Coastal California (BCR 32)
Waterbird Conservation Plan
Encompassing the Coastal Slope and Coast Ranges of Central and Southern California and the Central Valley
Coastal California (BCR 32)
Waterbird Conservation Plan

Encompassing the Coastal Slope and Coast Ranges
of Central and Southern California and the Central Valley

W. DAVID SHUFORD

ADDITIONAL SPECIES ACCOUNT AUTHORS:
Lyann A. Comrack, Meredith Elliott, Catherine M. Hickey,
Gary L. Ivey, John P. Kelly, Dan Robinette, Cheryl Strong

Published by U.S. Fish and Wildlife Service, Pacific Southwest Region
Author contact information:
W. David Shuford
Point Blue Conservation Science
3820 Cypress Drive # 11
Petaluma, CA 94954
dshuford@pointblue.org
www.pointblue.org

Typography and design: Timothy W. Brittain

Recommended Citation:
CONTENTS

Acknowledgments ................................................................. v
Photograph Credits ............................................................. vi

EXECUTIVE SUMMARY .................................................. 1

CHAPTER 1 Introduction .................................................. 3
  Goals and Objectives ...................................................... 3
  Species Coverage .......................................................... 4

CHAPTER 2 Description of the Coastal California Region .... 7
  Geographic Extent .......................................................... 7
  Physical Geography ....................................................... 7
  Central Valley .............................................................. 7
  Coastal Slope ............................................................... 8
  Ecological Importance .................................................... 9
  Role of BCR 32 in North American Waterbird Conservation 9
  Threats to Ecological Integrity ....................................... 10
  Central Valley ............................................................. 10
  Coastal Slope .............................................................. 11

CHAPTER 3 Waterbirds in BCR 32 .................................... 13
  Patterns of Seasonal Use and Dispersion ....................... 13
  Seasonal Use Patterns .................................................. 13
  Colonial vs. Noncolonial Breeders ................................ 13
  Wintering, Postbreeding, and Migrant Waterbirds ............ 13
  Status and Biology of Breeding Waterbirds ...................... 14
  Habitat Needs ............................................................ 14
  Distribution ............................................................... 16
  Population Estimates and Trends .................................. 17
  Key Habitats and Sites .................................................. 19
  Spatial and Temporal Variability in Breeding ................. 21
  Status and Biology of Migrant and Wintering Waterbirds ... 21
  Population Estimates and Trends .................................. 21
  Key Habitats and Sites .................................................. 22

CHAPTER 4 Conservation Issues and Threats to Waterbirds ... 23
  Loss of Habitat Integrity ............................................... 23
  Habitat Alterations Favoring Predators ......................... 23
  Siltation .................................................................. 23
  Collisions .................................................................. 23
  Liquefied Natural Gas Plans ....................................... 23
  Changing or Detrimental Agricultural, Municipal, or Industrial Practices ................................... 24
  Competition for Water .................................................. 24
  Contaminants .............................................................. 24
  Organochlorine Pesticides .......................................... 25
  Selenium ................................................................ 25
  Mercury .................................................................. 25
  PDBEs .................................................................. 26
  Miscellaneous Contaminants ....................................... 26
  Diseases and Toxins ...................................................... 26
  Algal Toxins ................................................................ 26
  Avian Botulism ........................................................... 27
  Avian Cholera ............................................................. 27
  Avian Influenza ............................................................ 27
  Newcastle Disease ....................................................... 27
  Steatitis or Yellow Fat Disease ..................................... 27
  West Nile Virus ......................................................... 28
  Subsidized and Introduced Predators ......................... 28
  Impacts of Subsidized Predators .................................. 28
  Non-native Predators .................................................. 29
  Invasive Species .......................................................... 29
  Invasive Spartina ........................................................... 29
  Perenial Pepperweed or Whiterop ............................... 29
  Tamarisk or Saltcedar ................................................... 30
  Giant Reed .................................................................. 30
  Water Primrose ........................................................... 30
  Water Hyacinth ............................................................ 30
  Spanish Sunflower ....................................................... 30
  Other Plant Species ...................................................... 30
  Invasive Invertebrates and Vertebrates .......................... 30
  Human Disturbance ..................................................... 31
  Conflicts with Human Interests ..................................... 31
  Aquaculture and Fish Hatcheries .................................. 31
  Human Health Concerns .............................................. 32
  Inter-species Conflicts .................................................. 32
  Climate Change and Sea-level Rise ............................... 32

CHAPTER 5 Conservation Priority of Waterbirds in BCR 32 ... 35
  Prioritization Process ................................................... 35
  Factor Scores .............................................................. 35
  Categories of Conservation Concern for BCR 32 .......... 36
  Results of Prioritization ................................................. 37

