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

ENVIRONMENTAL MANAGEMENT BRANCH
Marine Biotoxin Monitoring Program

Monthly Marine Biotoxin Report

May 2012

Technical Report No. 12-17

INTRODUCTION:

This report provides a summary of biotoxin activity for the month of May, 2012. 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 at only one southern California location in May (Figure 1). A low number of cells was observed at Pismo Pier in San Luis Obispo County (May 22). PSP toxins were not detected in any shellfish samples collected in May (Figure 3).

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Figure 1. Distribution of toxin-producing phytoplankton in Southern California during May, 2012.

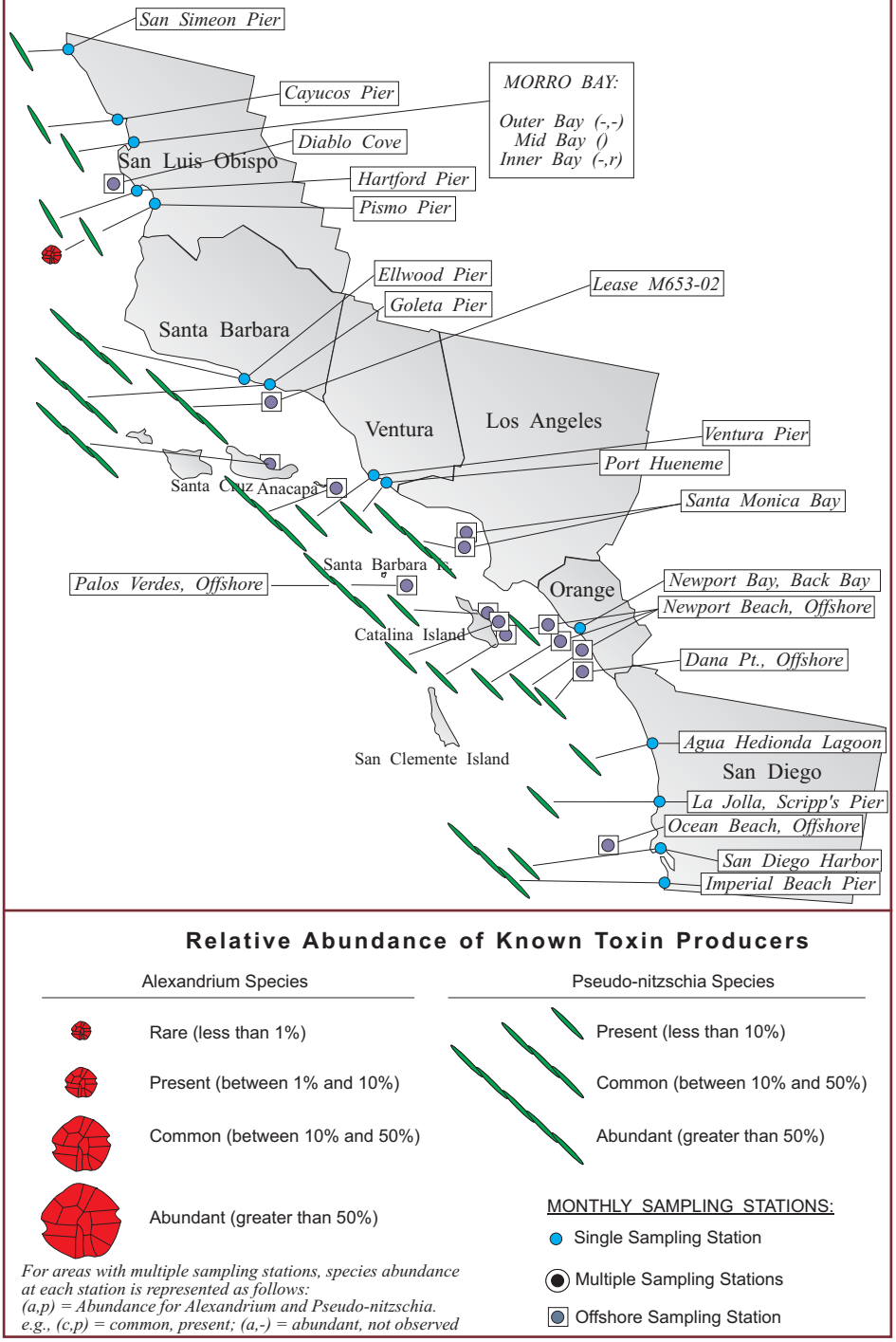
