

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 2015 Technical Report No. 15-24

INTRODUCTION:

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

A low number of *Alexandrium* was observed at Scripp's Pier in San Diego County in December (Figure 1). PSP toxins were not detected in any bivalve shellfish samples collected in December (Figure 3).

Domoic Acid

Pseudo-nitzschia was observed at select

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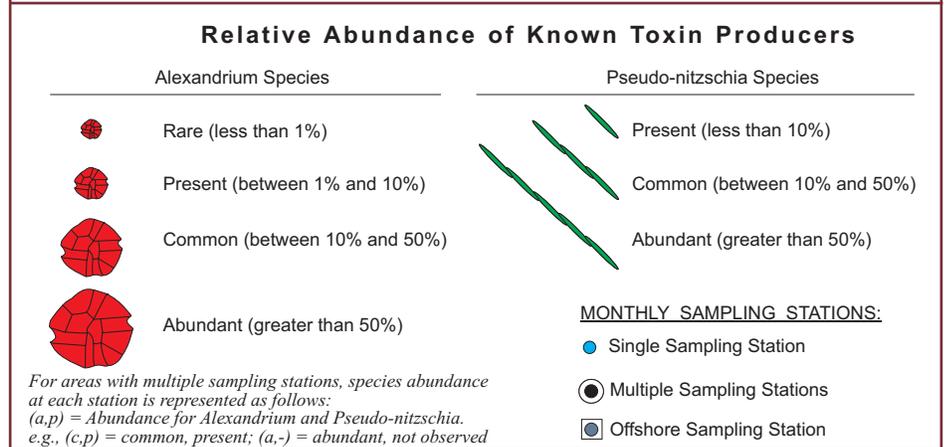
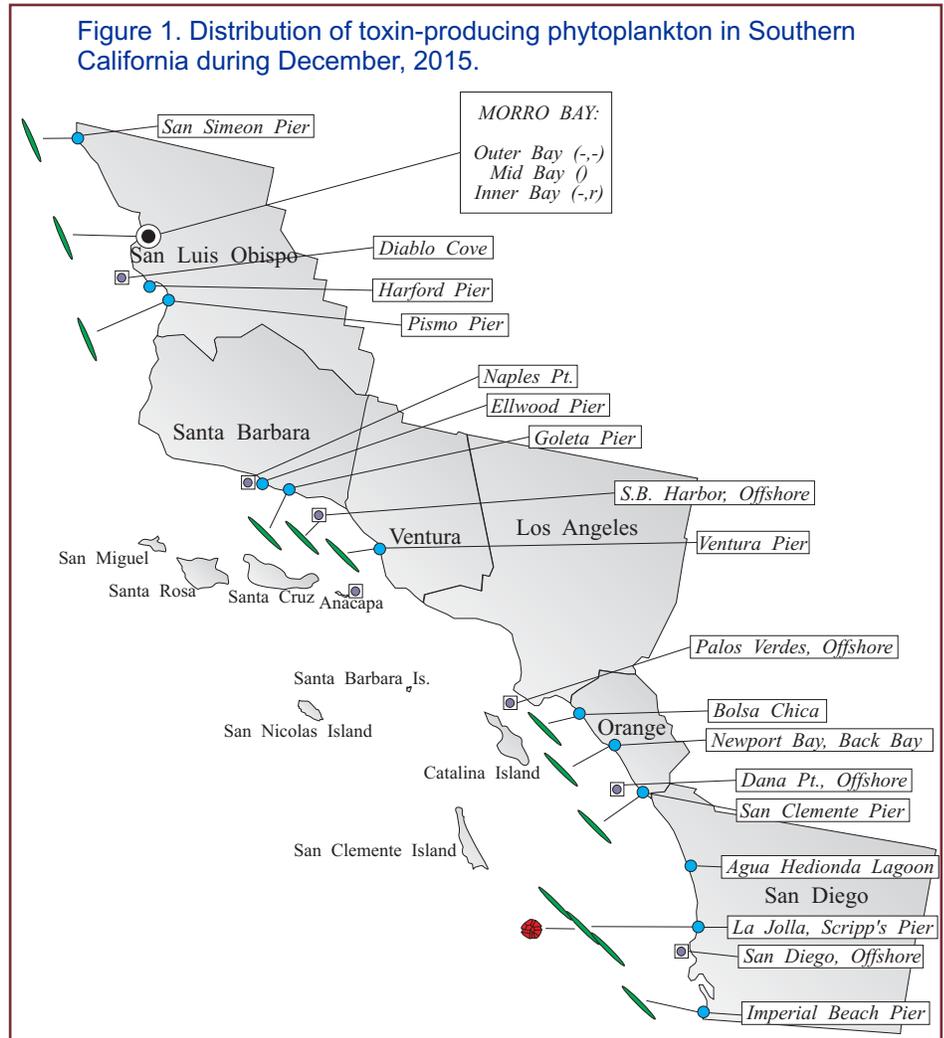
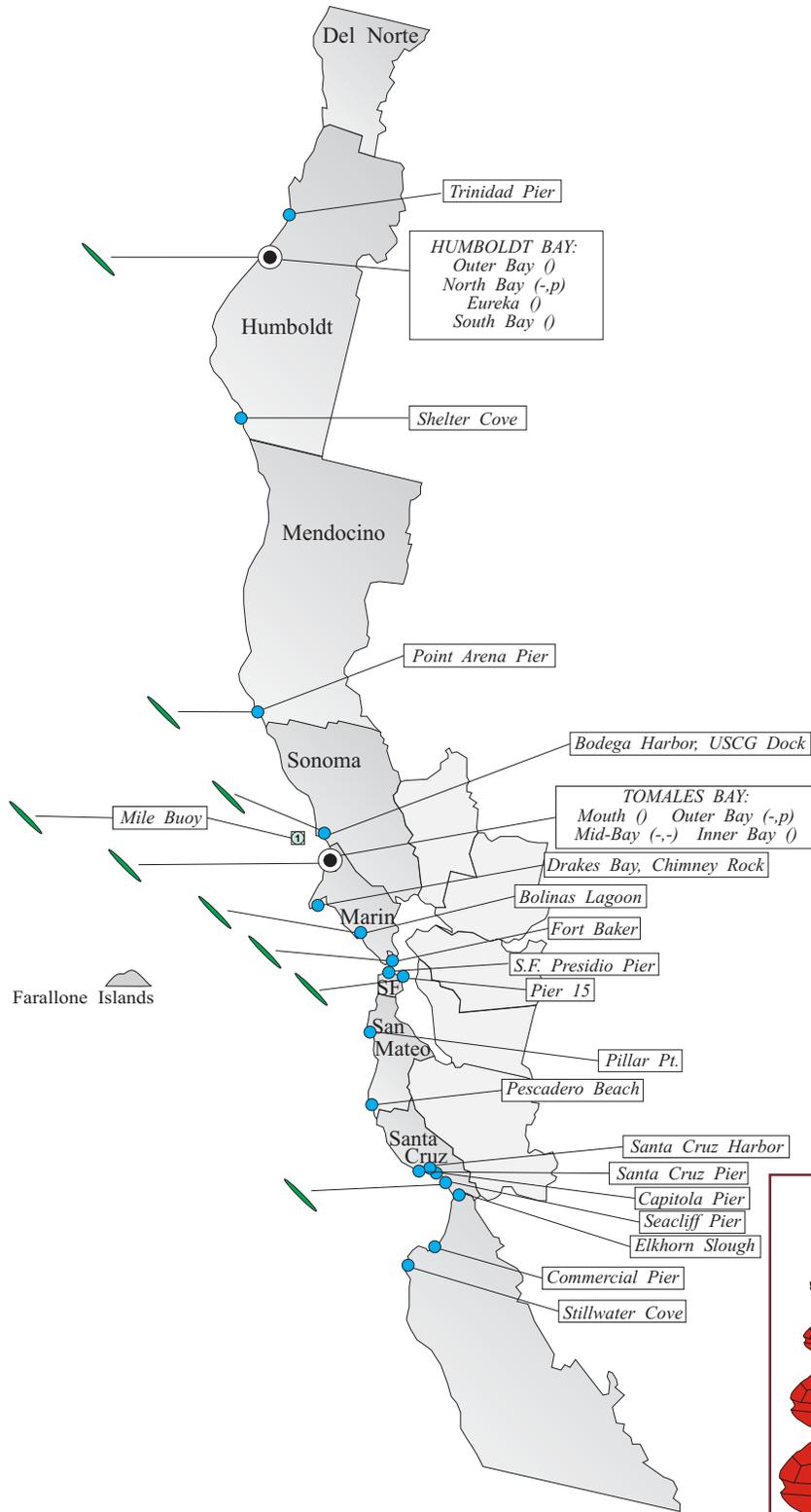


Figure 2. Distribution of toxin-producing phytoplankton in Northern California during December, 2015.



