

Cruise Plan
1999 Regional Monitoring Program
Bivalve Deployment Cruise 19
January 5-7, 1998

Objectives

The objectives of this cruise are:

1. □ Collect *Mytilus californianus* from Bodega Head and deploy them at seven sites;
2. □ Obtain *Crassostrea gigas* from Tomales Bay and deploy them at seven sites¹;
3. □ Obtain triploid *C. gigas*, *Ostrea lurida* and *Mytilus edulis* from Tomales Bay and deploy them at three sites;
4. □ Install a thermosalinograph at Napa River.

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 all scientific diving operations and dive safety. Mr. Gold will perform duties as diver. Mr. Morgan will be responsible for vessel operation and vessel safety. Messrs. Gold and Salop will alternate diver responsibilities. Mr. Gold will be responsible for operation and safety of the vessel *M.E. II* on January 7.

Cruise Schedule

This cruise schedule assumes that approximately 50 minutes will be required for operations at each site and the vessel proceeds between stations at approximately 15 knots.

¹ No *Corbicula fluminea* will be deployed at the Sacramento River, San Joaquin River and Grizzly bay sites during 1999.

<i>Date</i>	<i>Time</i>	<i>Activity</i>
Day 1 12/16/98	1100-1400	Bell, Gold, Jay Johnson (AMS) and Salop collect <i>Mytilus californianus</i> at low tide from Bodega Head, Sonoma County. <i>M. californianus</i> are transferred into plastic mesh bags and placed into filtered seawater tanks at the Bodega Marine Laboratory (BML).
Day 2 12/17/98	0900-1400	Gold and Salop collect <i>Mytilus edulis</i> and <i>Ostrea lurida</i> from natural populations found in Tomales Bay, Marin County. Bivalves are transferred into plastic mesh bags and placed into filtered seawater tanks at BML.
Day 3 12/21/98	1200	Gold purchases <i>Crassostrea gigas</i> from Tomales Bay Oyster Company. Oysters are transferred into plastic mesh bags and placed into filtered seawater tanks at BML.
Day 4 1/4/98	1200	Gold or Salop picks up bivalves from BML.
Day 5 1/5/99	0700-0745	Mobilize gear, load all bivalves and conduct safety briefing on R/V Questuary, Emeryville Marina. Depart for Yerba Buena Island site (BC10).
	0800-0845	Deploy bivalves at Yerba Buena Island, depart for Alameda site (BB71).
	0930-1015	Deploy bivalves at Alameda. Slack current near Alameda is shown in Figure 1. Depart for Redwood Creek site (BA40).
	1100-1145	Deploy bivalves at Redwood Creek, depart for Dumbarton Bridge site (BA30).
	1215-1300	Deploy bivalves at Dumbarton Bridge, depart for Coyote Creek site (BA10).
	1315-1600	Deploy bivalves at Coyote Creek. Return to Emeryville Marina.
	1600-1615	Demobilize vessel, refill SCUBA tanks.
Day 6 1/6/99	0730-0800	Mobilize gear on R/V Questuary, Emeryville Marina. Depart for Pinole Point (BD30).
	0930-1015	Deploy bivalves at Pinole Point. Slack current near Pinole Point is shown in Figure 2. Depart for Petaluma River site (BD15).
	1100-1130	Deploy bivalves at Petaluma River, depart for San Pablo Bay site (BD20).
	1200-1230	Deploy bivalves at San Pablo Bay, depart for Red Rock site (BD60).
	1345-1415	Deploy bivalves at Red Rock, depart for Horseshoe Bay site (BC21).
	1500-1530	Deploy bivalves at Horseshoe Bay. Return to Emeryville.
1/6/99	1615-1700	Demobilize gear and unload all bivalves.
Day 7 1/7/99		Mobilize gear on vessel M.E. II and conduct safety briefing at Vallejo Marina. Depart for Napa River site (BD50).
		Install new mooring at Napa River for the placement of a thermosalinograph (Figure 3). Initialize data logger aboard M.E. II and place on new mooring. Deploy bivalves on old mooring. Depart for Davis Point site (BD40).
		Deploy bivalves at Davis Point. Slack current near Davis Point is shown in Figure 4. Depart for Vallejo Marina.
		Demobilize vessel at Vallejo Marina.

