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

ENVIRONMENTAL MANAGEMENT BRANCH
Marine Biotoxin Monitoring Program

Monthly Marine Biotoxin Report

June 2003

Technical Report No. 03-17

INTRODUCTION:

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

Southern California Summary:

Paralytic Shellfish Poisoning:

Alexandrium was not observed at any Southern California sites during June (Figure 1). PSP toxicity was not detected in any

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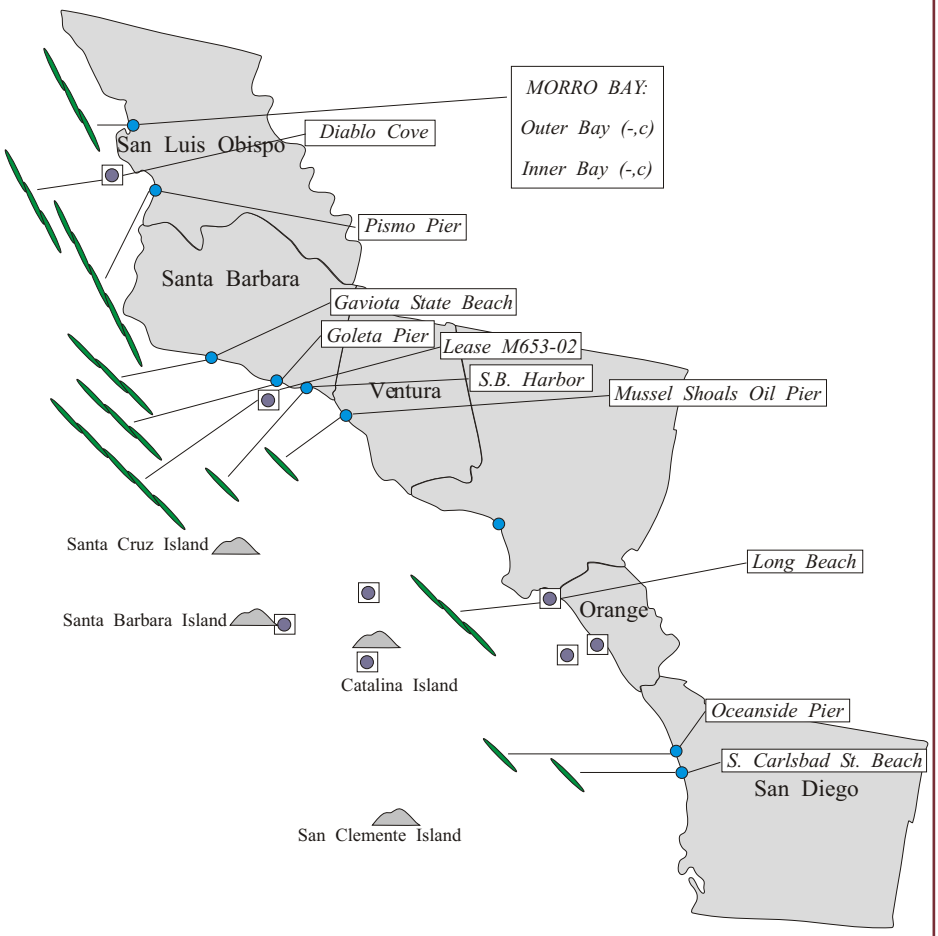
Figure 1. Distribution of toxin-producing phytoplankton in Southern California during June, 2003.



