

# BIOTOXIN QUARTERLY REPORT

## April - June 2001



### BIOTOXIN SUMMARY

The enclosed reports (No. 01-13 through 01-18) provide a summary of biotoxin activity and toxigenic phytoplankton distribution for the months of April through June 2001.

*April* – There were low numbers of *Pseudo-nitzschia* observed at a number of locations along most of the California coast, with increasing abundances along Santa Barbara. *Alexandrium* was only detected in one sample from offshore of Los Angeles.

*May* – *Alexandrium* was observed along the Marin coast for the first time this year, although there was no measurable PSP toxicity in shellfish from the region. Because of the increased abundance of *Pseudo-nitzschia* over the past month along the Santa Barbara coast shellfish samples were analyzed for domoic acid. All samples were absent of detectable levels.

*June* – There was a dramatic increase along the Santa Barbara and San Luis Obispo coasts. Mussels, rock crab, and anchovies collected along the San Luis

Obispo coast were found to be absent of domoic acid.

*Alexandrium* was present along the coast of Humboldt, Marin, and Santa Cruz Counties. No PSP toxicity was detected in shellfish from these areas.



### QUARANTINES

The annual quarantine on sport-harvested mussels began as scheduled on May 1 and will extend through midnight on October 31. This quarantine applies only to sport-harvested mussels along the entire California coastline, including all bays and estuaries.



### How to Contact Us:

*The Biotoxin Quarterly Report is prepared and distributed by the California Department of Health Services' Marine Biotoxin Monitoring and Control Program.*

*For information on our program please call (510) 540-3423, fax us at (510) 540-2716, or send an email to [glangloi@ix.netcom.com](mailto:glangloi@ix.netcom.com).*

*Call our toll-free number for recorded information on shellfish quarantines related to marine biotoxins: (800) 553-4133.*

### EMAIL BIOTOXIN UPDATES

The Marine Biotoxin Monitoring Program is planning on initiating a weekly or bi-weekly update via email. If you are interested in receiving this brief summary of recent biotoxin and phytoplankton data please send us a quick email or call so that we can add you to the distribution list.

We will continue to produce and distribute either monthly or quarterly reports and would like to distribute these via email as an Adobe Acrobat file. Doing so would greatly reduce the costs associated with producing and distributing this report. Contact us if you would like to begin receiving this report via email; the file size is approximately 1.2 megabytes.

As I mentioned in the last quarterly report, the tremendous assistance provided by all of the people listed in the tables of this report have us struggling to keep pace with our reporting. As we have made efforts to improve the appearance and content of our reports, experimenting with more efficient ways to manage and display our data, we have experienced unfortunate delays in getting this information to you. We hope to remedy this situation soon and thank you for your patience!

*Gregg Langlois*

To subscribe please send a brief request to [glangloi@ix.netcom.com](mailto:glangloi@ix.netcom.com).

**Table 1.** California Marine Biotoxin Monitoring and Control Program participants submitting shellfish samples during April 2001.

<b>COUNTY</b>	<b>AGENCY</b>	<b>SAMPLES</b>
<b>Del Norte</b>	Del Norte County Health Department	1
<b>Humboldt</b>	Coast Seafood Company	4
<b>Mendocino</b>	None Submitted	
<b>Sonoma</b>	California Department of Parks and Recreation	4
<b>Marin</b>	Cove Mussel Company	1
	CDHS Marine Biotoxin Program	2
	Hog Island Oyster Company	2
	Johnson Oyster Company	16
	Marin Oyster Company	4
<b>San Francisco</b>	San Francisco County Health Department	1
<b>San Mateo</b>	San Mateo County Environmental Health Department	2
<b>Santa Cruz</b>	None Submitted	
<b>Monterey</b>	None Submitted	
<b>San Luis Obispo</b>	Williams Shellfish Company	10
<b>Santa Barbara</b>	U.C. Santa Barbara Marine Science Institute	4
	California Department of Parks and Recreation	1
<b>Ventura</b>	Ventura County Environmental Health Department	1
<b>Los Angeles</b>	Los Angeles County Health Department	1
<b>Orange</b>	Orange County Health Care Agency	1
	Ecomar, Inc.	2
<b>San Diego</b>	Carlsbad Aquafarms, Inc.	3
	CDHS Volunteer (Paul Sims)	1

**Table 2.** Agencies and organizations participating in marine phytoplankton sample collection in California during April 2001.

<b>COUNTY</b>	<b>AGENCY</b>	<b>SAMPLES</b>
<b>Del Norte</b>	None Submitted	
<b>Humboldt</b>	Coast Seafood Company	4
	Arcata High School	4
<b>Mendocino</b>	CDHS Volunteer (Amy Johnson, Jim Wesley)	4
<b>Sonoma</b>	CDHS Marine Biotoxin Program	1
	Bodega Marine Lab	2
<b>Marin</b>	CDHS Volunteer (Brent Anderson, Richard Plant, Cal Strobel)	11
	CDHS Marine Biotoxin Program	1
	Johnson Oyster Company	16
<b>Alameda</b>	None Submitted	
<b>San Francisco</b>	CDHS Volunteer (Eugenia McNaughton)	5
<b>San Mateo</b>	San Mateo County Environmental Health Department	1
<b>Santa Cruz</b>	Aptos High School	1
	Santa Cruz County Environmental Health Department	3
<b>Monterey</b>	CDHS Volunteer (Lisa Marrack)	1
<b>San Luis Obispo</b>	CDHS Volunteer (Renee and Auburn Atkins)	3
	CDHS Marine Biotoxin Program	2
	Tenera Environmental	2
<b>Santa Barbara</b>	U.C. Santa Barbara Marine Sciences	4
	California Department of Parks and Recreation	2
<b>Ventura</b>	California Department of Parks and Recreation	1
<b>Los Angeles</b>	Los Angeles County Sanitation District	3
	Catalina Island Marine Institute	4
	Roundhouse Lab and Aquarium	2
<b>Orange</b>	Orange County Sanitation District.	4
	Ecomar, Inc.	2
<b>San Diego</b>	CDHS Volunteers (Randy and Bill Dick, Kai Schumann)	5
	San Diego County Environmental Health Department	3

**Table 3.** California Marine Biotoxin Monitoring and Control Program participants submitting shellfish samples during May 2001.

<b>COUNTY</b>	<b>AGENCY</b>	<b>SAMPLES</b>
<b>Del Norte</b>	Del Norte County Health Department	2
<b>Humboldt</b>	Coast Seafood Company	5
<b>Mendocino</b>	None Submitted	
<b>Sonoma</b>	Sonoma County Public Health Department	2
<b>Marin</b>	Cove Mussel Company	4
	CDHS Marine Biotoxin Program	2
	Hog Island Oyster Company	3
	Johnson Oyster Company	20
	Marin Oyster Company	5
<b>San Francisco</b>	San Francisco County Health Department	2
<b>San Mateo</b>	San Mateo County Environmental Health Department	2
<b>Santa Cruz</b>	Santa Cruz County Environmental Health Department	2
<b>Monterey</b>	None Submitted	
<b>San Luis Obispo</b>	Williams Shellfish Company	8
	San Luis Obispo County Environmental Health Department	2
<b>Santa Barbara</b>	U.C. Santa Barbara Marine Science Institute	5
	Vandenberg Air Force Base, Environmental Health Services	1
<b>Ventura</b>	Ventura County Health Department	1
<b>Los Angeles</b>	Los Angeles County Health Department	3
<b>Orange</b>	Orange County Health Care Agency	1
	Ecomar, Inc.	2
<b>San Diego</b>	Carlsbad Aquafarms, Inc.	5

**Table 4.** Agencies and organizations participating in marine phytoplankton sample collection in California during May 2001.