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sampling sites in the majority of Southern California counties (Figure 1). The cell mass was low at all locations. It should be noted that when *Pseudo-nitzschia* was observed to be 'common' it was a nontoxic species in the *delicatissima* complex. Domoic acid was not detected in bivalve shellfish samples analyzed during December (Figure 3).

Rock crab samples were collected in Santa Barbara County in December by the CDPH Food and Drug Branch (FDB) and the California Department of Fish and Wildlife (DFW). The samples from offshore around the northern Channel Islands exhibited a range of domoic acid concentrations: <2.5-210 ppm.

Nearshore Santa Barbara County rock crab samples collected from multiple locations on December 20 and 27 were all under the 30 ppm alert level in the viscera. A summary of the crab sample data can be found at:

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

A spiny lobster sample collected by a volunteer from offshore of Port Hueneme in Ventura County contained a low level of domoic acid in the viscera.

Non-Toxic Species

The diatom *Chaetoceros* was common to abundant at one to two sites in all counties except Ventura. The species *Chaetoceros socialis* was abundant at Bolsa Chica in

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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:

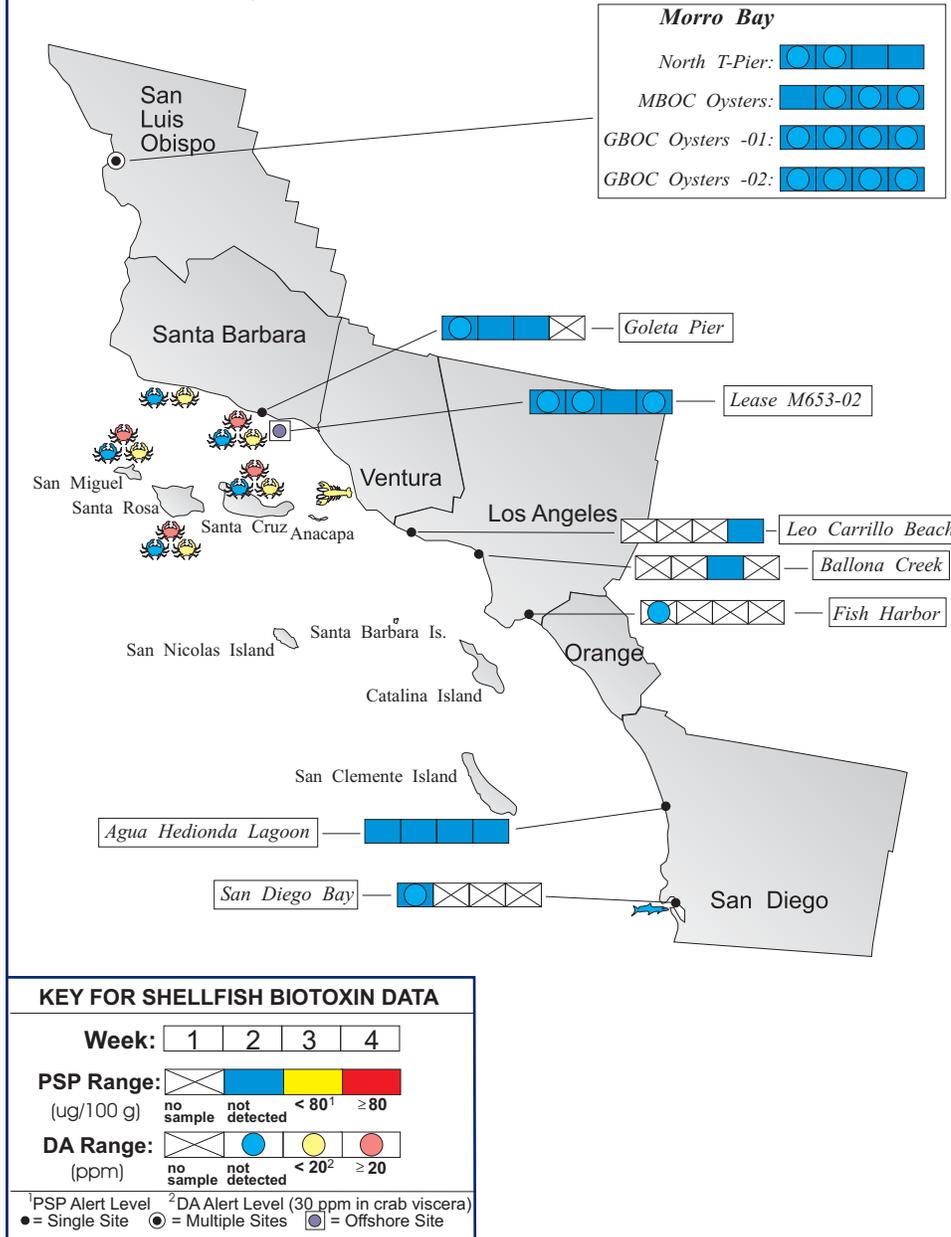
- Single Sampling Station
- Multiple Sampling Stations
- Offshore Sampling Station

