

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 February 2009

Technical Report No. 09-13

INTRODUCTION:

This report provides a summary of biotoxin activity for the month of February, 2009. 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.

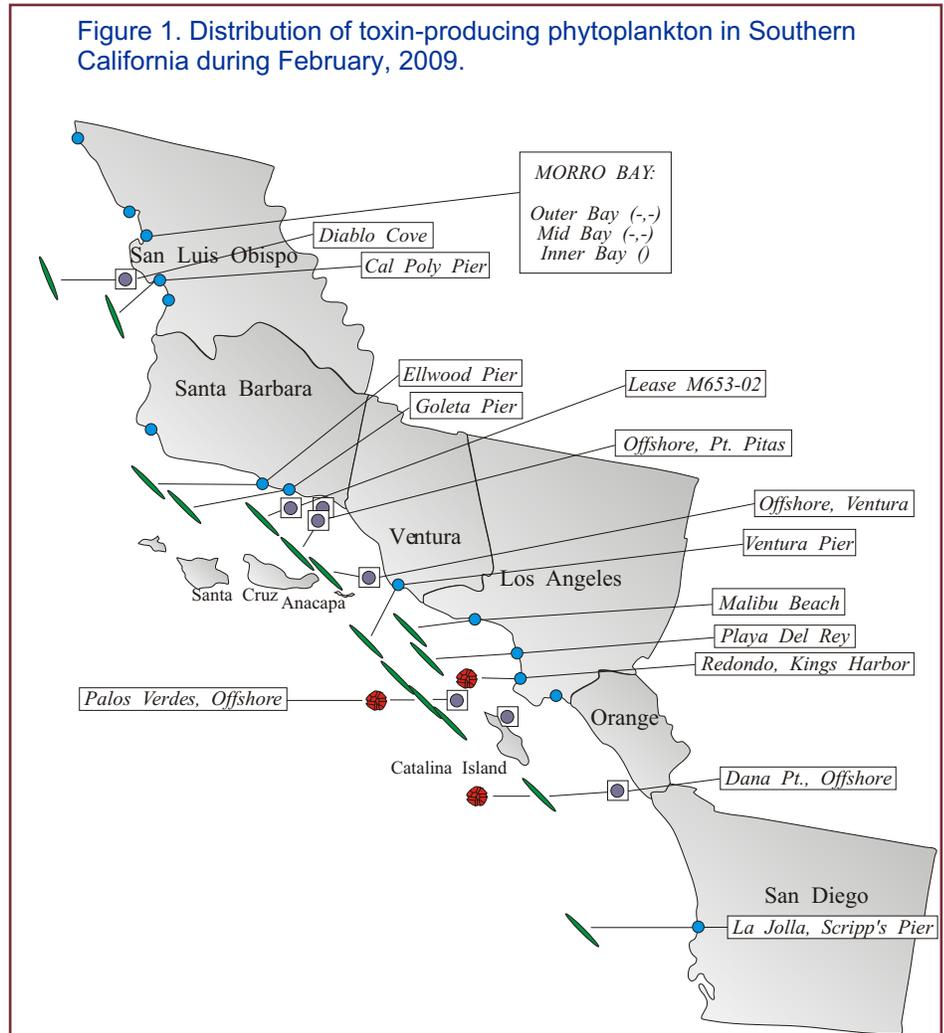
Southern California Summary:

Paralytic Shellfish Poisoning

Alexandrium was observed at sampling stations along the coast of Los Angeles and Orange counties during February (Figure 1). These observations represent a decrease in the geographic distribution of this

(Continued on Page 2)

Figure 1. Distribution of toxin-producing phytoplankton in Southern California during February, 2009.