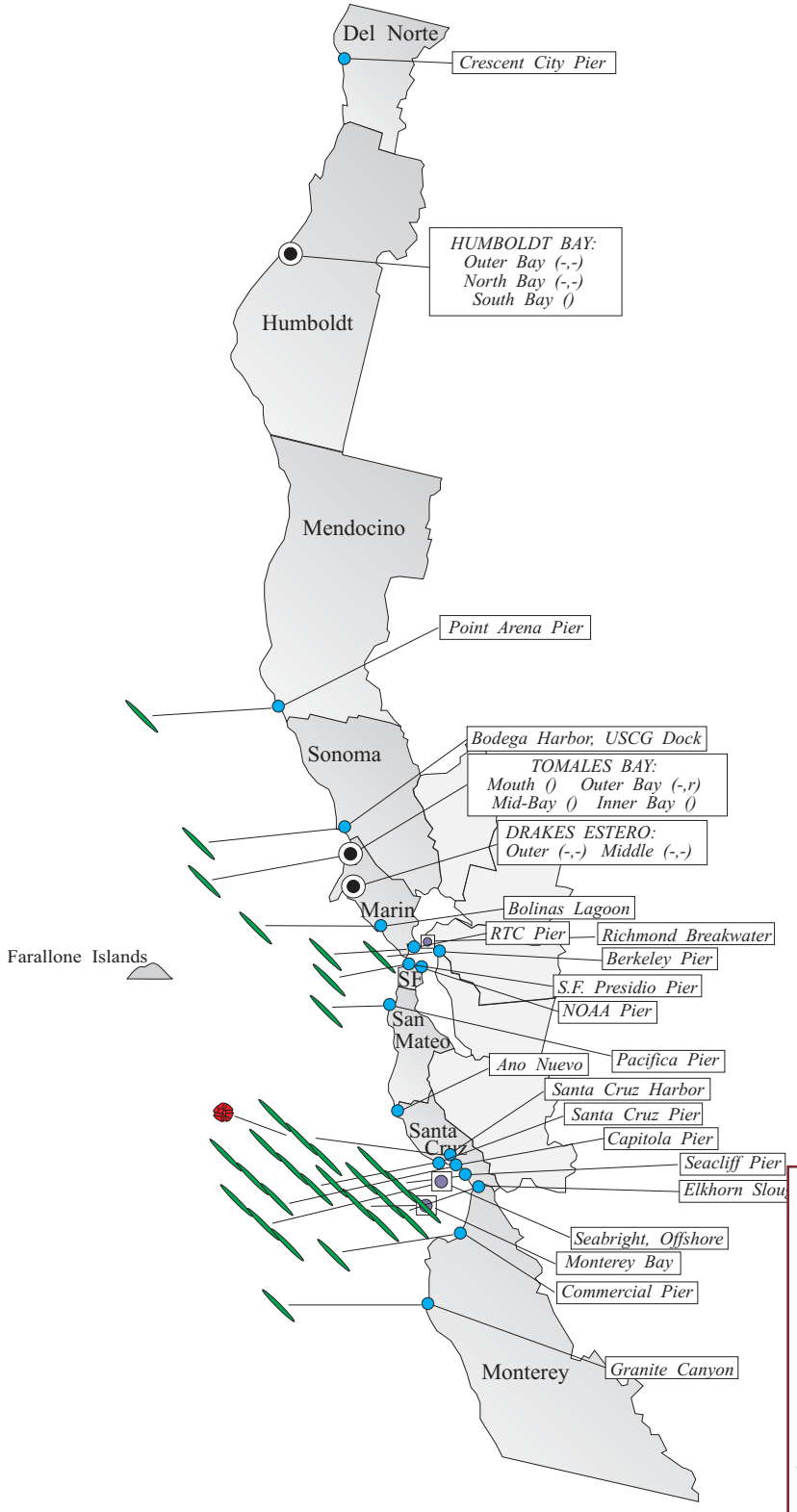


Figure 2. Distribution of toxin-producing phytoplankton in Northern California during May, 2012.



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Domoic Acid

Pseudo-nitzschia was observed along the entire southern California coast in May (Figure 1). There was a noticeable increase in relative abundance at sites along the Santa Barbara coast, including offshore near Anacapa Island. In contrast the relative abundance of this diatom decreased along the Orange and San Diego coasts compared to observations in April. The overall cell mass of *Pseudo-nitzschia* remained low. The highest relative abundances were observed at Ellwood (May 1) and Goleta (May 30) piers in Santa Barbara and offshore of Palos Verdes (May 10).

