

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

November 2008

Technical Report No. 08-28

INTRODUCTION:

This report provides a summary of biotoxin activity for the month of November, 2008. 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.

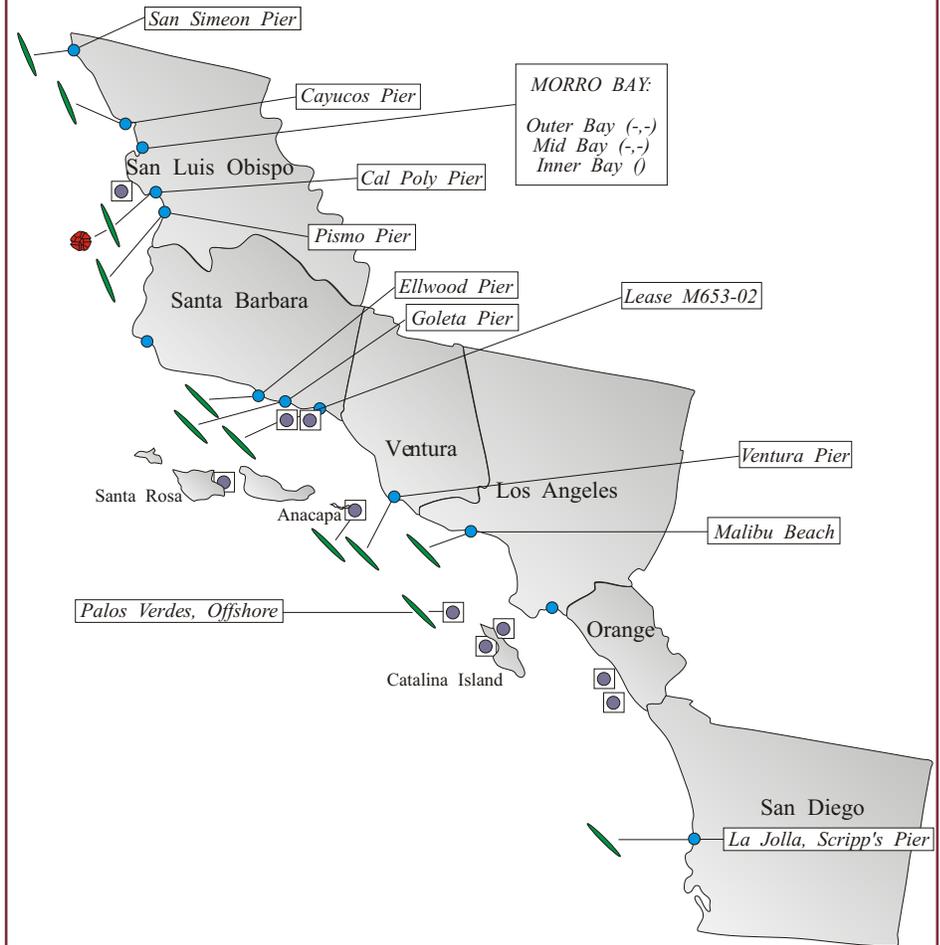
Southern California Summary:

Paralytic Shellfish Poisoning

Alexandrium was observed at only one sampling station during November (Figure 1). This dinoflagellate was observed in very low numbers throughout the month at Avila in San Luis Obispo County. PSP toxins were not

