

# M o n t h l y M a r i n e B i o t o x i n R e p o r t

January 2016

Technical Report No. 16-06

**INTRODUCTION:**

This report provides a summary of biotoxin activity for the month of January, 2016. Ranges of toxin concentrations 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 that was 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 are for mussel samples, unless otherwise noted; (iii) All samples are assayed for PSP toxins; DA analyses are performed as needed (i.e., 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.

**Southern California Summary:**

**Paralytic Shellfish Poisoning**

*Alexandrium* was not observed at any Southern California sites (Figure 1). PSP toxins were not detected in any bivalve shellfish samples collected in January (Figure 3).

**Domoic Acid**

*Pseudo-nitzschia* was observed at select

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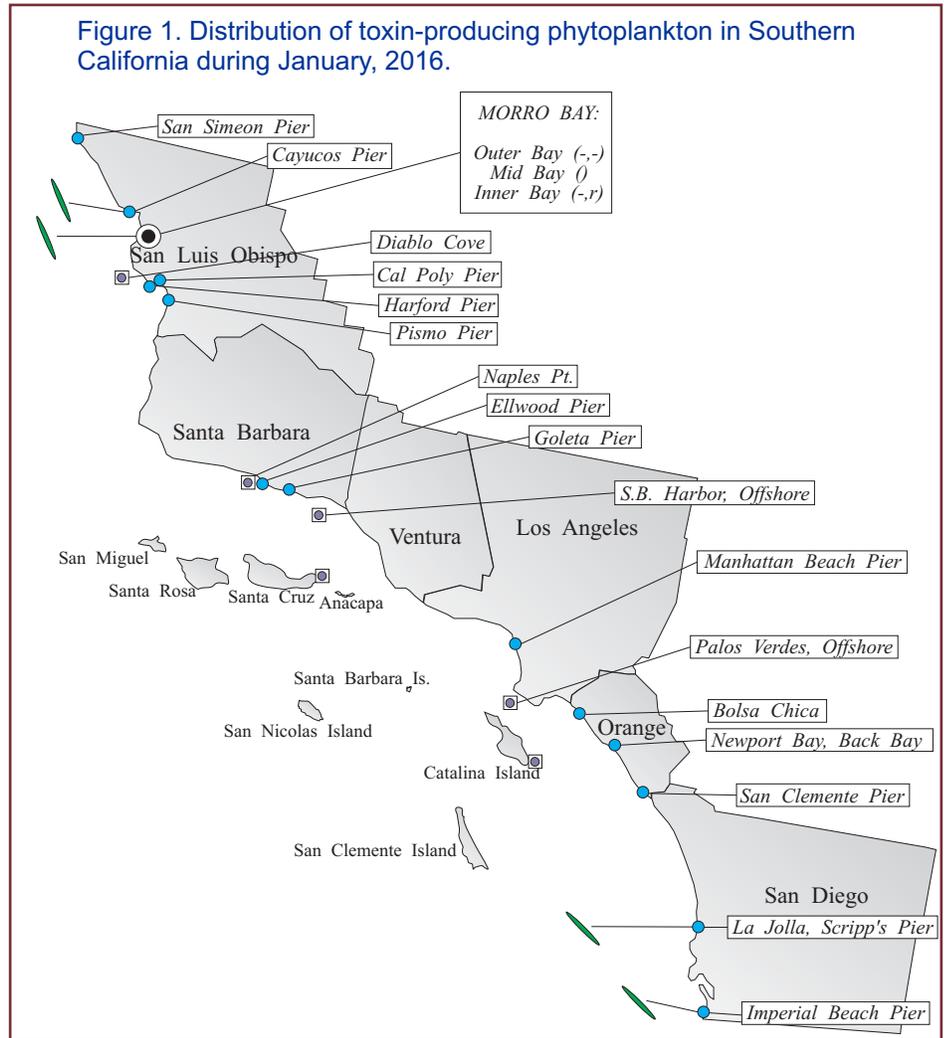
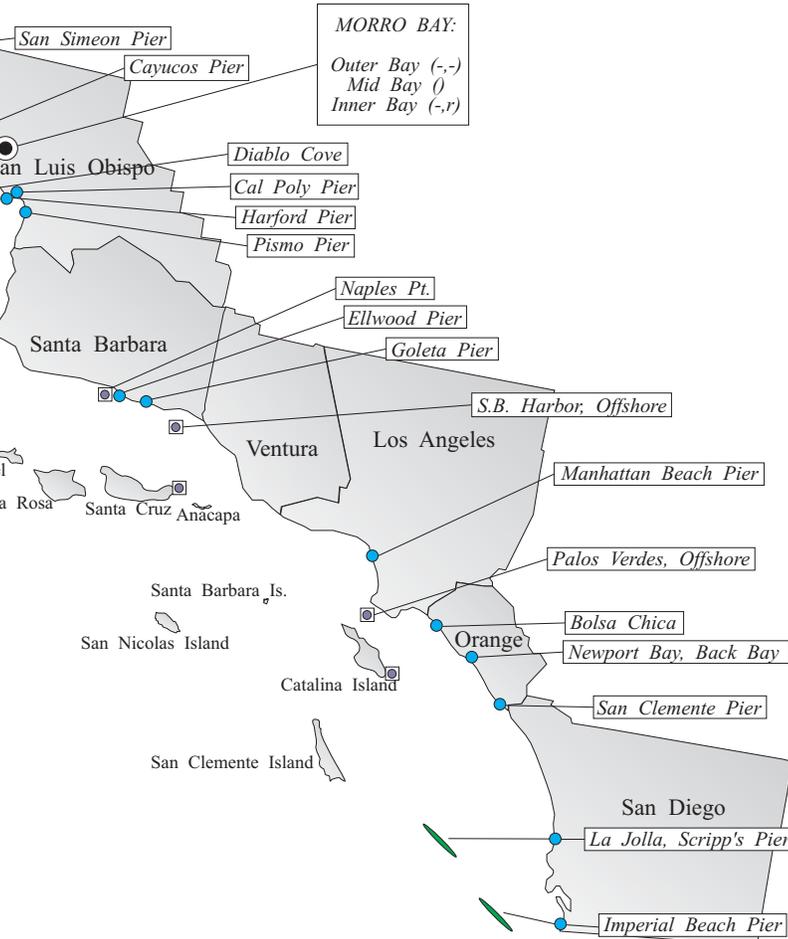


