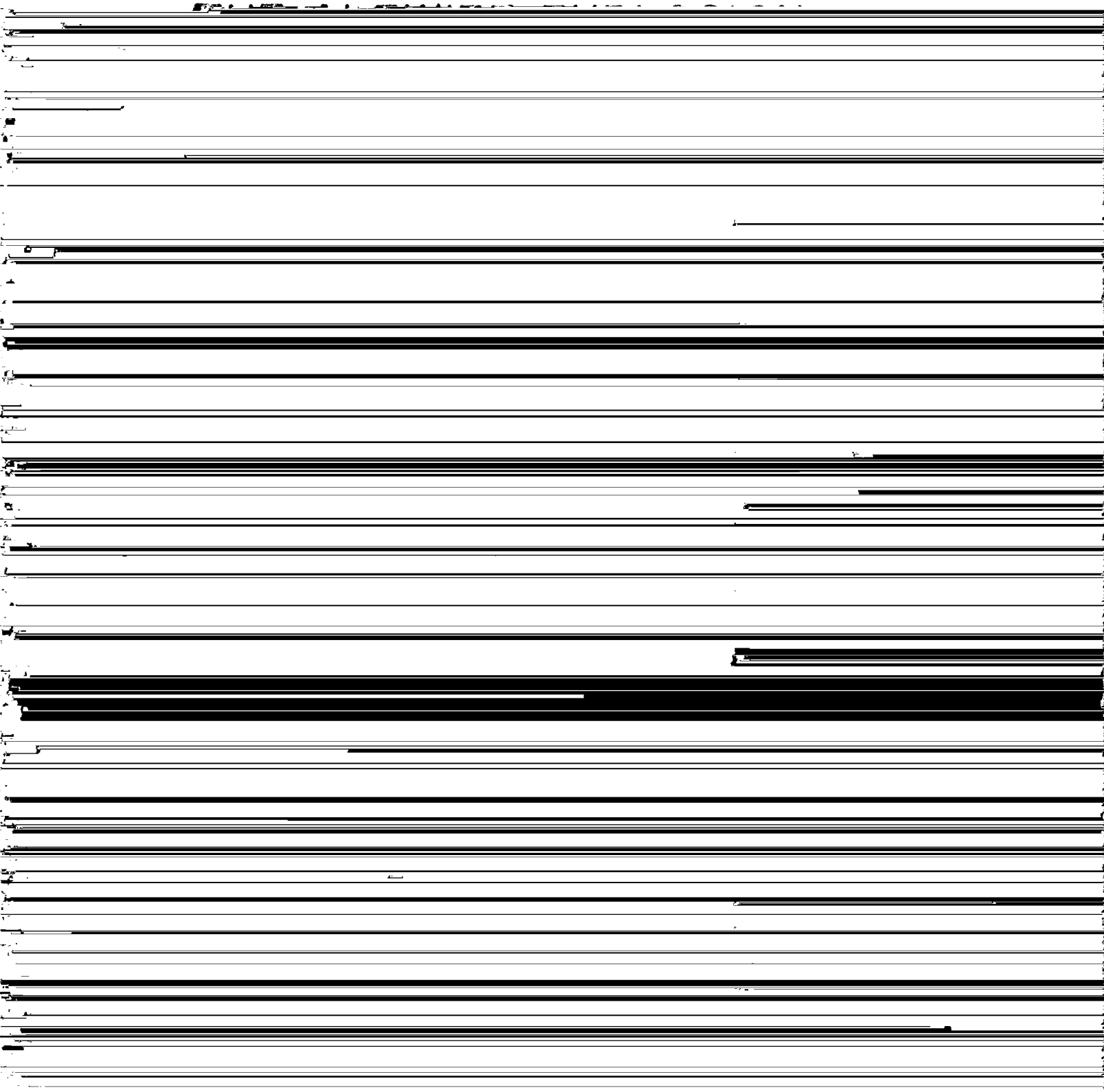

The 1967 Die-Off in Lake Michigan

ENVIRONMENTAL PROTECTION AGENCY

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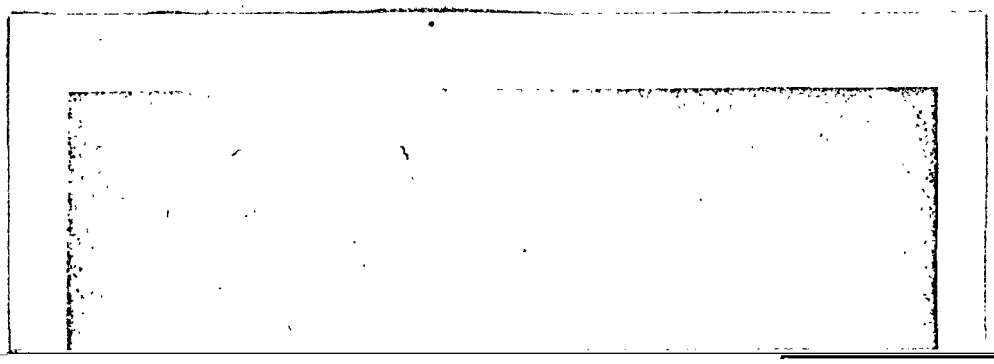
[redacted]

