



Marine Biotoxin Monitoring Report

February 2019

Technical Report No. 19-12

INTRODUCTION:

This report provides a summary of biotoxin activity for the month of February, 2019. Toxin concentration ranges are provided for the paralytic shellfish poisoning (PSP) toxins and for domoic acid (DA). Estimates are also provided for the distribution and relative abundance of *Alexandrium*, the dinoflagellate that produces PSP toxins, and *Pseudo-nitzschia*, the diatom that produces domoic acid. Summary information is also provided for any quarantine or health advisory in effect during the reporting period.

Please note the following conventions for the phytoplankton and shellfish biotoxin distribution maps: (i) All estimates for phytoplankton relative abundance are qualitative, based on sampling effort and percent composition; (ii) All toxin data



Despite winter conditions, *Alexandrium* was observed at several locations along the California coast.

are for mussel samples, unless otherwise noted; (iii) All samples are assayed for PSP toxins; DA analyses are performed as needed (e.g., on the basis of detected blooms of the diatoms that produce DA);



(iv) Please refer to the appropriate figure key for an explanation of the symbols used on the maps.

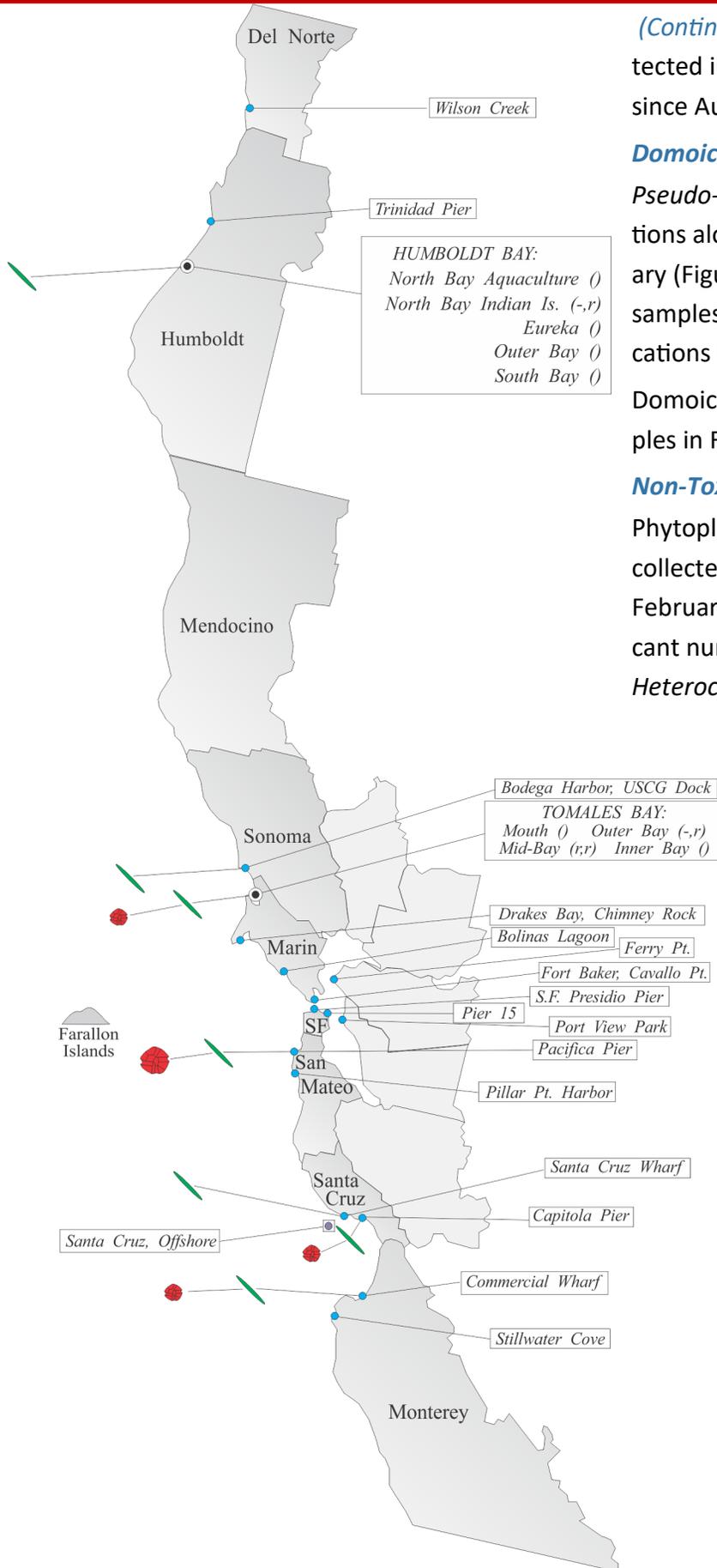
Northern California Summary:

Paralytic Shellfish Poisoning

Alexandrium was observed at several locations between Sonoma and Monterey counties in February (Figure 1). Low cell numbers were observed in sample from mid-Tomales Bay (February 18), Pacifica Pier (February 8 and 24), and inside Monterey Bay at the Capitola Pier (Santa Cruz County, February 10) and Monterey Commercial Wharf (February 26). These observations represent an increase in the distribution of *Alexandrium* compared to observations in January.

PSP toxicity was detected in a mussel sample from the Monterey Commercial Wharf (69 $\mu\text{g}/100\text{ g}$) on February 5 (Figure 2), declining but still detectable by the end of the month (33 $\mu\text{g}/100\text{ g}$ on February 27). A sample of rock scallop viscera from this site contained 78 $\mu\text{g}/100\text{ g}$ of the PSP toxins at the end of the month, a decline from the alert level detected in January (470 $\mu\text{g}/100\text{ g}$). PSP toxins have been de-

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ected in rock scallop viscera from this location since August 2016.

Domoic Acid

Pseudo-nitzschia was observed at scattered locations along the northern California coast in February (Figure 1). Low cell numbers were observed in samples from Humboldt Bay and several other locations between Sonoma and Monterey counties.

Domoic acid was not detected in any shellfish samples in February (Figure 2).

Non-Toxic Species

Phytoplankton biomass was low in most samples collected along the northern California coast in February. Most notable was the presence of significant numbers of the dinoflagellates *Gonyaulax* and *Heterocapsa* in outer Tomales Bay in late February.

Gonyaulax sp. was also common in a mid-bay sample. Elsewhere along the coast, centric diatoms were common inside San Francisco Bay at Oakland’s Port View Park. The diatom *Thalassiosira* was common in samples from the Pacifica Pier and the Monterey Commercial Wharf; *Chaetoceros* was also common at the latter site. A variety of zooplankton were common inside Bolinas Lagoon (Marin County).

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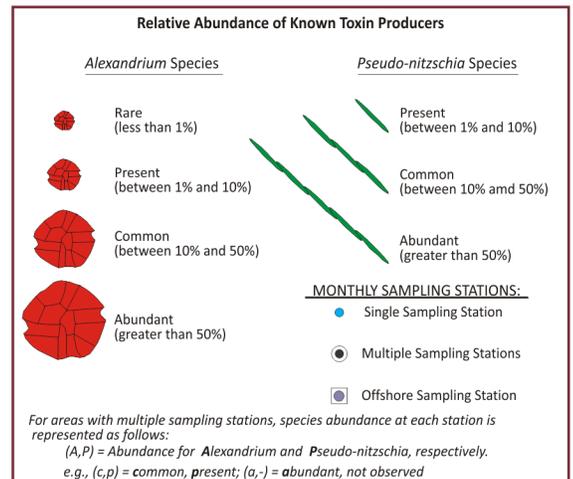


Figure 1. Toxic phytoplankton distribution in northern California.

