

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

December 2004

Technical Report No. 04-26

INTRODUCTION:

This report provides a summary of biotoxin activity for the month of December 2004. 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 only observed along the San Luis Obispo coast in December (Figure 1). The distribution and relative abundance of

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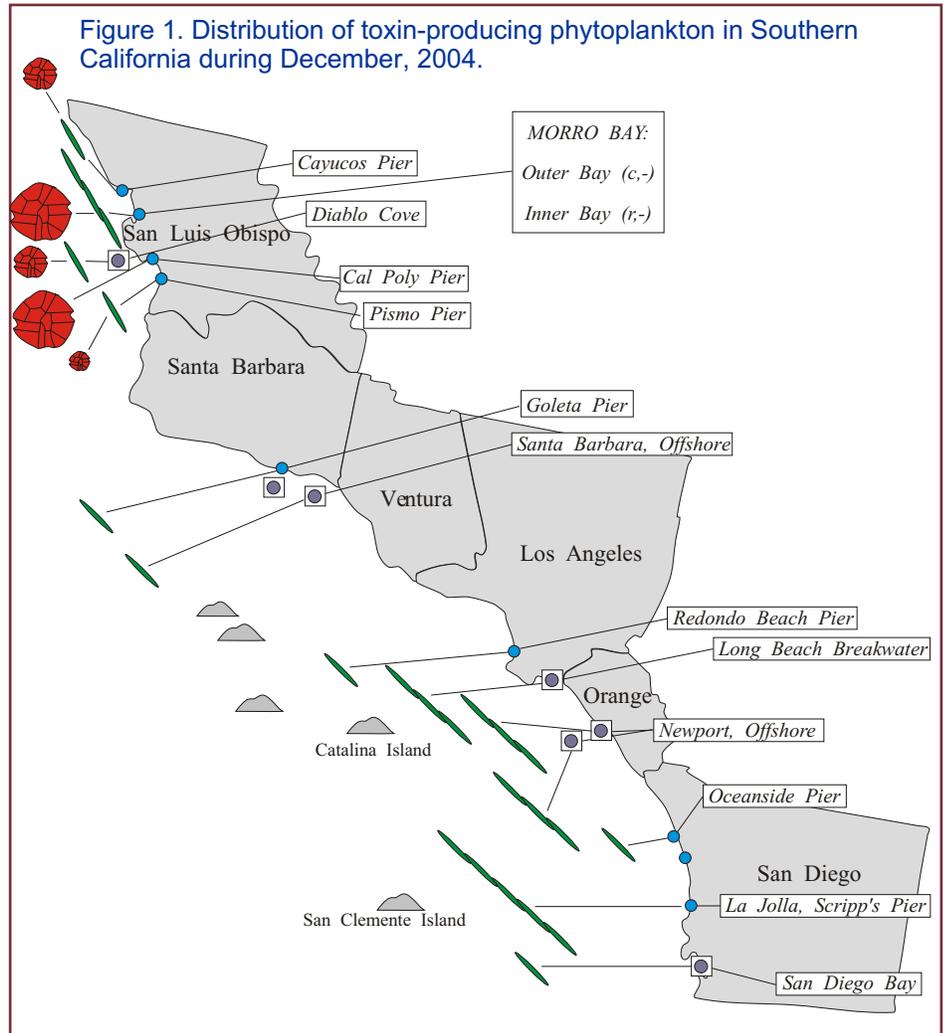


Figure 1. Distribution of toxin-producing phytoplankton in Southern California during December, 2004.

