

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

March 2012

Technical Report No. 12-12

INTRODUCTION:

This report provides a summary of biotoxin activity for the month of March, 2012. 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 observed at several southern California locations in March (Figure 1). Low numbers of this dinoflagellate were observed at Hartford Pier and Pismo Pier in San Luis Obispo County (March 16 and March 13, respectively), Ellwood Pier in Santa

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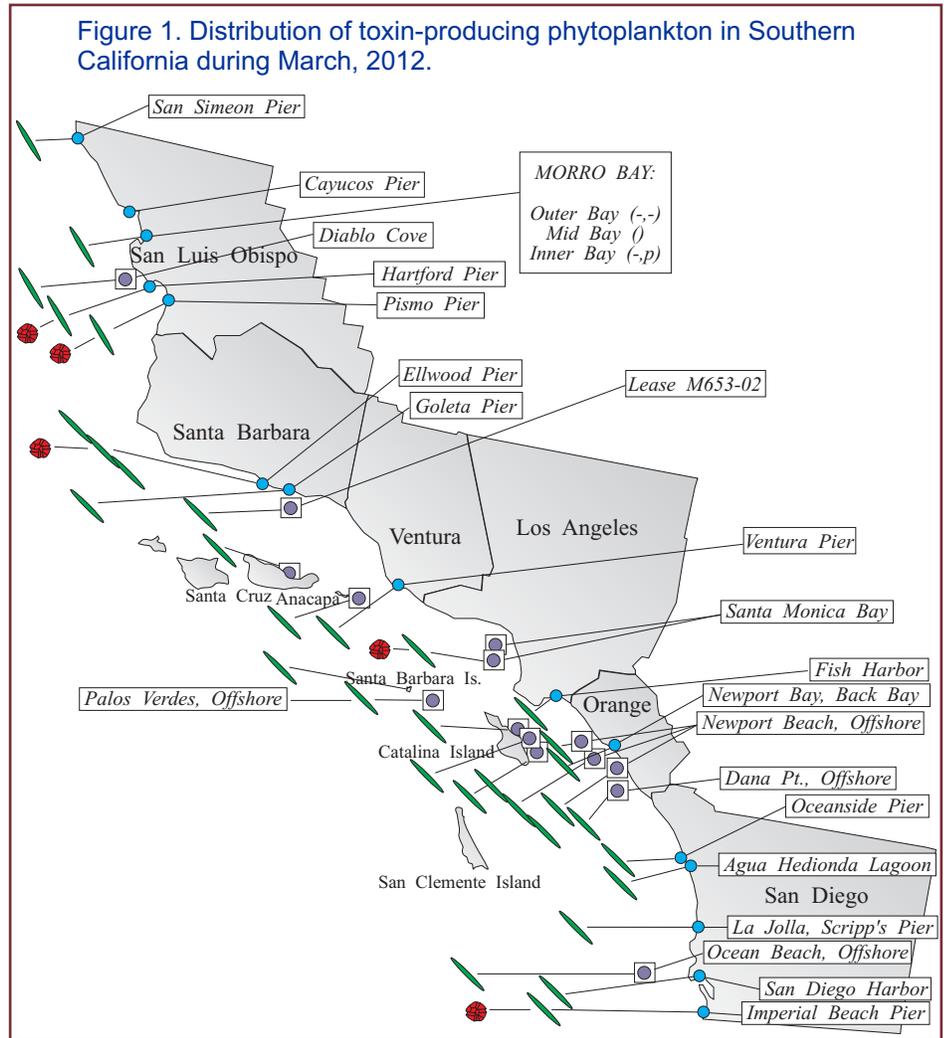


Figure 1. Distribution of toxin-producing phytoplankton in Southern California during March, 2012.