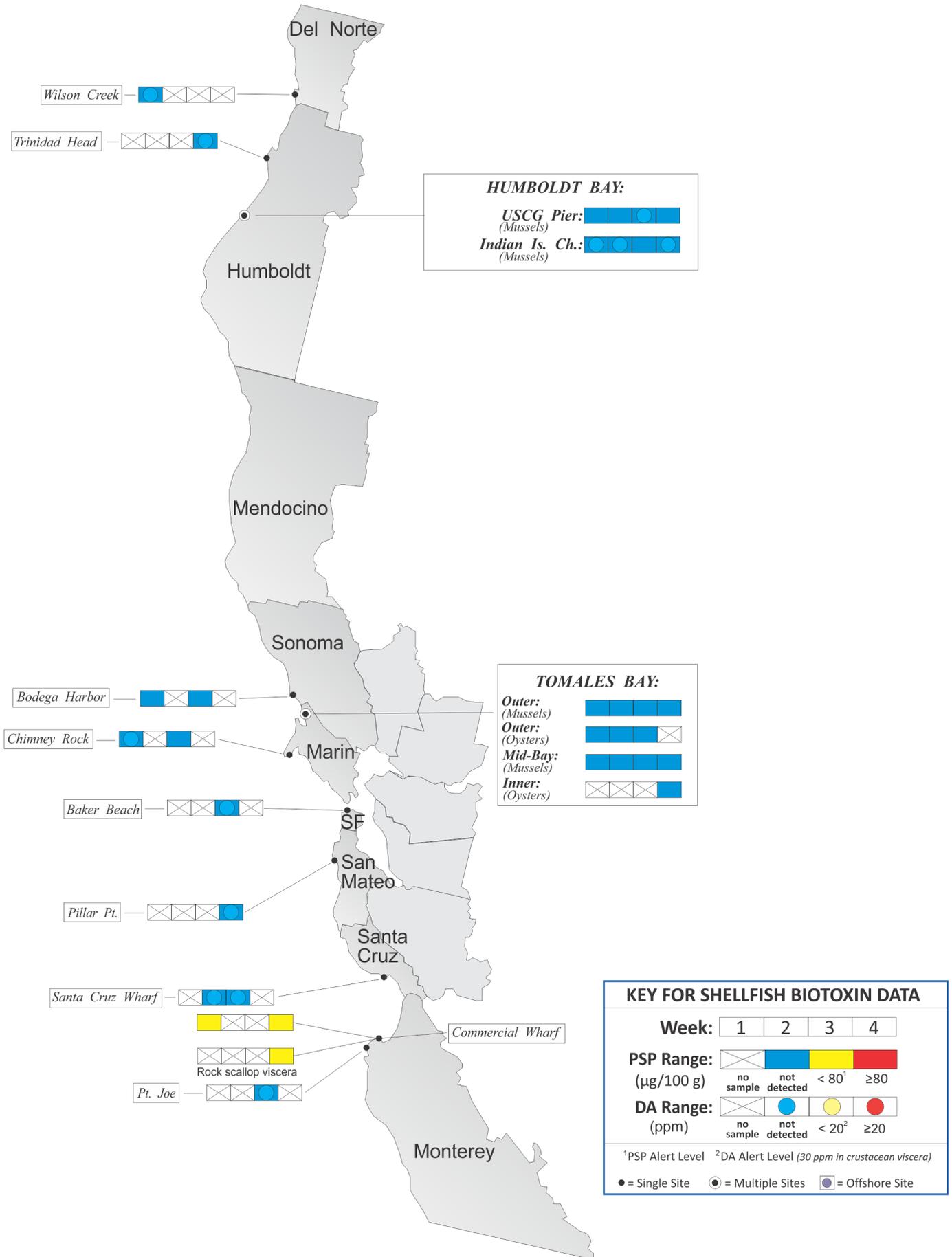


Figure 2. Distribution of shellfish biotoxins in northern California.

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Figure 3. Toxic phytoplankton distribution in southern California.

Southern California Summary:

Paralytic Shellfish Poisoning:

Alexandrium continued to be observed in samples from the Belmont Pier (Los Angeles County) and Bolsa Chica in Orange County (Figure 3). Cell numbers were low at both sites.

