

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 2003

Technical Report No. 03-23

INTRODUCTION:

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

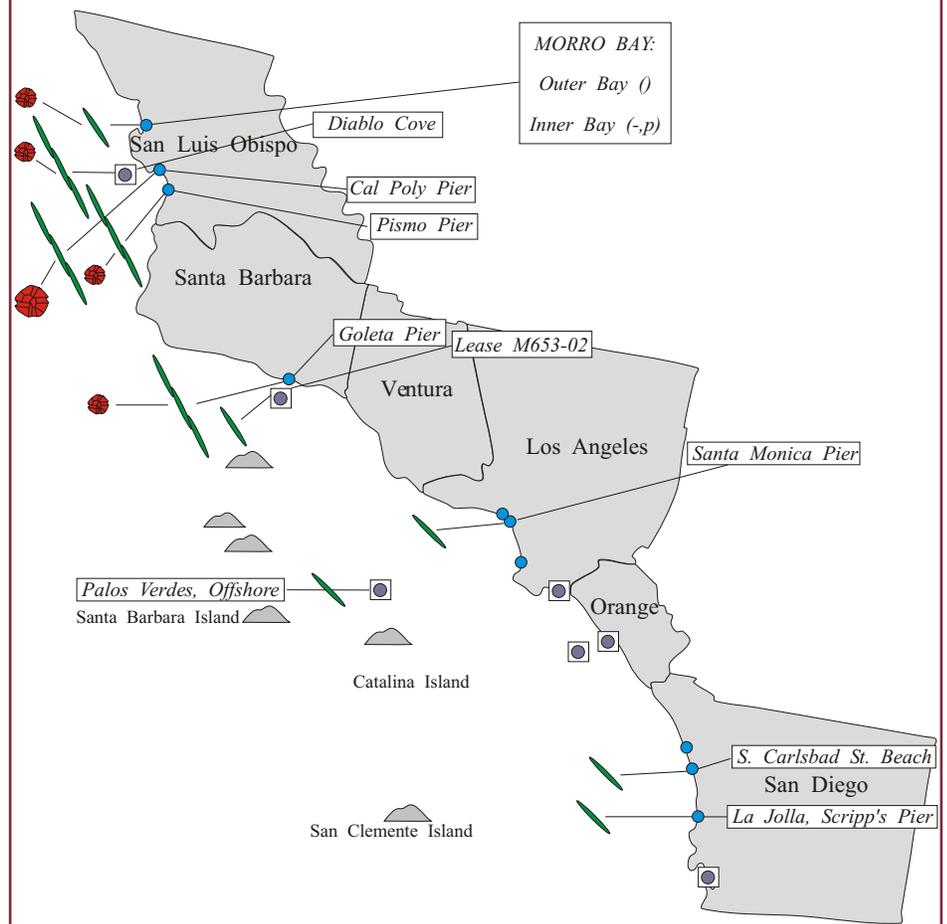
Southern California Summary:

Paralytic Shellfish Poisoning:

Alexandrium increased in distribution and relative abundance along the Southern California coast during December (Figure 1).

