

**Cruise Plan**  
**1999 Regional Monitoring Program**  
**Bivalve Deployment Cruise #21**  
**June 2-4, 1999**

**Objectives**

The objectives of this cruise are:

- 1) Collect *Mytilus californianus* from Bodega Head and deploy them at 12 sites; obtain *Mytilus edulis* from Tomales Bay and deploy them at 12 sites; and obtain *Crassostrea gigas* from Tomales Bay and deploy them at six sites.
- 2) Re-install thermosalinograph at the Napa River bivalve mooring.
- 3) Replace bivalve mooring at Redwood Creek.
- 4) Select a new mooring site for Dumbarton Bridge and install new bivalve mooring.

**Personnel**

The personnel and work assignments for this cruise are as follows:

<i>Name</i>	<i>Affiliation</i>	<i>Duties</i>	<i>Contact</i>
David Bell	AMS	Cruise Manager, Dive Master	bell@amarine.com
Jordan Gold	AMS	Diver	gold@amarine.com
Dave Morgan	Romberg Tiburon Centers	Vessel Skipper	cptdavid@aol.com
Paul Salop	AMS	Diver	salop@amarine.com

Mr. Bell will be responsible for scientific operations and diver safety. Mr. Morgan will be responsible for vessel operation and safety on June 3-4. Messrs. Gold and Salop will alternate dive duties. Mr. Gold will be responsible for vessel operation and safety on June 2.

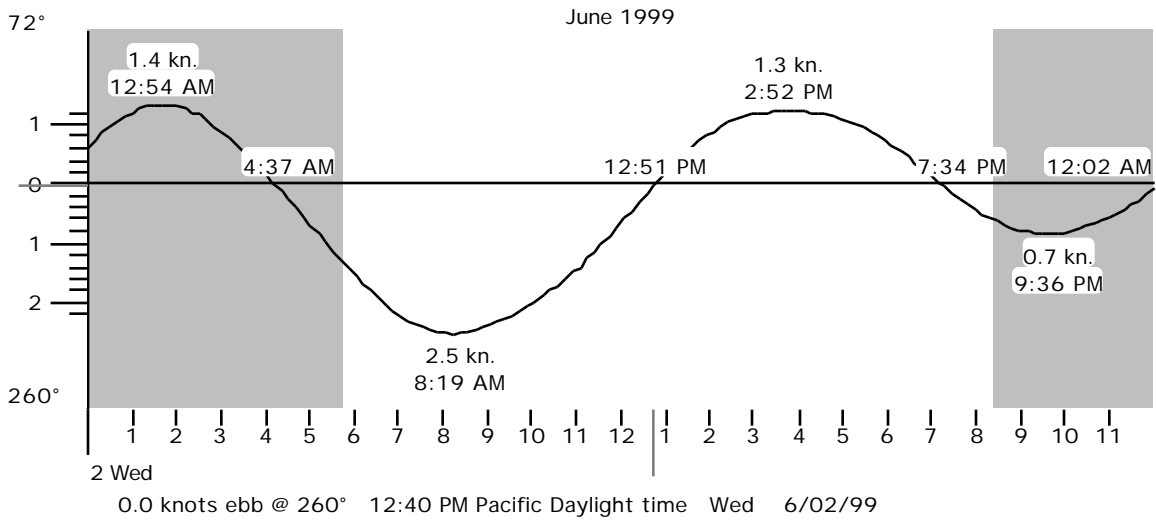
**Cruise Schedule**

This cruise schedule assumes that approximately 0.5 hour will be required for deployment operations at each site.

<u>Date</u>	<u>Time</u>	<u>Activity</u>
May 19, 1999	1000-1700	Gold and Salop collect <i>M. edulis</i> from Tomales Bay and obtains <i>C. Gigas</i> from Tomales Bay Oyster Company. Bivalves are transferred into mesh bags and placed into holding tanks at Bodega Marine Lab (BML).
May 20	0900-1500	Bell, Gold and Salop collect <i>M. californianus</i> at Bodega Head. Bivalves are transferred into mesh bags and placed into holding tanks at BML.
June 1	1200-1700	Gold picks up bivalves from BML.
June 2	1100-1130	Mobilize gear aboard <i>M.E. II</i> at the Vallejo Marina. Depart for Napa River site (BD50).

