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**Birds of the Salton Sea:  
past, present, and future**

Presented before the

**State Water Resources Control Board**

Hearing on the Proposed  
IID-SDCWA Water Transfer

April 30, 2002  
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## **TESTIMONY OF NILS WARNOCK, Ph.D.**

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Presented to: SWRCB

RE: PETITION FOR APPROVAL OF TRANSFER OF CONSERVED WATER  
April 8, 2002

### **Birds of the Salton Sea: Past, Present, and Future**

By: Nils Warnock, Co-Director of the Wetlands Program at PRBO, Conservation Science

Founded in 1965 as Point Reyes Bird Observatory, PRBO is dedicated to conserving birds, other wildlife and their ecosystems through innovative scientific research and outreach. The first bird observatory established in the United States, PRBO has grown to become an internationally recognized conservation science center, with over 50 full time staff and an additional 50-100 seasonal biologists. We do research all over the West, and we have done significant amounts of research at and around the Salton Sea over the past 20 years or so.

#### Slide of Salton Sea

I will spend the next 15 minutes or so discussing the importance of the Salton Sea and its surrounding area to birds from a historical and current perspective. I would then like to spend a bit of time talking about what the possible future holds for Salton Sea birds given some of the proposed actions.

As most of you know and have heard, the present day Salton Sea is merely one of a number of fresh water bodies that have periodically appeared in the Salton Trough through its complex interaction with the Colorado River and the Gulf of California.

#### Slide - Proximity to Gulf

As such, birds, especially waterbirds, have undoubtedly colonized and recolonized water bodies in the Salton Trough numerous times due to its proximity to the Gulf of California and through the funneling of birds down the Colorado River riparian zone (Shuford et al. 2000, Patten et al. in press).

#### Slide - History of birds at the Sea

History of birds at the Salton Sea prior to the re-flooding of the sea in 1905 is scant. William deBuys and Joan Myers, in their book *Salt Dreams*, describe geologist's William Blakes journey to the region in 1853 in which Blake spent time with Cahuilla Indians who described an ancient lake that had plenty of geese and ducks and other wildlife. Contents of middens suggest that the avifauna of ancient Lake Cahuilla was similar to that of the present Salton Sea (Patten et al. in press).

Slide - Results of Grinnell's survey

No real counts of birds appear until around 1908 when Grinnell, one of California's eminent ornithologists visited the present day Salton Sea. He reported thousands of white pelicans, herons, terns and grebes.

Slide - Current importance of the Sea

Currently, the Salton Sea and its surrounding valleys is of international importance to bird populations and one of our most important interior sites in North America, particularly for waterbirds (Shuford et al. 1999, 2000, in prep).

Slide - Species at the Sea

407 species of birds recorded at the sea

100 breeding species

and on any given day, low hundreds of thousands of birds use the sea with high single day counts exceeding 3 million birds (Shuford et al. 2000).

Slide - Important species

Salton Sea hosts populations of various bird species that are of National importance.

For instance:

90% (3.5 million) or more of North America's population of Eared Grebes may use the sea in some years (Jehl 1988, J. Jehl in lit.)

40% of North America's population of Endangered Yuma Clapper Rails breed around the Sea (Shuford et al. 2000)

30-50% of world's population of Mountain Plovers winter in the Imperial Valley in some years (Shuford et al. 2000).

20-30% of North America's breeding population of American White Pelicans may stop at the sea

Slide - Important breeding species

Breeding populations at the Salton Sea of Double-crested Cormorants, Gull-billed Terns, Caspian Terns, and Black Skimmers are some of the largest in western USA

And there are many other species for which the Salton Sea and its surroundings provide critical support for entire populations.

Slide - Key bird areas at and around Salton Sea

Key areas for birds around the Salton Sea include the north side of the sea where the Whitewater River flows in, especially important to breeding waders, wintering and migrating shorebirds; the southwestern side of the sea where large numbers of Snowy Plovers may breed and many species and numbers of other waterbirds congregate; the south end of the sea including the NWR area and the State Wildlife areas host high diversity and numbers of waterbirds including rails, shorebirds and waterfowl; while the agricultural fields are also used by many tens to hundreds of thousands of waterbirds, including 1/3 to 1/2 the worlds population of Mountain Plovers (Heitmeyer et al. 1989, Shuford et al. 2000, Warnock et al. in prep.).

Slide - What is the future of birds at the sea based on reduced fresh water flows into the Sea and its surroundings?

Slide - Salinity levels in the sea are projected to increase

This graph shows the projections under a reduced flow of 1.06 maf/yr and with a water transfer to San Diego this would be even a steeper curve (Draft EIR/EIS 2000). One immediate impact will be that when the average salinities in the sea reach somewhere around 70 ppt, fish are projected to disappear from the main body of the sea (except for perhaps around fresh water sources). That will represent a major shift for fish-eating birds like the Double-crested Cormorant, the gulls and terns, pelicans and waders such as herons and egrets, as we will lose major breeding colonies of these birds.

