

M o n i t h l y M a r i n e B i o t o x i n R e p o r t

May 2005

Technical Report No. 05-17

INTRODUCTION:

This report provides a summary of biotoxin activity for the month of May 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 May (Figure 1). The distribution and relative abundance of

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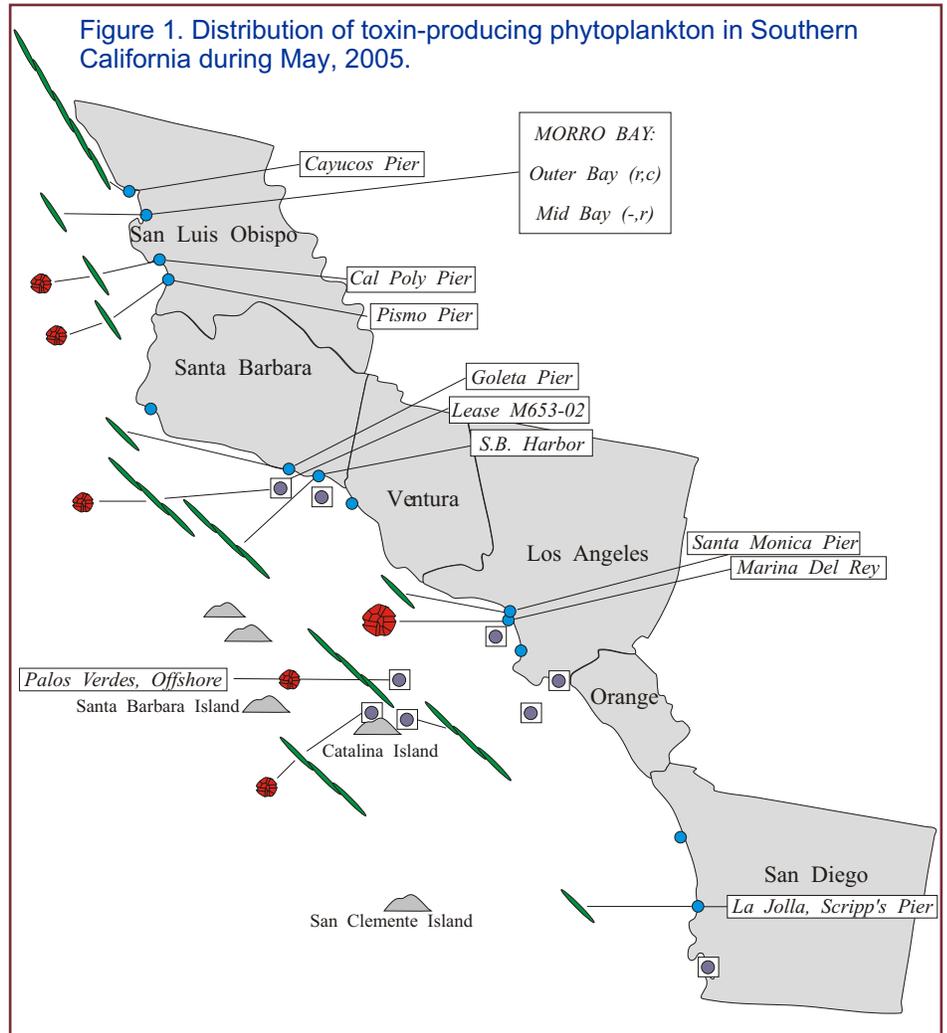


Figure 1. Distribution of toxin-producing phytoplankton in Southern California during May, 2005.