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



Relative Abundance of Known Toxin Producers

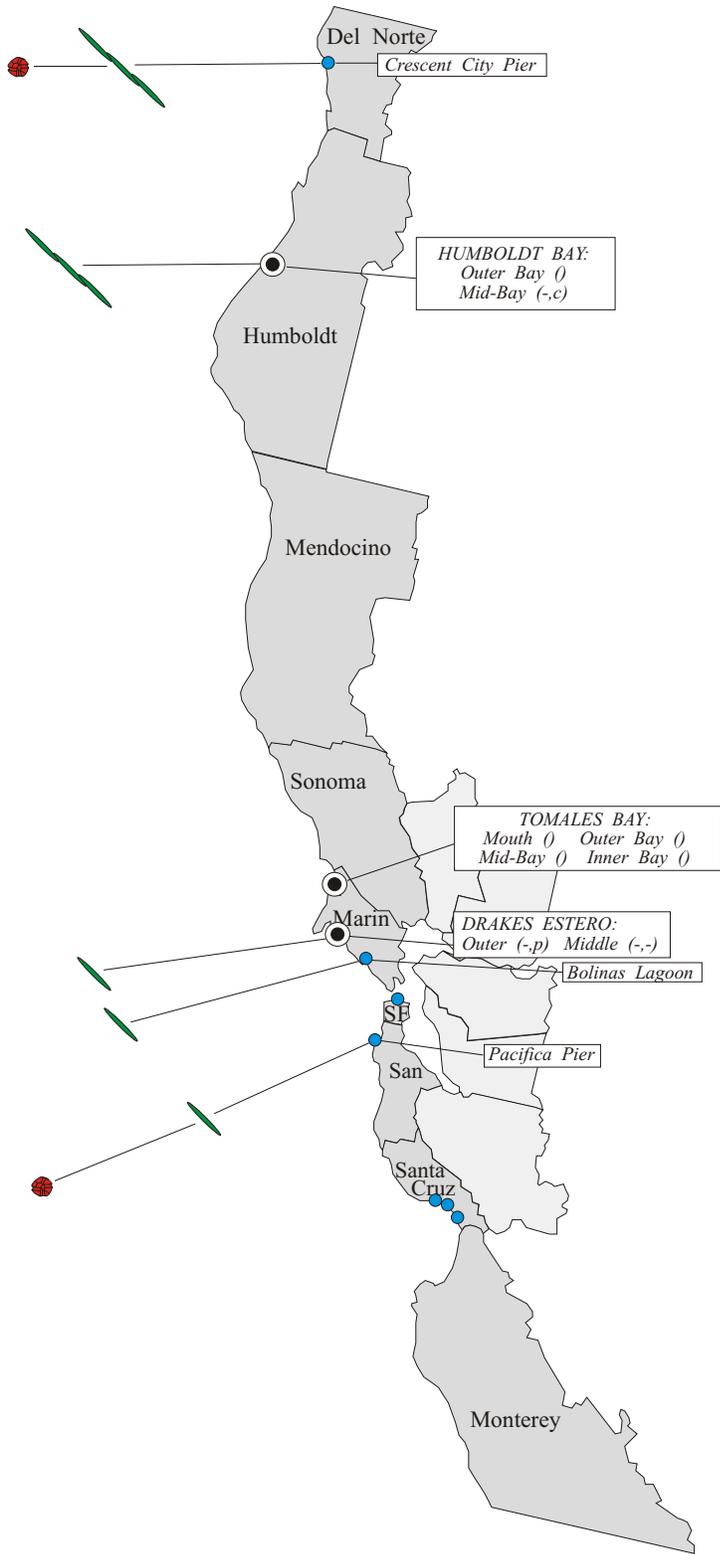
Alexandrium Species	Pseudo-nitzschia Species
 Rare (less than 1%)	 Present (less than 10%)
 Present (between 1% and 10%)	 Common (between 10% and 50%)
 Common (between 10% and 50%)	 Abundant (greater than 50%)
 Abundant (greater than 50%)	

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 December, 2003.



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Small numbers of this dinoflagellate species were observed between Morro Bay (San Luis Obispo County) and Goleta Pier (Santa Barbara County). Slightly higher numbers were observed at the Cal Poly Pier in Avila on December 23 and offshore of Diablo Cove on December 31.

PSP toxins were detected in mussels from the Cal Poly Pier during the last week of December (Figure 3).

Domoic Acid:

The distribution and relative abundance of *Pseudo-nitzschia* increased slightly in December at most locations along the Southern California coast compared to November's observations (Figure 1). The highest relative abundance of this diatom was observed along the San Luis Obispo coast, although cell mass was low.

Nontoxic Events

Remnants of the extensive fall dinoflagellate blooms continued through December along much of the Southern California coast. *Lingulodinium polyedrum* was common along most of the coastline from San Luis Obispo through San Diego. A greater diversity of other dinoflagellate species was observed between San Luis Obispo and Los Angeles, with *Ceratium furca* and

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Relative Abundance of Known Toxin Producers

