

Mapping California's Important Bird Areas



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Cover: Black Rail (*Laterallus jamaicensis*) by John James Audubon.

Summary

Important Bird Areas (IBAs) identify sites that provide essential habitat for birds. As such they establish a useful framework for helping guide efforts to conserve birds statewide. Audubon California determined that detailed IBA maps are necessary for on-the-ground IBA conservation to be planned and carried out in an effective and efficient fashion. Beginning in 2006, Audubon California set out to define and map the geographic boundaries of the 148 sites originally designated by bird experts around the state. The present document, *Mapping California's Important Bird Areas*, serves as a general technical report describing our mapping methodology and basic summary results. It accompanies Version 1.0 of our new Geographic Information Systems (GIS) database containing the boundaries and attributes of California's Important Bird Areas.

Acknowledgments

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During the review phase, Melinda Elster and Karen Velas both contributed considerable and valuable time to refining and editing IBA maps and providing good humor and expertise to the process.

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While too many people to name, we thank all Audubon California chapters, bird clubs, and birding experts for originally nominating IBAs, editing the site descriptions, and helping delineate the site boundaries.

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Table of Contents

Overview	1
Background	1
<i>Important Bird Areas</i>	1
<i>California's Important Bird Areas</i>	1
Methods	3
<i>Creating initial draft maps</i>	3
<i>Review and refinement of boundaries</i>	7
<i>Site summary statistics</i>	8
Results	9
<i>Accuracy</i>	9
<i>Name revisions</i>	9
<i>Area</i>	10
<i>Land ownership</i>	10
<i>Land cover</i>	12
<i>Political boundaries</i>	12
Discussion	13
<i>Map representation</i>	13
<i>Data dissemination and future updates</i>	13
<i>Conservation ownership and stewardship</i>	13
<i>Future analysis</i>	14
References	15
Appendix 1	
Example review form	A1.1
Appendix 2	
Attributes provided in the geodatabase	A2.1
Appendix 3	
Basic site attributes	A3.1
Appendix 4	
Important Bird Areas by county	A4.1
Appendix 5	
Habitat associations	A5.1
Appendix 6	
Important Bird Areas by Senate District	A6.1
Appendix 7	
Important Bird Areas by Congressional District	A7.1
Appendix 8	
Important Bird Areas by Assembly District	A8.1

Overview

Important Bird Areas (IBAs) identify essential sites that provide habitat for (i) rare, threatened or endangered birds, (ii) exceptionally large congregations of shorebirds, or (iii) exceptionally large congregations of waterfowl. In an effort to promote conservation and awareness of these areas, Audubon California set out to define and map the geographic boundaries of all IBAs in California using a Geographic Information System (GIS). The present document serves as the general technical report describing our mapping methodology and basic summary results.

Background

Important Bird Areas

Classification of Important Bird Areas (IBAs) began in Europe in 1985 by Birdlife International as a means to identify and encourage conservation of habitats for preserving avian biodiversity. This international conservation program was a response to growing concerns over bird habitat fragmentation and loss. Since the program's inception, IBAs have been designated in six continents, nearly 200 countries and territories, and 48 of the 50 United States. As of 2008, there were over 10,000 IBAs throughout the world.

While conferring no regulatory authority, a site's designation as an IBA is a powerful distinction which can be utilized to leverage conservation efforts. IBA status increases opportunities for land acquisition, restoration, conservation planning, public outreach, advocacy, and environmental education. In some cases, the IBA program has been used to establish legal protections for bird habitat. For example, the IBAs in New York State served as a model for the State Bird Conservation Area Program, which now legally integrates bird conservation into agency planning, management, and research.

California's Important Bird Areas

The American Bird Conservatory and the National Audubon Society joined in the development of an IBA program in the United States. From 1995 to 1998, the California IBA program designated 50 sites. Since 2000, Audubon California has administered the statewide IBA program through designation, mapping, and conservation. During the designation phase, Audubon California

consulted with local bird experts for their recommendations of sites with exceptional bird habitat. Bird survey data furnished by local Audubon chapters was used to create a larger list of possible sites. The two designation processes led to the current definition and standardized criteria for California's IBAs and inclusion of an additional 98 IBAs. In 2004, Audubon California published *Important Bird Areas of California* (Cooper 2004), describing 148 IBAs.

California IBAs are defined as biogeographically distinct sub-regions that meet at least one of the following criteria:

- Support over 1% of the global or 10% of the California population of one or more sensitive species (breeding or wintering).
- Support at least 10 sensitive species (federally or state-listed threatened or endangered species as well as California Species of Special Concern).
- Support 10,000 or more shorebirds that can be observed in one day.
- Support 5,000 or more waterfowl that can be observed in one day.

Some IBAs, such as the Channel Islands or the Sierra Meadows, are a complex of separate sites. Sites were grouped if they shared a geographic area, similar management regime, or similar avifauna. California, unlike some other states, did not require landowner approval for site designation. Therefore, property boundaries were not originally considered relevant to the initial designation.

At the time of book publication, California's IBAs were not explicitly mapped: *“The boundaries of California IBAs were intentionally loosely defined, and were described as precisely as the various advisors felt would be useful in working toward their conservation. Political boundaries were used in cases with specific management regimes, such as around military installations, but in general, every effort was made to identify areas that were definable by natural boundaries, both geologic (e.g. portions of mountain ranges) and biotic (wetlands and associated uplands)”* (Cooper 2004).

In May 2006, Audubon California identified mapping IBA boundaries as a critical step towards promoting on the ground conservation. Maps can serve as valuable visuals in helping promote awareness and conservation of IBAs across the state. For example, IBA maps can assist other statewide conservation agencies, such as The Nature Conservancy, California Department of Fish and Game, Bureau of Land Management, and California State Parks; those focused on specific areas, such as the California Coastal Commission; and partners focused on conservation efforts at local sites, such as land trusts and Audubon chapters. Knowing the specific locations of IBA boundaries, and the avian and other biological communities they encompass, will enable Audubon California and its partner agencies to better articulate the value of conserving key areas.

To facilitate the mapping process, Audubon California partnered with David Yun, GIS lecturer at California Polytechnic University in San Luis Obispo. This

partnership provided Cal Poly GIS program students with required projects. Over the course of a year, David Yun and eight of his students were instrumental in helping Audubon California define a standardized mapping methodology, acquire necessary datasets, and complete the initial mapping of California's 148 IBAs. Four of these students used their results to complete their senior project requirements. Results of these efforts were also presented at the International ESRI User Conference in San Diego in August 2008 (Yun *et al.* 2008) and at the Annual Meeting of the Western Field Ornithologists in October 2008 (Jones *et al.* 2008).

Methods

Creating initial draft maps

Important Bird Area Classification

Mapping individual IBAs was possible thanks to text descriptions of sites furnished in *Important Bird Areas of California* (Cooper 2004). We created three broad categories into which most IBAs could be classified (Bailey & Johnson 2006):

- Management based importance
- Feature based importance
- Habitat based importance

Sites with *management based importance* gain distinction from surrounding areas due to the distinct ways in which they are managed. Often these sites fall into categories such as wildlife refuges or Department of Defense properties. These types of sites may not be inherently more important for birds than their surrounding areas, but management in these areas may be conducive to maintaining or enhancing habitat with high wildlife value. In the case of a wildlife refuge, land management is specifically geared towards wildlife preservation and enhancement. Military bases serve a different primary function, but often the human access limitation and lack of development results in *de facto* high wildlife value for some of these lands. Vandenberg Air Force Base's large expanse of open and relatively undisturbed land is an excellent example of an IBA on a military base with management based importance. These IBA boundaries were defined using GIS layers of major landowners in California.

Sites with *feature based importance* have a unique natural landform which stands out from the surrounding area. Morro Bay is a prime example of this type of IBA. When designating Morro Bay, local experts emphasized the estuary and its

associated wetlands and beaches. Additional habitat within the watershed was not included in the IBA, because it does not stand out over other habitat in the county or serve as habitat for the birds cited within the IBA. Feature based importance includes defining elevational gradients, landforms, features and their associated habitats. These IBA boundaries were defined using topographic maps to identify the landform and related areas and aerial imagery to distinguish between general habitat types.

Sites with *habitat based importance* required intimate knowledge of on-the-ground bird habitat characteristics. Mount Hamilton Range IBA (formerly East Diablo Range IBA) is a noteworthy example, designated because it encompasses a complex mosaic of critical bird habitats. IBA boundaries of sites with habitat based importance were defined using a combination of aerial images, topographic maps, and expert knowledge.

Statewide Data Layers

We determined that four types of statewide geographic information were needed to begin locating and mapping each IBA: county boundaries, high quality aerial images, topographic maps, and land ownership.

A statewide county map (scale 1:24,000) was obtained from the California Department of Forestry and Fire Protection (2004), accessed through the California Spatial Information Library (CaSIL).

For aerial imagery, we chose the National Agriculture Imagery Program (NAIP) County Compressed Mosaics (USDA-FSA Aerial Photography Field Office 2005), which at the time were the most recent high quality images available for the entire state. The California Resources Agency and other state agencies partnered with the U.S. Department of Agriculture to acquire one-meter color Digital Orthophoto Quarter Quads (DOQQs) for each county. The aerial images were available as a countywide MrSID (Multiresolution Seamless Image Database) format in the UTM (Universal Transverse Mercator) coordinate system. California had two UTM zones: 10 and 11. The aeriels were downloaded from CaSIL.

Topographic maps, as well as Google Earth, were critical for locating many IBAs. We initially used the National Geographic TOPO! 4.0 software to find individual IBAs. Topographic map images were exported as GeoTIFF to UTM coordinates with the North American Datum of 1983 (NAD83). This allowed both aerial and topographic images to be overlaid in a spatially correct fashion. Later, we adopted the California Teale Albers projection with NAD83 as the spatial reference system and ArcGIS Online services for aerial, topographic, and street information. This change allowed us to map all IBAs in one coordinate system using common base layers.

Because many sites included or were restricted to conservation lands, such as National Wildlife Refuges or California State Parks, we also identified IBA boundaries using the Public, Conservation and Trust Lands v05_2a (PCTL, California Resources Agency Legacy Project 2007) statewide data layer, accessed from CaSIL.

San Francisco Bay Area Data Layers

In addition to the above datasets, some San Francisco Bay Area regional datasets were utilized to map IBA boundaries in the 9 county San Francisco Bay Area.

The San Francisco Bay EcoAtlas (San Francisco Estuary Institute 2002) is a GIS database of historic and modern San Francisco Bayland habitats. Modern San Francisco Bay wetland and mudflat mapping was used as a starting point when defining the boundaries of San Francisco Bay IBAs (San Francisco Bay South, Eastshore Wetlands, North Richmond Wetlands, Corte Madera Marshes, Concord Marshes, San Pablo Bay Wetlands, and Suisun Marsh) as the wetlands and mudflats of these sites are defining features. Boundaries were refined using local review and checked against the datasets used statewide.