Relative Abundance of Known Toxin Producers

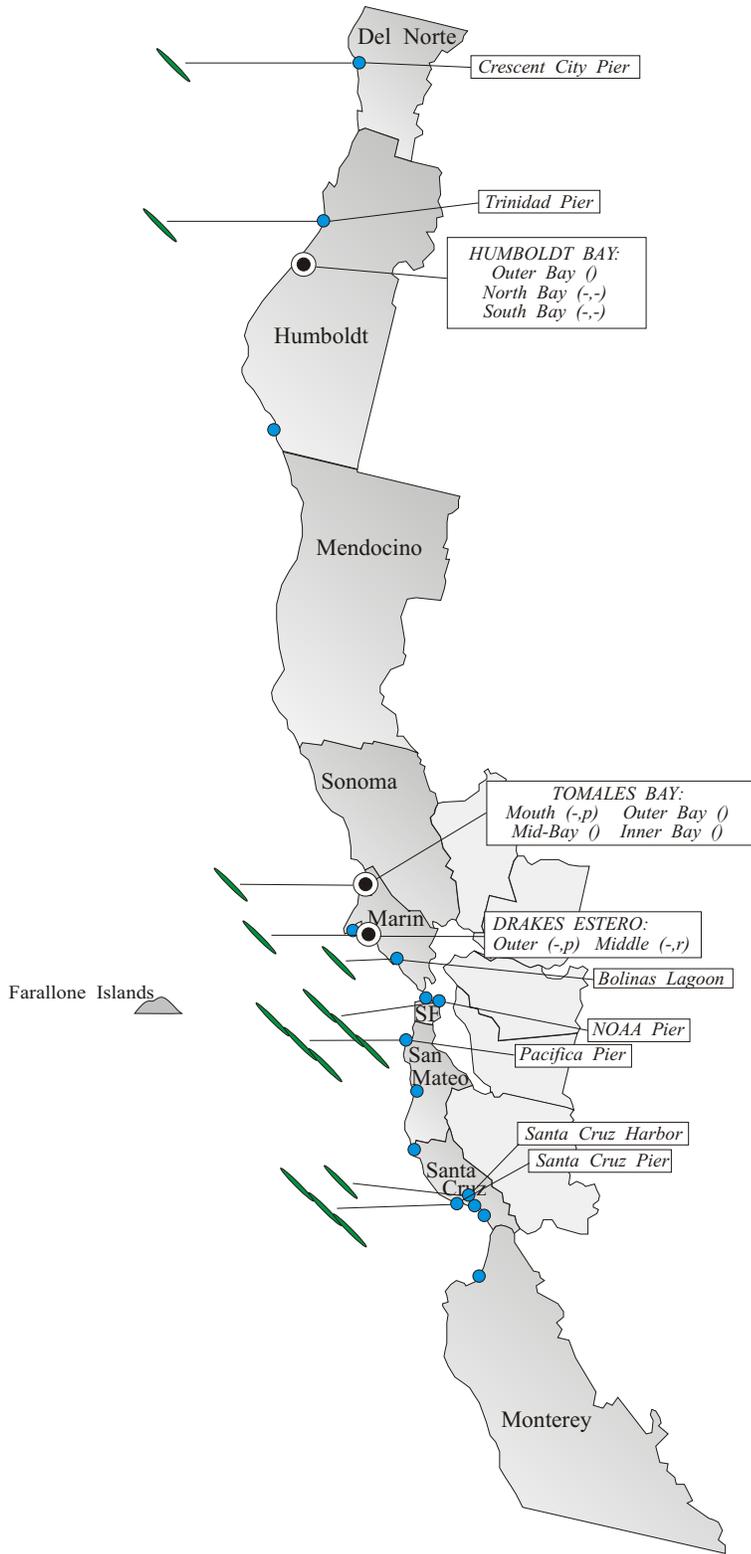
Alexandrium Species		Pseudo-nitzschia Species	
	Rare (less than 1%)		Present (less than 10%)
	Present (between 1% and 10%)		Common (between 10% and 50%)
	Common (between 10% and 50%)		Abundant (greater than 50%)
	Abundant (greater than 50%)		

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

Figure 2. Distribution of toxin-producing phytoplankton in Northern California during February, 2009.



(Continued from Page 1)

dinoflagellate when compared to observations in January. Overall the cell numbers were quite low, with the greatest relative abundance observed in a sample collected from offshore of Palos Verdes on February 5.

