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A PROGRESS REPORT ON THE LAKE STURGEON IN THE BLACK LAKE SYSTEM, CHEBOYGAN AND PRESQUE ISLE COUNTIES

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SUMMARY

The lake sturgeon in Black Lake, Cheboygan and Presque Isle counties have been surveyed with large mesh gill nets for the past four years. To date, not enough recaptures have been obtained from tagged fish to make any reliable population estimates.

Data do indicate that a substantial sturgeon population exists at Black Lake and that the construction of Kleber Dam has not noticeably affected year class strength.

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INTRODUCTION

Black Lake is a 10,000 acre lake located in Cheboygan and Presque Isle counties of the northern lower peninsula of Michigan. It is one of the few lakes in Michigan which contains a population of lake sturgeon (Acipenser fulvescens). Kleber Dam was constructed on the Black River in 1949, and effectively blocks any upstream migration of fish. While sturgeon now spawn in the river between the dam and Black Lake, success was questioned due to the fluctuating water level caused by the dam and the shortage of desirable spawning substrate.

This report includes information gathered from 1970 through 1973. The fish were collected during late May and early June. The study was initiated to determine the size of the existing population, whether natural reproduction is sufficient to support the fishery, and if the present regulations adequately protect the species from over exploitation.

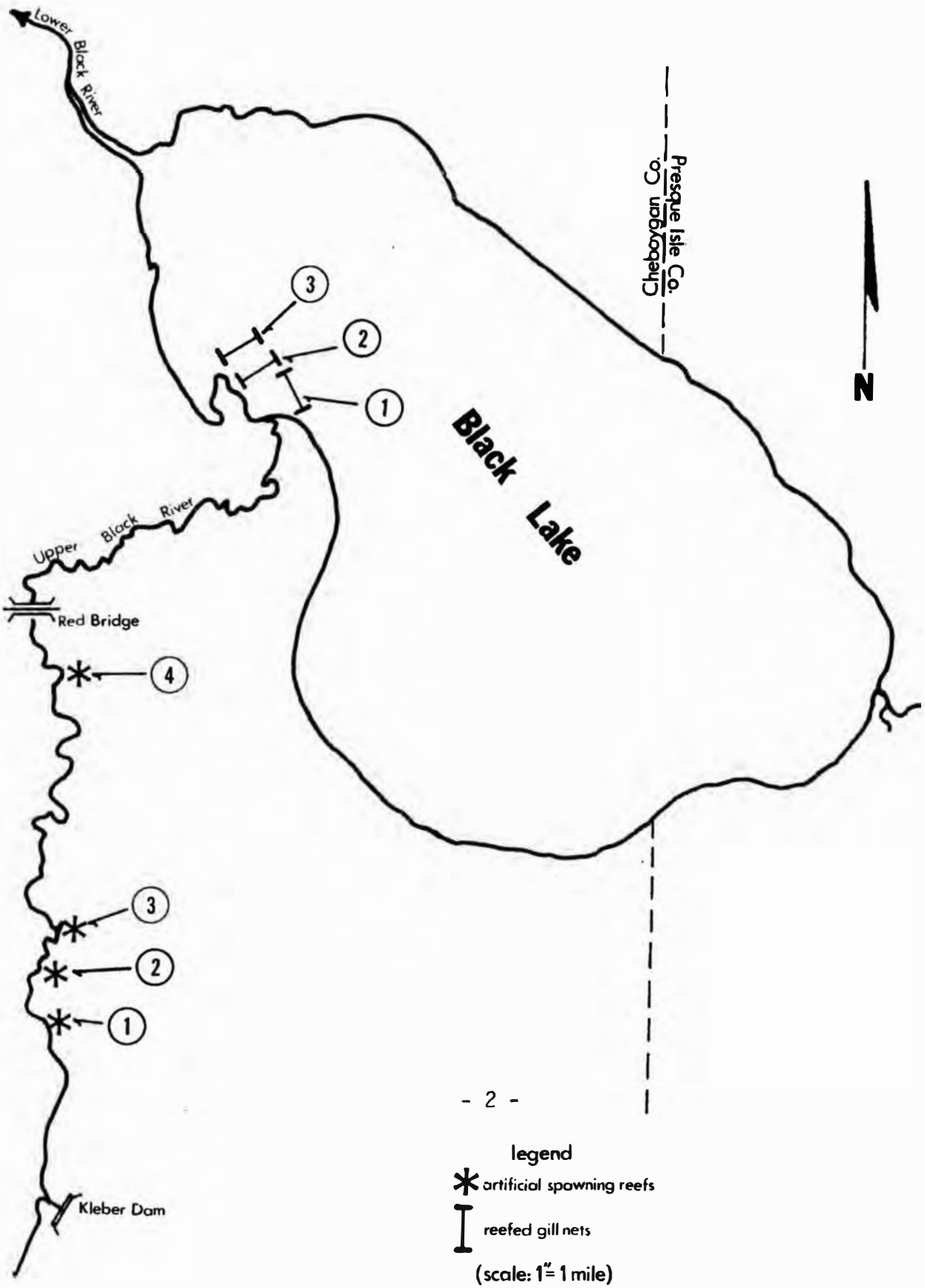
METHODS

In 1970 sturgeon were captured with a single large mesh gill net (10 inch stretch measure, 300 feet long) in conjunction with two four foot trap nets. The gill net proved better than trap nets since it allowed easier handling of the fish. Sturgeon usually entangle (rather than gill) in the gill nets, and tire themselves out. The efficiency of these nets can be increased many fold by reefing. A gill net 14 feet deep reefed down to 8 feet appears to be the most efficient.

Three 8 inch stretch measure gill nets were used for collecting from 1971 through 1973. Two nets (900 feet and 1,000 feet in length) were set off the mouth of the Upper Black River, and one net (500 feet long) was set off the old river mouth approximately one mile northwest of the present river mouth (Figure 1). Since the bottom is fairly flat, except for a few troughs, the nets are fishing the 10 foot to 15 foot depths. It is believed the majority of the sturgeon travel in this depth of water and may move in even shallower in the evening to feed.