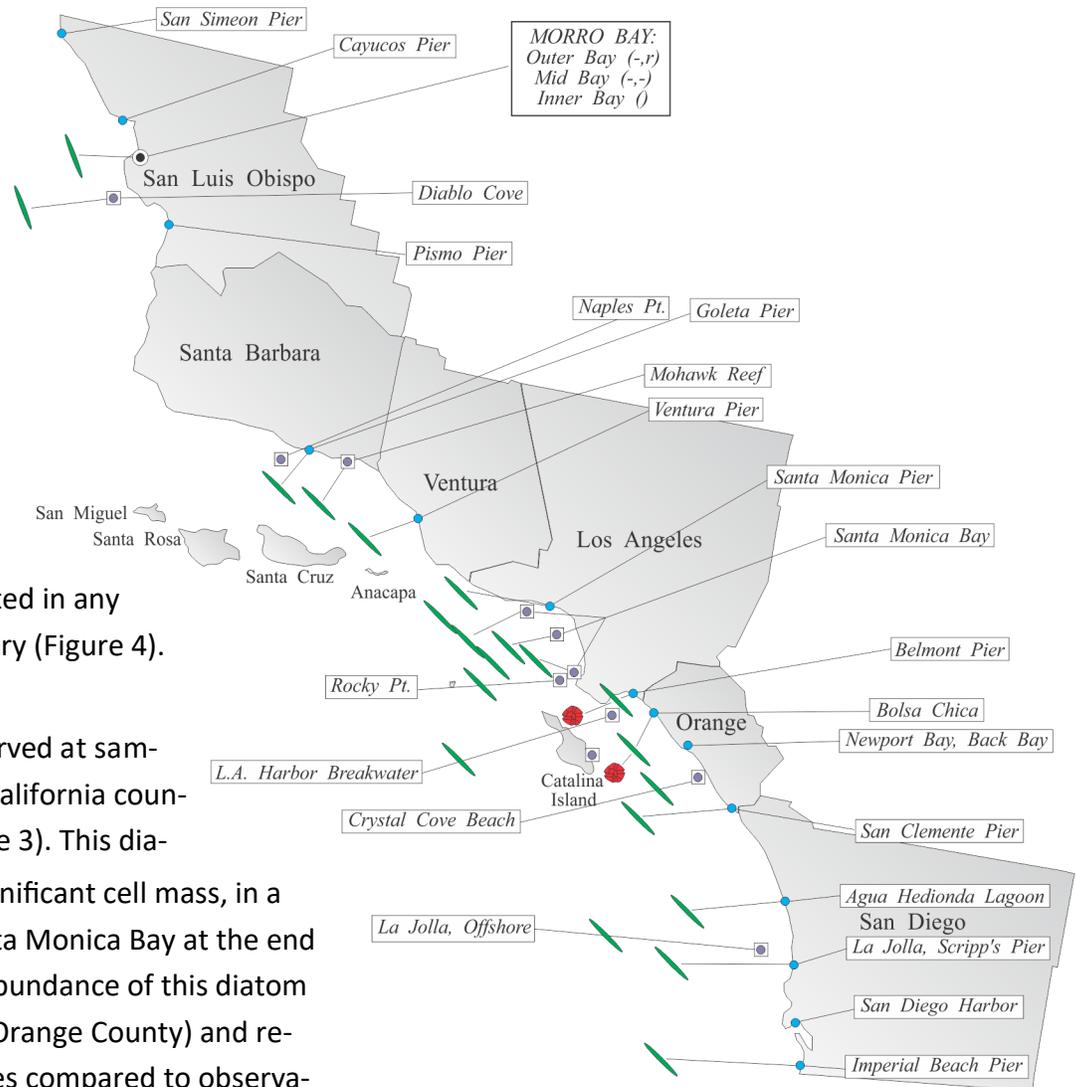
PSP toxicity was not detected in any shellfish samples in February (Figure 4).

Domoic Acid

Pseudo-nitzschia was observed at sampling sites in all southern California counties during February (Figure 3). This diatom was common, with significant cell mass, in a sample from northern Santa Monica Bay at the end of February. The relative abundance of this diatom decreased at Bolsa Chica (Orange County) and remained low at all other sites compared to observations in January. Domoic acid was not detected in any shellfish samples analyzed in February (Figure 4).

Non-Toxic Species

Diatoms, in particular *Chaetoceros*, were dominant along the entire southern California coast in February.



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The Marine Biotoxin Monitoring and Control Program, managed by the California Department of Public Health, is a state-wide effort involving a consortium of volunteer participants. The shellfish sampling and analysis element of this program is intended to provide an early warning of shellfish toxicity by routinely assessing coastal resources for the presence of paralytic shellfish poisoning (PSP) toxins and domoic acid.

The Phytoplankton Monitoring Program is a state-wide effort designed to detect toxin producing species of phytoplankton in ocean water before they impact the public. The phytoplankton monitoring and observation effort can provide an advanced warning of a potential toxic bloom, allowing us to focus sampling efforts in the affected area before California's valuable shellfish resources or the public's health is threatened.