Slide - Salt ponds in SF Bay

Will all birds disappear then? Based on work PRBO has been doing at places like Mono Lake and other alkali lakes as well as in SF Bay salt ponds -- that is unlikely. However, as noted in the previous slide re projected increased salinity with the proposed water transfer, it is expected that there will be a decline/loss of fish, a corresponding decline in fish eating birds . . . and therefore a decline in the diversity of avian species at Salton Sea.

Slide - Total water bird species seen in salt ponds

As you can see here, there are a number of waterbirds that use the salt ponds in San Francisco (Warnock et al. in press).

Slide - Water levels in the Sea

However, concurrent with increasing salinities in the sea, water levels are projected to decrease by as much as 12 ft if IID's water transfer to SDCWA is approved (Draft EIR/EIS/HCP 2002).

Decreasing water levels will negatively affect birds in a number of ways:

- 1) by increasing the distance of water from arboreal nesting sites of many of the waders such as herons and egrets
- 2) by connecting island breeding colonies to the mainland, exposing them to mammalian predators
- 3) decreasing shallow water areas (under 15 cm) where shorebirds can feed (Warnock et al. in press)
- 4) increasing the slope of the shoreline making it difficult for shorebirds like Snowy Plovers to breed and feed along it

Slide - Other effects on birds

Other potential problems for birds at the sea that may be brought about by decreasing fresh water flows into the sea include increasing levels of nutrients which may create more favorable conditions for certain disease outbreaks and increasing exposure to contaminants.

#### Slide - Collapse of the ecosystem

I am frequently asked what will happen to the birds of the Salton Sea if their ecosystem collapses. The answer to this question is all about habitat. If the Salton Sea is lost, the birds now using the habitats at the Sea must find comparable habitat elsewhere -- in order to survive.

#### Slide - Owens Lake

We can go to nearby Owens Lake and see one example of a large sea historically used by millions of waterfowl that was ruined by water diversions (Jehl 1994). Where those birds went is unknown. But what we do know is that we have significantly fewer numbers of some of these species than we did when Owens Lake existed.

#### Slide - Where would birds go?

Where Salton Sea birds might move to is part speculation but we do have data on connectivity of this site with other sites in the west.

American White Pelicans are known to move from breeding sites in W NV to the Great Salt Lake to the Salton Sea (Yates in press).

California Gulls winter at the sea in the tens of thousands and banded birds have been seen going through the Great Salt Lake region on their way to breeding grounds in WY. Black-crowned Night Herons have also been observed moving between wetlands of the western Great Basin to the Salton Sea (Henney and Blus 1986), while shorebirds such as the Western Sandpiper undoubtedly move through the Salton Sea from places in South and Central America on their way to breeding grounds (Butler et al. 1996).

Again, the answer to the question, "Where would birds go?" is about habitat. If the Salton Sea ecosystem collapses, the birds now using these habitats must find comparable habitat in order to survive.

#### Slide - Waterfowl

Marked waterfowl from the Salton Sea have been recovered all over the United States (band reports from USGS Banding Laboratory)

#### Slide of the Colorado River Delta

The closest, most likely wetland to support birds that get forced out of the Salton Sea area is the Colorado Delta, but wetlands at this site have declined by over 95% and it faces, as you all know, the same problems as the Salton Sea does.

#### Slide - Habitat loss

Despite the fact that birds from the Salton Sea have been seen at sites all over the United States, habitat loss in the US suggests that there is not a lot of habitat out there to compensate for the loss of the Sea.

Wetland habitat loss has been particularly acute in the west (Reed et al. 1997- 91% in California over the past 200 years, 52% in Nevada, and 33% in Arizona (Dahl 1990). For example, in the Tulare Basin in the southern San Joaquin Valley, several hundred square miles of lakes and freshwater marsh once provided the largest single block of

wetland habitat in California (U.S. Fish and Wildlife Service 1978). These habitats are now gone due to extensive agricultural development (Werschull et al. 1982).

Slide - Wetland loss since 1980's

And we continue to lose wetland habitat, up to 47,000 acres per year. With these dramatic losses of wetland habitat -- as noted previously -- there has been a corresponding dramatic loss of abundance of birds that now are supported by the Salton Sea.

Slide - Summary

To lose the Salton Sea for birds means losing one of the most important interior sites in North America for waterbirds.

Based on projections for the proposed transfer and the related potential increases in salinity, birds at the Salton Sea face a long-term decline in the suitability of the Sea and its surroundings. However, it is also true that birds face an uncertain future at the Sea until a program is developed for the long-term restoration and protection of habitats in and around the Sea. Regarding the proposed water transfer, how serious are these habitat declines for native bird populations? Given the already very significant losses of wetland habitat throughout CA, the west, and the Pacific Flyway, I believe the projected declines in Salton Sea habitats present a very serious -- perhaps irreversible threat to some bird populations. Thank you.

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