Relative Abundance of Known Toxin Producers

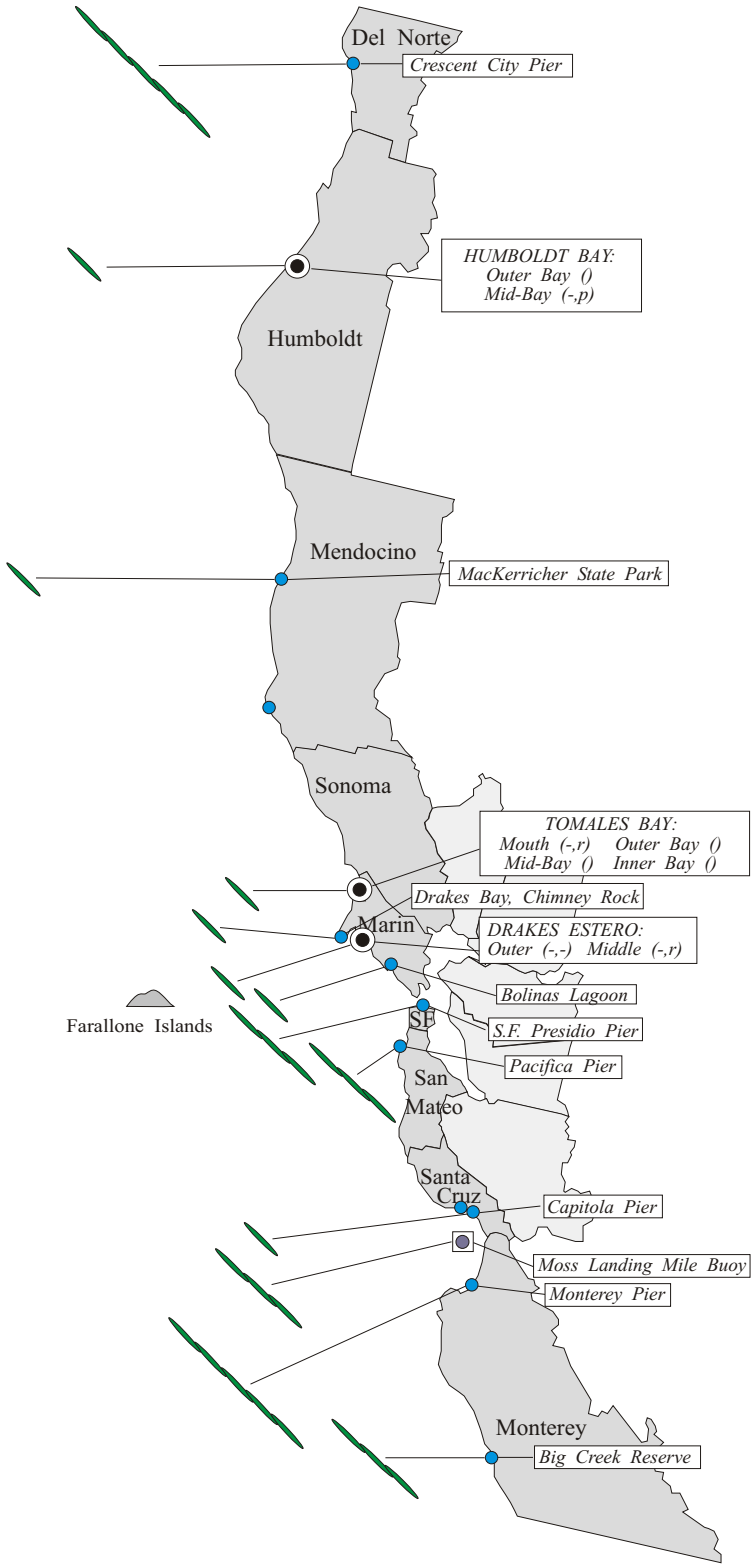
Alexandrium Species	Pseudo-nitzschia Species
Rare (less than 1%)	Present (less than 10%)
Present (between 1% and 10%)	Common (between 10% and 50%)
Common (between 10% and 50%)	Abundant (greater than 50%)
Abundant (greater than 50%)	

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

MONTHLY SAMPLING STATIONS:

- Single Sampling Station
- Multiple Sampling Stations
- Offshore Sampling Station

Figure 2. Distribution of toxin-producing phytoplankton in Northern California during June, 2003.



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shellfish samples collected at sites along the Southern California coast throughout the month.

Domoic Acid:

The distribution and relative abundance of *Pseudo-nitzschia* decreased significantly along most of the Southern California coast during June (Figure 1). High relative abundances of this toxin producing diatom continued to be observed along the San Luis Obispo and Santa Barbara coast. The greatest densities were observed at sites along the Santa Barbara coast and offshore. By the beginning of June the relative abundance and cell number for *Pseudo-nitzschia* had decreased dramatically from Ventura through San Diego counties.

The decline in domoic acid concentrations noted at the end of May continued through June (Figure 3). Low levels of this toxin were detected in mussels from Morro Bay in San Luis Obispo County (3 ppm on June 16) and from several sites in Santa Barbara. Oysters from a mariculture lease approximately one-half mile offshore of Santa Barbara contained low concentrations of domoic acid on June 3 (10 ppm) and on June 7 (3 ppm), decreasing below the detection limit by June 11. Low