Figure 1. Distribution of toxin-producing phytoplankton in Southern California during January, 2016.



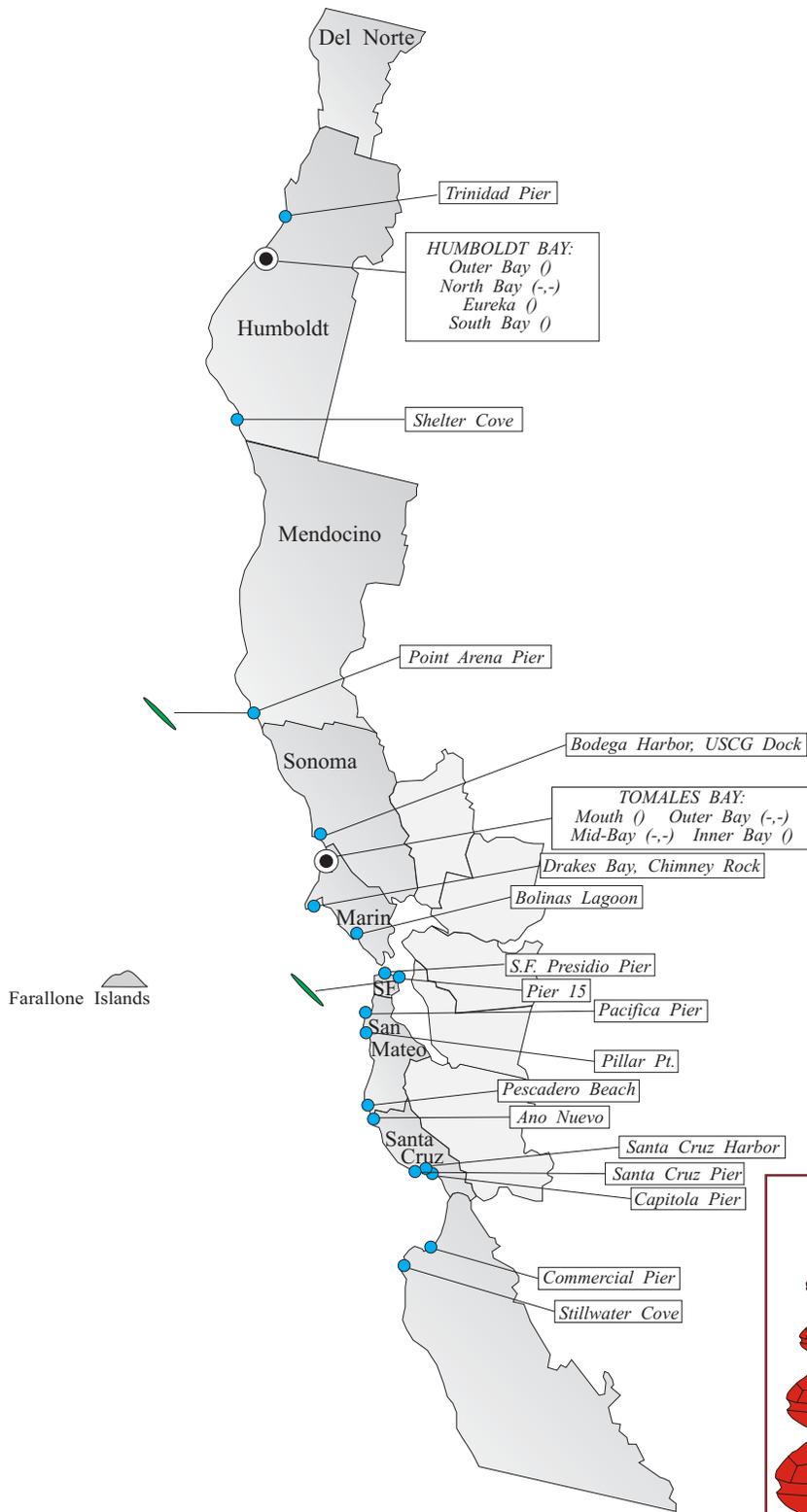
**Relative Abundance of Known Toxin Producers**

Alexandrium Species	Pseudo-nitzschia Species
<ul style="list-style-type: none"> <li> Rare (less than 1%)</li> <li> Present (between 1% and 10%)</li> <li> Common (between 10% and 50%)</li> <li> Abundant (greater than 50%)</li> </ul>	<ul style="list-style-type: none"> <li> Present (less than 10%)</li> <li> Common (between 10% and 50%)</li> <li> Abundant (greater than 50%)</li> </ul>

**MONTHLY SAMPLING STATIONS:**

- Single Sampling Station
  - Multiple Sampling Stations
  - Offshore Sampling Station
- For areas with multiple sampling stations, species abundance at each station is represented as follows:  
(a,p) = Abundance for Alexandrium and Pseudo-nitzschia.  
e.g., (c,p) = common, present; (a,-) = abundant, not observed

Figure 2. Distribution of toxin-producing phytoplankton in Northern California during January, 2016.



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sampling sites in San Luis Obispo and San Diego counties (Figure 1). The cell mass was low at all locations. Domoic acid was not detected in bivalve shellfish samples collected during January (Figure 3).

Rock crab samples were collected in Santa Barbara County by the CDPH Food and Drug Branch (FDB) and the California Department of Fish and Wildlife (DFW). The samples from offshore around the northern Channel Islands exhibited a range of domoic acid concentrations from <2.5-460 ppm.

A summary of the crab sample data can be found at:

[http://www.cdph.ca.gov/HealthInfo/Pages/fd\\_bDomoicAcidInfo.aspx](http://www.cdph.ca.gov/HealthInfo/Pages/fd_bDomoicAcidInfo.aspx).

**Non-Toxic Species**

The diatom *Chaetoceros* was common to abundant at sites between Los Angeles and San Diego. The dinoflagellate *Ceratium* was common in Santa Barbara County at Ellwood Pier and offshore of the Santa Barbara Harbor.

**Northern California Summary:**

**Paralytic Shellfish Poisoning**

*Alexandrium* was not observed at any Northern California sites (Figure 2). PSP toxins were not detected in any bivalve shellfish samples collected in January (Figure 4).