Relative Abundance of Known Toxin Producers

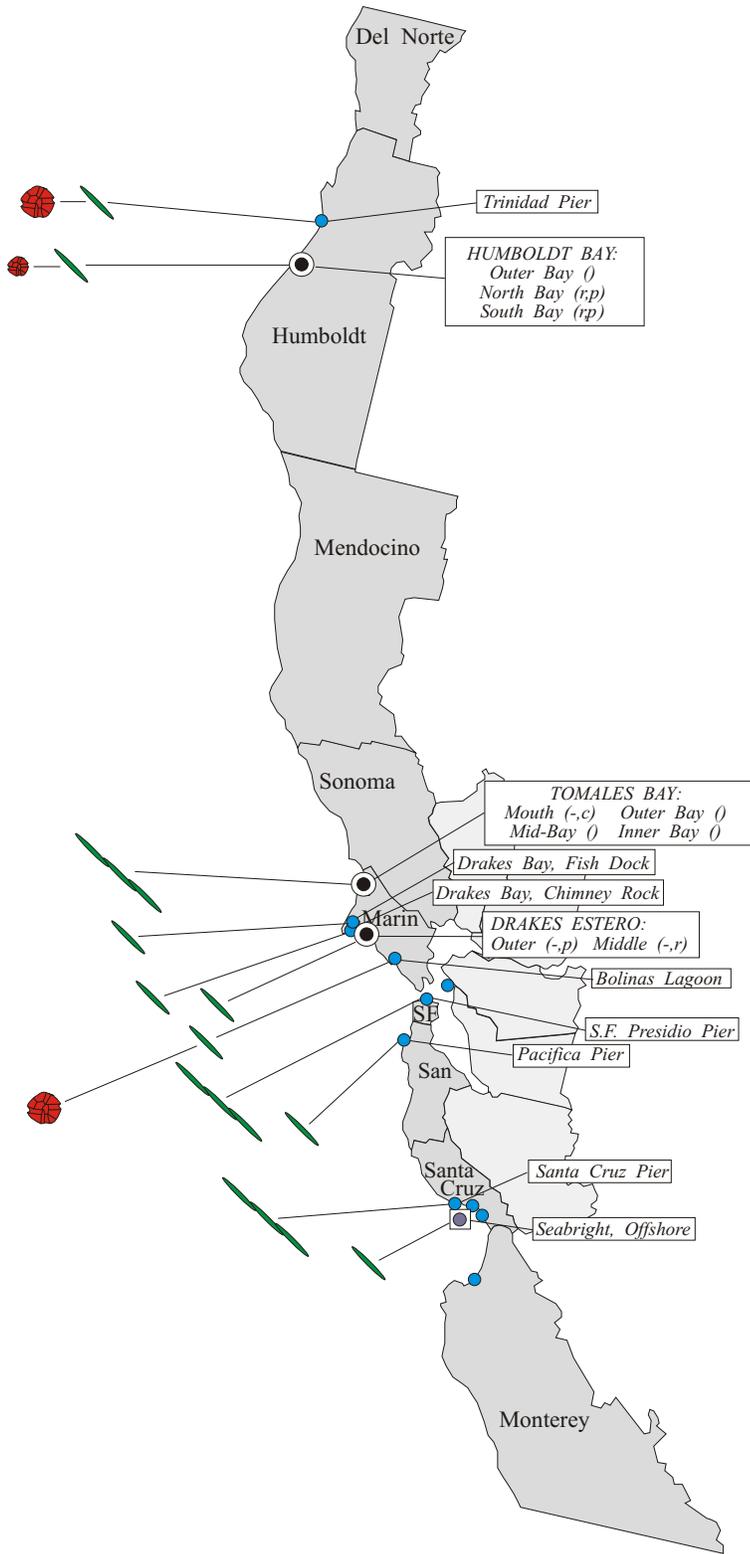
Alexandrium Species		Pseudo-nitzschia Species	
	Rare (less than 1%)		Present (less than 10%)
	Present (between 1% and 10%)		Common (between 10% and 50%)
	Common (between 10% and 50%)		Abundant (greater than 50%)
	Abundant (greater than 50%)		

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 December, 2004.



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Alexandrium increased compared to observations in November. The highest relative abundance of this dinoflagellate was observed inside Morro Bay and farther south at Avila.

