

**COSEE West Informal Science Education Center Partnership
How do we Address Harmful Algal Blooms?**

**Resources
1/31/2011**

Caron Lab @ USC

www.usc.edu/dept/LAS/biosci/Caron_lab/

Center for Integrated Networked Aquatic Platforms

http://cinaps.usc.edu/photo_video.html

Southern California Coastal Observing Systems: Habs data

<http://www.sccoos.org/data/habs/index.php>

Previous COSEE Harmful Algal Bloom Talks 2006

http://www.coexploration.org/cosee_west/

Animations

http://www.usc.edu/org/cosee-west/ocean_tube.html

NOAA Coastal Services Center HAB Forecasting

<http://www.csc.noaa.gov/crs/habf/>

NOAA Harmful Algal Blooms

<http://oceanservice.noaa.gov/hazards/hab/>

NOAA phytoplankton monitoring network

<http://www.chbr.noaa.gov/pmn/>

NOAA Coastal Services HABS forecasting

<http://www.csc.noaa.gov/crs/habf/>

NOAA Center for Sponsored Coastal Ocean Research - HABS

<http://www.cop.noaa.gov/stressors/extremeevents/hab/default.aspx>

Woods Hole Oceanographic Institute Harmful Algae Page

<http://www.whoi.edu/redtide/>

Northwest Fisheries Science Center HABS Program

<http://www.nwfsc.noaa.gov/hab/>

Toxic and Harmful Algal Blooms Educational Activities – Bigelow Labs

<http://www.bigelow.org/edhab/>

Economic Impact of HABS

http://www.cop.noaa.gov/stressors/extremeevents/hab/current/HAB_Econ.aspx

NOVA , Ocean Animal Emergency

<http://video.pbs.org/video/1051884361/>

Maryland Department of Natural Resources: Harmful Algal Blooms in Maryland. Questions and Answers.

<http://www.dnr.state.md.us/bay/hab/index.html>

Scientific Assessment of Marine *Harmful Algal Blooms*

www.whitehouse.gov/sites/default/files/microsites/.../jsost-assess_12-08.pdf

Pacific Northwest ECOHAB

<http://www.ecohabpnw.org/>

Northwest Fisheries Science Center: Marine Biotoxins and Harmful Algal Blooms

<http://www.nwfsc.noaa.gov/hab/>

National Council for Science and the Environment: Congressional Research Service (CRS) Report for Congress: Pfiesteria and Related Harmful Blooms:

<http://cnie.org/NLE/CRSreports/Marine/mar-23a.cfm>

CA Department of Health Services – Cyanobacteria (freshwater) Blooms

<http://www.cdph.ca.gov/HEALTHINFO/ENVIRONHEALTH/WATER/Pages/Bluegreenalgae.aspx>

Amnesic Shellfish Poisoning: Harmful Algae website, Woods Hole Oceanographic Institution

(WHOI) <http://www.whoi.edu/redtide/page.do?pid=9257>

ECOHAB Pacific Northwest: A multi-disciplinary project to study the physiology, toxicology, ecology and oceanography of toxic *Pseudo-nitzschia* species off the Pacific Northwest coast

<http://www.ecohabpnw.org/>

Domoic Acid Poisoning: Northwest Fisheries Science Center, NOAA, Seattle, WA

http://www.nwfsc.noaa.gov/hab/habs_toxins/marine_biotoxins/da/index.html

Domoic Acid - A Major Concern to Washington State's Shellfish Lovers: Washington Dept. of Fish and Wildlife <http://wdfw.wa.gov/fishing/shellfish/razorclams/>

Domoic Acid (ASP) in Shellfish: Washington State Dept. of Health

<http://www.doh.wa.gov/ehp/sf/Pubs/DomoicAcid.htm>

Domoic acid and sick mammals: Channel Islands National Marine Sanctuary, Santa Barbara, CA <http://channelislands.noaa.gov/focus/dom.html>

Domoic Acid Information and History: Channel Islands Marine and Wildlife Institute, Santa Barbara, CA http://www.cimwi.org/stranded_domoic.html

Domoic acid and California sea lion deaths: Chris Scholin; Monterey Bay Aquarium Research Institute, Moss Landing, CA

http://www.mbari.org/news/news_releases/2000/jan06_scholin.html

Environmental Sample Processor (ESP): Instrumentation for sampling *Pseudo-nitzschia* and domoic acid; Monterey Bay Aquarium Research Institute, Moss Landing, CA
<http://www.mbari.org/ESP/>

Tracking a toxic *Pseudo-nitzschia australis* bloom: Central and Northern California Ocean Observing System (CeNCOOS) Scientists Detect, Chase and Predict Phytoplankton Blooms in Monterey Bay - October 4–29, 2010
http://www.cencoos.org/sections/news/MontBay_HAB_experiment_2010.shtml

Pseudo-nitzschia: Information gathered by Jennifer Shin (1999); Monterey Bay Aquarium Research Institute, Moss Landing, CA
<http://www.mbari.org/staff/conn/botany/diatoms/jennifer/tax.htm>

Understanding Domoic Acid and Toxic Diatom Blooms: B Mary Silver (2002); University of California, Santa Cruz, CA <http://escholarship.org/uc/item/98d310d0>

The Ecology of *Pseudo-nitzschia* in Monterey Bay, California (M.C. Villac; while at Texas A&M University) <http://ocean.tamu.edu/Quarterdeck/QD4.2/recentgrads-4.2.html#anchor359358>

