

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 2015

Technical Report No. 15-11

INTRODUCTION:

This report provides a summary of biotoxin activity for the month of April, 2015. 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 of the Southern California sites in April (Figure 1). PSP toxins below the alert level were detected in a rock scallop viscera sample from the Santa Barbara Channel during the third week of April (Figure 3).

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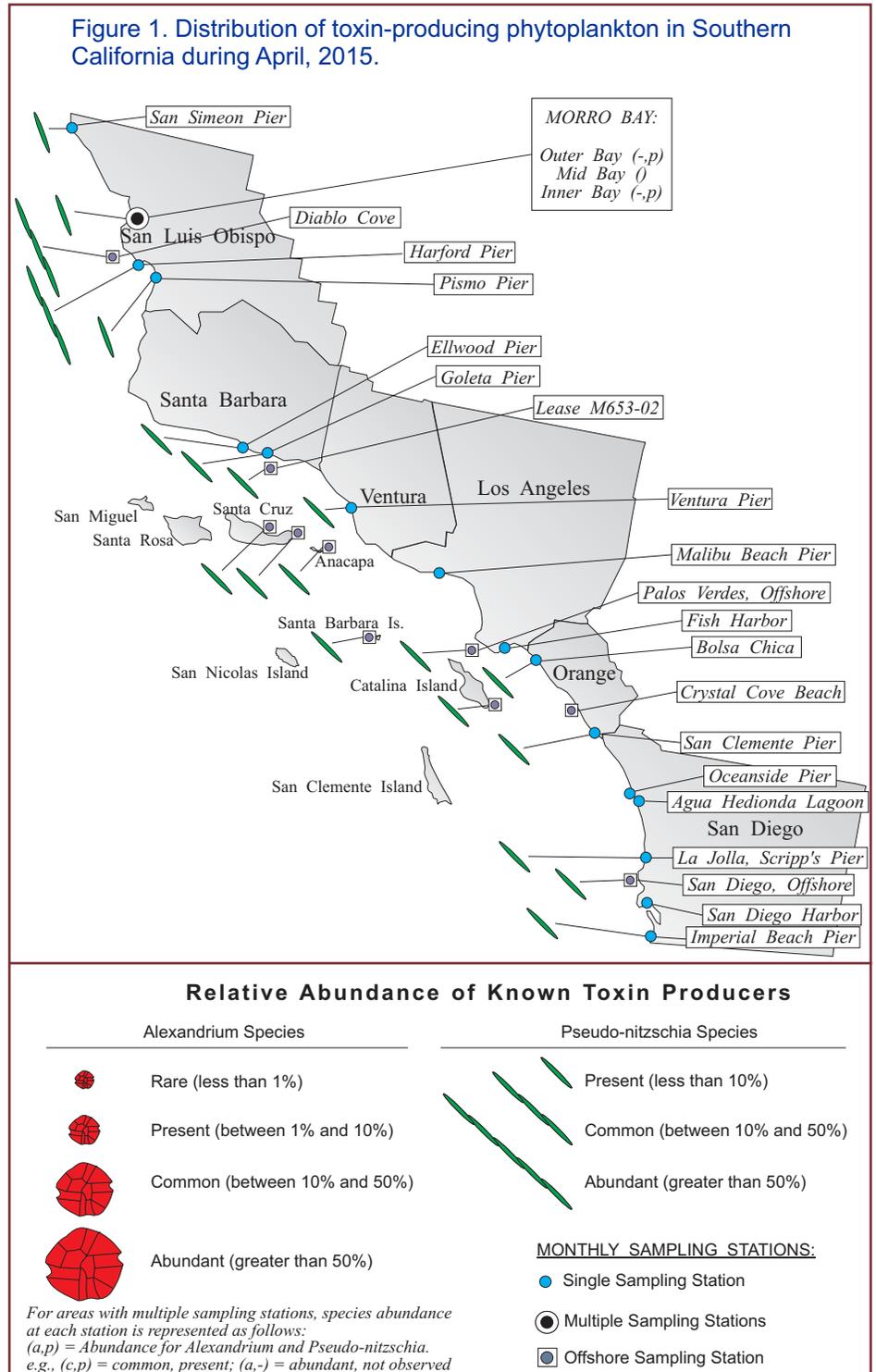


Figure 2. Distribution of toxin-producing phytoplankton in Northern California during April, 2015.