Relative Abundance of Known Toxin Producers

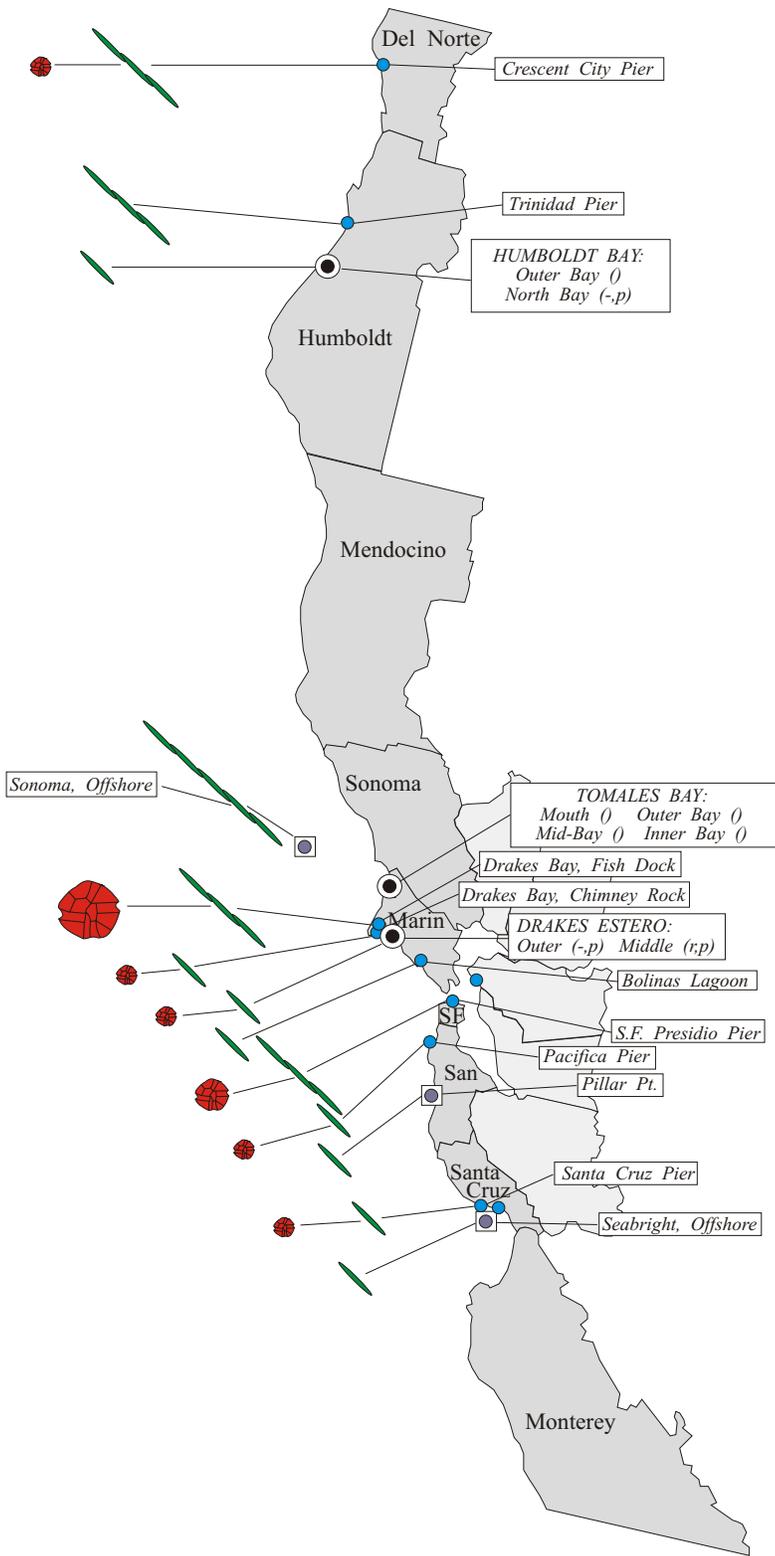
Alexandrium Species	Pseudo-nitzschia Species
 Rare (less than 1%)	 Present (less than 10%)
 Present (between 1% and 10%)	 Common (between 10% and 50%)
 Common (between 10% and 50%)	 Abundant (greater than 50%)
 Abundant (greater than 50%)	

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 May, 2005.



