

Atlantic Coast Environmental Indicators Consortium

ACE-INC 0301 BT Cruise Report 22-25 April 2003

This report provides a summary of the research activities completed on the R/V Pisces during the ACE-INC 0301 Bottom Trawling (BT) cruise.

Research Vessel

R/V Pisces

Area of Operations

22 April	Patuxent River
25 April	Choptank River

Scientific Crew

J. Bichy, P. Campfield, and B. Connelly,

Goals and Objectives:

The ACE INC programs goal is to develop integrative indicators of trophic structure and function that reflect changes in nutrient loading resulting from a changing landscape. Biota are proposed to be integrators of changing conditions in the Bay. Physical variability, both temporal and spatial, especially dissolved oxygen, is proposed to modulate trophic responses to nutrient over-enrichment. Phytoplankton, zooplankton, and fish responses are being analyzed to develop integrated indicators of Bay 'health.' We proposed that the structure of biotic communities will differ in the Patuxent and Choptank Rivers as a response to their differing trophic status. The Patuxent is 'recovering' from nutrient over-enrichment while the Choptank continues to receive high nutrient loading from agricultural inputs.

The specific objectives of the bottom trawling efforts on this cruise are to (1) characterize and compare the demersal fish community of each river as well as the pelagic community, (2) investigate the potential of demersal species as metrics of ecological status of each river and (3) include demersal species in the biomass spectra of each river. Many demersal fish species depend on the benthos for prey. This benthos-fish link could be best explained in future biomass size spectra analyses from samples collected with the bottom trawl.

Cruise Activities:

The Patuxent and Choptank Rivers were sampled at six stations on each river ([Figure 1](#)). A CTD cast was made prior to a 5-minute bottom trawl tow at each station ([Table 1](#)). Each 5-min bottom trawl was conducted to collect juvenile and

adult demersal fish. The catches were processed to obtain data on species composition, sizes, and abundances. On the Patuxent, hogchockers and white perch dominated catches at the three most upriver stations. A few adult bay anchovy were collected from the two lower river stations; none were collected at the four upper stations. On the Choptank, hogchockers, catfish, and white perch dominated catches. No fish were collected from the two lower river stations.

CTD Summary:

The salt front (1 psu) was located between Hollands Cliff (UR) and Lower Marboro (UUR) on the Patuxent River. On the Choptank, the salt front was located near day marker 52 (UR). Stratification was minimal on both rivers. **Figure 2** shows bottom CTD readings for salinity, temperature, dissolved oxygen and turbidity at each station. Overall, water properties were similar between respective stations on each river. At the two most upriver stations (psu <3) water temperatures were between 14°C and 16°C. Temperatures decreased to 10°C and salinities increased to 11 and 13 psu at the lower river stations (LR). On both rivers, turbidity or light attenuation was highest at the three upper river stations. Dissolved oxygen was above 4.0 mg/l at all stations.

Weather Summary:

Measurements from NOAA weather station at Thomas Point Light

Weather was fair for the two days on the Patuxent River with air temperatures reaching 21°C and light southerly winds. On 17 April at approximately 0500 a cold front swept through the area bringing strong winds and a drop in temperatures. Lows reached 4°C on 18 April. Winds were gusting to 25-30 knots on 17 April (as measured by RV Aquarius ship weather instruments). These high winds forced a change in cruise plan for Tucker and mid-water trawl operations on the Choptank River. Instead of conducting Tucker trawls on day 1 and mid-waters on day 2, both trawls were towed at the two upriver stations (CHOP_UR and CHOP_UMR) on day 1. On day 2, the remaining 3 stations were sampled with Tucker and mid-water trawls. The two upriver stations were not sampled on day 2.

Problems:

1. All CTD fluorometer data is questionable

Contact Information:

Dr. Ed Houde (410) 326-7224
John Bichy (410) 326-7462
Bill Connelly (410) 326-7269

