

A Final Report to  
**The Hudson River Foundation**  
Fiscal Year 1998

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Presented By  
**Liberty Science Center**  
January 22, 1998

**Analysis of Estuary Trophic Systems (AETS)  
Final Report to the  
Hudson River Foundation**

January 22, 1998

*Science and technology centers, museums, and schools  
should be able to create a universe of learning  
that is seamless between the inside and the outside  
of school walls.*

Neal Lane, Director, National Science Foundation

**Introduction**

When Liberty Science Center embarked on the project *Analysis of Estuary Trophic Systems* (AETS I and II) beginning in 1995, its intention was to reach school children and the general public, with the goal of making them environmental stewards of their own region. The goal of stewardship is in keeping with the Hudson River Foundation's mission, and with LSC's, which provides the tools for stewardship by serving as a public resource for lifelong interactive exploration of science and technology.

Liberty Science Center embarked on this grant project

- to create baseline records,
- to translate that information into informal science education resources for guests, and
- to acquaint the public with techniques of scientific research.

As a result of the project, a profile emerged of how to successfully use informal science education and field collection to attract and engage all sectors of the public represented by LSC's 800,000 annual guests.

**Summary of the Grant Period**

On February 16, 1995, Hudson River Foundation awarded Liberty Science Center a grant in the amount of \$10,225, to undertake a project for creating a research laboratory on Liberty Science Center's Environment Floor. The grant was intended to provide a forum for estuary research, and a site in the Center for presentations about this research to guests. The research focus was life in

the Hudson River, starting with the simplest trophic level in local estuaries, plankton.

During May of 1995, Principal Investigator Dr. Faber and Co-Investigator Norman Hill began plankton collection near Liberty State Park in Jersey City, New Jersey.

In June of 1995, presentations began at LSC's Microscope Station and Field Station.

On June 14, 1995, Liberty Science Center received its signed Agreement on Grant Conditions.

On October 2, 1995, LSC submitted a pre-proposal to the Hudson River Foundation for continuation of the project, and after invitation from the Foundation, submitted a full proposal on December 6, 1995. Given delays in implementing the first phase of the project, this second proposal was never accessed by LSC.

On October 5, 1995, Liberty Science Center submitted its interim financial report to Hudson River Foundation. This report showed total expenditures of \$5397 divided between salaries (\$3303), benefits (\$660), supplies (\$730), and indirect costs (\$704). Expenditures for the May 1995 sampling trips that established a favorable plankton collection site on the Hudson River were not reflected in the expenditure report. To date, none of the grant expenses have been submitted to the Foundation on the required Expense Report/Advance Request and Check Transmittal Forms. Those forms are made a part of this report.

In July of 1997, informal education sessions ended. In September of 1997, field collections ended. Attached to this report is a record of field collections from September 1995 to September 1996. Field collections from September 1996 to September 1997 were not recorded.

Attached to this report is the Expense Report/Advance Request Form, showing total grant fund expenditures of \$10,225 and cost sharing of \$36,839. Grant funds were expended on salaries, benefits, travel, and publication materials for the museum's DISCOVERY TRAILS™ field trips. The matching funds from Liberty Science Center represent salaries, benefits, and equipment used at the Microscope Stage to present plankton samples to LSC guests.

With this report is enclosed a video cassette record of some of the plankton samples presented to our guests and viewed at the Microscope Stage exhibit area.

Included with this report is a photographic summary of the project.



**Field Collections for Hudson River Foundation AETS Grant\***  
**September 1995 to September 1996**  
**First Year Report\*\***

\*\*Recorded by Richard Weddle,  
Liberty Science Center Animal Care Supervisor

September 29, 1995

Collected at 12:45 PM (High tide at 12:33)

Water temp 64 F

Salinity 30 ppt

Water very clear and still

Comments: Found almost nothing, water is too clear

October 6, 1995

Collected at 3:30 PM (High tide at 5:30)

Water Temp 60 F

Salinity NA

Water not as clear as last time, average current

Comments: Got reasonable plankton, videotaped 5-6 specimens

October 11, 1995

Collected at 10:15 AM (High tide at 9:35)

Water Temp 53 F

Salinity 25 ppt

Water was cold, choppy, a very windy day

Comments: Got a little plankton

October 19, 1995

Collected at 11:05 AM (High tide at ?)

