



Photo credit: E.Tuttle

INTRODUCTION

Ballona Wetlands Ecological Reserve, Los Angeles, California
Santa Monica Bay Restoration Commission

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INTRODUCTION

“Mankind's failure to use ecological principles to minimize negative impacts of human activities is arguably the most important failure of the twentieth century” (Karr 1987).

The Santa Monica Bay Restoration Commission (SMBRC) is a collaboration of federal, state and local entities whose mission is to restore and enhance the Santa Monica Bay (Bay). Through actions and partnerships, the SMBRC protects and improves the health of the 266-square mile Bay and its 400-square mile watershed, located in the second most populous region in the United States.

The SMBRC is a National Estuary Program (NEP) of the United States Environmental Protection Agency (USEPA). The NEP was established by Congress in 1987 to improve the quality of estuaries of national importance, with a focus on habitat restoration and protection as well as water quality. Stakeholders of the SMBRC developed the Bay Restoration Plan (BRP), which includes 14 goals and 67 objectives, for protecting and restoring the Bay. Scientific monitoring of the Bay's natural resources and restoration of impaired Bay habitats are important goals of the BRP.

In 2009, the SMBRC partnered with the California Department of Fish and Game (CDFG) and the California State Coastal Conservancy (SCC) to assess the ecological condition of the Ballona Wetlands Ecological Reserve (BWER). The Baseline Assessment Program (BAP) was developed to comprehensively survey the biological, chemical, and physical characteristics needed to inform the State's restoration planning process at the BWER, as well as to develop baseline information and data to assist long-term and regional monitoring programs.

The second annual BAP report is a supplement to the comprehensive first year report. It presents data collected during the second year of the BAP and compares results across both years when possible.

Overview and Site History

The Ballona Wetlands is one of approximately 40 coastal wetlands along the 1,045 miles of the Southern California coast between Point Conception and Mexico. The original Ballona Wetlands ecosystem was approximately 2000 acres and included a variety of habitats, dominated by over 1,200 acres of vegetated wetland in 1876 (Grossinger et al. 2010). Since then, the site has been impacted by agriculture, roads, railways, a marina, industry, housing, and the channelization of Ballona Creek. The remaining 600-acre parcel was purchased by the State in 2004 and designated an Ecological Reserve. Wetlands at the site have been reduced to approximately 67 acres of muted intertidal salt marsh and mudflat, with the remaining area largely converted to seasonal wetland or upland habitats. The BWER is now the largest opportunity to restore critical coastal wetlands in the Santa Monica Bay and Los Angeles County.

The Freshwater Marsh is a 24-acre freshwater treatment wetland bordering the BWER, which treats stormwater from neighboring roads and communities. The Freshwater Marsh is monitored (Read and Strecker 2009, Read and Strecker 2010) and maintained separately from the rest of the BWER and is not included in the BAP.

Goals of the Baseline Assessment Program

Previous scientific surveys of the BWER focused largely on individual aspects of the ecosystem or on limited areas. The BAP provides a comprehensive baseline biological assessment designed to determine the biotic integrity of the ecosystem. Biotic integrity can be defined as “the capability of supporting and maintaining a balanced, integrative, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of natural habitat of the region” (Karr and Dudley 1981).

The BAP is a two-year program. This report presents the results of the second year of the baseline data collection. It includes protocol development with scientific review, coordination with regional restoration programs, implementation of the assessment protocols, data analysis and reporting, and external scientific review. The goals of the BAP include:

- (1) Provide a measure of pre-restoration baseline conditions at the BWER;
- (2) Compare the results from year one and year two;
- (3) Increase comprehensive knowledge of the health and functioning of the site in an urban environment;
- (4) Assess ecological processes, cross-habitat comparisons, and species interactions;
- (5) Fill data gaps at the Ballona Wetlands and develop protocols for addressing data gaps at other wetland projects;
- (6) Inform adaptive management and long-term restoration plans;
- (7) Develop a framework for scientific, regional wetland monitoring protocols for southern California;
- (8) Inform both a site-specific and regional long-term monitoring program;
- (9) Establish an informed, scientifically valid basis for improved watershed management to protect, prevent and reduce pollution to the BWER;
- (10) Contribute chemical and ecological data from the BWER to local, regional, and national databases.

For a detailed description of the protocol development of the Baseline Assessment Program, refer to the Introduction Chapter of the first year Baseline Report (Johnston et al. 2011).