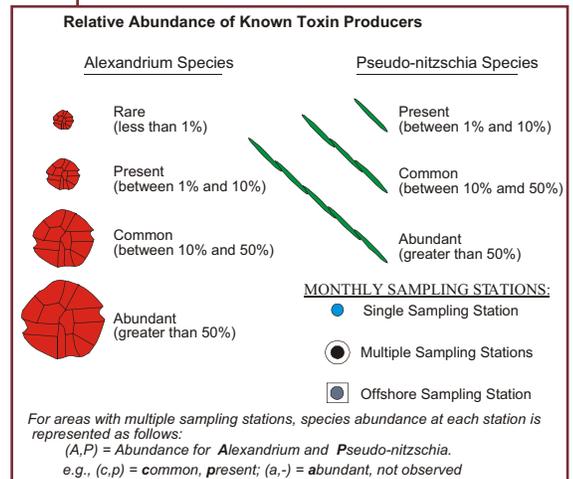
PSP toxins were generally absent during February. A sample of lobster viscera collected from offshore of Ventura County on February 4 contained a low concentration of these toxins (52 ug/100 g).

Domoic Acid

Pseudo-nitzschia was detected at sites between San Luis Obispo and San Diego counties in February (Figure 1). The relative abundance of this diatom decreased compared to observations in January, particularly along the San Luis Obispo coast. Cell numbers were low at most sites, with the highest relative abundances observed in samples from offshore of Palos Verdes (February 24) and Malibu Pier (February 26).

Domoic acid was not detected in any bivalve shellfish samples collected along the southern California coast in February (Figure 3). A low concentration of domoic acid (8 ppm) was detected in a sample of lobster viscera collected from offshore of Ventura County on February 4.

(Continued on Page 3)



(Continued from Page 3)

Pseudo-nitzschia was observed at a number of locations along the northern California coast in February (Figure 2). The distribution and relative abundance was similar to observations in January. Cell numbers were low at all sites, with the highest relative abundance observed in a sample collected at Pacifica Pier. Domoic acid was not detected in any samples analyzed in February.

Non-toxic Species

A low diversity of diatoms, along with the usual winter assortment of detritus, continued to be observed along the northern California coast in February. The diatom *Chaetoceros* was common at most locations. The highest relative abundance was observed in a sample collected at Santa Cruz Pier on February 4.