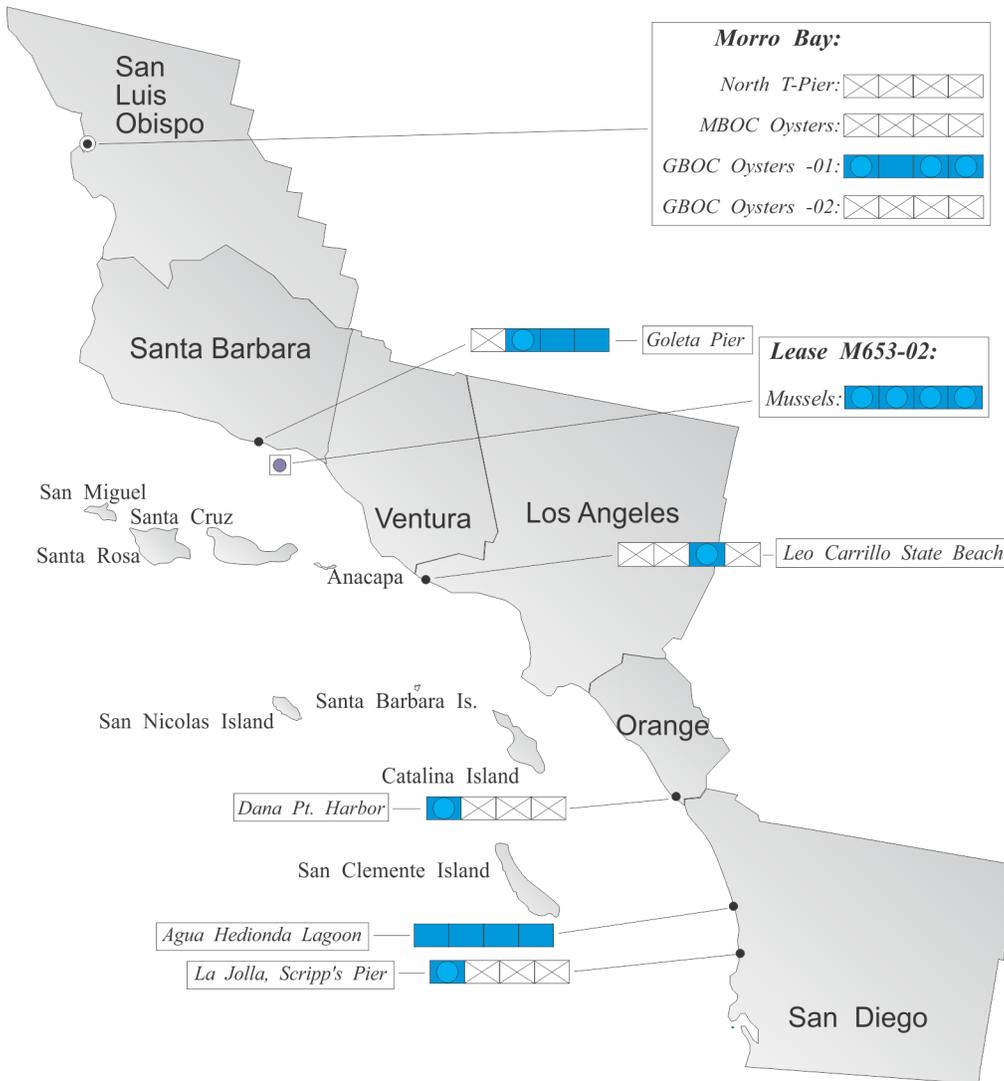
For Information on Volunteering:

For Recorded Biotoxin Information Call:

Email redtide@cdph.ca.gov or call 510-412-4635

(800) 553 - 4133

Figure 4. Distribution of shellfish biotoxins in southern California.



QUARANTINES:

On December 3 CDPH lifted the domoic acid health advisory for Dungeness crabs caught in state waters near Bodega Head and Russian River in Sonoma County.

On November 19 CDPH rescinded the domoic acid health advisory for sport-harvested mussels, scallops, and clams (other than razor clams) in Del Norte and Humboldt counties.

On November 19 CDPH also rescinded the domoic acid health advisory for lobsters caught in state waters around Anacapa Island in Ventura County, which was issued on October 16.

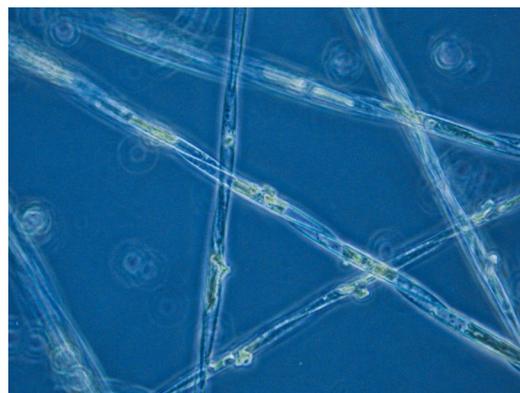
On November 1 CDPH advised consumers not to consume the viscera (internal organs) of Dungeness crab caught near Bodega Head and Russian River in Sonoma County due to the detection of elevated levels of domoic acid in samples from these areas.

On October 31 CDPH issued a press release announcing that the statewide annual quarantine on sportharvesting of mussels ended at midnight on Wednesday, October 31, 2018, for all coastal counties except Del Norte and Humboldt (this exception was rescind-

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Chaetoceros was common to abundant at sites in each coastal county, with very high cell masses observed in samples collected by the City of Los Angeles Environmental Monitoring Division in northern and mid-Santa Monica Bay. *Bacteriastrium* was common in a sample from the Santa Monica Pier and *Asterionella* was common in samples from Bolsa Chica and inside San Diego Bay. *Cerataulina* was common in a sample from the Scripps Pier in La Jolla. *Ceratium furca* was the

lone dinoflagellate to reach “common” status in a sample collected from offshore of La Jolla by volunteers with SEACAMP/HABNet.