The Bay Area Protected Areas Database (BPAD, GreenInfo Network 2008a) contains the San Francisco Bay Area subset of protected lands contained in the California Protected Areas Database (CPAD, see below). BPAD has been updated more recently than CPAD and also depicts conservation easements in addition to conservation fee title holdings. Boundaries for the proposed Alameda Wildlife Refuge were extracted from BPAD to define the Alameda Wildlife Refuge IBA. BPAD was also used to locate parks and reserves not represented by PCTL or CPAD.

The Upland Goals GIS project for the San Francisco Bay Area (Bay Area Open Space Council 2008) is a compendium of GIS resources created for conservation planning on a regional scale. The vegetation map from the Upland Goals GIS project was used to help delineate Douglas Fir and Redwood forest habitat potentially used by Marbled Murrelets on the outskirts of Año Nuevo State Park in the Año Nuevo Area IBA.

Software Selection

ArcGIS Desktop, a collection of GIS software produced by the Environmental Systems Research Institute (ESRI), is widely used by federal, state, and local agencies as well as many non-governmental organizations. Although other GIS software resources exist, ArcGIS Desktop provided the most complete set of tools required to complete our mapping project. Two critical ArcGIS Desktop

applications were ArcCatalog and ArcMap. We used ArcCatalog to manage all GIS layers and ArcMap to digitize boundaries, analyze data, and create maps and graphics.

Creating the IBA Layer

ArcCatalog was used to create the blank polygon shapefile with the same spatial coordinate system as the NAIP mosaics and topographic images. Due to complexity of the data and issues associated with having multiple remote users on the project, we decided to create separate shapefiles for each IBA and compile all individual IBA shapefiles into a single layer at the end. ArcMap's built in Editor and Advanced Editor tools were used to carefully delineate each IBA boundary using the aerials and topographic maps (Messer *et al.* 2007).

IBA boundaries were initially based on the site descriptions in *Important Bird Areas of California* (Cooper 2004). However, site descriptions were not always comprehensive and additional research was often necessary to complete the mapping process. California Department of Fish and Game, US Fish and Wildlife Service, local land conservancies, and county websites were the main sources for location information. Maps found on these sites were usually graphic files such as .jpeg, .gif, or .tif files without the spatial information. We used the Georeference tool in ArcMap to overlay non-georeferenced maps on top of the other GIS layers.

Important Bird Areas of California (Cooper 2004) was consulted for the general location of the site, roads, surrounding communities, adjacent rivers, lakes, hills, and mountains. When property delineations such as refuge boundaries were not applicable to IBAs, elevation and environmental features were used.

Once all individual IBAs were completely mapped, they were compiled into a single polygon layer in a geodatabase created using ArcCatalog. A dataset was created using the California Teale Albers NAD83 coordinate system. ArcToolbox was used to re-project and import individual IBA shapefiles into a new feature class in the geodatabase. This was necessary to generate a single statewide IBA layer and to run the topology rule to check for errors.

We set two topology rules for the IBA feature class: "must not have overlap" and "must not have gap". Running the topology rules revealed many areas with multiple digitizing of the same feature, slivers, and hidden polygons. Every error was identified and corrected. This quality check continued until there were no errors. A completed draft layer in a geodatabase format was completed for all of California's 148 IBAs (originally designated and named) in October 2007.

Review and refinement of boundaries

Assembling Feedback

After assembling the draft statewide IBA layer, we requested input from local birding experts, and those that had assisted in originally nominating the IBAs, to gain insight into how to modify the IBA boundaries to improve their accuracy. An example of one of our review forms is provided in Appendix 1. In most cases we relied on California's 49 local Audubon chapters to facilitate review. Chapters worked within their community and contacted local birding experts and land managers. In cases where chapters were not active, we attempted to contact contributors cited in the book or local land managers. The review period remained open for 11 months, during which time we received comments on 85% of the draft IBA boundaries and site summaries.

New Statewide Data Layers

We continued to utilize the PCTL layer described above to cross check our polygons with protected lands referenced in the original site accounts. In addition, we utilized the California Protected Area Database (CPAD, GreenInfo Network 2008b) as a cross reference. CPAD encompasses all fee title open space lands in California. CPAD depicts lands held in fee ownership by public agencies and non-profits but it does not contain data on private conservation and other similar public agency easements.

By the time we completed the initial maps, ESRI's ArcGIS Online services (Environmental Systems Research Institute 2008) had become a reliable online GIS data resource. ArcGIS Online provides the ArcGIS user with free and immediate access to seamless basemaps. Using this resource, we were able to access high-resolution aerial imagery (generally flown in 2005) that matched the quality and resolution of the original NAIP county mosaics. We used three ArcGIS Online layers to edit IBA boundaries: (i) ESRI Imagery World 2D, (ii) NGS Topo US 2D, and (iii) Street Map World 2D. Using the seamless online maps and imagery greatly increased the speed of digitizing and editing IBA polygons. Furthermore, ArcGIS Online eliminated our need to manage large image datasets. It also provided users with a common set of base layers and solved some coordinate mismatch problems that users encountered when working with datasets from multiple sources. We suggest that all future IBA mapping with ArcGIS software be conducted using ArcGIS Online services if high speed internet is available.

Re-digitizing IBA Boundaries

Based on comments ranging from “no change” to those involving substantial revision, we refined IBA boundaries to create new polygons and attribute tables for each site. During the revision process, we attempted to set a standard scale for drawing boundaries and adopted the following general rule:

- Small IBAs, particularly in urban areas, were mapped at approximately 1:10,000.
- Medium IBAs, where boundaries could be easily discerned from the surrounding landscape, were mapped at 1:24,000.
- Large IBAs, where boundaries were difficult to distinguish from the surrounding landscape, were mapped at 1:50,000 or greater.

Several IBAs are islands, including Channel Islands – Northern, San Clemente Island, and Farallon Islands. It was difficult to determine a fixed water boundary around these islands because of different management and protection regimes. For consistency, we selected a 1-mile water buffer around each island. This is similar to the buffer used by Channel Islands National Park. In 2009, Audubon California will begin a marine IBA program, at which time the IBA boundaries of our islands may be revised based on feeding or other biological requirements of nesting, wintering, or migratory seabirds.

All individually completed polygons (shapefiles) were combined into one geodatabase, which provided for ease of distribution, unified data storage, and the ability to run analyses across all sites. A final geodatabase and associated metadata file was completed in November 2008. We included additional information in the attribute table to document the designation history and purpose of each IBA, including the original site name as used in *Important Bird Areas of California* (Cooper 2004), subsequent name changes, sub-area names, aerial extent in acres and hectares, chapter contacts, hyperlinks to eBird birdlists, mapping scale and accuracy, and IBA criteria. See Appendix 2 for a complete list of the attributes and their definitions.

Site summary statistics

We downloaded additional datasets to provide useful analysis of IBA sites. The following datasets were superimposed with the IBA polygons to determine areas of overlap:

- California counties obtained from the California Department of Forestry and Fire Protection (2004).
- Multi-source Land Cover Data (v02_2) from the California Department of Forestry and Fire Protection (2002). This system was

developed to categorize major vegetative complexes at a scale sufficient to predict wildlife-habitat relationships in California.

- Land cover data from the US Geological Survey (2003), which provides an alternative classification to Multi-source Land Cover Data (v02_2).
- Senate, Congressional, and Assembly districts from the California Spatial Information Library (2002).

Results

Our final revised map of California’s IBAs encompasses 145 sites (Figure 1, Appendix 3). While most edits were fairly minor in nature, several sites received major revisions. Based on local expert review, we combined Tulare Lake Bed, Pixley and Kern National Wildlife Refuges, and Creighton Ranch into one larger site named Sand Ridge – Tulare Lake Bed IBA. The other site receiving a major revision was Salinas River – Middle. This polygon was changed in both area and name (King City Grasslands IBA) to better reflect its key species.

Accuracy

Written descriptions of IBAs varied in level of detail and accuracy. Each IBA polygon was ranked on a scale of 1 to 3 with 1 representing low confidence in our ability to accurately map the boundary, 2 representing moderate confidence, and 3 representing high confidence (Appendix 3). Overall, 30 IBAs (21%) received an accuracy rank 1, 61 IBAs (42%) received an accuracy rank 2, and 54 IBAs (37%) received an accuracy rank 3.

Name revisions

We revised the names of several IBAs based on comments received from local experts. Name changes reflected physical changes to an IBA boundary (such as Terminal Island Tern Colony changed to Pier 400 Tern Colony or San Emigdio Canyon changed to San Emidgio Mountains) or names that better represent the common name of an area (such as Lancaster changed to Antelope Valley). The attribute table in the geodatabase provides both the original name exactly as described in *Important Bird Areas of California* (Cooper 2004) as well as any name changes. In addition, for sites with multiple polygons, we provided names of working subregions where appropriate. All analyses and appendices use the revised IBA name (also referred to in the attribute table as the “Working Name”).

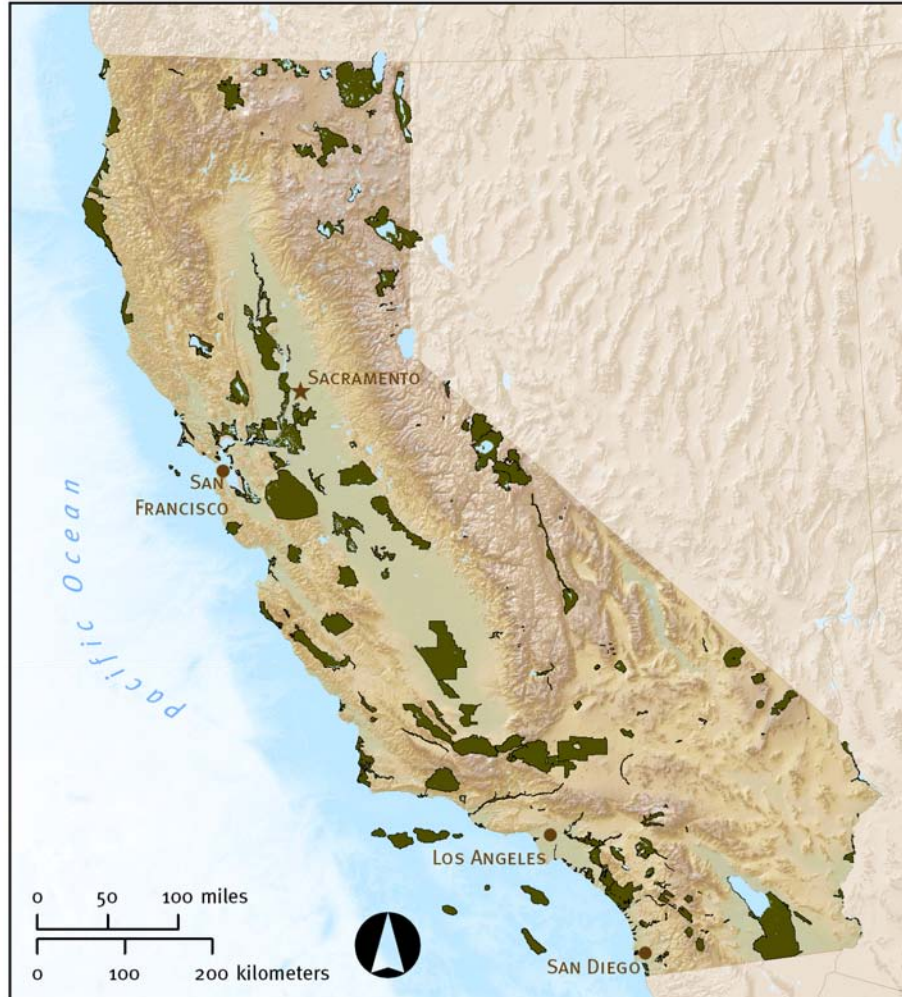


Figure 1. Map of digitized boundaries of 145 Important Bird Areas in California, December 2008.

