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Editors

Dr J.P. Myers, Vertebrate Biology, Academy of Natural Sciences, 19th and the Parkway, Philadelphia, Pennsylvania 19103, USA.

Dr R.I.G. Morrison, Canadian Wildlife Service, 1725 Woodward Drive, Ontario, Canada K1A OE7. (613)-998-4693.

PAN AMERICAN SHOREBIRD PROGRAM

In the August 1982 issue (Bulletin 35) we announced the formation of the North American Steering Committee, and briefly outlined a proposed program for Spring 1983. Planning and fieldwork have moved forward considerably. This has been possible because of a generous grant from the World Wildlife Fund - US to support wader banding and conservation along the Pacific Coast of South America.

The Pan American Shorebird Program is a collaborative research project examining the migration pathways of different shorebird populations as they travel northward from South America to their North American breeding grounds. Participants are capturing and banding birds in South America and in migration stopovers along the US coastline, and then searching for these marked birds at points farther north in migration. The key species chosen for fieldwork in spring 1983 are Sanderling, Knot, and Black-bellied Plover. Other species, particularly Western and Semipalmated Sandpipers, will also be marked.

Marking sites are: Mollendo, Peru; Valdivia, Chile; Antofogasta, Chile; Rio Grande, Brazil; Bodega Bay, California; The Outer Banks, North Carolina; Assateague, Virginia; Delaware Bay, New Jersey.

Participants will be searching for birds along all the major coastlines of the US, with special emphases on staging areas in: Coastal Texas; The Outer Banks, North Carolina; Assateague, Virginia; Delaware Bay, New Jersey; Central Coastal California; Willapa Bay, Oregon; Grays Harbor, Washington.

Volunteers are urgently needed to participate in the searching effort for marked birds in these and other areas. If you wish to participate, please contact one of the following:

Dr. Marshall Howe,
Migratory Bird Laboratory,
U.S. Fish and Wildlife Service,
Laurel, MD 20708, USA.

Brian Harrington,
International Shorebird Survey,
Manomet Bird Observatory,
Manomet, MA 02345, USA.

Dr. R.I.G. Morrison,
Canadian Wildlife Service,
1725 Woodward Drive,
Ottawa, Ontario K1G 0E7, Canada.

Dr. J.P.Myers,
Academy of Natural Sciences,
19th and the Parkway,
Philadelphia, PA 19103, USA.

Lic. Michel Sallaberry,
Seccion Zoologia,
Museo Nacional de Historia Natural,
Casilla 787, Santiago, Chile.

Dr. Jeffrey Walters,
Dept. of Zoology,
North Carolina State University,
Raleigh, NC 27650, USA.

The Pan American Shorebird Program is a collaborative effort involving:
The Academy of Natural Sciences of Philadelphia; Bodega Marine Laboratory, University of California; Canadian Wildlife Service; Instituto Forestal y de Fauna, Peru; Manomet Bird Observatory; Museo Nacional de Historia Natural, Chile; North Carolina State University; U.S. Fish and Wildlife Service; The Wader Study Group; The World Wildlife Fund-US.

ABSTRACTS OF SHOREBIRD PAPERS AT THE MEETING OF THE AMERICAN ORNITHOLOGISTS UNION, CHICAGO, OCTOBER 1982

Migration of Dunlin and Western Sandpipers from Alaska.

Robert Gill, Jr., U.S. Fish and Wildlife Service, 1011 E. Tudor Road, Anchorage, AK 99503.

A 5-year study of the fall migration strategies of two Calidridine sandpipers breeding in southwest Alaska has shown that the Dunlin race Calidris alpina pacifica is represented by two populations which are centered on the Yukon Delta and Alaska Peninsula and have respective wintering areas from southern British Columbia to Oregon and from Oregon to central California. Some overlap in wintering areas occurs. The Alaska Peninsula population partakes of a direct trans-Pacific route to its wintering grounds while birds from the Yukon Delta appear to follow a more coastal route. The Arctic nesting race C. a. sakhalina was found to move south to the Yukon Delta to complete molt prior to migrating to wintering grounds in Japan and Korea. Western Sandpipers from the Yukon Delta and Alaska Peninsula follow a more coastal route than Dunlin and do not appear to segregate on the wintering grounds, which extend primarily along the coast from Washington to southern California and possibly beyond.

Resting Birds Tend to Tuck Their Bills in the Scapulars on Their Most Exposed Side.

Sylvia L. Halkin, Department of Zoology, University of Wisconsin, Madison, WI 53706.

Observations of groups of resting Black Skimmers, Rynchops nigra, and Black-necked Stilts, Himantopus mexicanus, revealed that most birds tucked their bills in the scapulars on the side nearest to the edge of the group. After being alerted from one side of the group, many birds shifted to tucking their bills on that side. The bill-tucking

behavior of undisturbed birds may function to maximize their awareness of and readiness to defend their most exposed side. If they have reason from recent experience to expect to be disturbed from one side, they instead tend to tuck their bills on that side.

