Historical Ecology of Wetlands in Vicinity of Elkhorn Slough

Andrea Woolfolk

Elkhorn Slough National Estuarine Research Reserve
Objectives

- Share a work-in-progress – map of historical wetlands of north Monterey County
- Share historical data used to create map
- Provide web access to historical maps
Historical Ecology. What is it?
Using reliable, firsthand accounts can help us understand past and current conditions

Provides insight into forgotten habitat types

Identifies landscape-level linkages and functions

Can help us understand the potential to protect and/or restore land and water we manage

**NOT** a template from which to re-create the past

(adapted from San Francisco Estuary Institute)
Historical wetlands, North Monterey County

A draft map
Connected channels

Extensive wetlands
Primary data

A sampler of some of the sources for the map
Interconnected channels
Early 1800s – Mexican Rancho maps

- Elkhorn Slough
- Moro Cojo
- San Miguel Canyon
- Tembladero
- River
- Salt
Mid 1800s – American Surveys

Elkhorn Slough

Monterey Bay

Salinas River

1854 USCS

North
INITIATORY SURVEY
OF
BOLSA DEL POTRELLO
or
MORO COJO

LA SAGRADA FAMILY

Confirmed by the Board of Land Commissioners
To
John B.R. Cooper

Containing 6524 28

Surveyed by Nicholas
Dec. 31st

Korte
A Boat Trip: Tembladero, Moro Cojo, and Castroville Sloughs

1870
“The Tembladera has its rise in, and is chiefly fed by two large and deep lakes, one lying about two miles east of Castroville, and the other about the same distance southeast. About a month ago...we in company with Mr. Juan B. Castro, Mr. Antonio Pomber and Mr. Anderson, made the voyage down one channel and up the other. About 1 o’clock pm we got into a skiff on the Tembladera, near Hick’s Mill, and proceeded leisurely down the stream, three miles to the Salinas...”
Tembladero Slough, 40-50’ wide, 3-7’ deep, clear of tules

Moro Cojo Slough, 250-350’ wide, 6-9’ deep, alive with waterfowl

Castroville Slough, 75-100’ wide, 8-9’ deep

Salinas River, 250-350’ wide, low tide, sand bars

End 150’ ft from town Marsh, tide range 3-4’

20’ wide, 3-4’ deep, tules on side
Castroville Channel today – 5-20 feet wide for most of its length
Interconnected channels mapped repeatedly.
What changed?

Water control structures
Bulkhead installed to prevent tides in Moro Cojo Slough (erroneously called “Elkhorn” below)

Santa Cruz Sentinel, May 11, 1886

—The bulkhead at Moss Landing is finished. The structure is eighty feet at the base, and fifty feet at the top, and about six hundred feet in length. The flood gates are arranged so that at low tide the fresh water will open the gates, letting the water into the ocean, but the tide water will close them, permitting no water to pass up Elk Horn slough.
Extensive wetlands – estuarine marshes and freshwater lakes, sloughs, wetlands
October 7, 1769. Portola Expedition heads north from Salinas River
rauches. The chief peculiarity in the location of Salinas City is that it is in the midst of natural lakes, some of them of considerable depth, and fed by springs. Entering Salinas on the Santa Rita road the traveler passes between two of these lakes, one of great depth. Entering by way of the Castroville road, we pass several other lakes. On the south of the town, and some miles distant, there are several similar lakes. In fact, there is a chain of lakes of varying sizes, reaching from Salinas City to Castroville. Some of these lakes are deep and permanent. Others are shallow, and surrounded with wide belts of marsh and tule.

Now, the future of these lakes is a question of much importance. Can they be drained, so as to utilize the marvelously rich soil and age-old deposits of vegetable matter, now worse than idle? The natural outlet is the Tembladera Slough, a deep and wide channel, which could easily be made navigable for small vessels, and doubtless the work of deepening the short channels between the lakes would not be anything enormous. But the fundamental question, so
During extremely high tide the soil is occasionally overflowed. Saline deposits are present. Salt grasses, pickleweed and other water loving salt-resistant grasses or sedges.
What changed?

Wetland reclamation
“The land in proximity to the sea is often rendered unfit for cultivation by the effects of brackish tide water. In a few cases existing slough channels afford an outlet for drainage of limited areas of this land. Much of the land of the Monterey County farm and vicinity has been drained into such sloughs.” - 1901 Soil Survey of the Lower Salinas Valley, California.
Twentieth Century maps – created for reclamation ditch
Maps and aerals you can use at home

- USGS maps from 1914 and 1917
- Lou Hare’s lake maps from early 1900s
- Aerial photos from 1930s - 1980

Files available at
elkhornslough.org/habitat-restoration/historical-ecology-tools.htm
Elkhorn Slough Restoration: Historical Ecology Tools

Digging into the Past - Historical Ecology Tools You Can Use at Home

On January 25, 2014 we talked about the history of our local area and ways we can try to apply that knowledge to land we own and manage. Here are some resources you can use at home.

For more information about using these KMZ files below download this ReadMe file.

Historical Maps

1. United State Geological Survey topographical maps, early 1900s.
   - Just want to view or print these maps as pdf files? Visit http://nationalmap.gov/historical/.
   - Click on "Historical Topographic Map Collection search" and search for the map you want.
   - To see maps for the Elkhorn Slough area, search for "Capitola" and "San Juan Bautista."
2. Want to view historical USGS topos for the Elkhorn Slough region in Google Earth? Elkhorn Slough staff have converted portions of the 1914 and 1917 images into kmz files. Download the files below, and then open in Google Earth.
   - 1914usgsWest.kmz (6.5 MB)
   - 1917usgsEast.kmz (13 MB)
   - Interpreting the maps. Some of the historical USGS maps include legends, others do not.
Elkhorn Slough Restoration: Historical Ecology Tools

Digging into the Past – Historical Ecology Tools You Can Use at Home

On January 25, 2014 we talked about the history of our local area and ways we can try to apply that knowledge to land we own and manage. Here are some resources you can use at home.

For more information about using these KMZ files below download this ReadMe file.

Historical Maps

1. United States Geologic maps, early 1900s.
   - Open Link in New Tab
   - Open Link in New Window
   - Open Link in New Private Window
   - Bookmark This Link
   - Save Link As...
   - Copy Link Location
   - Inspect Element (Q)
   - Convert Link Target to Adobe PDF
   - Append Link Target to Existing PDF

   Interpreting the maps. Some of the historical USGS maps include legends, others do not.

   1914usgsmap.png (14 MB)
   1917usgsEastKmz (13 MB)
Elkhorn Slough.org
The official website of the Elkhorn Slough Foundation and Elkhorn Slough National Estuarine Research Reserve

Enter name of file to save to...

Organize New folder

Favorites

Desktop

SkyDrive

Dropbox

Google Drive

Recent places

Homegroup

amwoolfolk

This PC

File name: 1917usgsEast.kmz

Save as type: (*.kmz)

Save Cancel

Click on "Historical Topographic Map Collection search" and search for the map you want.

To see maps for the Elkhorn Slough area, search for "Capitola" and "San Juan Bautista."

Want to view historical USGS topos for the Elkhorn Slough region in Google Earth? Elkhorn Slough staff have converted portions of the 1914 and 1917 images into kmz files. Download the files below, and then open in Google Earth.

- 1914usgsWest.kmz (6.5 MB)
- 1917usgsEast.kmz (13 MB)

Interpreting the maps. Some of the historical USGS maps include legends, others do not.
Connected channels

Extensive wetlands

elkhornslough.org/habitat-restoration/historical-ecology-tools.htm

Andrea Woolfolk: amwoolfolk@gmail.com