Area

IBAs in California range in size from 16 acres (Pier 400 Tern Colony) to 624,000 acres (Imperial Valley) and occupy approximately 10.7 million acres or 4.3 million hectares of the state (Appendix 3). This represents roughly 10% of the total land and water area of California. IBAs occur in 56 of California's 58 counties (Appendix 4). The two counties without IBAs are Trinity and El Dorado.

Land ownership

Land ownership was analyzed for all IBAs (Figure 2). This analysis did not include lands under conservation easements. Most sites consist of a mosaic of landowners, including both public and private lands. Based on our analysis, 58%

of all lands in IBAs are identified as unclassified, which primarily refers to privately held lands. Of conservation lands, the largest landholders are USDA Forest Service (1,062,784 acres), Bureau of Land Management (971,000 acres), and Department of Defense (775,904 acres). In terms of numbers of IBAs, 82 contain some land owned by the Bureau of Land Management, 69 by the California Department of Fish and Game, and 50 by California State Parks.

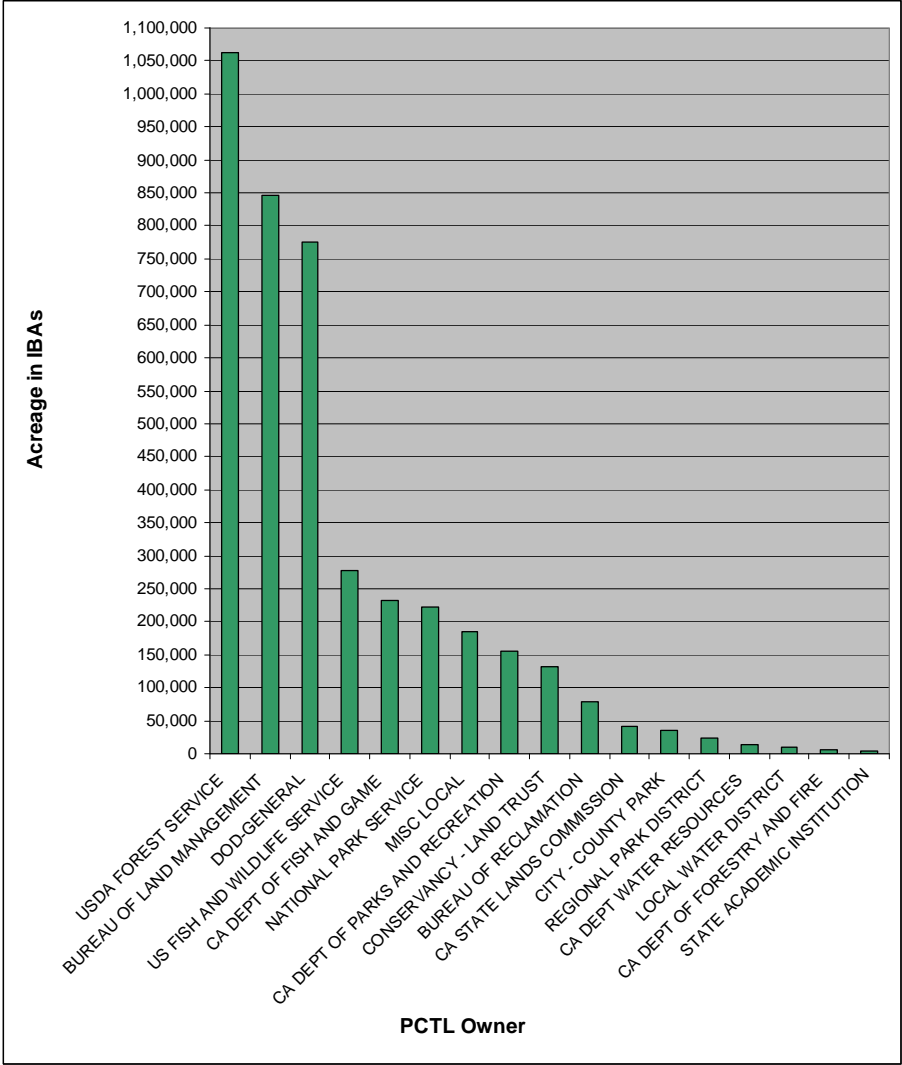


Figure 2. Land ownership of Important Bird Areas in California. Acreage reported based on data form Public, Conservation and Trust Lands (PCTL).

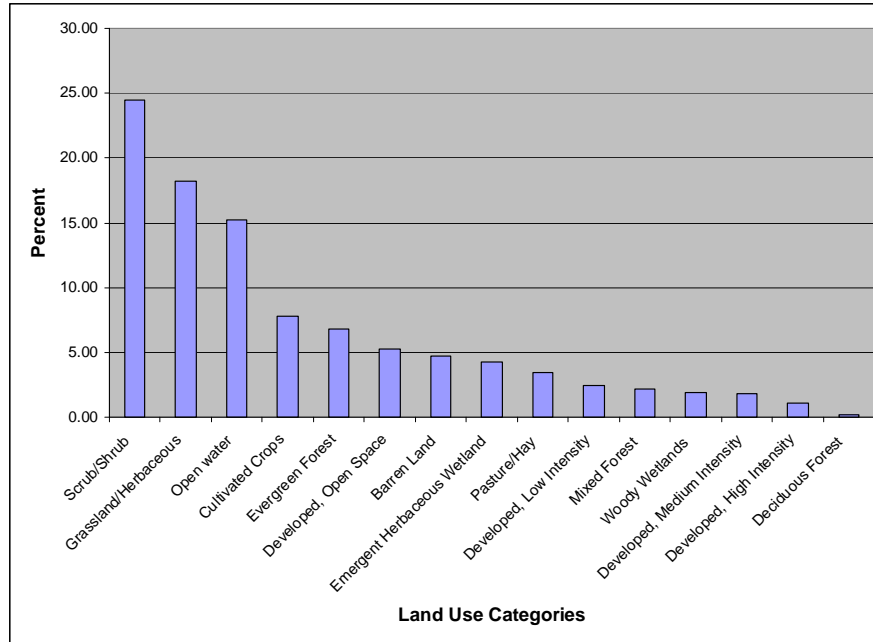


Figure 3. Land cover of important Bird Areas in California. Percentages based on data from the National Land Cover Database.

Land cover

Each IBA was analyzed for aerial extent and percent cover based on the California Department of Fish and Game’s wildlife habitat classes (Appendix 5). These habitat characteristics are primarily useful on a broad scale and in many instances will need ground-truthing and refinement at a local level. With these qualifications, the three most extensive habitat types in IBAs are California Prairie, Sagebrush Steppe, and Tule Marsh.

Each IBA was further analyzed for land cover using the National Land Cover Database (Figure 3). Using these categories, shrub/scrub occurs in the highest percentage, encompassing 24% of the area occupied all IBAs, followed by grassland/herbaceous (18%) and open water (15%). Less than 5% of the statewide area encompassed by IBAs is considered to be impacted by human development.

Political boundaries

To facilitate easy lookup of IBAs by political district, we have listed IBAs by United States Senate (Appendix 6), Congressional (Appendix 7), and California Assembly (Appendix 8) districts.

Discussion

Map representation

IBA boundaries are displayed in the site portfolios not as solid, but rather dashed lines to suggest that boundaries are not necessarily fixed, as birds move through and between sites. Boundaries were drawn to the best of our knowledge at the time of publication and are only good to the accuracy and scale indicated (Appendix 3).

Data dissemination and future updates

This report accompanies version 1.0 of California's IBA GIS map and geodatabase. We make this information freely available with the hope that it will assist conservation planning throughout California. To facilitate these efforts, Audubon California is providing the GIS data layer through our website (www.ca.audubon.org/iba) and on a DVD to conservation partners, including state and federal agencies, land trusts, conservation organizations, and Audubon chapters. Our goal is to also make the information available in a variety of formats. To achieve this, we are providing both the raw data in geodatabase and Google Earth KML format, as well as downloadable and printable individual maps as Adobe Acrobat PDFs.

Future edits to the California IBAs release are expected. We intend to update the IBA maps roughly on an annual basis based on user comments. Updates will be posted at www.ca.audubon.org/iba.

Version 1.0 of our release only encompasses sites designated in *Important Bird Areas of California* (Cooper 2004). While the book represents a significant step in identifying California's IBAs, it is likely that additional sites meeting California's IBA criteria were overlooked. These new sites will be designated in a future nomination process that also includes marine IBAs.

Conservation ownership and stewardship

Our analysis of land ownership of IBAs provides an initial framework for assessing potential conservation action. However, additional information is needed in order to understand conservation status. First to consider is that the land ownership databases we used for our analysis only encompass land held in fee title. Conservation easements on private land are an important tool for

securing conservation value on the landscape. A more complete analysis would encompass both fee title and easement properties.

Fee title and conservation easements are only one aspect of conservation. Management and stewardship of land is critical to maintaining conservation value. Despite public ownership, many conserved sites face threats from invasive species, overgrazing, poorly managed public access, and other factors that require immediate response.

In some cases, private landowners are equally or more invested in conservation than public agencies. Private land ownership cannot therefore be discounted from having conservation value. Audubon California actively collaborates with private landowners through its Landowner Stewardship Program to better manage private lands for conservation. Other examples of private landowners taking conservation initiative include work on IBAs such as Surprise Valley and the Tulare Basin where private landowners are restoring wetlands. Inclusion of these efforts in future analysis would help us better understand conservation opportunities and needs across California's IBAs.

Future analysis

Analysis of IBAs by land cover, public landowner, and political jurisdiction is only an initial step towards understanding IBAs in a regional and landscape context. Future study will include:

- Inventorying and monitoring of bird populations in selected IBAs and joining this information to the geodatabase. Having defined digital boundaries enables seamless interface with bird databases such as eBird (www.ebird.org/california), which organizes bird occurrence data collected by the general public.
- Overlay the IBA map with biological inventories, such as those represented in the California Natural Diversity Database, which encompasses other faunal and floral species of conservation concern. This will help conservation organizations work together to conserve IBAs in ways that are useful to other species in the community.
- Analysis of climate change impacts on California's IBAs. This work will integrate Audubon California's Climate Change and IBA mapping programs to help answer questions such as:
 - *Which IBAs are at risk of losing their threatened and endangered bird species?*
 - *Which IBAs could become more valuable as bird species move geographically in response to climate change?*
 - *What climate adaptation IBAs do we need to designate and conserve to help species move in response to climate change?*

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Appendix 1. Example form provided to reviewers for input on draft Important Bird Area maps and text.