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Domoic Acid

Pseudo-nitzschia was observed at the majority of sampling sites in all Southern California counties (Figure 1). The percent composition of this diatom remained constant compared to March. The highest relative abundance was observed at San Simeon Pier (San Luis Obispo County) during the second week of April. The percent composition for the majority of stations remained low. The cell mass was low at most locations.

Domoic acid was not detected in any bivalve shellfish samples collected in April (Figure 3).

Non-Toxic Species

A mix of diatoms and dinoflagellates was observed along the coast. The diatom *Chaetoceros* was common to abundant at most sites in all counties. The dinoflagellate *Ceratium furca* was common to abundant at sites in Los Angeles and San Diego counties.

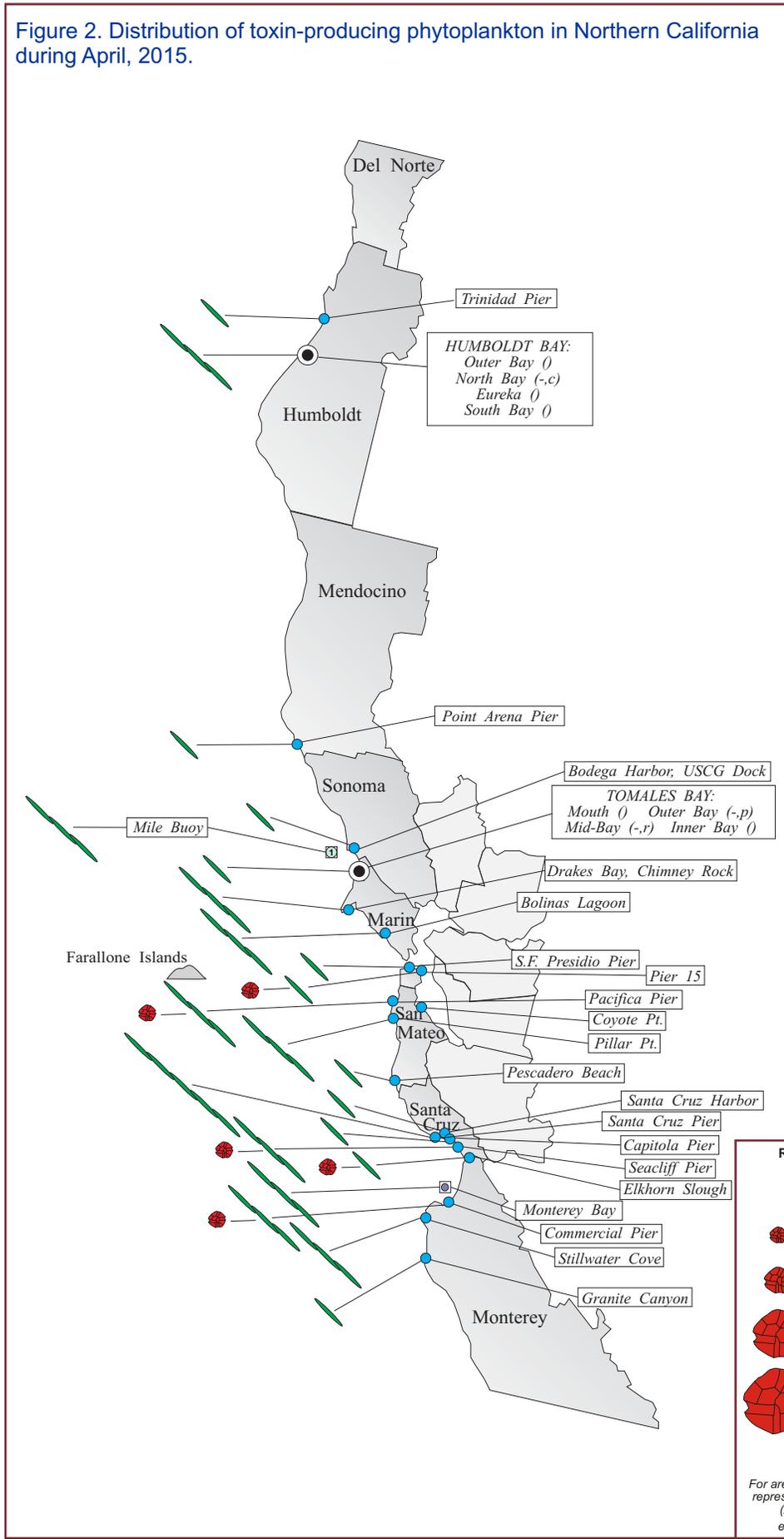
Northern California Summary:

Paralytic Shellfish Poisoning

Alexandrium was observed at five sampling sites between San Francisco and Monterey counties (Figure 2). Cell numbers were low at all sites.

