

FEATURE ARTICLES

CROSSING THE ULTIMATE ECOLOGICAL BARRIER: EVIDENCE FOR AN 11 000-KM-LONG NONSTOP FLIGHT FROM ALASKA TO NEW ZEALAND AND EASTERN AUSTRALIA BY BAR-TAILED GODWITS

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Abstract. Populations of the Bar-tailed Godwit (*Limosa lapponica*; Scolopacidae) embark on some of the longest migrations known among birds. The *baueri* race breeds in western Alaska and spends the nonbreeding season a hemisphere away in New Zealand and eastern Australia; the *menzbieri* race breeds in Siberia and migrates to western and northern Australia. Although the Siberian birds are known to follow the coast of Asia during both migrations, the southern pathway followed by the Alaska breeders has remained unknown. Two questions have particular ecological importance: (1) do Alaska godwits migrate directly across the Pacific, a distance of 11 000 km? and (2) are they capable of doing this in a single flight without stopping to rest or refuel? We explored six lines of evidence to answer these questions. The distribution of resightings of marked birds of the *baueri* and *menzbieri* races was significantly different between northward and southward flights with virtually no marked *baueri* resighted along the Asian mainland during southward migration. The timing of southward migration of the two races further indicates the absence of a coastal Asia route by *baueri* with peak passage of godwits in general occurring there a month prior to the departure of most birds from Alaska. The use of a direct route across the Pacific is also supported by significantly more records of godwits reported from within a direct migration corridor than elsewhere in Oceania, and during the September to November period than at other times of the year. The annual but rare occurrence of Hudsonian Godwits (*L. haemastica*) in New Zealand and the absence of their records along the Asian mainland also support a direct flight and are best explained by Hudsonian Godwits accompanying Bar-tailed Godwits from known communal staging areas in Alaska. Flight simulation models, extreme fat loads, and the apparent evolution of a wind-selected migration from Alaska further support a direct, nonstop flight.

Key words: Bar-tailed Godwit, energetics, flight mechanics, *Limosa lapponica*, migration, Oceania, wind-selected migration.