

# 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 February 2010 Technical Report No. 10-04

## INTRODUCTION:

This report provides a summary of biotoxin activity for the month of February, 2010. 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.

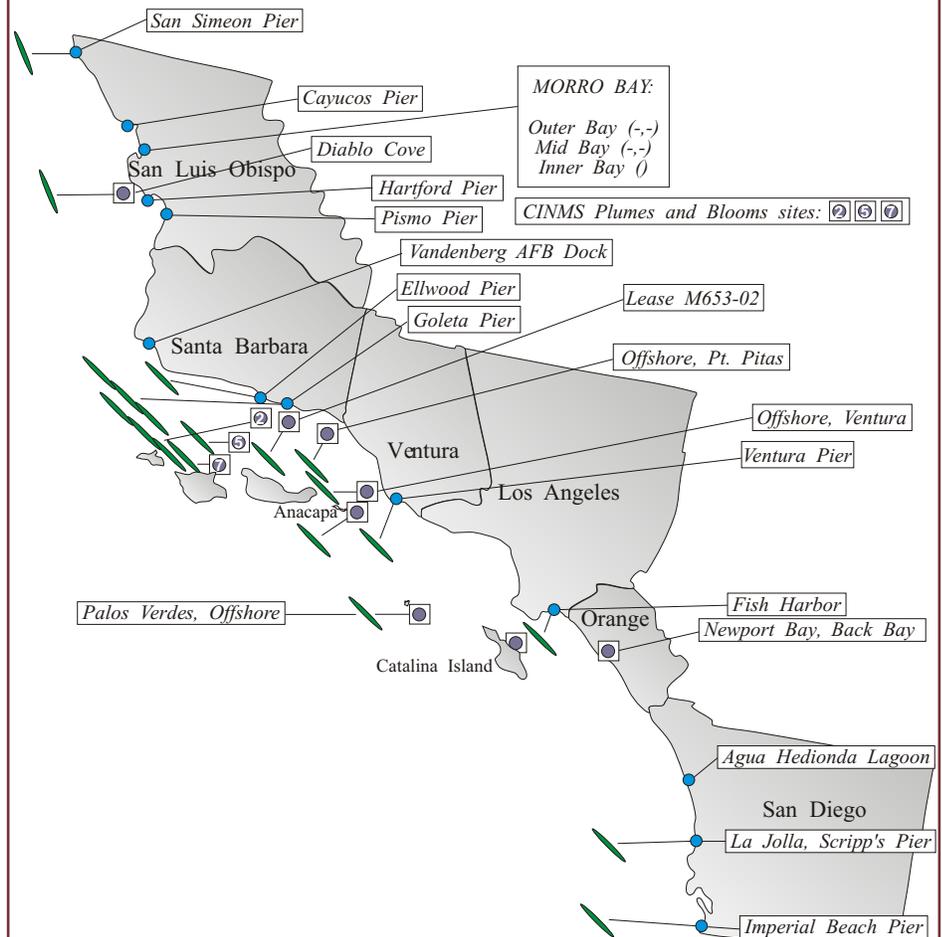
### Southern California Summary:

#### Paralytic Shellfish Poisoning

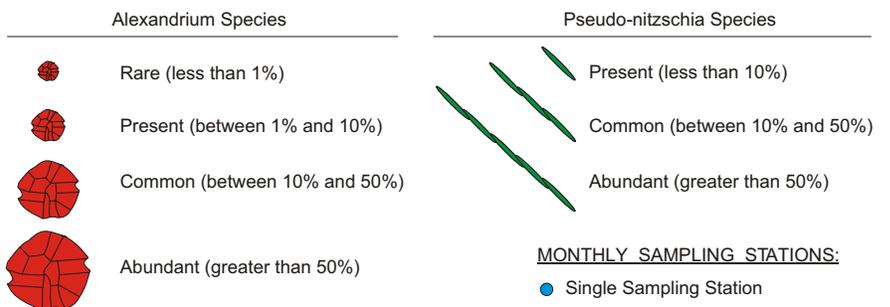
*Alexandrium* was not observed at any sampling location during February (Figure 1). PSP toxins were not detected in any shellfish samples collected during the month (Figure 3).

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Figure 1. Distribution of toxin-producing phytoplankton in Southern California during February, 2010.



