Cruise Report
Regional Monitoring Program
Bivalve Retrieval Cruise #19
April 27 – 30, 1999

1 INTRODUCTION

This report describes activities associated with the 1999 wet-season bivalve retrieval cruise of the Regional Monitoring Program for Trace Substances in the San Francisco Estuary. Measurement of contaminant bioaccumulation in transplanted bivalves during wet-season and 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 collecting bivalves from sites that are relatively clean and transplanting them to 12[i] separate mooring locations in the Estuary. Five species of bivalves were deployed as part of Cruise 19. As in previous cruises, *Mytilus californianus* and a diploid variety of *Crassostrea gigas* were deployed at different locations depending upon the expected range of salinity. *M. californianus* were deployed at the most saline sites, from San Pablo Bay southward to the Dumbarton Bridge. *C. gigas* were deployed at sites with intermediate salinities in the Central and North Bay and south of the Dumbarton Bridge. Additionally, three "mega-station" deployments were made at Napa River, Yerba Buena Island, and Coyote Creek sites that included not only *M. californianus* and *C. gigas*, but the additional species of *Mytilus edulis, Ostreola conchaphila,* and a triploid variety of *C. gigas.* These extra deployments were used to gain information on the survival capabilities of alternate test species through the depressed salinity regimes associated with winter flows to the Estuary.

M. californianus were collected from Bodega Head, *M. edulis* were collected from Tomales Bay and *C. gigas* (both diploid and triploid varieties) and *O. concaphila* were obtained from a commercial grower in Tomales Bay. Additionally, specimens of *Corbicula fluminea* were collected from the native populations in areas adjacent to the historical mooring sites in the Sacramento River and San Joaquin River.

2 CRUISE REPORT

2.1 Objectives

The objectives of this cruise were:

1) Retrieve bivalves that were deployed at 12 sites on January 5 – 8, 1999.

2) Collect native *Corbicula fluminea* from the Sacramento and San Joaquin Rivers.

3) Divide surviving bivalves into three groups for analysis of trace organics by Texas A&M University (GERG), trace elements by Bay Area Dischargers Authority (BADA) and Brooks-Rand, LTD, and condition by Applied Marine Sciences.

[i] Bivalves were not deployed at the Grizzly Bay, Sacramento, and San Joaquin River Sites.

2.2 Personnel

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

Name	Affiliation	Duties	Contact
David Bell	AMS	Cruise Manager, Dive Master, Dive Tender	bell@amarine.com
Jordan Gold	AMS	Diver, Dive Tender, Vessel Skipper on 4/27	gold@amarine.com
Jay Johnson	AMS	Dive Tender on 4/30	johnson@amarine.com
Nicole Kleinsinger	AMS	Dive Tender on 4/27 - 28	
Dave Morgan	Romberg Tiburon Centers	Vessel Skipper	rvquest@aol.com
Paul Salop	AMS	Diver	salop@amarine.com

2.3 Activities

The activities for this cruise were as follows:

Date	Time	Activity
4/27/99	1200-1250	Mobilized gear aboard vessel *M.E. II* at Vallejo Marina. Departed for Napa River site (BD50).
	1300-1345	Retrieved thermosalinograph and bivalves at Napa River site, departed for Davis Point site (BD40).
	1355-1410	Retrieved bivalves at Davis Point site, departed for Vallejo Marina.
	1425	Arrived at Vallejo Marina, demobilized vessel. All bivalves stored on dry ice.
4/28/99	0800-0830	Mobilized gear and conducted safety briefing aboard *R/V Questuary*, Emeryville Marina. Departed for Alameda site (BC11).
	0910-0915	Arrived Alameda, current too strong for retrieval, departed for Coyote Creek site (BA10).
	1015-1100	Arrived Dumbarton site (BA30), channel marker broken off just above water surface. Decided to retrieve bivalves before piling was completely submerged by rising tide. Retrieved bivalves at Dumbarton, departed for Coyote Creek site.

Date	Time	Activity
4/28/98	1120-1200	Retrieved bivalves at Coyote Creek, departed for Redwood Creek site (BA40).
	1235-1255	Retrieved bivalves at Redwood Creek, departed for Alameda site (BB71).
	1340-1410	Retrieved bivalves at Alameda, departed for Yerba Buena Island site (BA10).
	1435-1500	Retrieved bivalves at Yerba Buena Island, departed for Emeryville Marina.
	1515	Arrived at Emeryville Marina, demobilized vessel. All bivalves returned to AMS.
4/30/99	0800-0830	Mobilized gear aboard vessel *R/V Questuary*, Emeryville Marina. Departed for Horseshoe Bay site (BC21).
	0900-0920	Retrieved bivalves at Horseshoe Bay, departed for Red Rock site (BC60).
	0950-1000	Retrieved bivalves at Red Rock, departed for Pinole Point site (BD30).
	1030-1055	Retrieved bivalves at Pinole Point, departed for San Pablo Bay site (BD20).
	1105-1120	Retrieved bivalves at San Pablo Bay, departed for Petaluma River site (BD15).
	1200-1220	Retrieved bivalves at Petaluma River, departed for Martinez Marina
	1515	Arrived at Martinez Marina, demobilized gear. All bivalves transferred to AMS.
5/6/99	1000-1030	Mobilized gear aboard vessel *ME II*, Antioch Marina. Departed for San Joaquin River site (BG30).
	1030-1530	Collected *C. fluminea* from native populations in the San Joaquin River & Sacramento River (BG20), nearby the previously used mooring locations. Departed for Antioch Marina.
	1530	Arrived at Antioch Marina, demobilized vessel. All bivalves transferred to AMS for processing.

2.4 Discussion

Site Locations

The geographic coordinates for all bivalve moorings are listed in Table 1.

Table 1. Coordinates of Regional Monitoring Program Bivalve Deployment.

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° 48.35’	122° 22.25’	Dolphin 0.1 nmi. S 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
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’	No bivalves deployed
Sacramento River BG20	–	–	No bivalves deployed
San Joaquin River BG30	–	–	No bivalves deployed