breeding Dunlin (Calidris alpina pacifica), Western Sandpipers (C. mauri), Rock Sandpipers (C. ptilocnemis couesi), and Bar-tailed Godwits (Limosa lapponica), as well as examined turnover rates of birds in the lagoon and possible inter-lagoon movements along the Peninsula. To this end we colour-banded and marked some 1200 each of Dunlin and Western Sandpipers, and 400 Rock Sandpipers. Subsequent sightings of banded birds have been most enlightening, especially regarding fall migration routes and strategies of these species (see below).

In 1978 we shifted study sites and emphasis and began a two year investigation of the breeding ecology of the Black Turnstone on the Yukon Delta (Figure 1). Our original plans called for only limited work with other shorebird species on the Delta, but the numbers of Dunlin and Western Sandpipers found using the intertidal zone after breeding, and the comparative ease with which we were able to capture them, prompted us to begin a study similar to that at Nelson Lagoon the previous two years. We subsequently colour-marked approximately 500 each of Dunlin and Western Sandpipers after a somewhat late start and reduced effort.

In late September 1978 we returned to Nelson Lagoon to continue our work with Dunlin and their departure on fall migration.

During the summer of 1979 we will conduct intensive studies at both Nelson Lagoon and the Yukon Delta where we will concentrate on the comparative fall migration routes and strategies of areas alpina and mauri from these two areas.

Methods

Our banding at Nelson Lagoon (mid-July to early October 1977) was done with a rocket net set at high tide roosts. If birds did not return to the exact site we could usually "walk" them along the beach until they were within coverage of the net, and thereby allow us to control better the number of birds captured per firing. Given our usual crew of 3-4 people we found it best to confine our catches to around 100 birds per firing. Such a catch would usually require three hours to process. We also found it desirable to cover the net with a large sheet of light-weight black plastic immediately upon firing the net. This had a tranquilizing effect on the birds and was especially helpful in preventing injury to the wings of Dunlin and Rock Sandpipers undergoing post-nuptial moult.

Most birds were banded, colour-banded, weighed, measured, moult-scored, and dyed on the breast, flanks, and vent with picric acid. By varying placement of a split red/blue band with the metal band we were able to change banding schemes every 15 days throughout the study.

At the Yukon Delta site in 1978 we did not have use of a rocket net (or we feel the number of birds captured could have been increased many fold) but instead used between two and six 12 m mist nets strung in series or in various configurations over intertidal areas, usually at or adjacent to high tide roosts. Our best results came when high tides occurred at dawn or dusk or during daylight storms. Under the latter conditions we lowered our nets to one or two tier heights and then herded birds into them. We recorded the same data as at Nelson Lagoon, except in 1978 we used a split red/green colour-band. All birds were again marked with picric acid on the belly, flanks and vent. We occasionally held birds in outdoor pens until they had bathed and preened and then released them as a group. We feel this reduced post-release mortality, especially from hypothermia when we banded on windy, cold days. Many of our Hatching Year birds were still undergoing moult when colour-marked. These birds subsequently lost some of their colouring on the belly, but retained most of the colouring on the vent and flanks. We also found that picric acid undergoes a photochemical reaction once applied and that within 3-4 days turns from a bright yellow to a salmon or light orange colour. This in itself was helpful in discerning local movement of birds.

Results

Between 1976-1978 we banded 3952 shorebirds of 12 species (Table 1). Of these, approximately 3500 were colour-marked, resulting, to date, in approximately 60 'bird days' of sightings away from the banding sites (Figure 1).

Table 1. Numbers of birds banded and 'bird days' of sightings from Nelson Lagoon (1977) and Yukon Delta (1978).

Species	Nelson Lagoon		Yukon Delta	
	No. banded	'bird days'	No. banded	'bird days'
Dunlin *	1025	14	544	6 ¹ / ₁
Western Sandpiper *	1231	16	478	18 ¹ / ₁
Rock Sandpiper *	332	2	27	-
Black Turnstone +	-	-	85	3
Sharp-tailed Sandpiper +	-	-	29	-
Short-billed Dowitcher	14	-	-	-
Red Knot	-	-	2	-
Golden Plover	-	-	2	-
Semipalmated Sandpiper	-	-	2	-
Northern Phalarope	-	-	1	-
Red Phalarope	-	-	1	-
Total	2782	32	1171	27

¹Reports received as of December 1, 1978.

*Species which were colour-banded and colour-marked.