COUNTY	AGENCY	SAMPLES
<b>Del Norte</b>	None Submitted	
<b>Humboldt</b>	Coast Seafood Company	4
	Arcata High School	2
<b>Mendocino</b>	CDHS Volunteer (Amy Johnson, Paul Lobell)	3
<b>Sonoma</b>	CDHS Volunteer (Cathleen Cannon)	1
	CDHS Marine Biotoxin Program	1
<b>Marin</b>	CDHS Volunteer (Brent Anderson, Richard Plant, Cal Strobel)	12
	CDHS Marine Biotoxin Program	3
	Johnson Oyster Company	20
<b>Alameda</b>	City of Berkeley, Shorebird Nature Center	2
<b>San Francisco</b>	CDHS Volunteer (Eugenia McNaughton)	3
<b>San Mateo</b>	San Mateo County Environmental Health Department	1
<b>Santa Cruz</b>	Aptos High School	1
	Pacific Cetacean Group	1
	Santa Cruz County Environmental Health Department	4
<b>Monterey</b>	University of California Reserve System	1
<b>San Luis Obispo</b>	CDHS Volunteer (Renee and Auburn Atkins, Bill Schwebel)	3
<b>Santa Barbara</b>	U.C. Santa Barbara Marine Sciences	6
	California Department of Parks and Recreation	1
<b>Ventura</b>	California Department of Parks and Recreation	4
<b>Los Angeles</b>	Los Angeles County Sanitation District	5
	Los Angeles County Health Department	2
	City of Los Angeles Environmental Monitoring Division	3
	Roundhouse Lab and Aquarium	1
<b>Orange</b>	None Submitted	
<b>San Diego</b>	CDHS Volunteers (Kai Schumann, Jeff Kermode, Rachel Woodfield)	5
	San Diego County Environmental Health Department	2

**Table 5.** California Marine Biotoxin Monitoring and Control Program participants submitting shellfish samples during June 2001.

<b>COUNTY</b>	<b>AGENCY</b>	<b>SAMPLES</b>
<b>Del Norte</b>	Del Norte County Health Department	1
<b>Humboldt</b>	Coast Seafood Company	4
	Humboldt County Environmental Health Department	1
<b>Mendocino</b>	None Submitted	
<b>Sonoma</b>	California Department of Parks and Recreation	1
	Sonoma County Public Health Department	3
<b>Marin</b>	Cove Mussel Company	3
	CDHS Marine Biotoxin Program	2
	Hog Island Oyster Company	3
	Johnson Oyster Company	16
	Marin Oyster Company	4
<b>San Francisco</b>	San Francisco County Health Department	2
<b>San Mateo</b>	San Mateo County Environmental Health Department	2
<b>Santa Cruz</b>	Santa Cruz County Environmental Health Department	2
	University of California at Santa Cruz	1
<b>Monterey</b>	None Submitted	
<b>San Luis Obispo</b>	Williams Shellfish Company	8
	San Luis Obispo County Environmental Health Department	1
	CDHS Marine Biotoxin Program	2
<b>Santa Barbara</b>	U.C. Santa Barbara Marine Science Institute	4
	Vandenberg Air Force Base, Environmental Health Services	1
<b>Ventura</b>	Ventura County Environmental Health Department	1
<b>Los Angeles</b>	Los Angeles County Health Department	1
<b>Orange</b>	Orange County Health Care Agency	1
	Ecomar, Inc.	1
<b>San Diego</b>	Carlsbad Aquafarms, Inc.	2

**Table 6.** Agencies and organizations participating in marine phytoplankton sample collection in California during June 2001.

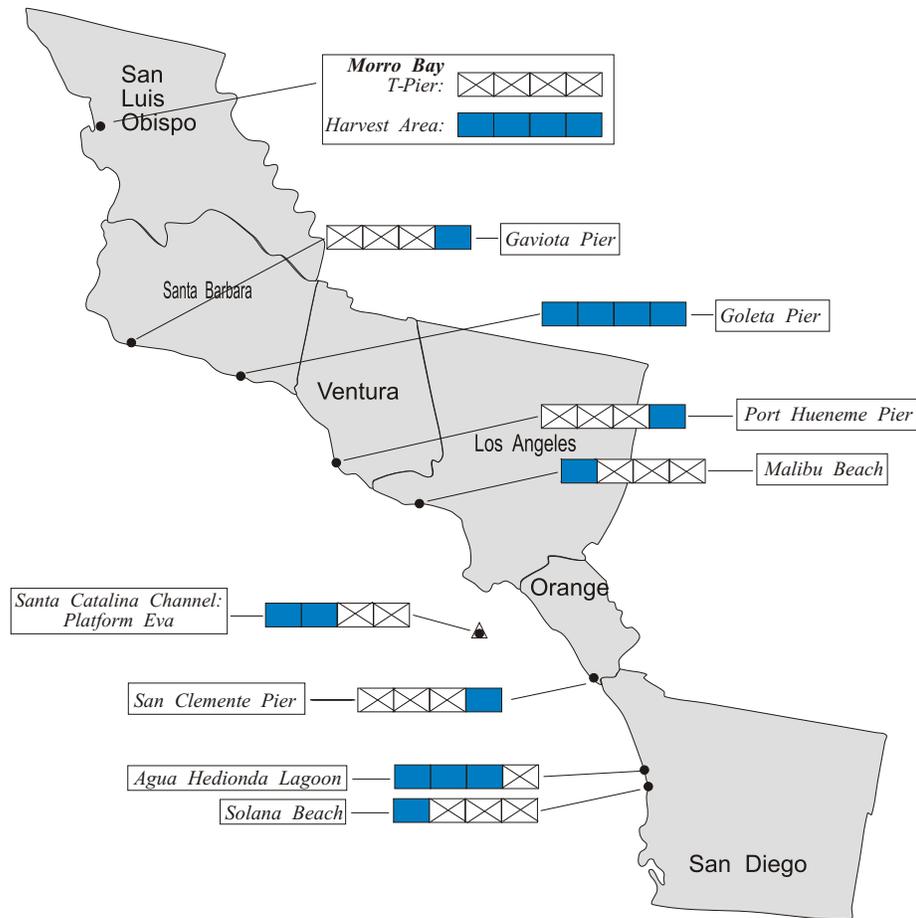
<b>COUNTY</b>	<b>AGENCY</b>	<b>SAMPLES</b>
<b>Del Norte</b>	None Submitted	
<b>Humboldt</b>	Coast Seafood Company	4
	Arcata High School	3
<b>Mendocino</b>	CDHS Volunteer (Paul Lobell, Kim Swenson, Jim Wesley)	4
<b>Sonoma</b>	Bodega Marine Lab	1
	CDHS Volunteer (Cathleen Cannon)	2
	CDHS Marine Biotoxin Program	1
<b>Marin</b>	CDHS Volunteer (Brent Anderson, Linda Judah, Richard Plant, Cal Strobel)	9
	CDHS Marine Biotoxin Program	3
	Johnson Oyster Company	16
<b>Alameda</b>	City of Berkeley, Shorebird Nature Center	1
<b>San Francisco</b>	CDHS Volunteer (Eugenia McNaughton)	3
<b>San Mateo</b>	San Mateo County Environmental Health Department	1
	CDHS Volunteer (Debbie Volturno)	1
<b>Santa Cruz</b>	Santa Cruz County Environmental Health Department	6
	Pacific Cetacean Group	1
<b>Monterey</b>	U.C. Reserve System	1
	Pacific Cetacean Group	2
<b>San Luis Obispo</b>	CDHS Volunteer (Curt Beebe, Bill Schwebel, Ernie Lowry)	5
	CDHS Marine Biotoxin Program	11
<b>Santa Barbara</b>	California Department of Parks and Recreation	2
	U.C. Santa Barbara Marine Sciences	4
	Vandenberg Air Force Base, Environmental Health Services	2
	CDHS Marine Biotoxin Program	1
<b>Ventura</b>	California Department of Parks and Recreation	3
<b>Los Angeles</b>	Los Angeles County Sanitation District	4
	Roundhouse Lab and Aquarium	1
<b>Orange</b>	Orange County Sanitation District	3
	Ecomar, Inc.	3
<b>San Diego</b>	CDHS Volunteer (Kai Schumann, Jeff Kermodé, Rachel Woodfield)	4
	San Diego County Environmental Health Department	3

# SHELLFISH BIOTOXIN MONTHLY REPORT

April 2001

Technical Report No. 01-13

## Distribution of Shellfish Biotoxins Southern California



### KEY FOR SHELLFISH BIOTOXIN DATA

Week: 1 2 3 4

**PSP Range:** (ug/100 g)  
 no sample not detected < 80<sup>1</sup> ≥ 80

**DA Range:** (ppm)  
 no sample not detected < 20<sup>2</sup> ≥ 20

<sup>1</sup>PSP Alert Level    <sup>2</sup>DA Alert Level  
 ● = Single Site    ● = Multiple Sites    ▲ = Offshore Site

Source: DHS Marine Biotoxin Monitoring and Control Program, April 2001.