Domoic acid was not detected in any bivalve shellfish samples collected in May, however a very low concentration was detected in one of several rock crab samples collected from Santa Rosa Island on May 28 (Figure 3).

Non-toxic Species

Diatoms dominated the southern California coast in May. *Chaetoceros* was common to abundant at most locations, reaching bloom densities at Pismo Pier on May 29.

Northern California Summary:

Paralytic Shellfish Poisoning

Alexandrium was observed at only one location during May (Figure 2). A small

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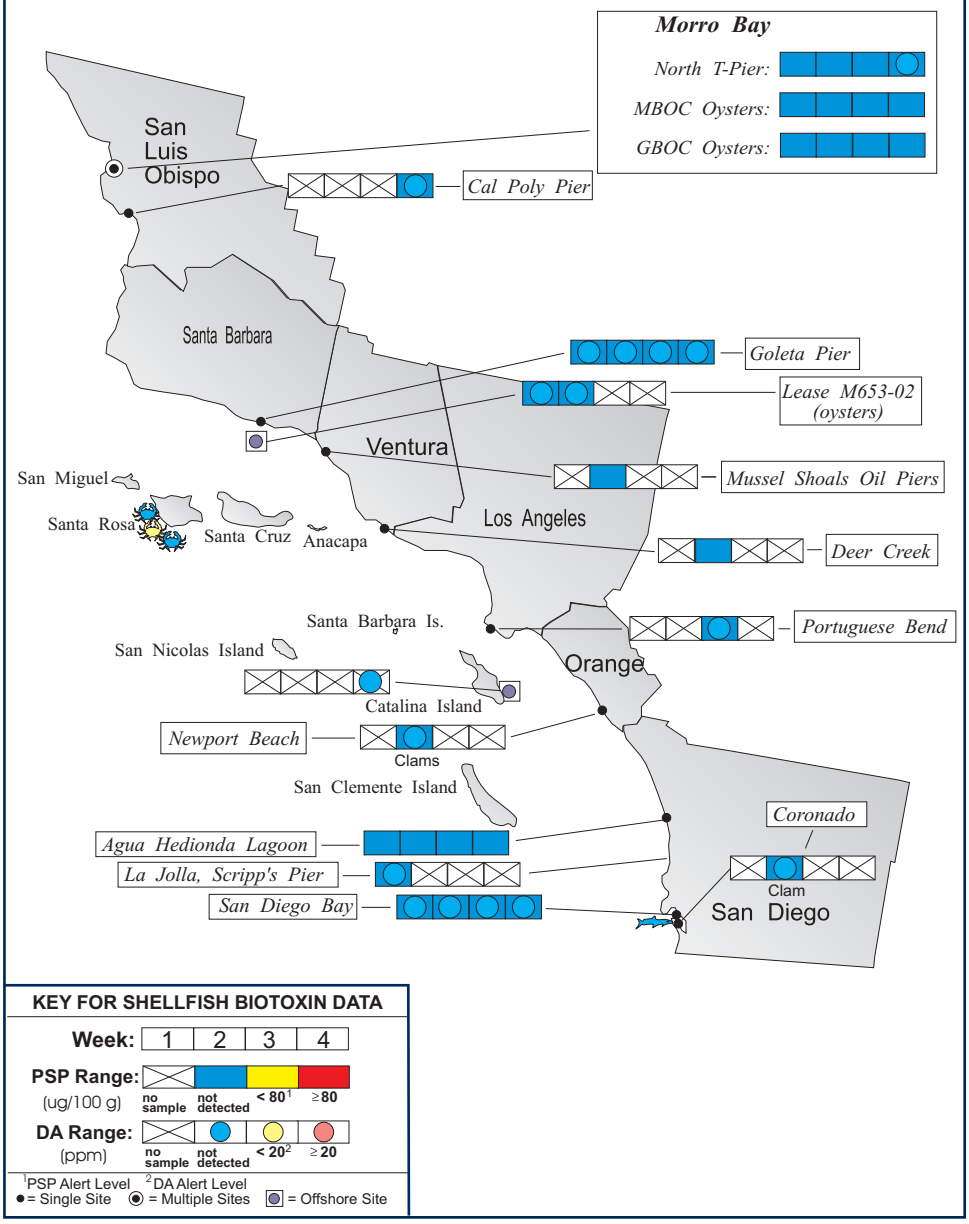
Figure 3. Distribution of shellfish biotoxins in Southern California during May, 2012.



