Focused Surveys for
Belding's Savannah Sparrow at the Ballona Wetlands, 2008

as part of the
Ballona Wetlands Biological Study

for the
U.S. Army Corps of Engineers
Post-Restoration Study
for the
Project Modifications for Improvement of the
Environment and Aquatic Ecosystem Restoration
at the Ballona Wetlands
Marina del Rey, CA

FINAL Report

prepared for:

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Introduction

This report summarizes the findings of five surveys conducted from March through June 2008 by Keane Biological Consulting (KBC) for the Belding's Savannah Sparrow (*Passerculus sandwichensis beldingi*[1]) at the Ballona Wetlands Study Area (Study Area) as part of the Ballona 1135 Restoration Project (BRP). The Belding's Savannah Sparrow (hereafter BSS) is listed as endangered under the California Endangered Species Act. KBC conducted surveys in the Study Area for the BSS in 2001 and 2004 for the U.S. Army Corps of Engineers, Los Angeles District (Corps), through the Corps contract with MEC Analytical Systems, Inc. – Weston Solutions, and in 2005 and 2007 as part of a contract with the City of Los Angeles Environmental Monitoring Division. The 2001 surveys were conducted prior to the installation of the self-regulating tidegates, and the 2004, 2005 and 2007 surveys were conducted following the installation of the self-regulating tidegates, which occurred in spring 2003.

The goal of 2001 BSS surveys was to determine the number of breeding pairs and territories in the Study Area. Results of 2004, 2005 and 2007 surveys were compared with those of 2001 to ascertain whether the 1135 Restoration Project was successful in enhancing habitat for BSS. The estimated numbers of BSS territories were similar during 2001 (13-15), 2004 (12), 2005 (11) and 2007 (12) surveys. However, because habitat changes in the Study Area are likely continuing with the enhanced tidal influence rendered by the BRP, the Corps requested an additional year (2008) of post-restoration surveys be conducted by KBC through the City of Los Angeles Environmental Monitoring Division, under Curtis Cash.

The Ballona 1135 Restoration Project (BRP) was implemented by the Corps in spring 2003 and included improvement of tidegates between the Ballona Creek Channel and the Ballona Wetlands to increase tidal influence in the Study Area to a level of 1.1 m MLLW[2]. The BSS is known to nest in the Study Area in clumps of pickleweed (*Salicornia* sp.), a common plant of coastal saltmarshes in California. The improved tidal flushing in the Study Area may beneficially affect the extent and health of pickleweed, which in turn may influence the Study Area's BSS population. Thus, the Corps requested BSS surveys to document effect of the BRP on BSS in the Study Area. Another BRP tide-gate modification to 1.2 m MLLW was conducted August 29, 2007, but the tide gates were soon returned 1.1 m MLLW due to malfunction.

The Study Area is located in Marina del Rey, California, and is bordered on the north by the Ballona Creek channel, on the south by the Southern California Gas facility and adjacent bluff, on the west by the community of Playa del Rey, on the east by the Southern California Gas Company access road south of Culver Boulevard, and on the north by Culver Boulevard as it curves northeast (Figure 1).

[1] Scientific names are provided only after the first mention of the common name in this document.
[2] m = meters; MLLW = Mean Lower Low Water, the average of the lower low water height of each tidal day recorded over a period called the National Tidal Datum Epoch.

Figure 1. Location of Study Area for Belding's Savannah Sparrow Surveys, 2008

Methods

Species Background

The savannah sparrow is a widespread and abundant species of North American open habitats south to northern El Salvador and Honduras. Seventeen subspecies are recognized, most of which are migratory, although several subspecies are year-round residents of coastal salt marshes. These include the large-billed savannah sparrow (*Passerculus sandwichensis rostratus*), which occurs along the east and west shores of the Gulf of California, and the BSS, which is found from Goleta Slough in Santa Barbara County to El Rosario, Baja California. The BSS is 5.5 inches long and is similar to other subspecies of savannah sparrows but is darker and heavily streaked on the back, breast, and sides (Wheelwright and Rising 1993).