### INTRODUCTION:

Please note the following conventions: (i) All data are for mussel samples, unless otherwise noted; (ii) All samples are analyzed for PSP toxins; domoic acid (DA) analyses are performed as needed (i.e., on the basis of detected blooms of the diatoms that produce DA). Please refer to the figure key for an explanation of the symbols used for the time of month of sample collection and the toxicity range.

### Southern California Summary:

**Paralytic Shellfish Poisoning (PSP):** PSP toxins were not detected in shellfish samples from southern California sites in April.

*For Information on our Volunteer Field Sampling Program Please Call:*

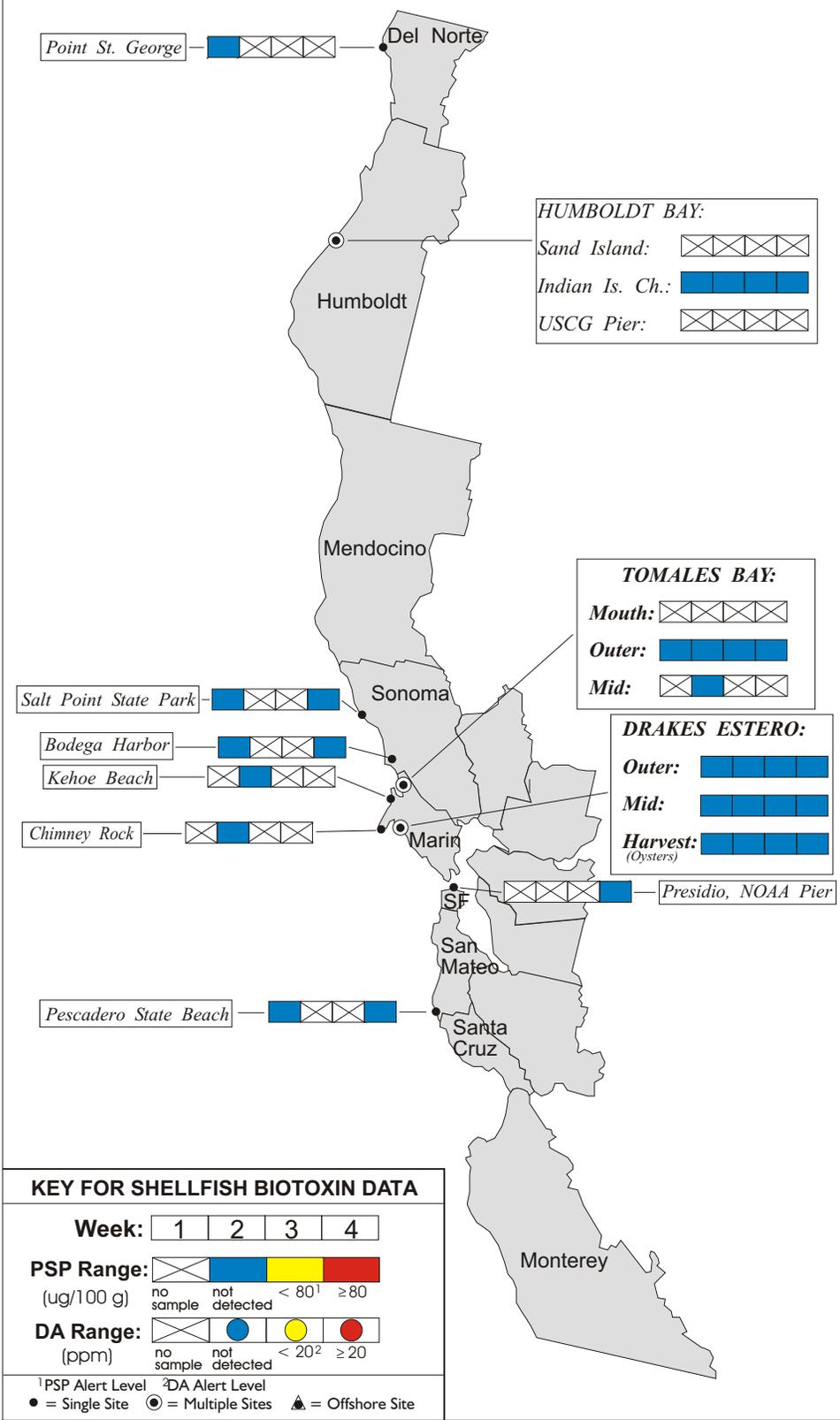
**(510) 540-3423**

# Distribution of Shellfish Biotoxins Northern California

## Northern California Summary:

### Paralytic Shellfish Poisoning (PSP):

PSP toxicity was not detected at any northern California site during April.



*The Marine Biotoxin Monitoring and Control Program 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.*

*For More Information Please Call:  
(510) 540 - 3423*

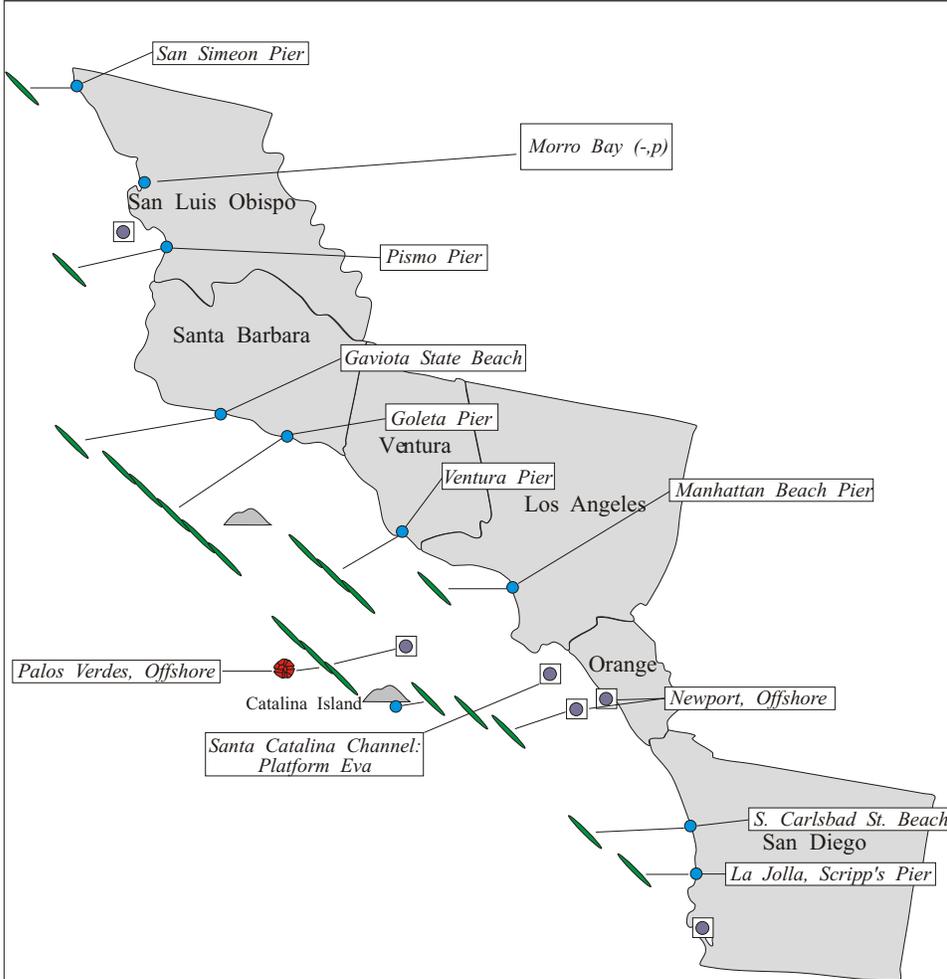
*For Recorded Biotoxin Information Call:  
(800) 553 - 4133*

# Phytoplankton Monthly Report

April 2001

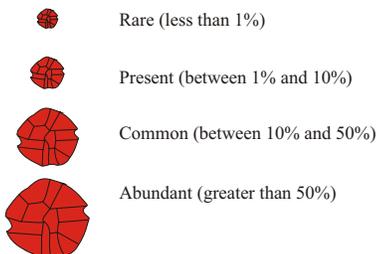
Technical Report No. 01-14

## Distribution of Toxin-Producing Phytoplankton Southern California

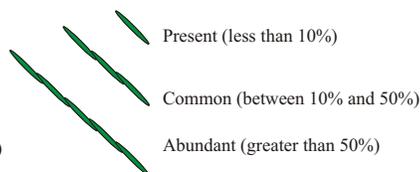


### Relative Abundance of Known Toxin Producers

#### Alexandrium Species



#### Pseudo-nitzschia Species



#### 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

### Southern California Summary:

*Alexandrium catenella* (Dinoflagellate that produces paralytic shellfish poisoning (PSP) toxins). Low numbers of *Alexandrium* were observed at only one southern California location, offshore of Palos Verdes, during April.

