

# 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

April 2016

Technical Report No. 16-09

## INTRODUCTION:

This report provides a summary of biotoxin activity for the month of April, 2016. 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 in low numbers at Port San Luis and San Simeon Pier in San Luis Obispo County and offshore of Santa Barbara Harbor in Santa Barabara County (Figure 1). Low levels of PSP toxins were detected in mussel samples from San Luis Obispo County

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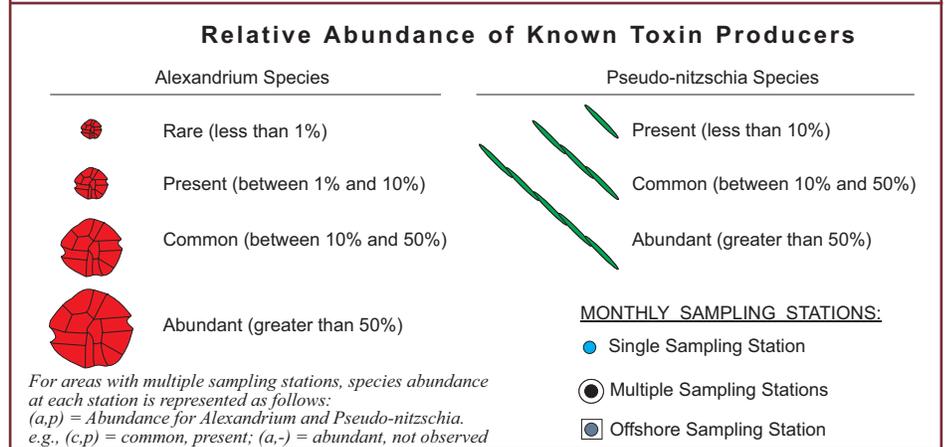
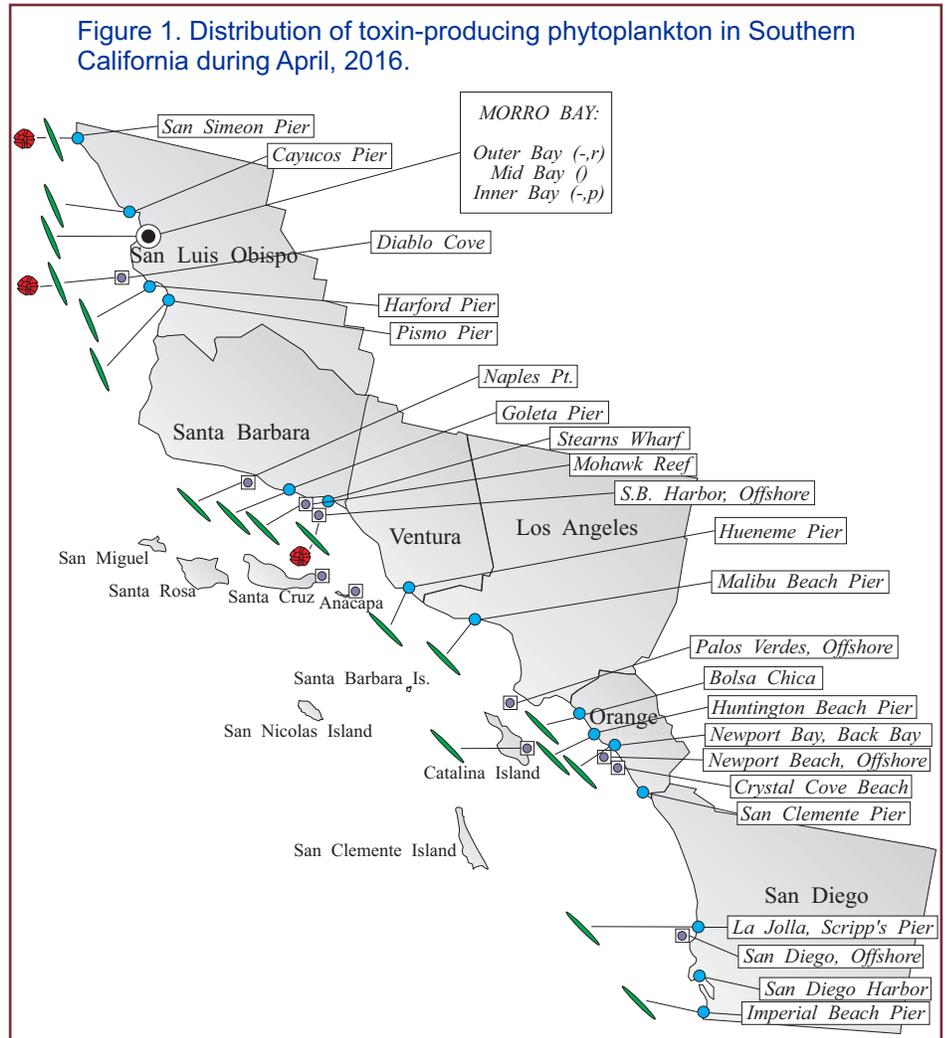
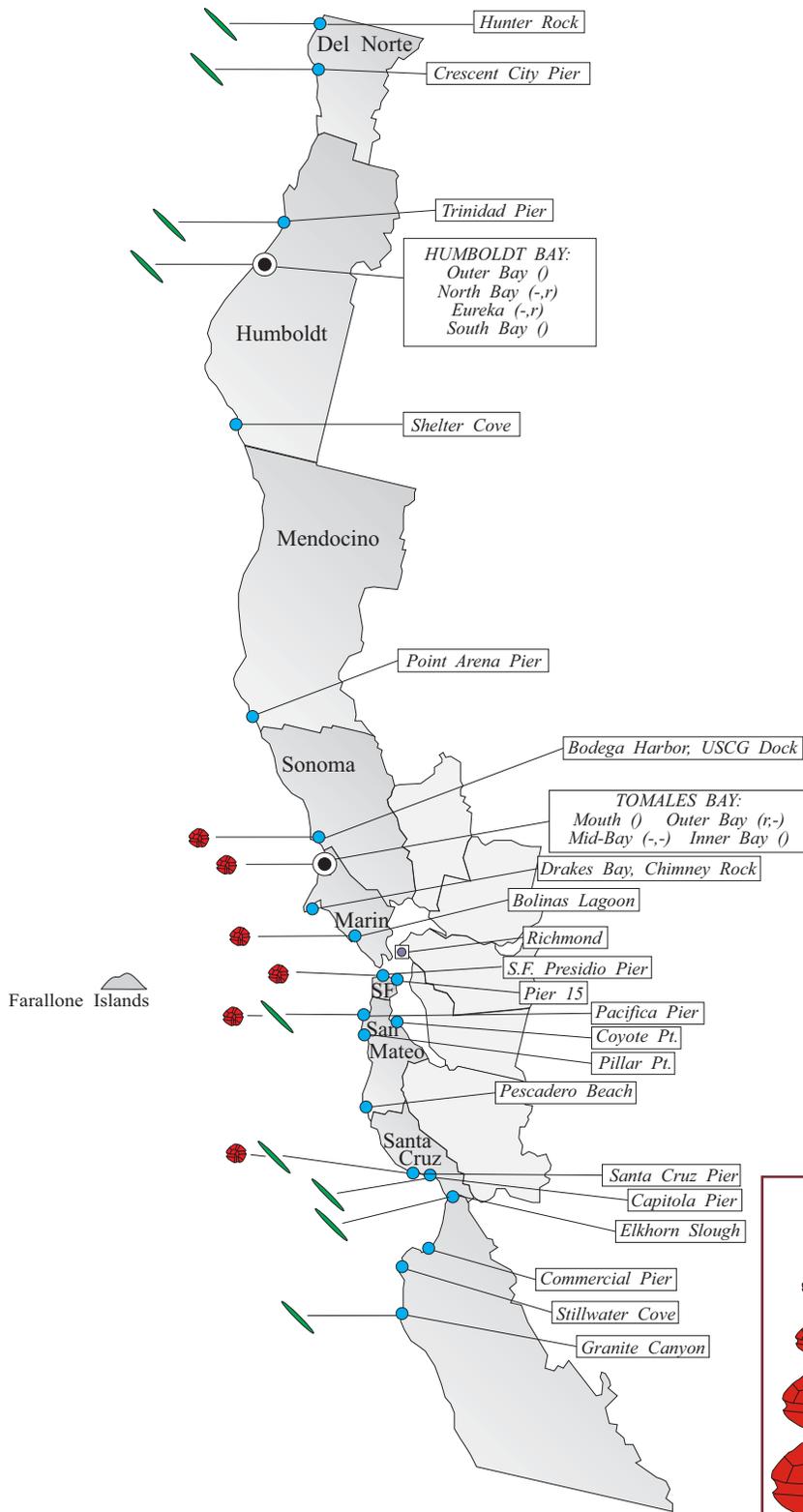