Relative Abundance of Known Toxin Producers

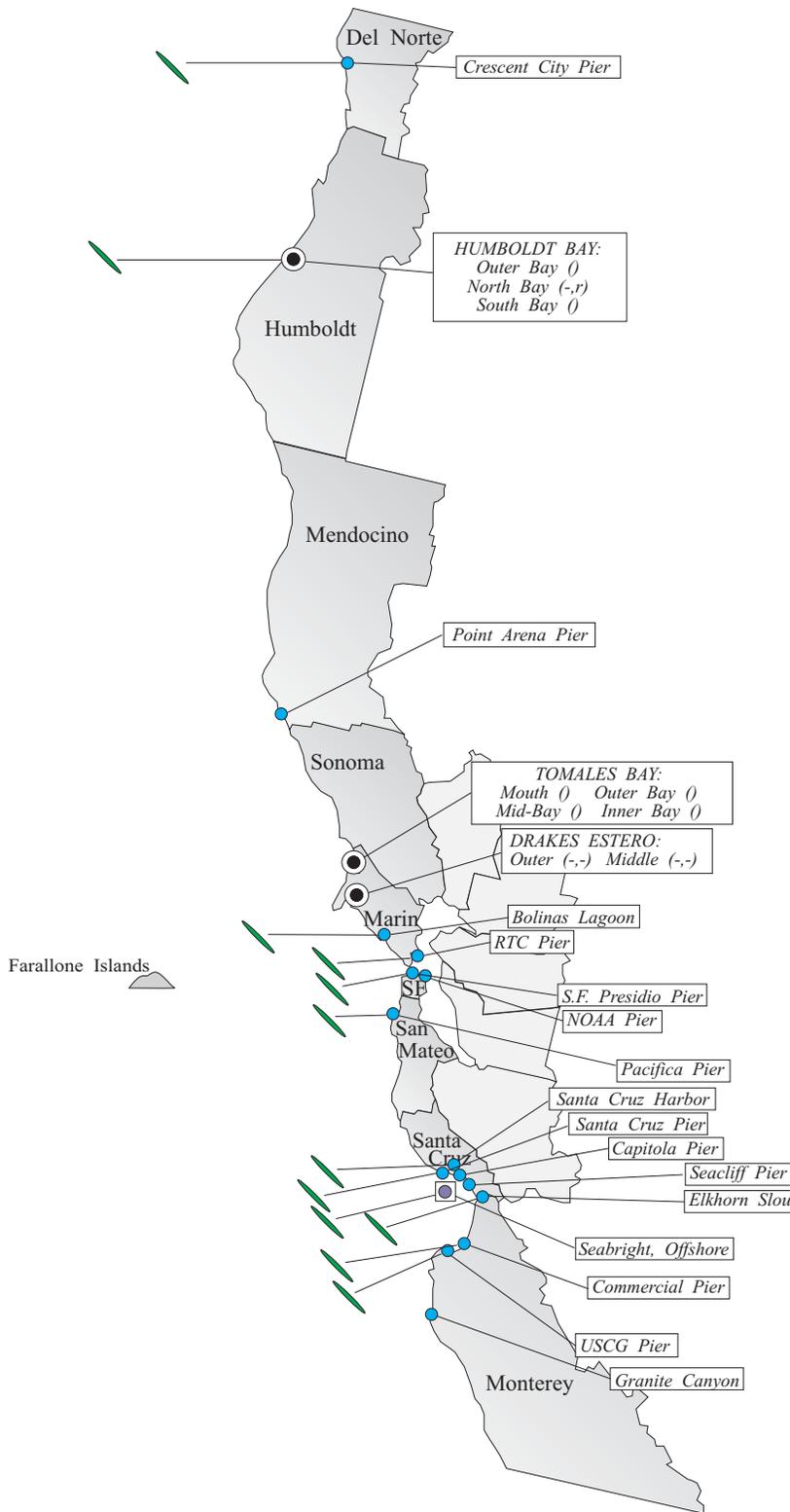
Alexandrium Species		Pseudo-nitzschia Species	
	Rare (less than 1%)		Present (less than 10%)
	Present (between 1% and 10%)		Common (between 10% and 50%)
	Common (between 10% and 50%)		Abundant (greater than 50%)
	Abundant (greater than 50%)		

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

Figure 2. Distribution of toxin-producing phytoplankton in Northern California during March, 2012.



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Barbara County (March 27), in Santa Monica Bay in Los Angeles County (March 1), and at Imperial Beach Pier in San Diego County (March 14). PSP toxins were not detected in any shellfish samples collected in March (Figure 3).