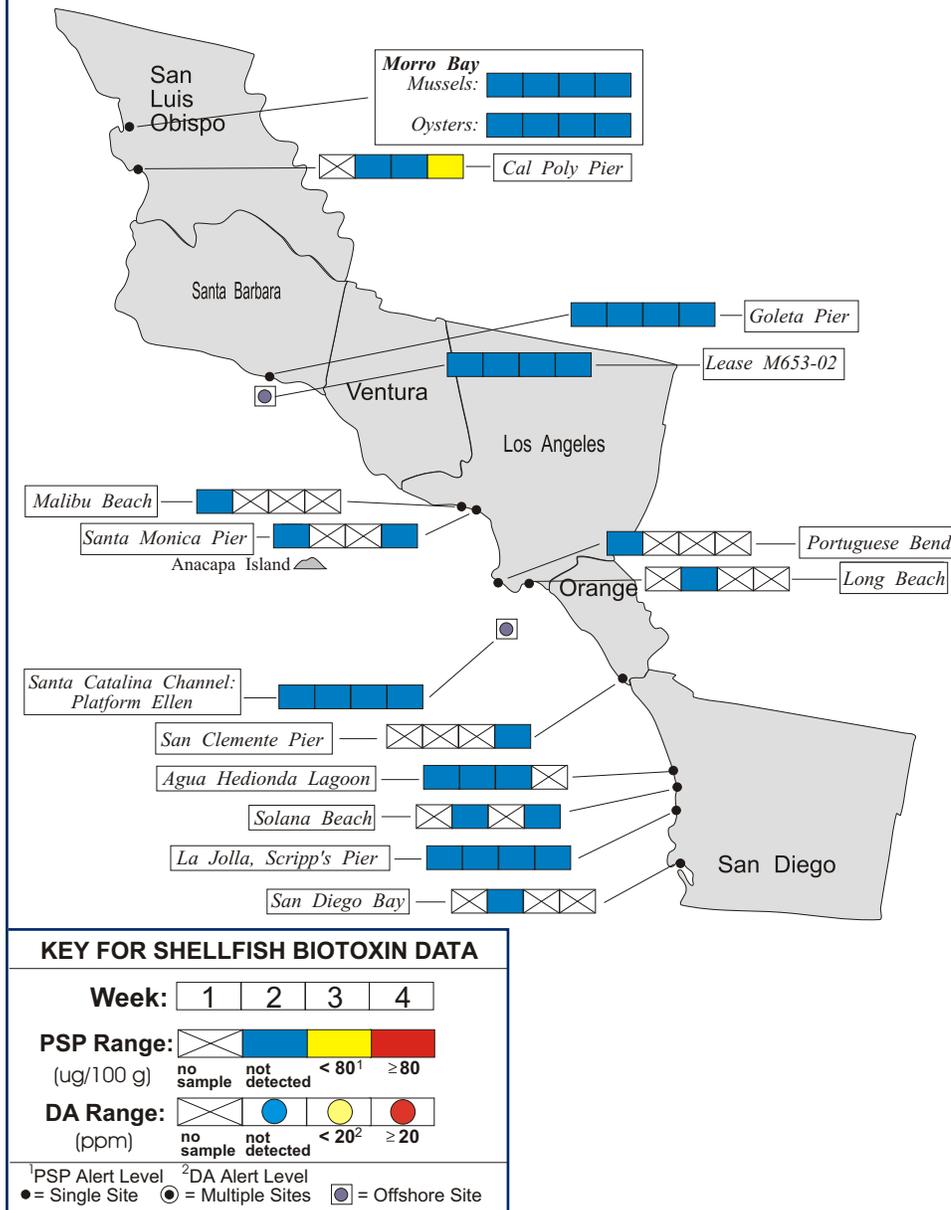
Alexandrium Species		Pseudo-nitzschia Species	
	Rare (less than 1%)		Present (between 1% and 10%)
	Present (between 1% and 10%)		Common (between 10% and 50%)
	Common (between 10% and 50%)		Abundant (greater than 50%)
	Abundant (greater than 50%)		

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



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Gymnodinium sanguineum commonly occurring in equal numbers. The increased diversity in Los Angeles waters included the reoccurrence of several diatom species, most notably *Skeletonema*. *L. polyedrum* remained almost monospecific along the San Diego coastline.

Northern California Summary:

Paralytic Shellfish Poisoning:

The relative abundance of *Alexandrium* decreased throughout Northern California in December (Figure 2). Low numbers of this dinoflagellate were observed at Crescent City (Del Norte County) and Pacifica (San Mateo County) at the beginning of December.

