

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 2005

Technical Report No. 05-24

INTRODUCTION:

This report provides a summary of biotoxin activity for the month of November 2005. 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.

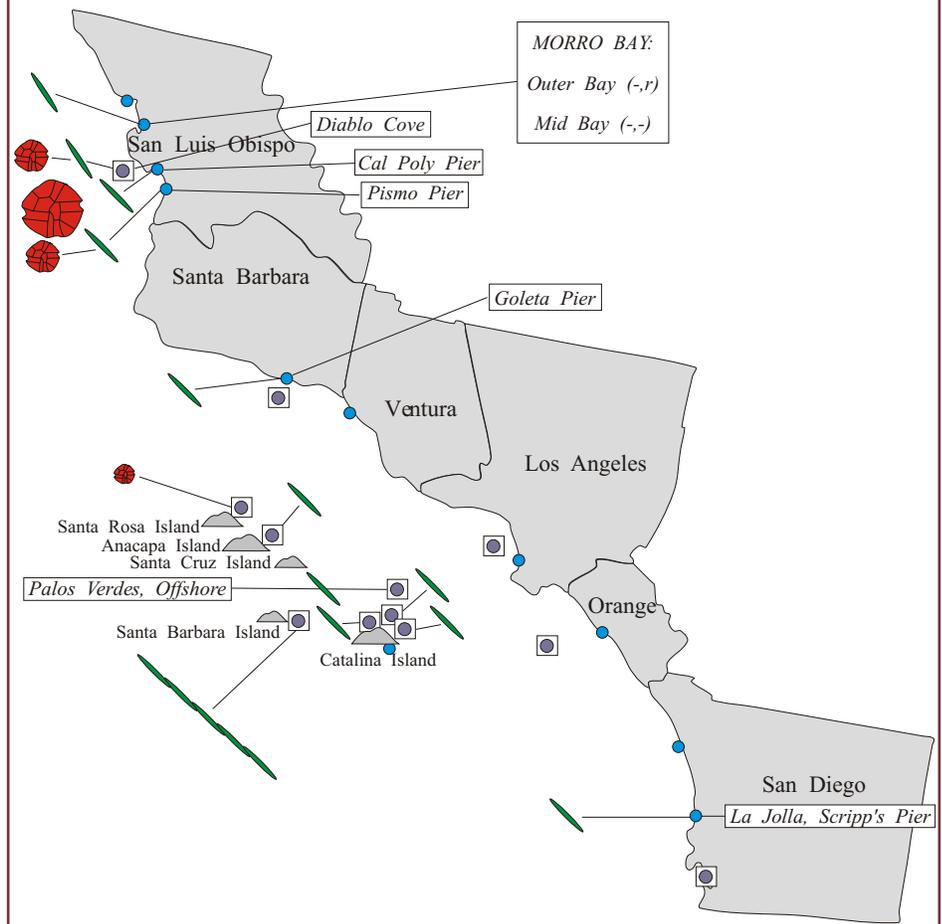
Southern California Summary:

Paralytic Shellfish Poisoning

Alexandrium was observed at several Southern California sites during November, primarily along the San Luis Obispo coast

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Figure 1. Distribution of toxin-producing phytoplankton in Southern California during November, 2005.