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number of cells of this dinoflagellate was observed in a sample from Santa Cruz Harbor on May 19.

PSP toxins were not detected in any samples collected in May (Figure 4).

Domoic Acid

Pseudo-nitzschia was observed at several sites along the northern California coast during May (Figure 2). The relative abundance continued to increase at sampling sites in Monterey Bay but overall cell densities remained low. A low concentration (2.8 ppm) of domoic acid was detected in sentinel mussels from Santa Cruz Pier on May 30.

Non-toxic Species

Diatoms continued to dominate the northern California coast. *Chaetoceros* was common to abundant at most locations. *Thalassiosira* and *Skeletonema* were common at select locations. The highest cell masses were observed in samples from offshore of Seabright Beach (Santa Cruz County) on May 28 and in Humboldt Bay on May 22.

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

QUARANTINES:

The annual mussel quarantine began on May 1. This quarantine prohibits the sport-harvesting of mussels along the entire California coastline, including all bays and estuaries. The annual quarantine does not apply to the certified commercial shellfish growing areas in California, which are monitored intensively throughout the year. In addition, routine coastal phytoplankton and biotoxin monitoring is maintained throughout the quarantine period. Special quarantines or health advisories may be issued for additional seafood species as warranted by increasing toxin levels.

Consumers of Washington clams, also known as butter clams (*Saxidomus nuttalli*), 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 (*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 affect the human central nervous system, producing a tingling around the mouth and fingertips within a few minutes to a few hours after eating toxic shellfish. These symptoms typically are followed by disturbed balance, lack of

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Figure 4. Distribution of shellfish biotoxins in Northern California during May, 2012.