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this toxin-producing dinoflagellate decreased compared to observations in April. The highest cell numbers were observed at Marina Del Rey (Los Angeles County) at the beginning of the month. Cell densities were low at most other sites. *Alexandrium* continued to be present in small numbers at two sites offshore of Los Angeles, including a site near Catalina Island.

The high concentrations of PSP toxicity detected offshore of Santa Barbara in April decreased below the alert level by the first week of May (Figure 3). Low concentrations of these toxins were also detected in mussels from Goleta Pier throughout most of the month and at Portuguese Bend (Los Angeles County) during the last week of May.

Domoic Acid

Pseudo-nitzschia was observed at several sites along the Southern California coast in May (Figure 1). The relative abundance of this diatom decreased at most sites compared to observations in April. One exception to this trend was at Cayucos (San Luis Obispo County), where *Pseudo-nitzschia* was observed to be abundant by the end of the month. This diatom was also common at sites along the Santa Barbara coast and offshore of Los Angeles near Catalina Island and offshore of Palos Verdes.

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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%)

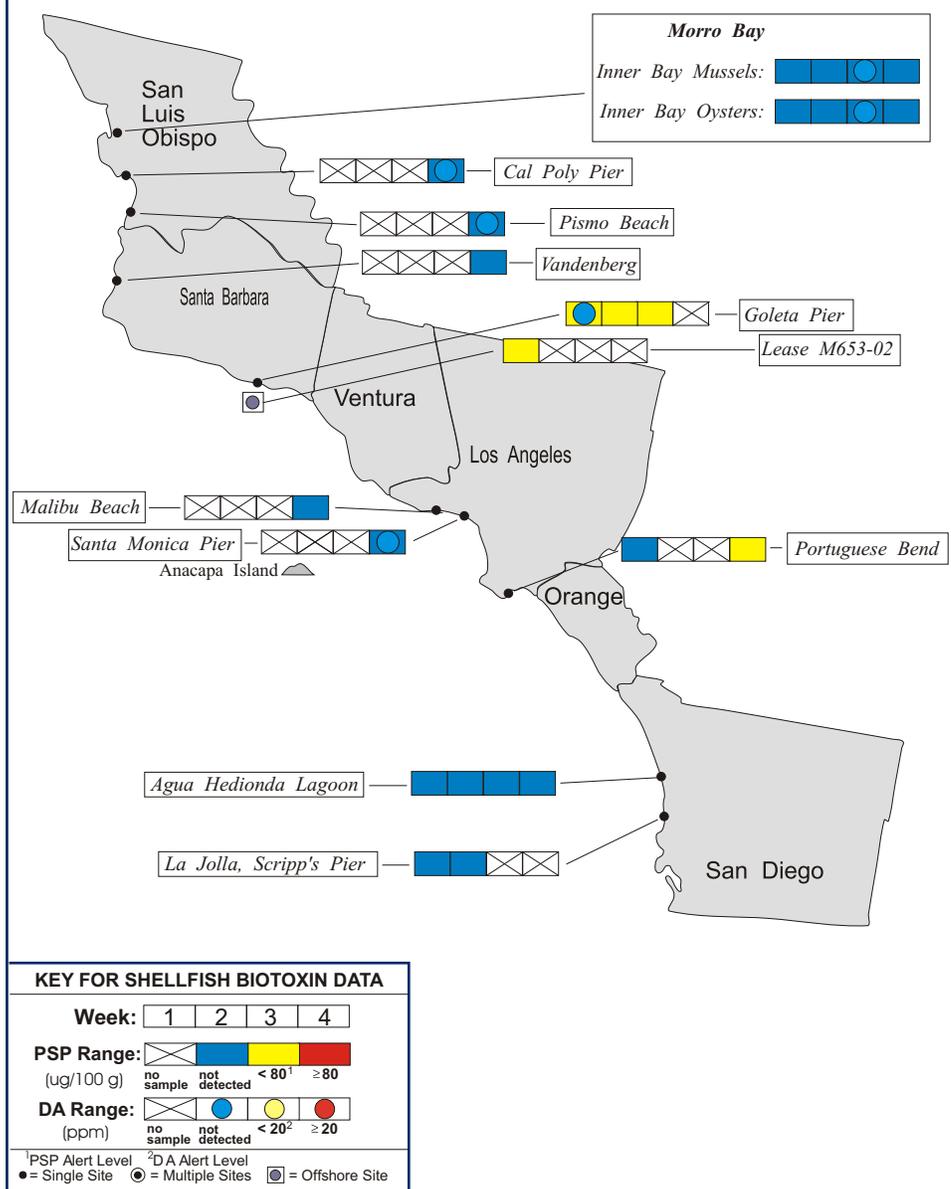
MONTHLY SAMPLING STATIONS:

- 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 May, 2005.



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Cell numbers were low at all sites. Domoic acid was not detected in shellfish from Southern California sites during May.

Non-toxic Species

A variety of diatoms (*Chaetoceros*, *Rhizosolenia*) were observed along the San Luis Obispo coast in May. There was a mix of diatoms and dinoflagellates (*Prorocentrum*, *Ceratium*) south of Point Conception from Santa Barbara through Los Angeles. *Prorocentrum* was abundant in samples from Redondo Beach Pier. The dinoflagellates *Cochlodinium* and *Lingulodinium polyedrum* were also common along the Los Angeles coast. Diatoms were most common offshore near Catalina Island. Farther south along the San Diego coast *Lingulodinium* was abundant and responsible for persistent red tides.

Northern California Summary:

Paralytic Shellfish Poisoning

Alexandrium distribution and relative abundance increased in May compared to observations in April. The greatest relative abundance of this dinoflagellate was observed inside Drakes Bay (Marin County) by May 20 (Figure 2). Low numbers of this dinoflagellate were also observed at sites

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

along the coast of Del Norte, Marin, San Francisco, San Mateo, and Santa Cruz counties.

A low concentration of PSP toxins was detected at the sentinel mussel station in Drakes Bay (Marin County) by the last week of the month (Figure 4). PSP toxins were not detected at any other sites during May.

Domoic Acid

Pseudo-nitzschia was observed at most sampling stations along the Northern California coast in May (Figure 2). The relative abundance of this diatom increased along the Del Norte coast at Crescent City and offshore of the Sonoma coast. Low to moderate levels of domoic acid were detected at several sites near Crescent City. Mussels from Point St. George contained 3 ppm of this toxin on May 10 and less than 1 ppm by May 25. Razor clams from two different locations near Crescent City contained 13 ppm and 15 ppm of domoic acid on May 25 and May 27, respectively. It was uncertain if the moderate level of domoic acid in the razor clam samples was due to residual toxin from the previous event or if it represented recent increases due to the greater number of *Pseudo-nitzschia* observed in May. Requests were made of samplers from Del Norte and Humboldt counties for additional razor clam samples during the next suitable low tide series.



QUARANTINES:

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

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

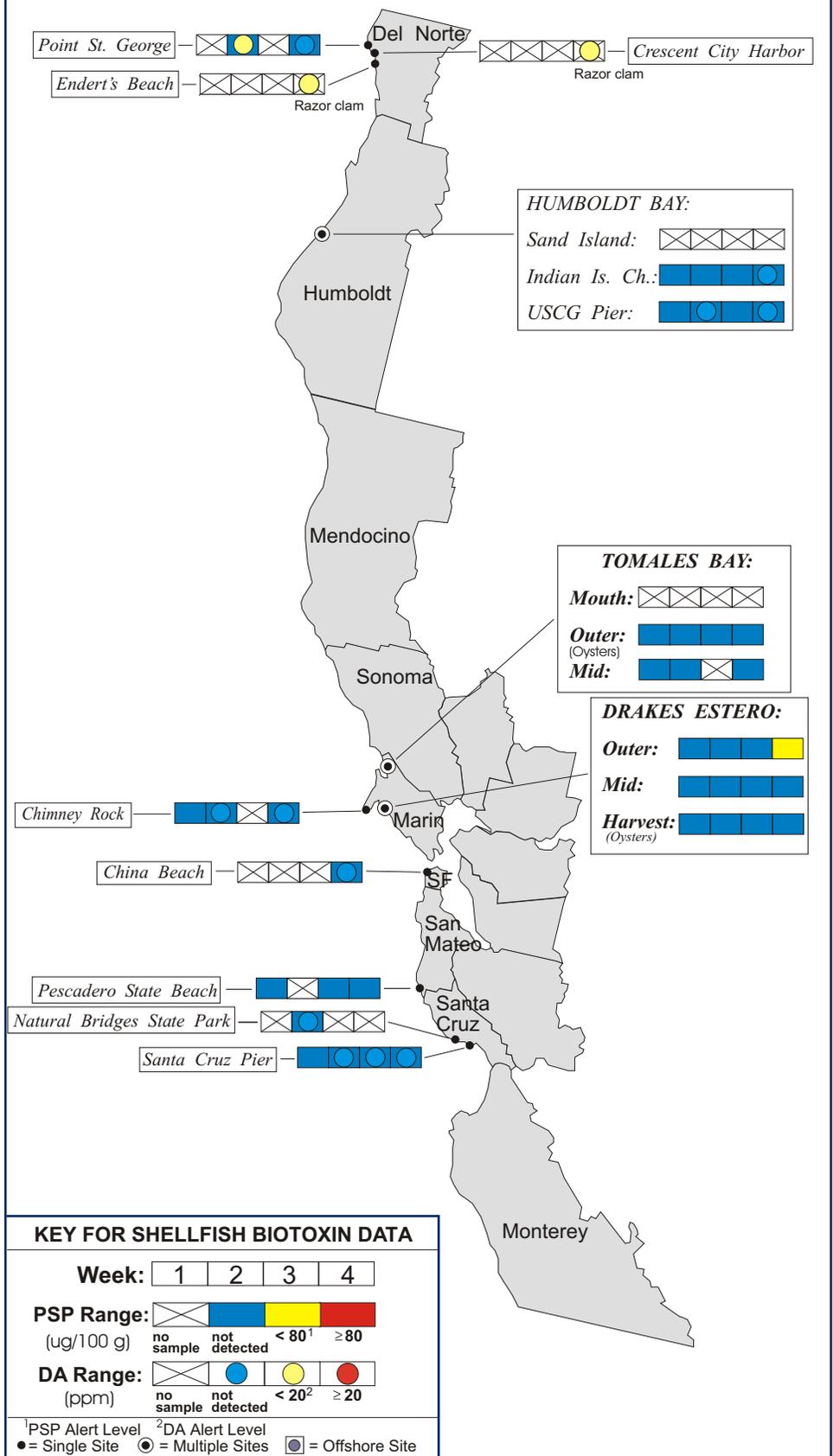


Table 1. California Marine Biotoxin Monitoring Program participants submitting shellfish samples during May, 2005.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	2
	U.C. Sea Grant Extension	2
Humboldt	Coast Seafood Company	10
Mendocino	None Submitted	
Sonoma	None Submitted	
Marin	Cove Mussel Company	4
	Hog Island Oyster Company	3
	Johnson Oyster Company	20
	Marin Oyster Company	2
	DHS Marine Biotoxin Monitoring Program	3
San Francisco	San Francisco County Health Department	1
San Mateo	San Mateo County Environmental Health Department	3
Santa Cruz	U.C. Santa Cruz	4
	Santa Cruz County Environmental Health Department	1
Monterey	None Submitted	
San Luis Obispo	Williams Shellfish Company	8
	DHS Marine Biotoxin Monitoring Program	2
Santa Barbara	Santa Barbara Mariculture Company	2
	U.C. Santa Barbara Marine Science Institute	3
	Environmental Health Services, Vandenberg AFB	1
Ventura	None Submitted	
Los Angeles	Regional Water Quality Control Board	1
	Los Angeles County Health Department	3
Orange	None Submitted	
San Diego	Carlsbad Aquafarms, Inc.	4
	Scripps Institute of Oceanography	4

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levels of domoic acid in razor clams collected from this region. Razor clams retain this toxin in the edible tissue for considerable periods of time and represent a unique public health threat.

