CALIFORNIA DEPARTMENT OF HEALTH SERVICES
850 Marina Bay Parkway, Richmond, CA 94804

ENVIRONMENTAL MANAGEMENT BRANCH
Marine Biotoxin Monitoring Program

Monthly Marine Biotoxin Report

April 2006

Technical Report No. 06-15

INTRODUCTION:

This report provides a summary of biotoxin activity for the month of April, 2006. 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 along the entire Southern California coast during April (Figure 1). The distribution and relative abundance of

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Figure 1. Distribution of toxin-producing phytoplankton in Southern California during April, 2006.

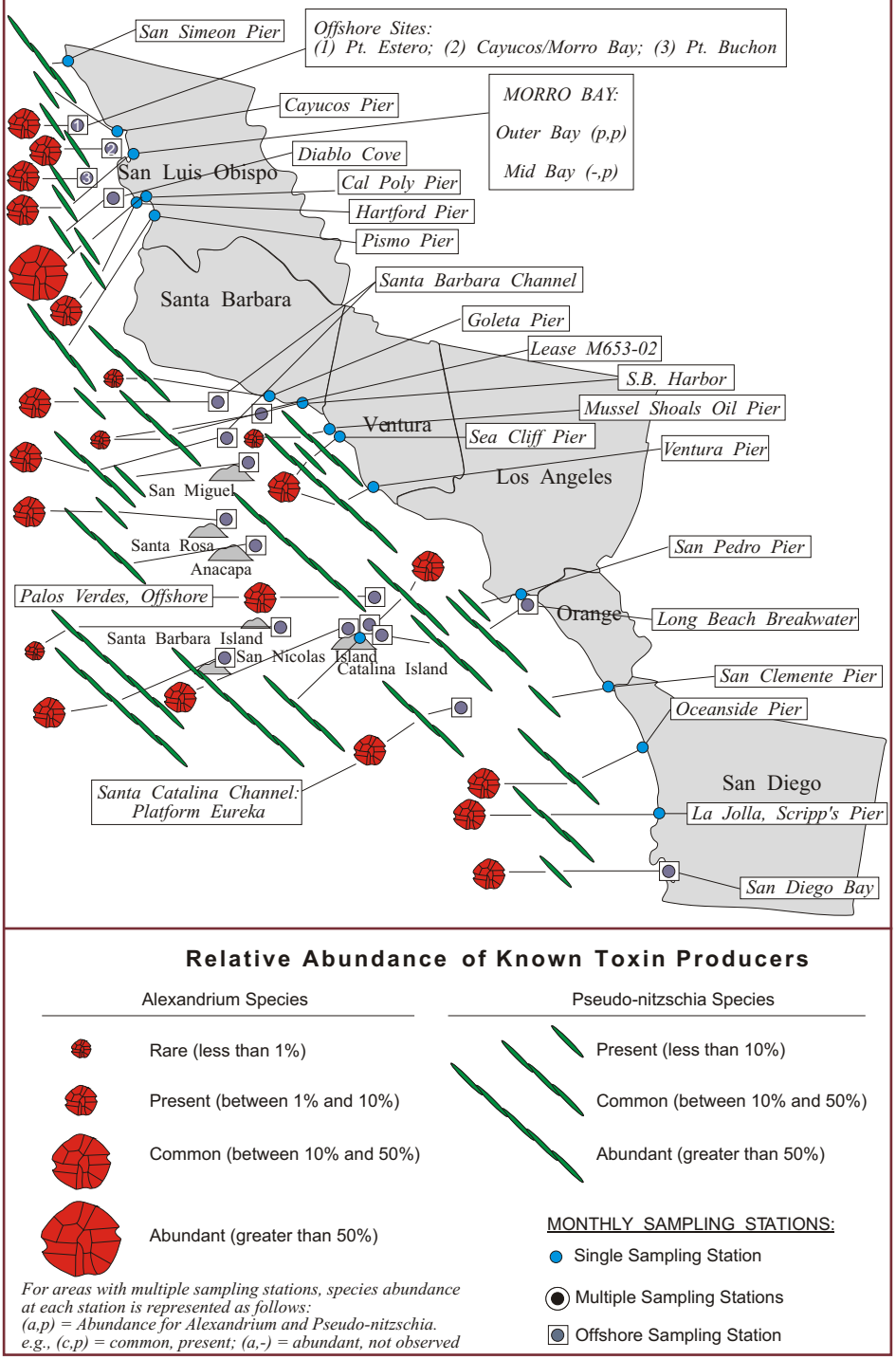
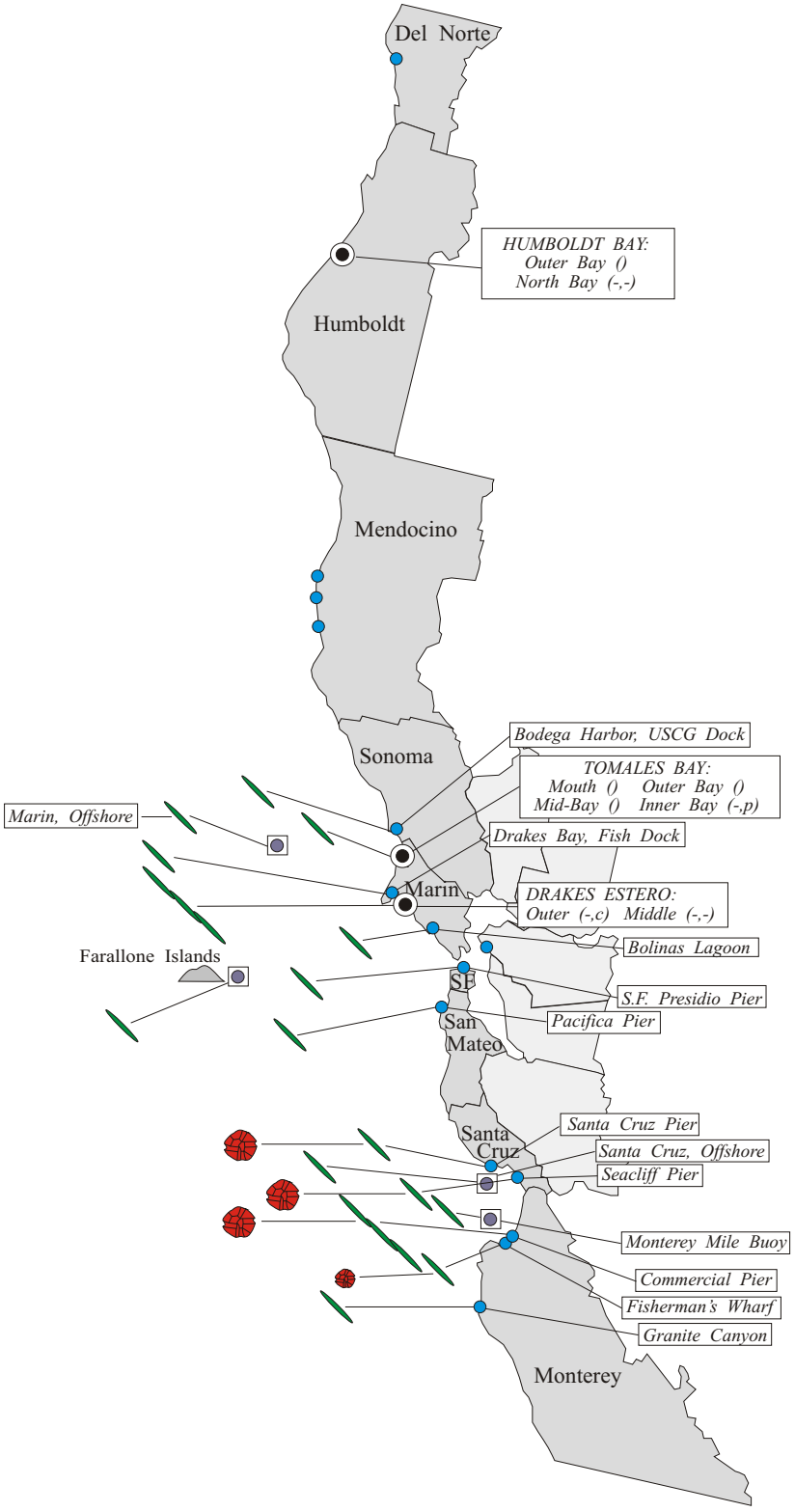
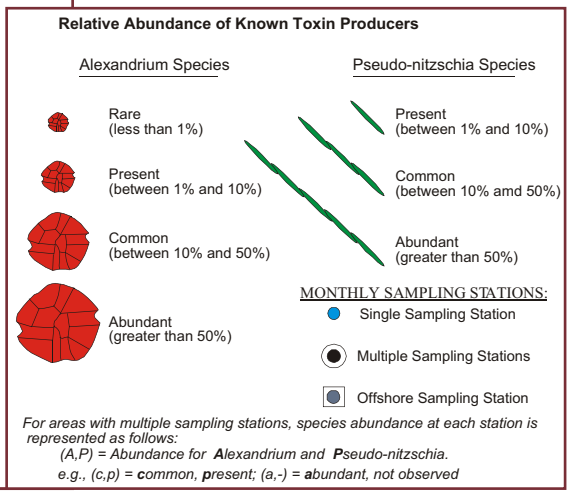


Figure 2. Distribution of toxin-producing phytoplankton in Northern California during April, 2006.