Low levels of PSP toxins were detected in mussel samples collected during the end of April at Humboldt and Marin sites (Figure 4).

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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%)

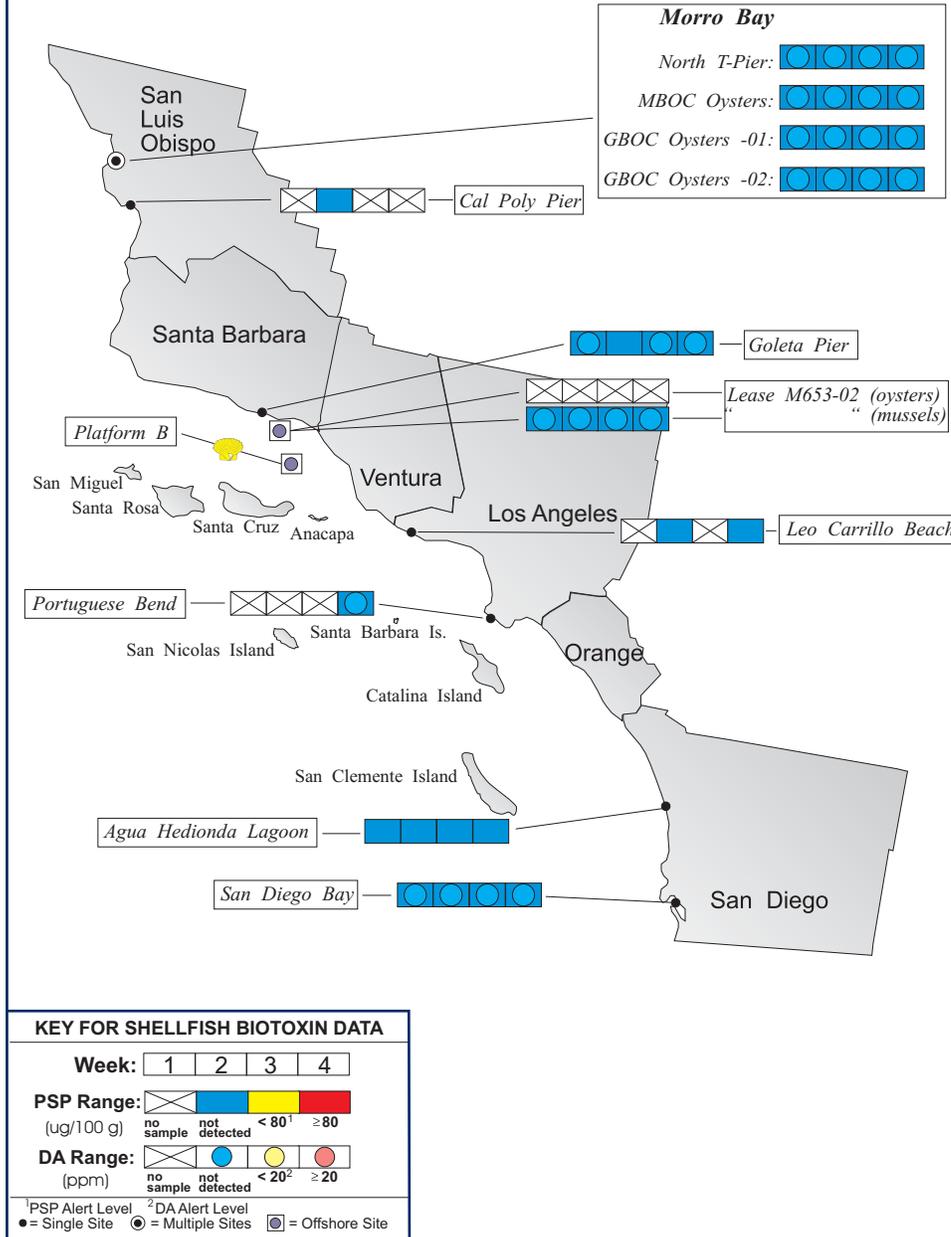
MONTHLY SAMPLING STATIONS:

- 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, 2015.



