

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

September 2005

Technical Report No. 05-22

INTRODUCTION:

This report provides a summary of biotoxin activity for the month of September 2005. 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.

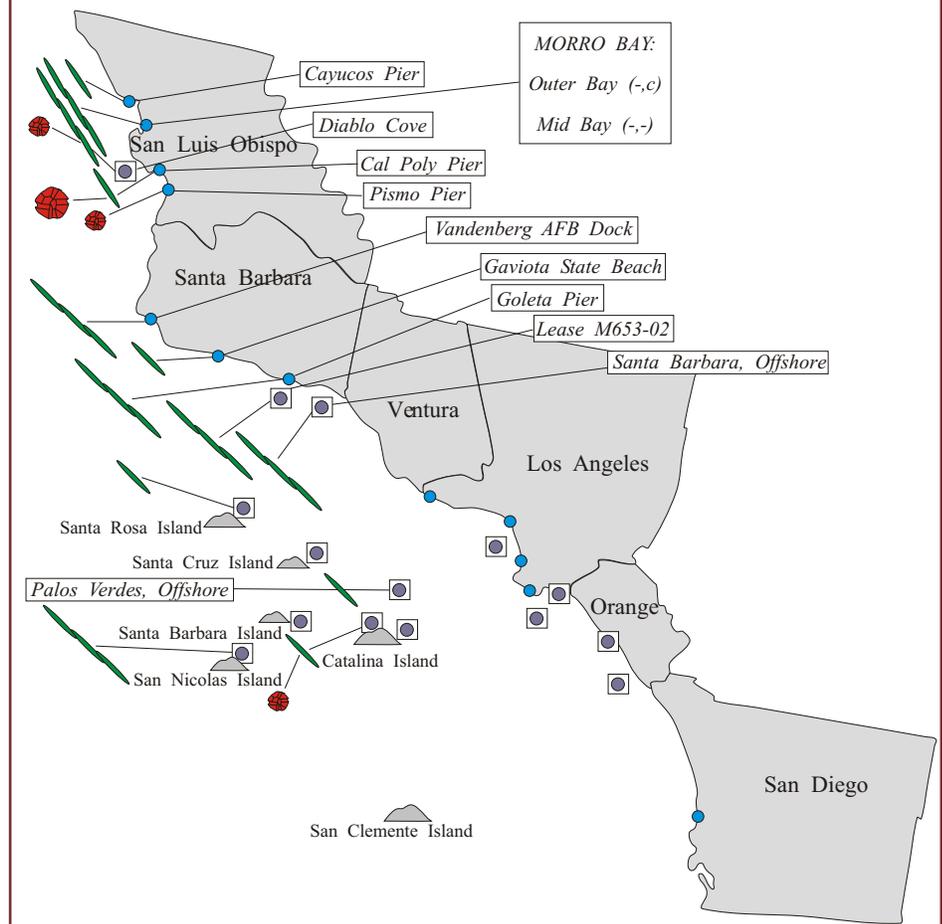
Southern California Summary:

Paralytic Shellfish Poisoning

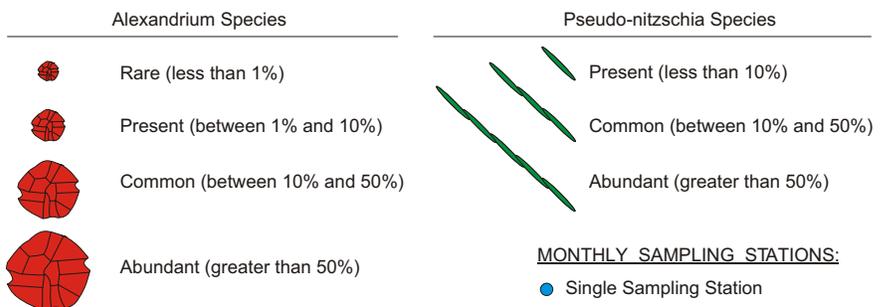
Alexandrium was observed at several Southern California sites during September (Figure 1). The distribution and relative

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Figure 1. Distribution of toxin-producing phytoplankton in Southern California during September, 2005.