### Relative Abundance of Known Toxin Producers

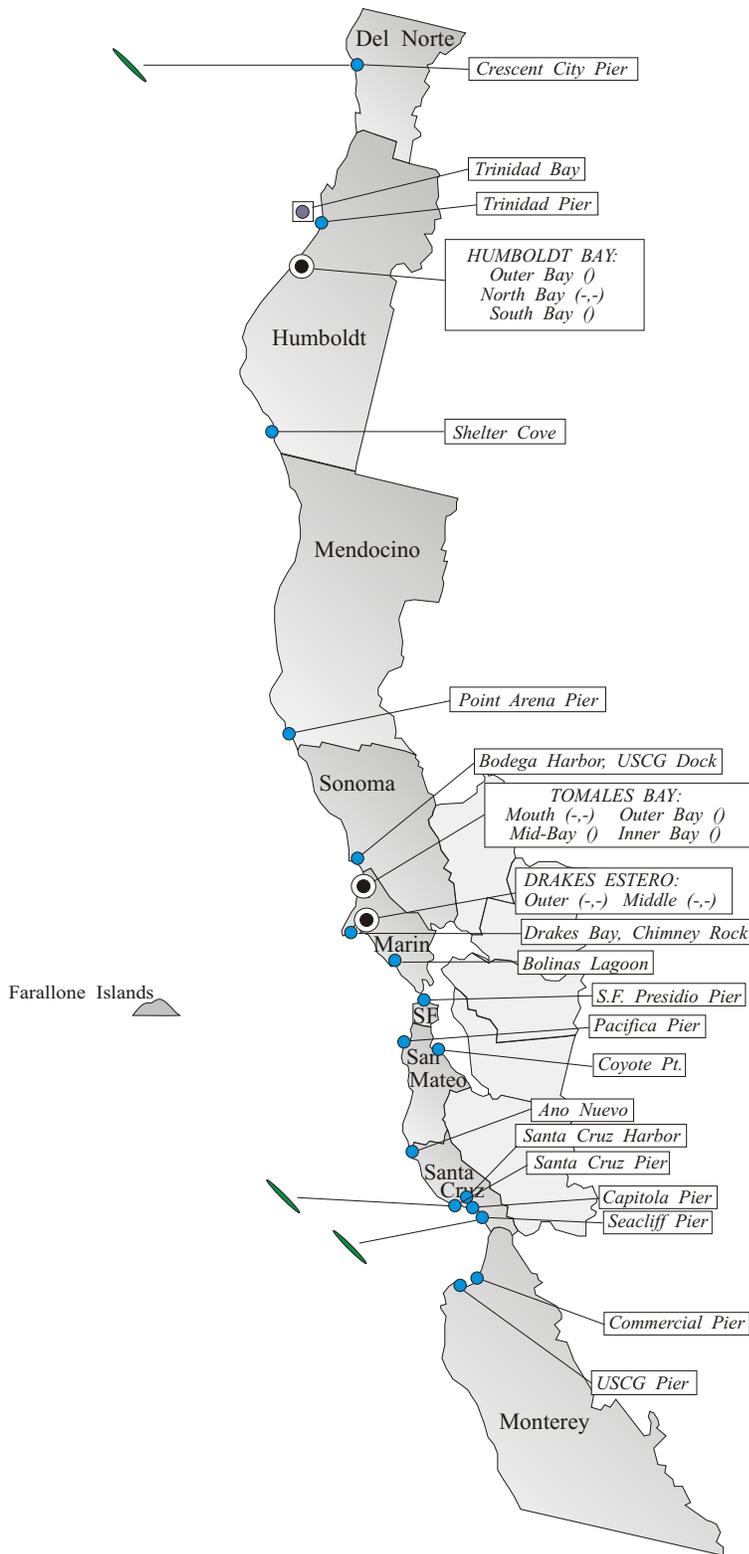


#### MONTHLY SAMPLING STATIONS:

- 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 February, 2010.



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**Domoic Acid**

*Pseudo-nitzschia* was detected at a number of locations along the southern California coast during February (Figure 1). The distribution was similar to observations in January, however there was a noticeable increase in relative abundance at two sampling locations in Santa Barbara. Cell mass remained low, even at the Santa Barbara sites. Domoic acid was not detected in any shellfish samples during the month.