Domoic Acid

Pseudo-nitzschia was observed at sites between Humboldt and Monterey counties (Figure 2). No phytoplankton samples were collected from Del Norte County in April. The percent composition of this diatom increased at select sites between Humboldt and Monterey compared to March. The highest relative abundance and cell mass was observed at a Monterey Bay offshore site during the third week of the month. The cell mass was low at most locations.

Domoic acid was detected above the alert level in a mussel sample from the Santa Cruz Pier during the last week of April (Figure 4). A low concentration of domoic acid was detected in razor clam sample from Clam Beach (Humboldt County) on April 21.

Non-Toxic Species

The diatom *Chaetoceros* was common to abundant along the Northern California coast. The diatom *Skeletonema* was common at select sites between Humboldt and Monterey counties. The dinoflagellates *Certium furca* and *Prorocentrum micans* were common at Seacliff Pier (Santa Cruz County).



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 is scheduled to begin May 1. When in effect this quarantine prohibits the sport-harvesting of mussels along the entire California coastline, including all bays and estuaries. The annual mussel 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 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

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Figure 4. Distribution of shellfish biotoxins in Northern California during April, 2015.

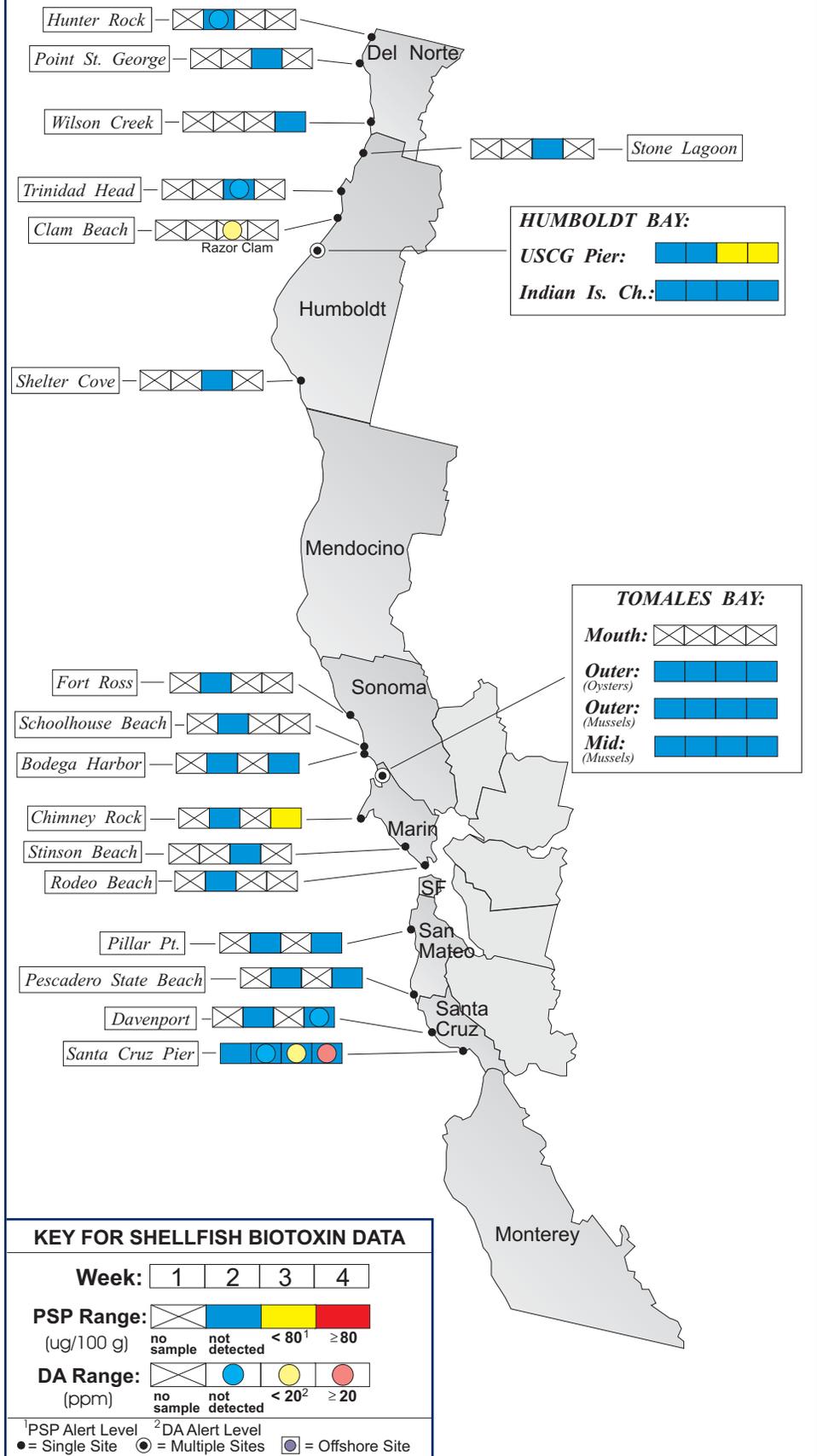


Table 1. Program participants collecting phytoplankton samples during April, 2015.

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AGENCY	#	AGENCY	#
HUMBOLDT COUNTY			
Coast Seafood Company	4	Humboldt State University Marine Lab	2
MENDOCINO COUNTY			
		CDPH Volunteer (<i>Marie DeSantis</i>)	3