PSP toxin concentrations increased in mussels from Cayucos during the first week of the month, reaching 248 ug by December 8. Toxin levels then declined but remained above the alert level through December 22. Sampling efforts by the Morro Bay National Estuary Program (MBNEP) were critical to tracking this unusual winter PSP event. They provided the first observations of *Alexandrium* in November, which allowed us to monitor toxin levels closely in mussel samples the MBNEP provided. By catching the rapid increase in PSP toxins DHS was able to issue a health advisory for the region, alerting the public to refrain from consuming sportharvested mussels. In addition to this episode, low levels of PSP toxins were detected inside Morro Bay throughout the month.

Domoic Acid

Pseudo-nitzschia was observed along the entire Southern California coast in December (Figure 1). The relative abundance increased compared to November's observations, particularly along the San Luis Obispo coast

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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%)

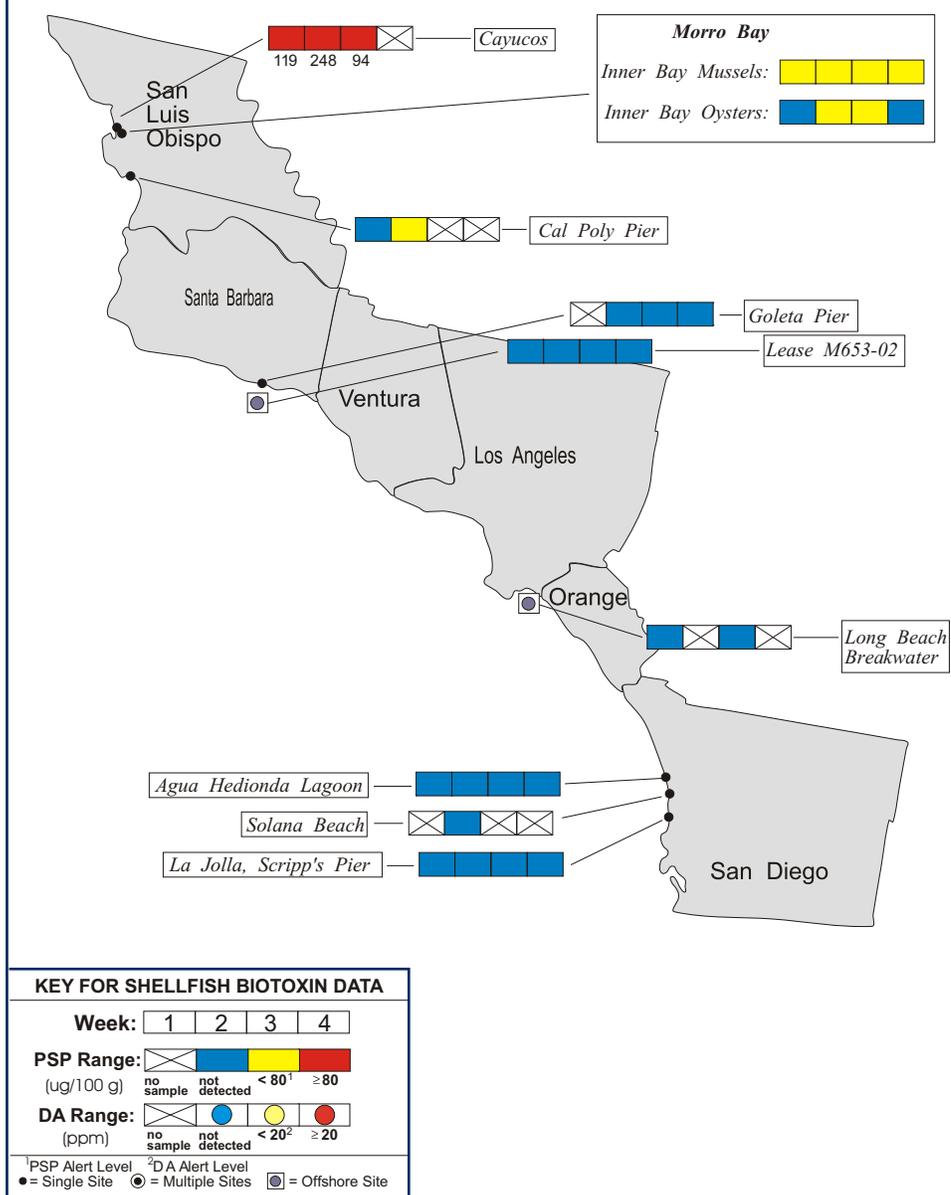
MONTHLY SAMPLING STATIONS:

- 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

Figure 3. Distribution of shellfish biotoxins in Southern California during December, 2004.



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and farther south between Los Angeles and San Diego counties.

Non-toxic Species

The San Luis Obispo coast was dominated by a variety of dinoflagellates throughout December. *Cochlodinium* was abundant at Avila in the beginning of December, declining somewhat by the end of the month. *Ceratium spp.*, *Lingulodinium polyedrum* and *Gymnodinium sanguineum* were also common in this region.

A mix of diatoms (*Chaetoceros*, *Bacteriastrum*) and dinoflagellates (*Lingulodinium polyedrum*, *Gymnodinium sanguineum*) were observed at sites south of Point Conception through San Diego.

Northern California Summary:

Paralytic Shellfish Poisoning

Alexandrium was observed at a few Northern California sites in December (Figure 2). In general the abundance of this dinoflagellate decreased along the Marin coast but increased farther north at sites in Humboldt County.

Low concentrations of PSP toxins were detected at several locations along the Northern California coast in December

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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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(Figure 4). Toxins were detected from Santa Cruz northward through Marin County.

Domoic Acid

Pseudo-nitzschia was observed along most of the Northern California coast in December (Figure 2). The high relative abundance observed in November along the coast of Del Norte and Humboldt counties declined significantly in December.

Non-toxic Species

A mix of diatoms and dinoflagellates were observed along the Northern California coast in December. The diatom *Chaetoceros* was common along most of the coast, with *Biddulphia* and *Ditylum* common along the Marin coast. Common dinoflagellates included *Ceratium spp.* and *Gymnodinium sanguineum*.



Figure 4. Distribution of shellfish biotoxins in Northern California during December, 2004.

