

Ecological and Wildlife Impacts of Coastal HABs in California



11:00 am - Noon ET, Tuesday July 18, 2023



Housekeeping

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Melanie.Jackson@noaa.gov & Katherine.Dziedzic@noaa.gov



Today's Speakers

- **Justin Viezbicke** - NOAA Fisheries West Coast Regional Office
- **Greg Doucette** - NOAA National Centers for Coastal Ocean Science
- **Penny Swanson** - NOAA Fisheries Northwest Fisheries Science Center



Toxic Algal Bloom Suspected in Dolphin and Sea Lion Deaths in Southern California

June 16, 2023

Stranding Network asks beachgoers to keep a safe distance and report strandings.



Deceased dolphin as a result of domoic acid poisoning. Credit: Channel Islands Marine & Wildlife Institute

The rapid growth of harmful algae along parts of the Southern California Coast is believed to have killed hundreds of California sea lions and close to 60 dolphins in the first weeks of June.



CALIFORNIA

As toxic algae sickens sea lions, other marine animals, California wildlife center needs help



John Warner, chief executive of the Marine Mammal Care Center in San Pedro, checks in on sea lions recuperating at the center on June 20. (Luis Sinco / Los Angeles Times)

BY ANDREW J. CAMPA | STAFF WRITER

JULY 7, 2023 6:30 AM PT



HABs Threaten CA's \$256M Fisheries



Dungeness crab, California spiny lobster, groundfish, anchovy, sardine, mackerel

All of these fisheries can be affected by domoic acid

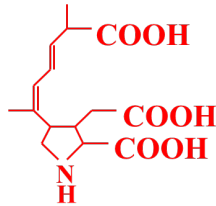
HAB Toxins Bioaccumulate in Marine Mammals



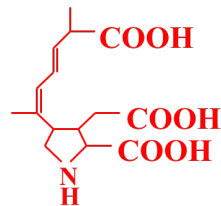
The algae *Pseudo-nitzschia*



...produces a neurotoxin,
Domoic Acid



...which moves through marine food webs to mammals and birds.



Is there a bloom?



Offshore observing needed, forecast available

- Offshore water sampling: ship-based, uncrewed systems are used elsewhere
- Forecasting risk of toxic blooms: CA Harmful Algae Risk Mapping ([C-HARM](#))

[NCCOS HAB Event Response](mailto:nccos.hab.event.response@noaa.gov): nccos.hab.event.response@noaa.gov



3G ESP/LRAUV: map-track-analyze
(mobile subsurface)



3G ESP/ASV: map-track-analyze
(surface & shallow water)



2G ESP (lab-in-a-can)
(stationary subsurface)

Is there a bloom?



Nearshore observing networks available

- [HAB Monitoring Alert Program](#)
- [Imaging FlowCytobot Network](#)
- [Phytoplankton Monitoring Network](#)





Is the bloom toxic?

Test if algae, prey, & sick animals have the toxin

Toxin Testing for the Food Web

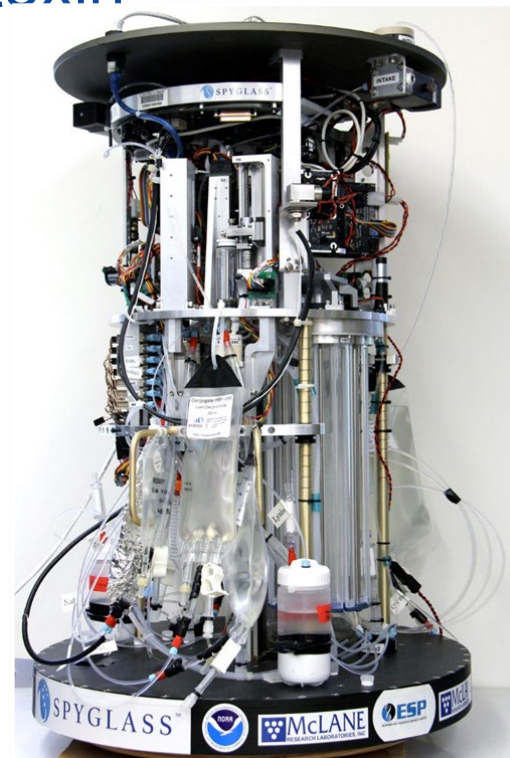
Water and algae



Prey (e.g. Anchovy)



Marine mammals and birds



(Similar tests used for seafood safety.)

