

Cruise Report ACE INC 02-02

Atlantic Coast Environmental Indicators Consortium (ACE INC)

4-7 June 2002

This report provides a summary of the research activities completed on the RV Aquarius. Additional sampling was conducted from the 25' Parker and is briefly noted.

Research Vessel

R/V Aquarius

Sampling Period

Samples collected during daylight hours from 4 –7 June 2002

Sampling Area

Patuxent River 4-5 June
Choptank River 6-7 June

Scientific Crew

Full time: J. Bichy, D. Kimmel, M. Mallonee,
Part time: E. Houde, L. Harding, A. Spear, P. Campfield, E.
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Objectives

We hypothesized that the Patuxent and Choptank River trophic structures should differ as a result of differences in nutrient loadings and that the Patuxent should have a “positive signal” from recent reductions in nutrient loading compared to the Choptank that continues to receive high nutrient inputs.

Objectives of this cruise were to characterize the plankton and fish communities, within the Choptank and Patuxent, in terms of taxon diversity, biomass, sizes, and abundances and to compare the two rivers.

Cruise Summary

The Patuxent and Choptank Rivers were sampled at three fixed stations per river to represent the lower, middle, and upper regions (Figure 1). Each river was sampled over a two-day period. In the Patuxent, two additional CTD stations were occupied.

Mean daily air temperatures, as measured by the National Weather Service weather station in Baltimore, ranged from 17^oC to 27^oC and were above average

(20°C) for three out of four days (Figure 2). On June 7, the temperatures were below normal as a result of a passing cold front on the evening of June 6. The cold front brought heavy rains (1.57") and high winds with gusts up to 32 knts recorded at the CBOS Horn Point weather station.

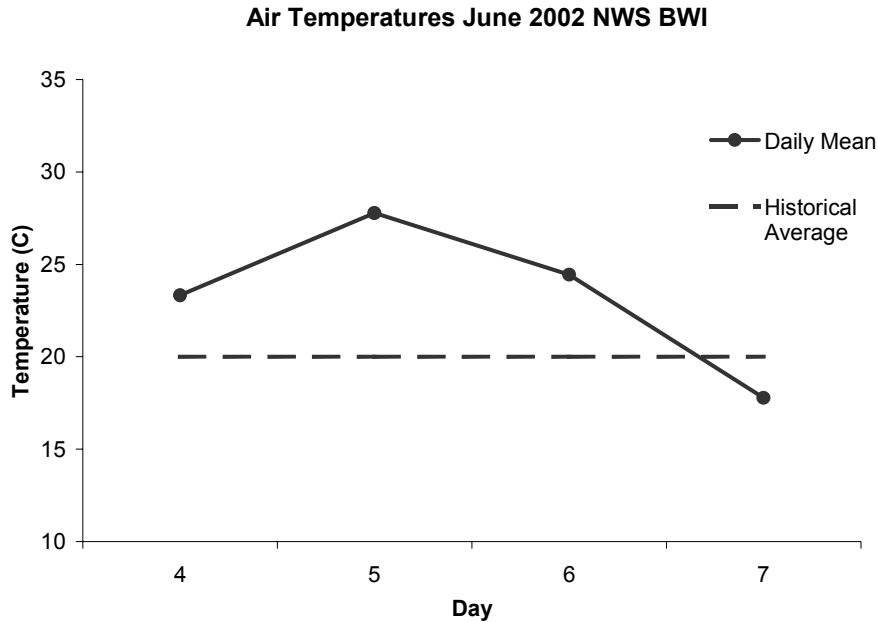


Figure 2: Mean daily air temperature (solid line) and the historical daily mean temperature (broken line) from the National Weather Service weather station in Baltimore, MD.

Salinities remained higher than normal due to the continued drought in the Mid-Atlantic region. Both upriver stations were moved further upstream to located the salt front. The upriver station in the Patuxent was moved from Magruder’s Landing to Nottingham where salinities were between 1 and 2 ppt. On the Choptank the upriver station was moved from Day Beacon 52 to the Dover Bridge where salinities were 4ppt.

Gelatinous zooplankton catches of lobate ctenohore, *Mnemiopsis leidyi* were high in Tucker and mid-water trawls. The size (bell diameter) of *Mnemiopsis* increased from upriver to down river. The sea nettle, *Chrysoursa sp.* was collected from the Choptank River only. Unlike ACE cruise 02-01 in late April, no winter jelly *Cyanea sp.* were caught.