AUDUBON CALIFORNIA
IBAs Mapping Review 2008

IMPORTANT BIRD AREA SITE SUMMARY
(see Review Process Resources for definitions of below)

IBA Name:

County/s:

Size: (acres)

Map Accuracy:

Map Drawn Based on:

Current Site Description: (taken from book text)

Habitat:

Species:

Threats/Conservation Issues:

Additional Notes (include suggested changes or updates to the text provided above):

FORM 2

AUDUBON CALIFORNIA

IBAs Mapping Project - Review Form

Please include map with changes marked clearly on map along with this form

IBA Name:

Review Date:

Chapter affiliation:

Reviewer names/s:

Sources: (people, organizations, websites, maps, books, etc.)

Suggested Changes

Changes based on habitat type or feature: (describe habitat type)

Changes based on species: (identify which species)

Changes based on management unit/owner (include name of management unit such as state park, land trust property, etc.)

Send form to via mail, fax, or email (preferred) to:

Mike Perlmutter
Bay Area Conservation Coordinator
Audubon California
4225 Hollis Street
Emeryville, CA 94608
Tel: 510-601-1866 ext. 231
Fax: 510-601-1954
MPerlmutter@audubon.org

Appendix 2. Attributes provided in the geodatabase for California Important Bird Areas.

Category	Definition
IBA_Code	Number assigned to each IBA from 1 to 145 alphabetically.
IBA_NAME_Book	IBA name exactly as it appears in IBA book.
IBA_Name_Working	Alternate IBA name usually associated with a name change. Where new areas have been added since book publication.
IBA_Name_subregion	For IBAs with multiple polygons this field names the subarea such as a lake or mountain.
ACRES	Size of IBA polygon in US acres.
Hectares	Size of IBA polygon in hectares.
Accuracy_Map	Scale of 1-3 based on confidence in accuracy of polygon boundaries. 1 = low accuracy - location found but text description inadequate, map needs refinement better description of boundaries, usually site not well known remote or covering vast area; 2 = moderate accuracy - map boundaries moderately accurate based on description in book but may need additional local review for at least some of the boundary; 3 = high accuracy - boundaries usually based on discrete areas such as NWR boundary DOD property, well defined water body, islands, etc. or received considerable local expert review.
Region	Region of California as defined in IBA book - 8 regions total.
Scale	Map Scale. Generally urban areas were mapped at 1:10,000; most areas were mapped at 1:24,000. Some large areas mapped at 1:100,000. No areas were mapped at less than 1:6,000.
Audubon_Conservation_Status	Audubon California IBA conservation status. High Priority IBAs are those sites considered highest priority for conservation actions based on analysis of biological value, threats, and conservation opportunities. Those labeled as "Slated for Conservation Action" will receive conservation work by Audubon California and/or Audubon chapters over next 5 years.
Chapter	Name of Audubon chapter/s in the IBA region.
Chapter_URL	Web address for primary Audubon chapter associated with an IBA.
URL_site_summary	Web address of IBA summary site description.
URL_eBird	Web address of bird list generated from eBird California.
P_Criteria	Criteria for IBA designation; P = Support over 1% of the global or 10% of the California population of one or more sensitive species (breeding and/or wintering).
L_Criteria	Criteria for IBA designation; L= Support at least 10 sensitive species (federally or state-listed threatened or endangered species as well as California Species of Special Concern).
S_Criteria	Criteria for IBA designation; S= Support 10,000 or more shorebirds that can be observed 1 day.
W_Criteria	Criteria for IBA designation; W= Support 5000 or more waterfowl that can be observed in 1 day.

Appendix 3. Basic site attributes of California's Important Bird Areas.

Size, in acres and hectares, and minimum and maximum elevation in meters.

Map Accuracy, based on a scale of 1 to 3 that defines our confidence in accurately defining polygon boundaries from the IBA site descriptions:

1. low accuracy - location found but text description inadequate, map needs better description of boundaries, usually site not well known remote or covering vast area;
2. moderate accuracy - map boundaries moderately accurate based on description in book but may need additional local review for at least some of the boundary;
3. high accuracy - boundaries usually based on discrete areas such as NWR boundary or DOD property, well defined water body, islands, etc. or received considerable local expert review.

Map scale refers to the scale in GIS that was used to map IBA polygons. Generally urban areas were mapped at 1:10,000; most areas were mapped at 1:24,000. Some large areas mapped at 1:100,000. No areas were mapped at less than 1:6,000.

Important Bird Area (Working Name)	Acres	Hectares	Min E (m)	Max E (m)	Map accuracy	Map scale
Adobe Valley	43,418	17,571	1,983	2,357	1	1:32,000
Aguanga Area	6,387	2,585	452	1,143	2	1:50,000
Alameda Wildlife Refuge	1,014	410	0	0	3	1:24,000
Año Nuevo Area	40,298	16,308	10	530	2	1:24,000
Antelope Valley	326,295	132,047	697	1,561	1	1:25,000
Anza-Borrego Riparian	2,835	1,147	370	667	1	1:24,000
Argus Range - Southern	2,150	870	715	1,786	2	1:10,000
Baldwin Lake	1,305	528	1,910	2,075	2	1:24,000
Ballona Wetlands	1,246	504	42	42	3	1:15,000
Bautista Creek	384	155	673	1,113	3	1:24,000
Benicia State Recreation Area	599	242	27	27	3	1:10,000
Big Morongo Canyon	405	164	497	830	2	1:24,000
Big Sur	39,373	15,934	104	856	2	1:24,000
Big Valley - Ash Creek	191,250	77,396	1,118	1,827	1	1:100,000
Bodega Harbor	3,670	1,485	1	74	3	1:20,000
Bolinas Lagoon	1,155	468	72	156	3	1:15,000
Bridgeport Valley	19,987	8,089	1,975	2,196	2	1:24,000
Brooks Island	233	94	0	0	3	1:6,000
Buena Vista Lake Bed	81,801	33,104	85	180	3	1:30,000
Butte Valley	31,988	12,945	1,290	1,590	2	1:32,000
Byron Area	42,737	17,295	-1	386	1	1:24,000
Camp Pendleton	169,012	68,397	11	741	2	1:24,000
Cape Mendocino Grasslands	220,377	89,184	37	919	1	1:13,000
Carrizo Plain	162,292	65,677	585	1,015	2	1:24,000
Central Orange County Preserves	44,381	17,960	89	647	2	1:22,000
Channel Islands - Northern	345,521	139,828	10	374	3	1:64,000
Cima Dome	15,264	6,177	1,411	1,644	1	1:50,000

Appendix 3, continued.

Important Bird Area (Working Name)	Acres	Hectares	Min E (m)	Max E (m)	Map accuracy	Map scale
Clear Lake	87,656	35,473	400	980	2	1:24,000
Colorado Desert Microphyll Woodlands	21,391	8,657	63	266	1	1:24,000
Concord Marshes	8,291	3,355	-3	23	3	1:10,000
Corte Madera Marshes	602	244	47	47	3	1:8,000
Cosumnes River Watershed - Lower	54,553	22,077	0	33	3	1:28,000
Crowley Lake Area	61,723	24,978	2,066	2,834	1	1:16,000
Cuyama Valley	14,386	5,822	457	869	2	1:24,000
Deep Springs Valley	2,483	1,005	1,521	1,782	1	1:24,000
Del Norte Coast	26,838	10,861	0	257	1	1:50,000
Eagle Lake	27,300	11,048	1,556	1,860	2	1:14,000
East Mojave Peaks	194,652	78,773	716	2,037	1	1:100,000
East Mojave Springs	1,683	681	1,034	1,719	1	1:24,000
East Park Reservoir	7,464	3,021	379	524	2	1:50,000
Eastshore Wetlands	1,586	642	6	22	2	1:6,000
Edwards Air Force Base	295,882	119,740	693	946	3	1:35,000
Elephant Tree Forest	1,895	767	19	213	2	1:24,000
Elkhorn Slough	9,573	3,874	1	33	3	1:18,000
Fall River Valley Area	54,000	21,853	1,007	1,295	2	1:50,000
Farallon Islands	9,407	3,807	0	0	3	1:9,000
Feather River - Lower	5,746	2,325	9	14	2	1:24,000
Goleta Coast	1,956	791	8	690	3	1:7,000
Goose Lake, Kern Co.	54,388	22,010	73	94	2	1:30,000
Goose Lake, Modoc Co.	141,194	57,139	1,433	1,550	2	1:28,000
Grasslands Ecological Area	155,345	62,866	21	40	2	1:21,000
Honey Lake Valley	310,643	125,713	1,213	1,775	2	1:15,000
Humboldt Bay	81,219	32,868	-2	167	2	1:50,000
Humboldt Lagoons	69,364	28,071	38	691	1	1:50,000
Imperial Valley	624,231	252,618	-72	135	2	1:50,000
Jepson Grasslands	42,391	17,155	0	36	2	1:24,000
Kelso Creek	2,025	820	883	1,266	3	1:15,000
King City Grasslands	135,624	54,885	93	908	3	1:42,000
Klamath Basin - Clear Lake	117,464	47,536	1,227	1,499	3	1:50,000
La Grange - Waterford Grasslands	189,943	76,868	32	335	1	1:18,000
Lake Almanor Area	82,762	33,493	1,369	1,945	2	1:24,000
Lake Casitas Area	9,465	3,830	137	210	1	1:24,000
Lake Elsinore	6,255	2,531	382	416	3	1:10,000
Lake Mathews - Estelle Mountain	34,906	14,126	208	635	2	1:24,000
Lake Success Area	7,938	3,213	156	304	2	1:15,000
Lone Willow Slough	31,135	12,600	39	69	3	1:24,000
Lopez Lake Area	6,859	2,776	229	528	2	1:24,000
Los Angeles Flood Control Basins	9,605	3,887	67	880	3	1:8,000
Lower Colorado River Valley	67,908	27,481	47	286	1	1:100,000

Appendix 3, continued.