The nets were set in the morning and checked approximately every hour until they were lifted in the afternoon. The sturgeon were removed and processed on the lake as the nets were checked. After the fish were in the boat, they were measured and the leading fin bone from one pectoral fin was removed for aging. Two dart tags were then placed in the fish, one on each side at the base of the anterior end of the dorsal fin. The fish were then released, the whole process taking approximately ten minutes per fish. The fin bones were frozen until the project was completed for the season. At a later date the fin bones were dried and sent to the Wisconsin Department of Natural Resources for aging.

Figure 1. Locations of Artificial Spawning Reefs On Upper Black River and "Reefed" Gill Nets On Black Lake



Attempts have been made to collect small sturgeon. In June 1972, a boom shocker was used in the lower end of the Upper Black River and in Black Lake near the river mouth. Experimental mesh gill nets were also used in Black Lake near the river mouth. In August 1973, a stream shocking boat and a back pack shocker were used near spawning structure number three and by the Red Bridge (Figure 1).

During the summer of 1972, four artificial spawning reefs were constructed on the Black River below Kleber Dam (Figure 1). The reefs were modeled after structures that Wisconsin constructed which have proved successful. The reefs were built in areas where high sand bluffs were washing into the river. The reefs involve rock riprapping the outside of a river bend and constructing a rock deflector on the inside of the bend to speed the water flow into the rock riprap. In Wisconsin, the sturgeon successfully spawn on the rock riprap.

RESULTS

To date 136 sturgeon have been captured, tagged, and released. No reports of mortality have been received from the local residents.

It is believed the majority of the fish are captured on a feeding rather than a spawning run, because many of the fish have full stomachs and will regurgitate wigglers. The river delta areas being netted are undoubtedly good producers of burrowing mayflies. The only ripe fish captured thus far have been males.

With the exception of a 38 inch fish taken in 1973, all fish sampled were over 40 inches.

The first recapture occurred in 1973. When tagged in 1972, it was 48.75 inches and in one year it had grown to 52.75 inches. With only one recapture to date, no population estimate can be made, however the population of large fish (over 40 inches) seems sizable.

Some limited age and growth data was gathered for Black Lake sturgeon during the period 1955-1960 (Vondett and Williams, 1961). When compared to the present data the age-length relationship appears quite similar (Figure 2).

The numerous attempts to collect small sturgeon in the Black River System have thus far been unsuccessful. Earlier attempts in the Black River were also unsuccessful, (Vondett and Williams, 1961). Young sturgeon have been collected in the Menominee River, between Michigan and Wisconsin, using boom shockers (Priegel, 1973). Priegel assisted on the Black River survey in 1973, and since proven techniques were used, it is assumed that significant numbers of young fish were not present.