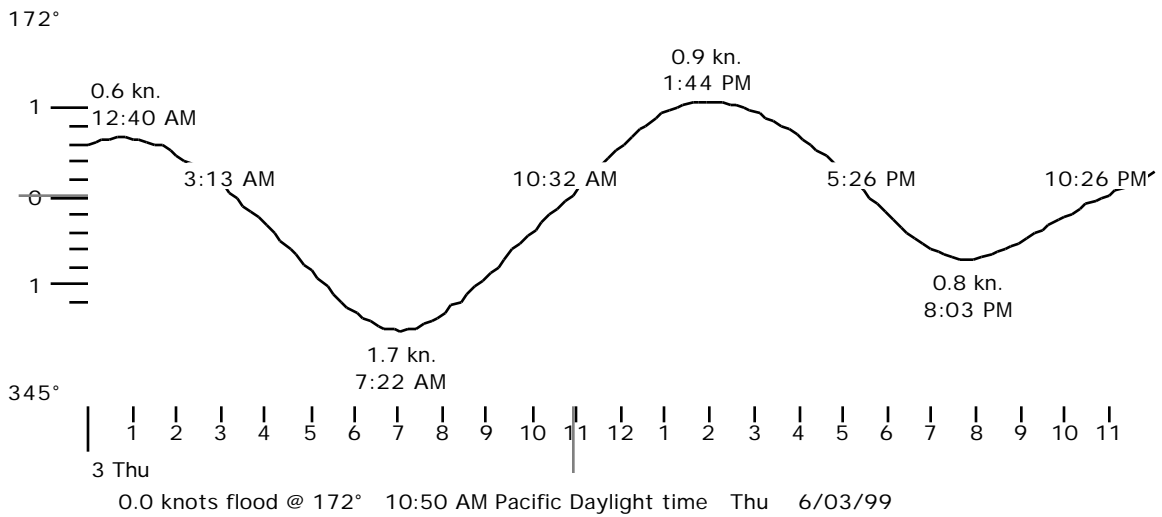
<u>Date</u>	<u>Time</u>	<u>Activity</u>
	1130-1230	Install thermosalinograph and deploy bivalves at Napa River. Depart for Davis Point site (BD40). Slack current at Davis Point is at 1251 (Figure 1).
	1230-1315	Deploy bivalves at Davis Point and return to Vallejo Marina.
	1315-1400	Demobilize gear at Vallejo Marina.
June 3	0700-0730	Mobilize gear aboard <i>R/V Questuary</i> , Emeryville Marina. Depart for Yerba Buena Island Site (BC10).
	0800-0830	Deploy bivalves at Yerba Buena Island, depart for Alameda site (BB71).
	0900-0930	Deploy bivalves at Alameda, depart for Redwood Creek site (BA40).
	1015-1045	Install new mooring and deploy bivalves at Redwood Creek. Slack current at Oyster Point is at 1032 (Figure 2) Depart for Dumbarton Bridge site (BA30).
	1115-1145	Select new mooring site and install bivalve mooring at Dumbarton Bridge. Depart for Coyote Creek site (BA10).
	1230-1315	Deploy bivalves at Coyote Creek. Return to Emeryville Marina.
	1500-1530	Demobilize vessel, refill SCUBA tanks.
June 4	0700-0730	Mobilize gear aboard <i>R/V Questuary</i> , Emeryville Marina. Depart for Horseshoe Bay site (BC21).
	0800-0830	Deploy bivalves at Horseshoe Bay, depart for Red Rock site (BC60).
	0900-0930	Deploy bivalves at Red Rock, depart for Pinole Point site (BD30).
	1000-1045	Deploy bivalves at Pinole Point. Slack current at Pinole Point is at 1318 (Figure 3). Depart for San Pablo Bay site (BD20).
	1115-1145	Deploy bivalves at San Pablo Bay, depart for Petaluma River site (BD30).
	1215-1245	Deploy bivalves at Petaluma River, return to Emeryville Marina.
	1530-1600	Demobilize gear at Emeryville Marina.

Davis Point, 1.0 nmi. NW of, SAN PABLO BAY Latitude: 38° 04' N Longitude: 122° 17' W