Important Bird Area (Working Name)	Acres	Hectares	Min E (m)	Max E (m)	Map accuracy	Map scale
Lower Los Angeles River	752	304	13	21	3	1:7,000
McCloud River - Upper	835	338	1,102	1,102	1	1:24,000
Mendocino Coast	53,677	21,722	9	222	2	1:30,000
Mendota Wildlife Area	16,396	6,635	47	51	3	1:24,000
Merced Grasslands	195,482	79,109	64	256	1	1:24,000
Mission Bay - San Diego River Estuary	2,938	1,189	1	11	3	1:24,000
Modoc National Wildlife Refuge	7,864	3,182	1,330	1,359	2	1:20,000
Modoc Plateau	412,491	166,930	1,396	1,662	1	1:50,000
Mojave River	8,664	3,506	535	875	2	1:24,000
Mono Highlands	269,859	109,208	1,452	2,890	2	1:16,000
Mono Lake Basin	217,145	87,876	1,946	2,698	2	1:30,000
Morro Bay	5,803	2,348	9	141	3	1:10,000
Mount Hamilton Range	565,443	228,828	35	1,035	1	1:50,000
Napa Lakes	132,005	53,421	97	738	3	1:24,000
North Mojave Dry Lakes	73,367	29,691	334	938	3	1:24,000
North Richmond Wetlands	4,785	1,937	2	42	3	1:10,000
North San Diego Lagoons	4,696	1,900	17	109	3	1:10,000
Orange Coast Wetlands	8,000	3,237	3	62	3	1:10,000
Owens Lake	76,506	30,961	1,081	1,199	3	1:30,000
Owens River	58,326	23,604	1,088	1,413	3	1:30,000
Pamo Valley	1,108	448	418	610	2	1:100,000
Panoche Valley	91,400	36,988	154	657	1	1:50,000
Pier 400 Tern Colony	16	6	0	0	3	1:6,000
Point Mugu	4,980	2,016	3	11	3	1:10,000
Point Reyes - Outer	7,714	3,122	4	150	3	1:20,000
Puente-Chino Hills	43,391	17,560	74	387	3	1:10,000
Richardson Bay	3,140	1,271	14	67	3	1:10,000
Sacramento River - Upper	213,301	86,320	-6	40	2	1:30,000
Sacramento Valley Wetlands	32,905	13,316	19	66	2	1:23,000
Sacramento-San Joaquin Delta	307,382	124,393	4	49	2	1:24,000
Salinas River - Lower	4,260	1,724	-1	17	3	1:15,000
Salt Spring Valley	8,194	3,316	286	523	1	1:24,000
Salton Sea	235,853	95,447	-75	-41	3	1:50,000
San Antonio Valley	193,015	78,111	179	997	2	1:50,000
San Clemente Island	71,452	28,916	30	421	3	1:91,000
San Diego Bay - South	8,071	3,266	3	23	3	1:24,000
San Diego Montane Forests	113,081	45,762	696	1,817	1	1:50,000
San Diego NWR Otay- Sweetwater Unit	13,960	5,650	85	417	3	1:24,000
San Emigdio Mountains	204,351	82,698	200	1,963	2	1:40,000
San Francisco Bay - South	69,732	28,220	-2	9	2	1:15,000
San Jacinto Valley	76,324	30,887	434	834	1	1:24,000
San Joaquin Hills	19,484	7,885	62	193	2	1:24,000

Appendix 3, continued.

Important Bird Area (Working Name)	Acres	Hectares	Min E (m)	Max E (m)	Map accuracy	Map scale
San Joaquin River -Lower	28,951	11,716	3	17	2	1:15,000
San Luis Rey River	7,930	3,209	83	926	2	1:24,000
San Pablo Bay Wetlands	78,001	31,566	-1	120	3	1:15,000
San Pasqual Valley - Lake Hodges	15,306	6,194	129	450	2	1:24,000
Sand Ridge - Tulare Lake Bed	512,842	207,540	55	106	3	1:30,000
Santa Ana River - Upper	36,775	14,882	539	2,672	2	1:100,000
Santa Ana River Valley	10,369	4,196	162	265	2	1:24,000
Santa Clara River Valley	33,998	13,758	3	1,123	2	1:24,000
Santa Lucia Peaks	13,165	5,328	623	1,276	2	1:24,000
Santa Margarita Valley	22,319	9,032	294	724	1	1:24,000
Santa Maria River Valley	15,875	6,425	24	352	2	1:24,000
Santa Ynez River - Upper	174,213	70,502	444	1,690	2	1:24,000
Santa Ynez River Valley	5,046	2,042	56	204	1	1:24,000
Seiad Valley	3,495	1,414	519	926	2	1:24,000
Shasta Valley	141,068	57,089	769	1,495	2	1:23,000
Shoshone-Tecopa Area	3,293	1,333	413	506	1	1:24,000
Sierra Meadows - Northern	4,972	2,012	1,913	2,433	2	1:24,000
Sierra Meadows - Southern	2,453	993	1,708	2,731	2	1:24,000
Sierra Valley	94,734	38,338	1,486	1,798	2	1:50,000
Skinner Reservoir Area	16,963	6,865	422	682	1	1:24,000
South Fork Kern River Valley	10,561	4,274	797	1,385	3	1:15,000
Southern Orange County Preserves	53,640	21,708	94	668	2	1:35,000
Stone Lakes Area	34,935	14,138	0	10	3	1:28,000
Suisun Marsh	66,107	26,753	-3	54	3	1:24,000
Surprise Valley	196,649	79,581	1,355	1,653	1	1:30,000
Taft Hills	49,636	20,087	224	948	1	1:100,000
Tehachapi Mountains	84,548	34,215	389	1,800	2	1:64,000
Tijuana River Reserve	2,875	1,163	2	10	3	1:13,000
Tomales Bay	10,081	4,080	10	129	3	1:20,000
Topaz Lake Area	14,931	6,042	1,524	1,776	3	1:17,000
Trinidad Rocks	83	34	77	77	2	1:10,000
Upper Pajaro River	57,757	23,374	42	223	2	1:20,000
Vandenberg Air Force Base and Santa Ynez Estuary	94,243	38,139	15	439	3	1:10,000
Yolo Bypass Area	79,041	31,987	0	11	3	1:29,000

Appendix 4. List of California's Important Bird Areas by county.



Appendix 4, continued.

County	Important Bird Area (Working Name)
Alameda	Alameda Wildlife Refuge Byron Area Eastshore Wetlands Mount Hamilton Range San Francisco Bay - South
Alpine	Sierra Meadows - Northern
Amador	Sierra Meadows - Northern
Butte	Sacramento Valley Wetlands Sacramento-San Joaquin Delta
Calaveras	La Grange - Waterford Grasslands Salt Spring Valley
Colusa	East Park Reservoir Sacramento Valley Wetlands Sacramento-San Joaquin Delta
Contra Costa	Brooks Island Byron Area Concord Marshes Eastshore Wetlands North Richmond Wetlands Sacramento River - Upper Suisun Marsh
Del Norte	Del Norte Coast
Fresno	Mendota Wildlife Area Panoche Valley Sierra Meadows - Southern
Glenn	Sacramento Valley Wetlands Sacramento-San Joaquin Delta
Humboldt	Cape Mendocino Grasslands Humboldt Bay Humboldt Lagoons Trinidad Rocks
Imperial	Colorado Desert Microphyll Woodlands Elephant Tree Forest Imperial Valley Lower Colorado River Valley Salton Sea
Inyo	Argus Range - Southern Deep Springs Valley East Mojave Peaks Owens Lake Owens River Shoshone-Tecopa Area
Kern	Antelope Valley Buena Vista Lake Bed Carrizo Plain Edwards Air Force Base Goose Lake, Kern Co. Kelso Creek

Appendix 4, continued.

County	Important Bird Area (Working Name)
Kern	North Mojave Dry Lakes San Emigdio Mountains Sand Ridge - Tulare Lake Bed South Fork Kern River Valley Taft Hills Tehachapi Mountains
Kings	Sand Ridge - Tulare Lake Bed
Lake	Clear Lake
Lassen	Big Valley - Ash Creek Eagle Lake Fall River Valley Area Honey Lake Valley Lake Almanor Area Surprise Valley
Los Angeles	Antelope Valley Ballona Wetlands Channel Islands - Northern Edwards Air Force Base Los Angeles Flood Control Basins Lower Los Angeles River Orange Coast Wetlands Puente-Chino Hills San Clemente Island Santa Clara River Valley
Madera	Lone Willow Slough Mendota Wildlife Area Merced Grasslands Sierra Meadows - Southern
Marin	Bodega Harbor Bolinás Lagoon Corte Madera Marshes Point Reyes - Outer Richardson Bay San Pablo Bay Wetlands Tomales Bay
Mariposa	Merced Grasslands
Mendocino	Cape Mendocino Grasslands Mendocino Coast
Merced	Grasslands Ecological Area Merced Grasslands Panoche Valley
Modoc	Big Valley - Ash Creek Goose Lake, Modoc Co. Klamath Basin - Clear Lake Modoc National Wildlife Refuge Modoc Plateau Surprise Valley
Mono	Adobe Valley

Appendix 4, continued.

County	Important Bird Area (Working Name)
Mono	Bridgeport Valley Crowley Lake Area Mono Highlands Mono Lake Basin Owens River Sierra Meadows - Northern Topaz Lake Area
Monterey	Big Sur Elkhorn Slough King City Grasslands Salinas River - Lower San Antonio Valley Santa Lucia Peaks
Napa	Napa Lakes San Pablo Bay Wetlands
Nevada	Sierra Meadows - Northern
Orange	Camp Pendleton Central Orange County Preserves Orange Coast Wetlands Puente-Chino Hills San Joaquin Hills Southern Orange County Preserves
Placer	Sierra Meadows - Northern
Plumas	Lake Almanor Area Sierra Valley
Riverside	Aguanga Area Bautista Creek Big Morongo Canyon Camp Pendleton Central Orange County Preserves Colorado Desert Microphyll Woodlands Lake Elsinore Lake Mathews - Estelle Mountain Lower Colorado River Valley Puente-Chino Hills Salton Sea San Jacinto Valley Santa Ana River Valley Skinner Reservoir Area Southern Orange County Preserves
Sacramento	Cosumnes River Watershed - Lower Sacramento River - Upper Stone Lakes Area
San Benito	King City Grasslands Panoche Valley Upper Pajaro River
San Bernardino	Baldwin Lake Big Morongo Canyon

Appendix 4, continued.