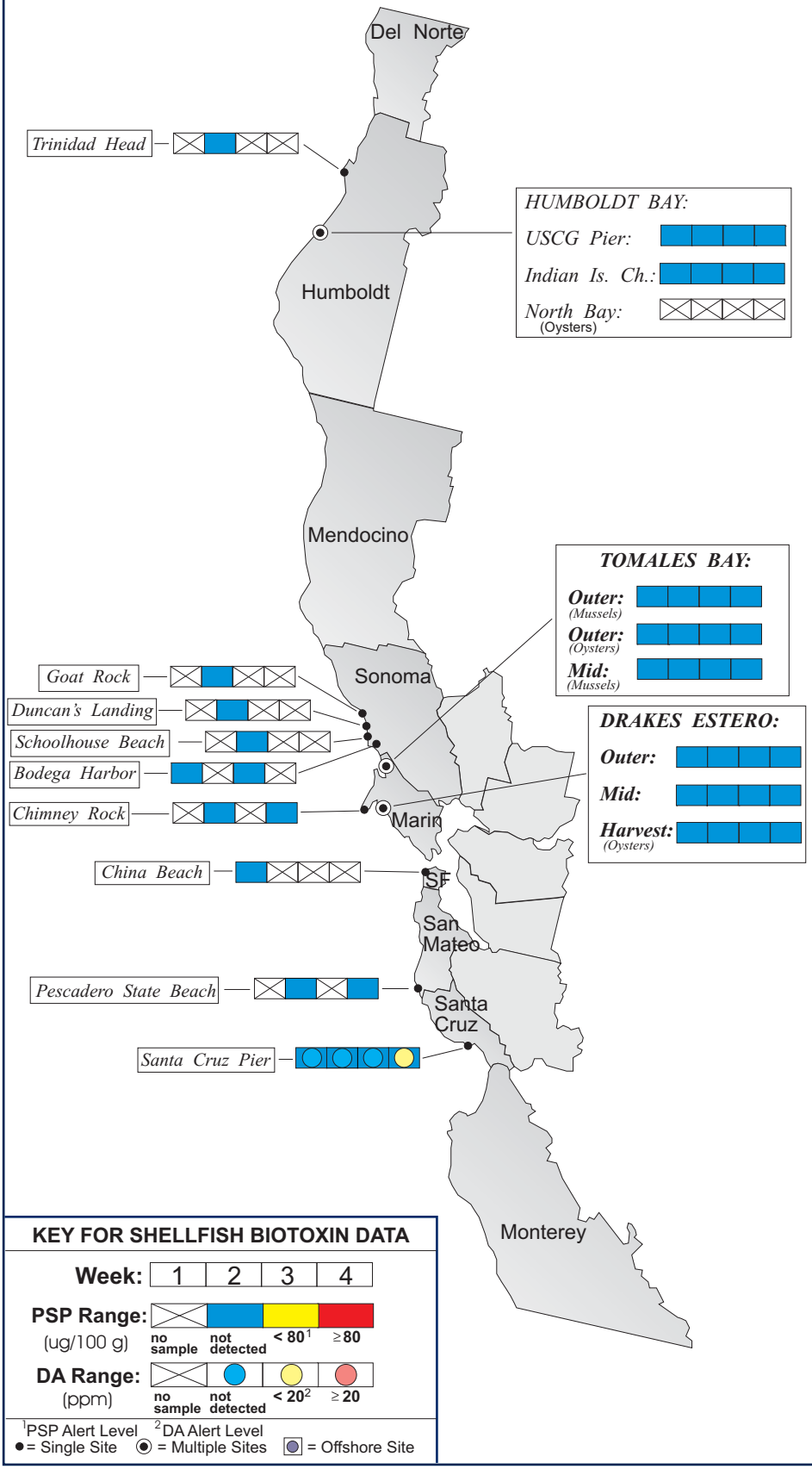

Table 1. California Marine Biotoxin Monitoring Program participants submitting shellfish samples during May, 2012.

COUNTY	AGENCY	#
Del Norte	None Submitted	
Humboldt	Coast Seafood Company	10
	Humboldt County Environmental Health Department	1
Mendocino	None Submitted	
Sonoma	CDPH Marine Biotoxin Program	5
Marin	Cove Mussel Company	4
	Drakes Bay Oyster Company	20
	Hog Island Oyster Company	4
	Marin Oyster Company	4
	CDPH Marine Biotoxin Program	2
San Francisco	San Francisco Health Department	1
San Mateo	San Mateo County Environmental Health Department	2
Santa Cruz	U.C. Santa Cruz	5
Monterey	None Submitted	
San Luis Obispo	Grassy Bar Oyster Co.	11
	Morro Bay Oyster Company	6
	Avila Beach Sea Life Center	1
Santa Barbara	Santa Barbara Mariculture Company	4
	U.C. Santa Barbara	5
	Wild Planet Foods	3
Ventura	Ventura County Environmental Health Department	2
Los Angeles	CDPH Volunteer (*Cal Parsons*)	1
	Los Angeles County Health Department	1
Orange	CDPH Volunteer (*Steve Crooke*)	1
San Diego	Carlsbad Aquafarms, Inc.	4
	CDPH Volunteer (*Steve Crooke*)	1
	Scripps Institute of Oceanography	1
	U.S. Navy Marine Mammal Program	6

Table 2. Agencies, organizations and volunteers participating in marine phytoplankton sample collection during May, 2012.

COUNTY	AGENCY	#
Del Norte	Del Norte County Health Department	4
Humboldt	Coast Seafood Company	4
	Humboldt State University Marine Lab	3
Mendocino	CDPH Volunteer (*Marie de Santis*)	1
Sonoma	CDPH Marine Biotoxin Program	2

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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 the viscera of other seafood species such as crab, lobster, and small finfish like sardines and anchovies, therefore these tissues should not be consumed. Contact the "Biotoxin Information Line" at 1-800-553-4133 for a current update on marine biotoxin activity prior to gathering and consuming shellfish.