Figure 2. Distribution of toxin-producing phytoplankton in Northern California during April, 2016.



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at Cal Poly Pier and Morro Bay T-Pier during the last week of April (Figure 3).

**Domoic Acid**

Low numbers of *Pseudo-nitzschia* were observed in all southern California counties (Figure 1). Domoic acid was not detected in bivalve shellfish samples collected during April (Figure 3).

Rock crab samples were collected in Santa Barbara County by the CDPH Food and Drug Branch (FDB) and the California Department of Fish and Wildlife (DFW). The samples from offshore around Santa Cruz Island contained a range of domoic acid with concentrations from <2.5-42 ppm.

A summary of the crab sample data can be found at:

<http://www.cdph.ca.gov/HealthInfo/Pages/fd bDomoicAcidInfo.aspx>

**Non-Toxic Species**

The diatom *Chaetoceros* was common to abundant between San Luis Obispo and Los Angeles counties. The diatom *Skeletonema* was common in San Luis Obispo County. The dinoflagellate *Ceratium furca* was common to abundant at select sites between Los Angeles and San Diego counties.

**Northern California Summary:**

**Paralytic Shellfish Poisoning**

Low numbers of *Alexandrium* were observed at six sampling sites between Sonoma and Santa Cruz counties (Figure 2). Low levels of

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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:**

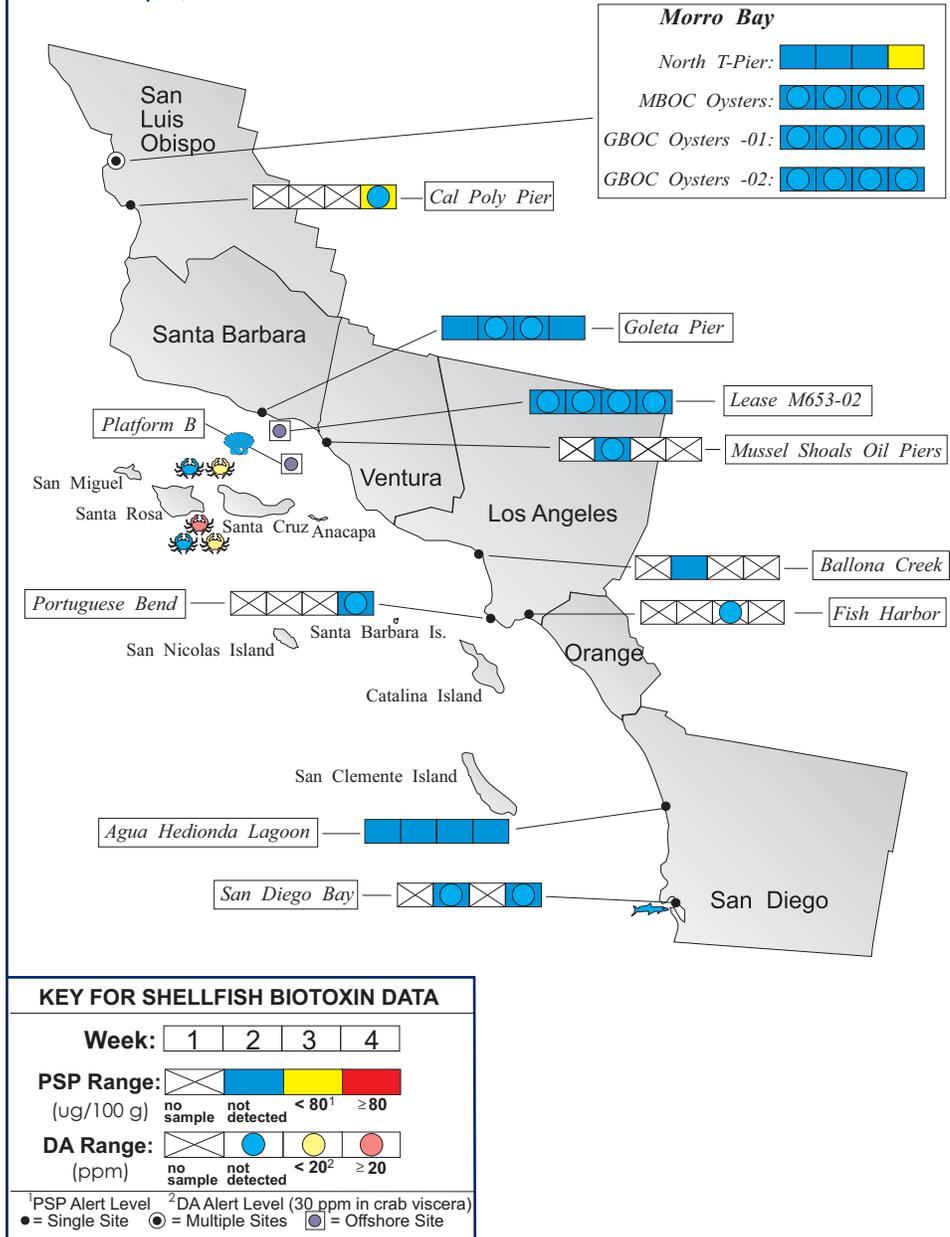
- Single Sampling Station
- Multiple Sampling Stations
- Offshore Sampling Station