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this dinoflagellate increased at a number of offshore and onshore sampling stations. The highest cell numbers were observed during the beginning of April and represented a continuation of the March event. Of particular significance was the occurrence of *Alexandrium* greater than 22 miles offshore near Catalina, Santa Barbara, and San Nicolas islands. The highest relative abundances were observed at sites in northern San Diego County and offshore of Los Angeles. This dinoflagellate decreased in relative abundance through the last three weeks of the month but continued to be observed through the third and fourth weeks at various locations.

By the first week of April the PSP toxin concentrations had reached the highest levels in Santa Barbara and had declined somewhat in San Luis Obispo and Ventura relative to the last week of March (Figure 3). Toxin concentrations above the alert level were detected in mussels from San Luis Obispo, Santa Barbara, and Ventura counties. Also significant was the detection of low levels of these toxins in mussels from Agua Hedionda Lagoon and La Jolla (San Diego County), a rare occurrence.

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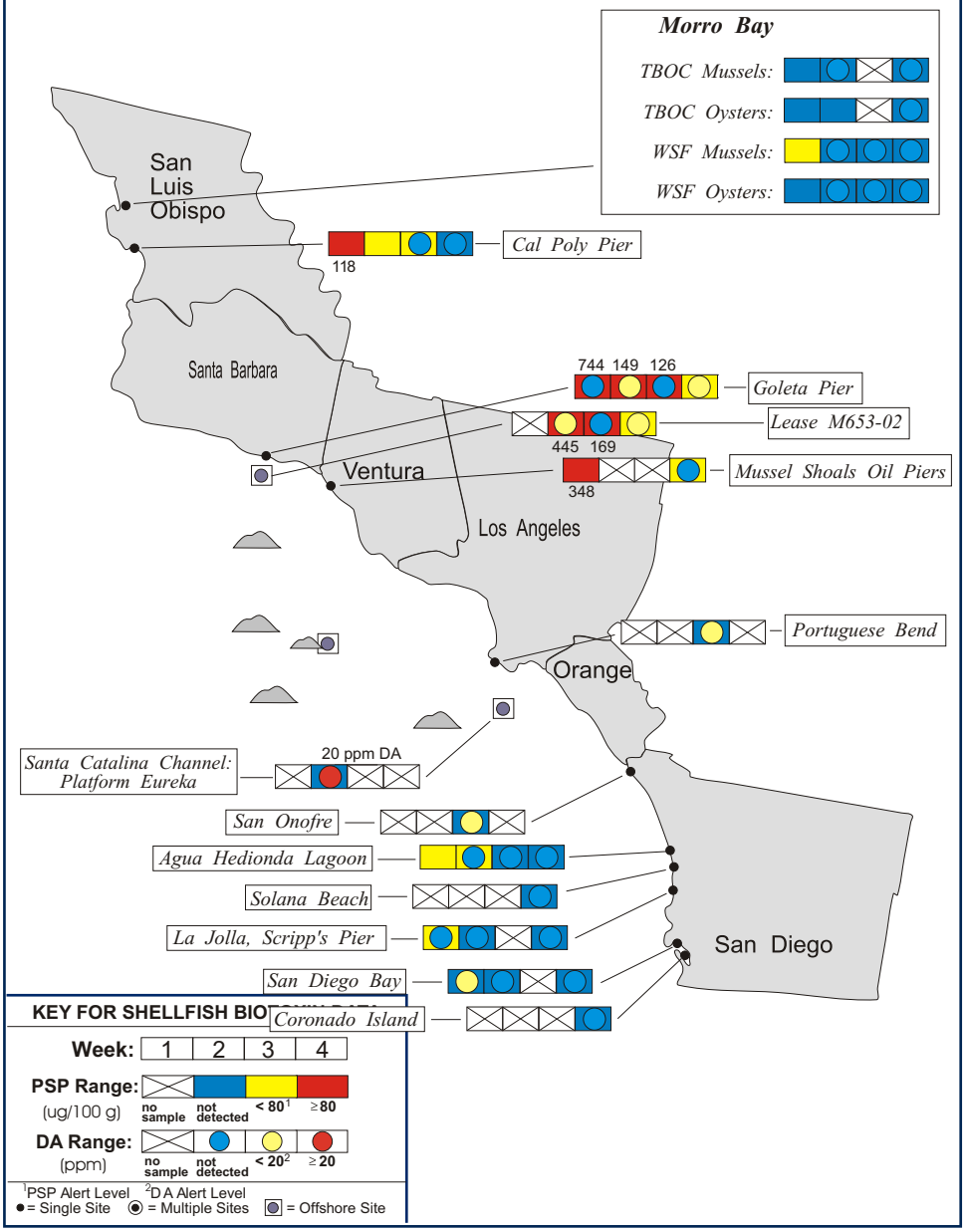
Figure 3. Distribution of shellfish biotoxins in Southern California during April, 2006.