Relative Abundance of Known Toxin Producers

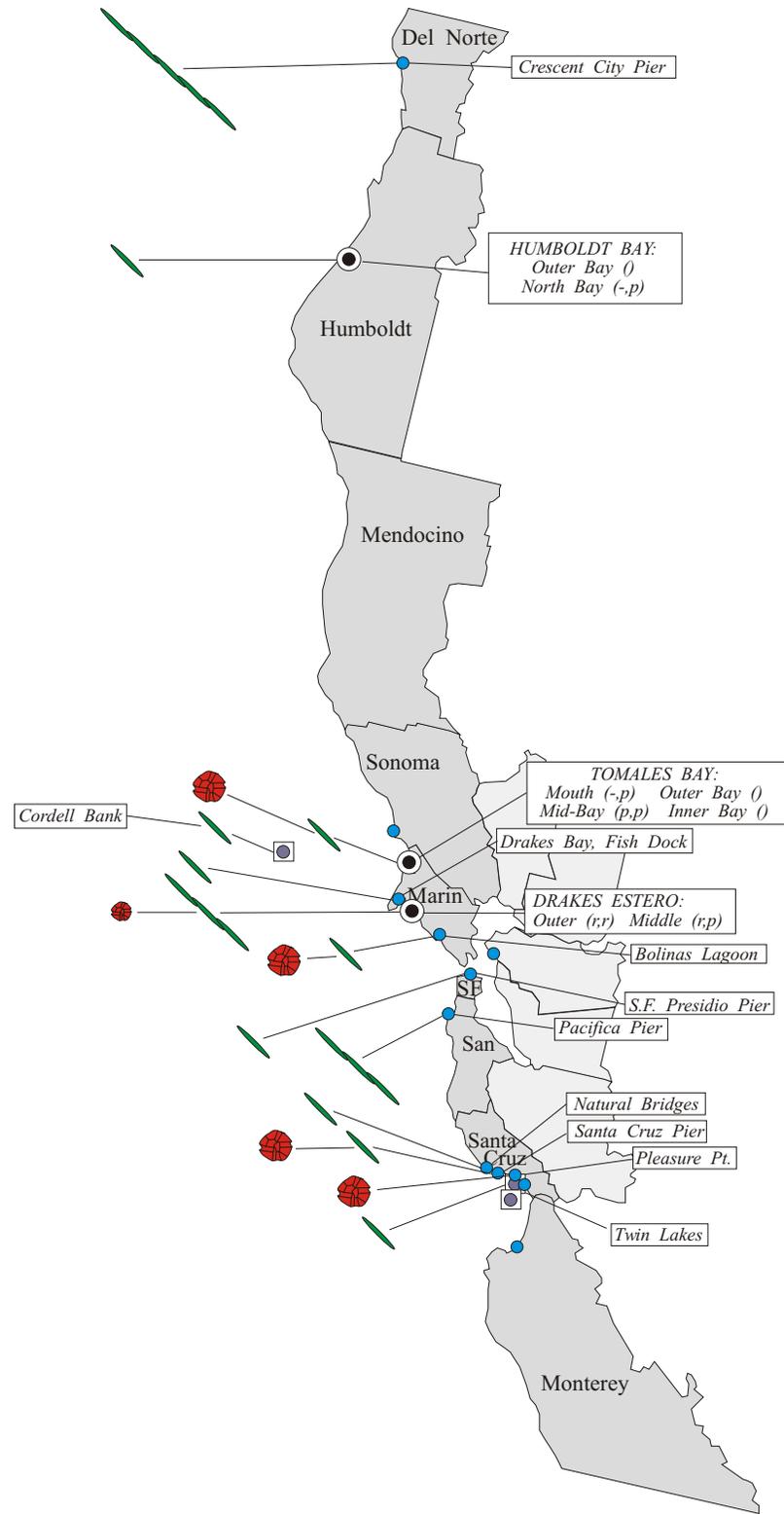
Alexandrium Species		Pseudo-nitzschia Species	
	Rare (less than 1%)		Present (less than 10%)
	Present (between 1% and 10%)		Common (between 10% and 50%)
	Common (between 10% and 50%)		Abundant (greater than 50%)
	Abundant (greater than 50%)		

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 November, 2005.



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(Figure 1). The distribution of this toxin-producing dinoflagellate decreased compared to observations in October. The relative abundance increased at several sites, however, with moderate numbers of *Alexandrium* observed offshore of Diablo Cove, at the Cal Poly Pier in Avila, and at Pismo Pier.

Low concentrations of PSP toxins were detected at sampling sites in San Luis Obispo and Santa Barbara counties (Figure 3). The increasing concentrations detected in mussels from Morro Bay in October declined but remained detectable through November 19 at various locations inside the bay.

