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## The Watershed Institute

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*Central  
Coast  
Watershed  
Studies*

**CCoWS**

**National Wetlands  
Inventory (NWI):**

**Wetland and deepwater  
habitat mapping,  
digitizing, and analysis in  
California's Central Coast:**

**Methods and Progress to  
Date**

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## 1. Project Overview

This report provides a record of wetland mapping conducted by the Central Coast Watershed Studies (CCoWS) in the Central Coast region of California, as part of the National Wetland Inventory Program. The National Wetland Inventory is a program implemented and mandated by the United States Fish and Wildlife Service (USFWS) for the purpose of providing information on the character, extent and status of the nation's wetlands. The wetland data are made accessible through an interactive web-based medium (Wetlands Online Mapper) where seamless data can be viewed and downloaded for use by the general public, federal, state, and local agencies, academia, and private corporations<sup>1</sup>.

## 2. Standard Methodology

Mapping under the National Wetland Inventory Program is conducted in a heads-up mode using geographic information systems (GIS). Wetland features are classified using the USFWS's Cowardin classification system (Cowardin et al. 1979)<sup>2</sup>. The wetlands are delineated and digitized on current, high-resolution (1 meter), natural color imagery (NAIP 2005) (Fig 1). In addition, a stereo-scope and color inferred stereo photo pairs (2002-2003) are used for collateral viewing and assistance with detecting wetland features (Fig 2). Other collateral data resources include black and white digital ortho-photo quads (1990's), digital USGS topographic maps, USGS stream flow data, county soil surveys, and literature relative to the project area.

A limited number of field trips are conducted during the projects for general reconnaissance and ground verification of wetland features. Field trips are typically conducted with USFWS staff although some smaller field visits are not. The field trips consist of a rapid inventory by car of as many wetland features as possible in the project area. A great majority of the project area is in private ownership and therefore large areas are not accessible. Most of the accessible or visible wetlands visited are located along public roads or in parklands that are easily accessible on foot. At each feature we record a GPS point, take photos, note or measure soil characteristics (when applicable) and estimate the wetland's classification. These data are then used to increase the accuracy of on-screen delineations and classifications.

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<sup>1</sup> For more information visit: <http://www.fws.gov/nwi/>

<sup>2</sup> Cowardin, L.M., V. Carter, F.C. Golet, and E.T. Laroe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. United States Department of the Interior, Fish and Wildlife Service, FWS/PBS 79/81, Washington, D.C.

### 3. Geographic Scope

The Watershed Institute has completed two projects for USFWS since October 2005 and is nearing commencement on a third mapping project. Figure 3 shows past and future mapping areas and quad names. In general, the project area(s) consist of a set of USGS quadrangles (quads) which are selected based on priority and proximity to other completed areas. Priority is determined by USFWS and other state and local resource managers based on the presence of sensitive wetland features, completeness of coverage, and both past and projected development pressures on wetland features.

The majority of the mapping has been conducted in the Salinas River Watershed. Other watersheds include Elkhorn Slough, Gabilan Watershed, upstream portions of the Carmel River Watershed, upper reaches of several coastal streams of the Big Sur area, small portions of the San Benito River Watershed near Hollister, and the upper sections of the Morro Bay, San Luis Obispo Creek, and Arroyo Grande Creek Watersheds. Notable areas completed to date include Elkhorn Slough National Estuarine Research Reserve, much of the Pinnacles National Monument, the Salinas River corridor, and much of the Arroyo Seco River Watershed.



Figure 1. An example of final wetland delineations over 2005 natural color imagery (NAIP, 2005).



Figure 2. Stereo-scope and light table set used for viewing color inferred stereo photo pairs.

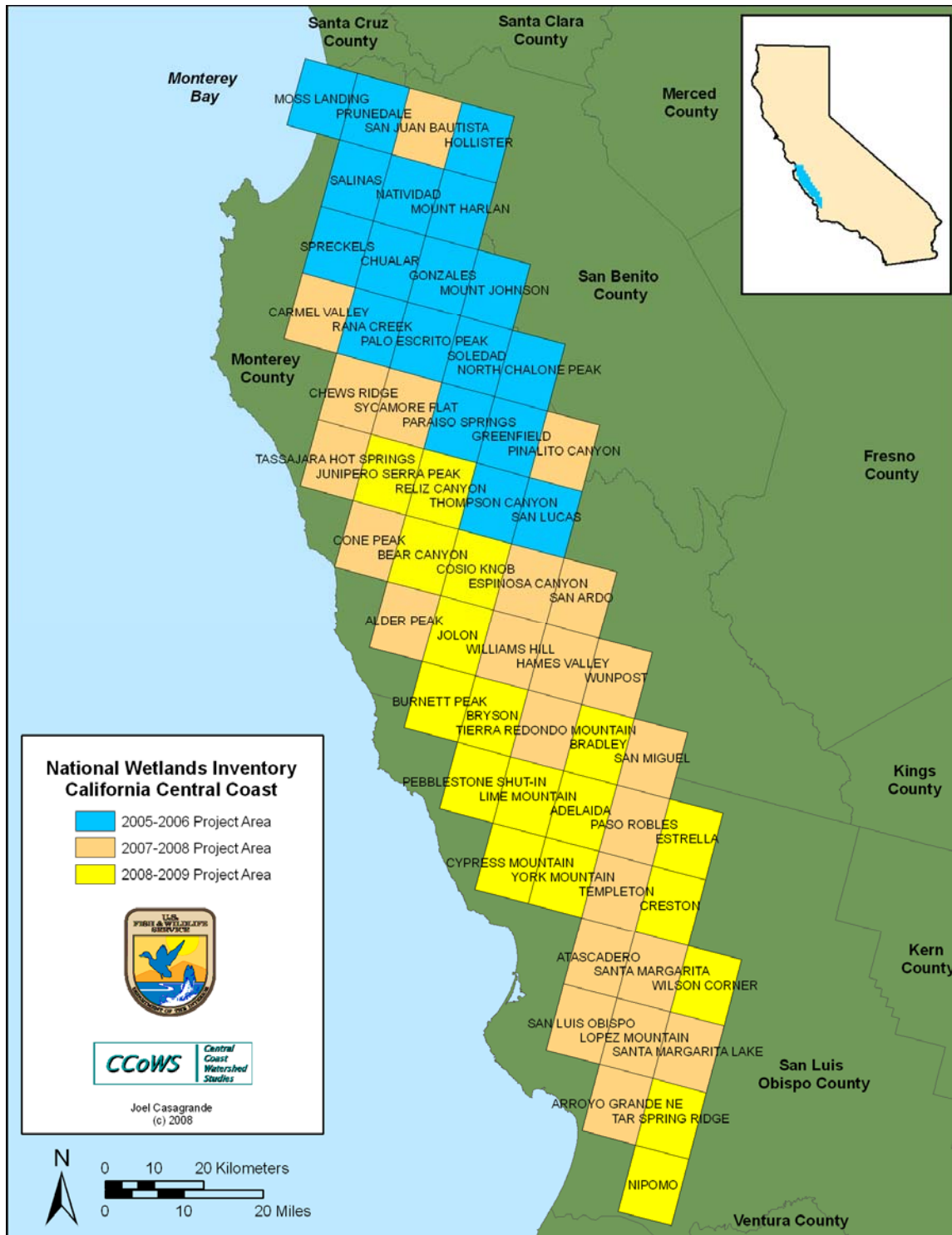


Figure 3. Project areas for the 2005-06, 2007-08, and 2008-09 wetland mapping efforts by the Watershed Institute, CSUMB.