+Species colour-banded

Dunlin

At Nelson Lagoon our observations of marked birds indicate that Dunlin stage on the lagoon, complete a post-nuptial moult, and build fat reserves prior to an early October (1976, 1977, and 1978) departure for wintering quarters. We feel birds depart Nelson Lagoon, and probably other lagoons along the northwest Alaska Peninsula, behind large anti-cyclonic storms, and with aid of strong westerly winds complete a transoceanic migration directly to their wintering grounds along the north-central California coast. Analysis of weather systems and flight range capabilities calculated from lipid extractions, plus sightings of birds marked on known days, indicate birds complete the 2000 km journey in 24-40 hours (Gill 1978). Indeed, one bird marked at Nelson Lagoon was reported near San Francisco three days following banding and two days after a major storm crossed the Peninsula and moved into the eastern North Pacific.

Of the other sightings of Dunlin, it is interesting to note that nine of the 14 'bird days' have come from the San Francisco Bay area and only one has occurred north of Coos Bay, Oregon. That was in late February in northwest Washington and was probably a bird already moving north from more southerly wintering grounds.

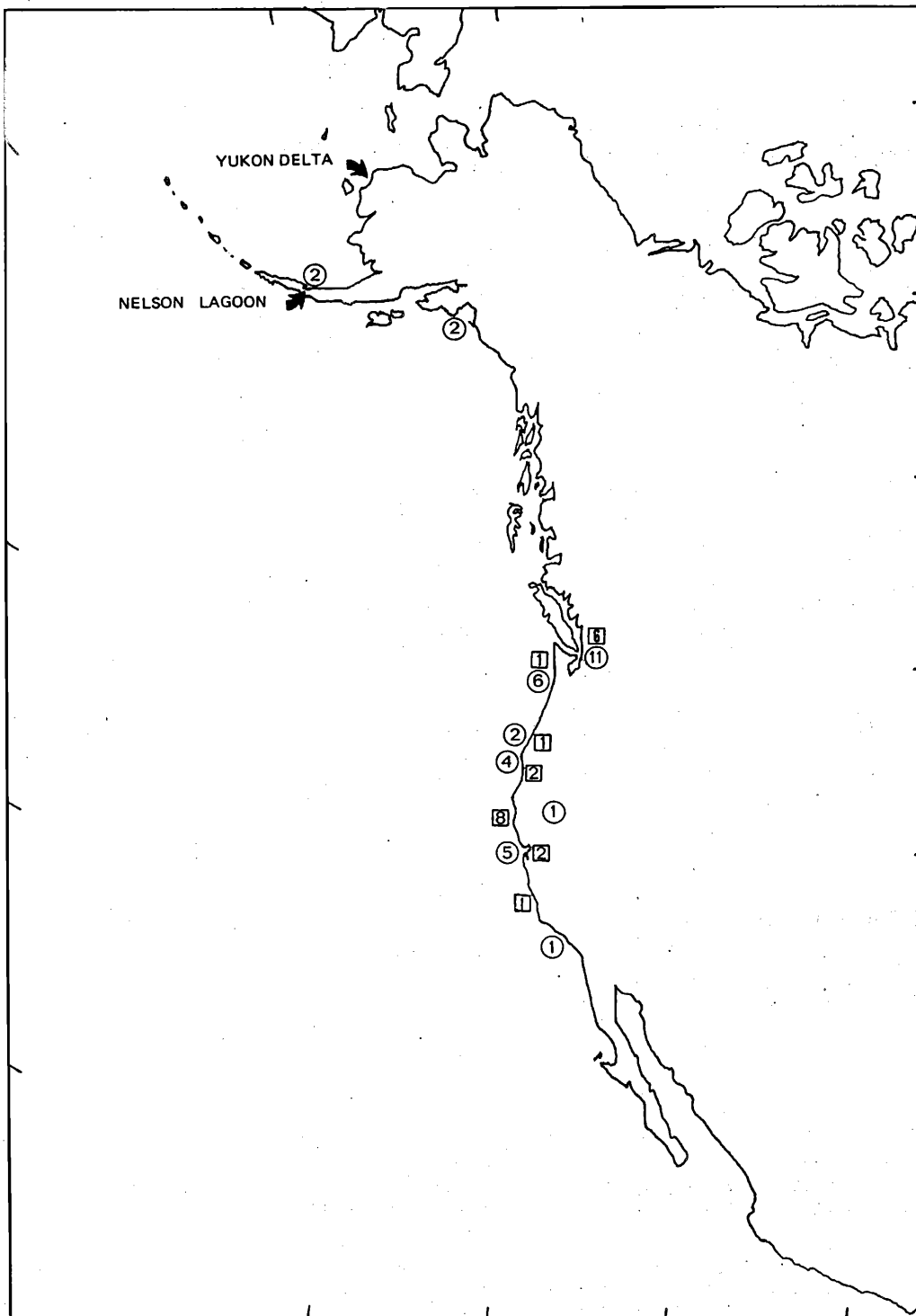


Figure 1. Locations and numbers of 'bird days' of sightings of Dunlin (□) and Western Sandpipers (○) banded at Nelson Lagoon (1977) and the Yukon Delta (1978). Please refer to the text for a discussion of 'bird days' of sightings from each banding site.