PSP toxins were detected in mussel samples from Marin, San Mateo, and Santa Cruz counties in December (Figure 4). Low concentrations of these toxins were detected throughout the month in Drakes Estero (Marin County) and Pescadero Beach (San Mateo County). Toxin concentrations did not exceed 45 ug. December marked the first month since July in which these toxins were absent from Humboldt Bay.

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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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Domoic Acid:

Pseudo-nitzschia continued to be present at several locations along the Northern California coastline during December (Figure 2). The relative abundance and distribution of this diatom was significantly reduced from observations in November. The highest relative abundance of *Pseudo-nitzschia* continued to be observed inside Humboldt Bay and at Crescent City during the first week of the month.

Nontoxic Events

Diatoms dominated the north coast between Crescent City and San Francisco, with dinoflagellates more common from San Mateo southward. There was a diversity of diatom species observed, with the most common including *Chaetoceros*, *Skeletonema*, *Coscinodiscus* and *Ditylum*. The most numerous dinoflagellates observed included *Gymnodinium sanguineum*, which was abundant inside Drakes Estero and at the Pacifica Pier, and *Ceratium furca*.



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

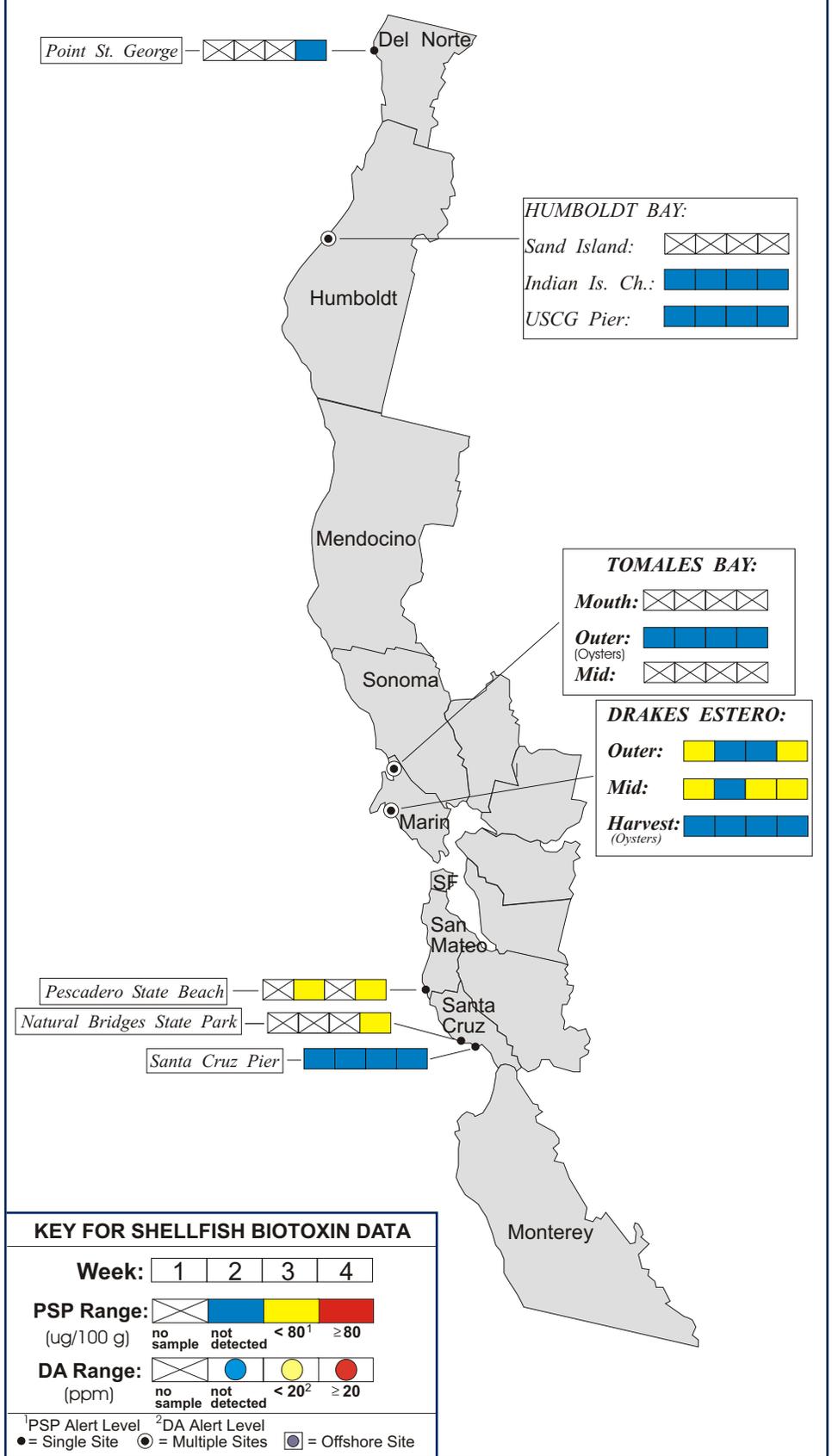


Table 1. California Marine Biotoxin Monitoring Program participants submitting shellfish samples during December, 2003.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	1
Humboldt	Coast Seafood Company	9
Mendocino	None Submitted	
Sonoma	None Submitted	
Marin	Hog Island Oyster Company	5
	Johnson Oyster Company	20
	Marin Oyster Company	2
San Francisco	None Submitted	
San Mateo	San Mateo County Environmental Health Department	2
Santa Cruz	U.C. Santa Cruz	4
	Santa Cruz County Environmental Health Department	1
Monterey	None Submitted	
San Luis Obispo	Williams Shellfish Company	8
	U.C. Santa Barbara Marine Science Institute	4
Santa Barbara	Santa Barbara Mariculture Company	4
	U.C. Santa Barbara Marine Science Institute	5
Ventura	None Submitted	
Los Angeles	Los Angeles County Health Department	2
	Aquarium of the Pacific Long Beach	2
	Los Angeles Regional Water Quality Control Board	2
Orange	Ecomar, Inc.	4