Domoic Acid

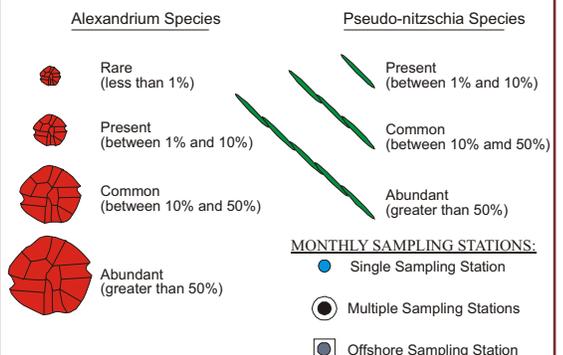
Pseudo-nitzschia was observed along the entire southern California coast in March (Figure 1). There was a decrease in relative abundance at sites south of Point Conception compared to observations in February. There continued to be a mix of toxic and nontoxic species and the overall cell mass of this diatom remained very low. Domoic acid was not detected in any shellfish samples collected in March (Figure 3).

Non-toxic Species

Diatoms dominated the southern California coast, with a greater diversity of species observed compared to past months. *Coscinodiscus* was common to abundant at sites between Santa Barbara and San Diego, with the exception of the Los Angeles region. *Chaetoceros* was common at nearshore Los Angeles sites and abundant offshore at Catalina Island. Other common diatoms included *Lauderia*, *Skeletonema*, *Guinardia*, and *Eucampia*. The highest cell masses of diatoms were observed at sites offshore of

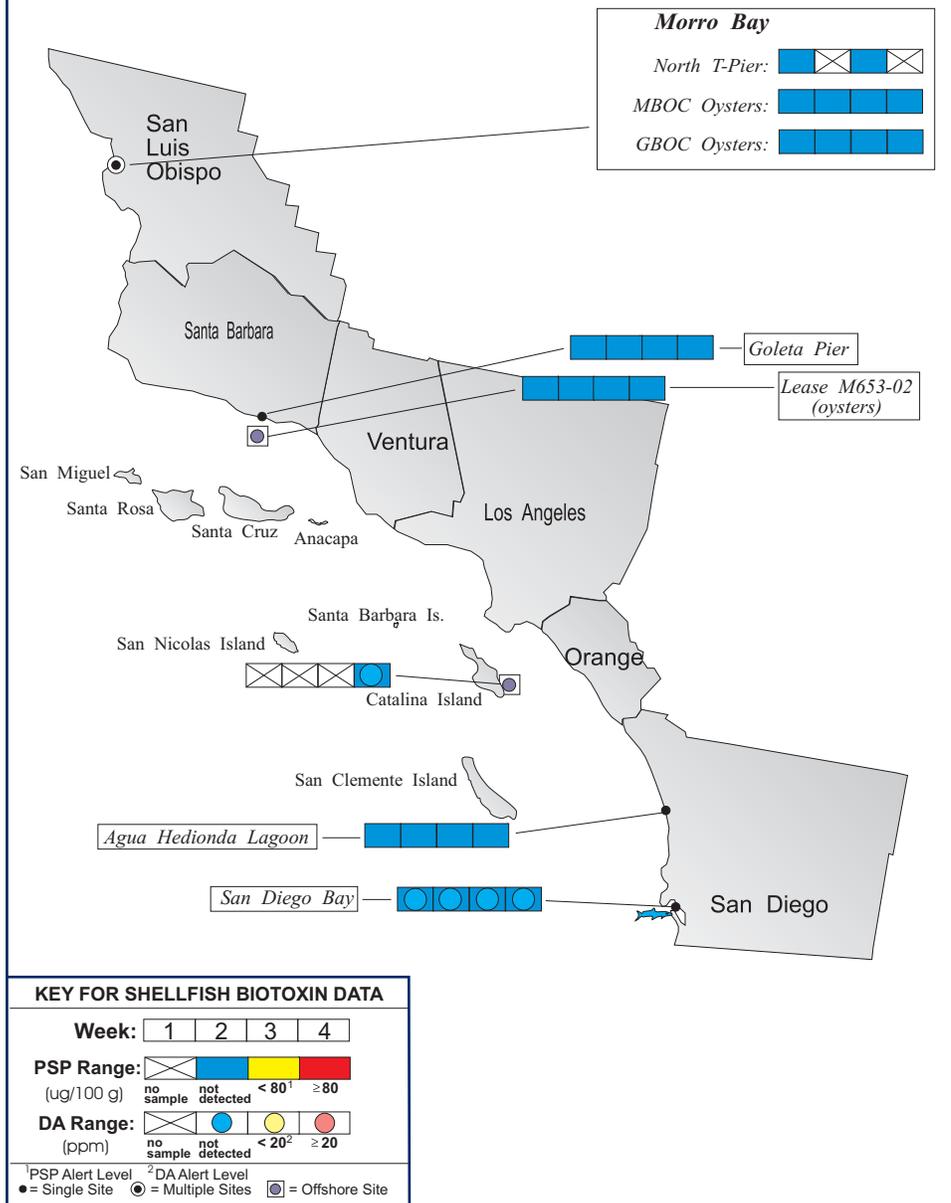
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Relative Abundance of Known Toxin Producers



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 3. Distribution of shellfish biotoxins in Southern California during March, 2012.