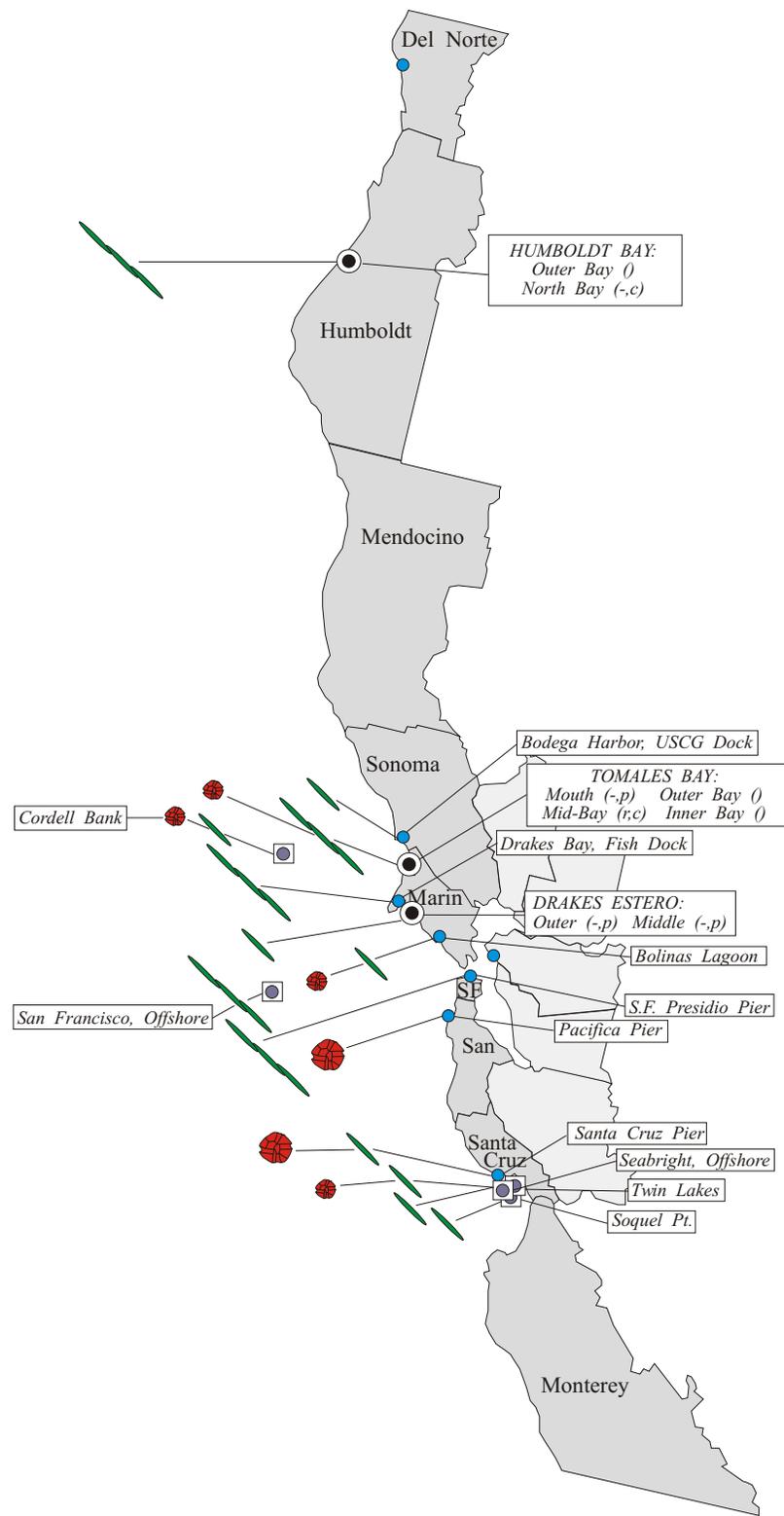


Relative Abundance of Known Toxin Producers



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 September, 2005.