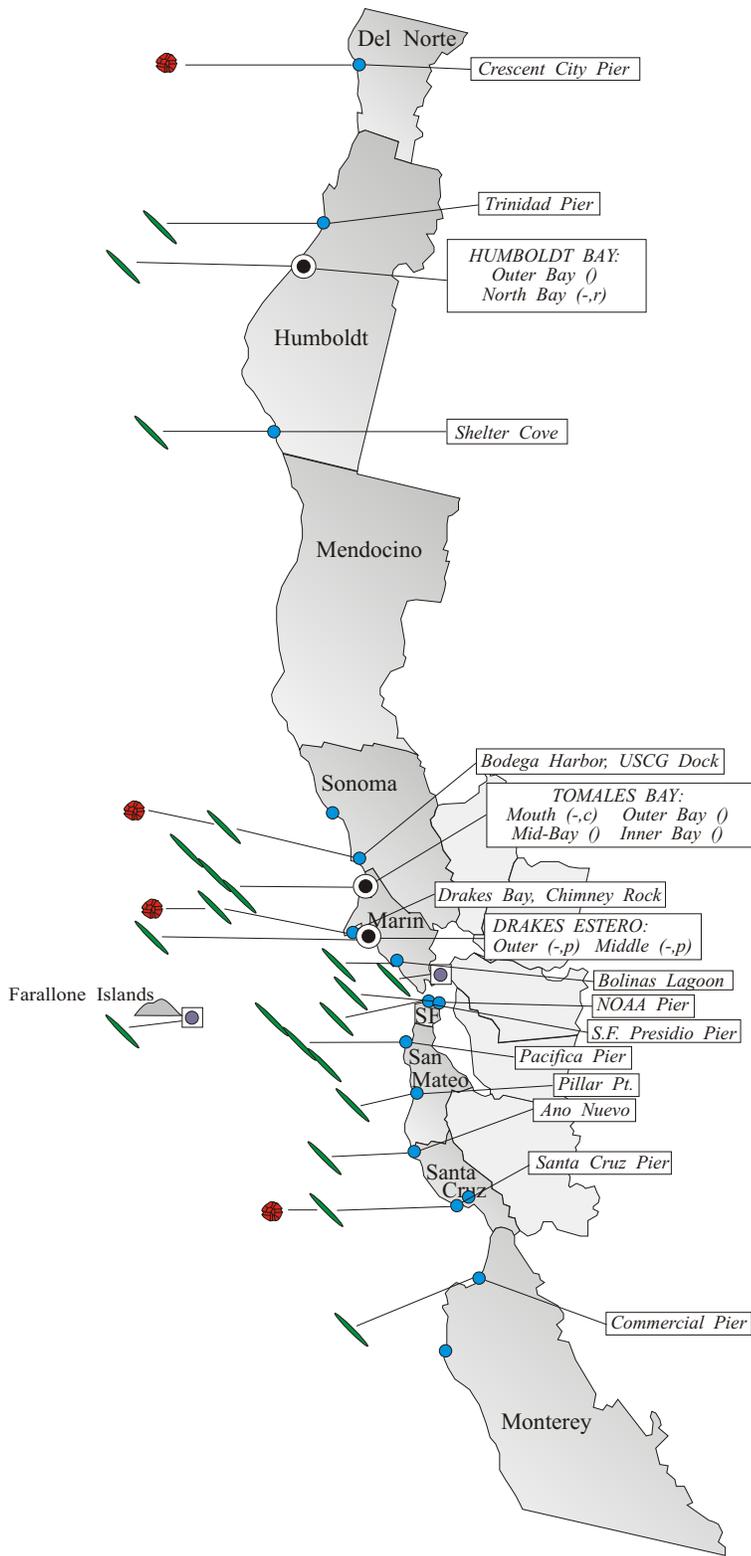
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Figure 1. Distribution of toxin-producing phytoplankton in Southern California during November, 2008.



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 November, 2008.



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detected in any shellfish samples collected in November, however a low level of these toxins was detected in a sample of lobster viscera collected on November 21 offshore of Port Hueneme, Ventura County (Figure 3).

Domoic Acid

Pseudo-nitzschia was detected at most sites between San Luis Obispo and San Diego counties in November (Figure 1). The distribution of this diatom was similar to observations in October but the relative abundance decreased significantly compared to observations the previous month. Domoic acid was not detected in any shellfish samples collected along the southern California coast in November (Figure 3).