Testes and mating systems: evidence from sandpipers

Ralph V. Cartar, Department of Biology, Queen's University, Kingston, Ontario K7L 3N6, Canada

Recent theory suggests that a correlation should exist between breeding systems and testes weight. Harcourt et al. (1981; Nature 393:55) have demonstrated that primates with multi-male breeding systems have larger testes relative to their body weight than those of single-male breeding systems. In birds, the period over which egg fertilisation occurs is shorter in males fertilising a single clutch (monogamous) than that for males fertilising more than one clutch (non-monogamous). In this study I examine the relative size and seasonal variation of testes of sandpiper species in the Calidridinae (a closely-related, morphologically similar group whose members represent a wide variety of mating systems). The predictions that promiscuous, polygynous, and serially polygamous species have relatively larger testes with wider seasonal distributions than do monogamous species are qualitatively supported. It appears that selection has favored relatively large testes (to maximise sperm production) in sandpiper species with non-monogamous mating systems.

Variation in egg size and laying date of Long-billed Curlews (Numenius americanus)

Roland L. Redmond, Department of Zoology, University of Montana, Missoula, MT 59812, U.S.A.

Egg size and laying date were recorded from 64 Long-billed Curlew clutches during 1977-1979. Nested analyses of variance reveal no significant differences in egg length, width or volume among years. In 1977 mean egg length and width were largest, and there was a significant negative correlation between egg volume and laying date. In 1979, the median laying date was significantly later than in previous years, mean egg measurements were smallest, and there was no seasonal decline in egg volume. Measurements in 1978 were intermediate, and the seasonal decline in egg volume was not significant. Analysis of covariance indicates that eggs laid early in 1977 and 1978 were of significantly greater volume than eggs laid in early 1979. Female curlews, being determinant layers, may respond to adverse environmental conditions early in a breeding season by reducing egg size.

Site-fidelity in breeding Black Turnstones.

Colleen M. Handel, U.S. Fish and Wildlife Service, 1011 E. Tudor Rd., Anchorage, AK 99503.

A breeding population of individually color-marked Black Turnstones (Arenaria melanocephala) was studied on the Yukon Delta from 1978-1981. The annual return rate averaged 89% for males and 72% for females. Almost all returned to nest in the same areas from year to year. Fidelity of birds to territories, which encompassed areas used for courtship, nesting, feeding, and chick-rearing, appeared to serve in part to reunite pairs, which were strictly monogamous. The proportion of pairs which successfully raised young was significantly greater among established pairs than among new ones. Birds did not change mates in response to a lack of success the previous year. Nesting was highly synchronized, reunited pairs did not nest significantly earlier than new pairs, and rapid mating did not appear to improve a pair's ability to hatch or raise young. Both sexes shared in incubation and care of young, and experience together appeared to be an important factor affecting reproductive success.

Foraging Ecology and Bill Adaptation in Whimbrel (Numenius phaeopus hudsonicus).

Elizabeth P. Mallory, Department of Biological Sciences, Dartmouth College, Hanover, NH 03755.

A migratory bird faces different adaptive problems in each habitat encountered during its movements. Foraging-related morphology should be able to handle the range of food resources in all the habitats an individual is likely to be in during an average lifetime. Bill morphology determines accessibility of resources and modification in foraging mode is accomplished by changing behavioral use of that design. If one habitat used by a migrant exerts stronger selection on design than do the other habitats, then the species may appear more adapted for living there than in the other areas. Whimbrel are migratory shorebirds which annually use several habitats. They have long decurved bills and I studied their bill use in their breeding, fall migratory and wintering habitats. The long bill is most useful when foraging on intertidal prey. I explore whether bill length is adaptive or an allometric result of body size. I argue that the bill's decurvature is adapted to fit into the burrows of crabs, their main intertidal prey. Finally, I discuss the evolution of a morphological trait used in two habitats.

Reproductive Success and Experience in the Polyandrous Spotted Sandpiper (Actitis macularia).

Lewis W. Oring and David B. Lank, Department of Biology, University of North Dakota, Grand Forks, ND 58202.

In a 9-yr study, 75 females (6-20 per year) laid eggs for 1.35-2.06 males per year. Females improved their RS in terms of mates, eggs, hatchlings and fledglings through their third breeding year. 107 males (12-32 per year) bred with 1.0-1.43 females per year. Experienced males acquired more mates and received more replacement eggs than inexperienced males, but there were no differences in the numbers of hatchlings and fledglings among males of different ages. There was greater inter-individual variance in annual RS of females than males; and females appeared to capitalize on experience to a greater degree than males through: (1) returning after reproductive success in the first two years more often than successful males and (2) exhibiting greater natal philopatry than males. Both experienced females and males preceded inexperienced birds to the breeding grounds. The greater variance in RS of females and the importance of experience to females form an interesting parallel to polygynous systems where these attributes are shown by males.

Discrimination of Predators by Lapwings (Charadriidae: Vanellus).

Jeffrey R. Walters, Zoology Department, North Carolina State University, Raleigh, NC 27650.

