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BENTHIC SURVEY OF THE NORTH CHANNEL IN SUPPORT OF GREAT LAKES BIOLIMNOLOGY LABORATORY

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GLBL BENTHIC SURVEY OF THE NORTH CHANNEL

There is the potential that the environmental affect of acid rain encompass large bodies of water such as the North Channel as well as small inland lakes. To confront this problem, an extensive survey of the benthic community was conducted from August 7 to August 26 of the North Channel and the Northern end of Georgian Bay. This study will serve as a baseline from which the impact of acid rain can be assessed and the cores taken may indicate changes which have already occurred in the benthic community.

OPERATIONS

The project was under the direction of Dr. Murray Johnson of GLBL (Great Lakes Biolimnological Laboratory) with the field party being Larry Culp of GLBL and Jim Brown from Technical Operations. Wayne Hyatt of GLBL replaced L. Culp for the last two days of the survey--August 25 and 26. The MV LAC ERIE, chartered from McKeel Work Boats Limited by Ocean & Aquatic Sciences, provided vessel support. An eighteen-foot open boat with a twenty horsepower motor was rented for three days of sampling in MacGregor Bay, Collins Inlet and Beaverstone Bay. Vehicle support was provided by GLBL.

The stations were spaced either a mile or half a mile apart along transect lines. At each station, duplicate Shipek and 9-inch Ekman dredge samples were taken as well as Secchi disc measurement

and an EBT cast. At specified stations, in addition to the foregoing tasks, there were zooplankton collections with a separate vertical net haul in the hypolimnion and the epilimnion. Also taken were water samples from both thermal layers and two cores utilizing a Boomerang corer. This corer is similar to the benthos corer except in the design of the vane assembly.

Onboard measurements of pH and alkalinity were done and the filtration of water for chlorophyll a analysis. Water samples were preserved for later determination of major ions, mercury and trace metals. The Ekman samples were screened, washed and preserved for later sorting and identification in the laboratory. A bottom profile with a Kelvin-Hughes 26A echo-sounder was taken as the ship moved along the transect lines.

SUMMARY

The initial delay in reaching the study was caused by bad weather and problems in towing the VAPS buoy and barge.

Using the Ekman grab from a heavy vessel such as the LAC ERIE posed some difficulties. On deep stations, the vessel tended to drift, dragging the Ekman before the messenger could trigger it closed. This problem was solved by modifying the Ekman so that it was self-triggering similar to the mechanism of the Shipek. It also meant that the samples could be raised and lowered by a winch rather than by hand which saved considerable effort.

In total, 223 stations were completed, including some 30 chemistry stations. Much credit is due to the assistance and interest rendered by the crew of the LAC ERIE, Captain Reg Black and Darren Keyes. The survey was successfully completed as planned with only two days lost due to bad weather in the study area.

CHRONOLOGY OF EVENTS - GLBL

July 28 - LAC ERIE arrived at CCIW and gear loaded aboard

July 30 - LAC ERIE departed from CCIW with the VAPS buoy and barge in tow

August 3 - VAPS was delivered to final destination--Erieau

August 7 - 9 - LAC ERIE arrived in Manitowaning and surveyed Manitowaning Bay

August 10-13 - LAC ERIE conducted the survey of the North Channel out of Little Current

August 14-26 - Killarney used as a berth while studies conducted in Frazier Bay, MacGregor Bay and Northern Georgian Bay

August 15-16 - Sampling done in Baie Finn with the LAC ERIE anchored overnight

August 22-23 - LAC ERIE anchored overnight to complete work in Collins Inlet and Beaverstone Bay

