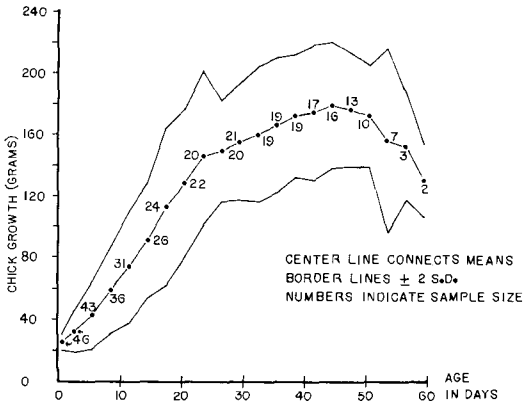

FIGURE 1. Weight against age of Brown Noddy chicks on Manana Island, Hawaii in 1972.

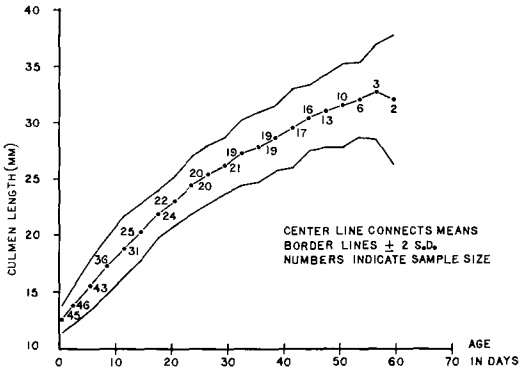

FIGURE 2. Culmen length against age of Brown Noddy chicks on Manana Island, Hawaii in 1972.

5.26 g/day (SD = 1.18 g/day), and chick growth rate and fledging age were negatively correlated ($r = -0.490$, $N = 19$, $P < 0.05$).

Seventeen of the chicks were weighed both at the age of fledging and from 3 to 12 days later; there was no significant recession in weight after fledging ($t = 1.17$, $P > 0.2$), as suggested for certain terns (e.g., LeCroy and LeCroy 1974, Bird-Banding 45:326).

Dorward and Ashmole (1963, Ibis 103b:447) measured growth in weight and culmen length of Brown Noddies on Ascension Island in the Atlantic; scatter diagrams of their data indicate growth functions very similar to those plotted in figures 1 and 2. Gibson-Hill (1951, J. Bombay Nat. Hist. Soc. 48:214) found on Christmas Island in the Indian Ocean that "if left to itself" a Brown Noddy chick would begin to fly about the thirty-fifth day; apparently Brown Noddies on Christmas Island grow more rapidly than those on Manana. More data are required for a refined analysis of intraspecific variation in growth rates of Brown Noddy young.

This paper is based upon my doctoral dissertation submitted to the University of Hawaii. I thank Andrew J. Berger for guidance and criticism. The Hawaii State Division of Fish and Game kindly granted me permission to work on Manana. This study was supported by the Department of Zoology of the University of Hawaii, by an NSF Graduate Fellowship, and by a Mount Holyoke College Faculty Grant.

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RED-FOOTED BOOBY HELPER AT GREAT FRIGATEBIRD NESTS

PAUL W. WOODWARD

Skutch (Condor 63:198, 1961) defined a helper as "a bird which assists in the nesting of an individual other than its mate, or feeds or otherwise attends a bird of whatever age which is neither its mate nor its dependent offspring." Helpers may be intra- or interspecific, almost any age, breeding or nonbreeding, and may assist in various ways. A common means of assistance is feeding of young, but other means are nest building, incubation, and brooding. Although Skutch listed numerous species recorded as helpers, he did not record the Red-footed Booby (*Sula sula*) or the Great Frigatebird (*Fregata minor*). The following observations were made on Enderbury Island (3°08′ S, 171° 05′ W) in the central Pacific Ocean during three surveys, totaling six days, conducted by the Pacific Ocean Biological Survey Program.

On the night of 1 October 1965, while banding Red-footed Boobies in a stand of *Tournefortia* on the western side of Enderbury Island, I captured an adult male booby, which had been banded as an immature on 19 November 1963, brooding a nestling Great Frigatebird. During the next two days this male was seen standing next to the nestling and threatening intruders with "forward head waving, an aggressive territorial display" (Nelson, Ibis 111:363–365, 1969). The following year on 25 September and 9 October I found the same booby guarding another nestling Great Frigatebird, which was too large to be brooded, in another *Tournefortia* ca. 35 m from the 1965 nest. During the 3 to 4 hr of observation in 1965 and the 2 to 3 hr in 1966, I saw no adult frigatebirds at the nests, so the relationship between the parent frigatebirds and this booby is unknown.

Both species nest commonly in this stand of trees, sometimes in the same tree, so a frigatebird egg could have accidentally fallen into a booby nest. However, because the same booby was guarding a frigatebird nestling in two successive years and because these records are unique, this interpretation seems unlikely. For the same reasons, it is unlikely that a Great Frigatebird parasitized a Red-footed Booby nest. In addition, both nests appeared to be typical frigatebird nests rather than booby nests.