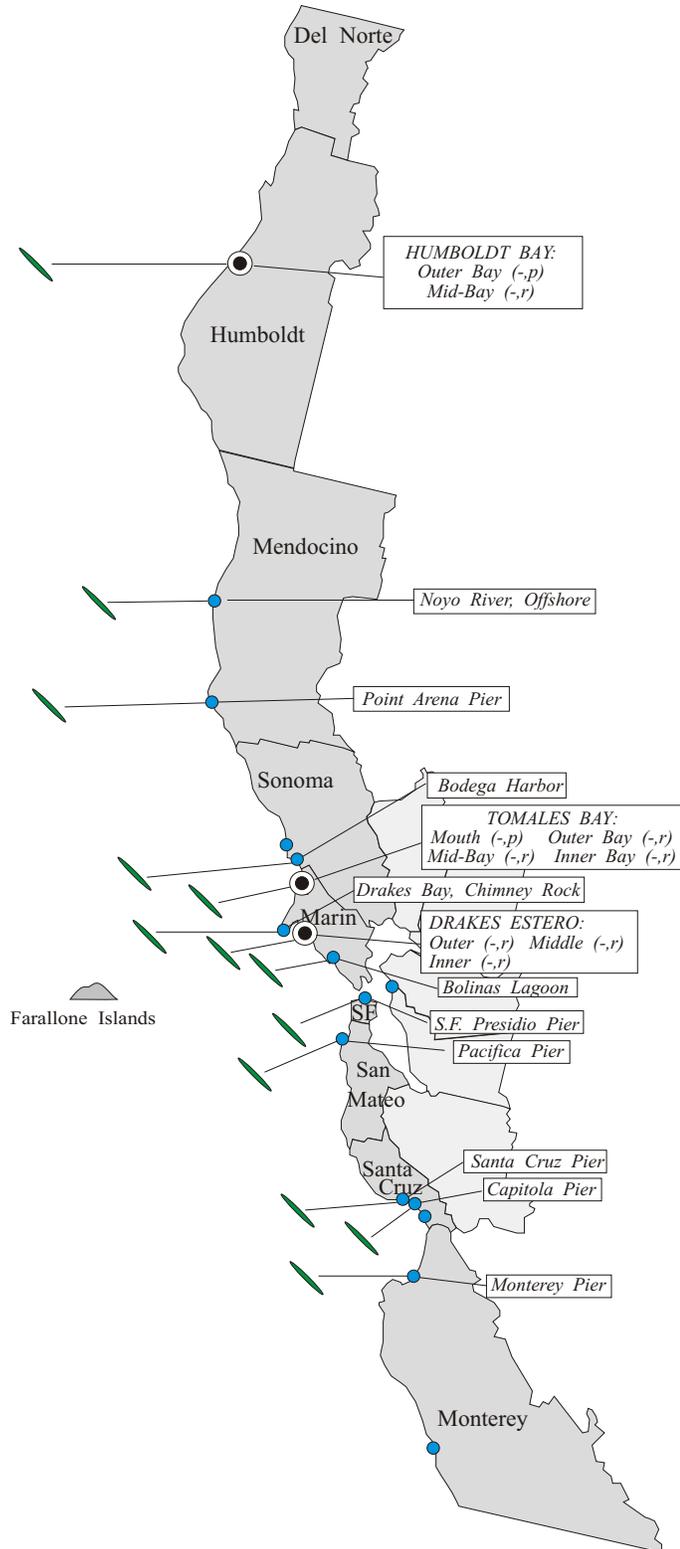
*Pseudo-nitzschia* species (includes all known potential domoic acid producing diatoms). *Pseudo-nitzschia* was observed along most southern California coastal counties in April. The relative abundance of this diatom increased throughout the month from rare to abundant at Goleta Pier (Santa Barbara County).

*The Phytoplankton Monitoring Program, managed by the California Department of Health Services, is a state-wide program designed to detect toxin producing species of phytoplankton in ocean water before they impact California's valuable shellfish resources or become a threat to consumer safety.*

*For More Information Please Call:  
(510) 540 - 3423*

*For Recorded Biotoxin Information Call:  
(800) 553 - 4133*

# Distribution of Toxin-Producing Phytoplankton Northern California



## Northern California Summary:

*Alexandrium catenella* (Dinoflagellate that produces paralytic shellfish poisoning (PSP) toxins). *Alexandrium* was not observed along the northern California coast during April.

*Pseudo-nitzschia species* (includes all known potential domoic acid producing diatoms). Low numbers of *Pseudo-nitzschia* were observed at most sampling locations along the northern California coast in April.

The Phytoplankton Monitoring Program, managed by the California Department of Health Services, is a state-wide program designed to detect toxin producing species of phytoplankton in ocean water before they impact California's valuable shellfish resources or become a threat to consumer safety.

For More Information Please Call:  
(510) 540 - 3423

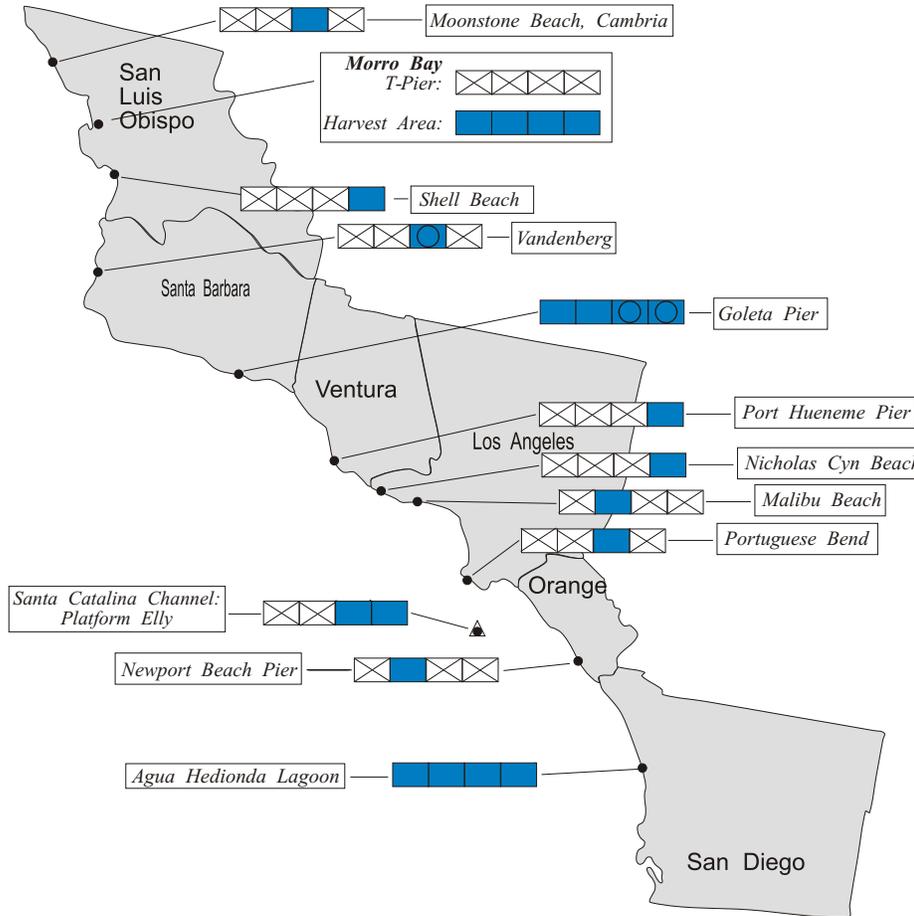
For Recorded Biotoxin Information Call:  
(800) 553 - 4133

# SHELLFISH BIOTOXIN MONTHLY REPORT

May 2001

Technical Report No. 01-15

## Distribution of Shellfish Biotoxins Southern California



### KEY FOR SHELLFISH BIOTOXIN DATA

Week:	1	2	3	4
PSP Range: (ug/100 g)	no sample	not detected	< 80 <sup>1</sup>	≥ 80
DA Range: (ppm)	no sample	not detected	< 20 <sup>2</sup>	≥ 20
<sup>1</sup> PSP Alert Level	<sup>2</sup> DA Alert Level			
● = Single Site	⊙ = Multiple Sites	▲ = Offshore Site		

Source: DHS Marine Biotoxin Monitoring and Control Program, May 2001.