SONOMA COUNTY			
CDPH Marine Biotxin Program	2	Bodega Marine Lab & Farallone Institute	1
MARIN COUNTY			
		Hog Island Oyster Company	4
CDPH Marine Biotxin Program	4	CDPH Volunteer (<i>Anderson, Clyde</i>)	5
SAN FRANCISCO COUNTY			
CDPH Volunteer (<i>Eugenia McNaughton</i>)	2	Exploratorium	3
SAN MATEO COUNTY			
		Friends of the Sea Otter (<i>Diane Larson</i>)	1
San Mateo County Environmental Health Dept.	6	The Marine Mammal Center (<i>Stan Jensen</i>)	4
SANTA CRUZ COUNTY			
U.C. Santa Cruz	5	San Lorenzo Valley High School	3
Santa Cruz County Envir. Health Department	5	The Otter Project (<i>Jeff Palsgaard</i>)	4
MONTEREY COUNTY			
		Marine Pollution Studies Laboratory	1
Monterey Abalone Company	2	Friends of the Sea Otter (<i>Janis Chaffin</i>)	3
The Otter Project (<i>Rose, Noke</i>)	3	Marine Life Studies	1
SAN LUIS OBISPO COUNTY			
Morro Bay National Estuary Program	2	Morro Bay Oyster Company	4
Coastal Discovery Center, San Simeon	3	Tenera Environmental	4
Friends of the Sea Otter (<i>Cherry</i>)	4	CDPH Volunteer (<i>Al Guild</i>)	4
SANTA BARBARA COUNTY			
		National Park Service	3
CDPH Volunteer (<i>Sylvia Short</i>)	2	U.C. Santa Barbara	5
Island Packers/HABNet	1	Santa Barbara Mariculture Company	2
VENTURA COUNTY			
National Park Service	1	CDPH Volunteer (<i>Fred Burgess</i>)	5
LOS ANGELES COUNTY			
Los Angeles County Sanitation District	2	CDPH Volunteers (<i>Cal Parsons</i>)	1
Los Angeles County Health Department	1	Southern California Marine Institute	1
ORANGE COUNTY			
		CDPH Volunteer (<i>Truong Nguyen</i>)	2
Crystal Cove Alliance	3	Amigos de Bolsa Chica	4
SAN DIEGO COUNTY			
Scripps Institute of Oceanography	4	Carlsbad Aquafarms, Inc.	2
U.S. Navy Marine Mammal Program	5	Tijuana River National Estuary Research	5
Sea Camp/HABNet	5	CDPH Volunteer (<i>Cynthia Hall</i>)	1

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.