Field observations of three species of lapwing revealed similar variation in responses to predatory birds. For each lapwing, variation existed in the distance at which a predator elicited a response and the intensity of that response. Responses included various vocalizations, distraction diplays, and physical attack. Responses to a particular predatory species were consistent within each stage of the breeding cycle, but varied between predators and between stages. Variation in response to predators could not be attributed to habituation or predator morphology. Instead, variation was related to predator diet: species most likely to to prey on lapwings or their young during a particular stage of the breeding cycle elicited the strongest response during that stage. For example, vultures, snail-eating kites and fish-eating species elicited little or no response. The apparently sophisticated discriminatory abilities of these species may be a result of the high cost of false alarms in their open, predator-rich habitats.

AERIAL SURVEYS OF SHOREBIRDS IN SOUTH AMERICA: SOME PRELIMINARY RESULTS

by R.I.G. Morrison

Introduction

One of the most basic requirements for conservational planning for shorebirds on an international scale is to obtain an understanding of their distribution throughout their ranges, and to identify those areas which are of critical importance during the annual cycle of the birds. Obtaining such information in South America presents considerable problems owing to the enormous distances to be covered and the remote nature of the coastline. Aerial surveys represent perhaps the only method of overcoming this logistical barrier and obtaining a wide geographical perspective on the distribution of the birds. The opportunity of undertaking such surveys has occurred under the Latin American Program of the Canadian Wildlife Service, set up in 1980 to undertake programs of conservational interest on groups of migratory birds shared between Canada and Latin American countries. Shorebirds are the most important group of birds shared between Canada and many South American countries, and a Shorebird Atlas Project has been started to determine shorebird distribution on wintering and migration areas for as much of the South American coast as possible. To date, spring surveys have been carried out in Suriname and Venezuela in 1981, and the first major set of winter surveys was completed in January/February 1982. During the latter, a large proportion of the coastline of northern South America was covered, including the coasts of Venezuela, Trinidad, Guyana, Suriname, French Guiana and Brasil to east of the mouth of the Amazon River, as well as the Rio Grande do Sul coastline of southern Brasil and nearly the entire coastline of Argentina (see Figure 1). This paper will present broad preliminary results from the 1982 set of winter surveys.

Methods

Aerial surveys of the mainland coast were carried out in single or twin engine light aircraft (Aero Commander, Norman Britten Islander, Cessna 210), and in a jet helicopter (Gazelle) for the coast of Trinidad. Surveys were flown at an altitude of approximately 40-50 metres and air speed of 160-240 kilometres per hour, depending on the densities of birds being encountered. Two observers recorded times and places of bird observations and estimates of numbers directly onto cassette tape recorders for later transcription.

Results

An estimated total of almost 2,214,300 shorebirds were counted during the aerial surveys (Table 1, see Figure 1). A number of areas of outstanding international importance for shorebirds were identified. The north coast of South America, Suriname and parts of neighbouring French Guiana are of critical importance for a wide variety of shorebird species, while on the coast of Argentina several areas hold major portions of the wintering populations of the North American race of the Red Knot Calidris canutus rufa and of the Hudsonian Godwit Limosa haemastica. Results are summarized for each country below, in geographical order starting with Venezuela. Totals in the text are rounded; those in Table 1 give the actual numbers counted.

Venezuela. For Venezuela, the most important shorebird habitats appeared to be in the Orinoco River Delta and in the coastal lagoons, especially those of the east-central coast between Caracas and Barcelona and on the Araya Peninsula, as well as those on the west-central coast and the Paraguana Peninsula. Much of the western and central coastline of Venezuela is sandy, mountainous and rocky, the only area with extensive mangrove coasts being found in the delta of the Orinoco River.

In February 1982, an estimated total of over 130,000 shorebirds were counted in Venezuela, with 65% in the Orinoco River Delta, and 19% and 8% in coastal lagoons of the east-central and west-central coasts, respectively. "Peeps", probably mostly Semipalmated Sandpipers Calidris pusilla, comprised 72% (94,100) of the total, and showed a similar pattern of distribution, with 74% in the Orinoco Delta, and 16% and 4% in the east-central and west-central lagoons, respectively; these represented 5% of the total for the north coast of South America (see Figure 2). Dowitchers Limnodromus sp. and Willets Catotrophorus semipalmatus (10,200 and 866 respectively) were most common in coastal lagoons with mangrove cover, and nearly 100% of Common Stilts Himantopus himantopus (2,150) occurred in the lagoons and at Lake Maracaibo. Sanderling Calidris alba (644) were recorded along the ocean beaches of western Venezuela (29%) and sandy areas of the Orinoco Delta (71%). Red Knot (520) were identified only in western Venezuela and presumably belong to the population wintering in the Caribbean.

During spring surveys in late March 1981, an estimated total of over 96,200 shorebirds were recorded in Venezuela. Some differences were observed in shorebird distribution compared with the winter surveys, suggesting a westerly shift in the birds: a much higher proportion of the birds occurred in coastal lagoons in the east-central coast (86%), and fewer were found in the Orinoco Delta (9%). Lower numbers and percentages were found on western coasts and lagoons and around Lake Maracaibo. It appears likely that these differences are related to a general westerly movement associated with spring migration towards the breeding grounds, and/or changes in availability of habitat and food resources. Apart from the greater use of coastal lagoons and westerly shift in distribution, various features of the