ehoude@cbl.umces.edu
bichy@cbl.umces.edu
connelly@cbl.umces.edu

Table 1: Consecutive station log for ACE -INC cruise 0301-BT

ACE INC 0301 BT Consecutive Station Log

RV PISCES

April 2003

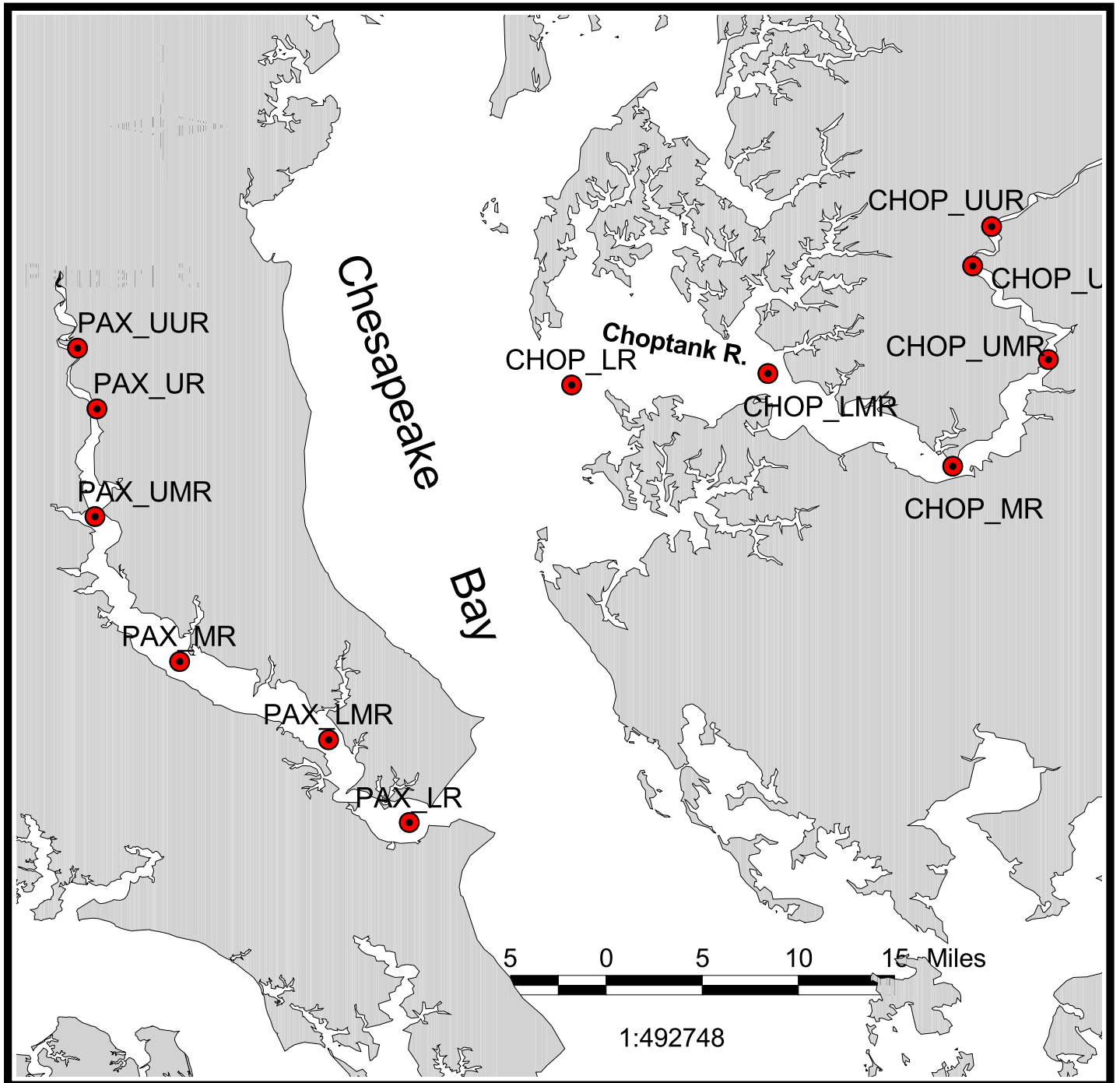
STA	CTD	STA_2	LOCATION	TIME	DAY	DEPTH	LAT	LONG	Activities	
									CTD	BT
1	1	PAX_LR	Pax River mouth	755	22	17	38.3063	-76.4375	X	X
2	2	PAX_LMR	St. Leonard Cr.	838	22	12	38.3687	-76.4982	X	X
3	3	PAX_MR	Battle Cr.	923	22	12	38.4275	-76.6104	X	X
4	4	PAX_UMR	Chaulk Pt.	1005	22	4.7	38.5363	-76.6739	X	X
5	5	PAX_UR	Hollands Cliff	1047	22	7	38.6176	-76.6725	X	X
6	6	PAX_UUR	Lower Marlboro	1135	22	4.5	38.6633	-76.6870	X	X
7	7	CHOP_LR	Choptank River mouth	845	25	8.4	38.6354	-76.3154	X	X
8	8	CHOP_LMR	Castle Haven Point	932	25	7.6	38.6440	-76.1678	X	X
9	9	CHOP_MR	Chancellor's Point	1013	25	11.5	38.5743	-76.0288	X	X
10	10	CHOP_UMR	Blinkhorn Creek	1057	25	8.4	38.6545	-75.9567	X	X
11	11	CHOP_UR	Day marker 52	1145	25	10.1	38.7249	-76.0136	X	X
12	12	CHOP_UUR	Dover Bridge	1215	25	11.5	38.7546	-75.9994	X	X
Total									12	12

Activity Codes:

CTD: Conductivity, Temperature and Depth datalogger

BT: 5-min bottom trawl tow

Figure 1: Study area ACE-INC cruise 0301-BT. Choptank and Patuxent Rivers, Maryland.