The first statewide BSS survey was conducted in 1977. Since 1986, statewide surveys have been undertaken at five-year intervals. A statewide survey in 2001 counted 2,902 territories, up 23.5% from the 1996 count of 2,350 pairs (Zembal and Hoffman 2001). The most recent statewide survey in 2006 located an estimated 3,139 BSS territories at 29 coastal salt marshes. This represents an 8.2% increase over 2001 surveys, primarily because of an increase at Mugu Lagoon to 1,042 territories, 33.2% of the state's population (Zembal et al. 2006). Other populations are all under 300 territories, with the largest at Seal Beach National Wildlife Refuge (289) and Tijuana Marsh National Wildlife Refuge (274) (Zembal et al. 2006).

Savannah sparrows of other subspecies have likely benefited from human activity because of their preference for breeding in open habitats such as agricultural fields and grazing lands (Wheelwright and Rising 1993). However, the BSS, limited to coastal saltmarshes, has declined in numbers over the past century due to destruction of suitable salt marsh habitat by filling for housing, industrial use and marina development (Garrett and Dunn 1981). Other factors affecting the population decline include loss of regular tidal connection with the ocean and inconsistent tidal influence on upper marsh habitat, disruptions in the natural drainage of coastal wetlands because of upstream development or flood control, human disturbance and exotic predators in marshes, especially feral and domestic cats and non-native red foxes (*Vulpes vulpes*). However, recent habitat protection and enhancement projects, such as those at Batiquitos Lagoon and the mouth of the Santa Ana River, have resulted in improvements in habitat conditions (CDFG 2000).

BSS-occupied habitat is dominated by pickleweed, sea-blite (*Suaeda* sp.), salt bush (*Atriplex* sp.), and salt grass. Although other subspecies subsist on a diet of insects during the summer and seeds during the winter, BSS eat crustaceans as well as pickleweed seeds. They may forage in nearby habitats including along rock jetties (Garrett and Dunn 1981) and are capable of drinking salt water. Nests are built low in pickleweed in middle to upper portions of salt marshes, or in non-tidal seepage areas dominated by pickleweed (Massey 1977). Other than cats and red foxes, BSS predators include several raptor species, clapper rail (*Rallus longirostris levipes*), striped skunk (*Mephites mephites*) and raccoon (*Procyon lotor*) (Wheelwright and Rising 1993).

Survey Methods

Suitable BSS habitat within the Study Area was surveyed in 2008 by Kathy Keane of KBC, with emphasis placed on the area around the main and west channels, three times in the spring (March 28, May 6-8, and May 21) to estimate the number of BSS territories, and twice in the summer (June 23 and June 30[3]) to estimate BSS productivity. Surveys were initiated between 6:00 a.m. and 6:30 a.m. and concluded by 11:00 a.m. No surveys were conducted in April since weather conditions were generally unseasonably cool, which likely delayed BSS nesting.

Spring survey methods followed those used by KBC during 2007 and previous BSS surveys, which are patterned after statewide censuses, as summarized in Zembal et al. (1988 and 2006). These methods entail walking slowly and stopping adjacent to all areas of suitable habitat and watching and listening for singing males and other breeding behavior (feeding young, carrying nesting material) to estimate the number of breeding pairs or territories. Sightings of singing males, non-singing individuals or pairs, individuals carrying nesting material, and other pertinent observations were mapped on an aerial photograph of the Study Area. Field notes were recorded and included details on BSS behavior and evidence of potential BSS predators. GPS points were not recorded, as this would entail walking to the observed location, resulting in disturbance to BSS and possible damage to nests.

[3] Family groups were also recorded when observed during the spring surveys March 28, May 6-8, and May 21.

Methods for the summer surveys were similar to spring survey methods and entailed walking slowly and stopping adjacent to all areas of suitable BSS habitat. However, rather than searching for singing male BSS to census the approximate number of BSS territories, the summer surveys focused on estimating reproductive success by searching for BSS family groups (3 or more birds). The presence of a family group within a territory indicates that the BSS pair on that territory was successful that year at fledging (raising to flight stage) one or more young. Locations of family group sightings were mapped on the aerial photograph of the Study Area, and details of the sightings (number of birds and their behavior) were recorded on field notes.