**Domoic Acid**

*Pseudo-nitzschia* was observed at select

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**Relative Abundance of Known Toxin Producers**

**Alexandrium Species**

- Rare (less than 1%)
- Present (between 1% and 10%)
- Common (between 10% and 50%)
- Abundant (greater than 50%)

**Pseudo-nitzschia Species**

- Present (between 1% and 10%)
- Common (between 10% and 50%)
- Abundant (greater than 50%)

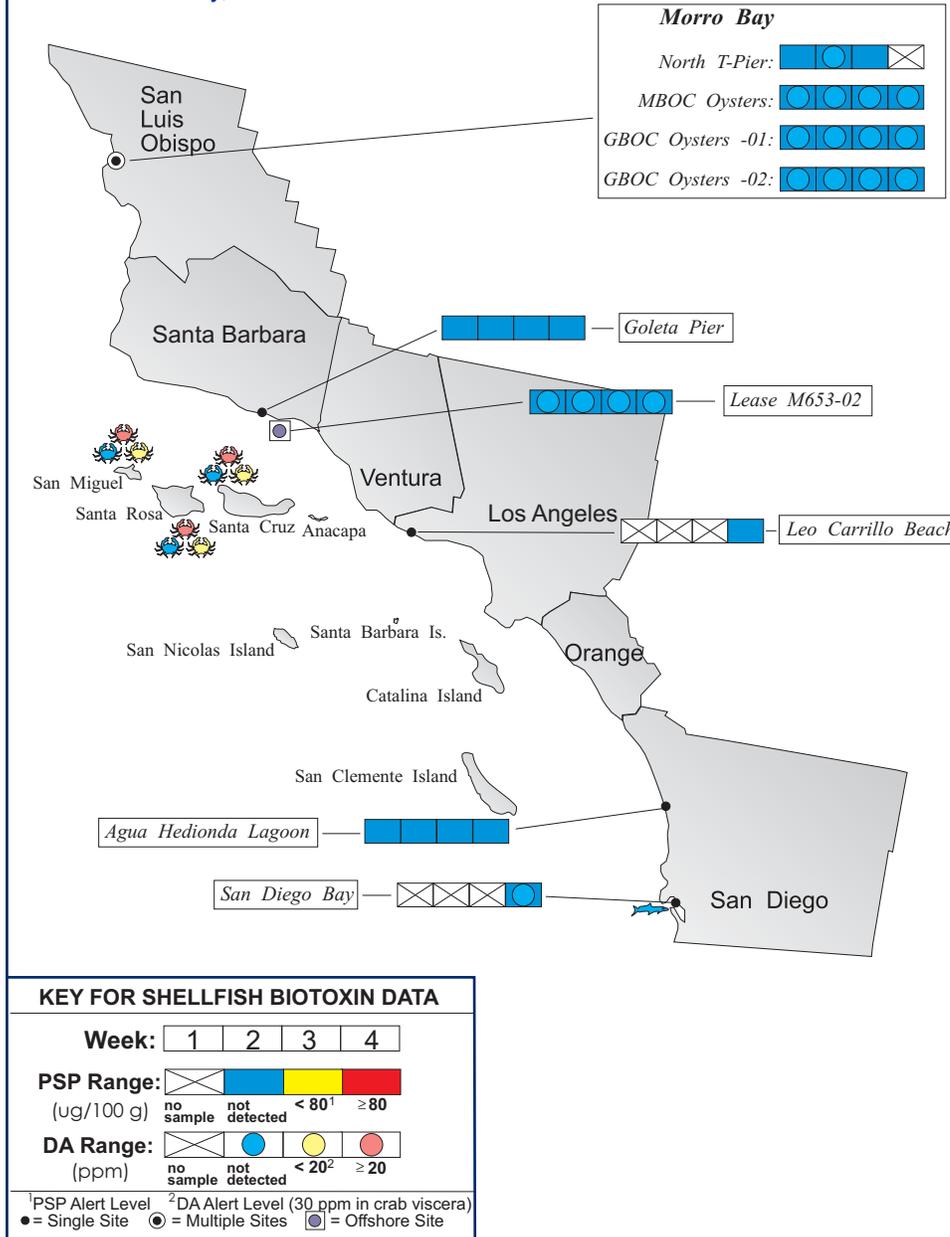
**MONTHLY SAMPLING STATIONS:**

- Single Sampling Station
- Multiple Sampling Stations
- Offshore Sampling Station

