

Population Change in Wintering Shorebirds in San Francisco Bay across Two Decades

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Summary

- Citizen scientists and partner biologists conducting multi-year Baywide roost counts of wintering shorebirds.
- Goal is to assess temporal and spatial changes in the population of shorebirds between sample periods (1990-92 and 2006-08).
- Overall shorebird population stable but changes seen within species and within Bay region.

Methods

- Annual Bay-wide November census of roosting shorebirds in San Francisco Bay, 1990-92 and 2006-08.
- Sites were surveyed by teams of biologists and volunteers.
- We analyzed 224 sites surveyed in all 6 years plus 13 new sites that were not available for roosting in 1990-92.
- Criteria for significant change: >33% change and P = 0.05 (Wilcoxon Rank-Sum Test)

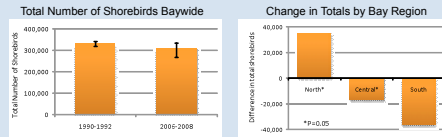


American Avocet

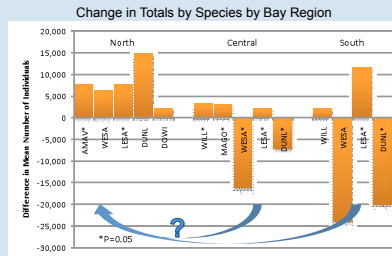


South Bay Salt Pond Science Symposium Feb 3, 2011, Menlo Park, CA

Results



- Total number of shorebirds similar
- Potential distribution shift south to north



- Western and Dunlin from Central and South may have shifted to North.
- Least Sandpiper show significant increase in each Bay Region.
- Change of >10,000 individuals not always significant for Western Sandpiper and Dunlin within a Bay Region (rank sum test P>0.05)

Baywide Species-specific Changes

- Black-bellied Plover
 - **Snowy Plover**
 - Semipalmated Plover
 - + **Killdeer**
 - + **Black Oystercatcher**
 - Black-necked Stilt
 - American Avocet
 - + **Spotted Sandpiper**
 - + **Greater Yellowlegs**
 - + **Willet**
 - Lesser Yellowlegs
 - Willet
 - + **Long-billed Curlew**
 - Marbled Godwit
 - (-) **Ruddy Turnstone**
 - + **Black Turnstone**
 - Red Knot
 - Sanderling
 - (-) **Western Sandpiper**
 - + **Least Sandpiper**
 - (-) **Dunlin**
 - (-) **Total Calidris spp.**
 - (-) **dowitcher spp.**
- Red = Species decreased Baywide
 (-) Orange = species potentially decreasing Baywide (Significant decrease in part of Bay)
 + Green = species increased Baywide



Western Sandpiper declined by 34,000 Baywide (26%).



Least Sandpiper increased by 21,000 Baywide (171%).

Conservation Implications

- Bay habitats are supporting large shorebird populations (>300,000 counted).
- Restoring tidal action may have short-term benefits for shorebirds (~10 yrs.).
- Shorebird distribution may shift as restored salt ponds, ag fields colonize with veg.
- More surveys needed to identify changes within Bay (South vs. North Bay).

How You Can Help

- Citizen science is at the heart of the **Pacific Flyway Shorebird Survey**.
- Time Commitment: 1/2 day per year between November 15 and December 15th.
- Best candidates: have optics, have transportation, follow protocol, enter data online, have a passion for shorebird conservation and can make long-term commitment.
- Contact: Lishka Arata (larata@prbo.org) or Len Liu (liu@prbo.org) or visit <http://data.prbo.org/partners/pfss/>



SAN FRANCISCO BAY BIRD OBSERVATORY

