



Cabrillo Marine Aquarium

Virginia Reid Moore Marine Research Library

Library Pathfinder: Wetlands

Wetlands are among the most productive ecosystems in the world, comparable to rain forests and coral reefs. They include areas where water saturation is the main factor determining the nature of soil development and the types of animals and plants living in that particular habitat. Wetland components include water, soil, vegetation and wildlife. Examples include marshes, bogs and swamps.

Wetlands are home to a variety of plant and animal species, some endangered, that have evolved to live in the wetland's unique conditions. This habitat acts as a filter, removing pollutants, including metals from runoff. Wetlands also serve as reservoirs; they facilitate flood and erosion control by absorbing excess water.

Along the U. S. coasts, salt marshes are the most prevalent types of tidal marshes and are characterized by salt tolerant plants such as saltgrass, pickleweed and cordgrass. Salt marshes have one of the highest rates of primary productivity associated with wetland ecosystems because of the inflow of nutrients and organics from surface and tidal water.

In the mid to late 19th century, the U.S. Coastal Survey created highly detailed topographic maps of the U. S. east and west coastlines. These maps are known as 'T-sheets'. They indicate which types of wetlands exist, including along the California coastline. T-sheets are valuable tools for coastal zone planning.

The U. S. Coast Survey of California has a website which includes a "T-sheet Interactive Map of Southern California". The online interactive map contains Southern California T-sheets created between 1850 through 1889. Using the webpage's navigation guides after selecting "San Pedro Bay", we can discover that San Pedro Bay was identified as a wetland on T-sheet T892, created in 1859. Cabrillo Marine Aquarium, Point Fermin Park and the White Point Nature Education Center and Reserve are currently located in that specified wetland!

BOOKS

Books for Adults

California Naturalist Handbook/Greg DeNevers. Univ CA Press. QH105 .C2 D43 2013.

Southern California's Coastal Wetlands – Pamphlet. Robin Madrid and Michelle Clemente. Back Bay Science Center and Sea Grant. QH102 .C2 .M33 S4347 2011.

Tidal Wetlands Primer/Ralph W. Tiner. Univ. of Mass. Press. QH87.3 .T57 2013.

Triangulating Archaeological Landscapes: The US Coast Survey in California, 1850-1895/R. Scott Byram. Regents of the Univ. of California. CC21 .C32 v.65 2013

Wetland Ecology: Principles and Conservation, 2nd ed./Paul Keddy. Cambridge Univ. Press. QH541.5 .M33 K44 2010.

Wetland Ecosystems/William J. Mitsch. Wiley & Sons. QH541.5 .M3 W4645 2009.

Wetland Environments: A Global Perspective/James S. Aber. Wiley-Blackwell. QH87.3 A24 2012.

Wetland Habitats of North America: Ecology and Conservation Concerns/Darold P. Batzer and Andrew H. Baldwin. Univ. of California Press. QH102 .W48 2012.

Wetlands, 2nd. Ed./Mitsch, William J. QH104 .M57 1993

Featured Websites

Environmental Protection Agency – Wetlands
www.epa.gov/type/wetlands

National Geographic – Education – Geo-Literacy
http://education.nationalgeographic.com/education/geoliteracy/?ar_a=1

National Wetlands Research Center – The Fragile Fringe: A Guide for Teaching about Coastal Wetlands
www.nwrc.usgs.gov/fringe/ff_index.html

Southern California Wetlands Recovery Project
www.scwrp.org

Southern California Coastal Water Research Project
www.sccwrp.org

Southern California Wetlands Mapping Project
www.socalwetlands.com/website/main.htm

State of California Coastal Conservancy
www.scc.ca.gov

U.S. Coast Survey Maps of California (Topographic sheets of the California Coast)
www.caltsheets.org

U.S. Fish and Wildlife Service – National Wetland Inventory
www.fws.gov/wetlands

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Marine Research Library
@ the Cabrillo Marine Aquarium

Library Pathfinder

**Designing Solutions to Restore Wetlands
In a Time of Change**

Journal Articles

Benthic food-web succession in a developing salt marsh. Nordstrom, M., C. Currin, T. Talley, **C. Whitcraft** and L. Levin. 2014. *Marine Ecology Progress Series* 500: 43-U69.

Connectivity and movements of juvenile predatory fishes between discrete restored estuaries in southern California. Freedman, R., **C. Whitcraft** and C. Lowe. 2015. *Marine Ecology Progress Series* 520: 191-201.

Diversity of Desulfobacteriaceae and Overall Activity of Sulfate-Reducing Microorganisms in and Around a Salt pan in a Southern California Coastal Wetland. Jackson, K., **C. Whitcraft** and J. Dillon. 2014. *Wetlands* 34: 969-977.