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Newport Beach (Orange County), offshore of Palos Verdes (Los Angeles County), and at Gaviota and Goleta piers (Santa Barbara County).

Northern California Summary:

Paralytic Shellfish Poisoning

Alexandrium was not observed in any phytoplankton samples collected during March (Figure 2). PSP toxins were not detected in any samples collected throughout the month (Figure 4).

Domoic Acid

Pseudo-nitzschia was observed at several sites along the northern California coast during March (Figure 2). The relative abundance remained very low at these sites. Domoic acid was not detected in any shellfish samples collected in March.

Non-toxic Species

Winter conditions continued to produce large amounts of detritus in our phytoplankton samples in March. Diatoms increased in diversity and relative abundance, with *Skeletonema* the dominant genus in most areas. *Chaetoceros* was common in samples collected between Marin and Monterey counties.



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 October 16 health advisory was rescinded in February as a result of continued low relative abundances of *Pseudo-nitzschia* and the low or nondetectable levels of domoic acid in recent months. The health advisory had warned consumers not to eat sport-harvested shellfish or the internal organs of crustaceans and small finfish from the Channel Islands.

There were no quarantines or health advisories in effect in March. The annual mussel quarantine is scheduled to begin May 1. When in effect this quarantine prohibits the sport-harvesting of mussels along the entire California coastline, including all bays and estuaries. The annual quarantine does not apply to the certified commercial shellfish growing areas in California, which are monitored intensively throughout the year. In addition, routine coastal phytoplankton and biotoxin monitoring is maintained throughout the quarantine period. Special quarantines or health advisories may be issued for additional seafood species as warranted by increasing toxin levels.

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

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Figure 4. Distribution of shellfish biotoxins in Northern California during March, 2012.