Non-toxic Species

Phytoplankton diversity and abundance declined through November along most of the southern California coast. The dinoflagellates *Prorocentrum* and *Cochlodinium* dominated the area around Avila (San Luis Obispo County) throughout most of the month, with diatoms common at other sites in this county. The diatom *Chaetoceros* was common in Santa Barbara, offshore near Anacapa Island, and offshore of Palos Verdes (Los Angeles County). *Prorocentrum* was also common at sites in

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Relative Abundance of Known Toxin Producers

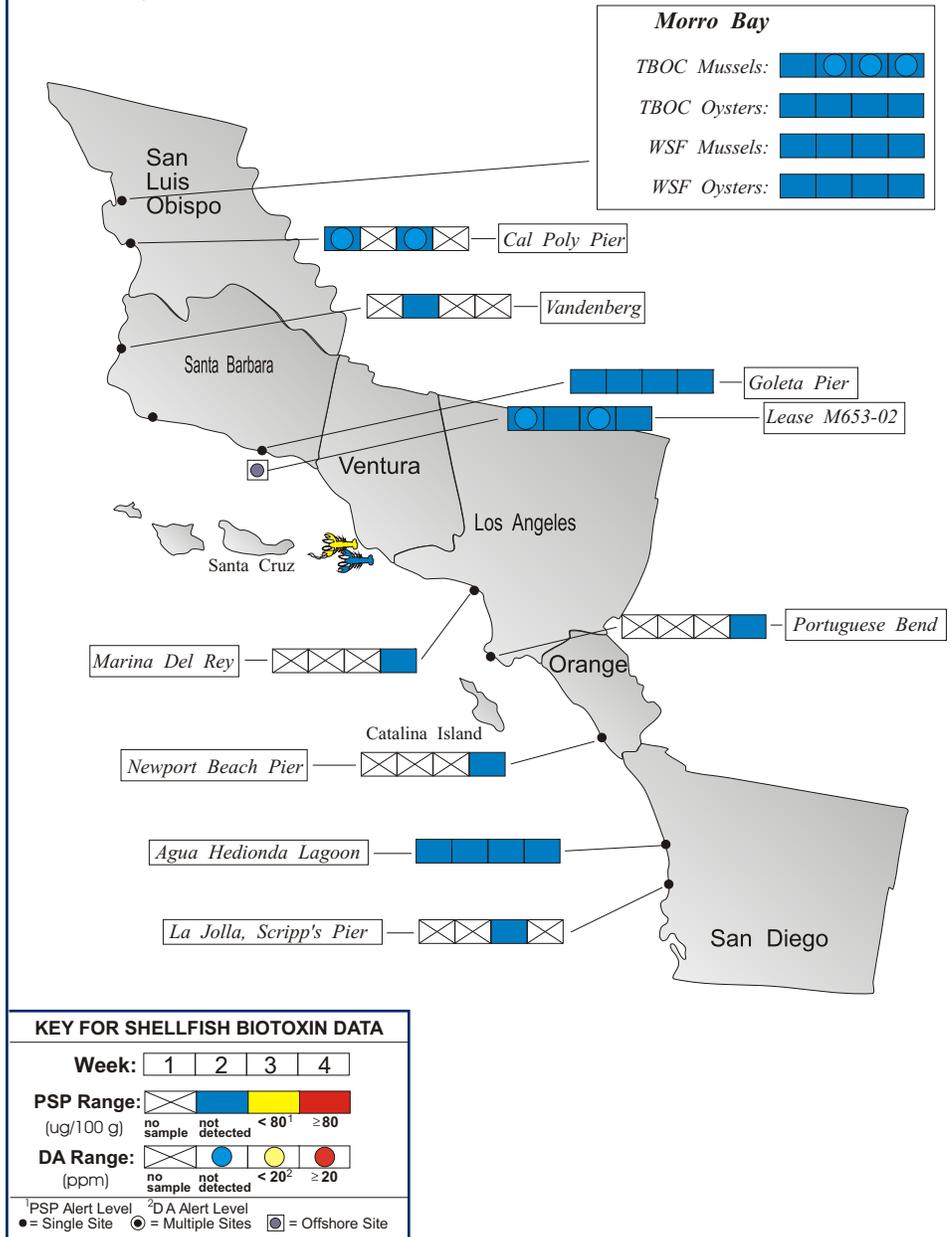
Alexandrium Species		Pseudo-nitzschia Species	
	Rare (less than 1%)		Present (between 1% and 10%)
	Present (between 1% and 10%)		Common (between 10% and 50%)
	Common (between 10% and 50%)		Abundant (greater than 50%)
	Abundant (greater than 50%)		

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 3. Distribution of shellfish biotoxins in Southern California during November, 2008.