INTRODUCTION

On June 15, while on a flight to investigate sources of pollution

in Lake Michigan, an official of the Great Lakes Region of the Federal

to determine the chemical, biological and bacteriological content of the waters; fish carcasses were examined for pesticides; a certain algae which some scientists believe is toxic was also studied. All the evidence



e photographed from

SPECIAL WATER QUALITY SURVEY

The FWPCA's Chicago Program Office, Great Lakes Region, conducted

ENVIRONMENTAL ASPECTS OF THE PROBLEM

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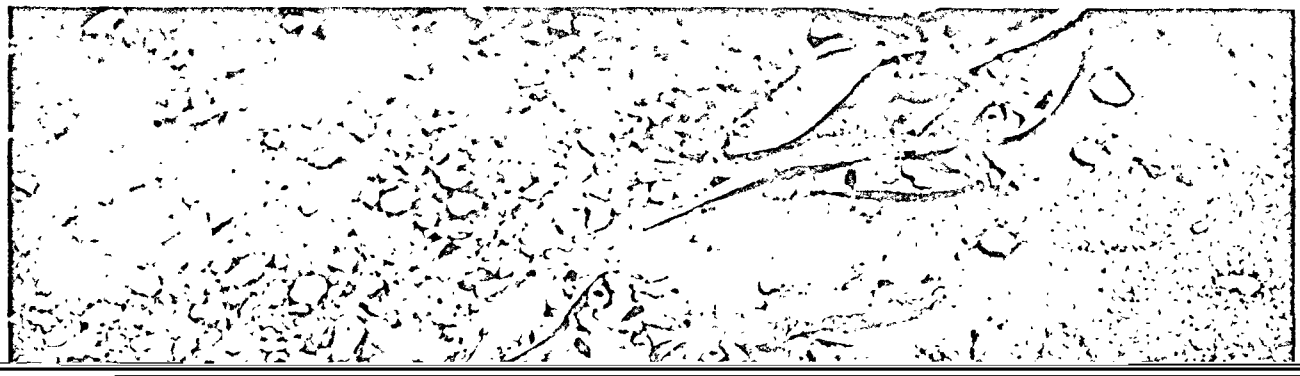
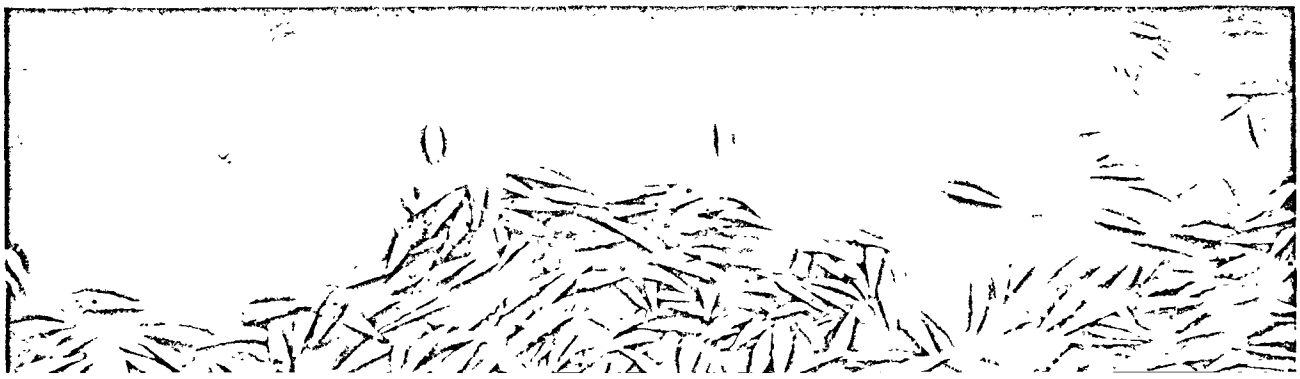
many factors that contributed to environmental changes, including:



and steelhead trout and coho and chinook salmon was begun. Care must be exercised, however, if the restocking program is to succeed. Adult alewives will be available to some of these predators only intermittently