### INTRODUCTION:

Please note the following conventions: (i) All data are for mussel samples, unless otherwise noted; (ii) All samples are analyzed for PSP toxins; domoic acid (DA) analyses are performed as needed (i.e., on the basis of detected blooms of the diatoms that produce DA). Please refer to the figure key for an explanation of the symbols used for the time of month of sample collection and the toxicity range.

### Southern California Summary:

**Paralytic Shellfish Poisoning (PSP):** PSP toxins were not detected in shellfish samples from southern California sites in May.

### Domoic Acid (DA):

Samples from two sites were analyzed for the presence of domoic acid due to observations of increased *Pseudo-nitzschia* in this region. All samples were absent of DA.

*For Information on our Volunteer Field Sampling Program Please Call:*

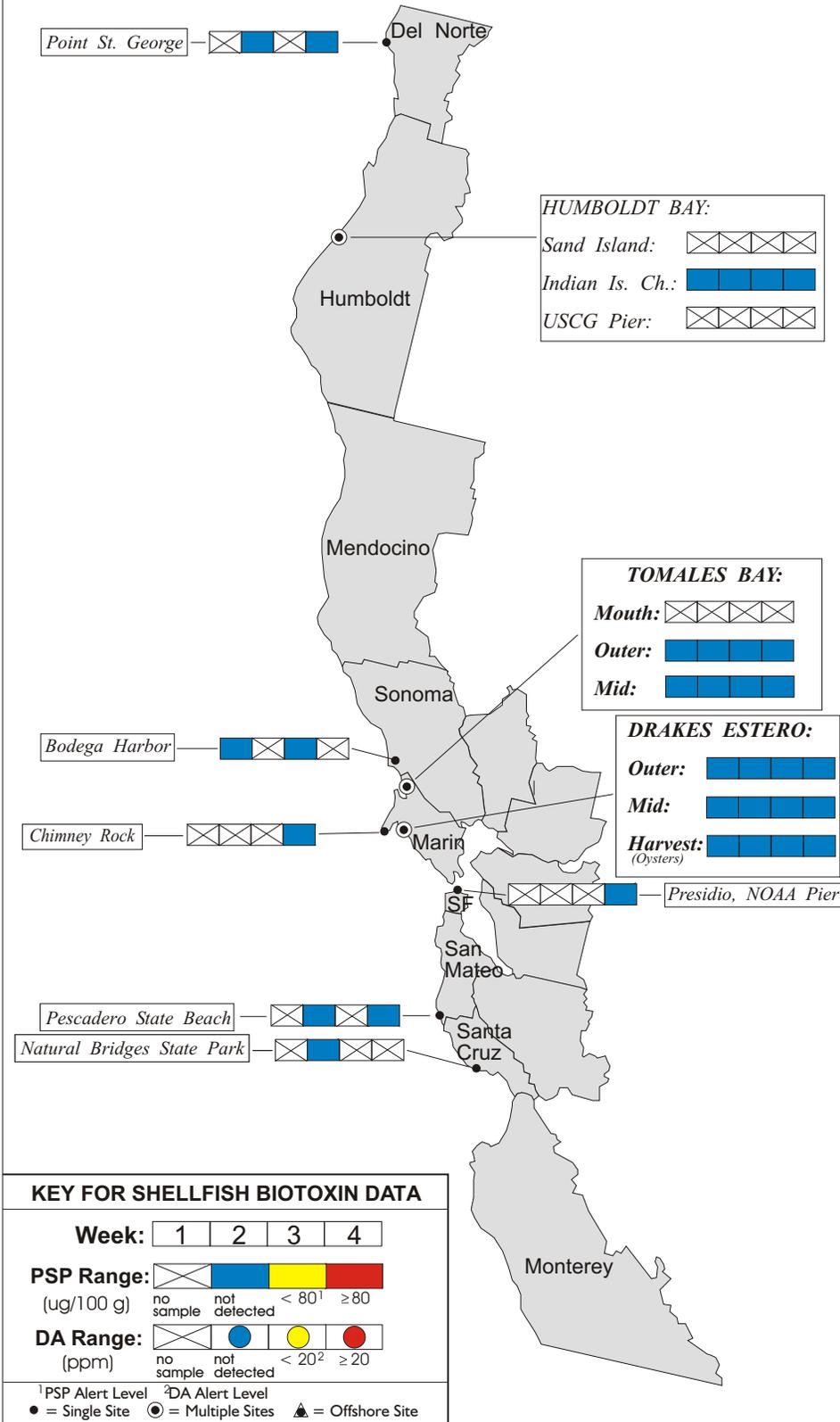
**(510) 540-3423**

# Distribution of Shellfish Biotoxins Northern California

## Northern California Summary:

### Paralytic Shellfish Poisoning (PSP):

PSP toxicity was not detected at any northern California site during May.



*The Marine Biotoxin Monitoring and Control Program 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.*

*For More Information Please Call:  
(510) 540 - 3423*

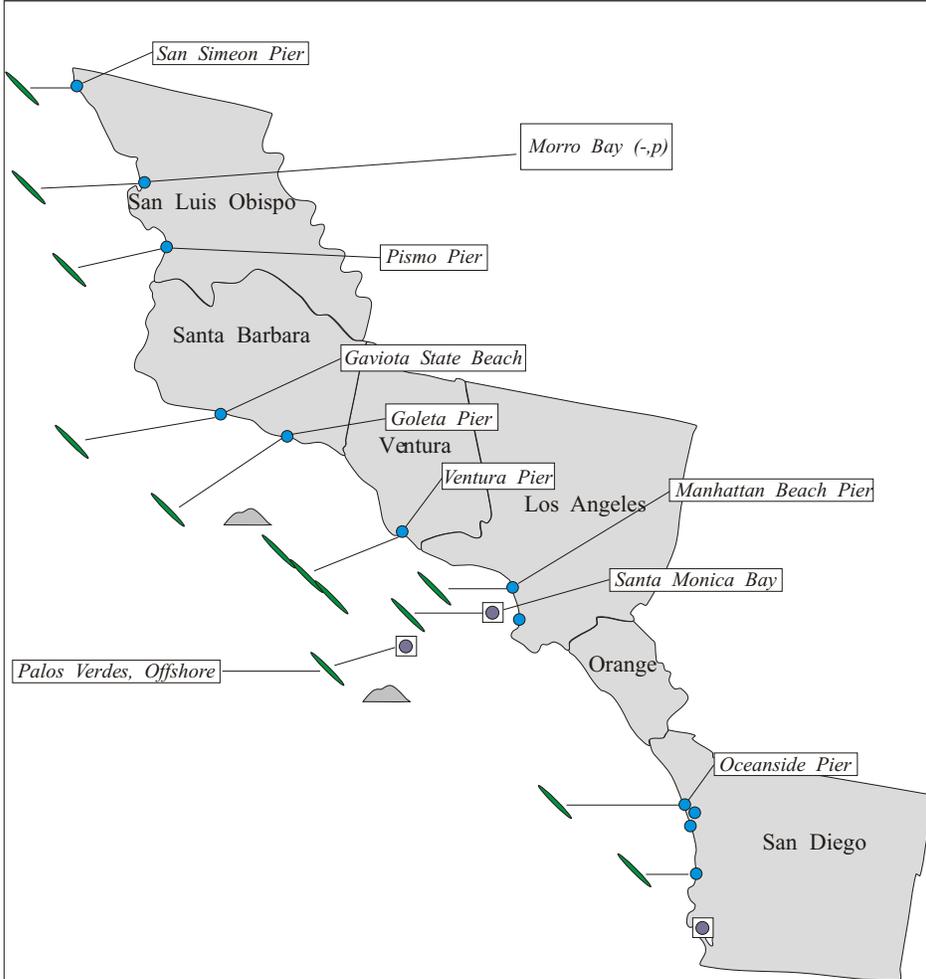
*For Recorded Biotoxin Information Call:  
(800) 553 - 4133*