Domoic Acid

Pseudo-nitzschia was observed at several sites along the coast from San Luis Obispo County southward through San Diego and at offshore sites around the Channel Islands (Figure 1). The relative abundance of this diatom was similar to observations in October. This diatom was abundant offshore near Santa Barbara Island on November 19.

Domoic acid was not detected in lobster viscera or mussel samples collected and analyzed in November (Figure 3).

Non-toxic Species

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Relative Abundance of Known Toxin Producers

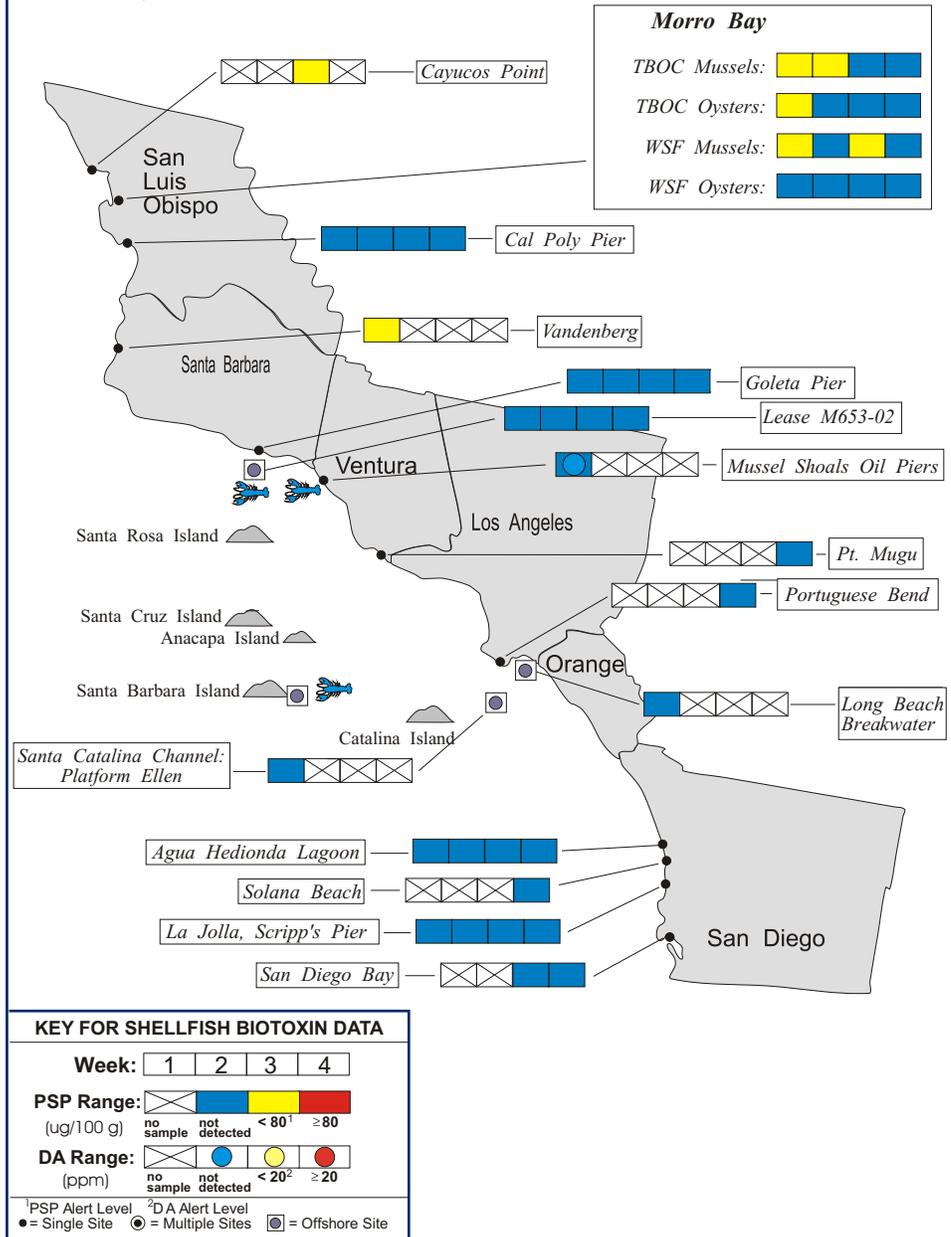
Alexandrium Species		Pseudo-nitzschia Species	
	Rare (less than 1%)		Present (between 1% and 10%)
	Present (between 1% and 10%)		Common (between 10% and 50%)
	Common (between 10% and 50%)		Abundant (greater than 50%)
	Abundant (greater than 50%)		