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

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Figure 3. Distribution of shellfish biotoxins in Southern California during April, 2016.



PSP toxins were detected in mussel samples collected at sites in Sonoma, Marin, and San Mateo counties (Figure 4). A low concentration of the PSP toxins was also detected in a rock scallop viscera sample from Trinidad Bay in Humboldt County collected on April 2nd.

**Domoic Acid**

Low numbers of *Pseudo-nitzschia* were observed at sites in Del Norte, Humboldt, San Mateo, Santa Cruz, and Monterey counties (Figure 2). High concentrations of domoic acid persisted in razor clam samples from Crescent Beach and South Beach in Del Norte County and Moonstone Beach in Humboldt County. Concentrations of domoic acid ranged from 6.8-170 ppm and 54-180 ppm in the meat samples from each County, respectively, with levels of 8.7-120 ppm and 61-150 ppm, respectively, in the viscera (Figure 4).

FDB and DFW continued to collect crab samples along the northern California coast. Concentrations of domoic acid in Dungeness crab viscera ranged from 2.9-58 ppm in Humboldt County. Low levels of domoic acid were detected in the viscera of Dungeness crab in Mendocino County. By the third week of April, Dungeness crabs collected from locations near Usal in Mendocino County were all under the alert level in the viscera for two consecutive groups of samples. Rock crab samples

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The Marine Biotoxin Monitoring and Control Program, managed by the California Department of Public Health, 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 effort 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 1. Program participants collecting phytoplankton samples during April, 2016.