	Orange County Health Care Agency	1
San Diego	Carlsbad Aquafarms, Inc.	4
	Scripps Institute for Oceanography	5
	U.S. Navy	1
	CDHS Marine Biotoxin Program Volunteer (Paul Sims)	2

QUARANTINES:

There were no special quarantines or health advisories issued in December. The annual quarantine on the sport-harvesting of mussels, which normally goes into effect each year on May 1st and ends at midnight on October 31st, had been extended due to the dangerous levels of PSP toxins detected at the end of October. Continued monitoring demonstrated that toxin concentrations declined throughout November and remained at safe or undetectable levels by the middle of the month. On November 21 the state Health Director ended the quarantine extension. 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).

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 December, 2003.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	4
Humboldt	Coast Seafood Company	5
Mendocino	None Submitted	
Sonoma	None Submitted	
Marin	CDHS Volunteers (Brent Anderson, Marjorie Siegel, Mary Von Tolksdorf)	5
	Johnson Oyster Company	10
Contra Costa	None Submitted	
San Francisco	CDHS Volunteer (Eugeria McNaughton)	2
San Mateo	San Mateo County Environmental Health Department	2
Santa Cruz	None Submitted	
Monterey	None Submitted	
San Luis Obispo	CDHS Volunteers (Rere and Auburn Atkins)	2
	Morro Bay Natural History Museum	1
	Tenera Environmental	3
	U.C. Santa Barbara Marine Science Institute	3
Santa Barbara	U.C. Santa Barbara Marine Science Institute	6
	Santa Barbara Mariculture Company	3
Ventura	Ventura County Environmental Health Department	1
Los Angeles	Los Angeles County Sanitation District	3
	Regional Water Quality Control Board	1
	Aquarium of the Pacific Long Beach	2
	Los Angeles County Health Department	1
Orange	Orange County Sanitation District	4
San Diego	San Diego County Environmental Health Department	2
	CDHS Volunteer (Paul Sims)	4
	Scripps Institute for Oceanography	5

PHYTOPLANKTON GALLERY



The diatom *Chaetoceros* was common along the Northern California coast, including Humboldt Bay where this species was observed, in December.



A less common member of the phytoplankton, the diatom *Planktoniella* was observed offshore of Diablo Cove (San Luis Obispo County) in December.



Another rare member of the phytoplankton community is the dinoflagellate *Ornithocercus*, observed in a sample from the Cal Poly Pier (San Luis Obispo County).