In addition to field notes and observation maps, the survey route was drawn on an aerial photograph of the Study Area during each survey (Figure 2) and ensured that all areas of tidal and non-tidal saltmarsh habitat dominated by pickleweed were visited. The direction of the survey route, and the order in which portions of the Study Area were surveyed, varied among survey dates so that portions of the Study Area were visited at different times of day. In addition, the routes were sometimes walked clockwise, and other times counter-clockwise. This ensured that BSS territory holders more active at a particular time of the day were not missed. Finally, all birds observed during surveys were recorded on field notes; a list of birds observed during the 2008 surveys is provided on pages 13 and 14 of this report.

Figure 2. Map of Approximate Survey Route for 2008 Belding's Savannah Sparrow Surveys[4]

[4] Although the Study Area (Figure 1) extends further east than what is shown in Figure 2, no suitable BSS habitat is present further east, and no BSS were observed in the Study Area south of Culver Blvd.

Results

Spring Surveys

During the first (March 28) survey, BSS were singing sporadically, and territorial chases and few observations of pairs suggested that BSS nesting was in its early stages. Thus, the next survey was delayed until May. During the first May survey (which extended over two dates, May 4 and May 6, due to high levels of BSS activity), BSS singing was more frequent. Several BSS pairs and three family groups were observed, indicating that nesting was well underway. Singing was most active May 21, and four family groups and several mated pairs were noted, in addition to several singing males and territorial chases. Approximately 14 BSS territories were present during spring 2008 surveys (Figure 3).

Figure 2. Approximate locations of Belding's Savannah Sparrow (BSSP) Territories, Spring 2008

Summer Surveys

Because parent BSS feed and remain with fledglings until they are a minimum of three weeks of age (Wheelright and Rising 1993), family groups (FG) were not counted again if they were observed within a three- to five-week period in the same area. Family groups were observed during spring as well as summer surveys. Two family groups were observed May 6-8 (FG-1 and FG-2—Figure 4) and three were seen May 21 (FG-3, FG-4, and FG-5—Figure 4).

Two of the family groups observed May 4-6 were observed in the same areas May 21, and two groups observed May 21 were seen in the same areas June 23.

Seven additional family groups (FG-6 through FG-12—Figure 4) were observed during the summer surveys; three of these were seen during both summer surveys. In addition to family groups, several BSS individuals were singing, and two birds flushed as if from nests during summer surveys, indicative of additional BSS productivity after summer surveys are concluded. In summary, a total of 12 family groups were observed during 2008 summer surveys (Figure 4).

No BSS were observed south of Culver Boulevard, or east of the areas where FG-1 was observed. The Study Area east of FG-1 is primarily weedy, non-native vegetation, with some weed-dominated non-tidal pickleweed and thus is not suitable for BSS breeding.

Figure 4. Approximate locations of Belding's Savannah Sparrow family groups (FG), 2008

Conclusions and Recommendations

Comparison with Previous Surveys

Focused surveys for BSS were conducted from the late 1970's through the present, and BSS have been observed in the Study Area during all surveys (Table 1). Comparison among recent surveys suggests that the BSS population in the Study Area has been fairly stable from 1998 through 2008 (Table 1).

Table 1. Results of Surveys for Belding's Savannah Sparrow Territories at Ballona Wetlands, 1977 to 2008

YEAR	ESTIMATED TERRITORIES	SURVEYS CONDUCTED BY
1977	37	Massey 1977
1979	21	Dock and Schreiber 1981
1980	18	Dock and Schreiber 1981
1981	13	Dock and Schreiber 1981
1982 – 1985	No data	--
1986	32	Zembal et al. 1988
1987	30	Massey 1987
1988	No data	--
1989	31	White and White 1989
1990	11-12	Corey and Massey 1990
1991	1 to 30 throughout the year	Corey 1991
1992 – 1993	No data	--
1994	10	Lockhart 1994
1995	21	Keane Biological Consulting 1996
1996	37[a]	John Konecny, USFWS
1997	No surveys	No surveys
1998	12 to 13	Keane Biological Consulting 1998
2001	13 to 15	Keane Biological Consulting 2001
2003	No estimate—construction monitoring only	Observations during tide gate construction by Russell Ruffing, City of Los Angeles
2004	12	Keane Biological Consulting 2004
2005	11	Keane Biological Consulting 2005
2006	12	Kathy Keane and Brad Henderson, for Zembal et al. 2006
2007	12	Keane Biological Consulting
2008	14	This study—Keane Biological Consulting

[a] this is likely an overestimate—see conclusions and recommendations

However, observations in 2008 included a substantially higher number of family groups than during previous years (Table 2), suggesting that although suitable BSS habitat is limited, BSS are managing, during years with adequate spring rainfall that results in abundant food (insects and pickleweed seeds), to successfully produce young sufficient to maintain or increase the BSS population in the Study Area.