For areas with multiple sampling stations, species abundance at each station is represented as follows:  
 (A,P) = Abundance for *Alexandrium* and *Pseudo-nitzschia*.  
 e.g., (c,p) = common, present; (a,-) = abundant, not observed

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Figure 3. Distribution of shellfish biotoxins in Southern California during January, 2016.



sites in Mendocino and San Francisco counties (Figure 2). Cell mass was low at all locations. Domoic acid was detected in razor clam samples collected by DFW from Clam Beach in Humboldt County on January 24, ranging from 10-380 ppm in the muscle tissue and 9.8-300 ppm in the viscera.

FDB and DFW continued to collect crab samples along the entire northern California coast. Concentrations of domoic acid in Dungeness crab viscera ranged from 4.9-59 ppm in Del Norte County, <2.5-31 ppm in Humboldt County, 4.7-81 ppm in Mendocino County, <2.5-34 ppm in Sonoma County, and <2.5-54 ppm in San Mateo County. Dungeness crabs collected from San Francisco and Monterey counties contained low levels of domoic acid in the viscera. Some rock crabs from Monterey county continued to exceed the domoic acid alert level in the viscera with concentrations ranging from <2.5-67 ppm.

The Yurok Tribe Environmental Program collected Pacific lamprey meat samples during the second week of January that were non-detect for domoic acid.

**Non-Toxic Species**

As typical for winter samples, there was an abundance of detritus and few phytoplankton cells. No species of phytoplankton were common or abundant in the Northern California samples.



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 health is threatened.

For More Information Please Call:  
(510) 412-4635

For Recorded Biotoxin Information Call:  
(800) 553-4133

**QUARANTINES:**

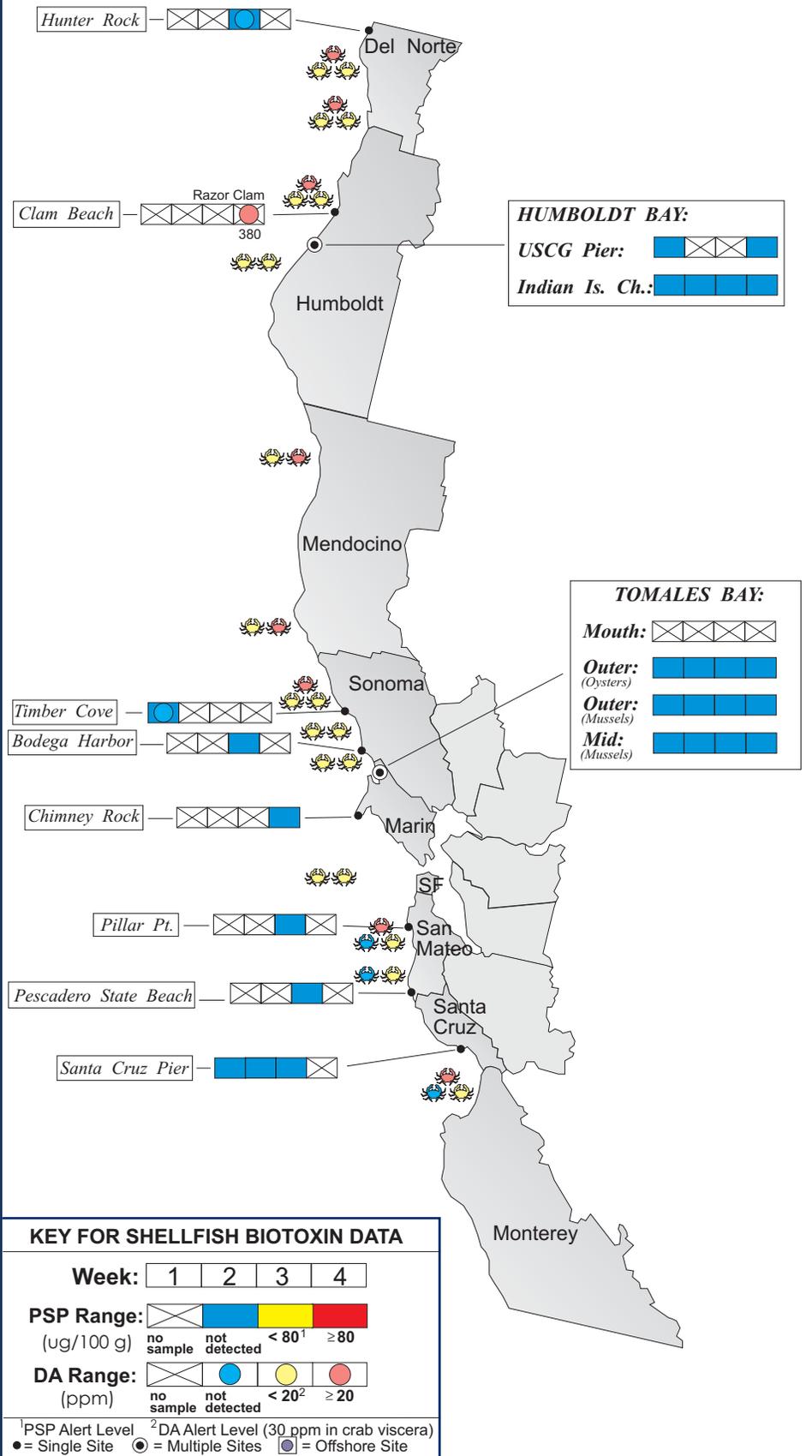
The annual mussel quarantine ended at midnight on October 31 for all coastal counties except for Del Norte, Humboldt, Santa Cruz, Monterey, and Santa Barbara counties.