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Los Angeles and Orange counties.

Northern California Summary:

Paralytic Shellfish Poisoning

Alexandrium numbers declined through November, but this dinoflagellate was still observed at several northern California sampling sites (Figure 2). *Alexandrium* was observed in very low numbers at sites in Santa Cruz, Marin, Sonoma, and Del Norte counties.

The low concentrations of the PSP toxins detected in mussels from Humboldt Bay towards the latter part of October continued through the first week of November at the outer bay sentinel station (Figure 4). Low levels of these toxins were also detected in mussels from Crescent City (Del Norte County) on November 12 and at Trinidad (Humboldt County) on November 24.

Domoic Acid

Pseudo-nitzschia continued to be observed along most of the northern California coast during November (Figure 2). The relative abundance decreased significantly compared to observations in October and was greatest in samples from Pacifica Pier (San Mateo County) collected on November 18 and 25. Domoic acid was not

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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 health is threatened.

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

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

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detected in any shellfish samples collected in November.

Non-toxic Species

The northern California coast contained a mix of diatoms and dinoflagellates in November. The Del Norte and Humboldt coast was dominated by the diatoms *Skeletonema*, *Chaetoceros*, and *Thalassiosira*. One or more of these diatom species were also common at sites between Sonoma and San Mateo counties and were joined by the dinoflagellates *Prorocentrum* and *Ceratium*. *Prorocentrum* dominated the area around the Santa Cruz Pier throughout the month.



QUARANTINES:

The annual mussel quarantine, which began on May 1, was rescinded on schedule at midnight on October 31. The annual quarantine applies specifically to sport-harvesting of mussels along the entire California coastline, including all bays and estuaries. Routine phytoplankton and biotoxin monitoring is maintained throughout the year, not just within the quarantine period. 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. All certified shellfish growers are required to submit at least weekly samples of

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Figure 4. Distribution of shellfish biotoxins in Northern California during November, 2008.

