

# NEW WORLD SECTION



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## AERIAL CENSUSES OF SANDERLINGS AND ESTIMATES FOR OTHER SHOREBIRDS ON THE BAJA CALIFORNIA PENINSULA, MEXICO, 1983-1984

by C.T. Schick, T.M. Johnson, C.M. Kunde and J.P. Myers

To our knowledge there are no published reports documenting numbers of wintering shorebirds in Baja California. Here we report numbers of wintering Sanderlings *Calidris alba*, and some estimates for other species, on the west (Pacific) coast of the peninsula. We concentrated our efforts on the west coast because there are long ocean beaches backed by open desert, and also numerous ocean beaches and spits enclosing several areas of extensive intertidal flats. In contrast, the east coast of the peninsula along the Gulf of California is primarily mountainous with a rocky coastline, and thus provides very few (and relatively small) areas for wintering shorebirds.

### METHODS

From 27 to 31 December 1983 we made aerial surveys along the west coast of the Baja California peninsula (from 30.5°N to 25.8°N) in order to census wintering Sanderling populations. When practicable we were also able to get estimates for populations of other wintering shorebird species. Totals for other wintering shorebird species are clearly underestimates (see Results and Discussion), but are nonetheless presented in Table 1. From 1 to 7 January 1984, we did follow-up work on the ground by automobile, but this was severely restricted by remoteness of the coast.

All aerial work was conducted in a single engine aircraft (Cessna 172-N). Censuses were taken on beaches while flying at an altitude of 10-30 m, and at 144-160 km/hr depending on the density of birds. Numbers were recorded on cassette tapes. Because the densities of birds on beaches were low, we were able to count individuals. On intertidal areas large flock sizes were estimated. Fortunately, aerial surveys of coastal beaches were conducted at a variety of tidal heights. This necessitated checking adjacent intertidal flats for Sanderlings which had left the beaches for low tide foraging areas (Connors et al. 1981). Any Sanderlings censused on the intertidal flats were tallied with those from the closest adjacent beach, and densities were simply calculated for the length of beach. Surveys of intertidal flats were conducted with roughly the same flying conditions as those on the beaches, but at times we flew slightly higher and faster when there were few birds. We surveyed intertidal flats at lower tidal heights.

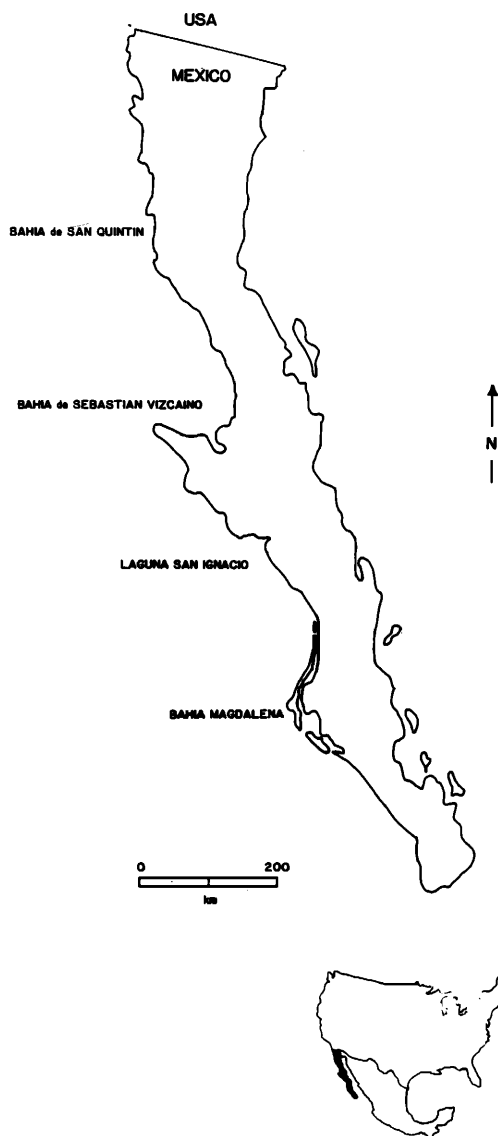


Figure 1. Areas of shorebird concentration on the Baja California peninsula.

## RESULTS AND DISCUSSION

Most shorebirds were concentrated around the four large bay and lagoon systems on the west coast (Figure 1), with only low numbers of Sanderlings, and very few Black-bellied Plovers *Pluvialis squatarola* and Willets *Catoptrophorus semipalmatus* found on long stretches of beach in front of open desert. Results from the four bay/lagoon areas are presented individually below.