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, 2005.



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Dinoflagellate species dominated the phytoplankton assemblage along the Southern California coast. *Gymnodinium* was abundant near Avila (San Luis Obispo County) at the beginning of the month, giving way to *Cochlodinium* by mid-month. *Lingulodinium polyedrum* was common to abundant from Santa Barbara through San Diego, including offshore sites near Catalina Island and Anacapa Island. Interestingly, diatoms were dominant farther offshore near Santa Barbara Island.

Northern California Summary:

Paralytic Shellfish Poisoning

The distribution and relative abundance of *Alexandrium* in November was very similar to observations in October (Figure 2). Significant numbers of this dinoflagellate were observed at sites from Marin through Santa Cruz counties.

Low concentrations of PSP toxins persisted inside Drakes Estero throughout the month. Low levels of these toxins were also detected inside Tomales Bay and farther south at Pescadero Beach (San Mateo County) during the first week of November.

Domoic Acid

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The Marine Biotoxin Monitoring and Control Program, managed by the California Department of Health Services, 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 program 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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Pseudo-nitzschia was observed at most sampling stations along the Northern California coast in November (Figure 2). The relative abundance of *Pseudo-nitzschia* was similar to observations in October. The highest relative abundance of this diatom was observed at Crescent City (November 4, Del Norte County) and, to a lesser extent, inside Humboldt Bay.

Domoic acid was not detected in any samples analyzed during November.

Non-toxic Species

Dinoflagellates were dominant at most locations along the Northern California coast and included *Ceratium furca*, *Prorocentrum micans*, and *Gymnodinium sanguineum*. *Cochlodinium* was common at sites in Santa Cruz. The diatom *Chaetoceros* was common inside Humboldt Bay, Tomales Bay, and Bolinas Lagoon.



QUARANTINES:

The June 24 health advisory remained in effect, warning the public not to eat mussels or the viscera of sardines, anchovies, lobster (also known as lobster “tomale”), and crab (sometimes called crab “butter”) from Ventura County. This advisory was issued after dangerous levels of domoic acid were detected from this region.

The annual quarantine on the sport-harvesting of mussels was rescinded as scheduled at midnight on October 31. The annual mussel quarantine applies only to sport-harvested mussels along the entire California coastline, including all bays

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Figure 4. Distribution of shellfish biotoxins in Northern California during November, 2005.