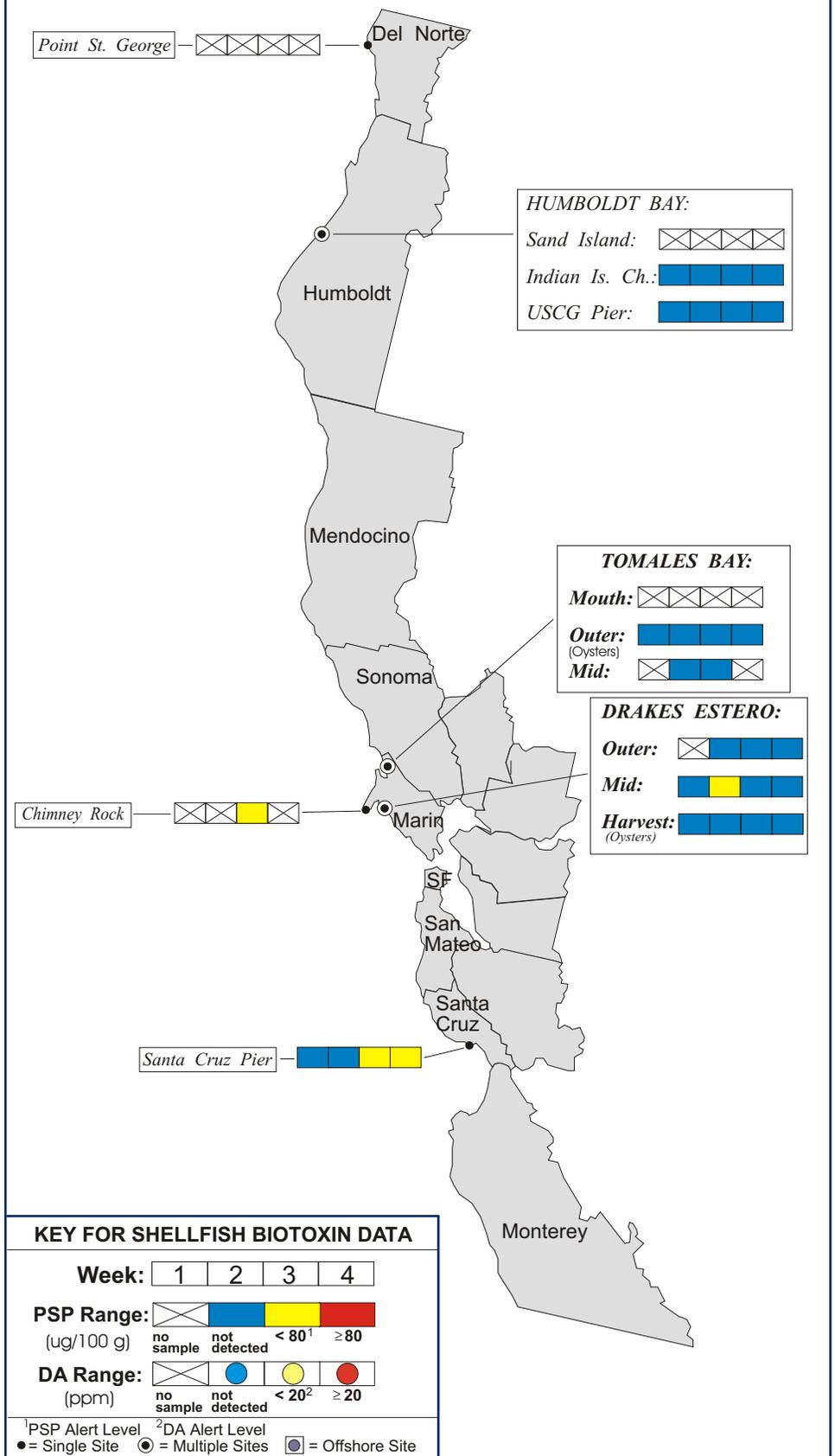


Table 1. California Marine Biotoxin Monitoring Program participants submitting shellfish samples during December, 2004.

COUNTY	AGENCY	# SAMPLES
Del Norte	None Submitted	
Humboldt	Coast Seafood Company	8
Mendocino	None Submitted	
Sonoma	None Submitted	
Marin	Cove Mussel Company	2
	DHS Marine Biotoxin Monitoring Program	1
	Hog Island Oyster Company	4
	Johnson Oyster Company	16
	Marin Oyster Company	3
San Francisco	None Submitted	
San Mateo	None Submitted	
Santa Cruz	U.C. Santa Cruz	4
Monterey	None Submitted	
San Luis Obispo	Williams Shellfish Company	10
	U.C. Santa Barbara Marine Science Institute	2
	Morro Bay National Estuary Program	3
Santa Barbara	Santa Barbara Mariculture Company	4
	U.C. Santa Barbara Marine Science Institute	3
Ventura	None Submitted	
Los Angeles	Aquarium of the Pacific Long Beach	4
Orange	None Submitted	
San Diego	Carlsbad Aquafarms, Inc.	4
	Scripps Institute of Oceanography	4
	CDHS Volunteer (Paul Sims)	1

QUARANTINES:

The State Health Director issued a health advisory in December warning the public not to eat sport-harvested shellfish from the San Luis Obispo coast. This action was taken as a result of dangerous levels of PSP toxins in samples from this region.

