

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 2003

Technical Report No. 03-11

INTRODUCTION:

This report provides a summary of biotoxin activity for the month of February 2003. 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.

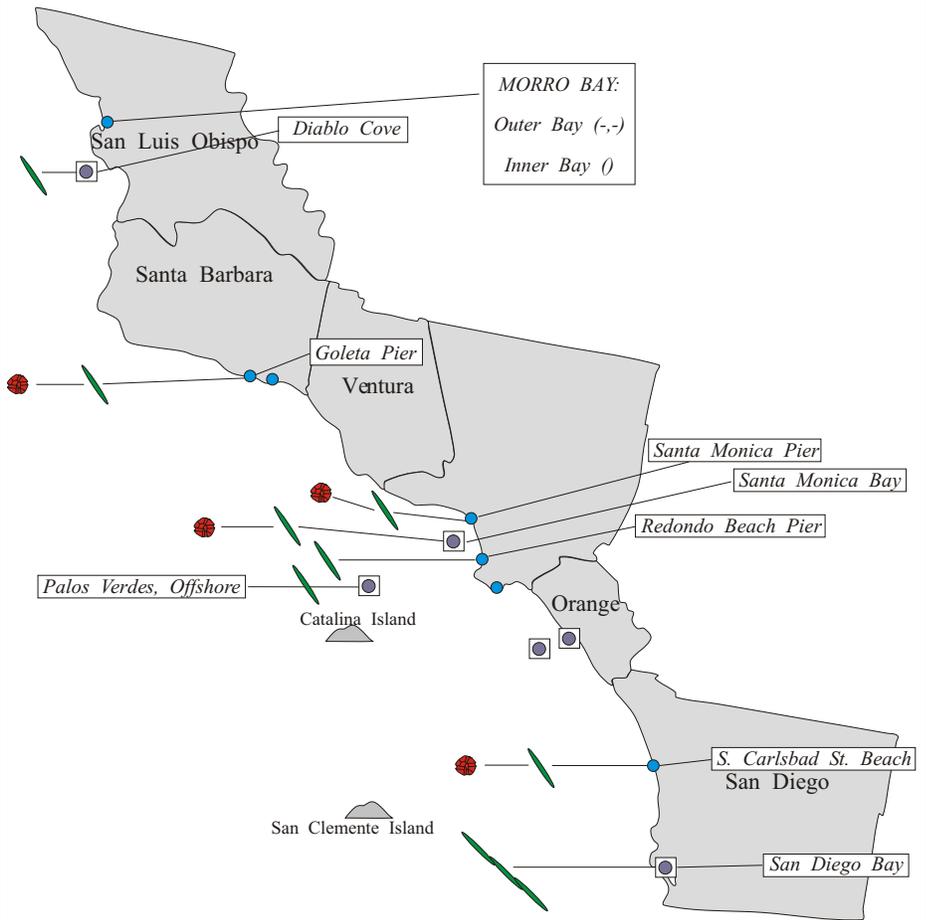
FEBRUARY:

Southern California Summary:

Low numbers of *Alexandrium* were detected at several southern California sites during February, ranging between Santa Barbara and

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Figure 1. Distribution of toxin-producing phytoplankton in Southern California during February, 2003.