Scientific Review

Several stages of the BAP underwent external scientific review (Figure i.1). The SMBRC received input from the WRP Science Advisory Panel, SMBRC Technical Advisory Committee, and many research scientists conducting similar studies at other wetlands in southern California. Through this process, the SMBRC proposed protocols for feedback and worked with researchers on detailed protocols. Development of the protocols was an iterative process to achieve the desired goals while working within the unique constraints and conditions of the BWER. Protocols have been adapted in the field when necessary, with direct consultation from experts and after the implementation of the first baseline year. Additionally, individual chapters of the baseline report underwent external expert review (see list of reviewers).

Report Structure

This report is divided into twelve chapters, one for each of the 11 monitoring components (i.e. water quality, marine sediments, terrestrial soils, vegetation, ichthyofauna, herpetofauna, mammals, avifauna, benthic invertebrates, terrestrial invertebrates, and physical characteristics), and one for the introduction. Each chapter includes the goals of the assessment program for that component of the study, revisions or new methods used in the second year BAP surveys, results, and preliminary analyses of the results from both baseline years. Each chapter also includes an outline of sampling planned for the third monitoring year as the transition is made to long-term monitoring.

Detailed methods are provided in the Baseline Assessment Program: 2009-2010 Report, including locations and parameters targeted. This Report is available for free download (www.ballonarestoration.org). Results are summarized within the text and detailed data are available in the appendices. Interpretations and inferences of the potential relationships of these data will be provided in future publications through in-depth analyses.

SITE DESCRIPTION

The site description for the BWER is modified from the Draft Existing Conditions Report compiled by Phillip Williams and Associates (PWA) in 2006. For additional descriptive details, reference PWA 2006. In previous studies, the BWER has been divided into three areas designated as Areas A, B, and C (Figure i.2). This nomenclature will be continued throughout this report to facilitate comparison to previous reports.

Area A is the approximately 139 acre portion of the BWER that lies north of Ballona Creek, west of Lincoln Boulevard, and south of Fiji Way (Figure i.2). Fill was placed on Area A during the excavations of Ballona Creek and Marina del Rey which resulted in elevations ranging between approximately nine and 17 feet above mean sea level (MSL). Development of Area A is limited to a parking area along the western boundary, a drainage channel (Fiji Ditch) along the northern boundary, and four monitoring well sites maintained by the Gas Company in the western end.

Area B is the approximately 338 acre portion of the BWER that lies south of Ballona Creek and west of Lincoln Boulevard (Figure i.3). Area B extends south to Cabora Drive and contains a utility access road near the base of the Playa Del Rey bluffs. To the west, Area B extends through the dunes to Playa Del Rey. Area B elevations generally range from approximately two to five feet MSL, extending up to 50 feet MSL at the Del Rey bluffs. Culver Boulevard and Jefferson Boulevard are major traffic thoroughfares that traverse Area B. Additionally, the Gas Company maintains an access road that connects its facility in southern Area B to Jefferson Boulevard. Area B contains the largest area of remnant unfilled wetlands with abandoned agricultural lands to the southwest, and the Freshwater Marsh to the northeast. The Gas Company maintains one active oil well in Area B.

Area C is the approximately 66 acre portion of the BWER that is located north of Ballona Creek and east of Lincoln Boulevard (Figure i.1). The 90 Freeway forms the northeastern border of Area C, and Culver Boulevard bisects Area C in an east-west direction. Area C contains fill from the construction of the Ballona Creek flood channel, developments such as Marina del Rey, and the 90 Freeway. Elevations range from approximately 4.5 feet to 25 feet MSL. Area C contains Little League baseball fields.

All three Areas are surrounded by dense urban development.



Figure i.1. Aerial of the BWER and Marina del Rey (photo: SMBRC 2007). Note: the Freshwater Marsh is not included in the BAP surveys.

Personnel Summary Information

Monitoring was conducted by expert regional scientists, staff scientists, volunteer experts, additional in-house staff, contracted employees, and, when appropriate, student interns and volunteers.

Over 750 staff and expert scientist field hours were logged over the course of 150 field days in the second baseline year, not including laboratory and data analyses. Professional participants included: Karina Johnston, Sean Bergquist, Dan Cooper, Dr. Shelley Luce, Dr. John Dorsey, Dr. Sean Anderson, Dr. José Saez, Dr. Guangyu Wang, Jack Goldfarb, Andrew Keller, Ivan Medel, Elena Del Giudice-Tuttle, and Charlie Piechowski. Additional scientific reviewers and technical advisory committees participated in the development and review of the program and reporting materials (see document cover pages). 2,356 internship and volunteer hours were completed during the second baseline year.

For more information and electronic copies of the full report, visit www.ballonarestoration.org.

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