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 December, 2015.



Orange County during the first week of December.

Northern California Summary:

Paralytic Shellfish Poisoning

Alexandrium was not observed at any Northern California sites (Figure 2). PSP toxins were not detected in any bivalve shellfish samples in December (Figure 4).

Domoic Acid

Pseudo-nitzschia was observed at select sites between Humboldt and Monterey counties (Figure 2). Cell mass was low at all locations. Domoic acid was not detected in bivalve shellfish samples analyzed during December.

FDB and DFW continued to collect crab samples along the entire northern California coast. A smaller proportion of Dungeness crab samples exceeded the alert level in the viscera compared to November. Dungeness crab domoic acid concentrations ranged from 8.6-69 ppm in Del Norte County, <2.5-49 ppm in Humboldt County, 7.8-64 ppm in Mendocino County, <2.5-120 ppm in Sonoma County, <2.5-40 ppm in Marin County, and <2.5-130 ppm in San Mateo County. Dungeness crabs collected from San Francisco and Monterey counties contained low levels of domoic acid in the viscera. A portion of rock crabs from Monterey county continued to exceed the domoic acid alert level in the viscera with

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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

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concentrations ranging from <2.5-100 ppm.

Non-Toxic Species

The dinoflagellate *Akashiwo* was common in samples from Humboldt Bay during the second and third weeks of December. The diatom *Chaetoceros* was common at Pescadero State Beach in San Mateo County.



QUARANTINES:

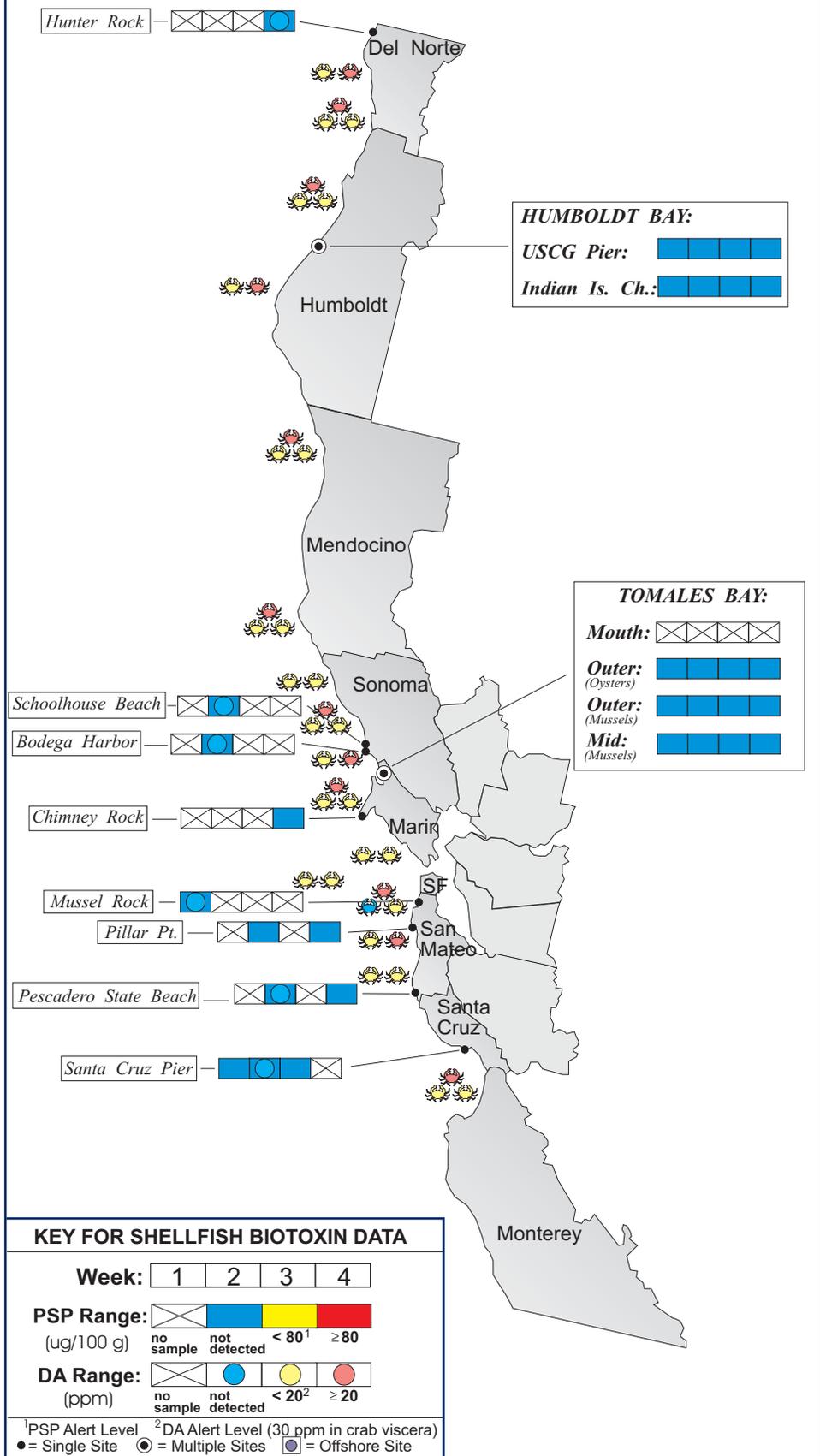
The annual mussel quarantine ended at midnight on October 31 for all coastal counties except for Del Norte, Humboldt, Santa Cruz, Monterey, and Santa Barbara counties.