Activities

RV Aquarius

Table 1 is a log of the activities conducted at each station. Once on station, a CTD cast was made prior to other activities. A TAPS unit (acoustic profiler) was

configured to the CTD array and collected zooplankton size and abundance data on each cast.

Pump and grab samples were taken at each station for chlorophyll, seston, particulate absorption, dissolved inorganic nutrients, total CO₂, HPLC pigments (size fractionated) and particle size analysis (fixed samples). Primary production was measured using ¹⁴C methodology. In-water bio-optical profiles were performed on the first day at each river station using both Satlantic MicroPro (vertical) and Hyper-TSRB (surface) instruments.

Zooplankton was sampled at each station using two bottom and surface pump samples, two vertical lifts of a 0.5 diameter 64µm mesh net, and the TAPS instrument. The small plankton net was sent to the bottom and lifted to the surface.

A single tow of a 1m² Tucker trawl with 280-µm mesh was taken each day at each station to collect fish larvae and eggs. The single tow provided both a 2-min bottom and 2-min top sample that together sampled the entire water column. In all, 12 tows were made that provided 24 samples.

Two 10-min tows of the mid-water trawl (MWT) were conducted at each station on day 1 of sampling each river (n=12). The catches were processed to obtain data on species composition, sizes and abundances.

RV 25' Parker

In conjunction with activities on the R/V Aquarius, research was conducted from Horn Point Laboratory's 25' Parker. Activities included, CTD casts and ACROBAT tows. For questions related to efforts on the Parker, please contact Tom Wazniack (see below).

Contact Information

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CTD Data

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ACE INC Cruise 02-02 Station Log 4 - 7 June 2002

R/V Aquarius

									Activities									
<u>Day</u>	<u>Time</u>	<u>Depth</u>	<u>Tide</u>	<u>LAT</u>	<u>LONG</u>	<u>River</u>	<u>Location</u>	<u>STA</u>	<u>CTD</u>	<u>TAPS</u>	<u>TT</u>	<u>MWT</u>	<u>Z_PS</u>	<u>Z_VL</u>	<u>C14</u>	<u>MP</u>	<u>TSRB</u>	<u>CF</u>
4	6:59	11	FLOOD	38.43	-76.61	PAX	BATTLE CREEK	1	X	X	X	X	X	X	X	X	X	X
4	10:30					PAX	HOLLAND CLIFF	2	X	X								
4	10:49	6	FLOOD	38.64	-76.69	PAX	MAGRUDER LANDING	3	X	X								
4	11:27	9	FLOOD	38.71	-76.70	PAX	NOTTINGHAM	4	X	X	X	X	X	X	X	X	X	X
4	15:38	16	EBB	38.31	-76.44	PAX	PAX RIVER MOUTH	5	X	X	X	X	X	X	X	X	X	X
5	6:58	12	SLACK	38.43	-76.61	PAX	BATTLE CREEK	6	X	X	X		X	X				X
5	9:22	6	FLOOD	38.71	-76.70	PAX	NOTTINGHAM	7	X	X	X		X	X				X
5	12:32	16		38.31	-76.44	PAX	PAX RIVER MOUTH	8	X	X	X		X	X				X
6	6:48	16	EBB	38.65	-76.31	CHOP	COOK POINT	9	X	X	X	X	X	X	X	X	X	X
6	10:10	14	SLACK	38.57	-76.03	CHOP	CHANCELLOR POINT	10	X	X	X	X	X	X	X	X	X	X
6	13:15	10	FLOOD	38.76	-76.00	CHOP	DOVER BRIDGE	11	X	X	X	X	X	X	X	X	X	X
7	6:44	14	EBB	38.65	-76.31	CHOP	COOK POINT	12	X	X	X		X	X				X
7	8:43	12	EBB	38.57	-76.03	CHOP	CHANCELLOR POINT	13	X	X	X		X	X				X
7	10:31	11		38.76	-76.00	CHOP	DOVER BRIDGE	14	X	X	X		X	X				X
Total								14	14	14	12	6	12	12	6	6	6	12

Activity Codes:

STA - Station #; **CTD** - Conductivity, Temperature and Depth datalogger; **TAPS** - Tracor Acoustic Profiler System; **TT** - tucker trawl; **MWT** - Mid-water Trawl; **Z_PS** - Zooplankton Pump Samples; **Z_VL** - Zooplankton Vertical Lift (35um); **C14** - Carbon uptake incubations (primary production); **MP** - MicroPro vertical profiler; **TSRB** - Towed Surface Radiometry Buoy; **CF** - Cold Filtration (Chlorophyll)

Table 1: The ACE INC consecutive station log for cruise 02-02. The activities shown were all conducted on R/V Aquarius from 4 -7 June 2002.