Our work with Dunlin (also *C. a. pacifica*) this past summer on the Yukon Delta suggests this population engages in a different migration route and probably a different migration strategy in fall than birds from the Alaska Peninsula. It appears, at least in 1978, that *alpina* from the Yukon Delta were a week or two later in their moult schedule than birds at Nelson Lagoon. Since we left our Yukon Delta camp on 15 September, our data on premigratory fat deposition and timing of departure of Dunlin are, unfortunately, incomplete.

Of the six sightings received to date of Dunlin marked this summer, five have come from the Victoria area, British Columbia, most in mid November. These sightings occurred 3-4 weeks later than our first sightings of birds from Nelson Lagoon in 1977. We feel that *alpina* from the Yukon Delta cross southern Alaska in fall to the Gulf of Alaska and then either cut across the northern Gulf or follow the British Columbia coastline south to the Vancouver area and then to suitable areas farther south along the coasts of Washington, Oregon and California. During 1979 we plan to determine flight ranges via lipid extraction and to look for marked birds along the south-central Alaska coast in late September and October.

Western Sandpiper

Western Sandpipers at Nelson Lagoon and the Yukon Delta appear to have similar migration strategies in fall. Adults are the first to use intertidal areas following breeding (beginning in late June) and usually depart by the time appreciable numbers of Hatching Year birds move onto the tidal flats. By mid August few Western Sandpipers are found at either site.

Observations of marked birds from Nelson Lagoon indicate that they move along the Alaska Peninsula to the north Gulf of Alaska and Prince William Sound areas (2 sightings), and then along the coast to wintering areas in Washington, Oregon and north-central California (Gill 1978). Analysis of flight range of both After Hatching Year and Hatching Year birds at time of departure indicates that neither group is capable of an extended over-water migration similar to that of Dunlin.

Western Sandpipers from the southern Yukon Delta probably have a similar route once they leave Alaska. Movements away from the breeding grounds but within Alaska, however, are less well known. Sightings of two Yukon Delta Western Sandpipers at Nelson Lagoon in early August 1978 indicate a considerable movement from the breeding grounds and suggests at least Hatching Year birds from the Delta spread out over much of the southern Delta, Bristol Bay, and the Alaska Peninsula. Birds probably then move into the north Gulf of Alaska and south along the Alaska and British Columbia coastline to their wintering grounds. Sightings of birds as of this writing (Figure 1) indicate widespread use of the Pacific Coast during winter.

Rock Sandpiper

Our work to date indicates that populations along the Alaska Peninsula are lagoon-specific and remain at their respective area through post-nuptial moult and into late fall. We have had sightings of two Nelson Lagoon birds near Homer on the lower Cook Inlet of south-central Alaska. This suggests some birds at least move into the Gulf of Alaska to winter. Others might move west along the peninsula and into the Aleutians but the lack of observers in this area in winter almost assures no sightings.

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SHOREBIRD BANDING AT THE CHEYENNE BOTTOMS WATERFOWL MANAGEMENT AREA

by E.F. Martinez

The Cheyenne Bottoms Waterfowl Management Area is an important stopover area for many species of waterbirds using the Central Flyway. Waterbirds by the hundreds of thousands are attracted to this large (7,285 hectares, or 18,000 acres), shallow (less than 1 metre deep) fresh water marsh. Among the birds recorded as using the area are 39 species of shorebirds. The marsh is owned by the State of Kansas and is managed by the Kansas Fish and Game Commission; it is "managed", however, only for the use of ducks and geese. The marsh is used during season for waterfowl hunting with an area set aside for refuge. Situated in the middle of a large natural depression, some 65 square kilometres (25 square miles), it is dependent on two intermittent and often undependable and unpredictable streams. An additional water source is supplied by the diversion of water from the nearby Arkansas River. When I began banding in 1966, there were over 160 kilometres (100 miles) of shoreline, including dikes and ditches. A large percentage of the former shoreline and mudflats has been overgrown with cattails and rushes, reducing much of the available habitat suitable for shorebirds.