The health advisory issued on June 10 remained in effect. This advisory warned consumers to avoid eating sport-harvested shellfish from Humboldt and Del Norte counties and was the result of dangerous levels of domoic acid in razor clams collected from this region.

The annual quarantine on the sport-harvesting of mussels was rescinded at midnight on October 31 as scheduled. This annual quarantine had gone into effect early, beginning on April 23 instead of the normal May 1 start date.

The annual mussel quarantine applies only to sport-harvested mussels along the entire California coastline, including all bays and estuaries. This quarantine does not affect the commercial shellfish growing areas in California. All commercial shellfish growers certified by the State of California are required to submit routine samples for biotoxin analysis, allowing us to closely monitor for the occurrence of any toxin. Harvesting closures are imposed if toxin levels reach the federal alert level.

Persons taking any clams or scallops are advised to remove and discard the dark parts (i.e., the digestive organs or viscera).

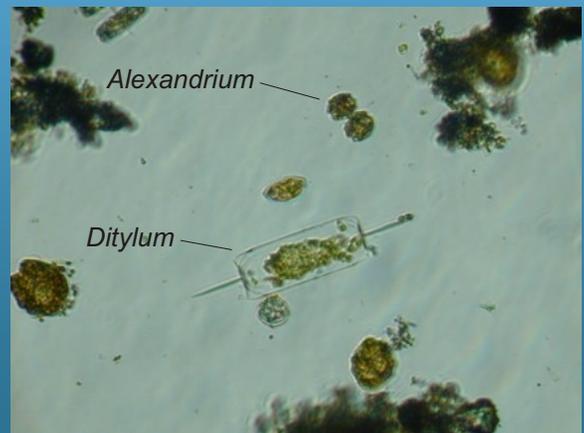
Contact the "Biotoxin Information Line" at 1-800-553-4133 or (510) 412-4643 for a current update on marine biotoxin activity.



Table 2. Agencies, organizations and volunteers participating in marine phytoplankton sample collection during December, 2004.

COUNTY	AGENCY	# SAMPLES
Del Norte	None Submitted	
Humboldt	Coast Seafood Company	4
	DHS Volunteer (Jacki Riley)	2
Mendocino	None Submitted	
Sonoma	None Submitted	
Marin	CDHS Volunteers (Brent Anderson, Mary Von Tolksdorf, Marjorie Siegel, Cal Strobel)	9
	DHS Marine Biotoxin Monitoring Program	1
	Johnson Oyster Company	8
Contra Costa	DHS Marine Biotoxin Monitoring Program	1
San Francisco	CDHS Volunteer (Eugenia McNaughton)	2
	DHS Marine Biotoxin Monitoring Program	1
San Mateo	San Mateo County Environmental Health Department	2
Santa Cruz	Santa Cruz County Environmental Health Department	3
	U.C. Santa Cruz	4
	California Department of Parks and Recreation	2
Monterey	CDHS Volunteer (Jerry Norton)	1
San Luis Obispo	CDHS Volunteers (Renee and Auburn Atkins, Richard Welch, Bill Schwebel)	3
	Morro Bay National Estuary Program	4
	Tenera Environmental	2
	U.C. Santa Barbara Marine Science Institute	3
Santa Barbara	U.C. Santa Barbara Marine Science Institute	6
	Santa Barbara Mariculture Company	2
	Santa Barbara Channel Keeper	1
Ventura	None Submitted	
Los Angeles	CDHS Volunteer (Richard Weaver)	1
	Aquarium of the Pacific Long Beach	2
Orange	Orange County Sanitation District	4
San Diego	CDHS Volunteer (Paul Sims, Jeff Kermode)	3
	Scripps Institute of Oceanography	4

PHYTOPLANKTON GALLERY



The diatom *Ditylum* was common in some Northern California locations.



The unarmored dinoflagellate *Gymnodinium* was common at several sites along the California coast.



The dinoflagellate *Lingulodinium* was abundant along the Southern California coast.