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Progress Report on Investigation of Effect of Mine Wastes (Red Water)  
on Fish Life in the Vicinity of Ironwood, Michigan<sup>1</sup>

by

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At the request of the State Stream Control Commission a preliminary investigation was made of streams in the vicinity of Ironwood, Michigan, reported to be polluted by water from iron mines or by sewage. The reports to the Commission came from sportsmen's clubs in the cities in this region. The list of streams as given me by Mr. Oeming of this Commission and our observations follow:

1. Spring Creek ( T.48N., R.47W. ) - pollution reported by Ironwood Conservation Club.

When examined by us on October 1, this stream was clear from the source near North Ironwood and at each road crossing to the lowest point of examination about 1/2 mile from the mouth. No deposits of mine waste were observed along the banks of this stream, as might be expected if the stream had contained red water in recent months.

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Study made October 1 - 3, 1946 by J. W. Leonard, David S. Shetter, O. H. Clark and the writer. Conservation officer Kenneth Grant gave us further information on the streams of the area and suggested the best places of approach in some cases.

2. Siemens Creek (T. 47N., R. 47W.)--Pollution reported by Ironwood Conservation Club. This is apparently the headwaters of Spring Creek according to the Field Administration Master Plan Map of Gogebic County. This stream was also clear when examined on October 1 and showed no evidence of red water deposits.

3. Powder Mill Creek (T. 47, 48N., R. 46W.) Reported to receive drainage from Pickins-Mather Mine. Complaint by Bessemer Conservation Club.

This stream was examined at road crossings of M 28 and U.S. 2 and in the lower 1/4-mile. The water was at low stage and very clear. There was no sign of mine waste deposits; however, there was evidence of heavy flooding in the lower end in recent years. The food supply in this stream was excellent, and on October 3, when the electric shocker was used in one exceptionally good pool near the mouth, nine brook trout from 8 to 11 inches were stunned along with several smaller brook trout, muddlers, suckers and blacknosed dace. The trout were in excellent condition and free of gill lice.

4. Jackson Creek (T. 48N., R. 45W.)--Pollution reported by Bessemer Conservation Club.

This stream above its junction with Planters Creek was found to be clear, but the water was tea-colored from bog drainage. Planters Creek, which joins Jackson Creek about 2 miles west of Thomaston, brings in some red water but because of the dilution Jackson Creek is not much affected. A good food supply was observed in Jackson Creek below the mouth of the tributary.

5. Planters Creek ("Sewer Creek") (T. 47, 48N., R. 45W.)--Reported by Conservation Officer Kenneth Grant to be heavily polluted by sewage from Wakefield and to receive waste from an iron mine northeast of Sunday Lake.

The officer's report was verified by examination at the M 28 crossing. Gross sewage pollution was evident. The stream channel was bordered with tomato plants, some bearing small fruit. (A new(?) index to sewage pollution!). A few snails and midge larvae were the only fish food organisms found at this point.

When we crossed the stream on the morning of October 2, a considerable stream of red water from the mine close to the bridge was entering Planters Creek; on return in the afternoon pumping had ceased and the flow of red water had stopped. It seems to us that the sewage pollution is much more important in its effect on fish life than the relatively small amount of mine waste which we observed.

6. Little Black River (T.47N., R.45,46W.)--Pollution from mines west of Wakefield reported by Bessemer and Ironwood Conservation Clubs.

This stream was clear above Sunday Lake through which it flows but receives a heavy discharge of red water between the county road crossings in Sections 8 and 18. The water appears to be impounded for a distance downstream below the crossing in Section 18 and is the color of red lead at this point. Where examined at the road crossing about 1/2 mile north of Verona the stream is rapid and very turbid from the mine waste. Only a few caddis worms, midge and tipulid larvae were observed. The stream is small at this point and probably is too warm for trout in summer since it is the outlet of Sunday Lake.

7. Black River (T.47,48,49 and 50N., R.46W.)--Reported by Bessemer Conservation Club.

Upstream from the entrance of the Little Black River the main Black was found to be clear and quite rich in food. Near North Bessemer it

receives another and much heavier load of red water from a mine just upstream from the bridge near the mouth of Powder Mill Creek. The electric shocker was used with a seine behind it in a side channel below the bridge crossing the Main Black near this point and many suckers, chubs, common shiners and muddlers were taken. The stony riffles were examined for food by hand-picking and we found Stoneflies common to abundant, Caddisflies abundant and Mayflies rare. Even though the water at this point was extremely turbid from mine waste (a man's hand was visible only for about an inch below the surface) fish and fish food were almost as abundant as one would expect in a clear water stream! The absence of trout in the one sample does not necessarily mean they were lacking in this part of the Black but the abundance of minnows and suckers suggest that the main Black in common with most streams of this region may become too warm for trout in summer. Temperature taken in summer previously at other points in the system support this view although a more careful study is needed and will be made by our District Fisheries Biologist in the summer of 1947.

Aside from fish-carrying capacity there is good reason to object to the dumping of red water, especially in the Black River. We followed this stream to the mouth and found that extreme turbidity persisted throughout the course and even out into Lake Superior. The scenic value of the Black River is certainly impaired as a result of the mine wastes. The many beautiful falls and vistas of the river are at least partly spoiled for the tourist because of the sediment. If there is any practicable means of settling the material in suspension it should be done.

The fact that many of the streams investigated appear to be marginal trout water during periods of summer high temperatures and low water levels bears directly on the pollution problem. Extensive mine waste discharges into a stream at low summer<sup>water</sup> levels would be less rapidly diluted than during the period covered by this report; and the influx of mine wastes at a time when trout populations were already jeopardized by low water and high water temperatures might well be the final blow required to eradicate the trout.

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