forms of organisms in the bottom muds that game fish feed on. Coarse



BACKGROUND OF THE PROBLEM

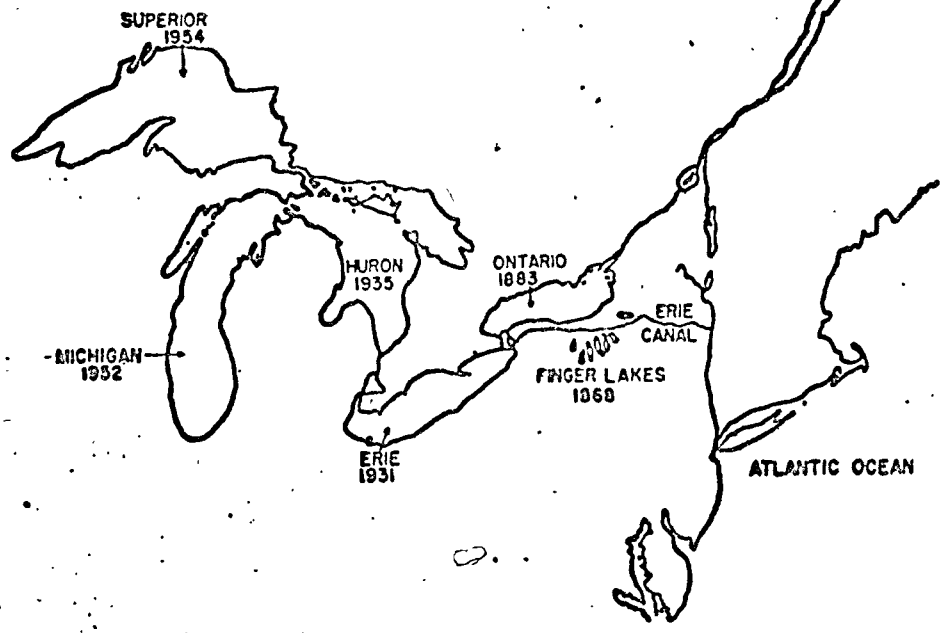
Alewife die-offs have been reported in the Atlantic Ocean since the 1700's. The alewives in the Great Lakes, unlike their salt water cousins, however, have been drawfed in their struggle to adapt to fresh water. They are about half the size of the Atlantic alewives, averaging about 6 or 7 inches compared to their Atlantic relations' 10 to 11-inch average length. Atlantic alewives also have food value, having been sought after first by Indians and the settlers of New England. The name was probably

Since most alewives spawn in the third year, 1967's bumper numbers could be anticipated. (2)

Natural inhabitants of the North Atlantic, the immigrant species of the Great Lakes was first noted in the Finger Lakes of New York in 1868, with subsequent sightings in Lake Ontario in the 1880's.

The alewife has since migrated throughout the entire Great Lakes

traces the progress of these invaders throughout the Great Lakes. Alewives soon became and continue to be the most abundant fish of Lake Ontario. They also exist in large numbers in Lake Erie, but have not become the



Outline map of the Atlantic coast and the Great Lakes drainage, (Threinen)

ORIGIN OF THE ALEWIFE POPULATION EXPLOSION

Species Inter-Relationships in the Great Lakes

Dr. Smith, in a paper on over-exploited fishery populations in the Great Lakes, presented at a symposium in 1966 (4), lucidly described the sequence of events leading to the present over-population of the Great Lakes by alewives. Smith states that "a succession of fish species would be expected during the natural aging process of the Great Lakes, but recent progressive changes in species composition have been rapid

Smith generalized on the recent changes in the Great Lakes fish populations as follows:

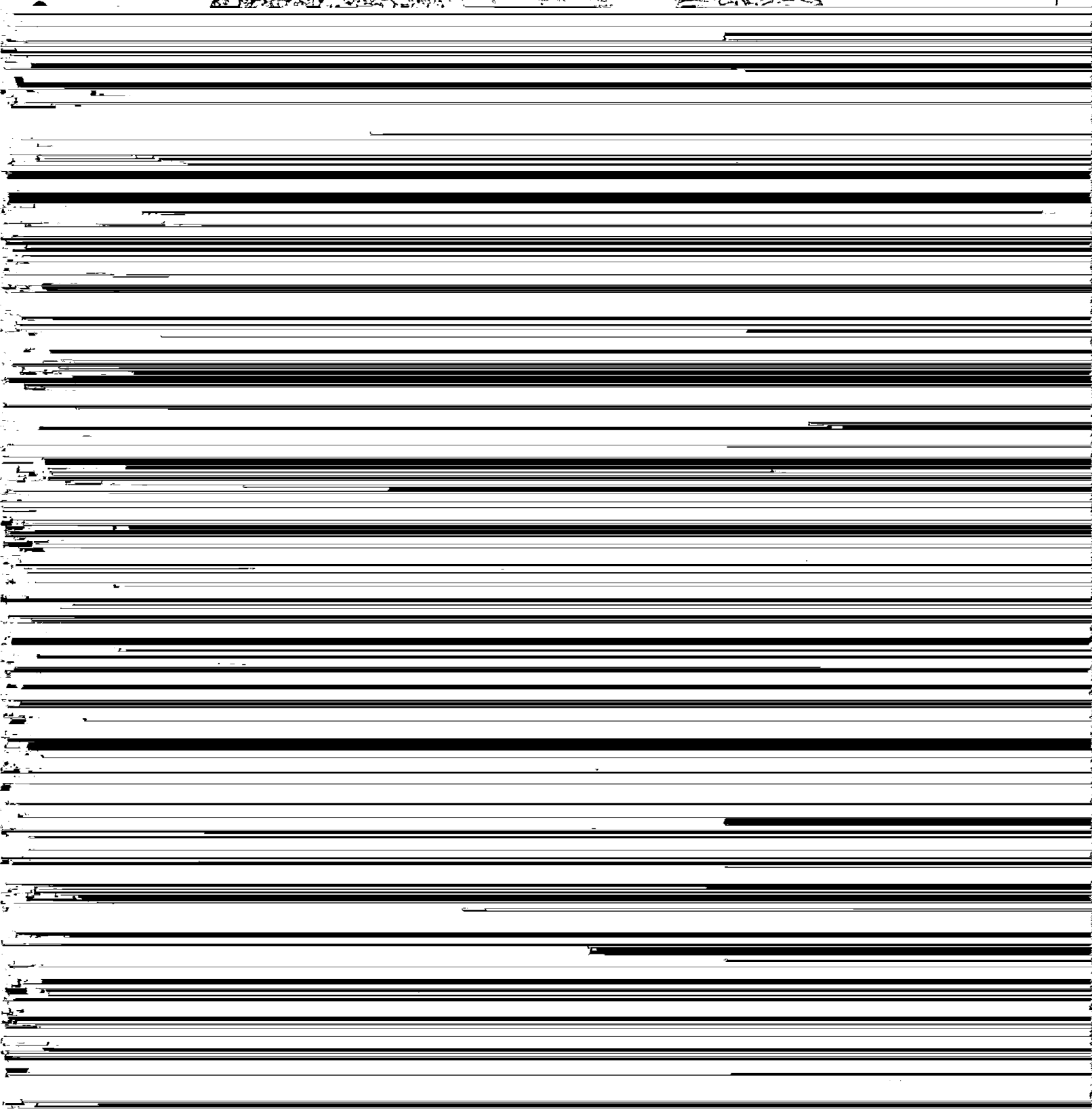
"Until the 1940's the Great Lakes as a whole had enjoyed a stable and productive fishery despite loss of the sturgeon and the few collapses.of stocks in certain lakes. All preferred species continued in abundance somewhere in the Great Lakes. Although many showed...degrees of...

"At the turn of the century seven of these species were represented in the catch. The lake trout (Salvelinus namaycush) and lake herring were the largest contributions to the catch, and the carp (Cyprinus carpio) which was introduced into the lake in the late 1800's composed less than 1 per cent of the catch. Despite increased abundance of carp and the subsequent introduction and establishment of the smelt, the relative contribution

Physical Description of Alewives

Threinen (2) describes the alewife as follows:

"The alewife, like other herrings, has soft fins, lacks teeth, has no



Habits and Habitat

Threinen (2) describes the habits and habitat of alewives as follows:

"Alewives are [redacted] gregarious fish (they flock together). In

THEORIES ON THE ALEWIFE DIE-OFF

[redacted]

[redacted]

Lake Michigan behaves as Lake Huron did, the alewife population in southern Lake Michigan should stabilize, according to Dr. Smith. Die-offs will be seen each year as always, but should be hardly noticeable, as is now the case in Lake Huron, Dr. Smith believes.