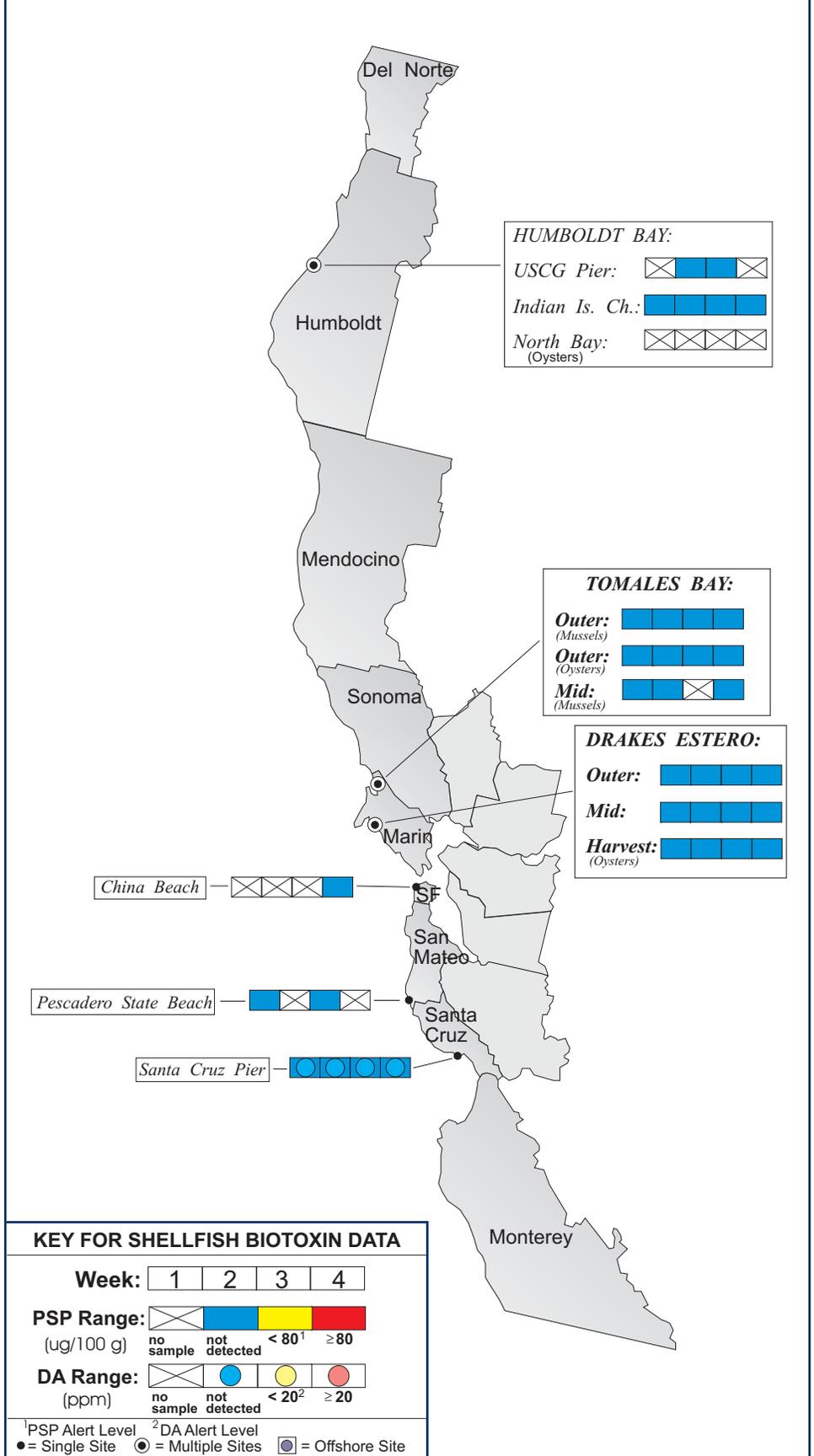


Table 1. California Marine Biotoxin Monitoring Program participants submitting shellfish samples during March, 2012.

COUNTY	AGENCY	#
Del Norte	None Submitted	
Humboldt	Coast Seafood Company	6
Mendocino	None Submitted	
Sonoma	None Submitted	
Marin	Cove Mussel Company	3
	Drakes Bay Oyster Company	16
	Hog Island Oyster Company	4
	Marin Oyster Company	4
San Francisco	San Francisco Health Department	1
San Mateo	San Mateo County Environmental Health Department	2
Santa Cruz	U.C. Santa Cruz	4
Monterey	None Submitted	
San Luis Obispo	Grassy Bar Oyster Co.	6
	Morro Bay Oyster Company	4
Santa Barbara	Santa Barbara Mariculture Company	8
	U.C. Santa Barbara	5
Ventura	None Submitted	
Los Angeles	CDPH Volunteer (<i>Cal Parsons</i>)	1
Orange	None Submitted	
San Diego	Carlsbad Aquafarms, Inc.	4
	U.S. Navy Marine Mammal Program	5

Table 2. Agencies, organizations and volunteers participating in marine phytoplankton sample collection during March, 2012.

COUNTY	AGENCY	#
Del Norte	Del Norte County Health Department	3
Humboldt	Coast Seafood Company	4
Mendocino	CDPH Volunteer (<i>Marie de Santis</i>)	1
Sonoma	None Submitted	
Marin	Drakes Bay Oyster Company	10
	CDPH Volunteer (<i>Brent Anderson</i>)	4
	SFSU, Romberg Tiburon Center	4
Contra Costa	None Submitted	
Alameda	None Submitted	
San Francisco	CDPH Volunteer (<i>Eugenia McNaughton</i>)	3
	Exploratorium	4
San Mateo	The Marine Mammal Center (<i>Stan Jensen</i>)	4
	San Mateo County Environmental Health Department	2

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clams (*Siliqua patula*) are an exception to this 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 affect the human central nervous system, producing a tingling around the mouth and fingertips within a few minutes to a few hours after eating toxic shellfish. These symptoms typically are 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.

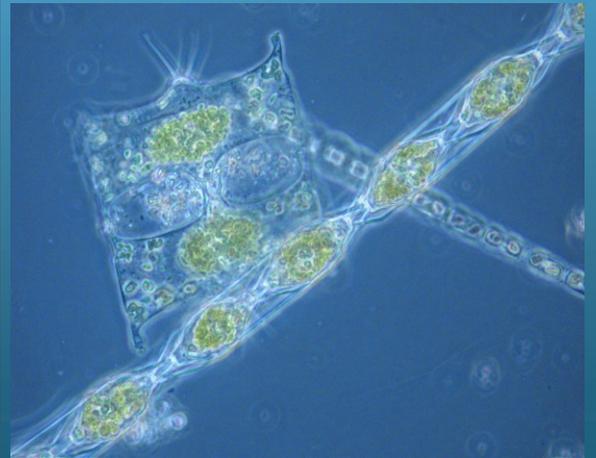
Any person experiencing any of these symptoms should seek immediate medical care. Consumers are also advised that neither cooking or freezing eliminates domoic acid or the PSP toxins from the shellfish tissue. These toxins may also accumulate in the viscera of other seafood species such as crab, lobster, 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.