**Non-toxic Species**

Phytoplankton diversity and abundance remained low at most locations, with samples dominated by detritus. There was a noticeable increase in phytoplankton species compared to January, however. Notable exceptions include a variety of diatoms observed at sites in San Luis Obispo (*Bacteriastrum* was abundant at San Simeon), Santa Barbara (*Chaetoceros* at various locations), and Los Angeles (*Chaetoceros* was abundant offshore of Palos Verdes). The latter site had the greatest cell mass of any site sampled in February. Significant numbers of dinoflagellates were observed at several locations. *Lingulodinium polyedrum* was abundant at Goleta Pier in Santa Barbara and common at sites in Ventura and San Diego

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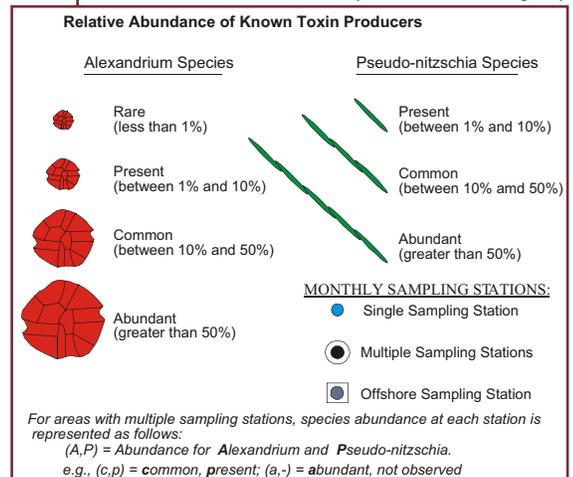
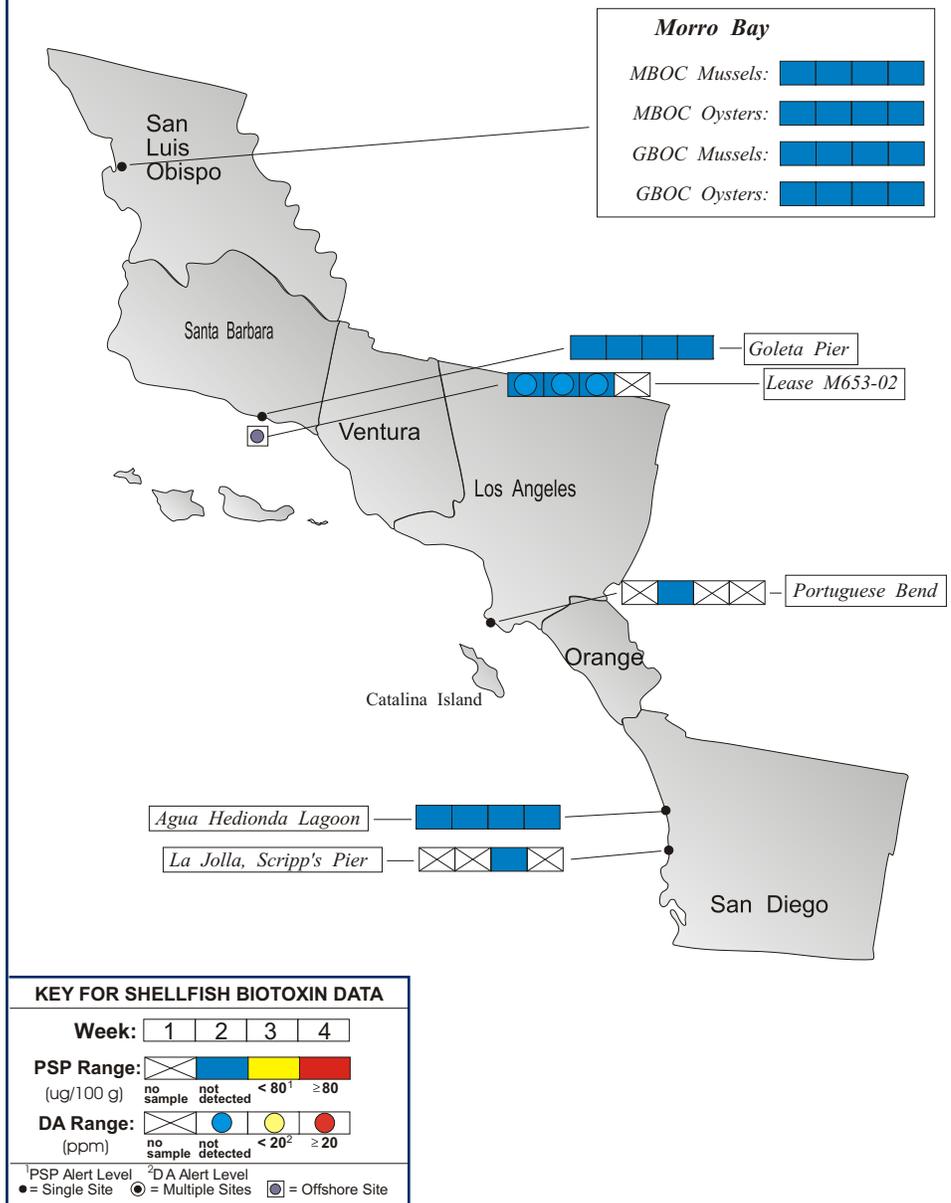