Relative Abundance of Known Toxin Producers

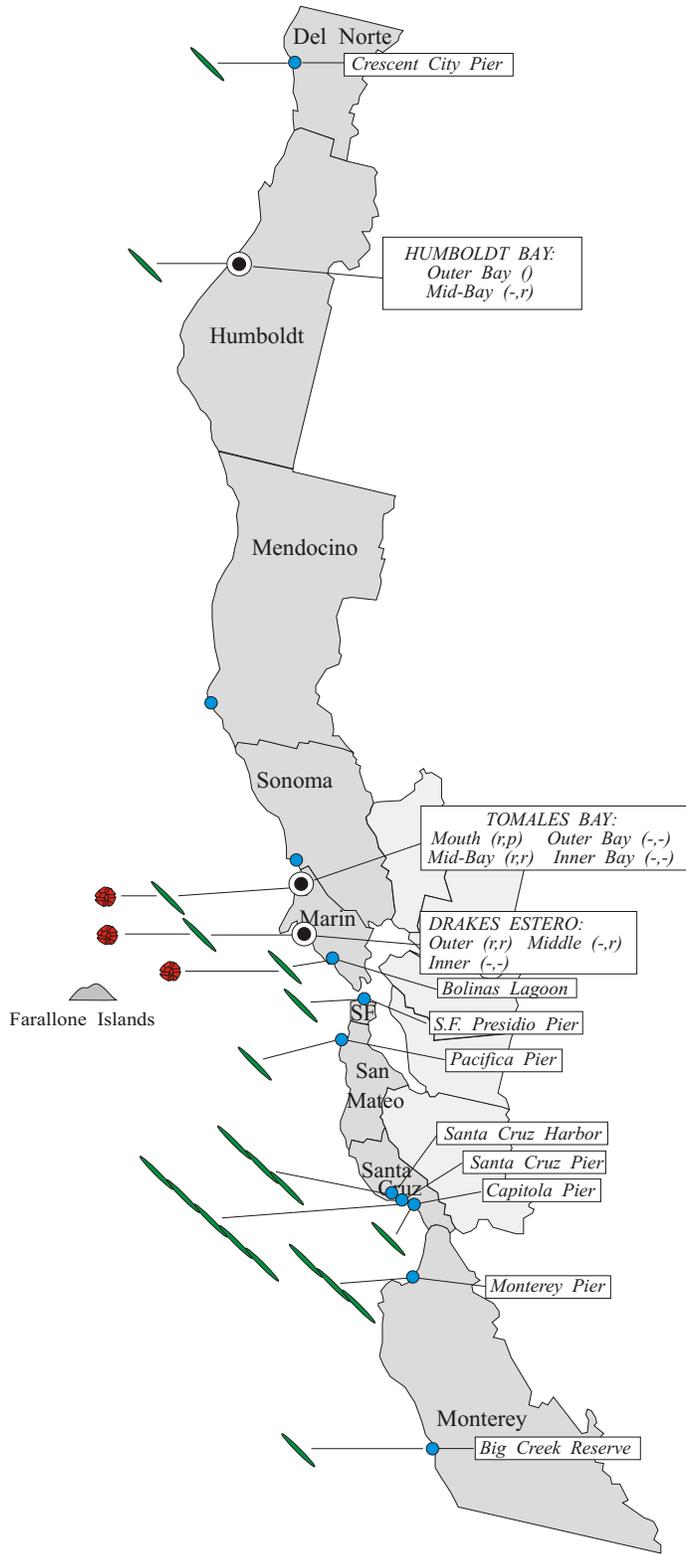
Alexandrium Species		Pseudo-nitzschia Species	
	Rare (less than 1%)		Present (less than 10%)
	Present (between 1% and 10%)		Common (between 10% and 50%)
	Common (between 10% and 50%)		Abundant (greater than 50%)
	Abundant (greater than 50%)		

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 February, 2003.



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San Diego (Figure 1).

PSP toxins were not detected in shellfish samples from southern California locations during February (Figure 3).

Low numbers of *Pseudo-nitzschia* were observed along most of the southern California coast during February. Volunteer field samplers Randy and Bill Dick reported a significant amount of this diatom inside San Diego Bay on February 16, in combination with a mix of other diatoms and dinoflagellates.