Table 1. Census results of migrant shorebirds wintering on the Baja California Peninsula, 1983-84.<sup>1</sup>

Species	Numbers
<i>Calidris alpina</i>	10 260
<i>Limosa fedoa</i>	10 000
<i>Calidris mauri</i>	6000
<i>Calidris alba</i>	3760
<i>Catoptrophorus semipalmatus</i>	700
<i>Pluvialis squatarola</i>	500
<i>Recurvirostra americana</i>	500
<i>Limnodromus griseus</i>	300
<i>Arenaria melanocephala</i>	300
<i>Arenaria interpres</i>	+
<i>Charadrius semipalmatus</i>	+
<i>Charadrius alexandrinus</i>	+
<i>Numenius phaeopus</i>	+
<i>Numenius americanus</i>	+
<i>Tringa melanoleuca</i>	+
<i>Calidris canutus</i>	+
<i>Calidris minutilla</i>	+
<i>Actitis macularia</i>	+

<sup>1</sup>these numbers are minimum values (except for *C. alba*), indicating relative abundance

+indicates present in small numbers

**Bahia de San Quintin, 30.5°N:** This bay provides extensive beaches (although some were cobbly). Inside the bay were large areas of mudflat and saltmarsh. Here we found only 107 Sanderlings in 45 km of beaches (2.4 birds/km). However, inside the bay were a total of at least 10 000 sandpipers. An estimated 80% of these were Dunlins *C. alpina*, and the remainder were Western Sandpipers *C. mauri*. Also present were 6000 to 8000 Marbled Godwits *Limosa fedoa*, and hundreds of Black-bellied Plovers, Willets, and American Avocets *Recurvirostra americana*.

**Bahia de Sebastian Vizcaino, 28°N:** This large bay is rimmed by numerous fine-grained beaches and spits. Behind these are lagoons, commercial salt ponds, and extensive mud and sandflats. Saltmarsh was conspicuously absent. On these beaches we found 772 Sanderlings in 88 km (8.8 birds/km). On mud and sandflat areas we found up to 2000 each of Marbled Godwits, and probably up to 2000 each of Dunlins and Western Sandpipers. Also present were hundreds of Black-bellied Plovers, American Avocets, and Short-billed Dowitchers *Limnodromus griseus*, and rather few Willets and Semipalmated Plovers *Charadrius semipalmatus*. During a spot check from the ground, we observed a very few Long-billed Curlews *Numenius americanus*, Greater Yellowlegs *Tringa melanoleuca*, and just one Red Knot *C. canutus*.

**Laguna San Ignacio, 26.5°N:** This area consists of long, broad beach spits backed by lagoons with extensive sand and mudflat and saltmarsh. Here we found 1177 Sanderlings in 126 km of beaches (9.3 birds/km). We were unable here to survey any but the adjacent mud and sandflat, and so have no data for other species.

**Bahia Magdalena, 25.8°N:** This large region contains long, broad beach spits backed by extensive mangrove, and minimal mud and sandflats in the northern portion, but extensive open sandflats towards the south. Here we found 1535 Sanderlings in 177 km of beaches (8.7 birds/km). On the intertidal areas we found only 500 Marbled Godwits, but up to 2200 "peeps", almost all of which were Western Sandpipers. Here we found also several hundred Willets and Black Turnstones *Arenaria melanocephala*, as well as nearly 100 Black-bellied Plovers, but only about 60 Dunlin, and very few Semipalmated Plovers and Long-billed Curlews.

Totalling all areas (including beaches not associated with bay/lagoon systems, we found only 3764 Sanderlings in 632 km of coastline (6.0 birds/km). In those beach areas near bay/lagoon systems, there were 3591 Sanderlings in 543 km (6.6 birds/km), while on rocky coastlines we saw only 173 Sanderlings in 89 km (1.9 birds/km). These values are low compared to the 9690 Sanderlings found in 240 km of beaches (40 birds/km) along the contiguous Pacific coastline north of Baja (e.g. California, Oregon, and Washington) during mid-winter 1982-83 (Myers et al. 1984). During mid-winter 1983-84, a total of 11 840 Sanderlings were found in 392 km (30 birds/km) along this same stretch of the U.S. Pacific Coast (47°N to 34°N) (J.P. Myers, unpublished data).

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