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abundance of this toxin-producing dinoflagellate were reduced compared to observations in August. The highest concentrations of *Alexandrium* were observed throughout the month in samples from the Cal Poly pier in Avila (San Luis Obispo County). Low numbers of *Alexandrium* were also detected offshore near Catalina Island.

Low concentrations of PSP toxins were detected in San Luis Obispo and Santa Barbara counties (Figure 3). Sporadic low levels of PSP toxins were detected in mussels inside Morro Bay. A low level of these toxins also was detected in scallops from an offshore oil platform.

Domoic Acid

Pseudo-nitzschia was observed at several sites along the coast from San Luis Obispo County southward and offshore of Los Angeles County in September (Figure 1). The relative abundance of this diatom decreased at most locations. Low numbers of this diatom were observed offshore of Santa Rosa, Catalina, and San Nicolas islands.

Non-toxic Species

A mix of diatom and dinoflagellate species were common along the Southern California coast during September, although cell

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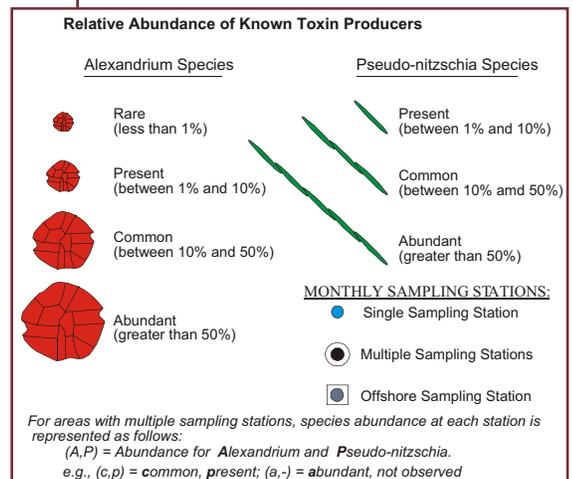
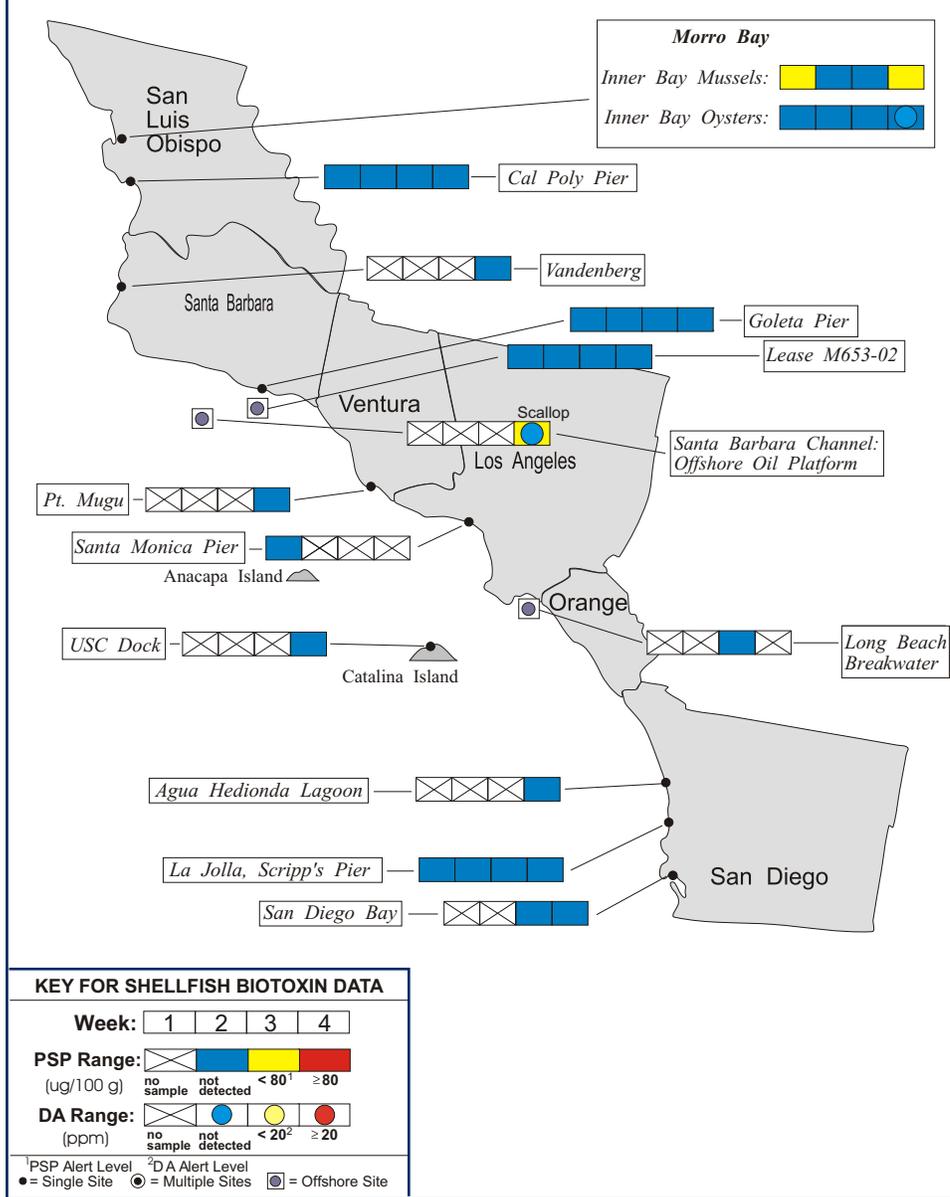