Pseudo-nitzschia was common in Santa Monica Bay.

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ed on November 19). The annual mussel quarantine is normally scheduled to begin on May 1 each year and end at midnight on October 31. These dates can change, however, based on the detection of dangerous toxin levels. The annual quarantine prohibits the sport-harvesting of mussels along the entire California coastline, including all bays and estuaries.

On October 24 CDPH advised recreational anglers not to eat Dungeness crab caught between Patrick's Point North (Humboldt County) and the Oregon border due to elevated levels of domoic acid in some samples.

The CDFW closure of the razor clam fishery remains in effect due to the continued presence of dangerous levels of domoic acid in razor clams from beaches in Humboldt and Del Norte counties.

Consumers of Washington clams, also known as butter clams (*Saxidomus nuttalli*), are cautioned to eat only the white meat. Washington clams can concentrate the PSP toxins in the viscera and in the dark parts of the siphon and can remain toxic for a long period of time. Persons taking scallops or clams, with the exception of razor clams, are advised to remove and discard the dark parts (i.e., the digestive organs or viscera). Razor clams (*Siliqua patula*) are an exception to this general guidance due

Table 1. Program participants collecting phytoplankton samples.

AGENCY	#	AGENCY	#
DEL NORTE COUNTY		Yurok Tribe Environmental Program	1
HUMBOLDT COUNTY			
Coast Seafood Company	4	Humboldt State University Marine Lab	1
MENDOCINO COUNTY		None Submitted	
SONOMA COUNTY		CDPH Marine Biotoxin Program	2
MARIN COUNTY			
CDPH Volunteers (<i>Brent Anderson, Ignacio Martin-Bragado</i>)			4
CDPH Marine Biotoxin Program	2	Hog Island Oyster Company	6
CONTRA COSTA COUNTY		CDPH Volunteer (<i>Russel Shearer</i>)	1
ALAMEDA COUNTY		Monterey Bay National Marine Sanctuary	1
SAN FRANCISCO COUNTY			
CDPH Volunteer (<i>Eugenia McNaughton</i>)	3	Exploratorium	1
SAN MATEO COUNTY			
The Marine Mammal Center	5	San Mateo County Environmental Health Dept.	1
SANTA CRUZ COUNTY		CDPH Volunteer (<i>Jeff Palsgaard</i>)	4
Nomad Charters	1	U.C. Santa Cruz	4
MONTEREY COUNTY			
Monterey Abalone Company	2	Pacific Grove Museum of Natural History	2
SAN LUIS OBISPO COUNTY			
CDPH Marine Biotoxin Program	1	CDPH Volunteer (<i>Dan Hoskins, Skip Rotstein</i>)	4
Friends of the Sea Otter	2	Grassy Bar Oyster Company	2
Monterey Bay National Marine Sanctuary	1	Tenera Environmental	3
SANTA BARBARA COUNTY			
Santa Barbara Channel Keeper	2	U.C. Santa Barbara	4
VENTURA COUNTY		CDPH Volunteer (<i>Fred Burgess</i>)	2
LOS ANGELES COUNTY		Catalina Island Marine Institute	1
CDPH Volunteers (<i>Michelle and Samantha Tran, Spencer Peterman</i>)			4
City of L.A. Environmental Monitoring Division	4	Los Angeles Water Keeper	1
ORANGE COUNTY			
Amigos de Bolsa Chica	4	Back Bay Science Center	2
Crystal Cove Alliance	1	CDPH Volunteer (<i>Truong Nguyen</i>)	1
SAN DIEGO COUNTY		Carlsbad Aquafarms, Inc.	3
Scripps Institute of Oceanography	3	SEACAMP/HABNet	1
Tijuana River National Estuary Research	3	U.S. Navy Marine Mammal Program	2

to their ability to concentrate and retain domoic acid in the edible white meat as well as in the viscera.

PSP toxins can produce a tingling around the mouth and fingertips within a few minutes to a few hours after eating toxic shellfish. These symptoms can be followed by disturbed balance, lack of muscular coordination, slurred speech and difficulty swallowing. In severe poisonings, complete muscular paralysis and death from asphyxiation can occur. Symptoms of domoic acid poisoning can occur within 30 minutes to 24

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hours after eating toxic seafood. In mild cases, symptoms of exposure to this nerve toxin may include vomiting, diarrhea, abdominal cramps, headache and dizziness.

