NOTES

INCREASING WINTER ABUNDANCE OF THE MARBLED GODWIT IN WASHINGTON

JOSEPH B. BUCHANAN, Cascadia Research Collective, 218½ West Fourth Avenue, Waterstreet Building, Suite 201, Olympia, Washington 98501; buchajbb@dfw.wa.gov

In the first half of the twentieth century the Marbled Godwit (*Limosa fedoa*) was considered a rare species in Washington (Jewett et al. 1953). Its status has changed since that time, and it is now locally common in migration and winter in coastal Washington (Buchanan 2005). The extension of the winter distribution is particularly unusual in that the new range is substantially north of the species' contiguous range in central California and also well north of isolated areas of winter occurrence in northern California and southern Oregon (Gratto-Trevor 2000). In this paper I present data that illustrate a change in the Marbled Godwit's abundance during winter in coastal Washington over the last several decades.

I summarized the available records of the Marbled Godwit from coastal Washington between 1975–76 and 2004–05. These records were obtained from *North American Birds* and its predecessors, seasonal field reports in *WOSNews* (newsletter of the Washington Ornithological Society) and my field notes. The records represented high counts of Marbled Godwits between November and February in 26 of the 30 winters during this interval. I considered all high counts from Grays Harbor or Willapa Bay to represent the same population and used high counts from either site for analysis. I believe this was appropriate because the vast majority of records were from northern Willapa Bay (specifically from the well-known roost site at Tokeland) and records from Grays Harbor are far less regular (Buchanan 2005), strongly suggesting that occasional flocks at Grays Harbor originated from the Tokeland roost. Marbled Godwits are rare away from these two areas (Buchanan 1992, Paulson 1993, Buchanan 2005).

The Marbled Godwit's abundance increased dramatically over the period of analysis. A curvilinear regression model with a quadratic function revealed a significant positive correlation between reported high count and year (F-ratio = 11.5, r^2 = 0.574, P = 0.0007) (Figure 1). High counts exceeded 1000 birds in 2003–04 and 2004–05. Similar changes in abundance have been evident in spring and autumn migrations since the 1960s (Buchanan 2005), but these are difficult to evaluate with this type of analysis because movements and turnover are not accounted for in the reported seasonal high counts.

The Marbled Godwit breeds in three disjunct areas (Gratto-Trevor 2000). One of these is in southwestern Alaska (Gibson and Kessel 1989), where *L. f. beringiae* nests over 2000 km from the next closest segment of the breeding range, which extends from Alberta east through the Canadian prairies, home of *L. f. fedoa*. The third population, also of nominate *fedoa*, nests around James Bay (Gratto-Trevor 2000). The winter range of the Alaskan birds is unknown but is suspected to include coastal Washington (Gibson and Kessel 1989, Melcher et al. 2005).

There are at least four possible explanations for the increase in numbers of the Marbled Godwit reported in coastal Washington in the last few decades. First, the change may reflect better coverage of suitable sites by bird watchers and ornithologists. This explanation seems unlikely, as these birds are very visible and have used the same foraging and roosting sites for several decades, a period during which the area has been visited by observers regularly.

The second and third potential explanations of the increase may operate simultaneously. The increases may reflect an increase in the overall abundance of the species,

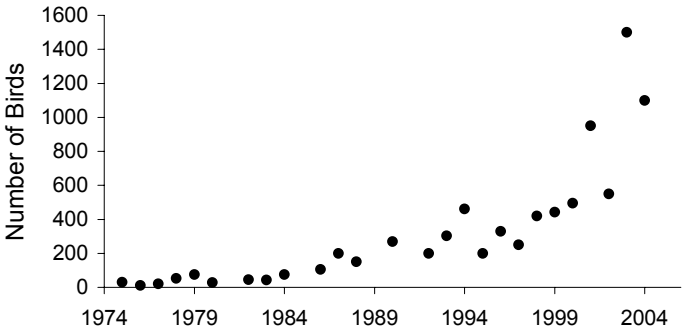

Figure 1. High winter counts of the Marbled Godwit in coastal Washington from Grays Harbor or Willapa Bay.