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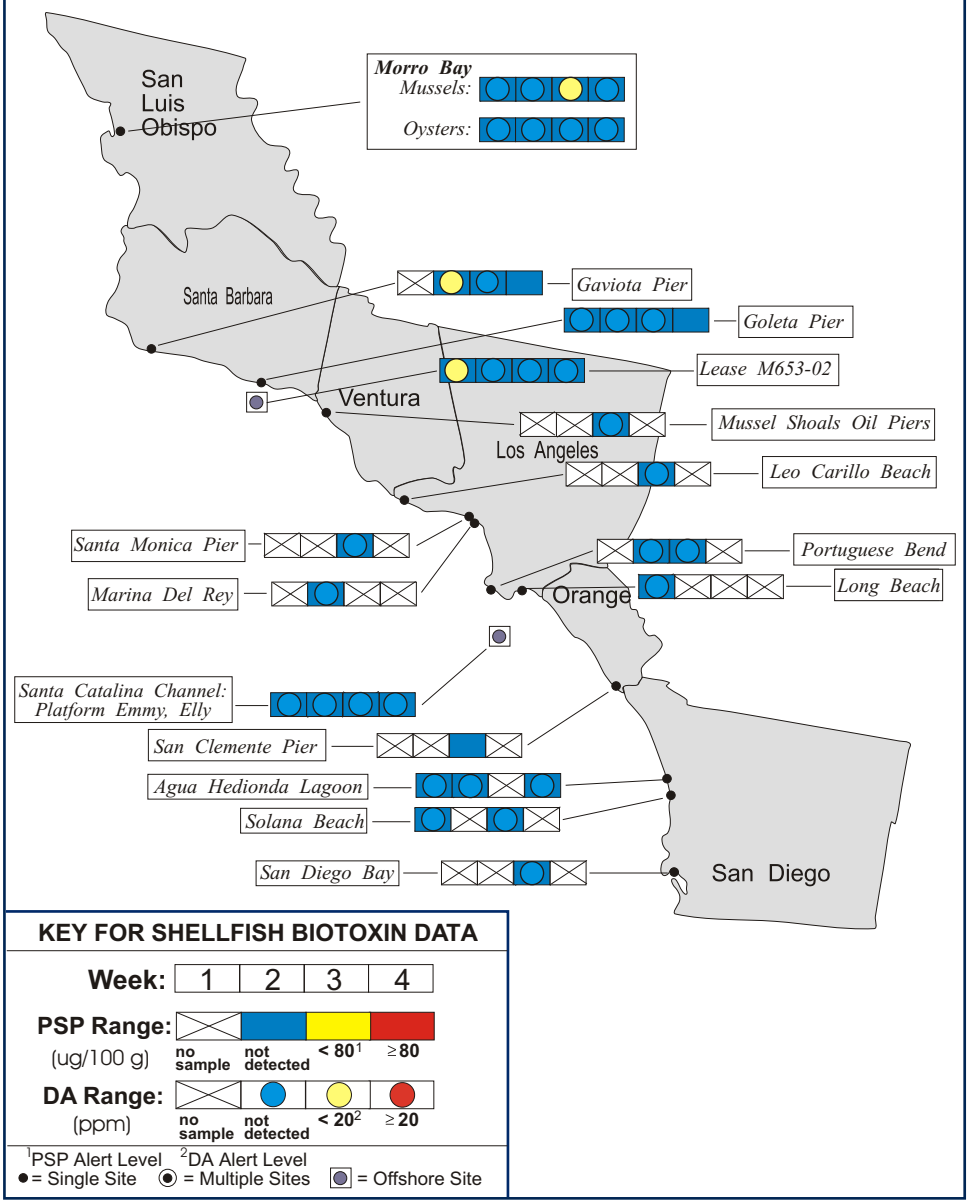
Figure 3. Distribution of shellfish biotoxins in Southern California during June, 2003.



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levels of domoic acid were also detected in mussels from Gaviota Pier on June 8 (5 ppm). This toxin was not detected at any Santa Barbara sites beyond this date. Domoic acid was not detected in any samples collected between Ventura and San Diego counties during June.

Nontoxic Events:

Of the various nontoxic phytoplankton present in June along the Southern California coast, diatoms were common throughout the month from San Luis Obispo through Los Angeles. *Rhizosolenia*, *Chaetoceros*, *Dactylosolen*, *Thalasiosira*, and *Leptocylindrus* were common in this region. Dinoflagellates began appearing at the beginning of the month and included *Ceratium*, *Prorocentrum*, *Protoperidinium* and *Gymnodinium*. *Lingulodinium polyedrum* (formerly *Gonyaulax polyedra)* was common in the Carlsbad area of San Diego through the third weekof June.

Northern California Summary:

Paralytic Shellfish Poisoning:

Alexandrium was absent from all

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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

(Continued from Page 3)

Northern California sampling sites during June (Figure 2). Likewise, PSP toxins were not detected in shellfish from any northern California location throughout the month (Figure 4).