These symptoms disappear completely within several days. In severe cases, the victim may experience excessive bronchial secretions, difficulty breathing, confusion, disorientation, cardiovascular instability, seizures, permanent loss of short-term memory, coma and death.

Any person experiencing any of these symptoms should seek immediate medical care.

Consumers are also advised that neither cooking or freezing eliminates domoic acid or the PSP toxins from the shellfish tissue. These toxins may also accumulate in seafood species such as crab, lobster, and small finfish like sardines and anchovies.

Spotharvesters should only collect shellfish from areas that are not affected by a current health advisory or quarantine. Contact the “Biotxin Information Line” at 1-800-553-4133 for a current update on marine biotoxin activity prior to gathering and consuming shellfish.

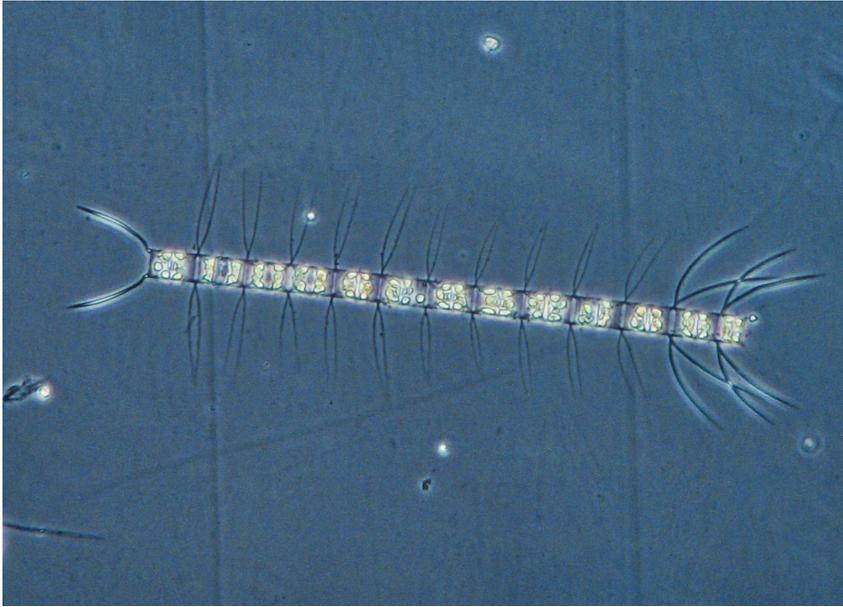


Table 2. Program participants collecting shellfish samples.

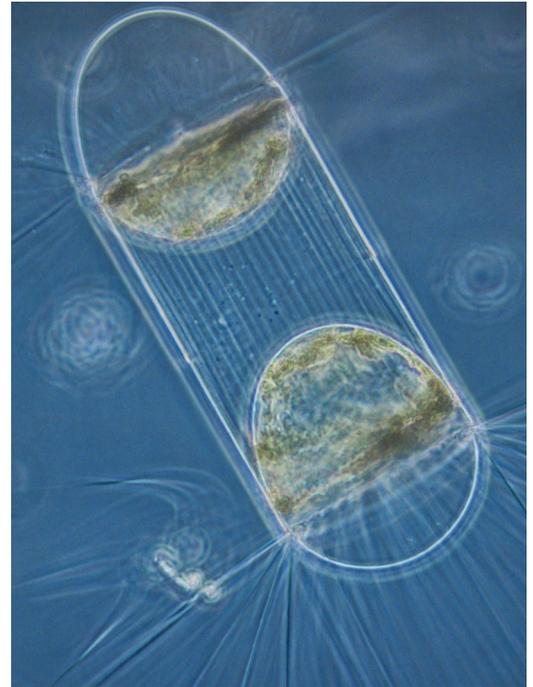
COUNTY	AGENCY	#
Del Norte	Yurok Tribe Environmental Program	1
Humboldt	Coast Seafood Company	8
	Humboldt County Environmental Health Department	1
Mendocino	None Submitted	
Sonoma	CDPH Marine Biotxin Program	2
Marin	CDPH Marine Biotxin Program	2
	Cove Mussel Company	4
	Hog Island Oyster Company	4
	Tomales Bay Oyster Company	4
San Francisco	CDPH Volunteer (<i>David Batten</i>)	1
San Mateo	San Mateo County Environmental Health Department	1
Santa Cruz	U.C. Santa Cruz	2
Monterey	CDPH Volunteer (<i>Serena Lomonico</i>)	1
	Monterey Abalone Company	4
San Luis Obispo	Grassy Bar Oyster Company	4
Santa Barbara	Santa Barbara Mariculture Company	4
	U.C. Santa Barbara	4
Ventura	None Submitted	
Los Angeles	CDPH Volunteer (<i>Steven Field</i>)	1
Orange	CDPH Volunteer (<i>Waylon Brennan</i>)	1
San Diego	Carlsbad Aquafarm, Inc.	4
	Scripps Institute of Oceanography	1
	U.S. Navy Marine Mammal Program	1