# Phytoplankton Monthly Report

May 2001

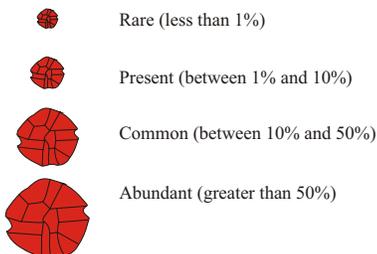
Technical Report No. 01-16

## Distribution of Toxin-Producing Phytoplankton Southern California



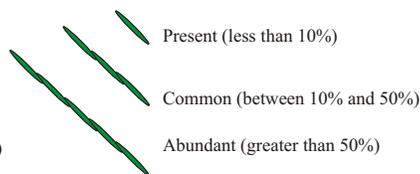
### Relative Abundance of Known Toxin Producers

#### Alexandrium Species



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

#### Pseudo-nitzschia Species



#### MONTHLY SAMPLING STATIONS:

- Single Sampling Station
- ⊙ Multiple Sampling Stations
- ⊠ Offshore Sampling Station

### Southern California Summary:

*Alexandrium catenella* (Dinoflagellate that produces paralytic shellfish poisoning (PSP) toxins). *Alexandrium* was not observed at any southern California location during May.

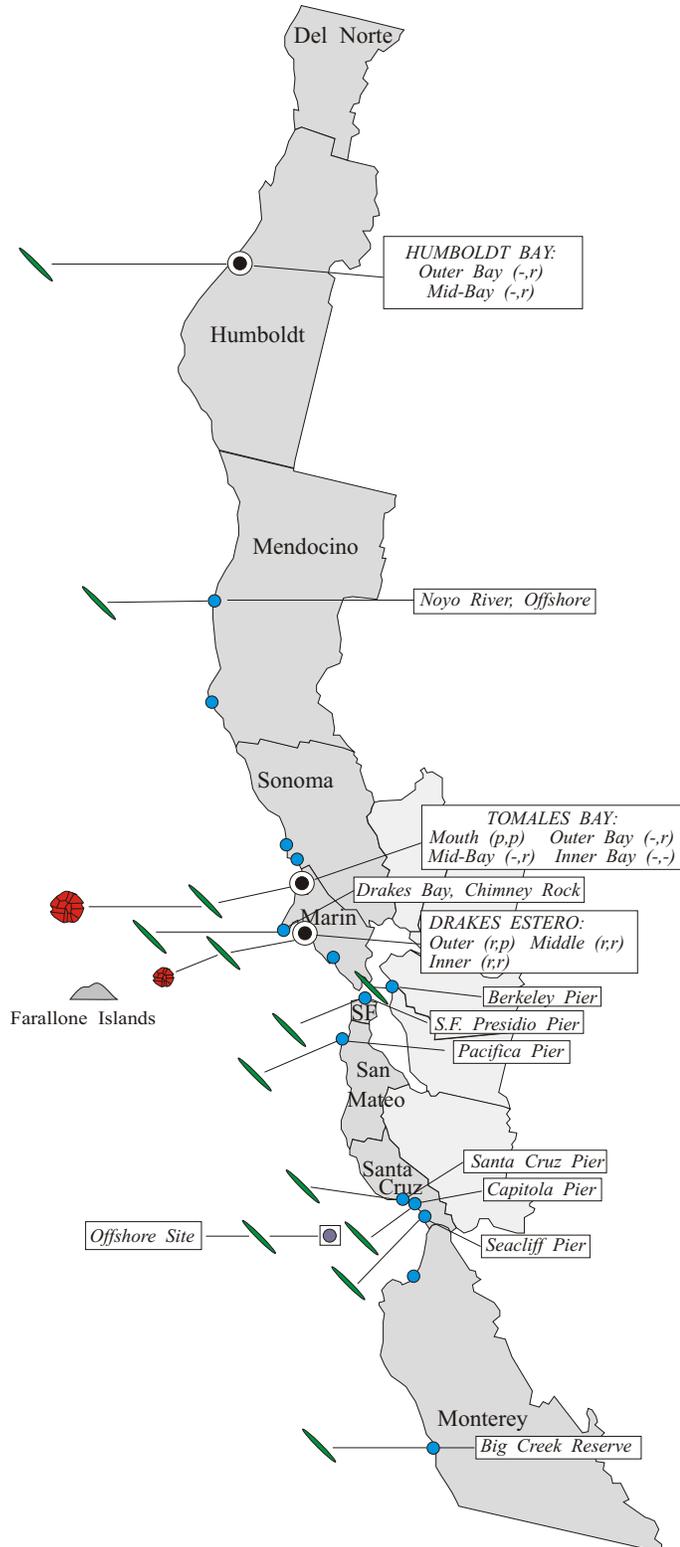
*Pseudo-nitzschia* species (includes all known potential domoic acid producing diatoms). *Pseudo-nitzschia* was observed along most southern California coastal counties in May. The relative abundance of this diatom was low at most sites.

*The Phytoplankton Monitoring Program, managed by the California Department of Health Services, is a state-wide program designed to detect toxin producing species of phytoplankton in ocean water before they impact California's valuable shellfish resources or become a threat to consumer safety.*

*For More Information Please Call:  
(510) 540 - 3423*

*For Recorded Biotoxin Information Call:  
(800) 553 - 4133*

## Distribution of Toxin-Producing Phytoplankton Northern California



### Northern California Summary:

*Alexandrium catenella* (Dinoflagellate that produces paralytic shellfish poisoning (PSP) toxins). *Alexandrium* was observed at two northern California sites, both along the Marin coast, during May.

*Pseudo-nitzschia species* (includes all known potential domoic acid producing diatoms). Low numbers of *Pseudo-nitzschia* were observed at most sampling locations along the northern California coast in May, including a site inside San Francisco Bay.

*The Phytoplankton Monitoring Program, managed by the California Department of Health Services, is a state-wide program designed to detect toxin producing species of phytoplankton in ocean water before they impact California's valuable shellfish resources or become a threat to consumer safety.*

*For More Information Please Call:  
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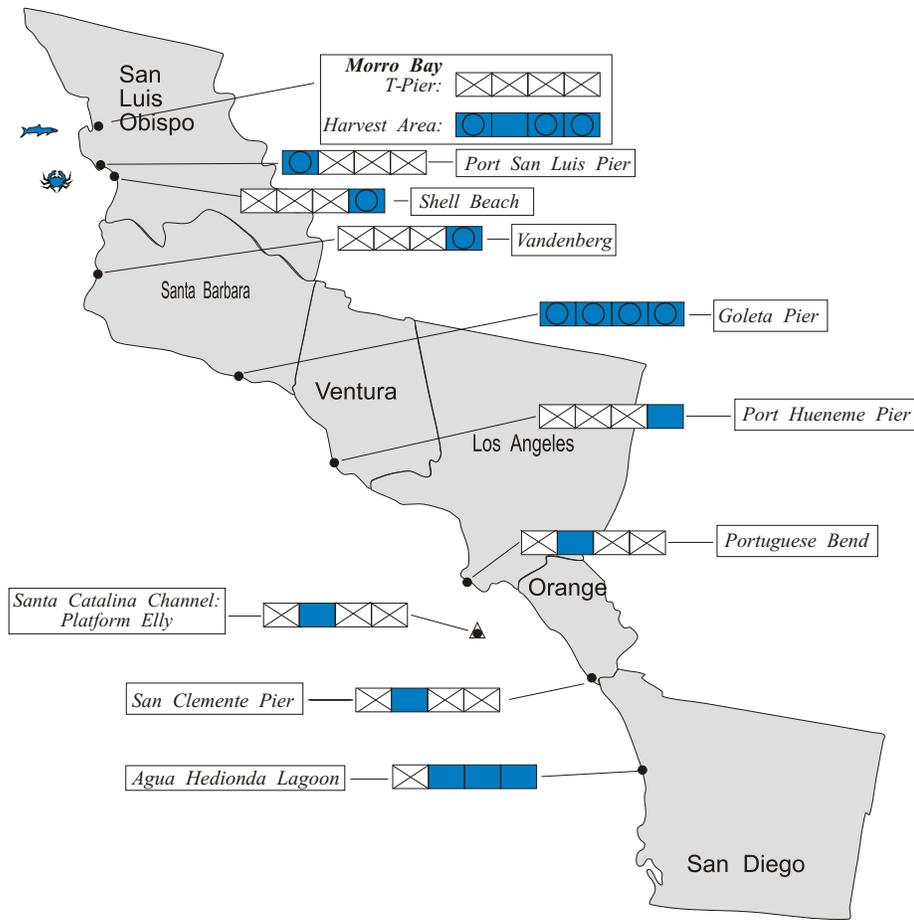
*For Recorded Biotoxin Information Call:  
(800) 553 - 4133*