Domoic Acid:

Pseudo-nitzschia was present along the entire Northern California coastline during June (Figure 2). The relative abundance of this diatom increased at sites in Del Norte, San Francisco, and San Mateo counties compared to May's observations. Moderate numbers of this diatom persisted inside Monterey Bay and farther down the Monterey coast at the Big Creek Reserve. Domoic acid was not detected in mussels collected at any Northern California location during June (Figure 4).

Nontoxic Events:

Diatoms continued to dominate the assemblage of phytoplankton species in samples collected by our volunteer network throughout June. *Chaetoceros* was common along most of the coast, with *Skeletonema* common in Del Norte and Humboldt counties and *Rhizosolenia* common from Marin through San Mateo counties.

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

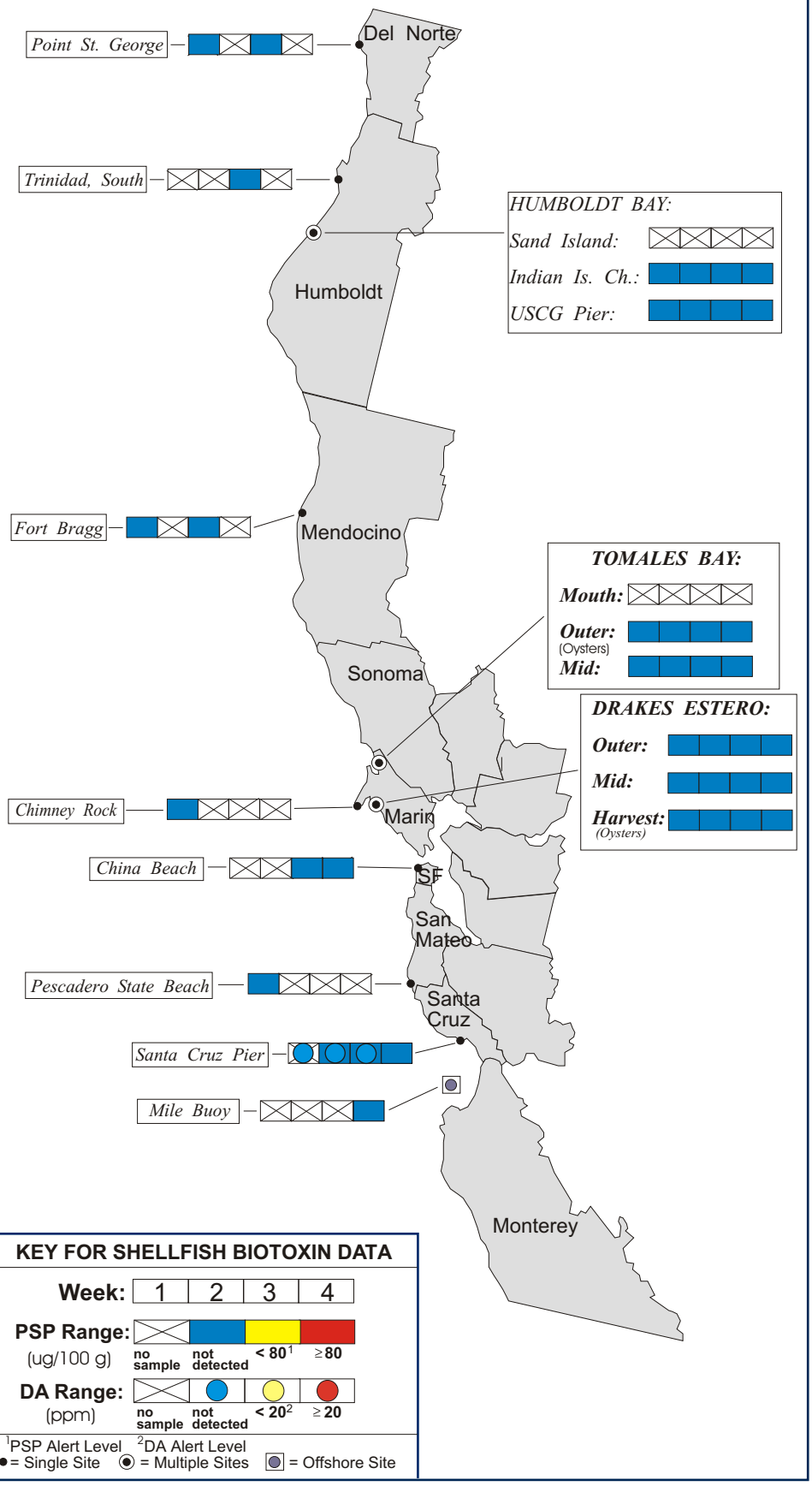


Table 1. California Marine Biotoxin Monitoring Program participants submitting shellfish samples during June, 2003.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	2
Humboldt	Coast Seafood Company	8
	Humboldt County Environmental Health Department	1
Mendocino	Mendocino County Environmental Health Department	2
Sonoma	None Submitted	
Marin	Cove Mussel Company	4
	Hog Island Oyster Company	5
	Johnson Oyster Company	20
	Marin Oyster Company	3
	CDHS Marine Biotoxin Program	1
San Francisco	San Francisco County Health Department	2
San Mateo	San Mateo County Environmental Health Department	1
Santa Cruz	U.C. Santa Cruz	4
Monterey	U.C. Santa Cruz	1
San Luis Obispo	Williams Shellfish Company	10
Santa Barbara	U.C. Santa Barbara Marine Science Institute	4
	Santa Barbara Mariculture Company	6
	California Department of Parks and Recreation	3
Ventura	Ventura County Environmental Health Department	1
Los Angeles	Los Angeles County Health Department	6
	Aquarium of the Pacific Long Beach	4
Orange	Ecomar, Inc.	7
	Orange County Health Care Agency	1
San Diego	Carlsbad Aquafarms, Inc.	3
	CDHS Volunteer (Paul Sims)	2
	U.S. Navy Marine Mammal Program	1

QUARANTINES:

The annual quarantine on the sport-harvesting of mussels went into effect on May 1st and will continue through October 31st. This annual 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.