County	Important Bird Area (Working Name)
San Bernardino	Cima Dome Colorado Desert Microphyll Woodlands East Mojave Peaks East Mojave Springs Edwards Air Force Base Lower Colorado River Valley Mojave River North Mojave Dry Lakes Puente-Chino Hills Santa Ana River - Upper Santa Ana River Valley
San Diego	Aguanga Area Anza-Borrego Riparian Camp Pendleton Elephant Tree Forest Mission Bay - San Diego River Estuary North San Diego Lagoons Pamo Valley San Diego Bay - South San Diego Montane Forests San Diego NWR Otay-Sweetwater Unit San Luis Rey River San Pasqual Valley - Lake Hodges Southern Orange County Preserves Tijuana River Reserve
San Francisco	Alameda Wildlife Refuge Farallon Islands
San Joaquin	Byron Area Cosumnes River Watershed - Lower La Grange - Waterford Grasslands Mount Hamilton Range Sacramento River - Upper San Joaquin River - Lower Stone Lakes Area
San Luis Obispo	Carrizo Plain Cuyama Valley Lopez Lake Area Morro Bay San Antonio Valley Santa Margarita Valley Santa Maria River Valley Taft Hills
San Mateo	Año Nuevo Area San Francisco Bay - South
Santa Barbara	Channel Islands - Northern Cuyama Valley Goleta Coast San Emigdio Mountains

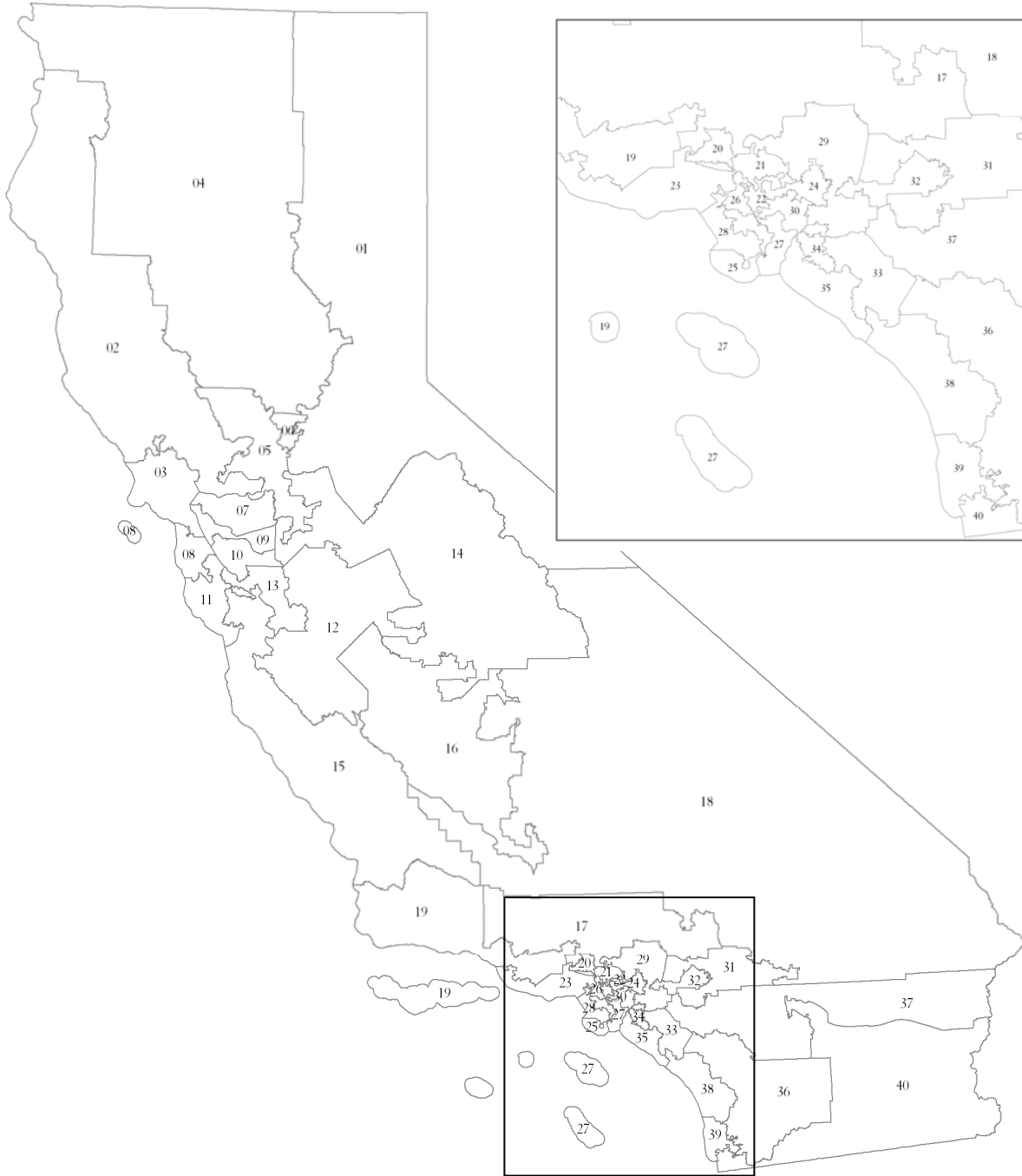
Appendix 4, continued.

County	Important Bird Area (Working Name)
Santa Barbara	Santa Maria River Valley Santa Ynez River - Upper Santa Ynez River Valley Vandenberg Air Force Base and Santa Ynez Estuary
Santa Clara	Mount Hamilton Range San Francisco Bay - South Upper Pajaro River
Santa Cruz	Año Nuevo Area
Shasta	Fall River Valley Area
Sierra	Sierra Meadows - Northern Sierra Valley
Siskiyou	Butte Valley Klamath Basin - Clear Lake McCloud River - Upper Seiad Valley Shasta Valley
Solano	Benicia State Recreation Area Jepson Grasslands Napa Lakes Sacramento River - Upper San Pablo Bay Wetlands Suisun Marsh
Sonoma	Bodega Harbor San Pablo Bay Wetlands
Stanislaus	Grasslands Ecological Area La Grange - Waterford Grasslands Mount Hamilton Range San Joaquin River - Lower
Sutter	Feather River - Lower Sacramento-San Joaquin Delta Yolo Bypass Area
Tehama	Sacramento Valley Wetlands
Tulare	Lake Success Area Sand Ridge - Tulare Lake Bed Sierra Meadows - Southern
Tuolumne	La Grange - Waterford Grasslands Sierra Meadows - Southern
Ventura	Channel Islands - Northern Lake Casitas Area Point Mugu San Emigdio Mountains Santa Clara River Valley Santa Ynez River - Upper
Yolo	Napa Lakes Sacramento River - Upper Sacramento-San Joaquin Delta Yolo Bypass Area
Yuba	Feather River - Lower

Appendix 5. Major habitats associated with California's Important Bird Areas.

Habitat Type	Acres
CALIFORNIA PRAIRIE	1,314,300
SAGEBRUSH STEPPE	1,053,147
TULE MARSH	931,193
BLUE OAK-DIGGER PINE FOREST	782,450
WATER	735,144
SONORAN CREOSOTE BUSH	645,324
SOUTHERN OAK FOREST	479,931
SAN JOAQUIN SALT BUSH	469,021
MOJAVE CREOSOTE BUSH	449,962
CHAPARRAL	370,795
DESERT SALT BUSH	363,943
COASTAL SAGEBRUSH	332,891
JUNIPER-SHRUB SAVANNA	326,773
JUNIPER-PINYON WOODLAND	213,729
MIXED HARDWOOD FOREST	199,659
JOSHUA TREE SCRUB	185,004
COASTAL PRAIRIE-SCRUB MOSAIC	153,129
MIXED EVERGREEN FOREST WITH RHODODENDRON	151,310
COASTAL SALTMARSH	143,660
YELLOW PINE-SHRUB FOREST	111,132
RIPARIAN FOREST	110,213
NORTHERN JEFFREY PINE FOREST	97,739
REDWOOD FOREST	94,312
VALLEY OAK SAVANNA	92,270
SIERRAN MONTANE FOREST	69,626
SOUTHERN JEFFREY PINE FOREST	51,511
COASTAL CYPRESS AND PINE FORESTS	45,442
ISLAND CHAPARRAL	34,741
UPPER MONTANE-SUBALPINE FORESTS	34,136
SALTON SEA SALT BUSH	33,735
SOUTHERN SEASHORE COMMUNITIES	29,060
MIXED HARDWOOD AND REDWOOD FOREST	24,974
NORTHERN SEASHORE COMMUNITIES	23,291
ALKALI SCRUB-WOODLAND	20,791
GRAND FIR-SITKA SPRUCE FOREST	20,555
OREGON OAK FOREST	14,478
SOUTHERN YELLOW PINE FOREST	11,447
UNDEFINED	9,656
SOUTHERN MONTANE-SUBALPINE FOREST	7,306
HOT SANDY DESERT	5,927
MIXED EVERGREEN FOREST WITH CHINQUAPIN	3,495
MOJAVE MONTANE FOREST	3,131
JUNIPER SAVANNA	2,736
BLACKBUSH SCRUB	338
OASIS SCRUB-WOODLAND	311
CACTUS SCRUB	282
BIG TREES - SIERRAN MONTANE FOREST	134
BIG TREES - UPPER MONTANE-SUBALPINE FORESTS	54
SIERRAN YELLOW PINE FOREST	51

Appendix 6. List of California's Important Bird Areas by Senate District.



Appendix 6, continued.

Senate District	Important Bird Area (Working Name)
1	Adobe Valley Big Valley - Ash Creek Bridgeport Valley Cosumnes River Watershed - Lower Crowley Lake Area Eagle Lake Fall River Valley Area Goose Lake, Modoc Co. Honey Lake Valley Klamath Basin - Clear Lake La Grange - Waterford Grasslands Lake Almanor Area Modoc National Wildlife Refuge Modoc Plateau Mono Highlands Mono Lake Basin Owens River Salt Spring Valley Sierra Meadows - Northern Sierra Valley Stone Lakes Area Surprise Valley Topaz Lake Area
2	Benicia State Recreation Area Bodega Harbor Cape Mendocino Grasslands Clear Lake Humboldt Bay Humboldt Lagoons Jepson Grasslands Mendocino Coast Napa Lakes Sacramento River - Upper San Pablo Bay Wetlands Suisun Marsh Trinidad Rocks
3	Alameda Wildlife Refuge Bodega Harbor Bolinas Lagoon Corte Madera Marshes Point Reyes - Outer Richardson Bay San Pablo Bay Wetlands Tomales Bay
4	Butte Valley Del Norte Coast East Park Reservoir Fall River Valley Area

Appendix 6, continued.

Senate District	Important Bird Area (Working Name)
4	Feather River -- Lower Klamath Basin - Clear Lake McCloud River - Upper Sacramento Valley Wetlands Sacramento-San Joaquin Delta Seiad Valley Shasta Valley Yolo Bypass Area
5	Byron Area Cosumnes River Watershed - Lower Jepson Grasslands Mount Hamilton Range Napa Lakes Sacramento River - Upper Sacramento-San Joaquin Delta San Joaquin River - Lower Stone Lakes Area Suisun Marsh Yolo Bypass Area
6	Stone Lakes Area
7	Byron Area Concord Marshes North Richmond Wetlands Sacramento River - Upper San Pablo Bay Wetlands Suisun Marsh
8	Farallon Islands San Francisco Bay - South
9	Alameda Wildlife Refuge Brooks Island Byron Area Eastshore Wetlands Mount Hamilton Range North Richmond Wetlands San Francisco Bay - South
10	Mount Hamilton Range San Francisco Bay - South
11	Año Nuevo Area San Francisco Bay - South
12	Grasslands Ecological Area King City Grasslands La Grange - Waterford Grasslands Lone Willow Slough Merced Grasslands Mount Hamilton Range Panoche Valley Salinas River - Lower San Joaquin River - Lower

Appendix 6, continued.

