

Cruise Report
Regional Monitoring Program
Bivalve Maintenance Cruise #21, Dry Season
August 2-4, 1999

1. INTRODUCTION

This report describes activities associated with the 1999 dry-season bivalve maintenance cruise of the Regional Monitoring Program for Trace Substances in the San Francisco Estuary. Measurement of contaminant bioaccumulation in transplanted bivalves 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 clean and transplanting them to separate mooring locations in the Estuary. Three species of bivalves, *Mytilus californianus*, *Mytilus edulis*, and *Crassostrea gigas* (both diploid and triploid varieties), were deployed on June 2-4, 1999 at 12¹ different locations depending upon the expected range of salinity. *M. californianus* were deployed at the most saline sites, which are from San Pablo Bay southward to the Dumbarton Bridge; *C. gigas* were deployed at sites with intermediate salinities between Grizzly Bay and San Pablo Bay and south of the Dumbarton Bridge. In addition, deployments were made at three "megastations" at which each of the four bivalve types were deployed.

M. californianus were collected from Bodega Head. *C. gigas* (both varieties) were obtained from a commercial grower in Tomales Bay. *M. edulis* were collected from Tomales Bay. *C. fluminea* was not deployed as part of this cruise as the decision was made to obtain and analyze resident bivalves as part of the retrieval cruise.

2. CRUISE REPORT

2.1. Objective

The objectives of this cruise were:

- 1) Check and maintain bivalve moorings at 12 sites.
- 2) Check, maintain, and download data from thermosalinograph installed at the Napa River site.

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

2.2. Personnel

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

<u>Name</u>	<u>Affiliation</u>	<u>Duties</u>
David Bell	AMS	Cruise Manager, Dive Master
Jordan Gold	AMS	Diver for 8/3, Vessel Skipper 8/4
Andy Gunther	AMS	Dive Tender for 8/4
David Morgan	Romberg Tiburon Ctr.	Vessel Skipper 8/2 – 8/3
Paul Salop	AMS	Diver for 8/2 – 8/4

2.3. Activities

<u>Date</u>	<u>Time</u>	<u>Activity</u>
8/2/99	0800-0900	Mobilized gear and conducted safety briefing aboard <i>R/V Questuary</i> , Emeryville Marina. Departed for Alameda (BB71).
	0930-0950	Checked and maintained mooring at Alameda, departed Redwood Creek (BA40).
	1030-1050	Checked and maintained mooring at Redwood Creek, departed for Dumbarton Bridge site (BA30).
	1105-1120	Checked and maintained mooring at Dumbarton Bridge, departed for Coyote Creek site (BA10).
	1145-1200	Checked and maintained mooring at Coyote Creek, departed for Yerba Buena Island site (BC10).
	1350-1405	Checked and maintained mooring at Yerba Buena Island departed for Emeryville Marina.
	1425	Arrived at Emeryville Marina, demobilized vessel.
8/3/99	0830-0930	Mobilized gear aboard <i>R/V Questuary</i> , Emeryville Marina. Departed for Horseshoe Bay site (BC21).
	1005-1025	Checked and maintained mooring at Horseshoe Bay, departed for Sausalito for refueling of vessel, then departed for Red Rock (BC60).
	1150-1210	Checked and maintained mooring at Red Rock, departed for Pinole Point (BD30).
	1245-1300	Checked and maintained mooring at Pinole Point, departed for San Pablo Bay (BD20).

<u>Date</u>	<u>Time</u>	<u>Activity</u>
	1320-1335	Checked and maintained mooring at San Pablo Bay, departed for Petaluma River (BD15).
	1400-1420	Checked and maintained mooring at Petaluma River, departed for Emeryville Marina.
	1600	Arrived Emeryville Marina, demobilized vessel
8/4/99	1345-1420	Mobilized gear aboard <i>ME II</i> , Vallejo Public Boat Launch. Departed for Napa River site (BD50).
	1425-1540	Checked and maintained mooring at Napa River, also removed thermosalinograph, downloaded data, and redeployed . Departed for Davis Point (BD40).
	1550-1610	Checked and maintained mooring at Davis Point, departed for Vallejo Boat Launch.
	1630	Arrived Vallejo, demobilized vessel.

2.4. Discussion

Bivalve and Mooring Condition

All moorings were generally in good condition and all showed few signs of biological fouling. Thermosalinograph data at Napa River site was downloaded successfully.

General Comments

All cruise objectives were met. Relatively high mortality was observed at Yerba Buena Island (seastar observed preying on the bivalves) and Horseshoe Bay (signs of crab predation). The prototype bivalve cage at San Pablo Bay site was checked for its presence only and was not maintained. Additionally, one gray whale was observed 8/2/99, 0930, between near Alameda station.

Table 1. Observations of Mooring and Bivalve Condition

<u>Site Name/Code</u>	<u>Comments</u>
Coyote Creek/BA10	Zero visibility, bivalves appear healthy, mooring gear in good shape, small set of native mussels found on mooring gear.
Dumbarton Bridge/BA30	Zero visibility, mooring gear in good shape, heavy set of native mussels found on mooring gear.
Redwood Creek/BA40	Zero visibility, some byssal threads present, mooring gear in good shape, some mussels on piling.
Alameda/BB71	Visibility 3 ft., byssal threads present, mooring gear in good shape.
Yerba Buena Island/BC10	Visibility 2 ft., byssal threads present, mooring gear in good shape, seastar damage to one entire set of mussels.
Horseshoe Bay/BC21	Visibility 5 ft., byssal threads present, mooring gear in good shape, several holes in bags and apparent predation by crabs.
Red Rock/BC60	Visibility 2 ft., byssal threads present, mooring gear in good shape, large set of native mussels.
Pinole Point/BD30	Visibility 0.5 ft., mooring gear in good shape, heavy set of native mussels.
San Pablo Bay/BD20	Visibility 0.5 ft., mooring gear in good shape.
Petaluma River/BD15	Zero visibility, mooring gear in good shape.
Davis Point/BD40	Zero visibility, mooring gear in good shape.
Napa River/BD50	Zero visibility, no bio-fouling, byssal threads present, thermosalinograph heavily fouled with hydroids, downloaded thermosalinograph data, both sets of mooring gear in good shape.
Grizzly Bay/BF20	No clams deployed at this site, did not examine mooring.
Sacramento River/BG20	No clams deployed at this site, did not examine mooring.
San Joaquin River/BG30	No clams deployed at this site, did not examine mooring.