ACE INC Cruise 02-02

4 - 7 June 2002

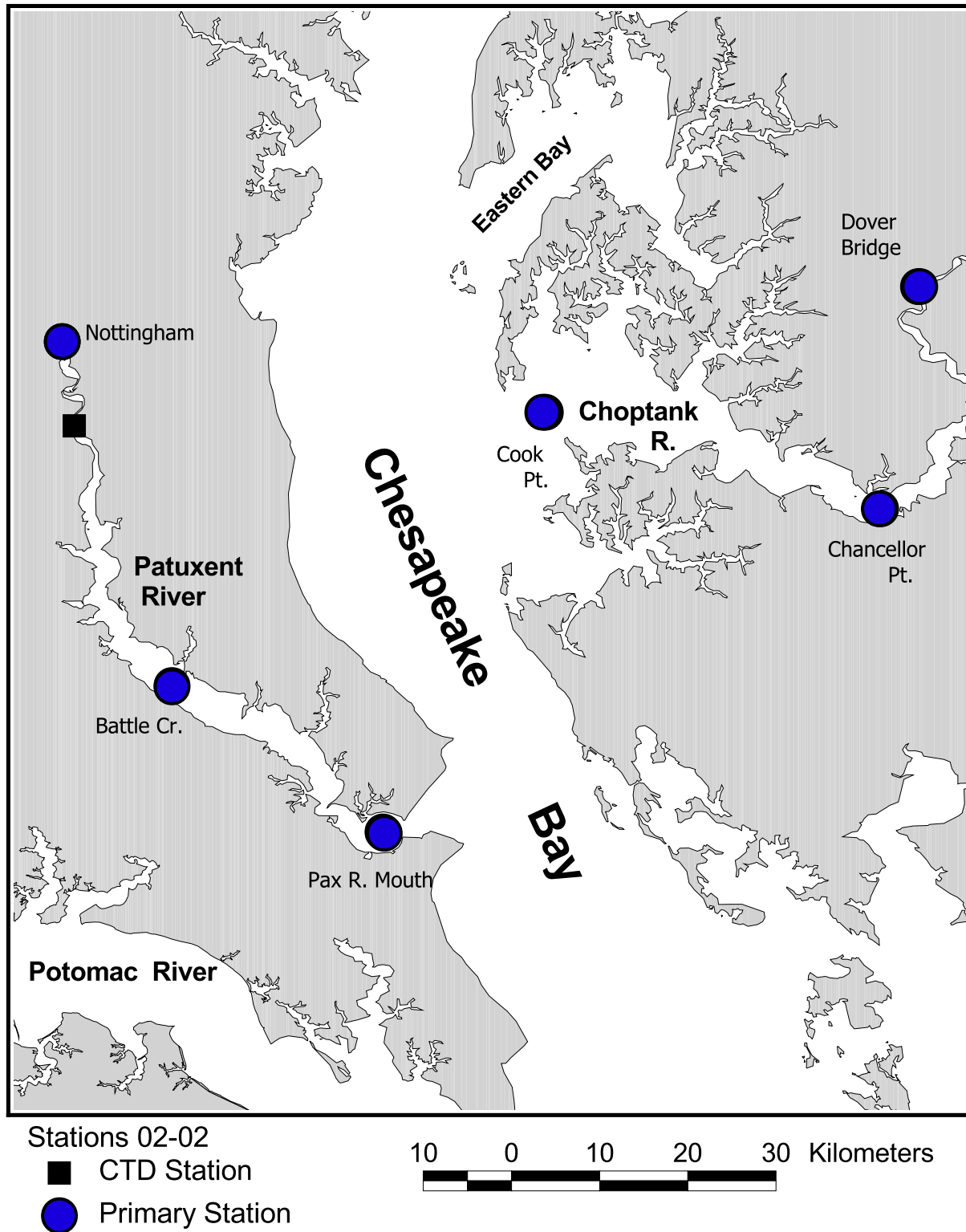


Figure 1: Map of 'mid' Chesapeake Bay region that shows the station locations sampled from R/V Aquarius during the ACE INC cruise 02-02.