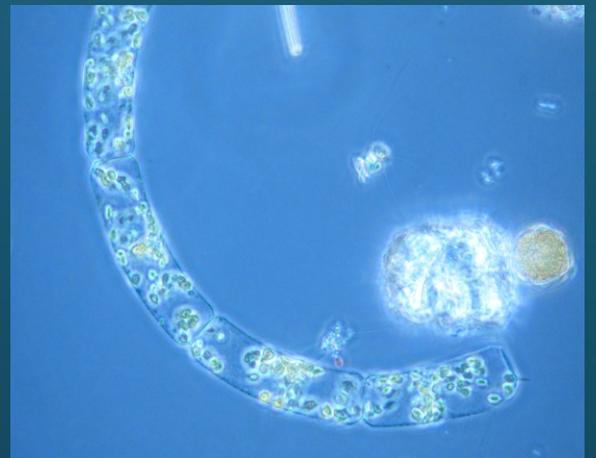
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COUNTY	AGENCY	#
Santa Cruz	San Lorenzo Valley High School	2
	California Department of Parks and Recreation	1
	U.C. Santa Cruz	4
Monterey	Friends of the Sea Otter (<i>Janis Chaffin, Cory Utter</i>)	3
	Monterey Abalone Company	2
	Marine Pollution Studies Laboratory	2
San Luis Obispo	Friends of the Sea Otter (<i>Kelly Cherry</i>)	4
	Grassy Bar Oyster Company	4
	Morro Bay National Estuary Program	1
	Monterey Bay National Marine Sanctuary	4
	Tenera Environmental	5
Santa Barbara	The Marine Mammal Center (<i>P.J. Webb, Tim Lytsell</i>)	3
	CDPH Volunteer (<i>Sylvia Short</i>)	4
	Santa Barbara Mariculture Company	4
	U.C. Santa Barbara	5
	National Park Service	1
Ventura	Tole Mour	2
	CDPH Marine Biotoxin Program	1
	CDPH Volunteer (<i>Fred Burgess</i>)	3
	National Park Service	1
Los Angeles	Los Angeles County Sanitation District	5
	CDPH Volunteer (<i>Cal Parsons</i>)	1
	Southern California Marine Institute	1
	City of Los Angeles Environmental Monitoring Division	1
Orange	Tole Mour	6
	Orange County Sanitation District	3
	California Department of Fish and Game	4
San Diego	Ocean Institute	2
	Carlsbad Aquafarms, Inc.	2
	CDPH Volunteer (<i>Cynthia Hall</i>)	2
	Scripps Institute of Oceanography	4
	San Diego Whale Watch	4
	Tijuana River National Estuary Research Reserve	4
	U.S. Navy Marine Mammal Program	4

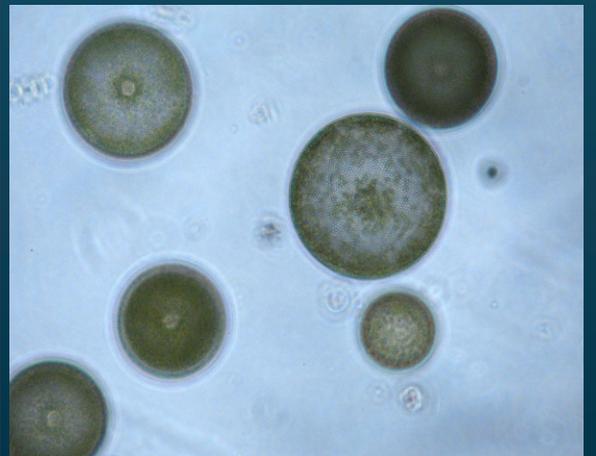
PHYTOPLANKTON GALLERY



Two different species of the diatom *Odontella*.



The diatom *Guinardia* was present in several samples during the month.



Centric diatoms were common to abundant at southern California sites.