Table 2. Results of Surveys for Belding's Savannah Sparrow Productivity at Ballona Wetlands, 2004 - 2008

YEAR	ESTIMATED FAMILY GROUPS
2004	2
2005	2
2006	No summer survey
2007	6
2008	12

Similar to previous surveys, no BSS territories were detected in areas south of Culver Boulevard during the 2008 surveys. Some groundwater is present in this area that continues to nourish pickleweed, which includes areas without heavy growth of non-native species, but pickleweed is dense and most of it lacks tidal influence. In addition, the area south of Culver lacks the berm that is present between Culver Boulevard and wetlands to the north, where the BSS population is located. This berm likely serves as a sound buffer for traffic noise, allowing BSS to communicate more effectively among individuals than they could south of Culver Boulevard.

Recommendations

The BSS population at the Ballona Wetlands has been fairly stable from 1998 through 2008. However, red foxes are still present, and some parts of the Study Area appear to be converting from supporting the pickleweed species apparently more preferred by BSS (*Salicornia virginica*) to other higher-marsh species including alkali weed (*Cressa truxilensis*) and jaumea (*Jaumea carnosa*). In addition, large portions of the Study Area remain dominated by non-native grasses, mustards (*Brassica* sp.), and other exotic species. Nevertheless, BSS productivity in 2008 appeared to be higher than previous years, as evidenced by observations of several more family groups than in previous years (Table 2).

Some of the alternatives proposed for the Ballona Wetlands Conceptual Restoration Plan (BWCRP) currently under study include replacing areas of non-native vegetation in the Study Area (as well as other areas of Ballona) with pickleweed. This would enhance habitat value for BSS, as would management of the red fox population. Alternative conceptual plans for restoration have been developed but are still under study as of the date of this report.

Increased tidal inundation to 1.2 m MLLW was initiated with tide-gate modification following KBC 2007 surveys, on August 29, 2007. However, the gates were soon returned to 1.1 m MLLW, their configuration following the first modification, due to malfunction. A future tide-gate modification, again to 1.2 m MLLW, is expected but not yet scheduled. The additional modification is expected to enhance habitat value for BSS by eliminating some types of non-native vegetation that are not salt-tolerant.

The increased tidal influence is also expected to create suitable conditions for expansion of pickleweed suitable for BSS nesting into areas that are now barren saltflats. However, because BSS nests are generally on the ground or a few inches above the ground, and because much of the pickleweed currently inhabited by BSS is less than 10 inches tall, the inundation increase may flood some areas that supported BSS nesting in 2008 and previous years. This may result in a temporary loss of BSS nesting habitat until non-native vegetation is replaced with pickleweed, and until pickleweed can expand into new areas.

Thus, focused BSS surveys are recommended for a minimum of three years following future modification of tide gates to document changes in the number of BSS territories in the Study Area.

Literature Cited

Corey, K. 1991. Bird survey of Ballona Wetland 1990-1991. Department of Biology, California State University, Long Beach CA 90840.

Corey, K. and B.W. Massey. 1990. A population and banding study on the Belding's savannah sparrow at Ballona Wetland 1989-1990. Department of Biology, California State University, Long Beach. 20 pp.

Garrett, K. and J. Dunn. 1981. Birds of Southern California: Status and Distribution. Los Angeles Audubon Society, California.