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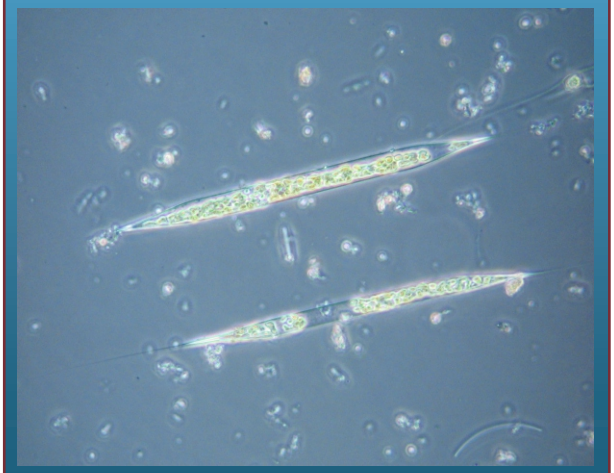
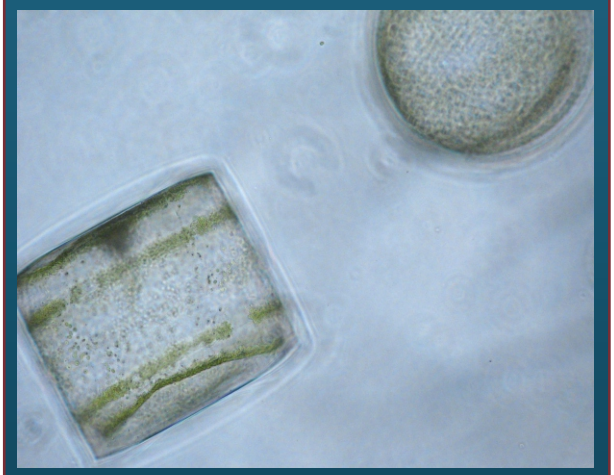
Marin	Drakes Bay Oyster Company	14
	CDPH Volunteer (*Brent Anderson*)	5
	SFSU, Romberg Tiburon Center	5
	CDPH Marine Biotoxin Program	2
	Pickleweed Point Community Shellfish Farm	1
Contra Costa	CDPH Marine Biotoxin Program	1
Alameda	City of Berkeley	2
San Francisco	CDPH Volunteer (*Eugenia McNaughton*)	4
	Exploratorium	2
San Mateo	The Marine Mammal Center (*Stan Jensen*)	2
	San Mateo County Environmental Health Department	2
	U.C. Santa Cruz	1
Santa Cruz	San Lorenzo Valley High School	2
	California Department of Parks and Recreation	2
	U.C. Santa Cruz	5
	Santa Cruz County Environmental Health Department	3
Monterey	Friends of the Sea Otter (*Janis Chaffin, Cory Utter*)	4
	Monterey Abalone Company	2
	Marine Pollution Studies Laboratory	4
	Marine Life Studies	1
San Luis Obispo	Friends of the Sea Otter (*Kelly Cherry, Al Guild*)	4
	Grassy Bar Oyster Company	4
	Morro Bay National Estuary Program	1
	Monterey Bay National Marine Sanctuary	3
	Tenera Environmental	2
	The Marine Mammal Center (*P.J. Webb, Tim Lytsell*)	6
Santa Barbara	CDPH Volunteer (*Sylvia Short*)	5
	Santa Barbara Mariculture Company	2
	U.C. Santa Barbara	5
	National Park Service	1
Ventura	CDPH Volunteer (*Fred Burgess*)	4
	National Park Service	3
	Ventura County Environmental Health Department	1
Los Angeles	Los Angeles County Sanitation District	4
	CDPH Volunteer (*Cal Parsons*)	1
	City of Los Angeles Environmental Monitoring Division	3
	Tole Mour	8
Orange	Orange County Sanitation District	6
	Orange County Health Care Agency	2
	California Department of Fish and Game	7
	Ocean Institute	2
San Diego	Carlsbad Aquafarms, Inc.	3
	Scripps Institute of Oceanography	4
	San Diego Whale Watch	1
	Tijuana River National Estuary Research Reserve	5
	U.S. Navy Marine Mammal Program	5

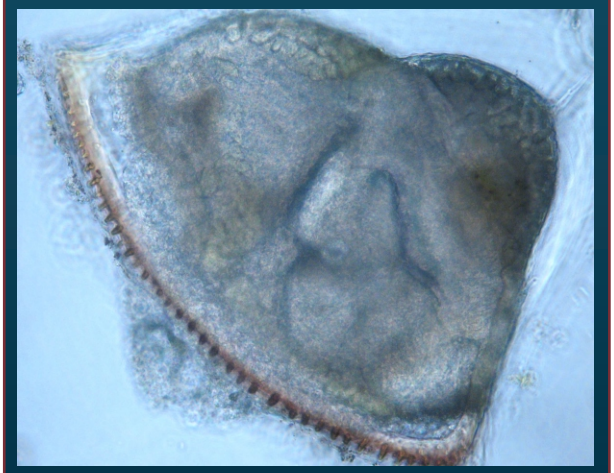
PHYTOPLANKTON GALLERY



The diatom Rhizosolenia has been present in recent samples.



A side view, or 'girdle' view, of a common centric diatom.



A larval stage of bryozoan with the adventurous name of 'cyphonaut'.