Cell numbers were generally low for the nontoxic species of phytoplankton in February samples, with several notable exceptions. A dinoflagellate bloom (*Lingulodinium polyedrum*, formerly *Gonyaulax polyedra*) was observed in Santa Monica Bay early in the month in samples collected by the City of Los Angeles, while diatoms (*Chaetoceros spp.*) dominated down coast off of the Palos Verdes peninsula in samples submitted by the L.A. County Sanitation District. The latter bloom expanded throughout the month, although the dinoflagellate *Ceratium furca* was also

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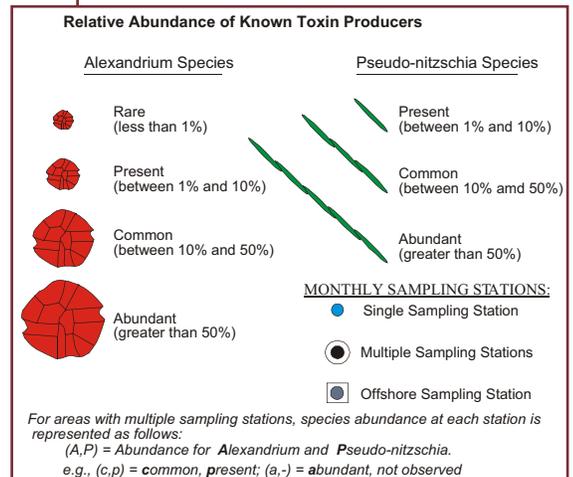
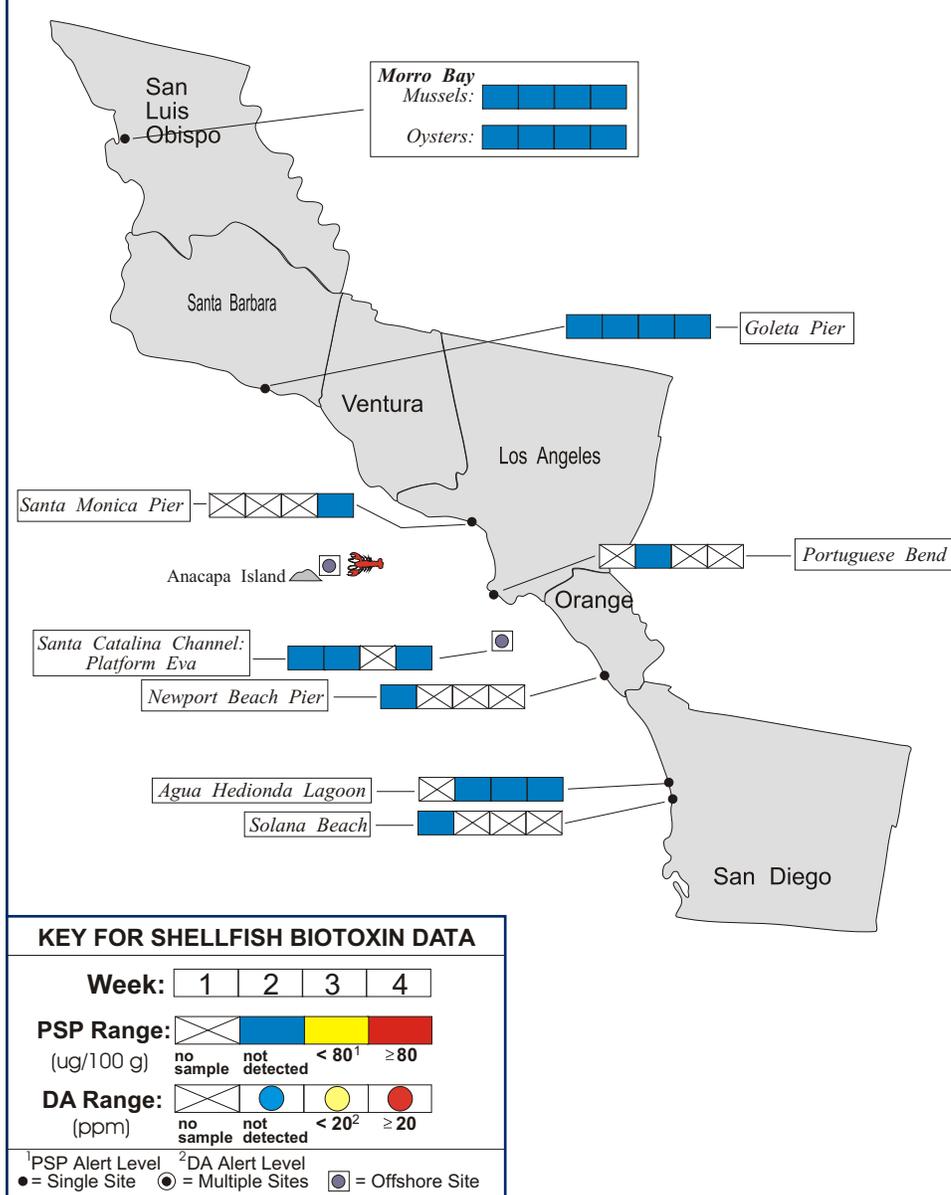