Figure 3. Distribution of shellfish biotoxins in Southern California during September, 2005.



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densities were low at most locations. *Chaetoceros* and *Coscinodiscus* were the most common and widely distributed diatoms, although *Ditylum* and *Bacteriastrum* were common offshore near the Channel Islands. The dinoflagellates *Prorocentrum*, *Gymnodinium*, and *Ceratium* were common along most of the Southern California coast. *Lingulodinium polyedrum* was increasingly common from Santa Barbara through San Diego, being abundant at sites from Los Angeles southward. The greatest cell densities of this red tide producing dinoflagellate were observed in samples from Orange County.

Northern California Summary:

Paralytic Shellfish Poisoning

Alexandrium relative abundance and distribution decreased in September. Low numbers of this dinoflagellate were observed at sites from Marin through Santa Cruz counties. The highest relative abundance of *Alexandrium* was detected in a sample from the Pacifica Pier (San Mateo County) on September 15 (Figure 2).

The low concentrations of PSP toxins detected in the Drakes Bay region during August persisted throughout September (Figure 4). Low levels of these toxins were

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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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also detected in sentinel mussels from the Santa Cruz Pier (Santa Cruz County) throughout most of the month.

Domoic Acid

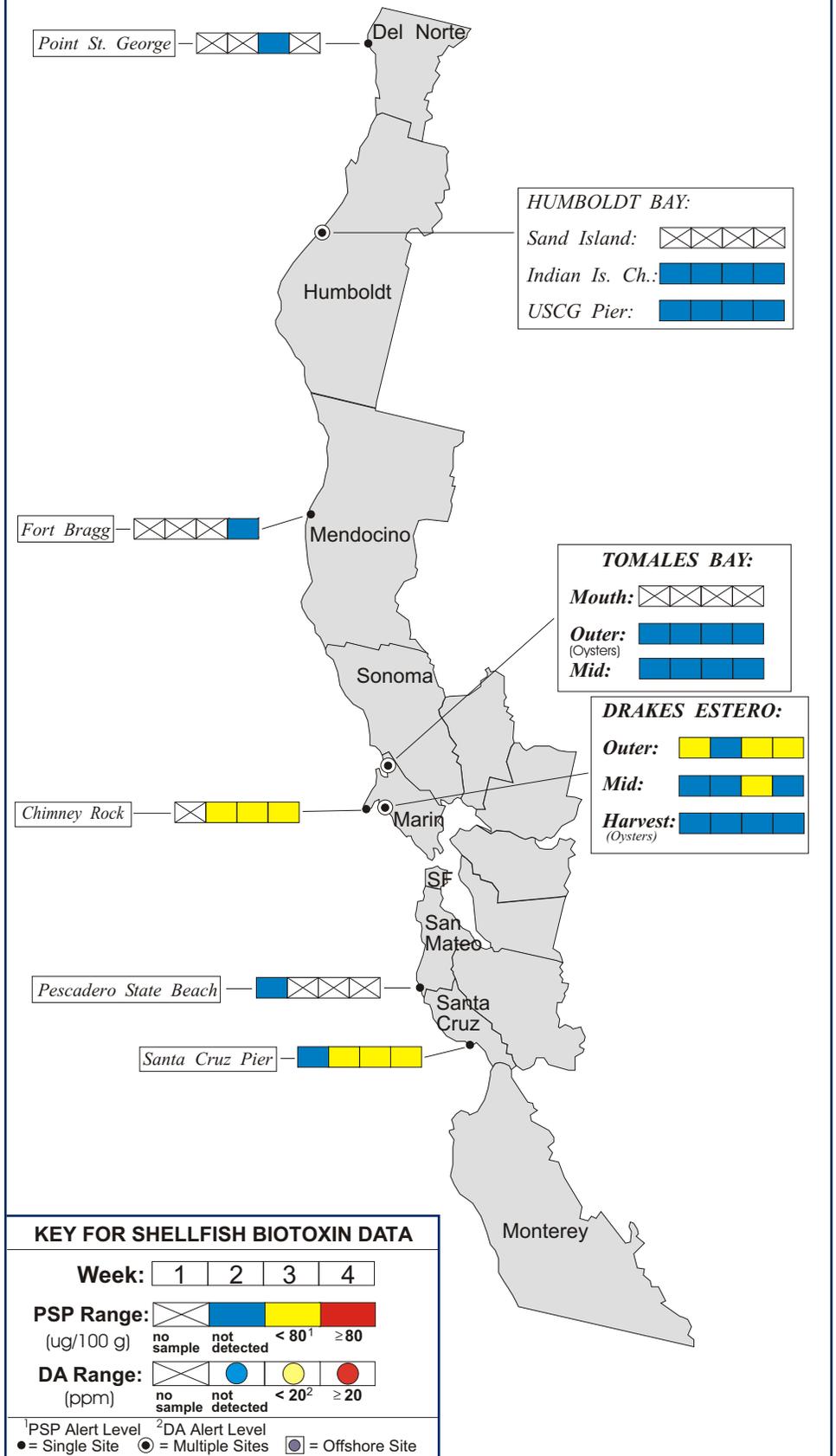
Pseudo-nitzschia was observed at most sampling stations along the Northern California coast in September (Figure 2). The relative abundance of *Pseudo-nitzschia* increased at sites in Marin and San Francisco counties, including an offshore location between the Golden Gate and the Farallone Islands. Low numbers of this diatom were observed in a sample from Cordell Bank offshore of Sonoma County.

Non-toxic Species

Diatoms remained the dominant group at most stations. Common diatoms included *Chaetoceros* and *Ditylum*. Dinoflagellates were also present along the coast and were common at specific locations. *Noctiluca* was common in Crescent City, while *Ceratium* and *Prorocentrum* were common inside Drakes Bay. *Prorocentrum* was also common inside Tomales Bay.



Figure 4. Distribution of shellfish biotoxins in Northern California during September, 2005.



QUARANTINES:

The June 24 health advisory remained in effect, warning the public not to eat mussels or the viscera of sardines,

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Table 1. California Marine Biotxin Monitoring Program participants submitting shellfish samples during September, 2005.