Figure 3. Distribution of shellfish biotoxins in Southern California during February, 2010.



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counties.

**Northern California Summary:**

**Paralytic Shellfish Poisoning**

*Alexandrium* was not observed at any sampling location during February (Figure 2). PSP toxins were not detected in any shellfish samples collected during the month (Figure 4).

**Domoic Acid**

*Pseudo-nitzschia* was observed at only three sampling locations in February (Figure 2). Very low numbers of this diatom were observed in samples from Crescent City and two Santa Cruz sites inside Monterey Bay.

Domoic acid was not detected in any shellfish samples collected in February.

**Non-toxic Species**

Detritus dominated all phytoplankton samples during February. A few diatoms were observed in samples from Humboldt Bay (*Thalassiosira*) and Tomales Bay (*Chaetoceros*, *Thalassiosira*), but cell mass was very low.



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:**

There were no quarantines or health advisories in place in February.

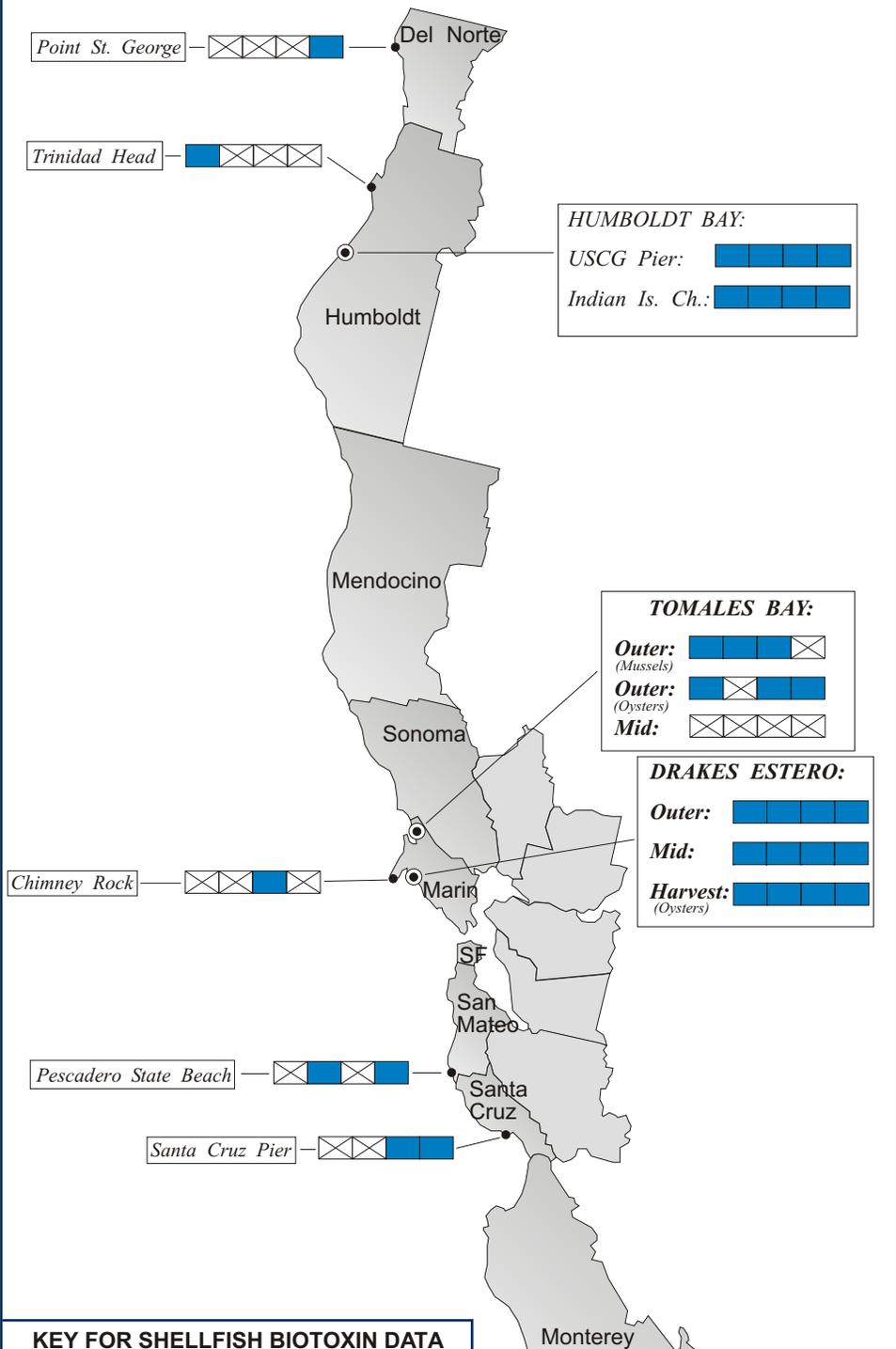
The annual quarantine goes into effect each year on May 1 and applies specifically to the sport-harvesting of mussels along the entire California coastline, including all bays and estuaries. Routine phytoplankton and biotoxin monitoring is maintained throughout the year. This allows the detection of unexpected increases in biotoxin activity outside of the routine quarantine period. The annual quarantine does not apply to the certified commercial shellfish growing areas in California, which are monitored intensively throughout the year. All certified shellfish growers are required to submit at least weekly samples of shellfish for toxin monitoring. Harvest restrictions or closures are implemented as needed to protect the public's health.