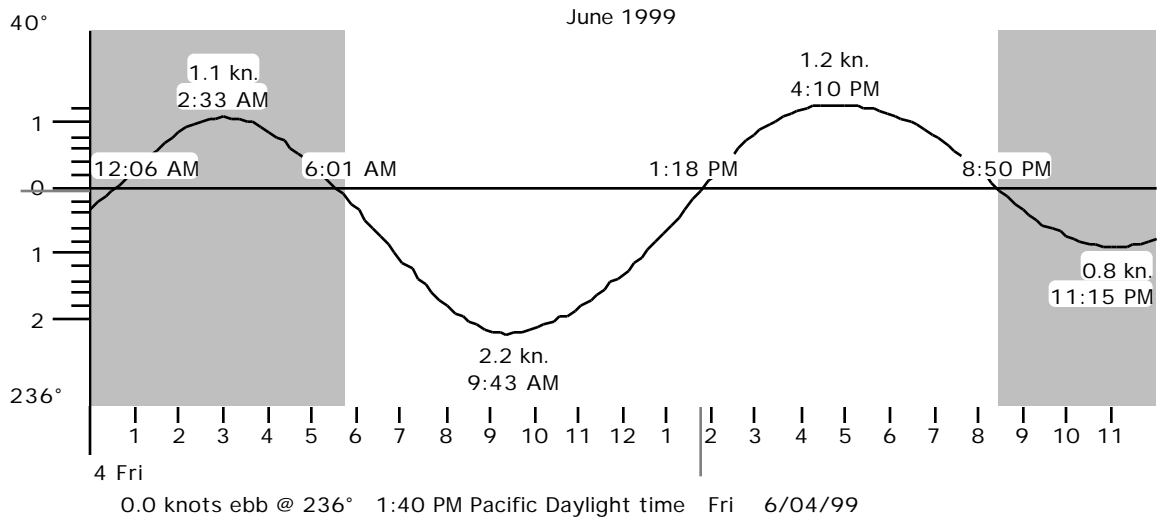


**Figure 1. Current near Davis Point on June 2, 1999.**

Oyster Point, 2.8 miles east of, South SAN FRANCISCO BAY Latitude: 37° 40' N Longitude: 122°



**Figure 2. Current near Oyster Point on June 3, 1999.**



**Figure 3. Current near Pinole Point, June 4, 1999.**

## Discussion

### Site Locations

The coordinates for all bivalve moorings are listed in the following table:

<i>Site Name/Code</i>	<i>Latitude (N)</i>	<i>Longitude (W)</i>	<i>Comments</i>
Coyote Creek BA10	37° 28.19'	122° 03.83'	Channel marker "18"
Dumbarton Bridge BA30	N/A	N/A	Channel marker damaged. Choose new mooring location
Redwood Creek BA40	37° 32.82'	122° 11.70'	Channel marker "4"
Alameda BB71	37° 41.73'	122° 20.38'	Channel marker "1" 1.65 nmi. SE of Hunters Point
Yerba Buena Island BC10	37° 49.12'	122° 20.81'	Dolphin 0.2 nmi. SW of Bay Bridge
Horseshoe Bay BC21	37° 49.87'	122° 28.65'	Dolphin 100 ft W of fishing pier
Red Rock BC60	37° 55.70'	122° 28.13'	Channel marker "2" for Larkspur ferry terminal
Point Pinole BD30	38° 01.00'	122° 22.05'	Channel marker "P"
San Pablo Bay BD20	38° 02.72'	122° 25.71'	Channel marker "1"
Petaluma River BD15	38° 06.77'	122° 30.05'	NE end of railroad bridge

<i>Site Name/Code</i>	<i>Latitude (N)</i>	<i>Longitude (W)</i>	<i>Comments</i>
Davis Point BD40	38° 03.26'	122° 15'.63	E side of Unocal loading dock
Napa River BD50	38° 04.84'	122° 14.82'	Mare Island Strait adjacent to General Foods facility, 0.7 nmi. from channel marker "2"
Grizzly Bay BF20	38° 06.49'	122° 03.37'	Channel marker "9" 1.0 nmi. NW of Garnet Point
Sacramento River BG20	38° 03'.58	121° 47.50'	Channel marker "8" N of Sherman Island
San Joaquin River BG30	38° 01.27'	121° 48.32'	Channel marker "8" 0.75 nmi. E of Antioch Marina

### *Bivalve Species at Each Site*

Bivalve species will be deployed at each site according to the following table:

<i>Site Name/Code</i>	<i>Number per Species</i>
Coyote Creek BA10	144 <i>C. gigas</i> 80 triploid <i>C. gigas</i> 80 <i>M. edulis</i> 160 <i>M. californianus</i>
Dumbarton Bridge BA30	160 <i>M. californianus</i> 80 <i>M. edulis</i>
Redwood Creek BA40	160 <i>M. californianus</i> 80 <i>M. edulis</i>
Alameda BB71	160 <i>M. californianus</i> 80 <i>M. edulis</i>
Yerba Buena Island BC10	160 <i>M. californianus</i> 80 <i>M. edulis</i> 80 triploid <i>C. gigas</i> 80 <i>C. gigas</i>
Horseshoe Bay BC21	160 <i>M. californianus</i> 80 <i>M. edulis</i>
Red Rock BC60	160 <i>M. californianus</i> 80 <i>M. edulis</i>
Point Pinole BD30	160 <i>M. californianus</i> 80 <i>M. edulis</i>
San Pablo Bay BD20	144 <i>C. gigas</i> 80 <i>M. californianus</i> 80 <i>M. edulis</i>
Petaluma River BD15	144 <i>C. gigas</i> 80 <i>M. californianus</i> 80 <i>M. edulis</i>
Davis Point BD40	144 <i>C. gigas</i> 80 <i>M. Californianus</i> 80 <i>M. edulis</i>

<i>Site Name/Code</i>	<i>Number per Species</i>
Napa River BD50	144 <i>C. gigas</i> 80 triploid <i>C. gigas</i> 80 <i>M. edulis</i> 160 <i>M. californianus</i> recording thermosalinograph
Grizzly Bay BF20	No deployments
Sacramento River BG20	No deployments will harvest resident <i>C. fluminea</i> at the end of the deployment
San Joaquin River BG30	No deployments will harvest resident <i>C. fluminea</i> at the end of the deployment