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AGENCY	#	AGENCY	#
<b>DEL NORTE COUNTY</b>			
CDPH Volunteer ( <i>Jim Hooper</i> )	3	Tolowa Dee-ni' Nation	1
<b>HUMBOLDT COUNTY</b>			
Coast Seafood Company	3	Humboldt State University Marine Lab	2
Bureau of Land Management	2	CDPH Volunteers ( <i>Roy, Giovannetti</i> )	4
<b>MENDOCINO COUNTY</b>			
		CDPH Volunteer ( <i>Marie DeSantis</i> )	1
<b>SONOMA COUNTY</b>			
		CDPH Marine Biotoxin Program	2
<b>MARIN COUNTY</b>			
		CDPH Marine Biotoxin Program	2
CDPH Volunteers ( <i>Anderson, Clyde</i> )	6	Hog Island Oyster Company	4
<b>SAN FRANCISCO COUNTY</b>			
		CDPH Volunteer ( <i>Eugenia McNaughton</i> )	1
Monte Vista High School	1	Exploratorium	3
<b>SAN MATEO COUNTY</b>			
		Friends of the Sea Otter ( <i>Diane Larson</i> )	2
San Mateo County Environmental Health Dept.	6	The Marine Mammal Center ( <i>Stan Jensen</i> )	4
<b>SANTA CRUZ COUNTY</b>			
		U.C. Santa Cruz	4
Santa Cruz County Envir. Health Department	2	The Otter Project ( <i>Jeff Palsgaard</i> )	4
<b>MONTEREY COUNTY</b>			
		CDPH Volunteer ( <i>Taylor Bratton</i> )	1
The Otter Project ( <i>Rose, Noke</i> )	4	Marine Pollution Studies Laboratory	1
Monterey Abalone Company	2	Friends of the Sea Otter ( <i>Janis Chaffin</i> )	1
<b>SAN LUIS OBISPO COUNTY</b>			
Morro Bay National Estuary Program	2	Morro Bay Oyster Company	3
Coastal Discovery Center, San Simeon	4	Tenera Environmental	4
Friends of the Sea Otter ( <i>Kelly Cherry</i> )	4	CDPH Volunteers ( <i>Hoskins, Plemons</i> )	4
<b>SANTA BARBARA COUNTY</b>			
		Santa Barbara Sea Center/HABNet	1
Santa Barbara Channel Keeper	3	U.C. Santa Barbara	5
<b>VENTURA COUNTY</b>			
Ventura County Environmental Health Dept	1	National Park Service	1
<b>LOS ANGELES COUNTY</b>			
		Los Angeles County Health Department	1
Los Angeles County Sanitation District	3	Catalina Island Marine Institute	6
<b>ORANGE COUNTY</b>			
		Orange County Health Care Agency	2
California Department of Fish and Wildlife	4	Amigos de Bolsa Chica	5
Crystal Cove Alliance	3	CDPH Volunteer ( <i>Truong Nguyen</i> )	2
<b>SAN DIEGO COUNTY</b>			
Scripps Institute of Oceanography	4	Tijuana River National Estuary Research	4
Sea Camp/HABNet	2	U.S. Navy Marine Mammal Program	4

remove and discard the dark parts (i.e., the digestive organs or viscera). Razor clams (*Siliqua patula*) are an exception to this general guidance due to their ability to concentrate and retain domoic acid in the edible white meat as well as in the viscera.

PSP toxins can produce a tingling around the mouth and fingertips within a few minutes to a few hours after eating toxic shellfish. These symptoms can be followed by disturbed balance, lack of muscular coordination, slurred speech and difficulty swallowing. In severe poisonings, complete muscular paralysis and death from asphyxiation can occur.

Symptoms of domoic acid poisoning can occur within 30 minutes to 24 hours after eating toxic seafood. In mild cases, symptoms of exposure to this nerve toxin may include vomiting, diarrhea, abdominal cramps, headache and dizziness. These symptoms disappear completely within several days. In severe cases, the victim may experience excessive bronchial secretions, difficulty breathing, confusion, disorientation, cardiovascular instability, seizures, permanent loss of short-term memory, coma and death.

Any person experiencing any of these symptoms should seek immediate medical care. Consumers are also advised that neither cooking or freezing eliminates domoic acid or the PSP toxins from the shellfish tissue. These toxins may also accumulate in seafood species such as crab, lobster, and small finfish like sardines and anchovies.

