Cruise Report
Regional Monitoring Program
RMP 2000 Summer Bivalve Deployment Cruise
June 20-22, 27-29, 2000

1 INTRODUCTION

This report describes activities associated with the 2000 dry-season bivalve deployment cruise of the Regional Monitoring Program for Trace Substances in the San Francisco Estuary. Bivalves were attached to moorings at 12[1] sites. Measurement of contaminant bioaccumulation in transplanted bivalves during dry-season deployments is one component of this program that is designed to provide long-term data on concentrations of trace metals and organic compounds in water, sediments, and tissues, as well as toxicity throughout the estuary.

Contaminant bioaccumulation in bivalves is being measured in this program by attempting to collect bivalves from sites that are known to be contaminant-free and transplanting them to separate mooring locations in the Estuary. Three species of bivalves, *Mytilus californianus* , *Mytilus edulis*, and *Crassostrea* were deployed at different locations depending upon the expected range of salinity. *M. californianus* were collected from Bodega Head, *M. edulis* were collected from Tomales Bay, and *C. gigas* were obtained from a commercial grower in Tomales Bay. At five stations, Redwood Creek, Yerba Buena Island, Horseshoe Bay, San Pablo Bay and Napa River, an alternative "cage" system was deployed that would potentially not require an intermediate maintenance cruise. Finally, a thermosalinograph was deployed at the Napa River site to allow for continuous measurement of temperature and salinity.

2 CRUISE REPORT

2.1 Objectives

The objectives of this cruise were:

1) Collect *M. californianus* from Bodega Head and *M. edulis* from Tomales Bay and obtain *C. gigas* from Tomales Bay (Hog Island Oyster Co.) for deployment.
2) Replace degraded moorings and perform a thorough clean-up at all sites to remove fouling, fishing line, and other accumulated debris.
3) Deploy a thermosalinograph at the Napa River site.
4) Develop and deploy "cage" bivalve containment system at five stations.
5) Obtain a CTD cast at each deployment site.

[1] Bivalves were not deployed at Grizzly Bay, Sacramento River and San Joaquin River stations.

2.2 Personnel

The personnel and work assignments for this cruise are shown in the following table:

Name	Affiliation	Duties
David Bell	AMS	Bivalve Collections, Cruise Manager, Dive Master
Jordan Gold	AMS	Bivalve Collections, Vessel Skipper 6/20-6/22
David Morgan	Romberg Tiburon Center	Vessel Skipper 6/27-29
Paul Salop	AMS	Bivalve Collections, Diver, Dive Tender
Ron Walder	AMS	Diver, Dive Tender

2.3 Activities

Date	Time	Activity
6/6/00	0800-1400	Bell, Gold and Salop collect *M. Californianus* at Bodega Head. Will Borgeson of Bodega Marine Laboratory (BML) collects *M. edulis* from Tomales Bay. Gold picks up *C. gigas* at Hog Island Oyster Company. All bivalves are transferred to mesh bags and placed into holding tanks at BML.
6/20/00	1100-1130	Mobilized gear aboard *M.E. II* at Vallejo public boat launch. Departed for Napa River site (BD50).
	1130-1308	Deployed thermosalinograph at Napa River, currents too strong to continue deployment. Returned to Vallejo boat launch.
	1308-1330	Arrived Vallejo public launch ramp, demobilized vessel.
6/21/00	1030-1135	Mobilized gear aboard *M.E. II* at Vallejo public boat launch. Departed for Napa River site (BD50).
	1143-1255	Deployed bivalves at Napa River. Departed for Vallejo public boat launch
	1315-1345	Arrived Vallejo public launch ramp, demobilized vessel.

Activities, continued.

Date	Time	Activity
6/22/00	1130-1235	Mobilized gear aboard *M.E. II* at Black Point launch ramp. Departed for Petaluma River site (BD50).
	1242-1330	Deployed bivalves at Petaluma River, departed for Black Point launch ramp.
	1340-1415	Arrived at Black Point launch ramp, demobilized vessel.
6/26/00	0800-0830	Mobilized gear aboard *R/V Questuary*, Emeryville Marina. Departed for Coyote Creek site (BA10).
	1010-1115	Replaced mooring and deployed bivalves at Coyote Creek, departed for Dumbarton Bridge site (BA30).
	1140-1212	Deployed bivalves at Dumbarton Bridge, departed for Emeryville Marina.
	1345-1400	Arrived at Emeryville Marina, demobilized vessel.
6/27/00	0730-0750	Mobilized gear aboard *R/V Questuary*, Emeryville Marina. Departed for Redwood Creek site (BA40).
	0950-1015	Deployed bivalves at Redwood Creek, departed for Alameda site (BB71).
	1105-1139	Deployed bivalves at Alameda, departed for Emeryville Marina.
	1230-1245	Arrived at Emeryville Marina, demobilized vessel.
6/28/00	0900-0920	Mobilized gear aboard vessel *R/V Questuary*, Emeryville Marina. Departed for Yerba Buena Island site (BC10).
	0944-1035	Deployed bivalves at Yerba Buena Island, departed for Horseshoe Bay site (BC21).
	1100-1130	Deployed bivalves at Horseshoe Bay, departed for Red Rock site (BC60).
	1205-1225	Deployed bivalves at Red Rock, departed for Emeryville Marina.
	1330-1345	Arrived at Emeryville Marina, demobilized vessel.

Activities, continued.

Date	Time	Activity
6/29/00	1030-1050	Mobilized gear aboard vessel *R/V Questuary*, Emeryville Marina. Departed for Pinole Point site (BD30).
	1200-1258	Deployed bivalves at Pinole Point, departed for San Pablo Bay site (BD20).
	1325-1359	Deployed bivalves at San Pablo Bay, departed for Emeryville Marina.
	1515-1630	Arrived Emeryville Marina, demobilized vessel.

2.4 Discussion

Site Locations

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

Site Name/Code	Latitude (N)	Longitude (W)	Comments
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 0.1 nmi. N 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
Pinole Point 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

Coordinates for bivalve moorings, continued.

Site Name/Code	Latitude (N)	Longitude (W)	Comments
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 were deployed at each site according to the following table:

Site Name	Site Code	Install New Mooring No. of Moorings	Install Cages No. of Bivalves	Install Salinograph	Bagged MCAL No. of Bivalves	Bagged MEDU No. of Bivalves	Bagged CGIG No. of Bivalves
Coyote Creek	BA10	1			79	79	99
Dumbarton Bridge	BA30				39	40	140
Redwood Creek	BA40		116 MCAL		40	40	31
Alameda	BB71				110	40	35
Yerba Buena Island	BC10		120 MCAL		40	80	
Horseshoe Bay	BC21		80 MCAL		79	40	
Red Rock	BC61				160	40	
Petaluma River	BD15				40	40	134
San Pablo Bay	BD20		144 CGIG		40		
Pinole Point	BD30				98	40	32
Davis Point	BD40				40	40	144
Napa River	BD50		36 CGIG	1	80	80	103

General Comments

All cruise objectives were achieved. One bivalve mooring was replaced, at the Coyote Creek site. Prototype, low maintenance bivalve containers were deployed at the Coyote Creek, Yerba Buena Island, Horseshoe Bay, San Pablo Bay, and Napa River sites. A thermosalinograph was installed at the Napa River site.

The cruise schedule was extended to allow extensive maintenance activities to occur during low current conditions. Extensive site cleanups were performed at each station, removing a number of fouling organisms, abandoned fishing anchors and line, cable ties, embedded fish hooks, etc.