EXTENT OF THE ALEWIFE DIE-OFF IN THE GREAT LAKES, 1967

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INTERFERENCE TO WATER USES BY THE ALEWIFE DIE-OFF

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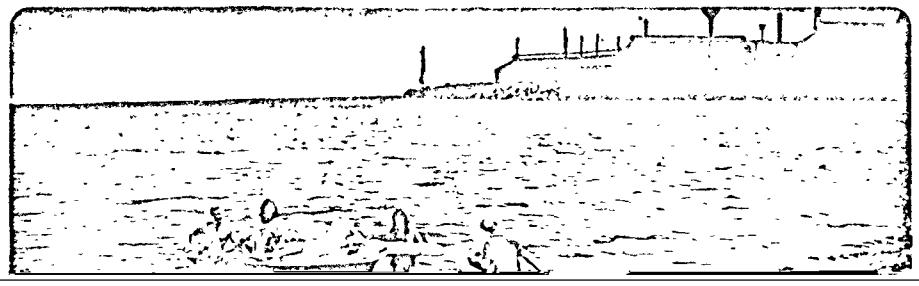

The alewife is troublesome to Great Lakes commercial fishermen because

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RESEARCH AND STUDIES ON THE ATHLETES' WORRIES

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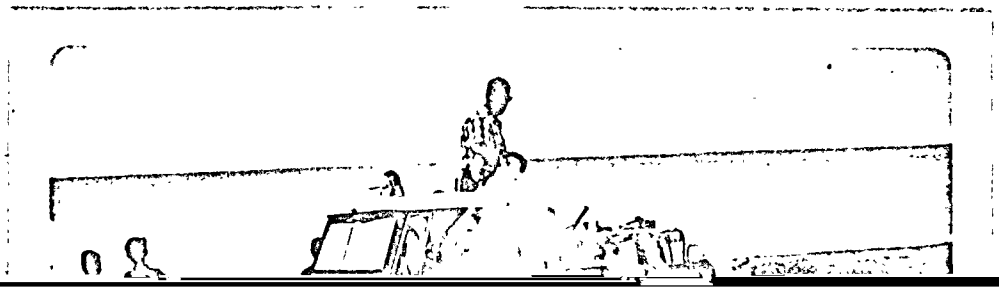

to Cheonwal (15) the U. S. Great Lakes Fisheries Commission stocked 2.1

selected for many generations to develop a strain that will occupy deep water, grow fast, and mature early. Michigan and Ontario have also initiated experimental introductions of kokanee in the Lake Michigan watershed and in Georgian Bay, Lake Huron. Although it is uncertain where the kokanee will live in the Great Lakes, they will probably compete with the alewife.

"It seems unlikely that all of these introductions will meet with great success. It is certain, however, that the sea lamprey will be controlled, as it has been in Lake Superior, and that conditions again will be favorable for large predators in the deepwater areas. Establishment of at least the lake trout seems to be assured because of its rapid recovery in Lake Superior that followed completion of the initial sea lamprey control measures in 1961. The successful establishment of at least one additional major predator in the deepwater area would place even greater pressure on the

CONGRESSIONAL CONCERN OVER THE ALEWIFE PROBLEM

As the dimensions of the alewife die-off became known, Congressional

Letters and telephone calls from concerned resort and summer home owners and vacationers have also rained into the Great Lakes Regional Office, FWPCA, in Chicago.

A number of Congressmen inquired about the possible use of members of the Job Corps, who are enrolled in one of the programs conducted by the Office of Economic Opportunity. Approximately 110 Job Corps members have since been engaged in clean-up activities in the Indiana communities of Gary, East Chicago, Whiting, Beverly Shores, and Michigan City. Along the Michigan shoreline between Benton Harbor and Ludington, between 40 and 100 Corpsmen have been employed for the clean-up. Twenty-five Job

John Nicosia, mayor of East Chicago.

Representatives from the Allis-Chalmers Co., whose equipment is currently used by the cities of Gary and Michigan City to remove fish from

CONCLUSIONS

Big alewife die-offs have occurred in Lakes Ontario, Erie, and Huron in the past, with kills of lesser magnitude occurring in these lakes the

Restocking of fish that prey on the alewives and increased commercial fishing for them should prove helpful in restoring a balanced aquatic environment to bring the alewife population under control.

There is also a need for programs which will concern themselves with the more immediate problems of cleaning up the beaches and finding ways of removing the fish from the water before they reach the shore. In this regard, increased funding for the fish should also be considered.

The Secretary of the Interior has appointed a six-man task force, headed

APPENDIX

List of References

Special FWPCA Lake Michigan Water Quality Survey, June-July 1967

References

News Clippings

LIST OF REFERENCES

(1) Warden, R. "20 Billion Dead Alewives." Chicago Daily News, June 21, 1967

(2) Threinen, C. W. "Life History, Ecology and Management of the

(3) "War on That Fish Smell Is Escalated." Chicago Tribune. July 12. 1967.

(4) Smith, Stanford H. "How Man Changed His Planet." Symposium on