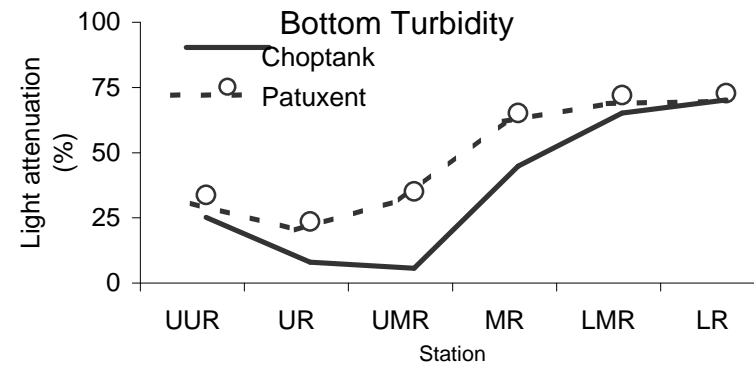
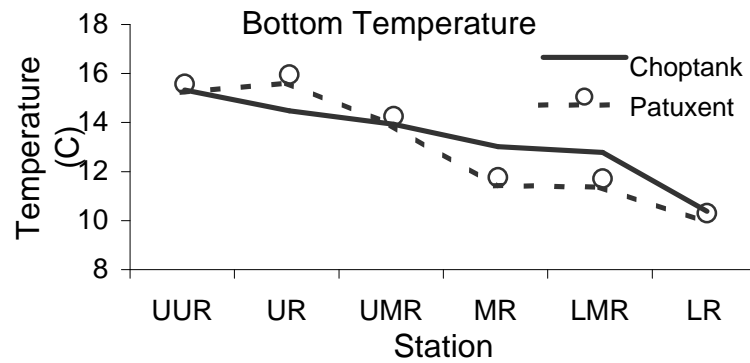
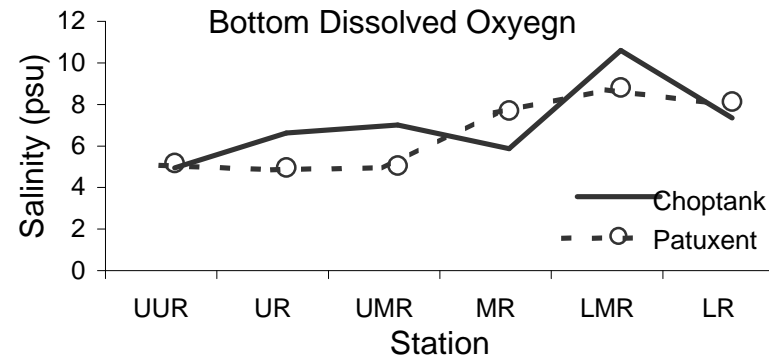
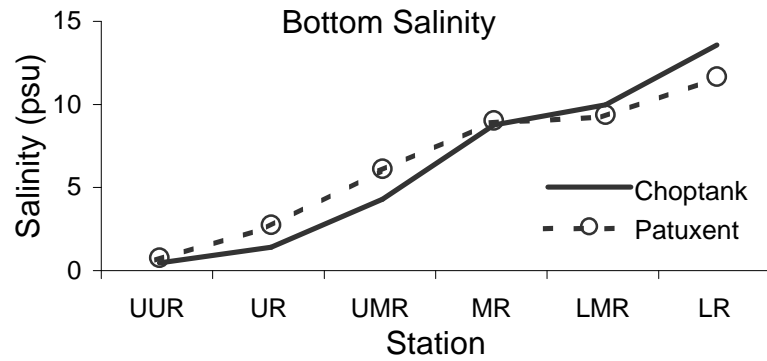


Figure 2: Bottom water property data collected from CTD profiles at stations in the Patuxent and Choptank Rivers during ACE INC 0301 BT cruise, 22-25 April 2003. Salinity (psu), temperature (C), dissolved oxygen (mg/l), and turbidity as measured from light attenuation are shown.