If you are having difficulty accessing this document, please contact CDPH at 1-800-553-4133 to request this information in an alternate format.

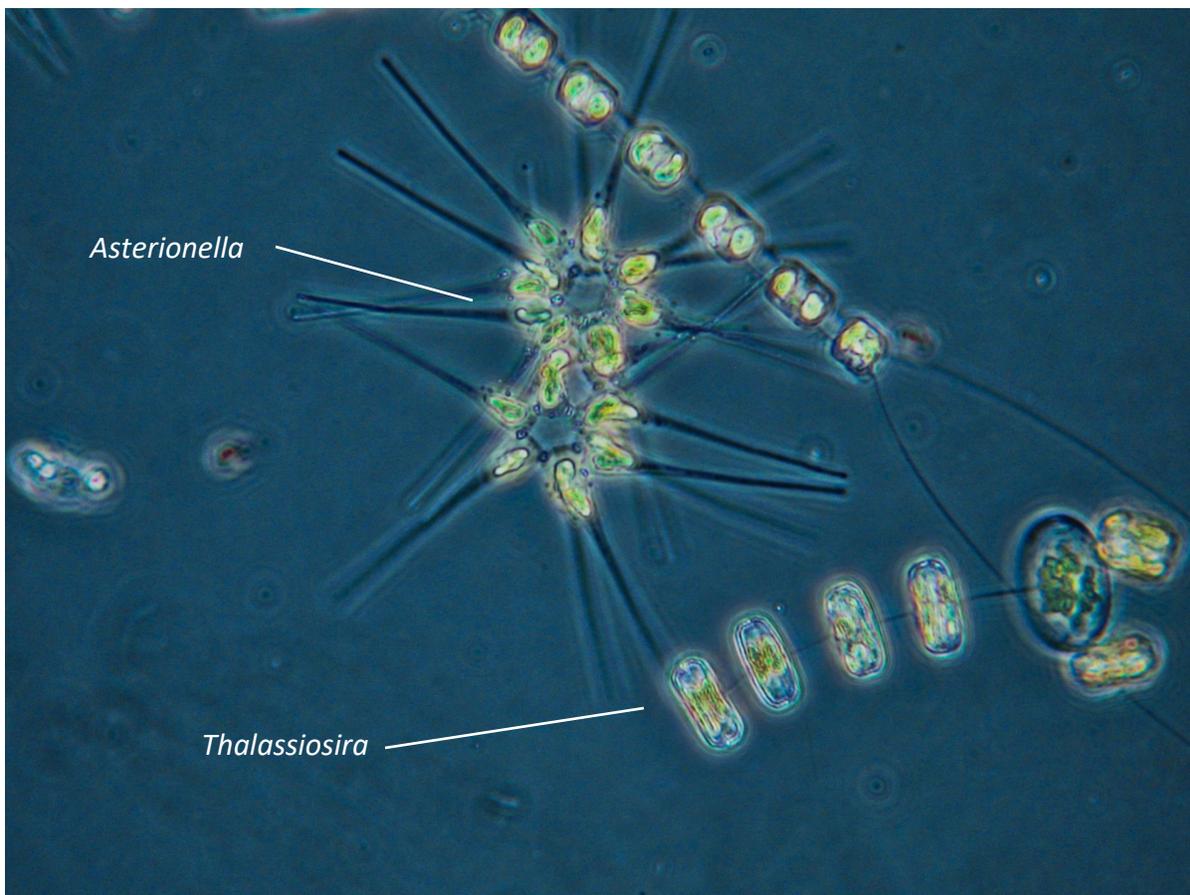
Phytoplankton Gallery



The diatom *Chaetoceros* was observed along all southern California counties.



Low numbers of *Corethron* were observed at several sites in February.



Asterionella was common at Bolsa Chica and *Thalassiosira* was common at the Pacifica Pier.