Deadly Diatoms: Demo from "Oceans of Life" CD-ROM, University of California, San Diego
<http://earthguide.ucsd.edu/diatom/d9b.html>

Amnesic Shellfish Poisoning: University of Miami NIEHS Marine and Freshwater Biomedical Sciences Center <http://yyy.rsmas.miami.edu/groups/ohh/science/aspccontent.htm>

Nova Scotia Museum: Red Tides
<http://museum.gov.ns.ca/poison/?section=species&id=126>

Center for disease control and prevention <http://www.cdc.gov/hab/>

Center for Disease Control: Health Studies: Pfiesteria piscicida
<http://www.cdc.gov/hab/pfiesteria/about.htm>

Center for Sponsored Coastal Ocean Research <http://www.cop.noaa.gov/>

Intergovernmental Oceanographic Commission (IOC)
<http://ioc.unesco.org/iocweb/news/items98/item019.htm>

Marine Mammal Care Center @ Fort MacArthur
www.marinemammalcare.org/mmccindex.html

International Bird Rescue Research Center
http://www.ibrrc.org/pelican_domoic.html

Lesson Plans

http://www.oceanservice.noaa.gov/education/classroom/07_algal.html
Investigating The Ocean- Algae Blooms – scenario using satellite images

<http://www.science-house.org/nesdis/algae/teacher.html>

Ocean Challenge Puzzle, <http://www8.nos.noaa.gov/oequixx/welcome.html>

Help, It's an HAB! Education Resources
http://www.bigelow.org/edhab/help_hab.html

<http://oceanservice.noaa.gov/education/lessons/welcome.html>

http://oceanservice.noaa.gov/education/lessons/bad_algae.html#bridge
Investigating The Ocean- Algae Blooms – scenario using satellite images
<http://www.science-house.org/nesdis/algae/teacher.html>

In Full Bloom <http://www.vims.edu/bridge/archive0402.html>

Posters

Mengelt, C. and B.B. Prézelin (2004). UV photophysiology & photoecology of two toxigenic diatom species *Pseudo-nitzschia australis* and *multiseriis*. University of California, Santa Barbara, CA; pdf file of poster (1.3 MB)

Gorga, J.J., Mengelt, C., and B.B. Prezelin. (2002) *In Situ* Evidence of Ultraviolet Radiation Tolerance for the Toxigenic Diatom *Pseudo-nitzschia australis*. 10th International Conference on Harmful Algae, St. Pete Beach, Florida; pdf file of poster (2.9 MB)

Mengelt, C. and B.B. Prezelin. (2002) Dark Survival and Subsequent Light Recovery for *Pseudo-nitzschia multiseriis*. 10th International Conference on Harmful Algae, St. Pete Beach, Florida; pdf file of poster (1.5 MB)

Hernandez, R., Mengelt, C., and B.B. Prezelin. (2003) Is there a link between eutrophication and *Pseudo-nitzschia multiseriis* blooms? Camp Symposium 2003. Irvine, California; Powerpoint file of poster (2.1 MB)
http://www.lifesci.ucsb.edu/eemb/labs/prezelin/posters/UCI_Poster_Final.ppt

Hernandez, R. and B.B. Prezelin. (2002) The Relationship Between Increased Ultraviolet Radiation and the Growth Rate and Pigmentation of *Pseudo-nitzschia* Multiseriis Compared to Other Phytoplankton Species. Summer Research Colloquium, UC Santa Barbara; Powerpoint file of poster (2.1 MB)
http://www.lifesci.ucsb.edu/eemb/labs/prezelin/posters/Roxana_Poster_Final.ppt

Ferdin, M.E., R.G. Kvittek, C. Bretz, C.L. Powell, G.J. Doucette, M.W. Silver, and C.A. Scholin *Emerita analoga* (Stimpson) - Possible New Indicator Species for the Phycotoxin Domoic Acid in California Coastal Waters; pdf file of poster
<http://seafloor.csumb.edu/publications/posters/ECOHAB-DomoicAcid.pdf>

Examining the Place and Role of Krill in Domoic Acid Poisoning: Slides by Sibel Bargu (while at the Univ. of California, Santa Cruz). The slides are excerpts from presentations given by participants at

the DIALOG V Symposium, held Oct. 19-25, 2004.
http://www.dialog.741.com/domoic_acid_v2%281%29.htm

Pseudo-nitzschia: Information on this genus compiled by Anne Thessen. The website contains additional information on other *Pseudo-nitzschia* species; from
<http://diatoms.lifedesks.org/pages/990>

Anatomy of a *Pseudo-nitzschia* bloom on the Central Washington Coast: By J.C. Wekell, N. Adams, and V.L. Trainer (1999); a pdf file of a Powerpoint presentation
http://www.coexploration.org/habs/ppt/HAB_online99/

Articles related to HABs

http://commcgi.cc.stonybrook.edu/am2/publish/General_University_News_2/Vitamins_Identified_As_Key_Nutrient_Which_May_Promote_Harmful_Algal_Blooms_in_Coastal_Waters.shtml

Brown tides, Red tides and research to manage blooms
<http://www.seagrant.sunysb.edu/btide/article.asp?ArticleID=388>

<http://www.sciencedaily.com/releases/2010/12/101203165534.htm>

<http://www.sciencedaily.com/releases/2010/12/101203165534.htm>

<http://www.sciencedaily.com/releases/2004/12/041208202518.htm>

California Animal Health and Food Safety Laboratory System; pdf file
<http://www.vetmed.ucdavis.edu/whc/local-assets/pdfs/montie2010-ohh.pdf>