Current status:

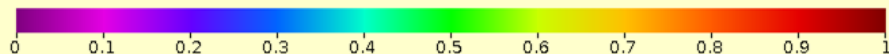
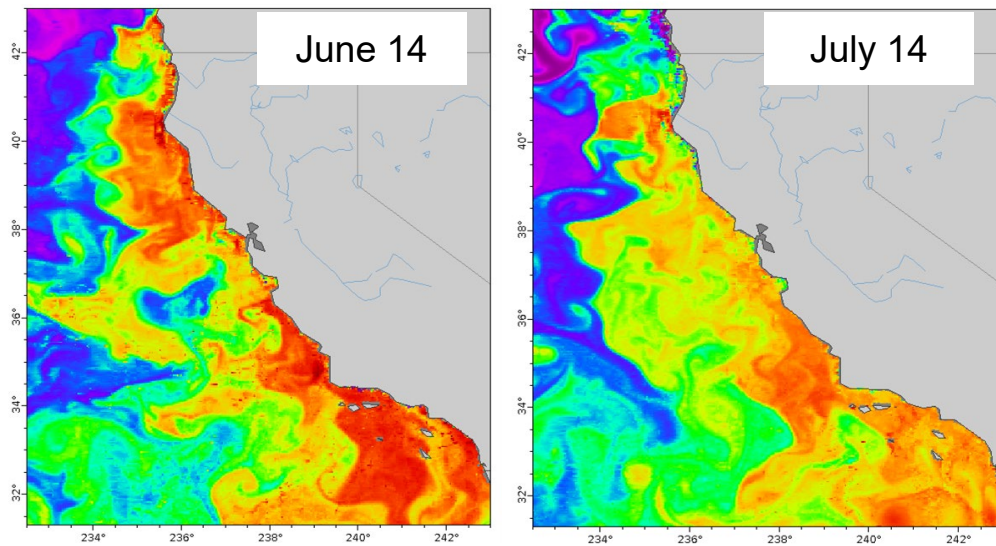
Observations & forecasts suggest the bloom is declining



Domoic acid 3-day forecasts California Harmful Algae Risk Mapping (C-HARM)

“Stranding numbers associated with this event started to decrease over the weekend and into Monday [10-July] in southern CA; numbers have remained pretty low in central/northern CA.”

- The Marine Mammal Center; July 12, 2023



Probability of Particulate Domoic Acid > 500 nanograms/L (1)
C-HARM v3.1 3-Day Forecast, Pseudo-nitzschia, cellular domoic acid, and particular domoic acid probability, California and Southern Oregon coast, 2022-present (2023-06-14T12:00:00Z)
Data courtesy of NOAA/NMFS/SWFSC/ERD, CoastWatch West Coast

Testing of offshore samples by partners for domoic acid is ongoing

Dolphin Mortalities



Dolphins died shortly after stranding, or already dead when observed

Necropsied by members of the stranding network

NMFS Northwest Fisheries Science Center's Wildlife Algal Toxin Research and Response Network-West (WARRN West) provides information on presence of HAB toxins in marine wildlife for the West Coast

Dolphin DA test results:

- Samples from June 10-18 confirm significant domoic acid exposure.
- Many samples ≥ 76 ug DA /g

DA in dolphins in Central and Southern CA. This is a first for Southern CA and largest number since DA toxicosis in marine mammals was identified in 1998.



Sea Lion Illness and Mortality



Animals stranded with clinical signs of DA

- Seizures
- Weak, lethargic

Response by stranding network members & government partners

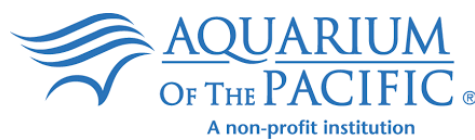
Sea Lion DA test results:

- Samples being analyzed this week
- DA cases in sea lions occur annually (dozens/hundreds), but numbers are increasing



[West Coast Region Stranding Hotline:](#)

(866) 767-6114



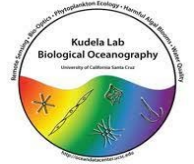
Southern California Coastal Ocean Observing System (SCCOOS)

Monterey Bay Aquarium Research Institute (MBARI)



Southern California Coastal Water Research Project (SCCWRP)

Channel Islands Cetacean Research Unit (CICRU)



Scripps Institution of Oceanography
The Marine Mammal Center

Channel Islands Marine and Wildlife Institute (CIMWI)

Biological and Satellite Oceanography Lab, UCSC

National Marine Mammal Foundation (NMMF)

Aquarium of the Pacific

Pacific Marine Mammal Center

Los Angeles Waterkeeper

Marine Mammal Care Center Los Angeles

Santa Barbara Channelkeeper

California Wildlife Center

US Navy

Ocean Animal Response & Research Alliance (OARRA)



Partners



Questions?

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