California Department of Fish and Game (CDFG). 2000. The Status of Rare, Threatened and Endangered Plants and Animals in California. Belding's Savannah Sparrow. 2000. Habitat Conservation and Planning Branch, Sacramento, CA. Available through http://www.dfg.ca.gov/hcpb/cgi-bin/read_one.asp?specy=birds&idNum=106

Dock, C.F. and R.W. Schreiber. 1981. The birds of Ballona. In Biota of the Ballona Region, Los Angeles County, Supplement I, Marina del Rey/Ballona Local Coastal Plan. Los Angeles County Museum of Natural History. pp. Bi1-Bi88. Keane Biological Consulting. 1996. Avifauna of Playa Vista, Part I: General Birds; Part II: Description of sensitive bird species, unpublished report prepared for Impact Sciences, Inc.

Keane Biological Consulting (KBC). 1996. Surveys for sensitive avian species at Playa Vista, 1995, unpublished report prepared for Impact Sciences, Inc.

Keane Biological Consulting. 1998. Surveys for sensitive avian species at Playa Vista, 1998, unpublished report prepared for Impact Sciences, Inc.

Keane Biological Consulting. 2001. Surveys for sensitive avian species at Playa Vista, 2001, unpublished report prepared for Impact Sciences, Inc.

Keane Biological Consulting. 2004. Focused Surveys for Belding's Savannah Sparrow at the Ballona Wetlands, 2004 as part of the Ballona Wetlands Biological Study for the U.S. Army Corps of Engineers Post-Restoration Study. Prepared for MEC Analytical Systems, Inc. – Weston Solutions, Inc. as part of Contract No. DACW90-1-D-0007. August 24, 2004.

Keane Biological Consulting. 2005. Focused Surveys for Belding's Savannah Sparrow at the Ballona Wetlands, 2005 as part of the Ballona Wetlands Biological Study for the U.S. Army Corps of Engineers Post-Restoration Study. Prepared for the City of Los Angeles Environmental Monitoring Division, September 23, 2005.

Keane Biological Consulting (KBC). 2007. Focused Surveys for Belding's Savannah Sparrow at the Ballona Wetlands, 2007, as part of the Ballona Wetlands Biological Study for the U.S. Army Corps of Engineers Post-Restoration Study for the Project Modifications for Improvement of the Environment and Aquatic Ecosystem Restoration at the Ballona Wetlands. Final Report. Prepared for the City of Los Angeles Environmental Monitoring Division, January 25, 2008.

Konecny, J. 1996. Biologist, United States Fish and Wildlife Service. Personal communication regarding results of focused surveys for Belding's Savannah Sparrow at Ballona Wetlands as part of statewide surveys, 1996.

Lockhart, S. 1996. Biologist. Personal communication regarding 1994 census for Belding's savannah sparrow at Ballona Wetland.

Massey, B.W. 1977. A census of the breeding population of the Belding's savannah sparrow in California, 1977. Unpublished report, Department of Fish and Game, The Resources Agency, Sacramento.

Massey, B.W. 1987. Census of Belding's savannah sparrow in the Ballona Wetlands. Report to the National Audubon Society. 6 pp.

Wheelwright, N.T., and J.D. Rising. 1993. Savannah Sparrow (*Passerculus sandwichensis*). *In* The Birds of North America, No. 45 (A. Poole and F. Gill, Eds.). Philadelphia: The Academy of Natural Sciences; Washington, D.C.

White, A. and P. White. 1989. Belding's savannah sparrow census at Ballona Wetland, 1989. Report to the National Audubon Society, Ballona Wetland Project, 16 March 1989. 16 pp.

Zembal, R.L., K.J. Kramer, R.J. Brandsfield, and N. Gilbert. 1988. A survey of Belding's savannah sparrows in California. American Birds: 42(5), pp. 1233-1236.

Zembal, R. and S. M. Hoffman. 2002. A survey of the Belding's savannah sparrow in California, 2001. Species Conservation and Recovery Program Report 2002-01. Habitat Conservation and Planning Branch, California Department of Fish and Game, California Resources Agency. 12 pp.

Zembal, R. J. Konecny and S.M. Hoffman. 2006. A survey of the Belding's savannah sparrow in California, 2006. Contract Final Report (S0150019) to California Department of Fish and Game, Rare and Endangered Species Preservation Program.