CHAPTER 6 Conservation Goals ....................................... 41
  Population Goals .......................................................... 41
  Population Goals: Listed Species .................................. 41
  Population Goals: Joint Ventures ................................ 41
  Population Goals: BCR 32 Waterbird Plan ..................... 42
  Habitat Goals .............................................................. 42
  Habitat Goals: Listed Species ....................................... 42
  Habitat Goals: Joint Ventures ..................................... 44
  Habitat Goals: BCR 32 Waterbird Plan ......................... 44
  Priorities and Recommendations .................................. 45

CHAPTER 7 Inventorying and Population Monitoring ........... 47
  Goals and Objectives ..................................................... 47
  Existing Efforts ............................................................. 47
  Inventorying ............................................................... 47
  Monitoring ................................................................ 47
  Priorities and Recommendations .................................. 48
  Colonial Waterbirds ..................................................... 48
  Solitary Breeders .......................................................... 48
  Wintering and Migrant Waterbirds ............................... 48

CHAPTER 8 Research Needs .............................................. 49
  Priorities and Recommendations ................................... 49
  Overarching or Multi-species Needs ............................. 49
  Species-specific Studies ............................................... 50
EXECUTIVE SUMMARY

The Coastal California Waterbird Conservation Plan is a regional plan associated with the larger Waterbird Conservation for the Americas initiative. The Coastal California plan focuses on the U.S. portion of Bird Conservation Region (BCR) 32, which encompasses the coastal slope and Coast Ranges of central and southern California and the Central Valley. The Coastal California plan provides a framework whereby a partnership of individuals and institutions can implement the broader initiative’s vision regionally by sustaining or restoring the distribution, diversity, and abundance of populations and habitats of breeding, migratory, and nonbreeding waterbirds in BCR 32.

The Coastal California plan includes 46 species of waterbirds (loons, grebes, pelicans, cormorants, herons, egrets, ibis, rails, gallinules, coots, cranes, gulls, terns, and skimmers). For species using both estuarine and open ocean waters, conservation focuses only on estuaries and associated outer coast sandy beaches; true seabirds that forage exclusively or mainly in the open ocean are not addressed.

Because of its mild climate and plentiful resource base, the Coastal California region is very rich ecologically and its wetlands and agricultural lands are of continental importance to wintering and migrating waterbirds and of regional importance to some breeding populations. Data on the population sizes and trends of waterbirds in BCR 32 overall are quite limited, but it is clear that many species have declined greatly historically. Conversely, some have increased dramatically and now pose threats to other breeding species and to the success of large-scale restoration projects.

Key conservation issues and threats to waterbirds in the region include habitat loss and degradation; changing or detrimental agricultural, municipal, or industrial practices in altered habitats; poor or toxic water quality and oil spills; increasing competition for water; diseases; subsidized and introduced predators; invasive species; human disturbance; conflicts with human interests; inter-species conflicts; and the long-term effects of climate change and sea-level rise.

Of 48 species and subspecies of waterbirds in the region ranked for conservation priority, 9 were considered of high conservation concern, 4 of moderate concern, 25 of low concern, and 10 of lowest concern. Of the 13 taxa ranked of high or moderate conservation concern in BCR 32, 9 have been given comparable or higher conservation status through other state or federal designations or rankings. Lack of concordance of BCR 32 waterbird rankings with some state or federal designations likely reflects the differing geographic areas over which waterbirds were ranked, variation of criteria among ranking systems or designations, or both.

Conservation strategies for birds increasingly rely on establishing desirable population goals for species and measureable habitat goals needed to reach those population objectives. Given the meager prior data on population trends for most waterbird species in BCR 32, this plan takes a tiered approach in assigning population goals that varies for federally and state listed species, priority waterbird species, and the remaining waterbird species in BCR 32. Lacking information for most species on the link between population objectives and the amount and quality of habitat needed to support those population levels, the BCR 32 waterbird plan mainly relies on assessments of habitat needs generated by recovery plans and joint venture implementation plans coupled with subjective assessments of additional needs. Obtaining the necessary information to refine or initially set population and habitat goals for all waterbirds in BCR 32 should be a very high conservation priority.

To enable effective conservation in BCR 32, it will be necessary to accurately monitor population trends of waterbirds. Ideally, monitoring in BCR 32 should track trends in waterbird populations and vital rates at the regional level while concurrently serving as a component of monitoring at the continental scale. High priority research needs are ones that will (1) inform the effective implementation of conservation priorities in the region, (2) fill large gaps in the knowledge of species’ biology or ecology, or (3) address overarching needs for multiple waterbirds species and other wetland-dependent birds. For individual species, the priority of related research should be raised for waterbirds ranked of moderate or high conservation concern in BCR 32.

Successful conservation of waterbirds in BCR 32 will be possible only if an informed and engaged constituency values these birds and supports measures to protect them and to create, restore, or enhance suitable wetland, agricultural, and upland habitats. Because of commonalities across bird conservation initiatives, the education and outreach goals and strategies for BCR 32 draw heavily on strategies recommended by joint ventures and regional conservation plans that focus on wetland-dependent birds in and adjacent to the BCR 32 region.