Figure 3. Distribution of shellfish biotoxins in Southern California during February, 2003.



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common by this time. The dinoflagellates *L. Polyedrum* and *C. furca*, both nontoxic red tide producers, also were common along the Orange County coast, a pattern more common in the summer months.

Northern California Summary:

Low numbers of *Alexandrium* were observed at several sites in Marin County during February (Figure 2). The low numbers of this dinoflagellate observed in outer Drakes Estero coincided with the detection of low levels of PSP toxins in sentinel mussels from this site (Figure 4).

Low concentrations of PSP toxins were also detected in the viscera of Washington clams (*Saxidomus nuttalli*) from Bodega Harbor during February. Two other clam species (the gaper clam, *Tresus nuttalli*, and the basket cockle, *Clinocardium nuttalli*) collected from Bodega Harbor by the California Department of Fish and Game did not contain detectable levels of PSP toxins.

Volunteer sampling efforts in Santa Cruz and Monterey resulted in the detection of an increase in the relative abundance of *Pseudo-nitzschia* by the first week of February (Figure 2). Elevated numbers of this diatom were observed at the Monterey commercial pier on February 2, at the Santa Cruz Pier on February 4, and in Santa Cruz Harbor on February 13. By February 9 *Pseudo-nitzschia* had become the dominant species of phytoplankton at the Santa Cruz Pier (80% relative abundance). Cell numbers were still

WEB LINKS:

- For related information on marine biotoxins and toxigenic phytoplankton, follow these links:
- [Http://www.whoi.edu/redtide/](http://www.whoi.edu/redtide/) ~ The Harmful Algae Page at Woods Hole Oceanographic Institute.
- [Http://www.cfsan.fda.gov/~mow/chap37.html](http://www.cfsan.fda.gov/~mow/chap37.html) ~ U.S. Food and Drug Administration site for information on shellfish-associated toxins.
- [Http://www.bigelow.org/hab/index.html](http://www.bigelow.org/hab/index.html) ~ Toxic and Harmful Algae Blooms Page at the Bigelow Laboratory for Ocean Sciences in Maine.
- [Http://www.pac.dfo-mpo.gc.ca/ops/fm/shellfish/Biotoxins/biotoxins_e.htm](http://www.pac.dfo-mpo.gc.ca/ops/fm/shellfish/Biotoxins/biotoxins_e.htm) ~ Shellfish Biotoxins information from the Fisheries and Oceans Canada Pacific Region.
- [Http://www.lifesci.ucsb.edu/~biolum/](http://www.lifesci.ucsb.edu/~biolum/) ~ The Bioluminescence Web Page at U.C. Santa Barbara - just for fun!

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relatively low however.

Domoic acid was not detected in shellfish samples from northern California locations during February (Figure 8).

With respect to the nontoxic species, most Northern California plankton samples contained very few cells. An unusual dinoflagellate bloom was detected inside Tomales Bay by the Department of Fish and Game and volunteer samplers Richard Plant and Cal Strobel. This bloom consisted primarily of the leaf-shaped *Prorocentrum micans*, although *Gonyaulax spinifera* was also common in the mid-bay region. Low numbers of diatoms were present along most of the Northern California coastline, with an abundance of *Ditylum sp.* observed at Pacifica (San Mateo County) in samples collected by the county Environmental Health Department in mid-February.

QUARANTINES:

There were no special quarantines or health advisories in place in February 2003.