or they may reflect a shift in its winter distribution from farther south (i.e., California). I evaluated Christmas Bird Count (CBC) data (obtained from www.audubon.org/bird/cbc) from sites in both northern (combined from Marin, Monterey Peninsula, Moss Landing, Oakland, and Point Reyes Peninsula CBCs) and southern California (combined from Los Angeles, Morro Bay, Oceanside, Salton Sea [north], Salton Sea [south], San Diego, Santa Barbara, and Ventura CBCs) from 1980 to 2004 to seek indications of changing abundances in those regions. The godwit's abundance on northern California CBCs combined increased slightly but not significantly (r^2 = 0.09, F ratio = 2.25, P = 0.15); on southern California CBCs it declined from the early 1980s then increased slightly beginning in the late 1990s (curvilinear model with quadratic function; r^2 = 0.49, F ratio = 10.4, P = 0.0007). Numbers at Arcata, California—the northernmost site within the contiguous winter distribution along the Pacific coast—did not change between 1986 and 2004 (r^2 = 0.003, F ratio = 0.05, P = 0.82). In addition, the species is uncommon in Oregon in winter (McGie 2003), and most CBC records are from Coos Bay, where the godwit occurred in two of 14 years between 1980 and 1993 but in nine of 11 years between 1994 and 2004 (median of 9 counts = 8 birds). The CBC results from Oregon are generally consistent with the recent changes observed in Washington. Data from California suggest a slight increase in northern California (but not at Arcata) that coincided with a decline in southern California in the early 1980s, and this suggests the possibility of a shift north. Without banding data, however, the CBC data are inconclusive with respect to the latter two possible explanations of changes in godwit numbers in Washington, and additional analysis will be required to evaluate these two scenarios.

Although the population of the Marbled Godwit breeding on the Great Plains (*L. f. fedoa*) is thought to have declined (Page and Gill 1994, Gratto-Trevor 2000), the status of the population breeding in Alaska (*L. f. beringiae*) is unknown (Melcher et al. 2005). Thus a fourth hypothesis suggests itself: the godwit's increase at Willapa Bay may reflect an increase in the population of *beringiae* and may be unrelated to any population trend or shift in nominate *fedoa*. Gibson and Kessel (1989) concluded that the winter range of *beringiae* most likely coincides with the northern end of the Marbled Godwit's winter range. They identified three specimens from Willapa Bay as *beringiae*, but these were collected on 17 April so could have been migrants that wintered farther south. Since no winter specimens have yet been collected around Willapa Bay, the breeding range of the birds wintering there is not yet known (Melcher et al. 2005). The subspecies differ in proportions, *beringiae* having a shorter tarsus,

wing, and bill, even though its weight averages greater (Gibson and Kessel 1989). Identifying the breeding origin of the birds that use Willapa Bay may facilitate a better understanding of the factor(s) resulting in their increased abundance locally.

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LITERATURE CITED

Buchanan, J. B. 2005. Marbled Godwit (*Limosa fedoa*), in Birds of Washington: Status and Distribution (T. R. Wahl, B. Tweit, and S. G. Mlodinow, eds.), p. 149. Ore. State Univ. Press, Corvallis.

Buchanan, J. B. 1992. Winter abundance of shorebirds on coastal beaches of Washington. Wash. Birds 2:12–19.

Gibson, D. D., and Kessel, B. 1989. Geographic variation in the Marbled Godwit and description of an Alaskan subspecies. Condor 91:436–443.

Gratto-Trevor, C. L. 2000. Marbled Godwit (*Limosa fedoa*), in The Birds of North America (A. Poole and F. Gill, eds.), no. 492. Birds N. Am., Philadelphia.

Jewett, S. G., Taylor, W. P., Shaw, W. T., and Aldrich, J. W. 1953. Birds of Washington State. Univ. of Wash. Press, Seattle.

McGie, A. 2003. Marbled Godwit (*Limosa fedoa*), in Birds of Oregon: A General Reference (D. B. Marshall, M. G. Hunter, and A. L. Contreras, eds.), pp. 227–228. Ore. State Univ. Press, Corvallis.

Melcher, C. P., Farmer, A., and Fernandez, G. 2005. Marbled Godwit conservation plan. Manomet Center for Conservation Sciences, P. O. Box 1770, Manomet, MA 02345.

Page, G. W., and Gill, R. E., Jr. 1994. Shorebirds in western North America: Late 1800s to late 1900s. Studies Avian Biol. 15:147–160.

Paulson, D. 1993. Shorebirds of the Pacific Northwest. Univ. of Wash. Press, Seattle.

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