Implementation of effective on-the-ground conservation of waterbirds in the Coastal California region will require the collaborative efforts of a broad coalition of public and private agencies, conservation organizations, interest groups, and individuals. Although the challenges of waterbird conservation are great, key goals and objectives can be met by collective action on the recommendations of this plan and those of key partners dedicated to wetland conservation.
SNOWY EGRET (*Egretta thula*)

Status Summary

*Continental conservation priority:* High concern.

*BCR 32 conservation scores:*

- Population trend: 2
- Threats to breeding: 4
- Threats to non-breeding: 2
- Percent of population in BCR: 1

*BCR 32 conservation priority:* Low concern.

*Abundance and population trend in North America:* Nesting population >143,000 individuals (159,000 in 1970s), subject to considerable flux since the mid-twentieth century and substantial uncertainty about recent population trends. Non-significant increasing BBS trend of 1.9%/yr (1966–2009).


*Percent of continental population in BCR 32:* >1.7% of continental breeding population; “key” continental wintering areas with >5% of winter band recoveries include (1) the San Francisco Bay area and Central Valley and (2) San Diego County (and area eastward to Colorado River).

Global Distribution

In United States, breeds principally along the Atlantic and Gulf coasts, in extensive inland areas along the Mississippi and Arkansas rivers, and in a block from Louisiana to east Texas; in the western U.S., breeds primarily in the Central Valley and coastal areas of California, the Salton Sea, along the lower Colorado River, and in pockets throughout western states. Breeding extends down both coasts of Mexico, through the Caribbean islands, and south to Chile and Argentina. Key wintering areas are the Atlantic Coast, Bahamas, Cuba, Greater Antilles, and Gulf and Pacific coasts south to Central America.

Occurrence in BCR 32

Colony sites are incompletely known; widely scattered throughout the Central Valley and the San Francisco Bay area, sporadically in small colonies along coastal lowlands (primarily, San Diego County), and uncommonly in higher areas of the outer Coast Ranges. Coastal occurrences south of
San Francisco are more widespread in winter than during the nesting season.

**Habitat Requirements**
Primarily a species of coastal wetlands and large wetland basins. Nests in trees or shrubs on islands; in trees within sub-urban areas near coastal lagoons, bays, or other large wetland systems; and in tule or Typha sp. beds of brackish or freshwater marshes. Usually nests in mixed-species heronries, often with Black-crowned Night-Herons; typically builds nests below the vegetation canopy. Forages in salt marsh pools and along shorelines of bays, lagoons, lowland streams, marshes, and swamps; also forages in rice fields, irrigation ditches and canals, and in diked, managed wetlands. Prefers open pools in dense marshes or swamps, the confluences or mouths of tidal creeks, channels that connect managed wetlands, and open shallows (5–25 cm) on the edges of rivers, lakes, reservoirs, bays and lagoons. Most feeding areas have tidal or seasonal fluctuations in water level. Prey consist primarily of small fish (60%–87% in Texas and East Coast), variable amounts of crustaceans (including crayfish), and small proportions of invertebrates and amphibians; 94% of prey <2 cm in San Francisco Bay.

**Issues in BCR 32**
- Nesting disturbance by humans or individual nest predators, including human commensals (e.g., raccoons, feral cats, or Common Ravens), can result in nest failure or colony site abandonment.
- Declines in foraging habitat suitability related to water quality, nutrient enrichment, or management of seasonal water depth, can lead to colony relocation and reduced use of wetlands.
- Declining availability of isolated islands or other safe areas for nesting within reasonable distances (<10 km) of important feeding areas may limit populations.
- Pesticides and other contaminants (e.g., DDT, PCBs, mercury, selenium) have caused mortality and can impair reproductive success.

**Existing Actions**
- Infrequent efforts by local planning departments and the State Coastal Commission to limit nest disturbance.
- Some protective management of heronries in state and federal refuges.

**Research and Monitoring Needs**
- Conduct surveys to assess region-wide nesting abundance and trends; surveys are especially needed in the Central Valley.
- Determine the relative use of feeding areas within major wetland subregions.
- Determine patterns of foraging dispersion near important colony sites.
- Evaluate seasonal differences in regional and subregional abundance and distribution.
- Measure variation in natal dispersal and inter-annual movements of adults between colony sites.

**Needed Management Actions**
- Protect existing heronries from major increases in human activity, including direct human disturbance, land development, and nearby construction activities.
- Prevent destruction of heronries during non-breeding periods, when sites are unoccupied.
- Reduce the occurrence of nest predators, especially human commensals, near existing heronries.
- Integrate appropriate water-level regimes and habitat objectives into wetland management plans.
- Limit recreational use of important shallow-water feeding areas.
- Promote collaborative management of habitat needs across wetland subregions.

**Primary regional contact(s):** John Kelly, Audubon Canyon Ranch; Cheryl Strong, Don Edwards San Francisco Bay National Wildlife Refuge; Philip Unitt, San Diego Museum of Natural History.

**References**

**Account author:** John P. Kelly.