Sierra Point, 1.3 miles ENE of, South SAN FRANCISCO BAY Latitude: 37° 41' N Longitude:

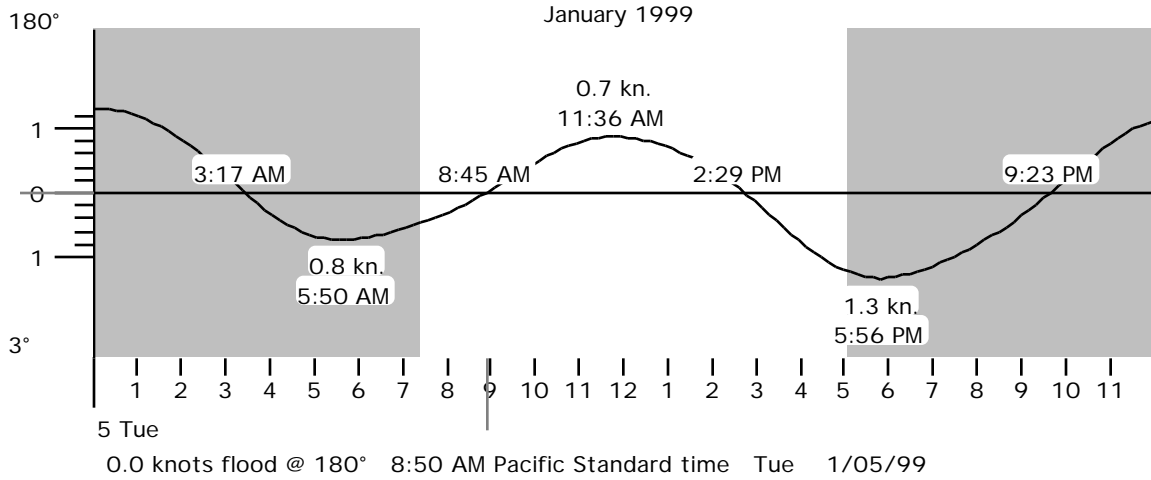


Figure 1. Currents near Alameda on January 5, 1999.

Pinole Point, 1.18 nmi. west of, SAN PABLO BAY Latitude: 38° 00' N Longitude: 122° 23'

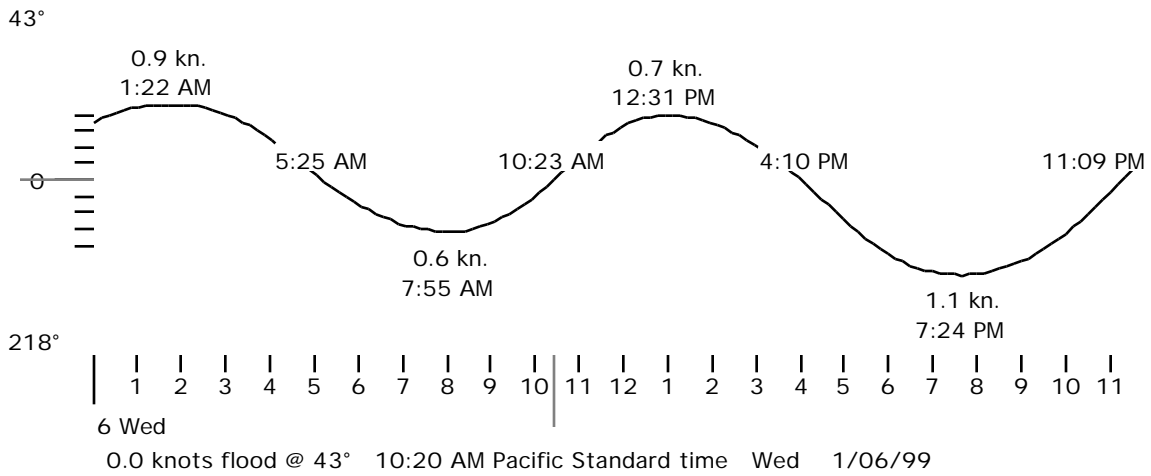


Figure 2. Currents near Pinole Point on January 6, 1999.