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 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

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Figure 4. Distribution of shellfish biotoxins in Northern California during February, 2010.



**KEY FOR SHELLFISH BIOTOXIN DATA**

**Week:** 1 | 2 | 3 | 4

**PSP Range:** [Legend: white box, blue box, yellow box, red box]  
 (ug/100 g) no sample not detected < 80<sup>1</sup> ≥ 80

**DA Range:** [Legend: white box, blue circle, yellow circle, red circle]  
 (ppm) no sample not detected < 20<sup>2</sup> ≥ 20

<sup>1</sup>PSP Alert Level <sup>2</sup>DA Alert Level  
 ● = Single Site ● = Multiple Sites ◐ = Offshore Site

Table 1. California Marine Biotoxin Monitoring Program participants submitting shellfish samples during February, 2010.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	1
Humboldt	Coast Seafood Company	8
	CDPH Volunteer ( <i>Nick Fernella</i> )	1
Mendocino	None Submitted	
Sonoma	None Submitted	
Marin	CDPH Marine Biotoxin Monitoring Program	1
	Drakes Bay Oyster Company	16
	Hog Island Oyster Company	3
	Marin Oyster Company	3
San Francisco	None Submitted	
San Mateo	San Mateo County Environmental Health Department	2
Santa Cruz	U.C. Santa Cruz	2
Monterey	None Submitted	
San Luis Obispo	Grassy Bar Oyster Co.	8
	Morro Bay Oyster Company	8
Santa Barbara	Santa Barbara Mariculture Company	6
	U.C. Santa Barbara	4
Ventura	None Submitted	
Los Angeles	Los Angeles County Health Department	1
Orange	None Submitted	
San Diego	Carlsbad Aquafarms, Inc.	4
	Scripps Institute of Oceanography	1

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.