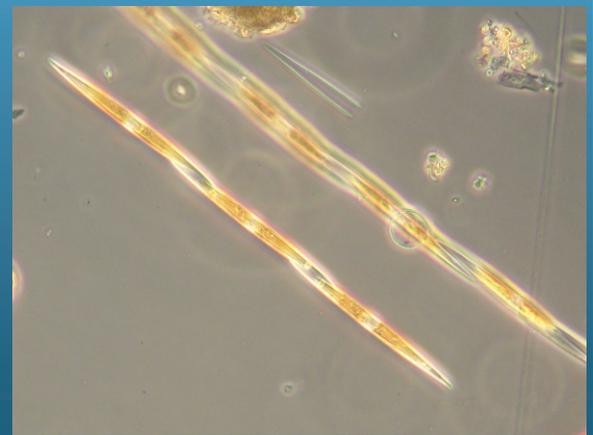
Any person experiencing any of these symptoms should seek immediate medical care. Consumers are also advised that neither cooking or freezing eliminates domoic acid or the PSP toxins from the shellfish tissue. These toxins may also accumulate in the viscera of seafood species such as crab, lobster, and small finfish like sardines and anchovies, therefore these tissues should not be consumed. Contact the "Biotxin Information Line" at 1-800-553-4133 for a current update on marine biotoxin activity prior to gathering and consuming shellfish.



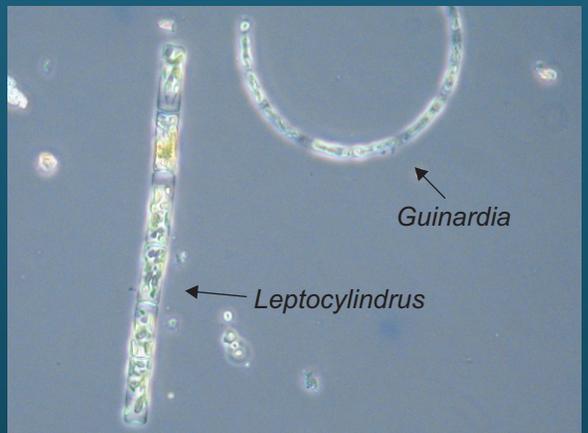
Table 2. CDPH program participants submitting shellfish samples during April, 2015.

COUNTY	AGENCY	#
Del Norte	None Submitted	
Humboldt	Coast Seafood Company	8
	CDPH Volunteer (<i>Steve Fox</i>)	1
Mendocino	CDPH Volunteer (<i>Ellie Bush</i>)	1
Sonoma	CDPH Marine Biotoxin Program	1
	CDPH Volunteer (<i>Charles Horn</i>)	1
Marin	Cove Mussel Company	4
	Drakes Bay Oyster Company	16
	CDPH Marine Biotoxin Program	2
	Hog Island Oyster Company	4
	Tomales Bay Oyster Company	4
San Francisco	None Submitted	
San Mateo	San Mateo County Environmental Health Department	3
Santa Cruz	U.C. Santa Cruz	4
	CDPH Volunteer (<i>Joel Herzel, Michael Wolcott</i>)	2
Monterey	CDPH Volunteer (<i>Kyle Mooers</i>)	1
San Luis Obispo	Grassy Bar Oyster Co.	10
	Morro Bay Oyster Company	6
	CDPH Marine Biotoxin Program	1
Santa Barbara	Santa Barbara Mariculture Company	5
	U.C. Santa Barbara	6
Ventura	Ventura County Environmental Health Department	2
	CDPH Volunteer (<i>Bill Weinerth</i>)	5
Los Angeles	CDPH Volunteer (<i>Cal Parsons</i>)	1
	Los Angeles County Health Department	1
	Southern California Marine Institute	2
	Los Angeles County Health Department Torrance	1
Orange	None Submitted	
San Diego	Carlsbad Aquafarms, Inc.	4
	U.S. Navy Marine Mammal Program	5

PHYTOPLANKTON GALLERY



The domoic acid-producing chain diatom *Pseudo-nitzschia* collected at Seacliff Pier in Santa Cruz County.



A view of the diatom *Leptocylindrus* with the diatom *Guinardia* in the background. *Leptocylindrus* forms relatively straight chains where *Guinardia* forms curved chains.



The diatoms *Guinardia* and *Navicula*. *Guinardia* was common at a few sites between Santa Cruz and San Diego counties in April.