The December 9 Health Advisory warning consumers not to eat recreationally harvested razor clams from Humboldt and Del Norte counties remains in effect.

On December 31 the Health Advisory for Dungeness and rock crabs was lifted for the coastlines of San Luis Obispo and Santa Barbara counties. Despite the lifting of the health advisory in this area consumers were still advised to avoid eating the viscera (internal organs, also known as "crab butter") of crabs. The Santa Cruz, Santa Rosa and San Miguel Channel Islands remain under the Health Advisory. The November 3 Health Advisory warning consumers not to eat Dungeness and Rock crabs remains in effect for the northern Channel Islands (Santa Cruz, Santa Rosa, and San Miguel) and the area between latitude 35° 40' N (near the Piedras Blancas Light Station in northern San Luis Obispo County) and the Oregon border.

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

Figure 4. Distribution of shellfish biotoxins in Northern California during January, 2016.



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Table 1. Program participants collecting phytoplankton samples during January, 2016.

(Continued from Page 4)

AGENCY	#	AGENCY	#
<b>HUMBOLDT COUNTY</b>		Bureau of Land Management	2
Coast Seafood Company	4	Humboldt State University Marine Lab	1
<b>MENDOCINO COUNTY</b>		CDPH Volunteer ( <i>Marie DeSantis</i> )	2
<b>SONOMA COUNTY</b>		CDPH Marine Biotoxin Program	1
<b>MARIN COUNTY</b>		Hog Island Oyster Company	5
CDPH Marine Biotoxin Program	1	CDPH Volunteers ( <i>Anderson, Clyde</i> )	5
<b>SAN FRANCISCO COUNTY</b>		CDPH Volunteer ( <i>Eugenia McNaughton</i> )	2
Monte Vista High School	2	Exploratorium	4
<b>SAN MATEO COUNTY</b>		San Mateo County Envir. Health Department	2
U.C. Santa Cruz - Ano Nuevo	2	The Marine Mammal Center ( <i>Stan Jensen</i> )	3
<b>SANTA CRUZ COUNTY</b>		San Lorenzo Valley High School	1
U.C. Santa Cruz	4	Santa Cruz County Envir. Health Department	2
<b>MONTEREY COUNTY</b>			
The Otter Project ( <i>Rose, Noke</i> )	4	Monterey Abalone Company	2
<b>SAN LUIS OBISPO COUNTY</b>		CDPH Marine Biotoxin Program	1
Morro Bay National Estuary Program	4	Morro Bay Oyster Company	4
Coastal Discovery Center, San Simeon	3	Tenera Environmental	3
Friends of the Sea Otter ( <i>Cherry</i> )	3	CDPH Volunteers ( <i>Plemons, Hoskins</i> )	5
<b>SANTA BARBARA COUNTY</b>			
CDPH Volunteer ( <i>Sylvia Short</i> )	2	U.C. Santa Barbara	2
Santa Barbara Channel Keeper	2	National Park Service	1
<b>LOS ANGELES COUNTY</b>			
CDPH Volunteers ( <i>Parsons, Yanny</i> )	2	Los Angeles County Sanitation District	3
<b>ORANGE COUNTY</b>		Amigos de Bolsa Chica	4
CDPH Volunteer ( <i>Truong Nguyen</i> )	2	California Department of Fish and Wildlife	4
<b>SAN DIEGO COUNTY</b>			
Scripps Institute of Oceanography	4	Tijuana River National Estuary Research	4