On December 9 the Department removed the Health Advisory for recreationally harvested bivalve shellfish, except razor clams, from Humboldt and Del Norte counties. The advisory for bivalve shellfish and finfish from Monterey and Santa Barbara counties was lifted November 13.

On December 31 the Health Advisory for Dungeness and rock crabs was lifted for the coastlines of San Luis Obispo and Santa Barbara counties. The Santa Cruz, Santa Rosa and San Miguel Channel Islands remain under the Health Advisory. As a precaution, consumers are advised not to eat the viscera or "butter" of the crabs. The November 3 Health Advisory warning consumers not to eat Dungeness and Rock crabs remains in effect, for the waters between the Oregon border to the southern Monterey County line and the northern Channel Islands.

Consumers of Washington clams, also known as butter clams (*Saxidomus nuttalli*), are cautioned to eat only the white

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



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Table 1. Program participants collecting phytoplankton samples during December, 2015. (Continued from Page 4)

| AGENCY | # | AGENCY | # |
|---|---|--|---|
| HUMBOLDT COUNTY | | Bureau of Land Management | 1 |
| Coast Seafood Company | 5 | Humboldt State University Marine Lab | 1 |
| MENDOCINO COUNTY | | CDPH Volunteer (<i>Marie DeSantis</i>) | 3 |
| SONOMA COUNTY | | | |
| Bodega Marine Lab & Farallone Institute | 1 | CDPH Marine Biotoxin Program | 1 |
| MARIN COUNTY | | | |
| CDPH Marine Biotoxin Program | 1 | CDPH Volunteers (<i>Anderson, Clyde</i>) | 7 |
| Hog Island Oyster Company | 4 | NatureBridge | 1 |
| CONTRA COSTA COUNTY | | CDPH Marine Biotoxin Program | 1 |
| SAN FRANCISCO COUNTY | | CDPH Volunteer (<i>Eugenia McNaughton</i>) | 2 |
| Monte Vista High School | 1 | Exploratorium | 3 |
| SAN MATEO COUNTY | | San Mateo County Envir. Health Department | 4 |
| SANTA CRUZ COUNTY | | | |
| U.C. Santa Cruz | 3 | Santa Cruz County Envir. Health Department | 3 |
| San Lorenzo Valley High School | 1 | The Otter Project (<i>Jeff Palsgaard</i>) | 4 |
| MONTEREY COUNTY | | The Otter Project (<i>Rose, Noke</i>) | 3 |
| Friends of the Sea Otter (<i>Janis Chaffin</i>) | 1 | Monterey Abalone Company | 1 |
| SAN LUIS OBISPO COUNTY | | | |
| Morro Bay National Estuary Program | 1 | Morro Bay Oyster Company | 4 |
| Coastal Discovery Center, San Simeon | 3 | Tenera Environmental | 4 |
| Friends of the Sea Otter (<i>Cherry</i>) | 6 | CDPH Volunteer (<i>Allison Plemons</i>) | 3 |
| SANTA BARBARA COUNTY | | Santa Barbara Channel Keeper | 2 |
| CDPH Volunteer (<i>Sylvia Short</i>) | 2 | U.C. Santa Barbara | 3 |
| VENTURA COUNTY | | | |
| National Park Service | 1 | CDPH Volunteer (<i>Fred Burgess</i>) | 2 |
| LOS ANGELES COUNTY | | Los Angeles County Sanitation District | 2 |
| ORANGE COUNTY | | | |
| CDPH Volunteer (<i>Truong Nguyen</i>) | 1 | California Department of Fish and Wildlife | 5 |
| Ocean Institute | 1 | Amigos de Bolsa Chica | 3 |
| SAN DIEGO COUNTY | | | |
| Sea Camp/HABNet | 1 | Tijuana River National Estuary Research | 5 |
| Scripps Institute of Oceanography | 4 | Carlsbad Aquafarms, Inc. | 2 |

