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INSTITUTE FOR FISHERIES RESEARCH
Division of Fisheries

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University Museums
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SURVEY OF VAN ETTEN LAKE, IOSCO COUNTY*

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Van Etten Lake is one of the moderately productive river lakes in Michigan. It occupies an interdunal basin about $\frac{1}{2}$ mile in width and extending about $3\frac{1}{2}$ miles in a northwest-southeast direction. The Pine River is its chief tributary but water also enters from Dry, Humes and Phelins Creeks. The outlet-stream (Van Etten Creek) flows approximately $1\frac{1}{2}$ miles before it enters the Au Sable. The distance from this point to Lake Huron is short and it is not surprising that certain fishes find their way into Van Etten Lake from Lake Huron.

Some years ago a dam was placed at the outlet of this lake and has been maintained to keep the level constant. According to Mr. F. W. Potts, Superintendent of the Harrisville State Fish Hatchery, this dam holds a 43 inch head of water during the summer, i.e., the full capacity of the dam. In October, however, the gates are lowered so that the winter lake level is only about 29 inches above the water below the dam. In the spring after the high waters recede, the gates are replaced to maintain the higher summer level.

The effect of this dam upon the activities of fishes in the lake and the stream below, has caused considerable controversy. In the light of present observations, there seems to be no cause for concern. Many of the large fish below undoubtedly pass over the dam during the high water when the gates are down. Dr. T. H. Langlois noted in 1927 that this dam was no barrier to fish. He says, "...even poor climbers like the mullet have been seen to climb over with ease." It may be a barrier to small fish, particularly in the summer, but the question arises as to the importance of the migrating "Lake Huron" fish to the Van Etten Lake population. Fish studies made on the lake indicate an adequate population with very suitable spawning grounds for all the important species concerned and in spite of the heavy fishing, the lake is considered good by the average fisherman.

The effect of this dam in maintaining a constant summer level in the lake is no doubt of great value. It gives the aquatic plants a chance to establish themselves even on the sandy shoals which in turn undoubtedly increases the production of fish food organisms. The increase in shoal and resulting weed beds is exceedingly important in Van Etten Lake since a lake of this type has comparatively little suitable space for plants to grow. Even with the increased shoal and favorable water level, the balance between shoals and the deeper open water of the lake is none too favorable (25%:75%).

*This survey was made by the Institute for Fisheries Research in August 1937. The party consisted of Dr. David Chandler, Mr. Walter Crowe, and Mr. E. L. Cheatum.

Van Etten Lake has about 1300 surface acres and a maximum depth of 33 feet. Its shoal is almost exclusively sand and the bottom in the deeper areas is composed primarily of clay.

At the time the survey was made, (8/26/37), the surface water temperature was 72° F. and bottom temperature 70° F. This is probably near the annual maximum. There was no evidence of thermal stratification which is to be expected in a river lake of this type. The water was fairly clear and greenish in color.

This lake is moderately alkaline with a pH of 8.4 and a methyl organe alkalinity of 136 parts per million.

The vegetation in Van Etten Lake is fairly abundant out to the 15 foot contour. It is made up mostly of Chara, Potamogeton, and Scirpus. These weed patches harbor the majority of the fish food organisms as well as afford good cover for fish.

Food conditions appear to be good. Large numbers of snails, fresh water shrimp, mayflies, caddisflies, and midge larvae were present in the weed beds while midge larvae were common in the deeper waters. Plankton (microscopic floating organisms) was comparatively abundant.

Twelve species of game fish, 10 species of forage fish, 4 species of coarse fish and 1 species of so-called obnoxious fish have been collected in this lake. The following list includes all of the fishes collected as well as those reported.

Van Etten Lake

Game Fish	Forage Fish	Coarse Fish	"Obnoxious" Fish
Northern Pike	Golden Shiner	Mullet Sucker	Mud Pickerel
Walleyed pike	Straw-colored Shiner	Common Sucker	Lamprey
Pumpkinseed	Mimic Shiner	Stone Catfish	Carp reported but not collected
Rock Bass	Blunt-nose Minnow	Brown Bullhead	
Perch	Menona Killifish		
Large-mouth bass	Log Perch		
Small-mouth bass	Johnny Darter		
Black crappie	Iowa Darter		
White crappie	Black-sided Darter		
Sheepshead	Tadpole Cat		
Bluegill			
Rainbow Trout reported, not collected			

Most of the fish were in good condition. The perch all reached legal length in their 3d summer, while the black crappies attained legal length in their 2d summer.

The 1½ year old northern pike averaged 17 inches in total length and the 2½ year old fish averaged 23 inches. Not a large enough series was taken of the other species to give dependable growth determinations.

A considerable number of predatory animals were seen in the vicinity of this lake, including Herons, Bitterns, Kingfishers and turtles. Their effect on the fish population is not known.

Quite a large number of fish were infected with the gill disease. The walleye pike, black crappie and common sucker were observed to have this malady.

Planting records for the past 5 years are as follows:

Year	Perch		Pike Perch		Large-mouth Bass		Northern Pike		Shiners
	fingerlings	adults	fry	yearlings	fingerlings	adults	yearling	adults	adults
1934	12,000	1,030	--	--	94	--	--	--	--
1935	11,000	--	750,000	--	--	--	--	--	--
1936	12,000	--	300,000	--	--	--	26	--	--
1937	--	60	375,000	590	--	--	26	--	--
1938	22,000	3,115	375,000	--	--	--	--	27	7,200

At present the combination of perch, black crappie, and northern pike seems to be satisfactory.