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Domoic Acid

Pseudo-nitzschia continued to be observed along the entire Southern California coast in April (Figure 1). The relative abundance decreased somewhat from observations in March, however this diatom remained common at a number of locations. The highest relative abundances, in decreasing order, were observed at the following locations: offshore of Palos Verdes (April 18), Scripps Pier in La Jolla (April 10), Ventura Pier (April 6), and at an aquaculture lease less than one mile offshore of Santa Barbara (April 26).

Domoic acid exceeded the alert level in mussels (20 ppm) collected from an oil platform offshore of Los Angeles and Orange counties during the second week of April (Figure 3). Lower concentrations of this toxin were detected in shellfish samples from San Diego, Los Angeles, and Santa Barbara counties.

Non-toxic Species

As might be expected from the co-occurrence of domoic acid and the PSP toxins, the Southern California coast contained a mix of diatoms and dinoflagellates. *Chaetoceros* was the dominant diatom genus, while

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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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Prorocentrum and *Ceratium* were the most common dinoflagellates. In general it appeared that diatoms were more numerous at offshore sites and dinoflagellates more dominant at the onshore sampling locations.

Northern California Summary:

Paralytic Shellfish Poisoning

Alexandrium was only observed at sites within Monterey Bay during April (Figure 2). The distribution and relative abundance of this dinoflagellate decreased from observations in March.

Low levels of the PSP toxins were detected in sentinel mussels from Drakes Estero (Marin County) and Santa Cruz Pier.

Domoic Acid

Low numbers of *Pseudo-nitzschia* were observed at sampling stations between Marin and Monterey counties in April (Figure 2). A high concentration of domoic acid was detected in razor clams from Humboldt County during the last week of the month.

Non-toxic Species

Diatoms (*Chaetoceros, Skeletonema*) were common to abundant along most of the Northern California coast. Dinoflagellates (*Prorocentrum*, *Gymnodinium*) were common inside Monterey Bay.

QUARANTINES:

On March 24 a health advisory was issued warning consumers not to eat sport-harvested species of bivalve shellfish, sardines and anchovies, or the viscera of sport-harvested or commercially sold lobster or crab taken

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Figure 4. Distribution of shellfish biotoxins in Northern California during April, 2006.