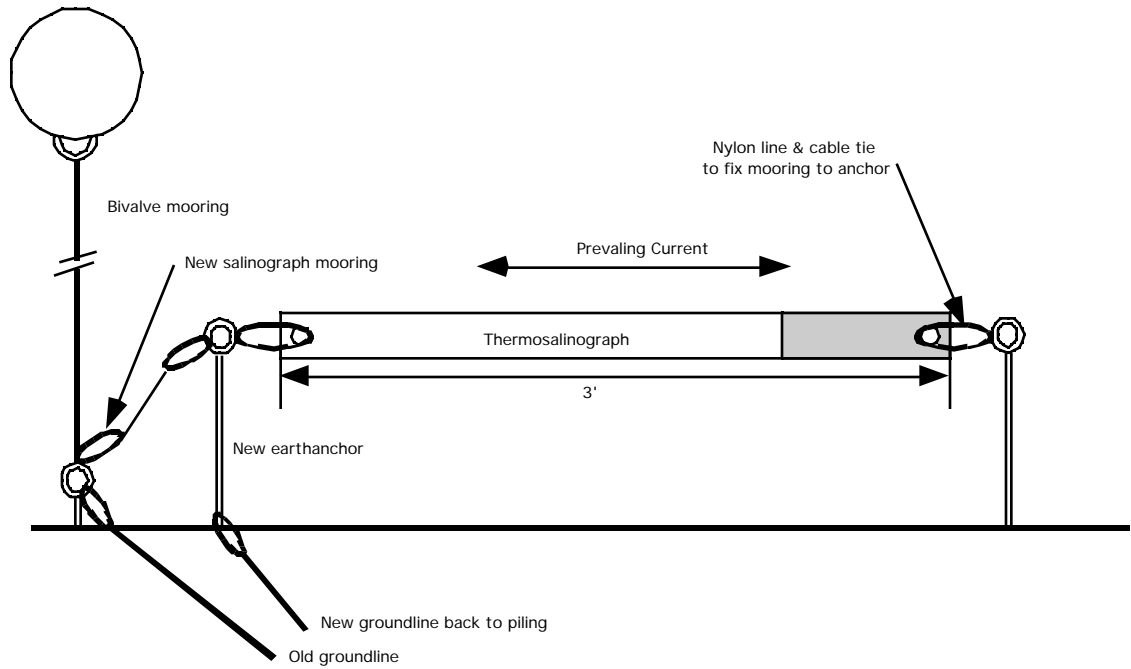


Figure 3. Mooring installation for thermosalinograph to be installed at Napa River.

Davis Point, (midchannel), SAN PABLO BAY Latitude: 38° 04' N Longitude: 122° 16' W

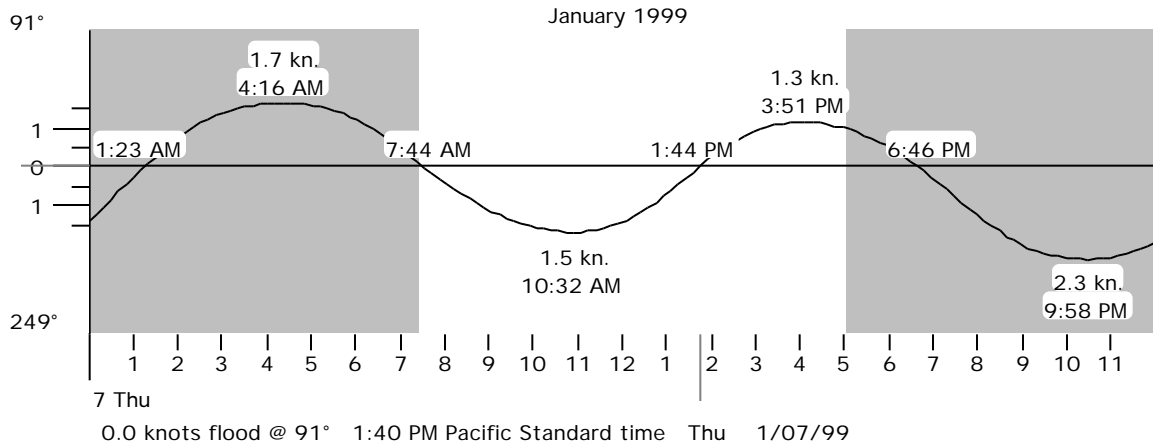


Figure 4. Currents near Davis Point on January 7, 1999.

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	37° 30.80'	122° 08.08'	Channel marker "14"
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
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 to be Deployed

Additional moorings will be installed to acquire the extra bivalves being deployed on this cruise. Bivalve species will be deployed at each site according to the following table:

<i>Site Name/Code</i>	<i>Install Additional Bivalve Mooring</i>	<i>Number per Species at Site</i>
Coyote Creek BA10	Yes	144 <i>C. gigas</i> 144 triploid <i>C. gigas</i> 160 <i>M. edulis</i> 144 <i>O. lurida</i>
Dumbarton Bridge BA30	No	160 <i>M. californianus</i>
Redwood Creek BA40	No	160 <i>M. californianus</i>
Alameda BB71	No	160 <i>M. californianus</i>
Yerba Buena Island BC10	Yes	160 <i>M. californianus</i> 144 triploid <i>C. gigas</i> 160 <i>M. edulis</i> 144 <i>O. lurida</i>
Horseshoe Bay BC21	No	160 <i>M. californianus</i>
Red Rock BC60	No	160 <i>M. californianus</i>
Point Pinole BD30	No	160 <i>M. californianus</i> 144 <i>C. gigas</i>
San Pablo Bay BD20	No	144 <i>C. gigas</i>
Petaluma River BD15	No	144 <i>C. gigas</i>
Davis Point BD40	No	144 <i>C. gigas</i>
Napa River BD50	Yes	144 <i>C. gigas</i> 144 triploid <i>C. gigas</i> 160 <i>M. edulis</i> 144 <i>O. lurida</i> recording thermosalinograph
Grizzly Bay BF20	N/A	No deployments
Sacramento River BG20	N/A	No deployments will harvest resident <i>C. fluminea</i> at the end of the deployment
San Joaquin River BG30	N/A	No deployments will harvest resident <i>C. fluminea</i> at the end of the deployment