August 26 - Survey completed and field technicians returned to CCIW

September 3 - LAC ERIE reached CCIW

September 5 - LAC ERIE finished charter

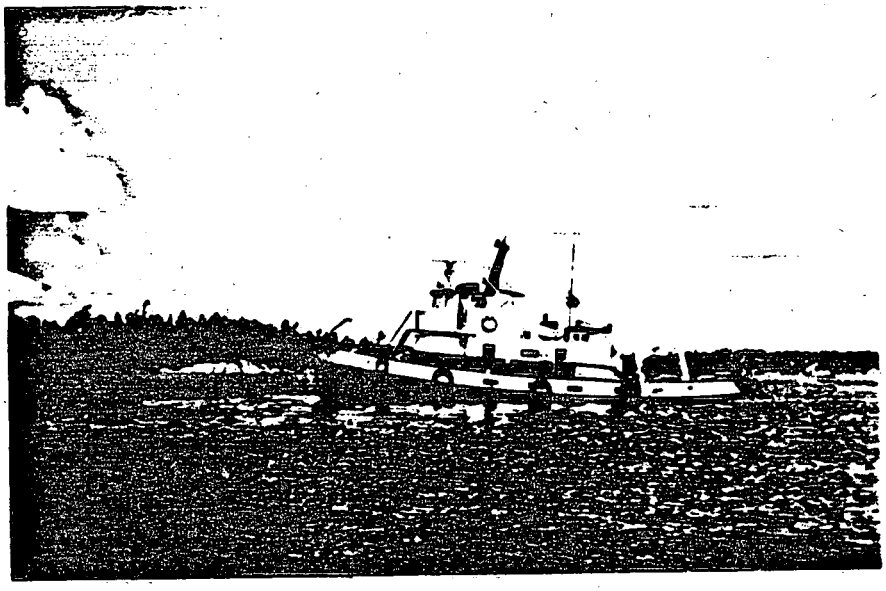

Figure 1. Charter vessel, MV LAC ERIE at anchor in Beaverstone Bay

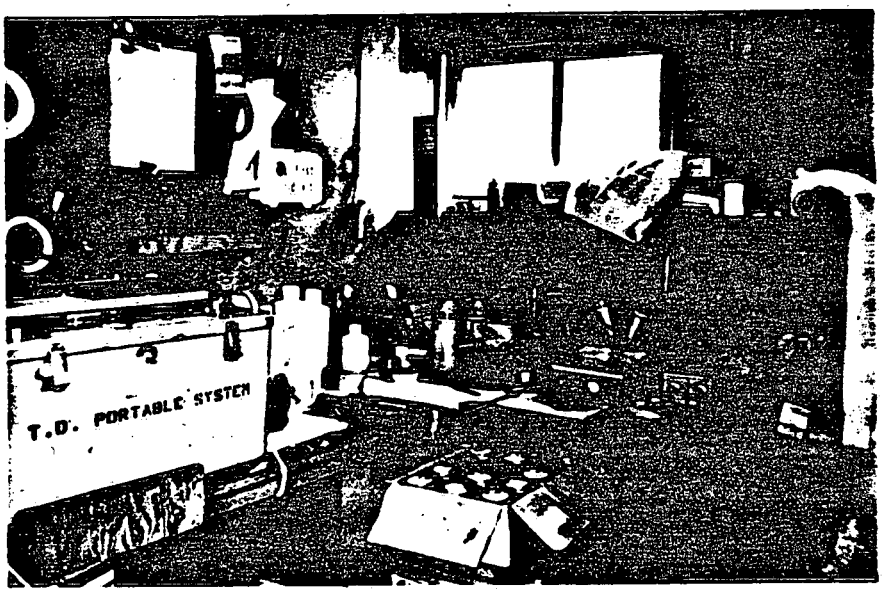

Figure 2. Laboratory setup showing portable EBT system and manual chemistry equipment

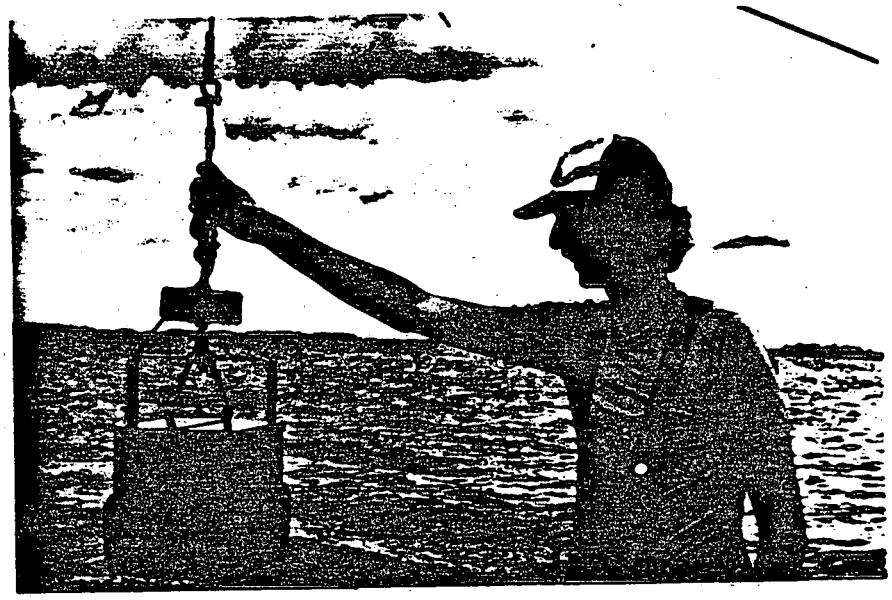

Figure 3. Ekman sampler which was modified to be self-triggering

Figure 4. Crewmen land a vertical net haul of the hypolimnion