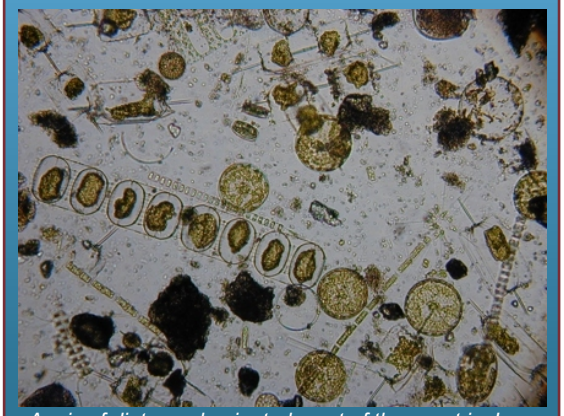
Consumers of Washington clams, also known as butter clams, are cautioned to eat only the white meat. Persons taking any clams or scallops are advised to remove and discard the dark parts (i.e., the digestive organs or viscera). Only the white meat of clams and scallops should be prepared for human consumption.

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.

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

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	2
Humboldt	Coast Seafood Company	4
Mendocino	CDHS Volunteer (Amy Johnson)	1
	California Department of Parks and Recreation	2
Sonoma	None Submitted	
Marin	CDHS Volunteers (Brent Anderson, Cal Strobel)	6
	Johnson Oyster Company	5
	CDHS Marine Biotoxin Program	1
Alameda	None Submitted	
San Francisco	CDHS Volunteer (Eugenia McNaughton)	2
San Mateo	San Mateo County Environmental Health Department	2
Santa Cruz	Santa Cruz County Environmental Health Department	2
Monterey	CDHS Volunteer (Jerry Norton)	1
	Pacific Cetacean Group	1
	U.C. Reserve System	1
San Luis Obispo	CDHS Volunteers (Rene and Auburn Atkins, Connie Marangi)	4
	Morro Bay Natural History Museum	3
	Morro Bay National Estuary Program	2
	Tenera Environmental	3
Santa Barbara	U.C. Santa Barbara Marine Science Institute	4
	California Department of Parks and Recreation	1
	Santa Barbara City College	1
	Santa Barbara Mariculture Company	5
	Catalina Tall Ships Expedition	1
Ventura	Ventura County Environmental Health Department	1
Los Angeles	Los Angeles County Sanitation District	1
	Los Angeles Regional Water Quality Control Board	1
	Catalina Tall Ships Expedition	4
Orange	Orange County Sanitation District	4
San Diego	San Diego County Environmental Health Department	3
	CDHS Volunteer (Paul Sims)	1

PHYTOPLANKTON GALLERY



A mix of diatoms dominated most of the coast in June.

Rhizosolenia was one of several common diatoms observed from Crescent City to Los Angeles in June.

Diatoms exhibit a wide range of shapes and sizes. Pictured is Isthmia, a less common but unique genus occasionally observed along the California coast.