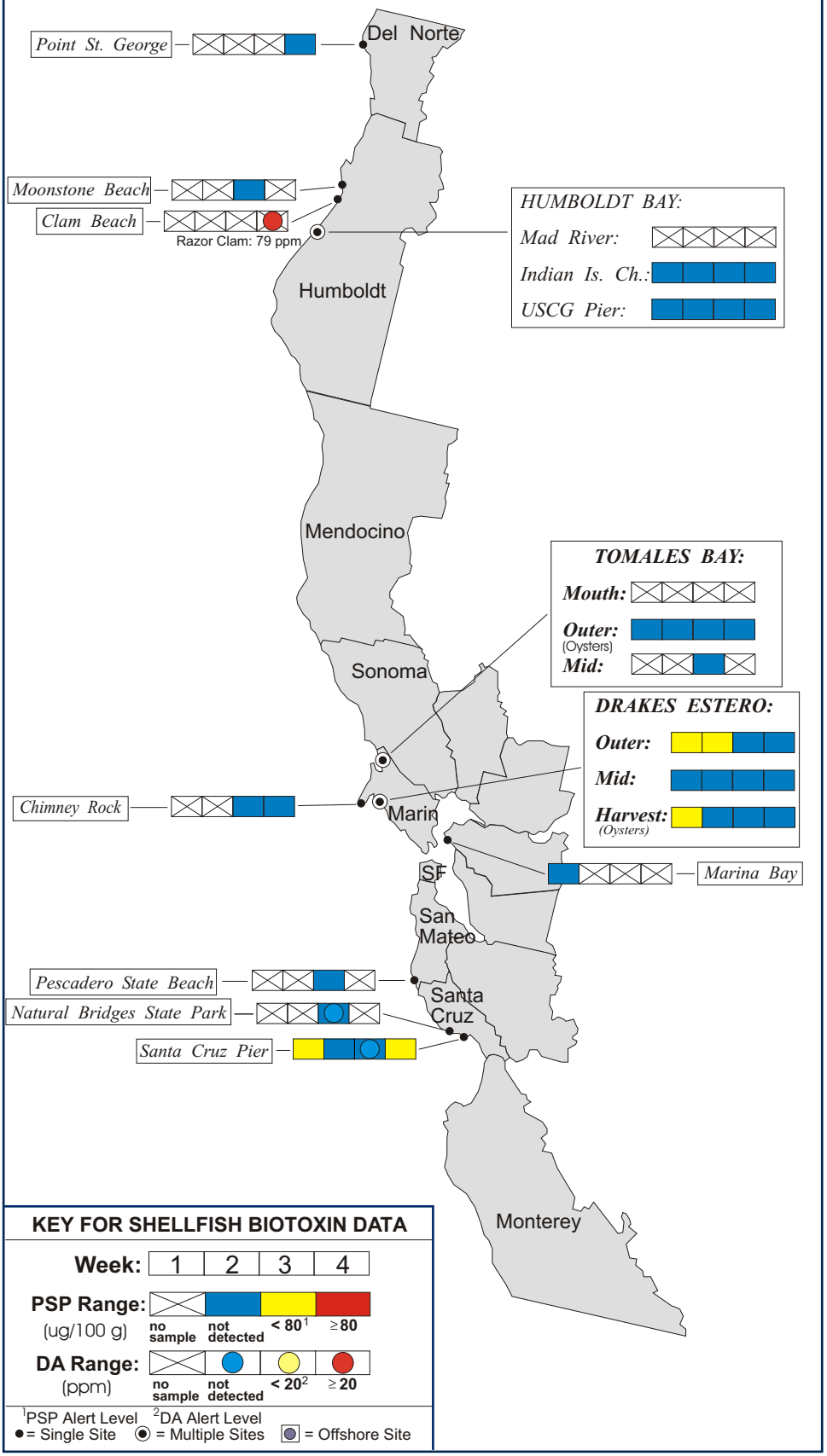

Table 1. California Marine Biotoxin Monitoring Program participants submitting shellfish samples during April, 2006.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	1
Humboldt	Coast Seafood Company	8
	Humboldt County Environmental Health Department	1
	Humboldt State University Marine Laboratory	1
Mendocino	None Submitted	
Sonoma	None Submitted	
Marin	Cove Mussel Company	1
	Hog Island Oyster Company	4
	Drakes Bay Oyster Company	16
	CDHS Marine Biotoxin Monitoring Program	2
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
	California Polytechnic State University	4
	Tomales Bay Oyster Company	6
Santa Barbara	Santa Barbara Mariculture Company	7
	U.C. Santa Barbara	4
Ventura	Ventura County Environmental Health Department	2
Los Angeles	Los Angeles County Health Department	1
Orange	Aquarium of the Pacific, Long Beach	1
San Diego	Carlsbad Aquafarms, Inc.	6
	U.S. Navy Marine Mammal Program	3
	CDHS Volunteer (Steve Crooke)	4
	Scripps Institute of Oceanography	3

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from the coast of San Diego, Los Angeles, Orange, Ventura, Santa Barbara and San Luis Obispo counties.

The annual quarantine on the sport-harvesting of mussels was scheduled to go in effect on May 1. 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. All certified shellfish growers are required to submit at least weekly samples of shellfish for toxin monitoring. Harvest restrictions or closures are implemented as needed to protect the public's health.