general guidance due 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 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 the viscera of seafood species such as crab, lobster, and small finfish like sardines and anchovies, therefore these tissues should not be consumed.

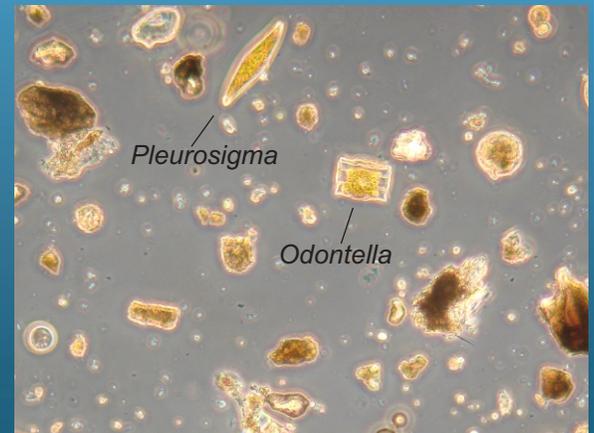
Contact the "Biotoxin Information Line" at 1-800-553-4133 for a current update on marine biotoxin activity prior to gathering and consuming shellfish.



Table 2. CDPH program participants submitting shellfish samples during January, 2016.

COUNTY	AGENCY	#
Del Norte	Tolowa Dee-ni' Nation	1
	Yurok Tribe Environmental Program	3
	CDPH Food and Drug Branch	24
Humboldt	Coast Seafood Company	6
	California Department of Fish and Wildlife	10
	CDPH Food and Drug Branch	24
Mendocino	CDPH Food and Drug Branch	12
	Sonoma	1
Sonoma	CDPH Marine Biotoxin Program	1
	CDPH Volunteer ( <i>Marcos Nunez</i> )	1
	CDPH Food and Drug Branch	18
Marin	Cove Mussel Company	5
	Hog Island Oyster Company	5
	Starbird Mariculture	4
	CDPH Marine Biotoxin Program	1
San Francisco	CDPH Food and Drug Branch	6
San Mateo	San Mateo County Environmental Health Department	2
	CDPH Food and Drug Branch	25
Santa Cruz	U.C. Santa Cruz	3
Monterey	CDPH Food and Drug Branch	23
	San Luis Obispo	8
San Luis Obispo	Grassy Bar Oyster Company	8
	Morro Bay Oyster Company	8
Santa Barbara	Santa Barbara Mariculture Company	4
	U.C. Santa Barbara	4
	CDPH Food and Drug Branch	126
Ventura	None Submitted	
Los Angeles	CDPH Volunteer ( <i>Steven Field</i> )	1
Orange	None Submitted	
San Diego	Carlsbad Aquafarms, Inc.	4
	U.S. Navy Marine Mammal Program	2

## PHYTOPLANKTON GALLERY



Singular cells of the diatoms *Odontella* and *Pleurosigma*. As common with winter phytoplankton samples, this sample was mostly detritus.



The armored dinoflagellate *Ceratium fusus*. This species of *Ceratium* is distinguished by its long narrow shape with horns that taper in a slight curve.



The diatom *Rhizosolenia*. Each cell is long and cylindrical with slanted ends to help maintain their horizontal position in the water.