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 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

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

| COUNTY | AGENCY | # |
|-----------------|--|----|
| Del Norte | Tolowa Dee-ni' Nation | 1 |
| | CDPH Food and Drug Branch | 22 |
| Humboldt | Coast Seafood Company | 10 |
| | CDPH Food and Drug Branch | 24 |
| Mendocino | CDPH Food and Drug Branch | 12 |
| Sonoma | CDPH Marine Biotoxin Program | 2 |
| | CDPH Food and Drug Branch | 31 |
| Marin | Cove Mussel Company | 4 |
| | Hog Island Oyster Company | 8 |
| | CDPH Marine Biotoxin Program | 1 |
| San Francisco | CDPH Food and Drug Branch | 17 |
| | CDPH Food and Drug Branch | 6 |
| San Mateo | San Mateo County Environmental Health Department | 4 |
| | CDPH Food and Drug Branch | 25 |
| | CDPH Volunteer (<i>Gary Della Maggiora</i>) | 1 |
| Santa Cruz | U.C. Santa Cruz | 3 |
| Monterey | CDPH Food and Drug Branch | 20 |
| | Grassy Bar Oyster Company | 12 |
| San Luis Obispo | Morro Bay Oyster Company | 6 |
| | Santa Barbara Mariculture Company | 4 |
| Santa Barbara | U.C. Santa Barbara | 3 |
| | CDPH Food and Drug Branch | 90 |
| | CDPH Volunteer (<i>Bill Weinerth</i>) | 1 |
| Los Angeles | CDPH Volunteer (<i>Steven Field</i>) | 1 |
| | Los Angeles County Health Department Burke | 1 |
| | Southern California Marine Institute | 1 |
| Orange | None Submitted | |
| San Diego | Carlsbad Aquafarms, Inc. | 5 |
| | U.S. Navy Marine Mammal Program | 3 |

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such as crab, lobster, and small finfish like sardines and anchovies, therefore these tissues should not be consumed.

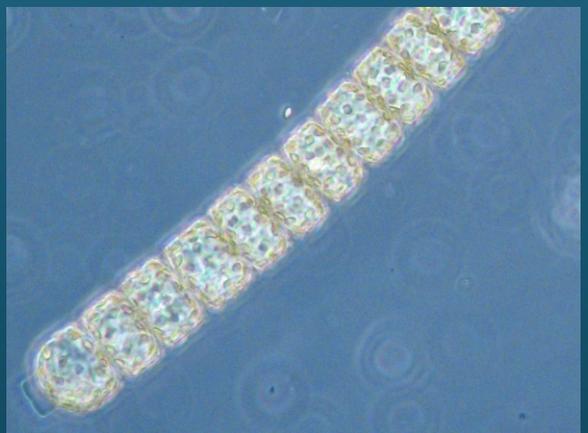
Contact the "Biotoxin Information Line" at 1-800-553-4133 for a current update on marine biotoxin activity prior to gathering and consuming shellfish.



PHYTOPLANKTON GALLERY



The species *Chaetoceros socialis* forms colonies held together with a slime or mucilaginous substance.



The centric chain diatom *Lauderia*.



The diatom *Chaetoceros* in a curved chain. The majority of *Chaetoceros* species form chains.