In order to gain insight into the effects the construction of Kleber Dam have had on sturgeon reproduction, a histogram of year class strength was prepared for all fish captured during this study (Figure 3). No decline in year class strength is apparent.

Figure 2. Comparison (x=1955-1960,•= 1970-1973)
Of Age-Length Data

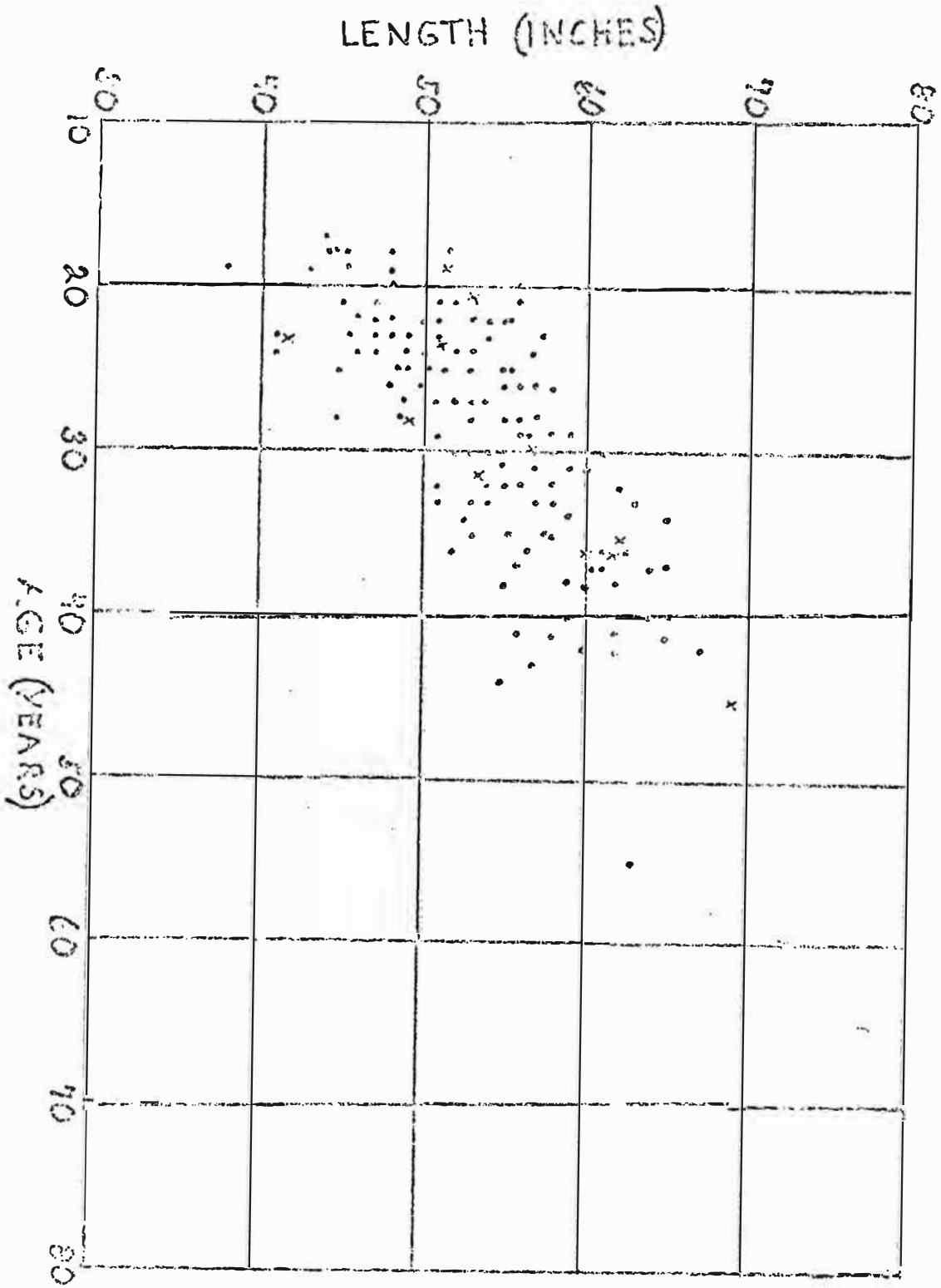
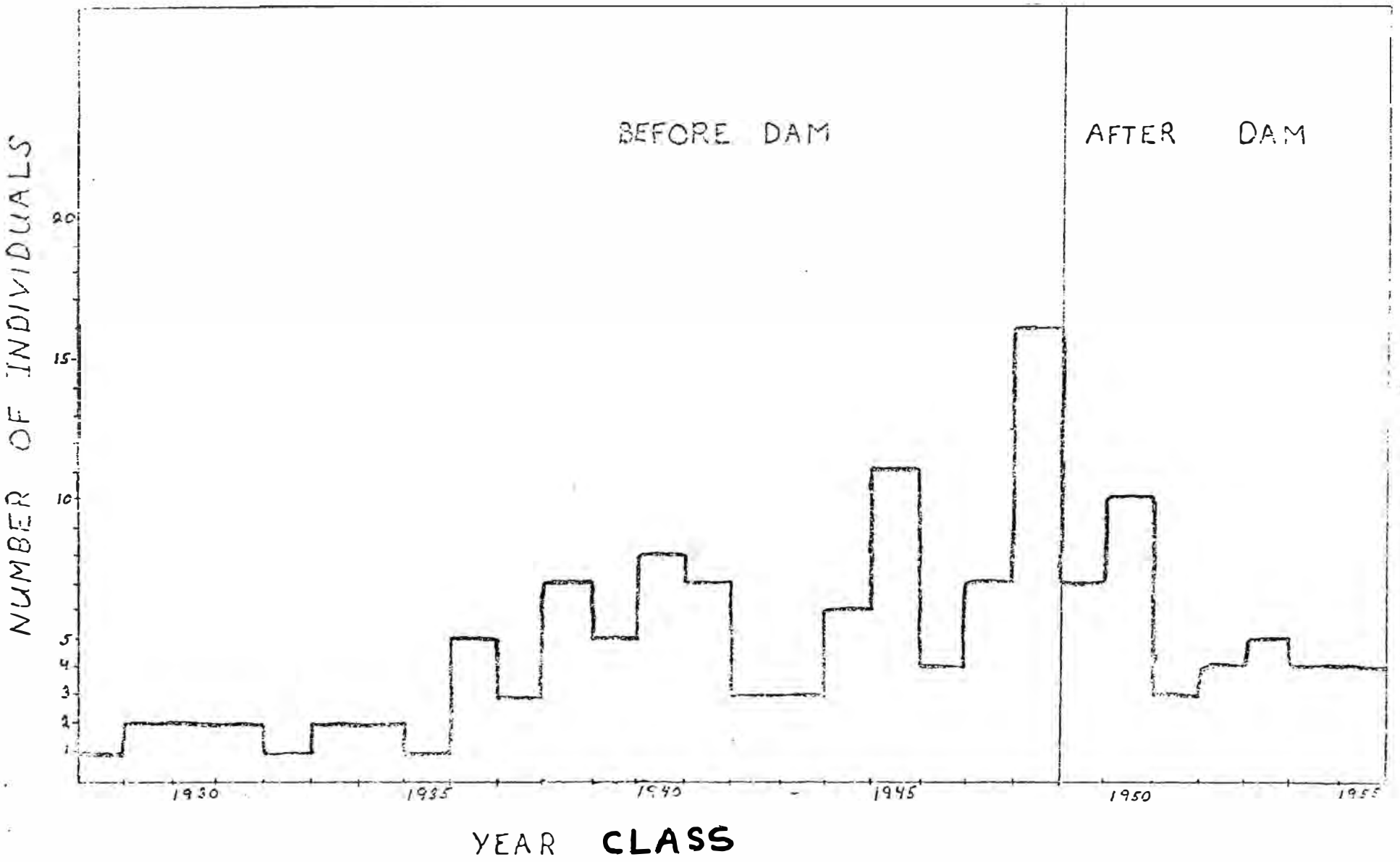


Figure 3. Year Class Strength of Lake Sturgeon Netted From Black Lake, Cheboygan County 1970-1973



Some observations of the spawning structures were made in the spring of 1973 and, while no actual spawning was observed, many sturgeon were noted in the vicinity of the structures. The lack of actual spawning is not too alarming since the observations were during the day and most spawning in Wisconsin takes place in the evening (Priegel and Wirth, 1971).

Beginning in 1973, the owners of the Kleber Dam, the Northern Michigan Electric Coop, Inc., agreed to release a minimum flow of approximately 80 cfs during the period of May 1 through July 31. This flow is necessary for the structures to work effectively and to protect the sturgeon eggs from being left high and dry.

Netting should continue until a population estimate can be made. Follow up work on the spawning reefs is needed to determine if they are successful. I recommend the validation of winter speared sturgeon be continued.

LITERATURE CITED

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