Senate District	Important Bird Area (Working Name)
12	Upper Pajaro River
13	Mount Hamilton Range San Francisco Bay - South Upper Pajaro River
14	Byron Area Cosumnes River Watershed - Lower La Grange - Waterford Grasslands Lone Willow Slough Mendota Wildlife Area Merced Grasslands Mount Hamilton Range Sacramento River - Upper San Joaquin River - Lower Sierra Meadows - Southern Stone Lakes Area
15	Big Sur Carrizo Plain Cuyama Valley Elkhorn Slough King City Grasslands Lopez Lake Area Morro Bay Mount Hamilton Range Salinas River - Lower San Antonio Valley Santa Lucia Peaks Santa Margarita Valley Santa Maria River Valley Taft Hills Upper Pajaro River
16	Buena Vista Lake Bed Goose Lake, Kern Co. Mendota Wildlife Area Panoche Valley Sand Ridge - Tulare Lake Bed
17	Antelope Valley Edwards Air Force Base Lake Casitas Area Los Angeles Flood Control Basins Mojave River San Emigdio Mountains Santa Clara River Valley Santa Ynez River - Upper
18	Antelope Valley Argus Range - Southern Baldwin Lake Big Morongo Canyon Buena Vista Lake Bed

Senate District	Important Bird Area (Working Name)
18	Carrizo Plain Cima Dome Colorado Desert Microphyll Woodlands Deep Springs Valley East Mojave Peaks East Mojave Springs Edwards Air Force Base Kelso Creek Lake Success Area Lower Colorado River Valley Mojave River North Mojave Dry Lakes Owens Lake Owens River San Emigdio Mountains Sand Ridge - Tulare Lake Bed Shoshone-Tecopa Area Sierra Meadows - Southern South Fork Kern River Valley Taft Hills Tehachapi Mountains
19	Channel Islands - Northern Cuyama Valley Goleta Coast Lake Casitas Area Point Mugu San Emigdio Mountains Santa Clara River Valley Santa Maria River Valley Santa Ynez River - Upper Santa Ynez River Valley Vandenberg Air Force Base and Santa Ynez Estuary
20	Los Angeles Flood Control Basins
23	Point Mugu Santa Clara River Valley
24	Los Angeles Flood Control Basins Puente-Chino Hills
25	Ballona Wetlands Lower Los Angeles River Pier 400 Tern Colony
27	Channel Islands - Northern Lower Los Angeles River Orange Coast Wetlands San Clemente Island
28	Ballona Wetlands Lower Los Angeles River
29	Central Orange County Preserves Los Angeles Flood Control Basins

Appendix 6, continued.

Senate District	Important Bird Area (Working Name)
29	Puente-Chino Hills Santa Ana River Valley
30	Los Angeles Flood Control Basins Puente-Chino Hills
31	Baldwin Lake Santa Ana River - Upper Santa Ana River Valley
32	Puente-Chino Hills
33	Camp Pendleton Central Orange County Preserves San Joaquin Hills Southern Orange County Preserves
35	Orange Coast Wetlands San Joaquin Hills
36	Aguanga Area Anza-Borrego Riparian Camp Pendleton Elephant Tree Forest Lake Elsinore Pamo Valley San Diego Montane Forests San Diego NWR Otay-Sweetwater Unit San Luis Rey River San Pasqual Valley - Lake Hodges Skinner Reservoir Area Southern Orange County Preserves
37	Aguanga Area Bautista Creek Big Morongo Canyon Central Orange County Preserves Colorado Desert Microphyll Woodlands Lake Elsinore Lake Mathews - Estelle Mountain Lower Colorado River Valley Puente-Chino Hills San Jacinto Valley Santa Ana River Valley Skinner Reservoir Area
38	Camp Pendleton North San Diego Lagoons San Luis Rey River San Pasqual Valley - Lake Hodges Southern Orange County Preserves
39	Mission Bay - San Diego River Estuary North San Diego Lagoons San Diego NWR Otay-Sweetwater Unit
40	Colorado Desert Microphyll Woodlands Elephant Tree Forest

Appendix 6, continued.

Senate District	Important Bird Area (Working Name)
40	Imperial Valley Lower Colorado River Valley Salton Sea San Diego Bay - South San Diego Montane Forests San Diego NWR Otay-Sweetwater Unit Tijuana River Reserve

Appendix 7. List of California's Important Bird Areas by Congressional District.



Appendix 7, continued.

Congressional District	Important Bird Area (Working Name)
1	Cape Mendocino Grasslands Clear Lake Del Norte Coast Humboldt Bay Humboldt Lagoons Mendocino Coast Napa Lakes Sacramento River - Upper San Pablo Bay Wetlands Trinidad Rocks Yolo Bypass Area
2	Butte Valley East Park Reservoir Fall River Valley Area Feather River - Lower Klamath Basin - Clear Lake McCloud River - Upper Napa Lakes Sacramento Valley Wetlands Sacramento-San Joaquin Delta Seiad Valley Shasta Valley Yolo Bypass Area
3	Cosumnes River Watershed - Lower Jepson Grasslands La Grange - Waterford Grasslands Napa Lakes Sacramento River - Upper Salt Spring Valley Sierra Meadows - Northern Stone Lakes Area
4	Big Valley - Ash Creek Eagle Lake Fall River Valley Area Goose Lake, Modoc Co. Honey Lake Valley Klamath Basin - Clear Lake Lake Almanor Area Modoc National Wildlife Refuge Modoc Plateau Sierra Meadows - Northern Sierra Valley Surprise Valley
5	Stone Lakes Area
6	Bodega Harbor Bolinas Lagoon Corte Madera Marshes Point Reyes - Outer

Appendix 7, continued.

Congressional District	Important Bird Area (Working Name)
6	Richardson Bay San Pablo Bay Wetlands Tomales Bay
7	Benicia State Recreation Area Brooks Island Concord Marshes Eastshore Wetlands North Richmond Wetlands Sacramento River - Upper San Pablo Bay Wetlands Suisun Marsh
8	Alameda Wildlife Refuge
9	Eastshore Wetlands San Francisco Bay - South
10	Byron Area Concord Marshes Jepson Grasslands Mount Hamilton Range Sacramento River - Upper Stone Lakes Area Suisun Marsh
11	Byron Area Cosumnes River Watershed - Lower La Grange - Waterford Grasslands Mount Hamilton Range Sacramento River - Upper San Joaquin River - Lower Stone Lakes Area Upper Pajaro River
12	Farallon Islands San Francisco Bay - South
13	Alameda Wildlife Refuge Mount Hamilton Range San Francisco Bay - South
14	Ano Nuevo Area San Francisco Bay - South
15	Mount Hamilton Range San Francisco Bay - South Upper Pajaro River
16	Mount Hamilton Range
17	Big Sur Elkhorn Slough King City Grasslands Panoche Valley Salinas River - Lower San Antonio Valley Santa Lucia Peaks Upper Pajaro River

Appendix 7, continued.

Congressional District	Important Bird Area (Working Name)
18	Grasslands Ecological Area Lone Willow Slough Mendota Wildlife Area Merced Grasslands Mount Hamilton Range Panoche Valley San Joaquin River - Lower
19	La Grange - Waterford Grasslands Lone Willow Slough Mendota Wildlife Area Merced Grasslands San Joaquin River - Lower Sierra Meadows - Southern
20	Buena Vista Lake Bed Goose Lake, Kern Co. Panoche Valley Sand Ridge - Tulare Lake Bed
21	Lake Success Area Sand Ridge - Tulare Lake Bed Sierra Meadows - Southern
22	Antelope Valley Buena Vista Lake Bed Carrizo Plain Cuyama Valley Edwards Air Force Base Kelso Creek Lopez Lake Area Morro Bay North Mojave Dry Lakes San Antonio Valley San Emigdio Mountains Santa Margarita Valley South Fork Kern River Valley Taft Hills Tehachapi Mountains
23	Channel Islands - Northern Goleta Coast Morro Bay Point Mugu Santa Clara River Valley Santa Maria River Valley Santa Ynez River - Upper Vandenberg Air Force Base and Santa Ynez Estuary
24	Channel Islands - Northern Cuyama Valley Goleta Coast Lake Casitas Area Point Mugu

Appendix 7, continued.

Congressional District	Important Bird Area (Working Name)
24	San Emigdio Mountains Santa Clara River Valley Santa Ynez River - Upper Santa Ynez River Valley Vandenberg Air Force Base and Santa Ynez Estuary
25	Adobe Valley Antelope Valley Argus Range - Southern Bridgeport Valley Crowley Lake Area Deep Springs Valley East Mojave Peaks East Mojave Springs Edwards Air Force Base Los Angeles Flood Control Basins Mojave River Mono Highlands Mono Lake Basin North Mojave Dry Lakes Owens Lake Owens River Santa Clara River Valley Shoshone-Tecopa Area Sierra Meadows - Northern Topaz Lake Area
26	Los Angeles Flood Control Basins
27	Los Angeles Flood Control Basins
28	Los Angeles Flood Control Basins
32	Los Angeles Flood Control Basins
35	Ballona Wetlands
36	Ballona Wetlands
37	Lower Los Angeles River
38	Los Angeles Flood Control Basins Puente-Chino Hills
39	Lower Los Angeles River
40	Central Orange County Preserves
41	Baldwin Lake Big Morongo Canyon Cima Dome Colorado Desert Microphyll Woodlands East Mojave Peaks East Mojave Springs Lower Colorado River Valley Mojave River San Jacinto Valley Santa Ana River - Upper
42	Central Orange County Preserves Puente-Chino Hills