Water temp 66 F

Salinity 26 ppt

Water was cloudy, choppy

Comments: Average collection, videotaped 4 or 5 samples

October 26, 1995

Collected at 10:45 AM (High tide at 10:20)

Water temp 56 F

Salinity 25 ppt

Water was clear and calm

Comments: Not much plankton today, videotaped two algae

\*Field collections from September 1996 to September 1997 were not recorded.

January 8, 1996

Collected at 10:30 AM (High tide at 10:00)

Water Temp 38 F

Salinity 28 ppt

Water was choppy

Comments: Found only bits of phytoplankton, mainly short chains of green algae. Water was extremely cold, we couldn't get back to the van soon enough!

January 29, 1996

Collected at 4:00 PM (High tide at 4:53)

Water Temp 40 F

Salinity 28 ppt

Water was reasonably calm

Comments: Slightly warmer than last week (At least in terms of air temp). Same results, just a bit of algae

February 5, 1996

Collected at 10:00 AM (High tide at 9:34)

Water Temp 42 F

Salinity 26.5 ppt

Water was choppy

Comments: Lots of sediment in the water. Centrifuged results had enough inorganic material to make plankton ID impossible.

February 19, 1996

Collected at 9:30 AM (High tide at 9:17)

Water Temp 40 F

Salinity 27 ppt

Rough water

Comments: Water even rougher than previously. Found nothing but the familiar bits of green algae and an occasional strand of red algae. Decided to stop collection till spring. In addition to being a very uncomfortable process, we have not been getting enough plankton to show off for the guests.

April 4, 1996

Collected at 10:25 AM (High tide at 10:31)

Water temp 52 F

Salinity 23 ppt

Calm water

Comments: Much more comfortable than two months ago! It was good to get back in the field. Found plankton including several interesting annelid worms that were quite large.

May 6, 1996

Collected at 10:00 AM (High tide at 10:21)

Water temp 55 F

Salinity 23.5 ppt

Smooth water

Comments: Similar results as last trip, also took beach seine and caught a few silversides today.

May 20, 1996

Collected at 10:30 AM (High tide at 10:32)

Water temp 59 F

Salinity 24 ppt

Smooth water

Comments: Fewer large organisms (especially worms) as last several trips. Plenty of phytoplankton though.

June 3, 1996

Collected at 4:00 PM (LOW Tide at 3:29)

Water temp 59 F

Salinity 26 ppt

Smooth water

Comments: For a change of pace, decided to try collecting at slack tide. I underestimate the range of the tidal change in this location. The waters edge was a good 30 yards out from where it is at high tide. The substrate was very muddy, and we quickly sunk as we attempted to walk across the mud flat. Candi has to be pulled out, and she sunk to above her knees and couldn't move. It is very difficult to get samples in these conditions, we won't repeat this experiment.

July 16, 1996

Collected at 9:00 AM (High tide at 8:45)

Water temp 63 F

Salinity 28 ppt

Smooth water

Comments: Found lots of phytoplankton, a few segmented worms, and one crab zoea. Also catching lots of small jellyfish in the plankton seine. Have to be careful to remove these before centrifuging, or the jelly creates a big mess.

August 19, 1996

Collected at 11:00 AM (High tide at 11:16)

Water temp 72 F

Salinity 27 ppt

Smooth water

Comments: More jellyfish, more phytoplankton. Also caught a few silversides and five baby stripers with a beach seine.

September 16, 1996

Collected at 10:00 AM (High tide at 9:56)

Water temp 70 F

Salinity 29 ppt

Smooth water

Comments: No jellyfish, only a few specimens of plankton. Tried for some fish, but didn't catch any. With VLM in for repairs, using a lower-quality microscope, very hard to see things.