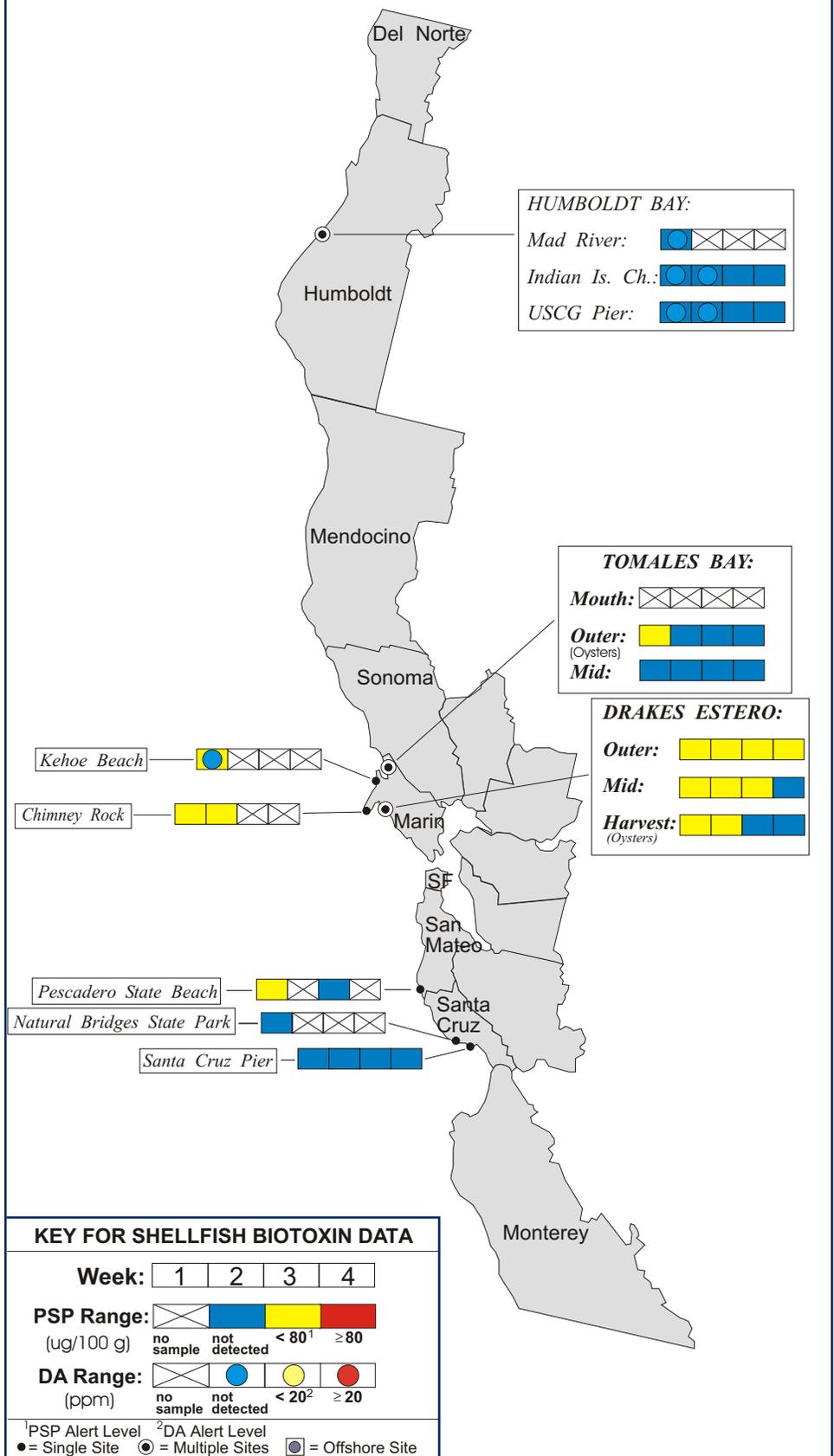


Table 1. California Marine Biotoxin Monitoring Program participants submitting shellfish samples during November, 2005.

COUNTY	AGENCY	# SAMPLES
Del Norte	None Submitted	
Humboldt	Coast Seafood Company	11
Mendocino	None Submitted	
Sonoma	None Submitted	
Marin	Cove Mussel Company	4
	Hog Island Oyster Company	5
	Drakes Bay Oyster Company	24
	DHS Marine Biotoxin Monitoring Program	3
San Francisco	None Submitted	
San Mateo	San Mateo County Environmental Health Department	2
Santa Cruz	U.C. Santa Cruz	5
	Santa Cruz County Environmental Health Department	1
Monterey	None Submitted	
San Luis Obispo	Williams Shellfish Company	6
	Tomales Bay Oyster Company	8
	California Polytechnic State University	4
	DHS Volunteer (Otto Schmidt)	1
Santa Barbara	Santa Barbara Mariculture Company	10
	U.C. Santa Barbara	5
	Vanderberg AFB	1
	National Park Service	1
	DHS Volunteer (Bill Weinerth)	1
Ventura	Ventura County Environmental Health Department	3
	Naval Air Station, Pt. Mugu	1
Los Angeles	Los Angeles County Health Department	1
	Aquarium of the Pacific, Long Beach	1
Orange	Aquarium of the Pacific, Long Beach	1
	Carlsbad Aquafarms, Inc.	4
San Diego	DHS Volunteer (Paul Sims)	1
	U.S. Navy	2
	Scripps Institute of Oceanography	4