California implements an annual quarantine each year from May 1 through October 31, which applies only to sport-harvested mussels along the entire California coastline, including all bays and estuaries. Marine Biotoxin Monitoring Program participants collect samples throughout the year. The Annual Quarantine does not affect the commercial shellfish growing areas in

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Figure 4. Distribution of shellfish biotoxins in Northern California during February, 2003.

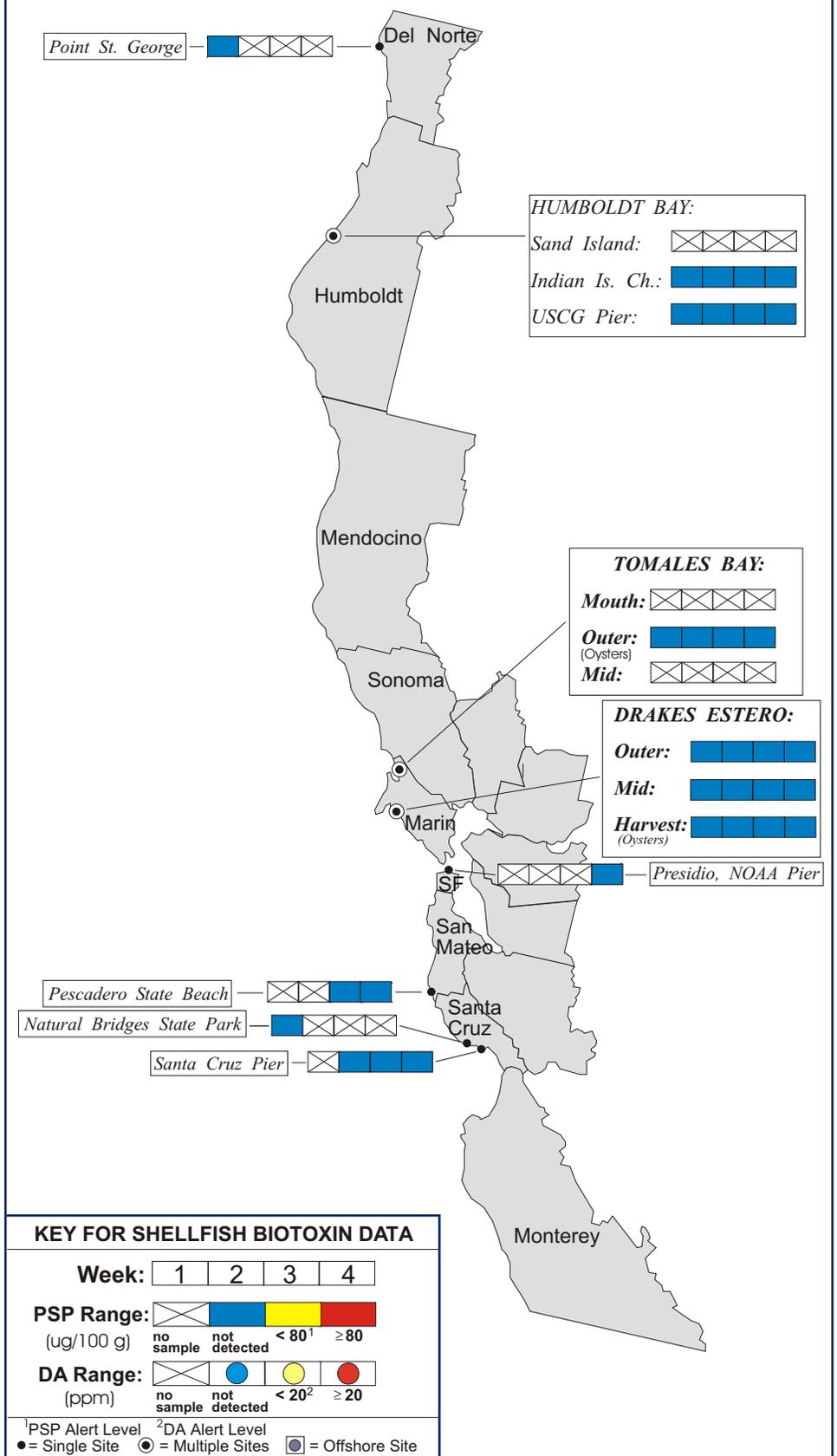


Table 1. California Marine Biotoxin Monitoring and Control Program participants submitting shellfish samples during February, 2003.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	1
Humboldt	Coast Seafood Company	8
Mendocino	None Submitted	
Sonoma	California Department of Fish and Game	4
	CDHS Volunteer	1
Marin	Cove Mussel Company	2
	Hog Island Oyster Company	3
	Johnson Oyster Company	22
	Marin Oyster Company	4
San Francisco	None Submitted	
San Mateo	San Mateo County Environmental Health Department	1
Santa Cruz	U.C. Santa Cruz	4
	Santa Cruz County Environmental Health Department	1
Monterey	None Submitted	
San Luis Obispo	Williams Shellfish Company	8
Santa Barbara	U.C. Santa Barbara Marine Science Institute	4
Ventura	None Submitted	
Los Angeles	Los Angeles County Health Department	2
Orange	Ecomar, Inc.	2
San Diego	Carlsbad Aquafarms, Inc.	3

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California. All commercial shellfish growers certified by the State of California are required to submit routine (at least weekly) samples for biotoxin analysis, allowing us to closely monitor the presence of any toxin. Harvesting closures are imposed if toxin levels reach the federal alert level.

Consumers of Washington clams, also known as butter clams, are cautioned to eat only the white meat. We recommend that persons engaged in the sport-harvesting of any bivalve shellfish (e.g., mussels, clams, scallops) contact the Department's "Shellfish Information Line" at 1-800-553-4133 or (510) 412-4643 for a current update on marine biotoxin activity.