Evaluating Monoculture Versus Polyculture Planting Regimes in a Newly-Restored Southern California Salt Marsh. Blair, E., B. Allen and **C. Whitcraft**. 2013. *Bulletin, Southern California Academy of Sciences* 112: 161-175.

Food web heterogeneity and succession in created saltmarshes. Nordstrom, M., A. Demopoulos, **C. Whitcraft**, et al., 2015. *The Journal of Applied Ecology* 52: 1343.

Invasion of tamarisk (*Tamarix* spp.) in a southern California salt marsh. **Whitcraft, C.** et al., 2007. *Biological Invasions* 9: 875-879.

Lignocellulose-responsive bacteria in a southern California salt marsh identified by stable isotope probing. Darjany, L., **C. Whitcraft** and J. Dillon. 2014. *Frontiers in Microbiology* 5: 263-271.

Regulation of Benthic Algal and Animal Communities by Salt Marsh Plants. **Whitcraft, C.** and L. Levin. 2007. *Ecology* 88: 904-917.

Spatial Hedonic Valuation of a Multiuse Urban Wetland in Southern California. Frey, E., M. Palin, P. Walsh and **C. Whitcraft**. 2013. *Agricultural and Resource Economics Review* 42: 387.

Uncovering the Ocean's Past. Lotze, H., J. Erlandson, M. Hardt, R. Norris, K. Roy, T. Smith and **C. Whitcraft**. 2011. *Shifting Baselines*: 137-161.

Using Movements and Habitat Utilization as a Functional Metric of Restoration for Estuarine Juvenile Fish Habitat. Freedman, R., C. Espasandin, E. Fox, **C. Whitcraft**, B. Allen, D. Witting and C. Lowe. 2016. *Marine and Coastal Fisheries* 8: 361-373.

Utilization of Invasive Tamarisk by Salt Marsh Consumers. **Whitcraft, C.** et al. 2008. *Oecologia* 158: 259-272.

BOOKS

Coastal Wetlands of the World / David B. Scott. Cambridge Univ. Press, *QH541.5 .M3 S36 2009*

Handbook for Restoring Tidal Wetlands / Joy Zedler. CRC Marine Science. *QH75 .H363 2000*

Tidal Wetlands Primer / Ralph W. Tiner. Univ. of Mass. Press. *QH87.3 .T57 2013.*

Wetland Ecology: Principles and Conservation, 2nd ed. / Paul Keddy. Cambridge Univ. Press. *QH541.5 .M33 K44 2010.*

Wetland Ecosystems / William J. Mitsch. Wiley & Sons. *QH541.5 .M3 W4645 2009.*

Wetland Environments: A Global Perspective. James S. Aber. Wiley-Blackwell, *QH87.3 A24 2012.*

Wetlands Handbook / Maltby, Edward. Wiley-Blackwell. *QH87.3 .W479 2009*

Websites

California State University, Christine Whitcraft - <https://fresca.calstate.edu/faculty/102>

EPA – Wetlands Protection and Restoration - www.epa.gov/wetlands

Southern California Wetlands Recovery Project – www.scwrp.org

Whitcraft Wetlands Lab - <https://web.csulb.edu/~cwhitcra/>

Cabrillo Marine Aquarium is a facility of the City of Los Angeles, Recreation and Parks Department with support from FRIENDS of CMA.

DISCOVERY LECTURE SERIES

Presented by AltaSea & Cabrillo Marine Aquarium



Here are some great resources that will teach you more about wetlands and give your students fun things to do!

http://water.epa.gov/type/wetlands/outreach/education_index.cfm

http://www.nwrc.usgs.gov/fringe/ff_index.html

<http://education.audubon.org/audubon-adventures>

<http://erc.cals.wisc.edu/gwah/>

<http://www.losangelesaudubon.org/index.php/education-mainmenu-194/>

Data and General Information about Wetlands

<http://www.fws.gov/wetlands/>

<http://sccwrp.org/>

<http://www.sfei.org/projects/SoCalTSheets>

<http://www.socalwetlands.com/website/main.htm>

Resources for Children Interested in Mapping

http://www.esri.com/industries/k-12/education/parent_info

http://education.nationalgeographic.com/education/geoliteracy/?ar_a=1

http://education.nationalgeographic.com/education/multimedia/interactive/maps-tools-gis-action/kd/?ar_a=3

General Information about Geographical Information Systems

<http://www.esri.com/what-is-gis>

<http://www.gislounge.com/what-is-gis/>

<http://www.epa.gov/reg3esd1/data/gis.htm>

<http://egis3.lacounty.gov/eGIS/tag/solar-map/>