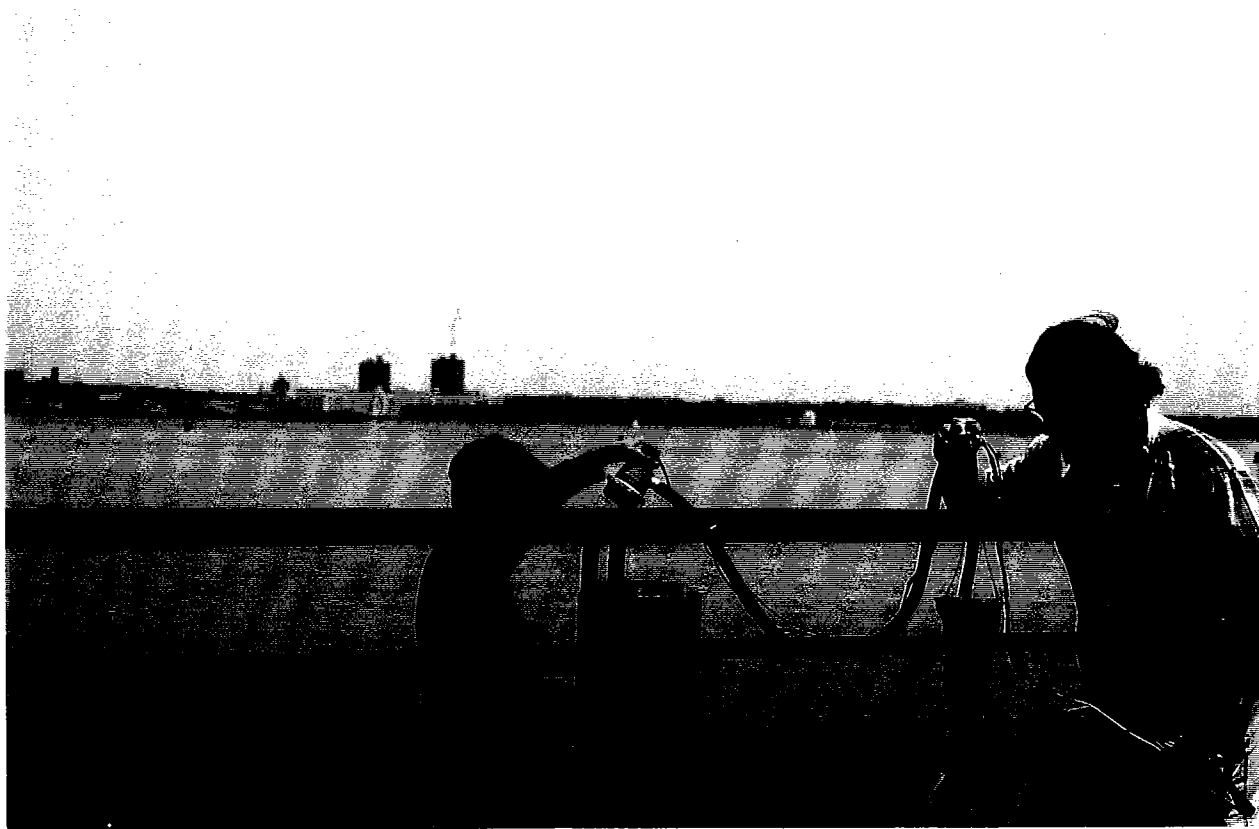
A Photographic Summary of  
**Analysis of Estuary Trophic Systems**  
**(AETS)**  
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**Initial Collections and Search for a Site  
(Liberty State Park)**







**Plankton Collection at Caven Point  
by LSC Guests, Groups,  
and Staff**









**Microscope Set-Up at the  
Microscope Stage Exhibit Area**



**AETS Grant Project Spawns  
Another Project -  
A Model of the Hudson River**