| COUNTY | AGENCY | # SAMPLES |
|------------------------|---|-----------|
| Del Norte | Del Norte County Health Department | 1 |
| Humboldt | Coast Seafood Company | 8 |
| Mendocino | None Submitted | |
| Sonoma | None Submitted | |
| Marin | Cove Mussel Company | 4 |
| | Hog Island Oyster Company | 4 |
| | Johnson Oyster Company | 16 |
| | Marin Oyster Company | 2 |
| | DHS Marine Biotxin Monitoring Program | 3 |
| San Francisco | None Submitted | |
| San Mateo | San Mateo County Environmental Health Department | 1 |
| Santa Cruz | U.C. Santa Cruz | 3 |
| | Santa Cruz County Environmental Health Department | 1 |
| Monterey | None Submitted | |
| San Luis Obispo | Williams Shellfish Company | 8 |
| | Tomales Bay Oyster Company | 2 |
| | California Polytechnic State University | 3 |
| Santa Barbara | Santa Barbara Mariculture Company | 8 |
| | U.C. Santa Barbara | 4 |
| | Vanderberg AFB | 1 |
| | DHS Volunteer (Bill Weinerth) | 1 |
| Ventura | Ventura County Environmental Health Department | 1 |
| Los Angeles | Los Angeles Regional Water Quality Control Board | 1 |
| | Aquarium of the Pacific, Long Beach | 1 |
| Orange | None Submitted | |
| San Diego | Carlsbad Aquafarms, Inc. | 1 |
| | U.S. Navy | 2 |
| | Scripps Institute of Oceanography | 5 |

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anchovies, lobster (also known as lobster "tomale"), and crab (sometimes called crab "butter") from Ventura County. This advisory was issued after dangerous levels of domoic acid were detected from this region.

The annual quarantine on the sport-harvesting of mussels went into effect on May 1 and will continue through October 31. The annual mussel quarantine applies only to sport-harvested mussels along the entire California coastline, including all bays and estuaries. Routine biotoxin monitoring is maintained throughout this period. The annual quarantine does not affect the certified commercial shellfish growing areas in California.

Consumers of Washington clams, also known as butter clams, 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 are an exception to this general guidance due to their ability to concentrate and retain domoic acid in the edible white meat.

Consumers are also advised that cooking does not eliminate the toxins from the shellfish tissue. Sport harvesters are encouraged to 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. Agencies, organizations and volunteers participating in marine phytoplankton sample collection during September, 2005.

| COUNTY | AGENCY | # SAMPLES |
|-----------------|--|-----------|
| Del Norte | Del Norte County Health Department | 1 |
| Humboldt | Coast Seafood Company | 4 |
| Mendocino | None Submitted | |
| Sonoma | DHS Volunteer (Cathleen Cannon) | 1 |
| | Cordell Bank Marine Sanctuary | 1 |
| Marin | DHS Volunteers (Brent Anderson, Mary Von Tolksdorf, Marjorie Siegel, Richard Plant, Cal Strobel) | 11 |
| | DHS Marine Biotoxin Monitoring Program | 3 |
| | Johnson Oyster Company | 8 |
| Contra Costa | DHS Marine Biotoxin Monitoring Program | 1 |
| San Francisco | DHS Volunteers (Eugenia McNaughbn, Carol Keiper) | 6 |
| San Mateo | San Mateo County Environmental Health Department | 1 |
| Santa Cruz | U.C Santa Cruz | 3 |
| | California Department of Parks and Recreation | 5 |
| Monterey | None Submitted | |
| San Luis Obispo | DHS Volunteers (Renee and Auburn Atkins) | 4 |
| | Morro Bay National Estuary Program | 3 |
| | California Polytechnic State University | 4 |
| | Tenera Environmental | 1 |
| Santa Barbara | U.C. Santa Barbara | 3 |
| | Santa Barbara Mariculture Company | 4 |
| | California Department of Parks and Recreation | 3 |
| | Vanderberg AFB | 2 |
| | National Park Service | 1 |
| | Catalina Tall Ships Expeditions | 1 |
| Ventura | None Submitted | |
| Los Angeles | Aquarium of the Pacific Long Beach | 1 |
| | Los Angeles County Health Department | 7 |
| | Los Angeles County Sanitation District | 3 |
| | DHS Volunteer (Richard Weaver) | 2 |
| | Catalina Tall Ships Expeditions | 10 |
| | Catalina Island Marine Institute | 1 |
| | Los Angeles Regional Water Quality Control Board | 1 |
| Orange | DHS Volunteer (Debbie Karimoto) | 1 |
| | Orange County Health Department | 2 |
| San Diego | Scripps Institute of Oceanography | 5 |