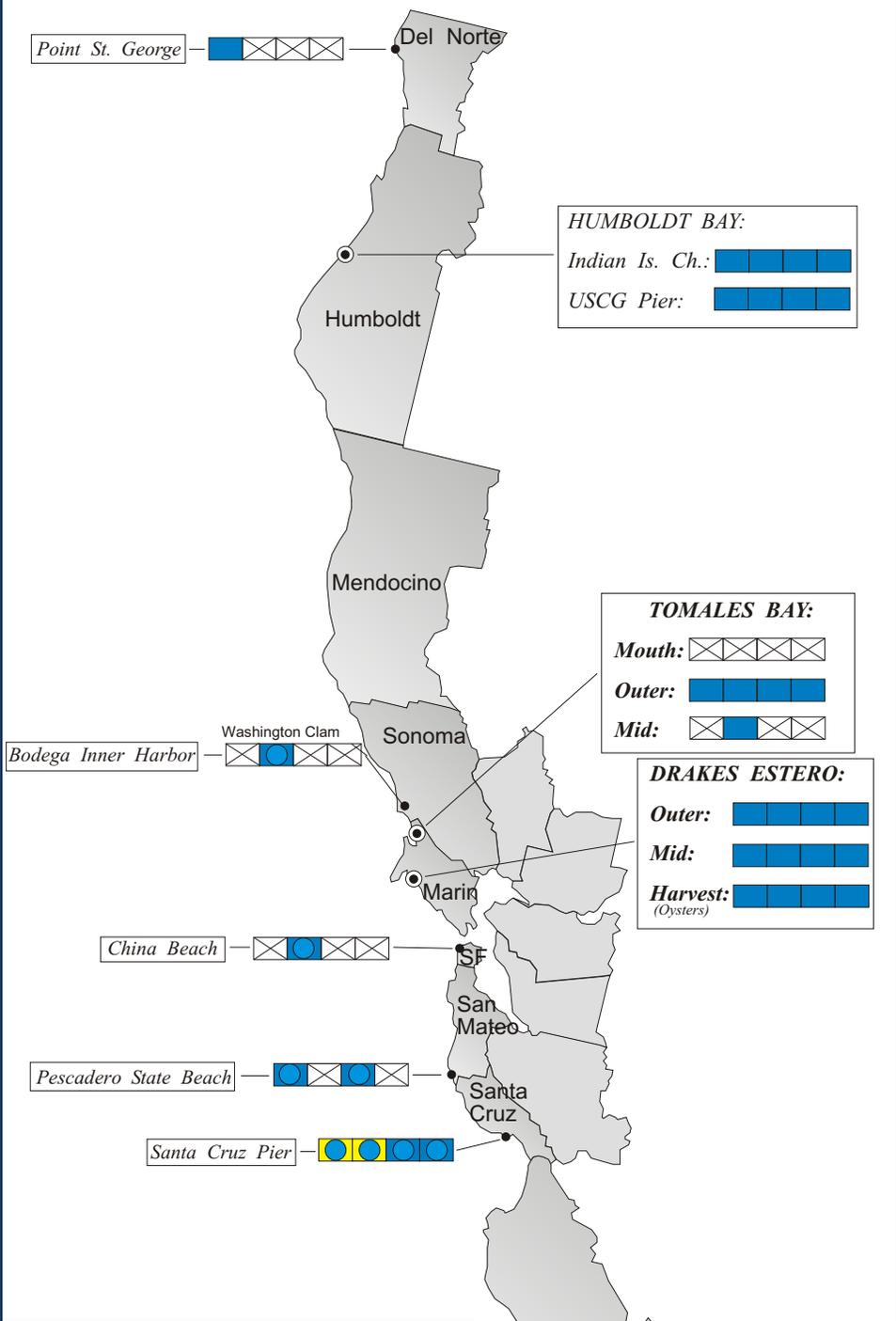


QUARANTINES:

There were no quarantines or health advisories in effect in February. The annual quarantine is scheduled to go in effect on May 1. This quarantine applies specifically to the sport-harvesting of mussels along the entire California coastline, including all bays and estuaries. Routine phytoplankton and biotoxin monitoring is maintained throughout the year, not just within the quarantine period. This allows the detection of unexpected increases in biotoxin activity outside of the routine quarantine period. The annual quarantine does not apply to the certified commercial shellfish growing areas in California, which are monitored intensively. All certified shellfish growers are required to

(Continued on Page 5)

Figure 4. Distribution of shellfish biotoxins in Northern California during February, 2009.



KEY FOR SHELLFISH BIOTOXIN DATA

Week: 1 | 2 | 3 | 4

PSP Range: [Legend: white, blue, yellow, red] (ug/100 g) no sample not detected < 80¹ ≥ 80

DA Range: [Legend: white, blue, yellow, red] (ppm) no sample not detected < 20² ≥ 20

¹PSP Alert Level ²DA Alert Level
 ● = Single Site ● = Multiple Sites ◐ = Offshore Site

Table 1. California Marine Biotoxin Monitoring Program participants submitting shellfish samples during February, 2009.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	1
Humboldt	Coast Seafood Company	8
Mendocino	None Submitted	
Sonoma	CDPH Volunteer (Tim Callan)	1
Marin	Cove Mussel Company	1
	Drakes Bay Oyster Company	16
	Hog Island Oyster Company	4
	Marin Oyster Company	3
San Francisco	San Francisco County Health Department	1
San Mateo	San Mateo County Environmental Health Department	2
Santa Cruz	U.C. Santa Cruz	4
Monterey	None Submitted	
San Luis Obispo	Cal Poly	4
	Tomales Bay Oyster Company	6
	Williams Shellfish Farms	8
Santa Barbara	Santa Barbara Mariculture Company	8
	U.C. Santa Barbara	4
	Vandenberg AFB	1
Ventura	CDPH Volunteer (<i>Bill Weinerth</i>)	3
Los Angeles	Los Angeles County Health Department	1
Orange	None Submitted	
San Diego	Carlsbad Aquafarms, Inc.	1
	Scripps Institute of Oceanography	5
	CDPH Volunteer (Steve Crooke)	1