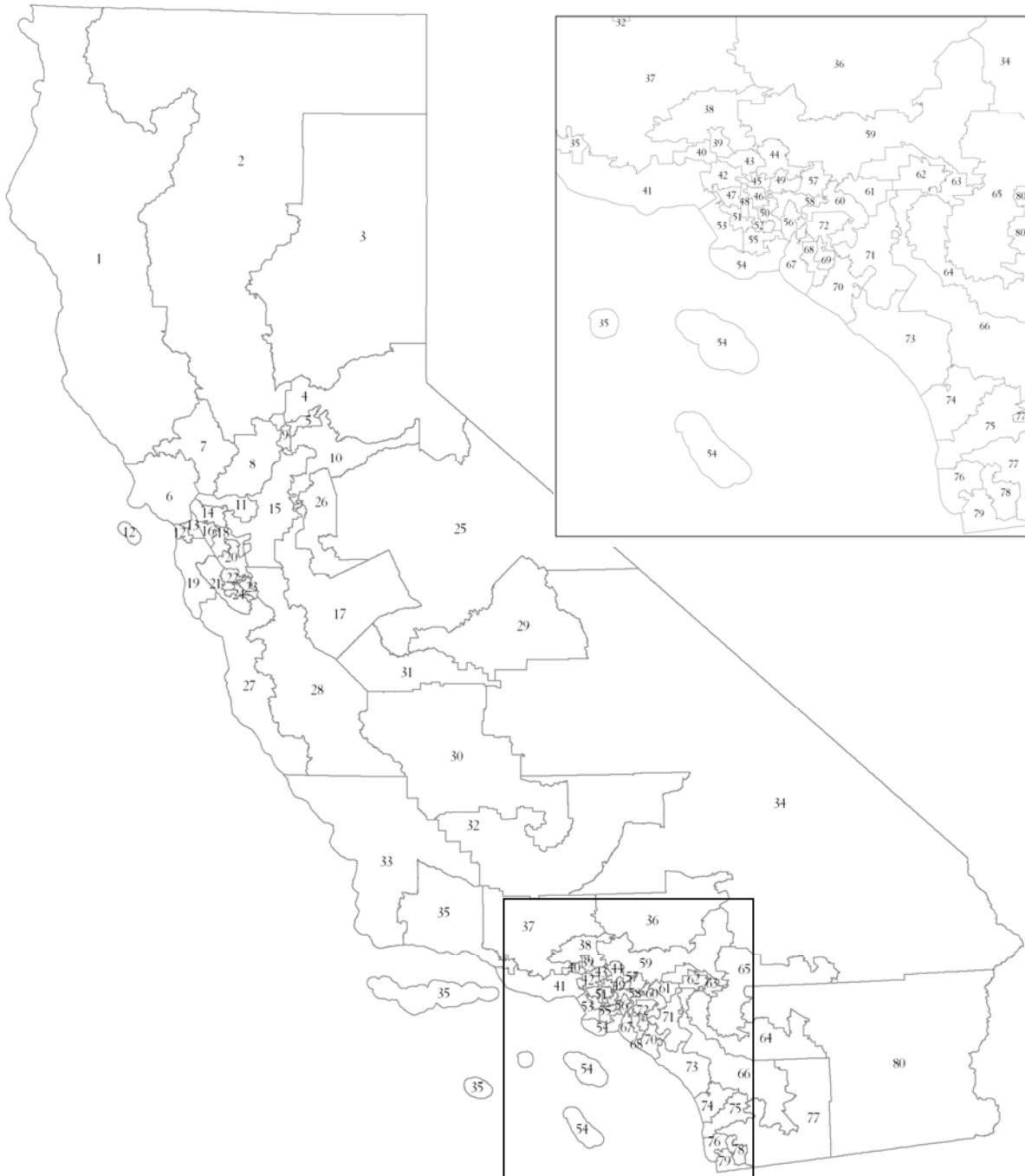
Appendix 7, continued.

Congressional District	Important Bird Area (Working Name)
42	Santa Ana River Valley Southern Orange County Preserves
44	Camp Pendleton Central Orange County Preserves Lake Mathews - Estelle Mountain Puente-Chino Hills Santa Ana River Valley Southern Orange County Preserves
45	Aguanga Area Bautista Creek Colorado Desert Microphyll Woodlands Lower Colorado River Valley Salton Sea San Jacinto Valley Skinner Reservoir Area
46	Channel Islands - Northern Lower Los Angeles River Orange Coast Wetlands Pier 400 Tern Colony San Clemente Island
48	Central Orange County Preserves Orange Coast Wetlands San Joaquin Hills Southern Orange County Preserves
49	Aguanga Area Camp Pendleton Lake Elsinore Lake Mathews - Estelle Mountain North San Diego Lagoons Pamo Valley San Diego Montane Forests San Jacinto Valley San Luis Rey River San Pasqual Valley - Lake Hodges Skinner Reservoir Area Southern Orange County Preserves
50	North San Diego Lagoons San Pasqual Valley - Lake Hodges
51	Colorado Desert Microphyll Woodlands Elephant Tree Forest Imperial Valley Lower Colorado River Valley Salton Sea San Diego Bay - South San Diego NWR Otoy-Sweetwater Unit Tijuana River Reserve
52	Anza-Borrego Riparian Elephant Tree Forest

Appendix 7, continued.

Congressional District	Important Bird Area (Working Name)
52	San Diego Montane Forests San Diego NWR Otay-Sweetwater Unit San Pasqual Valley - Lake Hodges
53	Mission Bay - San Diego River Estuary North San Diego Lagoons San Diego Bay - South San Diego NWR Otay-Sweetwater Unit Tijuana River Reserve

Appendix 8. List of California's Important Bird Areas by Assembly District.



Appendix 8, continued.

Assembly District	Important Bird Area (Working Name)
1	Bodega Harbor Cape Mendocino Grasslands Clear Lake Del Norte Coast Humboldt Bay Humboldt Lagoons Mendocino Coast Trinidad Rocks
2	Big Valley - Ash Creek Butte Valley East Park Reservoir Fall River Valley Area Feather River - Lower Goose Lake, Modoc Co. Klamath Basin - Clear Lake McCloud River - Upper Modoc National Wildlife Refuge Modoc Plateau Napa Lakes Sacramento Valley Wetlands Sacramento-San Joaquin Delta Seiad Valley Shasta Valley Surprise Valley Yolo Bypass Area
3	Big Valley - Ash Creek Eagle Lake Fall River Valley Area Feather River - Lower Honey Lake Valley Lake Almanor Area Sierra Meadows - Northern Sierra Valley Surprise Valley
4	Sierra Meadows - Northern
6	Bodega Harbor Bolinas Lagoon Corte Madera Marshes Point Reyes - Outer Richardson Bay San Pablo Bay Wetlands Tomales Bay
7	Benicia State Recreation Area Napa Lakes San Pablo Bay Wetlands
8	Benicia State Recreation Area Jepson Grasslands Sacramento River - Upper

Appendix 8, continued.

Assembly District	Important Bird Area (Working Name)
8	Suisun Marsh Yolo Bypass Area
9	Stone Lakes Area
10	Cosumnes River Watershed - Lower Sacramento River - Upper Sierra Meadows - Northern Stone Lakes Area
11	Byron Area Concord Marshes North Richmond Wetlands Sacramento River - Upper San Pablo Bay Wetlands Suisun Marsh
12	Farallon Islands
13	Alameda Wildlife Refuge
14	Brooks Island Eastshore Wetlands North Richmond Wetlands
15	Byron Area Cosumnes River Watershed - Lower Mount Hamilton Range Sacramento River - Upper Stone Lakes Area
16	Alameda Wildlife Refuge Eastshore Wetlands San Francisco Bay - South
17	Grasslands Ecological Area Merced Grasslands Mount Hamilton Range Panoche Valley San Joaquin River - Lower
18	San Francisco Bay - South
19	Año Nuevo Area San Francisco Bay - South
20	Mount Hamilton Range San Francisco Bay - South
21	San Francisco Bay - South
22	San Francisco Bay - South
23	Mount Hamilton Range
25	Adobe Valley Bridgeport Valley Crowley Lake Area La Grange - Waterford Grasslands Lone Willow Slough Mendota Wildlife Area Merced Grasslands Mono Highlands

Appendix 8, continued.

Assembly District	Important Bird Area (Working Name)
25	Mono Lake Basin Owens River Salt Spring Valley Sierra Meadows - Northern Sierra Meadows - Southern Topaz Lake Area
26	La Grange - Waterford Grasslands Sacramento River - Upper San Joaquin River - Lower
27	Año Nuevo Area Big Sur Elkhorn Slough Salinas River - Lower San Antonio Valley Santa Lucia Peaks
28	King City Grasslands Mount Hamilton Range Panoche Valley Salinas River - Lower San Antonio Valley Santa Lucia Peaks Upper Pajaro River
29	Merced Grasslands Sierra Meadows - Southern
30	Goose Lake, Kern Co. Sand Ridge - Tulare Lake Bed
31	Mendota Wildlife Area Panoche Valley
32	Antelope Valley Buena Vista Lake Bed Carrizo Plain Goose Lake, Kern Co. Kelso Creek North Mojave Dry Lakes San Emigdio Mountains South Fork Kern River Valley Taft Hills Tehachapi Mountains
33	Carrizo Plain Cuyama Valley Lopez Lake Area Morro Bay San Antonio Valley Santa Margarita Valley Santa Maria River Valley Santa Ynez River Valley Taft Hills Vandenberg Air Force Base and Santa Ynez Estuary

Appendix 8, continued.

Assembly District	Important Bird Area (Working Name)
34	Antelope Valley Argus Range - Southern Cima Dome Colorado Desert Microphyll Woodlands Deep Springs Valley East Mojave Peaks East Mojave Springs Edwards Air Force Base Lake Success Area Lower Colorado River Valley Mojave River North Mojave Dry Lakes Owens Lake Owens River Shoshone-Tecopa Area Sierra Meadows - Southern
35	Channel Islands - Northern Cuyama Valley Goleta Coast Lake Casitas Area San Emigdio Mountains Santa Clara River Valley Santa Ynez River - Upper Santa Ynez River Valley
36	Antelope Valley Edwards Air Force Base Mojave River Santa Clara River Valley
37	Antelope Valley Lake Casitas Area San Emigdio Mountains Santa Clara River Valley Santa Ynez River - Upper
38	Los Angeles Flood Control Basins Santa Clara River Valley
39	Los Angeles Flood Control Basins
41	Point Mugu Santa Clara River Valley
44	Los Angeles Flood Control Basins
49	Los Angeles Flood Control Basins
51	Ballona Wetlands
52	Lower Los Angeles River
53	Ballona Wetlands
54	Channel Islands - Northern Lower Los Angeles River Orange Coast Wetlands Pier 400 Tern Colony

Appendix 8, continued.

Assembly District	Important Bird Area (Working Name)
54	San Clemente Island
55	Lower Los Angeles River
57	Los Angeles Flood Control Basins
58	Los Angeles Flood Control Basins Puente-Chino Hills
59	Los Angeles Flood Control Basins Mojave River Santa Ana River - Upper Santa Clara River Valley
60	Central Orange County Preserves Puente-Chino Hills
61	Puente-Chino Hills Santa Ana River Valley
64	Aguanga Area Bautista Creek Lake Mathews - Estelle Mountain San Jacinto Valley Santa Ana River Valley Skinner Reservoir Area
65	Baldwin Lake Big Morongo Canyon San Jacinto Valley Santa Ana River - Upper Skinner Reservoir Area
66	Aguanga Area Camp Pendleton Lake Elsinore Lake Mathews - Estelle Mountain Pamo Valley San Diego Montane Forests San Luis Rey River Santa Ana River Valley Southern Orange County Preserves
67	Orange Coast Wetlands
68	Orange Coast Wetlands
70	Central Orange County Preserves Orange Coast Wetlands San Joaquin Hills Southern Orange County Preserves
71	Central Orange County Preserves Lake Mathews - Estelle Mountain Puente-Chino Hills Santa Ana River Valley Southern Orange County Preserves
72	Puente-Chino Hills
73	Camp Pendleton North San Diego Lagoons

Appendix 8, continued.

Assembly District	Important Bird Area (Working Name)
73	San Joaquin Hills Southern Orange County Preserves
74	North San Diego Lagoons San Pasqual Valley - Lake Hodges
75	North San Diego Lagoons San Pasqual Valley - Lake Hodges
76	Mission Bay - San Diego River Estuary
77	Anza-Borrego Riparian Elephant Tree Forest Pamo Valley San Diego Montane Forests San Diego NWR Otay-Sweetwater Unit
78	San Diego NWR Otay-Sweetwater Unit
79	San Diego Bay - South Tijuana River Reserve
80	Big Morongo Canyon Colorado Desert Microphyll Woodlands Elephant Tree Forest Imperial Valley Lower Colorado River Valley Salton Sea San Jacinto Valley