List of Birds Observed during Belding's Savannah Sparrow Surveys at Ballona Wetlands. 2008	
Family Pelecanidae	**Pelicans**
Pelecanus occidentalis	Brown Pelican
Family Phalacrocoracidae	**Cormorants**
Phalacrocorax auritus	Double-crested Cormorant
Family Ardeidae	**Herons and Egrets**
Ardea herodias	Great Blue Heron
Casmerodius albus	Great Egret
Egretta thula	Snowy Egret
Bubulcus ibis	Cattle Egret
Butorides virescens	Green Heron[a]
Nycticorax nycticorax	Black-crowned Night-Heron
Family Anatidae	**Ducks and Geese**
Anas platyrhynchos	Mallard
Anas strepera	Gadwall
Family Accipitridae	**Hawks**
Pandion haliaetus	Osprey
Elanus leucurus	White-tailed Kite
Buteo jamaicensis	Red-tailed Hawk
Falco sparverius	American Kestrel
Family Charadriidae	**Plovers**
Pluvialis squatarola	Black-bellied Plover
Charadrius vociferus	Killdeer
Charadrius semipalmatus	Semipalmated Plover[a]
Family Scolopacidae	**Sandpipers**
Tringa melanoleuca	Greater Yellowlegs[a]
Catoptrophorus semipalmatus	Willet
Numenius phaeopus	Whimbrel
Numenius americanus	Long-billed Curlew[a]
Limosa fedoa	Marbled Godwit
Calidris mauri	Western Sandpiper[a]
Family Laridae	**Gulls and Terns**
Larus philadelphia	Bonaparte's Gull[a]
Larus delawarensis	Ring-billed Gull
Larus occidentalis	Western Gull
Sterna caspia	Caspian Tern
Sterna forsteri	Forster's Tern
Sterna antillarum	Least Tern
Family Columbidae	**Pigeons and Doves**
Columba livia	Rock Dove
Zenaida macroura	Mourning Dove
Family Apodidae	**Swifts**
Aeronautes saxatalis	White-throated Swift

List of Birds Observed during Belding's Savannah Sparrow Surveys at Ballona Wetlands. 2008 continued	
Family Trocholidae	**Hummingbirds**
Calypte anna	Anna's Hummingbird
Selasphorus sasin	Allen's Hummingbird
Family Alcedinidae	**Kingfishers**
Ceryle alcyon	Belted Kingfisher [a]
Family Tyrannidae	**Tyrant Flycatchers**
Sayornis nigricans	Black Phoebe
Tyrannus verticalis	Western Kingbird
Family Hirundinidae	**Swallows**
Tachycineta bicolor	Tree Swallow
Stelgidopteryx serripennis	Northern Rough-winged Swallow
Petrochelidon pyrrhonota	Cliff Swallow
Petrochelidon rustica	Barn Swallow
Family Corvidae	**Jays, Crows**
Corvus brachyrhynchos	American Crow
Corvux corax	Common Raven
Family Aegithalidae	**Bushtits**
Psaltriparus minimus	Bushtit
Family Mimidae	**Thrashers**
Mimus polyglottos	Northern Mockingbird
Family Sturnidae	**Starlings**
Sturnus vulgaris	European Starling
Family Parulidae	**Wood Warblers**
Geothlypis trichas	Common Yellowthroat
Dendroica coronata	Yellow-rumped Warbler [a]
Family Emberizidae	**Sparrows and Towhees**
Pipilo crissalis	California Towhee
Passerculus sandwichensis	Savannah Sparrow
Melospiza melodia	Song Sparrow
Family Cardinalidae	**Cardinals, Grosbeaks and Buntings**
Pheucticus melanocephalus	Black-headed Grosbeak [a]
Guiraca caerulea	Blue Grosbeak [a]
Passerina amoena	Lazuli Bunting [a]
Family Icteridae	**Meadowlarks, Blackbirds, Orioles**
Molothrus ater	Brown-headed Cowbird
Sturnella neglecta	Western Meadowlark
Zonotrichia leucophrys	White-crowned Sparrow
Family Fringilidae	**Finches**
Carpodacus mexicanus	House Finch
Carduelis psaltria	Lesser Goldfinch
Family Passeridae	**Old World Sparrows**
Passer domesticus	House Sparrow

[a] not recorded during 2007 surveys