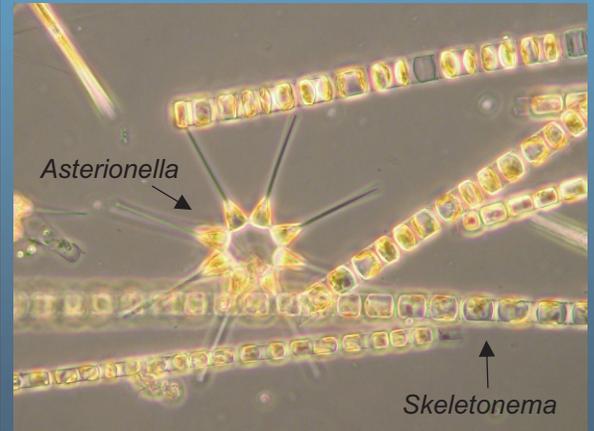
Contact the "Biotoxin Information Line" at 1-800-553-4133 for a current update on marine biotoxin activity prior to gathering and consuming shellfish.



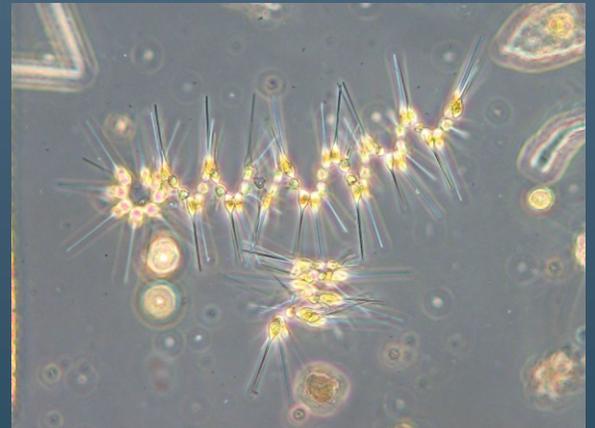
Table 2. CDPH program participants submitting shellfish samples during April, 2016.

COUNTY	AGENCY	#
Del Norte	Tolowa Dee-ni' Nation	5
	Del Norte County Health Department	5
	Yurok Tribe Environmental Program	1
	CDPH Volunteer ( <i>Ken Graves</i> )	19
Humboldt	Coast Seafood Company	8
	CDPH Volunteer ( <i>Steve Fox</i> )	1
	Humboldt State University	1
	California Department of Fish and Wildlife	10
	CDPH Food and Drug Branch	42
	Mendocino	Mendocino County Environmental Health Department
Sonoma	CDPH Food and Drug Branch	18
	CDPH Marine Biotoxin Program	4
	CDPH Volunteers ( <i>Morozumi, Sanders, Spike</i> )	3
	CDPH Food and Drug Branch	5
Marin	Cove Mussel Company	4
	Hog Island Oyster Company	4
	Starbird Mariculture	4
	CDPH Volunteer ( <i>Jamie Sutton</i> )	1
	CDPH Marine Biotoxin Program	3
	San Francisco	None Submitted
San Mateo	San Mateo County Environmental Health Department	4
	CDPH Volunteer ( <i>Gary Della Maggiora</i> )	1
	CDPH Food and Drug Branch	6
Santa Cruz	U.C. Santa Cruz	4
	CDPH Volunteers ( <i>Herzel, Wolcott</i> )	2
Monterey	CDPH Food and Drug Branch	18
San Luis Obispo	Grassy Bar Oyster Company	10
	Morro Bay Oyster Company	6
	California Polytechnic State University	1
Santa Barbara	Santa Barbara Mariculture Company	4
	U.C. Santa Barbara	5
	CDPH Food and Drug Branch	18
Ventura	Ventura County Environmental Health Department	1
Los Angeles	Los Angeles County Health Department	1
	Los Angeles County Health Department Sims	1
	Southern California Marine Institute	1
Orange	None Submitted	
San Diego	Carlsbad Aquafarms, Inc.	4
	U.S. Navy Marine Mammal Program	2

## PHYTOPLANKTON GALLERY



The chain diatoms *Skeletonema* and *Asterionella*. *Skeletonema* was common at many sites in northern California in April.



The chain diatom *Asterionella*. The individual cells connect at the larger end to form spirally curved chains.



The centric chain diatom *Thalassiosira*. In April, this diatom was observed as abundant in a sample from Trinidad Pier in Humboldt County.