The annual quarantine on the sport-harvesting of mussels went into effect on May 1 and will continue through October 31. The annual mussel quarantine applies only to sport-harvested mussels along the entire California coastline, including all bays 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.



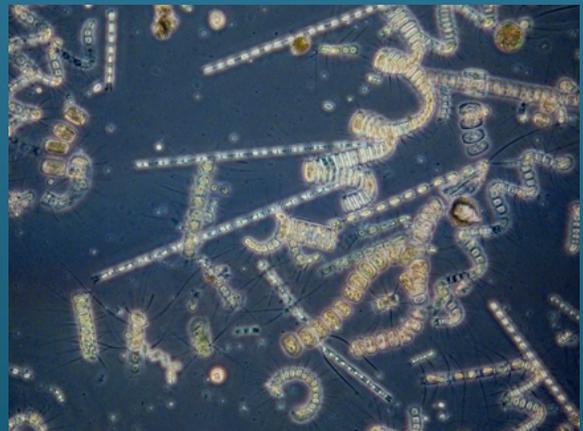
Table 2. Agencies, organizations and volunteers participating in marine phytoplankton sample collection during May, 2005.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	2
Humboldt	Coast Seafood Company	5
	DHS Volunteer (Jacki Riley)	2
Mendocino	None Submitted	
Sonoma	Cordell Banks National Marine Sanduary	1
Marin	CDHS Volurteers (Brett Anderson, Mary Von Tölkendorf, Marjorie Siegel)	8
	DHS Marine Biotoxin Monitoing Program	4
	Johnson Oyster Company	10
Contra Costa	None Submitted	
San Francisco	CDHS Volurteer (Eugeria McNaughton)	3
San Mateo	San Mateo County Enviromental Health Department	2
	CDHS Volurteer (SandyEmerson)	1
Santa Cruz	U.C Santa Cruz	5
	Santa Cruz Courty Environmental Health Department	3
	California Department of Parks and Recreation	2
Monterey	None Submitted	
San Luis Obispo	CDHS Volurteers (Reree and Auburn Atkins)	2
	Morro Bay National Estuary Program	4
	DHS Marine Biotoxin Monitoing Program	1
	Morro Bay Natural History Museum	2
Santa Barbara	U.C. Santa Barbara Marine Science Institutë	1
	Santa Barbara Maiculture Company	1
	Enviromental Health Services, Vandenberg AFB	2
	Santa Barbara Channel Keeper	1
	Santa Barbara City College	1
Ventura	Ventura County Environmental Health Department	1
Los Angeles	University of Southern California	2
	Los Angeles Courty Sanitation District	3
	City of Los Angeles Environmental Monitoring Division	3
	Catalina Tall Ships Expeditions	9
	Los Angeles Courty Heath Department	1
	Catalina Island Marine Institutë	1
	CDHS Volurteer (Richard Weaver)	1
	Regional Water Quality Control Board	1
Orange	None Submitted	
San Diego	Scripps Institutë of Oceanography	4
	CDHS Volurteer (Paul Sims, Jeff Kermode)	2

PHYTOPLANKTON GALLERY



Skeletonema was abundant inside Humboldt Bay in May.



The diatoms *Chaetoceros* and *Skeletonema* continued to be common along the Northern California coast.



Pseudo-nitzschia was common at several sites in San Luis Obispo, Santa Barbara, and offshore of the Los Angeles coast. Dinoflagellates were also common at nearshore sites.