Persons taking any clams or scallops are advised to remove and discard the dark parts (i.e., the digestive organs or viscera). Only the white meat of clams and scallops should be prepared for human consumption.



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

Table 2. Agencies, organizations and volunteers participating in marine phytoplankton sample collection during February, 2003.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	1
Humboldt	Coast Seafood Company	4
Mendocino	None Submitted	
Sonoma	Bodega Marine Laboratory	1
Marin	California Department of Fish and Game	3
	CDHS Volunteer (Brent Anderson, Richard Plant, Cal Strobel)	7
	Johnson Oyster Company	17
Alameda	None Submitted	
San Francisco	CDHS Volunteer (Eugenia McNaughton)	2
San Mateo	San Mateo County Environmental Health Department	1
Santa Cruz	San Lorenzo Valley High School	1
	Santa Cruz County Environmental Health Department	4
Monterey	CDHS Volunteer (Jerry Norbn)	1
	University of California Reserve System	1
San Luis Obispo	CDHS Volunteer (Rene and Auburn Atkins)	3
	Morro Bay National Estuary Program	2
	Tenera Environmental	3
Santa Barbara	U.C. Santa Barbara Marine Science Institute	4
	Santa Barbara City College	1
Ventura	None Submitted	
Los Angeles	Los Angeles County Health Department	2
	Los Angeles County Sanitation District	2
	Los Angeles Regional Water Quality Control Board	1
	City of Los Angeles Environmental Monitoring Division	2
	Catalina Tall Ships Expedition	1
Orange	Orange County Sanitation District	2
	Ocean Institute	1
San Diego	San Diego County Environmental Health Department	1
	CDHS Volunteer (Randy and Bill Dick)	1

PHYTOPLANKTON GALLERY



A bloom of the dinoflagellate *Prorocentrum micans* from Tomales Bay, Marin County, in February.



Two large centric diatoms (side and transverse view) observed in high numbers near San Francisco and San Diego.



Corethron sp., a common diatom observed along the California coast in February.

Plankton - Collective term for a variety of marine and freshwater organisms that drift on or near the surface of the water. Their movement depends largely on tides, currents, and winds, because they are too small or weak to swim against the currents. The name derives from the Greek word "planktos": to wander.