

California Harmful Algal Bloom Monitoring and Alert Program (Cal-HABMAP) Event Update, 2010-2011

I. Southern California

The Southern California Bight experienced significant marine mammal and bird strandings and deaths during Spring (primarily March-May) 2011, particularly in the Newport Beach to Huntington Beach region. Stranded animals testing positive for domoic acid were brought into a number of centers and organizations including: Pacific Marine Mammal Center (Laguna Beach), Marine Mammal Care Center at Fort MacArthur (San Pedro), California Wildlife Center (Malibu), International Bird Rescue (San Pedro), Los Angeles County Natural History Museum (Los Angeles). Samples collected from animals, and testing positive for domoic acid, included **approximately 60 sea lions, 10 dolphins, 20 birds (several species)**.

Pier monitoring for domoic acid during much of this period indicated low but consistently measurable concentrations. Sampling offshore was limited, but water samples collected at a few stations in the central San Pedro channel in early March detected extremely high values of domoic acid in the plankton (>50 µg/l).

Information supplied by Dave Caron's lab, University of Southern California.

II. Santa Barbara Basin

19 July 2010 - counts peaked for the following species, highest counts in +/- 1 month
Lingulodinium polyedrum 125000/L
Prorocentrum sp. 27000/L
no *Pseudo-nitzschia*, DA was low
Reports in the media that DA was elevated in the area - not verified by our samples

27Sep2010 - 25Oct2010 - counts peaked for the following species, highest counts in +/- 1 month
Prorocentrum sp. 160000/L (27Sep)
Pseudo-nitzschia 223000/L (25Oct), DA was elevated at end of October
Reports in the media that DA was elevated in the area - verified by our samples

8Mar2011 - counts peaked for the following species, highest counts in +/- 1 month
Pseudo-nitzschia 130000/L, DA 2.42 ng/ml
Reports in the media that DA was elevated in the area - verified by our samples

Data provided by Janice Jones, UCSB

III. Monterey Bay

Domoic acid was detected continuously (weekly sampling) at the Santa Cruz Municipal Wharf from April 21, 2010 to October 10, 2010. Peak concentrations exceeded 10 ug/L.

Lower and more sporadic levels of DA have been reported for 2011, peaking at >5 ug/L in August.

Sentinel mussels remained well below the regulatory limit for 2010-2011.

Other blooms (no reported negative impacts) included a red tide of *Noctiluca* in September 2010 and May 2011; see

http://www.cencoos.org/sections/conditions/algae_blooms.shtml

Data provided by Raphael Kudela, UCSC

IV. Sonoma Coast

A massive invertebrate mortality event took place in August-September 2011, in conjunction with 'red tide' conditions associated with *Gonyaulax spinifera*. Further details are available at:

http://www.cencoos.org/sections/news/NorthCoast_DieOff.shtml

<http://sanctuarysimon.org/news/index.php/2011/09/abalone-fishery-closes-after-die-off-observed-in-sonoma/>

CDPH has posted some general information for the public at:

<http://www.cdph.ca.gov/HealthInfo/vironhealth/water/Pages/Shellfish.aspx> and will update this information on its web page as sample results become available.

DFG biologist Carrie Wilson has an article on the invertebrate mortality also occurring along the Sonoma coast at: <http://californiaoutdoors.wordpress.com/page/2/>

V. Bird Strandings

Species WWCC: Results (Domoic Acid):

RTLO	34264	Negative
PALO	34265	Negative
BRAC	34329	Positive (came in on May 18, 2011)
DCCO	34494	Positive (came in on May 30, 2011)
DCCO	34501	Positive (came in on May 30, 2011)
BRAC	34329	Positive (came in on May 18, 2011)
DCCO	34494	Positive (came in on May 30, 2011)
DCCO	34501	Positive (came in on May 30, 2011)

Key: RTLO=Red-throated Loon, PALO=Pacific Loon, BRAC=Brandt's Cormorant, DCCO=Double-crested Cormorant

Data provided by Debbie McGuire, Wildlife Director, Wetlands and Wildlife Care Center

VI. California Sea Otters

We likely had a moderate DA event that spanned mid/late-July thru mid-August in sea otters, especially those from the southern half of their range (eg Estero Bay through Pismo Beach), based on gross case presentation and case history. No confirmatory testing due to lack of funding.

VII. California Department of Public Health

The typical pattern of spring and fall peaks in *Pseudo-nitzschia* relative abundance and domoic acid concentrations was not observed during the past year. Elevated levels of this toxin persisted throughout the year. Domoic acid was detected in a variety of seafood species for every month between October 2010 and September 2011. Toxin concentrations above the alert level (20 ug/g) were detected every month during this time period except May and September. The majority of activity was along the Santa Barbara coast and particularly offshore in the region of the northern Channel Islands. The highest concentration of domoic acid detected was in spiny lobster viscera: 1170 ug/g on 10/11/2010. Toxin concentrations above 100 ug/g were detected in crab and lobster viscera, mussels, and oysters in 19 samples collected between October 2010 and August 2011. Additional areas with detectable levels of domoic acid included sampling sites in Del Norte, Humboldt, Marin, San Francisco, San Mateo, Santa Cruz, Monterey, San Luis Obispo, Los Angeles, and San Diego counties.