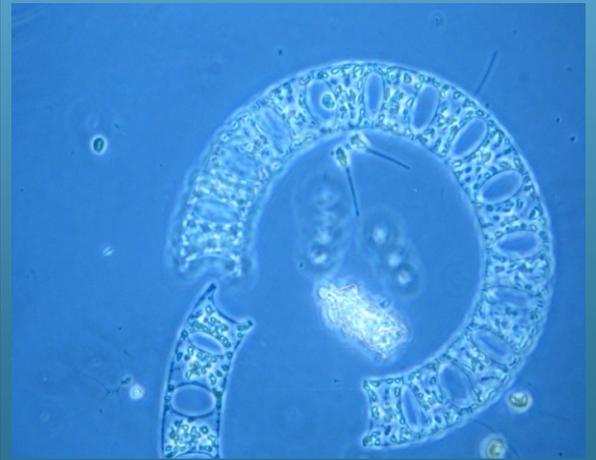
Any person experiencing any of these symptoms should seek immediate medical care. Consumers are also advised that neither cooking or freezing eliminates domoic acid or the PSP toxins from the shellfish tissue. These toxins may also accumulate in the viscera of other seafood species such as crab, lobster, and small finfish like sardines and anchovies, therefore these tissues should not be consumed. Sport harvesters are encouraged to contact the "Biotoxin Information Line" at 1-800-553-4133 for a current update on marine biotoxin activity prior to gathering and consuming shellfish.



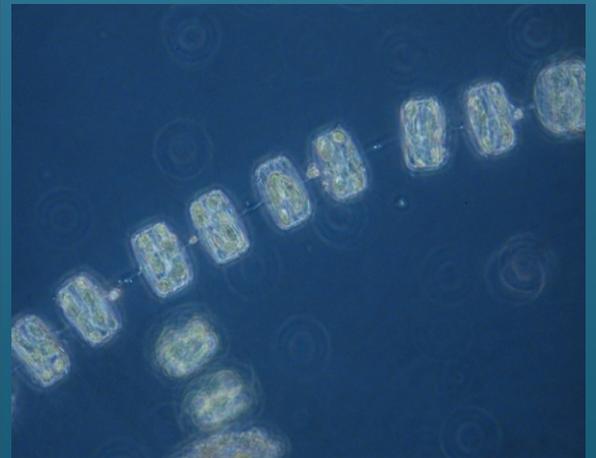
Table 2. Agencies, organizations and volunteers participating in marine phytoplankton sample collection during February, 2010.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	3
Humboldt	Coast Seafood Company	4
	Bureau of Land Management	2
	CDPH Volunteers ( <i>Nick Ferello</i> )	1
	Humboldt State University Marine Lab	1
Mendocino	CDPH Volunteer ( <i>Marie De Santis</i> )	2
Sonoma	CDPH Volunteer ( <i>Cathleen Cannon</i> )	1
Marin	CDPH Volunteers ( <i>Brent Anderson, Cal Strobel</i> )	5
	CDPH Marine Biotxin Program	1
	Drakes Bay Oyster Company	10
San Francisco	CDPH Volunteer ( <i>E. McNaughton</i> )	2
San Mateo	Friends of the Sea Otter ( <i>Diane Larsen</i> )	1
	San Mateo County Environmental Health Dept.	2
	The Marine Mammal Center ( <i>Stan Jensen</i> )	5
	U.C. Santa Cruz	2
Santa Cruz	San Lorenzo Valley High School	1
	Santa Cruz County Environmental Health Dept.	3
	U.C. Santa Cruz	4
Monterey	Friends of the Sea Otter ( <i>Aya Obara</i> )	1
	Monterey Abalone Company	1
San Luis Obispo	Friends of the Sea Otter ( <i>Kelly Cherry</i> )	4
	Morro Bay National Estuary Program	1
	Monterey Bay National Marine Sanctuary	3
	Morro Bay Oyster Company	4
	Tenera Environmental	3
Santa Barbara	The Marine Mammal Center ( <i>Tim Lytsell, P.J. Webb</i> )	7
	CDPH Volunteer ( <i>Sylvia Short</i> )	4
	Channel Islands National Marine Sanctuary	4
	Santa Barbara Mariculture Company	3
Vandenberg AFB	Vandenberg AFB	2
	U.C. Santa Barbara	4
	U.C. Santa Barbara	4
Ventura	CDPH Volunteer ( <i>Fred Burgess</i> )	3
	Channel Islands National Marine Sanctuary	2
	National Park Service	1
Los Angeles	Los Angeles County Sanitation District	3
	Southern California Marine Institute	1
Orange	California Department of Fish and Game	2
San Diego	Avian Research Associates	2
	Carlsbad Aquafarms, Inc.	2
	Scripps Institute of Oceanography	4

## PHYTOPLANKTON GALLERY



Increasing numbers of diatoms, like the chain of *Eucampia* pictured above, were observed in February.



The chained centric diatom *Thalassiosira* was common at a number of locations.



Dinoflagellates began increasing in numbers at some southern California sites.