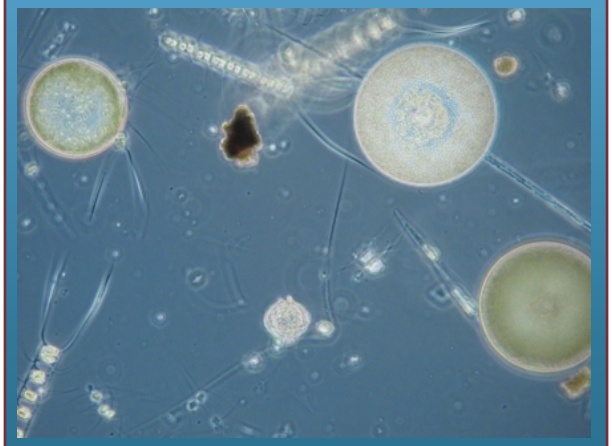
Consumers of Washington clams, also known as butter clams, are cautioned to eat only the white meat. Washington clams can concentrate the PSP toxins in the viscera and in the dark parts of the siphon and can remain toxic for a long period of time. Persons taking scallops or clams, with the exception 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. Sportharvesters 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.

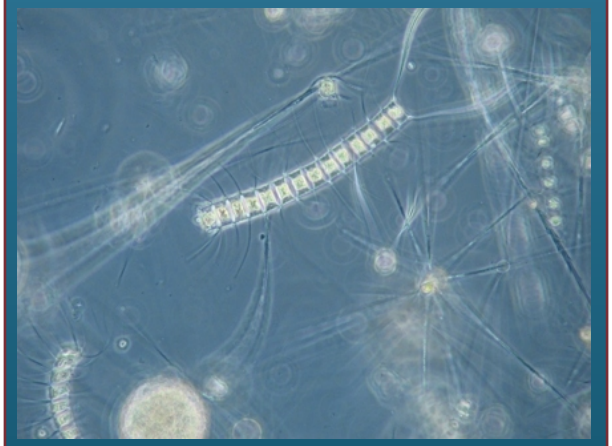
Table 2. Agencies, organizations and volunteers participating in marine phytoplankton sample collection during April, 2006.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	1
Humboldt	Coast Seafood Company	4
Mendocino	Marine Mammal Center Volunteer (Marc Mangahas)	3
Sonoma	CDHS Volunteer (Cathleen Cannon)	1
Marin	CDHS Volunteers (Brent Anderson, Mary Von Tolksdorf, Cal Strobel)	5
	Drakes Bay Oyster Company	8
	CDHS Marine Biotoxin Monitoring Program	5
Contra Costa	CDHS Marine Biotoxin Monitoring Program	2
San Francisco	DHS Volunteer (Eugenia McNaughton)	4
	CDHS Volunteer (Carol Keiper)	1
San Mateo	San Mateo County Environmental Health Department	2
Santa Cruz	U.C Santa Cruz	4
	Marine Mammal Center Volunteers (Marie Brayman, Nancy Scarborough)	6
Monterey	Marine Mammal Center Volunteers (Aubrey St. Marie, Marie Brayman)	1
	Monterey Abalone Company	4
	Marine Pollution Studies Laboratory	4
San Luis Obispo	Morro Bay National Estuary Program	2
	DHS Volunteers (Renee and Auburn Atkins)	2
	California Polytechnic State University	4
	NOAA Coastal Discovery Center	2
	Tenera Environmental	2
	Marine Mammal Center Volunteers (Terry Woodhouse, Debby Davis)	12
	Tomales Bay Oyster Company	1
Santa Barbara	Channel Islands National Marine Sanctuary	2
	National Park Service	6
	Santa Barbara Channel Keeper	2
	Santa Barbara Mariculture Company	4
	U.C. Santa Barbara	2
	Marine Mammal Center Volunteer	3
Ventura	CDHS Volunteer (Fred Burgess)	5
	Ventura County Environmental Health Department	2
	National Park Service	3
Los Angeles	Los Angeles County Sanitation District	5
	Catalina Island Marine Institute	2
	Catalina Tall Ships Expeditions	9
	Pt. Mugu Naval Air Station	1
	CDHS Volunteer (Richard Weaver)	2
Orange	Aquarium of the Pacific Long Beach	1
	DHS Volunteer (Debbie Karimoto)	1
San Diego	Scripps Institute of Oceanography	4
	DHS Volunteer (Paul Sims, Claire Sims)	5

PHYTOPLANKTON GALLERY



Centric diatoms were common at some sites along of the California coast.



The diatom Chaetoceros remained common along the coast in April.

This spectacular species of Ceratium is occasionally observed in low numbers offshore near Catalina Island.