A reasonable explanation is that this booby was raised by frigatebirds, perhaps as a result of an accidental introduction of a booby egg into a frigatebird nest, and was imprinted on Great Frigatebirds rather than on Red-footed Boobies. Harris (Ibis 112:488–498, 1970) showed that such interspecific imprinting could occur in the wild by cross-fostering young of Herring Gulls (*Larus argentatus*) and Lesser Black-

backed Gulls (*L. fuscus*) in England. As a result of his experiment the number of mixed pairs in the colony increased in subsequent years.

It is significant that this booby was about 3 years old in 1965 (based on the original banding data) and probably had never bred. Therefore it is unlikely that a frigatebird imprinted on boobies laid its egg in the booby nest.

Both species feed mainly on flying fish and squid, and both feed their young in a similar manner (VanTets, AOU Orn. Mon. No. 2, 1965), so it seems possible that either species might raise or help raise a nestling of the other.

Roger B. Clapp and Eugene S. Morton commented on an early draft of this note. This is Paper Number 108 of the Pacific Ocean Biological Survey Program.

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BREEDING STATUS OF THE MOUNTAIN PLOVER

WALTER D. GRAUL
AND
LOIS E. WEBSTER

The Mountain Plover (*Charadrius montanus*) is an endemic species of North America, nesting on the shortgrass prairie mainly east of the Rocky Mountains and wintering from California and Texas to northern Mexico. Information on the status of this species on the wintering ground is noticeably lacking. Jurek (1973), however, has found that in California these birds are now absent or rare in many areas where they were previously numerous, although flocks of hundreds still winter in some California valleys.

Several researchers have commented on the breeding status of this species. Bent (1929) described the main breeding range as extending along the eastern edge of the Rockies, from New Mexico into Canada, and eastward into North Dakota and Texas (fig. 1). Within this area the Mountain Plover was initially described as a common breeding resident (Coues 1874, Knight 1902). In fact, prior to 1900 it was abundant enough to be considered an important game bird by market hunters (Grinnell et al. 1918, Sandoz 1954).

Cooke (1915), however, noted that this species seemed to be decreasing in numbers. He acknowledged that market hunting may have been partly to blame for the decrease, but he felt that the major problem was the reduction of the breeding range due to cultivation and dairying activities. Later, Abbot (1939) reported that it was becoming still rarer in the 1930's; he felt that one reason for many fatalities was that they were "absurdly dumb." More recently Laun (1957) concluded that the Mountain Plover population had diminished markedly with the majority now breeding in southern Montana, Wyoming, and Colorado. Apparently in response to these reports, this species was included on the "status undetermined" list of the U.S. Department of the Interior (1973).

Aware of the above trend, Webster began a study of the Mountain Plover in 1967 and Graul began work on the species in 1969. We have been hitherto reluctant to estimate the total number of Mountain Plovers because of the limited nature of our data, but it now seems that even a highly tentative estimate is badly needed. We present here our information on the breeding status of this plover, and suggestions for preserving the species.

Webster studied the Mountain Plover in 1967 and 1968 to determine its current Colorado breeding range. Her study included personal correspondence, organized group field surveys, and much personal travel throughout the bird's known historic Colorado range. Graul (1973a, 1973b, 1974, 1975) conducted field work in 1969–72 and 1974 in Weld County, northeastern Colorado and he corresponded with many people residing in the shortgrass prairie region. In May, 1975, he traveled through 11 eastern Colorado counties in an effort to supplement Webster's work.

Our data support Laun's (1957) contention that most Mountain Plovers now breed in Montana, Wyoming, and Colorado. Stewart (1971) listed this species as accidental for North Dakota and, indeed, Graul found no evidence of recent nesting in North Dakota, South Dakota or Kansas. Ross Lock found an adult with one young 6 mi W of Bushnell, Kimball County, Nebraska on 7 June 1975, but this is the only Nebraska record in several years. George M. Sutton (pers. comm.) informed us that in some years they nest in northwestern Oklahoma. Kenneth Seyffert (pers. comm.) in June, 1974, found them nesting in Union County, northeastern New Mexico and saw two birds in Hartley County, northwestern Texas. Hubbard (1970) reported that some nest in central and southwestern New Mexico, but we have not found any recent nesting records for these areas. Duane Tolle

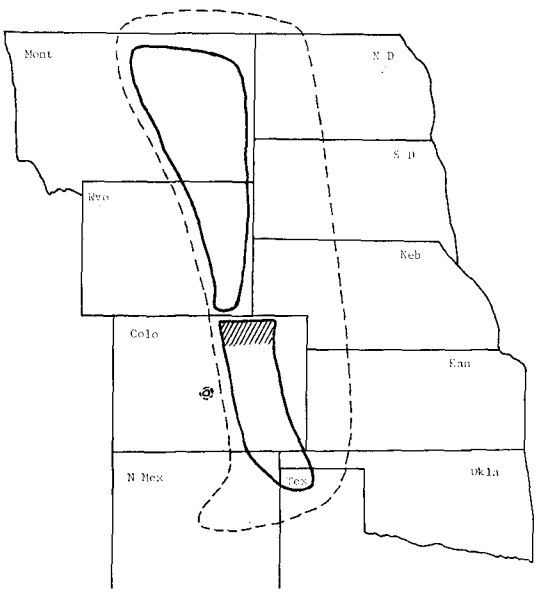

FIGURE 1. Former (dotted line) and presumed present (solid line) main breeding range of the Mountain Plover. Slanted lines represent present stronghold of the species.