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



submit at least weekly samples of shellfish for toxin monitoring. Harvest restrictions or closures are implemented as needed to protect the public's health.

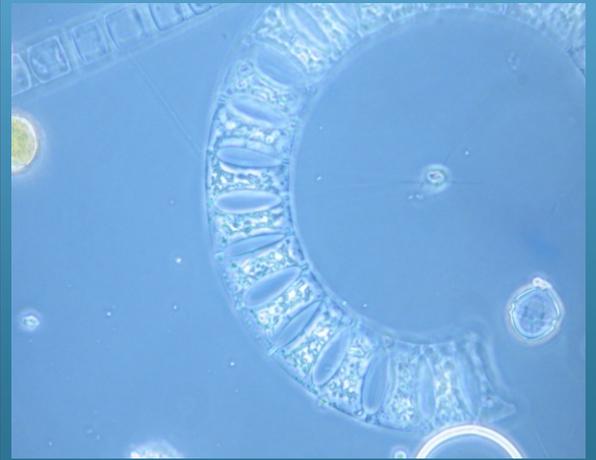
Consumers of Washington clams, also known as butter clams (*Saxidomus nuttalli*), are cautioned to eat only the

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.,

Table 2. Agencies, organizations and volunteers participating in marine phytoplankton sample collection during February, 2009.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	3
Humboldt	Coast Seafood Company	3
	Bureau of Land Management	1
	Humboldt State University	3
	Fortuna High School	1
Mendocino	None Submitted	
Sonoma	None Submitted	
Marin	CDPH Volunteers (<i>Brent Anderson, Cal Strobel</i>)	5
	Drakes Bay Oyster Company	8
San Francisco	San Francisco Health Department	3
San Mateo	San Mateo County Environmental Health Dept.	2
	The Marine Mammal Center (<i>Stan Jensen</i>)	4
	U.C. Santa Cruz	1
Santa Cruz	San Lorenzo Valley High School	2
	The Marine Mammal Center (<i>Nancy Scarborough</i>)	1
	U.C. Santa Cruz	4
Monterey	Monterey Abalone Company	4
San Luis Obispo	CDPH Volunteer (<i>Renee and Auburn Atkins</i>)	1
	CDPH Marine Biotoxin Program	1
	Cal Poly	12
	Monterey Bay National Marine Sanctuary	1
	Tenera Environmental	3
	The Marine Mammal Center (<i>Tim Lytsell, P.J. Webb</i>)	7
Santa Barbara	Tomales Bay Oyster Company	3
	CDPH Volunteer (<i>Sylvia Short</i>)	4
	Channel Islands National Marine Sanctuary	2
	Santa Barbara Channel Keeper	1
	Santa Barbara Mariculture Company	5
	U.C. Santa Barbara	4
Ventura	Vandenberg AFB	1
	CDPH Volunteer (<i>Fred Burgess</i>)	2
	Channel Islands National Marine Sanctuary	4
Los Angeles	Catalina Island Marine Institute	1
	City of Los Angeles Environmental Monitoring Div.	3
	Los Angeles County Sanitation District	3
	Southern California Marine Institute	1
Orange	Ocean Institute	2
San Diego	Scripps Institute of Oceanography	4

PHYTOPLANKTON GALLERY



The diatom *Eucampia* was present in samples from a variety of locations.



The diatom *Ditylum* has been present in small numbers at a number of locations.



The ubiquitous diatom *Chaetoceros* has been the most common species observed along the coast.