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and estuaries. Routine biotoxin monitoring is maintained throughout this period. The annual quarantine does not affect the certified commercial shellfish growing areas in California.

Consumers of Washington clams, also known as butter clams, 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 are an exception to this general guidance due to their ability to concentrate and retain domoic acid in the edible white meat.

Consumers are also advised that cooking does not eliminate the 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.



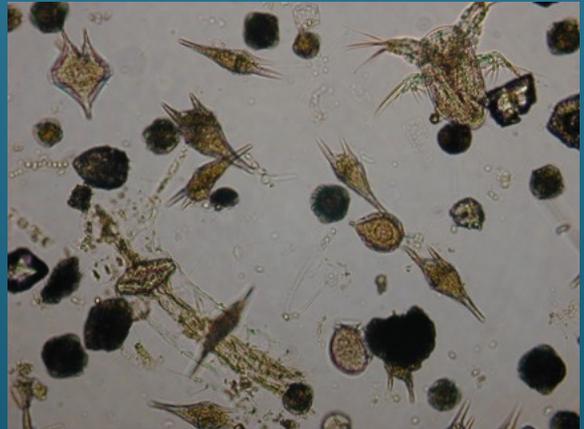
Table 2. Agencies, organizations and volunteers participating in marine phytoplankton sample collection during November, 2005.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	1
Humboldt	Coast Seafood Company	5
Mendocino	None Submitted	
Sonoma	None Submitted	
Marin	DHS Volunteers (Brent Anderson, Mary Von Tolksdorf, Richard Plant)	7
	DHS Marine Biotoxin Monitoring Program	2
	Drakes Bay Oyster Company	11
Contra Costa	None Submitted	
San Francisco	DHS Volunteer (Eugenia McNaughton)	2
San Mateo	San Mateo County Environmental Health Department	2
	DHS Volunteer (Sandy Emerson)	1
Santa Cruz	U.C. Santa Cruz	3
	California Department of Parks and Recreation	5
	Santa Cruz County Environmental Health Department	3
Monterey	DHS Volunteer (Jerry Norton)	1
San Luis Obispo	DHS Volunteers (Renee and Auburn Atkins)	2
	Morro Bay National Estuary Program	2
	California Polytechnic State University	5
	Tenera Environmental	1
Santa Barbara	U.C. Santa Barbara	6
	Santa Barbara Mariculture Company	3
	The Marine Mammal Center	1
	National Park Service	1
Ventura	Ventura County Environmental Health Department	1
	The Marine Mammal Center	1
Los Angeles	DHS Volunteer (Debbie Karimoto)	1
	City of Los Angeles Environmental Monitoring Division	2
	Los Angeles County Sanitation District	5
	Catalina Tall Ships Expeditions	5
	Catalina Island Marine Institute	1
Orange	Aquarium of the Pacific, Long Beach	1
	DHS Volunteer (Debbie Karimoto)	1
San Diego	Scripps Institute of Oceanography	4
	DHS Volunteers (Paul Sims, Randy Dick)	3

PHYTOPLANKTON GALLERY



Alexandrium was present at a number of locations but was not the most common species observed.



Dinoflagellates were common along much of the coast during November.



Pseudo-nitzschia remained common at a number of locations during November.