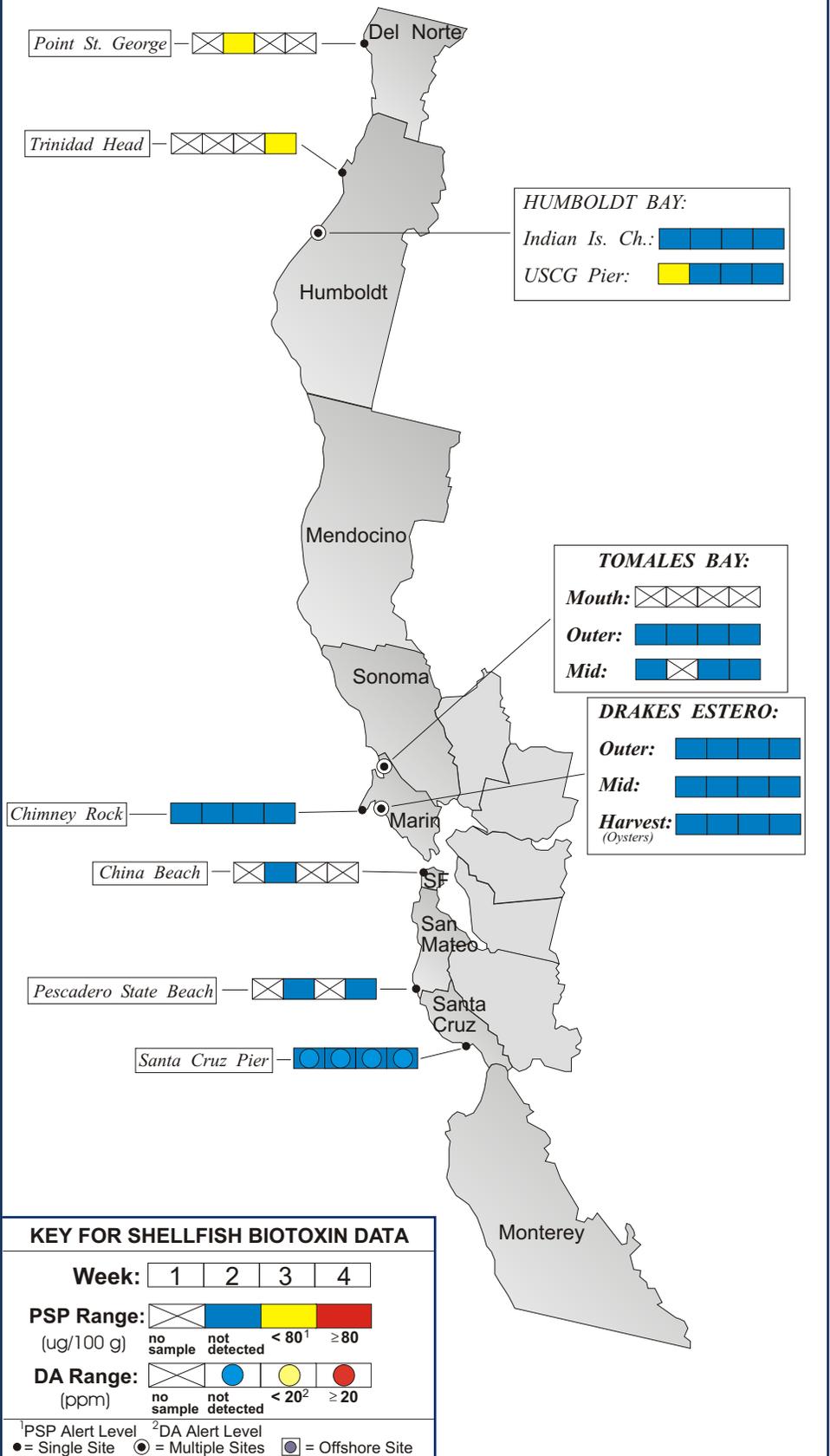


Table 1. California Marine Biotoxin Monitoring Program participants submitting shellfish samples during November, 2008.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	1
Humboldt	Coast Seafood Company	8
	Humboldt County Environmental Health Department	1
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
	CDPH Marine Biotoxin Monitoring Program	4
San Francisco	San Francisco County 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	Cal Poly	2
	Tomales Bay Oyster Company	10
	Williams Shellfish Farms	7
Santa Barbara	Santa Barbara Mariculture Company	7
	U.C. Santa Barbara	4
	Vandenberg AFB	1
Ventura	CDPH Volunteer (<i>Bill Weinerth</i>)	1
Los Angeles	Los Angeles County Health Department	2
Orange	Orange County Health Care Agency	1
San Diego	Carlsbad Aquafarms, Inc.	4
	Scripps Institute of Oceanography	1

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. These toxins may also accumulate in the viscera of other seafood species such as crab, lobster, and small finfish like sardines and anchovies.

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. 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.



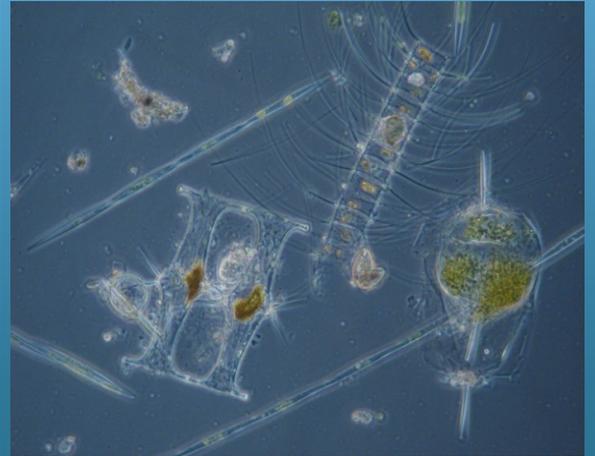
shellfish for toxin monitoring. Harvest restrictions or closures are implemented as needed to protect the public's health. Consumers of Washington clams, also known as butter clams (*Saxidomus nuttalli*), are cautioned to eat only the white meat. Washington clams can