# SHELLFISH BIOTOXIN MONTHLY REPORT

June 2001

Technical Report No. 01-17

## Distribution of Shellfish Biotoxins Southern California



### INTRODUCTION:

Please note the following conventions: (i) All data are for mussel samples, unless otherwise noted; (ii) All samples are analyzed for PSP toxins; domoic acid (DA) analyses are performed as needed (i.e., on the basis of detected blooms of the diatoms that produce DA). Please refer to the figure key for an explanation of the symbols used for the time of month of sample collection and the toxicity range.

### Southern California Summary:

**Paralytic Shellfish Poisoning (PSP):** PSP toxins were not detected in shellfish samples from southern California sites in June.

### Domoic Acid (DA):

Shellfish, crab and anchovy samples from the San Luis Obispo coast were analyzed for domoic acid as a result of the observed elevated abundance of *Pseudo-nitzschia* in this region. None of the samples analyzed contained detectable levels of DA.

### KEY FOR SHELLFISH BIOTOXIN DATA

Week: 1 2 3 4

**PSP Range:** (ug/100 g)  
 no sample (white box) not detected (blue box) < 80<sup>1</sup> (yellow box) ≥ 80 (red box)

**DA Range:** (ppm)  
 no sample (white box) not detected (blue box) < 20<sup>2</sup> (yellow box) ≥ 20 (red box)

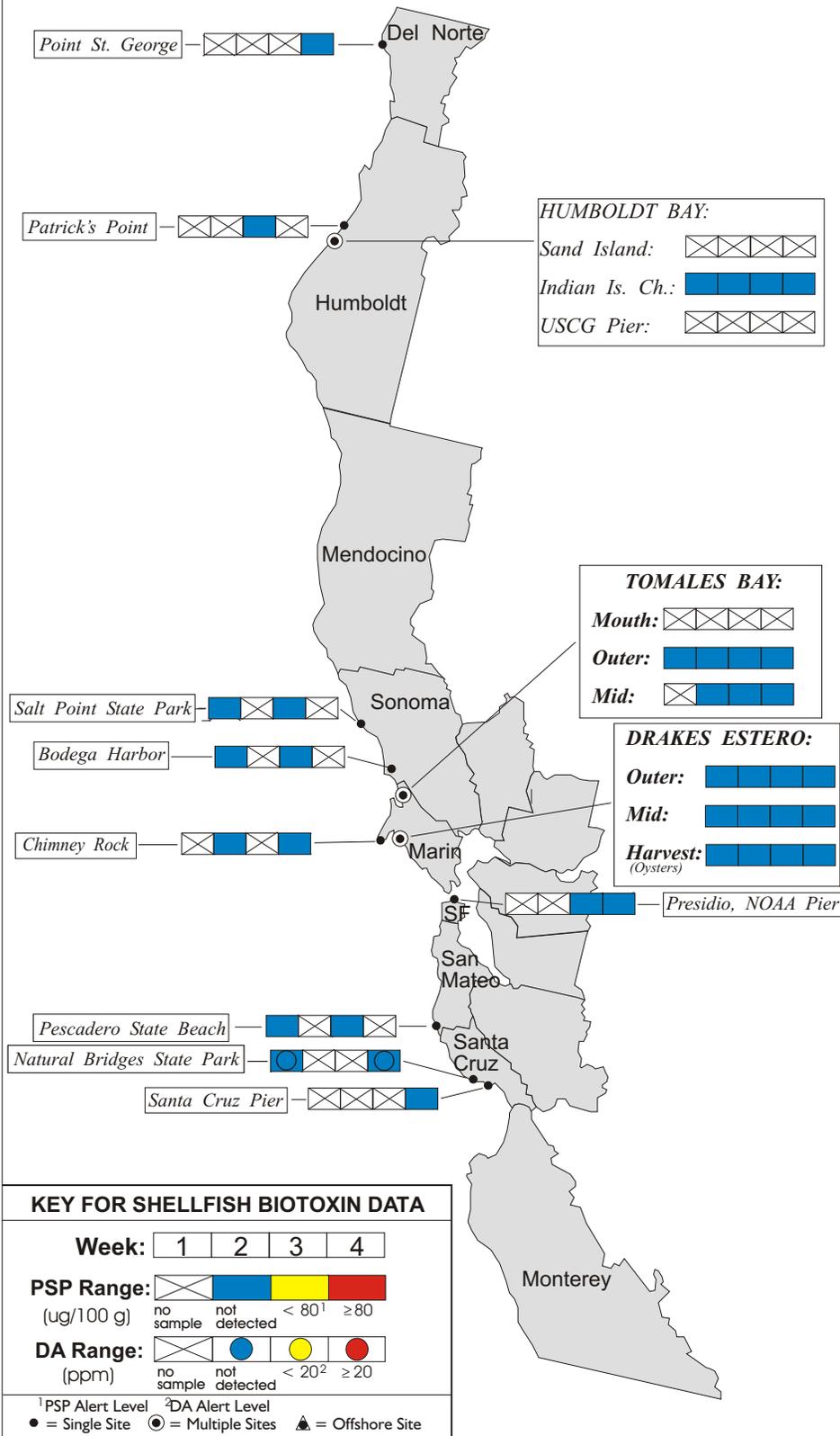
<sup>1</sup>PSP Alert Level    <sup>2</sup>DA Alert Level  
 ● = Single Site    ● = Multiple Sites    ▲ = Offshore Site

Source: DHS Marine Biotoxin Monitoring and Control Program, June 2001.

*For Information on our Volunteer Field Sampling Program Please Call:*

**(510) 540-3423**

# Distribution of Shellfish Biotoxins Northern California



## Northern California Summary:

### Paralytic Shellfish Poisoning (PSP):

PSP toxicity was not detected at any northern California site during June.

### Domoic Acid (DA):

Shellfish samples from the Santa Cruz area were analyzed for domoic acid as a result of the observed elevated abundance of *Pseudo-nitzschia* in Monterey Bay. DA toxicity was not detected in any samples from this area.

The Marine Biotoxin Monitoring and Control Program 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.

