

INSTITUTE FOR FISHERIES RESEARCH
UNIVERSITY MUSEUMS
UNIVERSITY OF MICHIGAN
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Report No. 76

ON THE FISH CULTURAL POSSIBILITIES OF THE J. LIST
PROPERTY, HATTON TOWNSHIP, CLARE COUNTY, MICHIGAN

The property is located about one-half mile from the small village of Hatton, about 2 1/2 miles off of U.S. 27. The road from the highway to the property is gravel.

The springs are located along the base of a rather steep slope 40 to 65 feet in height. From the level of the springs to a small stream, which receives the water from all springs, the slope is very gradual. The stream runs parallel to the steep slope, a distance of about four hundred feet, picks up the water from the several springs, crosses the road and continues on the J. List property for a distance of 80 rods. The steep slope, as well as the small stream, is at a right angle with the road. The stream originates as the result of a spring about 1000 feet from the road and is somewhat difficult of access at the present time because of the dense vegetation and soft layer of muck. After running a distance of about 600 feet the stream receives the water from the "Upper Pond spring" which at the present time is in the bottom of the upper of the series of two trout ponds. The stream continues a distance of about 300 more feet where it receives the water from the "Hatchery Spring" and proceeds to the road, a distance of about 100 feet. No investigation was made beyond this point. The flat area across the stream is heavily wooded, but the region from the "Upper Pond Spring" to the road has only a few trees on it.

There does not seem to be a place in the entire area where muck is thicker than 18 inches, and this thickness is found in places along the streambed. Sand, somewhat cemented and very solid, underlies the muck, According to Mr. J. List, clay is also present.

The entire stream system is full of trout ranging in size from fingerlings three inches long to those of legal size.

According to Mr. J. List the Upper Spring Pond flows at the rate of 18,000 gallons per hour and the Hatchery Spring 6,282 gallons per hour (14 cu. ft. per. minute). The stream at the road discharges 24,696 gallons per hour and 80 rods on the other side of the road, on the List property line there is a discharge of 34,500 gallons an hour.

The temperature of the water at the outlet of upper Spring Pond was 64°F., (temperature taken on a warm clear day at 4 P.M.). The temperature of the water at the Hatchery Spring was 46°F., and the temperature of the stream formed by it, one hundred feet from the spring, was 48°F. The temperature of the stream at the road, receiving the water from all springs, was 56°F.

The analysis of the water of the Upper Pond Spring follows: Oxygen from 7.0 to 8.0 parts per million, acidity (pH), 7.6, a trace of free carbon dioxide, alkalinity as carbonates (phenolphthalein alkalinity) none, alkalinity as bicarbonates (methyl orange alkalinity) 176 parts per million. The only difference between this water and water in the Hatchery Spring was the slight difference in the amount of methyl orange alkalinity and the temperature.

The two small ponds in existence at the present time each support a number of brook trout. The pond in which the springs are located is supplied with a good growth of Elodea and growths of a filamentous alga. The second pond bottom is almost completely covered by a thick growth of Chara. Insects and Amphipods ("shrimp" - Gammarus) seem to thrive in these ponds, but according to Mr. J. List the pond with the Chara in it is the most productive.

This seems to be a very desirable place for trout culture. The slope of the ground and its composition seem to be favorable for building rearing ponds. The fact that trout are found in the entire system seems to indicate that the water is good. The location of the Hatchery Spring with its low water temperature could be made an

attractive feature, especially, if when opened up, its flow would be increased.

No doubt a large pond or two could be built and the temperature therein held down low enough for trout. A very serious objection to building one or two ponds would be the difficulty of avoiding or controlling disease. We would point out that a series of narrow ponds with independent water feed would be much safer, and that the water supply and lay of the land would make such ponds possible to construct and operate.

We wish to thank Mr. List for his cooperation in making this investigation possible.

This report prepared and the field examinations were made by Wendell H. Krull, Fish Pathologist of the Institute.

APPENDIX I

The data taken by Mr. A. T. Stewart, Overseer, Drayton Plains Hatchery, are given in the following report by him.

Drayton Plains, Mich. June 6th, 1931

Proposed trout ponds at Harrison, Mich.

J. List,
Harrison, Michigan.

Pond #1. 150'x150', 6' deep at outlet, 20,000 gallons water per hr. Temperature taken June 6th, at 7:00 P.M., 58 Fahrenheit, Air Temperature, 75.
Pond #2. 125'x85', 20,000 Gallons per hr, Temperature taken at 7:00 P.M. June 6th, 58 Fahrenheit, Air Temperature 75.
Another Spring flowing 15 cubic feet per minute, Temperature taken at 7 P.M. June 6th, Temperature 48 Fahrenheit, Air Temperature, 75.
He has a number of other springs so that he has about 100,000 Gallons per hr. where the water collects that he could have a large pond for fishing.

The sample of the natural food taken by Mr. Stewart from the Chara of one of the larger ponds consists chiefly of the "shrimp" Gammarus; also present are leeches, snails (Physa and Lymnaea) and larval insects (dragon-fly, crane-fly, caddis, beetle). This is food of high quality.

No complete water analysis of the samples submitted by Mr. Stewart was possible, owing to the changes which must have taken place since collecting the samples. The only tests made were for hardness, and those are indicated on the chemical analysis card (Appendix II).

County: *Clare*

Township: *Hutton*

Lake or Stream: *Springs*
J. List Property

Exact Location: *1/2 mile from Hutton - near Clare*

[When more than one Station is entered, locate by map or description on reverse]

No.	Station	Date	Time A. or P.M.	Sky	WIND		Preceding Weather	WATER			DEPTH		TEMPERATURE $^{\circ}$ F?				OXYGEN				CARBON DIOXIDE			pH				
					dir.	velocity		Color	transp. S disk Ft? M?	Bottom Ft? M?	Exam. Ft? M?	Thermom.		Bot- tle No.	c.c. thio.	Fac- tor	ppm O ₂	Bot- tle No.	Free CO ₂	Alkalinity								
							Kind					No.	Air							Water	ph-th	MO						
<i>Upper Pond Spring</i>		<i>7/24/31</i>	<i>4 P.M.</i>	<i>Clear</i>			<i>Hot</i> <i>record-breaking none</i>						<i>76° F.</i>	<i>64° F.</i>	<i>1</i>		<i>7.8</i>	<i>1</i>	<i>Trace</i>	<i>none</i>	<i>176</i>	<i>7.6-</i>						
															<i>2</i>		<i>8.0</i>											
<i>Upper Pond Spring</i>							<i>Samples brought to Ann Arbor by Mrs. A. J. Stewart</i>															<i>1</i>		<i>Trace</i>	<i>180</i>			
																<i>2</i>		<i>6</i>	<i>172</i>									
<i>Hatchers Springs (near road)</i>		<i>7/24/31</i>	<i>4 P.M.</i>	<i>Clear</i>			<i>Hot</i> <i>record-break none</i>						<i>76° F.</i>	<i>46° F.</i>				<i>1</i>	<i>none</i>	<i>none</i>	<i>179</i>	<i>7.52</i>						
							<i>Temperature of the water 100 feet from the spring.</i>																	<i>48° F.</i>				
							<i>Temperature of the stream at the road.</i>																	<i>56° F.</i>				

ENTER OTHER ANALYSES OR REMARKS ON REVERSE

Wendell Krull

(Analyzer)

(over)