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

Table 2. Agencies, organizations and volunteers participating in marine phytoplankton sample collection during November, 2008.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	4
Humboldt	Coast Seafood Company	4
	California Department of Fish and Game	2
	Bureau of Land Management	1
Mendocino	None Submitted	
Sonoma	CDPH Volunteer (<i>Cathleen Cannon</i>)	1
Marin	CDPH Volunteers (<i>Brent Anderson, Cal Strobel</i>)	4
	Drakes Bay Oyster Company	8
San Francisco	CDPH Volunteer (<i>Eugenia McNaughton</i>)	1
	San Francisco Health Department	2
	Gulf of the Farallones National Marine Sanctuary	1
San Mateo	CDPH Volunteer (<i>Kathleen Abadie</i>)	1
	The Marine Mammal Center (<i>Stan Jensen</i>)	4
	San Mateo County Environmental Health Dept.	2
	U.C. Santa Cruz	1
Santa Cruz	San Lorenzo Valley High School	1
	U.C. Santa Cruz	4
Monterey	Monterey Abalone Company	3
	CDPH Volunteer (<i>Jerry Norton</i>)	1
	Marine Pollution Studies Laboratory	1
San Luis Obispo	CDPH Volunteer (<i>Renee and Auburn Atkins</i>)	1
	Monterey Bay National Marine Sanctuary	3
	Cal Poly	14
	Morro Bay National Estuary Program	1
	Tenera Environmental	1
	The Marine Mammal Center (<i>Tim Lytsell</i>)	9
	Tomales Bay Oyster Company	2
Santa Barbara	CDPH Volunteer (<i>Sylvia Short</i>)	3
	National Park Service	1
	Channel Islands National Marine Sanctuary	1
	Santa Barbara City College	1
	Santa Barbara Mariculture Company	4
	U.C. Santa Barbara	4
	Vandenberg AFB	1
Ventura	CDPH Volunteer (<i>Fred Burgess</i>)	2
	National Park Service	1
Los Angeles	Catalina Island Marine Institute	4
	City of Los Angeles Environmental Monitoring Div.	3
	Los Angeles County Sanitation District	2
	Southern California Marine Institute	1
Orange	Orange County Health Care Agency	1
	Ocean Institute	1
San Diego	Scripps Institute of Oceanography	4

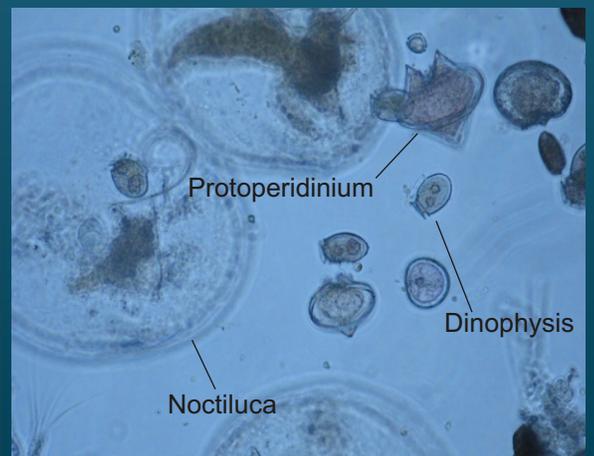
PHYTOPLANKTON GALLERY



Diatoms dominated much of the California coast, although cell numbers were generally low.



A typical mix of common diatoms observed included *Chaetoceros*, *Ditylum*, and *Pseudo-nitzschia*.



Although diatoms dominated much of the coast, some dinoflagellates were common at several locations.