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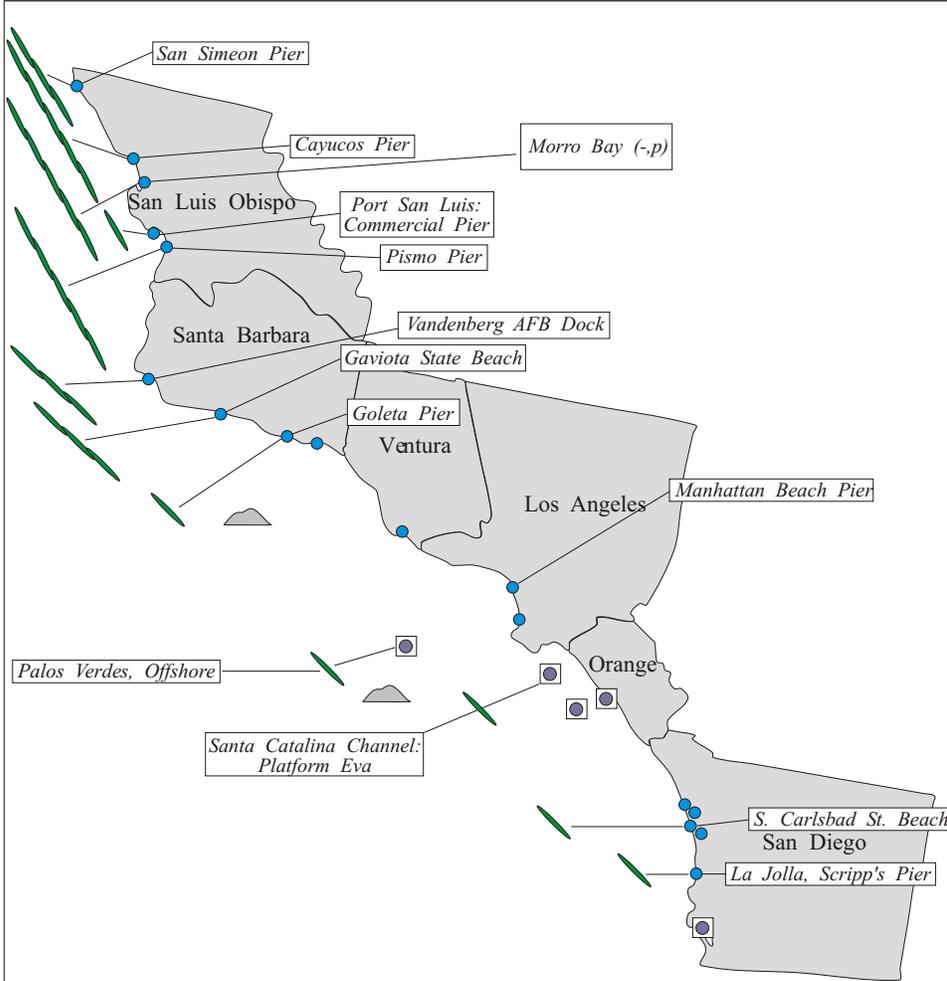
For Recorded Biotoxin Information Call:  
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# Phytoplankton Monthly Report

June 2001

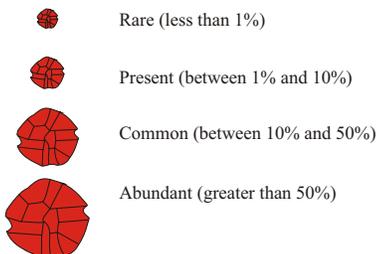
Technical Report No. 01-18

## Distribution of Toxin-Producing Phytoplankton Southern California



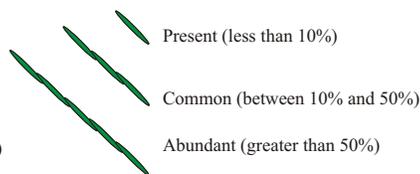
### Relative Abundance of Known Toxin Producers

#### Alexandrium Species



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

#### Pseudo-nitzschia Species



#### MONTHLY SAMPLING STATIONS:

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

### Southern California Summary:

*Alexandrium catenella* (Dinoflagellate that produces paralytic shellfish poisoning (PSP) toxins). *Alexandrium* was not observed at any southern California location during June.

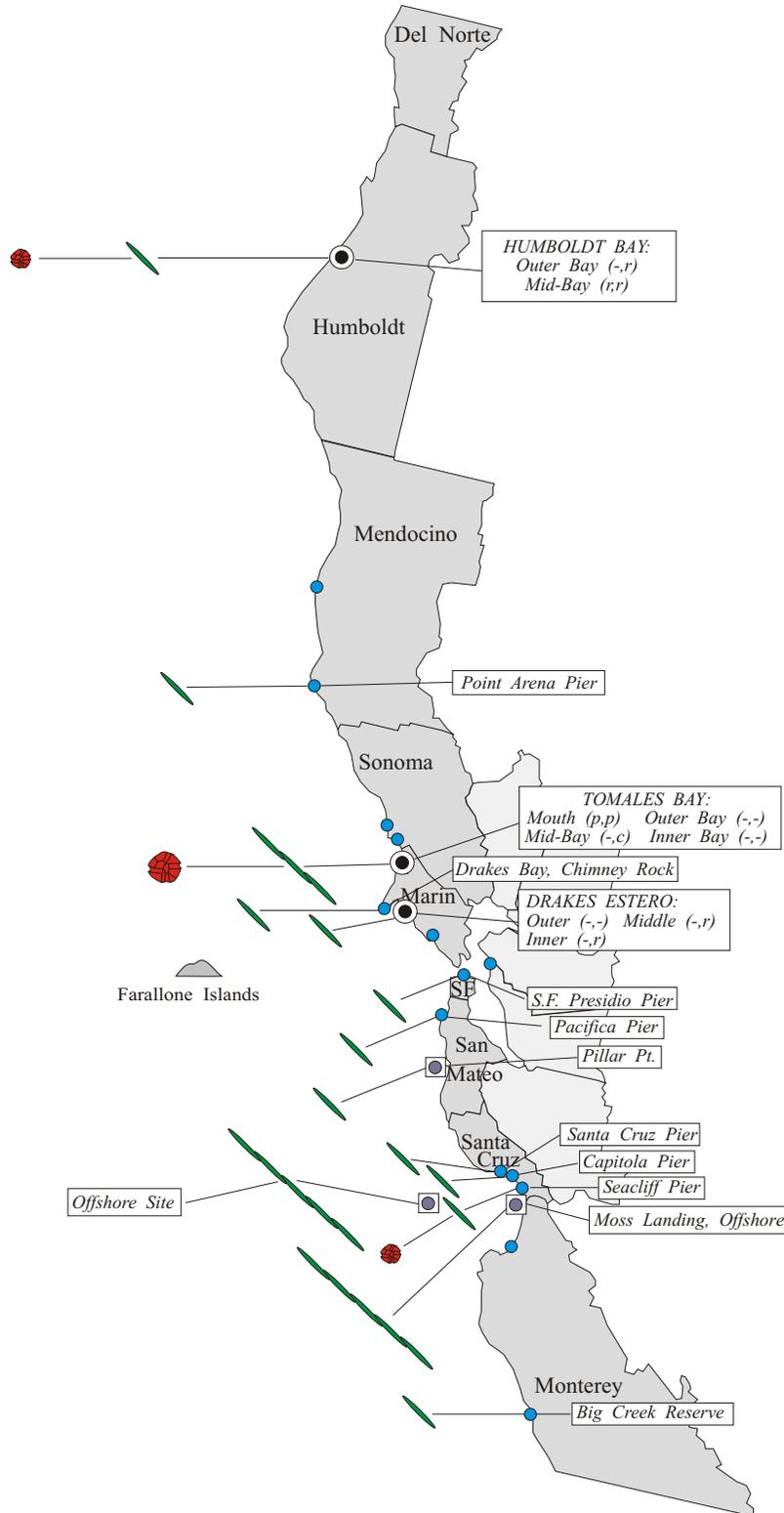
*Pseudo-nitzschia* species (includes all known potential domoic acid producing diatoms). *Pseudo-nitzschia* numbers increased dramatically from Gaviota Pier (Santa Barbara) northward to San Simeon (San Luis Obispo). The cell densities and relative abundance of this diatom was greatest along the northern half of San Luis Obispo County. Conversely, *Pseudo-nitzschia* appeared to be declining along the more southern counties (Ventura to San Diego).

*The Phytoplankton Monitoring Program, managed by the California Department of Health Services, is a state-wide program designed to detect toxin producing species of phytoplankton in ocean water before they impact California's valuable shellfish resources or become a threat to consumer safety.*

*For More Information Please Call:  
(510) 540 - 3423*

*For Recorded Biotoxin Information Call:  
(800) 553 - 4133*

## Distribution of Toxin-Producing Phytoplankton Northern California



### Northern California Summary:

*Alexandrium catenella* (Dinoflagellate that produces paralytic shellfish poisoning (PSP) toxins). *Alexandrium* was observed at three northern California sites during June. Low numbers were observed inside Humboldt Bay, at the mouth of Tomales Bay (Marin), and at Seacliff Pier (Santa Cruz).

*Pseudo-nitzschia species* (includes all known potential domoic acid producing diatoms). Low numbers of *Pseudo-nitzschia* were observed at most sampling locations along the northern California coast in June. High relative abundances were observed at two offshore sampling locations in Monterey Bay.

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