

A MUSSEL SURVEY OF THE UPPER WATERS OF  
THE VERMILION RIVER WITH SPECIAL REF-  
ERENCE TO THE SALT FORK<sup>1</sup>

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ABSTRACT.

The study was undertaken for the purpose of ascertaining the distribution of the mussel fauna of the upper waters of the Vermilion River. Extensive collections were made at definite stations between Urbana and Homer Park, each station embracing a stretch of the stream measuring 500 feet or more. The water was fairly low during the 1918 season and it was possible to give the bed of the stream a most searching study. This was done either with the bare hands or with a Walker dredge for the smaller species.

Thirty-two species, representing 12 genera, were obtained. Twenty stations were established between Urbana and Middle Fork, near Danville, 12 of which were between St. Joseph and Homer Park, the part of the Salt Fork most thoroughly explored. As would be expected, the mussel fauna is the least developed in the upper part of the Salt Fork above Crystal Lake, Urbana, where but four species were found. Below the dam at Homer Park the greatest faunal development was seen, 26 species being definitely identified. The dam at this station appears to form a barrier to the migration up stream of several species, only 16 of the Homer Park mussels occurring in the stream between the dam and the neighborhood of Sidney; 10 species appear to reach their limit of upstream distribution below the dam. It is possible that the fish carrying the glochidia of these species are not able to pass the dam and do not occur above it. Next to the Homer Park station, the lower part of the Middle Fork, near Danville,

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gave the next highest number of species, 20. More extended search, however, may increase the number in the Middle Fork.

During the investigation it was observed that the sewage and wastes which enter the Salt Fork at Urbana, produced a marked effect upon the mussel fauna. In the ditch and Salt Fork above Urbana (Crystal Lake) four species have been identified; between Urbana and the first bridge south of St. Joseph, a distance of 14 miles by the stream, only a broken valve of *Anodonta grandis* and a single valve of *Quadrula undulata* were found. It is fair to state, however, that this portion of the stream has not been as thoroughly searched as that part below St. Joseph, and additional work may change this statement to some extent. Our observations lead us to believe, however, that no molluscan life of the Unionidae character will be found in this part of Salt Fork. Not until a point two miles below St. Joseph is reached do we find a single living mussel, *Anodontoides ferussacianus*. About a mile below the latter station the mussels become fairly abundant. In the neighborhood of Sidney, 20 miles by stream from Urbana, the mussel fauna assumes good proportions both in number of species and in individuals, a dozen species being recorded.

The most significant observation made was the sudden break in the fauna about a mile above St. Joseph. Spoon River, which is a large branch joining Salt Fork about a mile above St. Joseph, has a mussel fauna of 12 species about a mile upstream from the junction with the Salt Fork. These gradually decrease as we go down the Spoon River and cease altogether at or near the mouth. One must pass down the stream (the Salt Fork) for the distance of six miles before encountering a mussel fauna of comparable extent. These facts offer adequate evidence that the sewage and wastes affect the environment rendering it unsuited to the life of these mussels. The struggle for survival is seen in the large number of empty valves no living representatives of which could be found after careful search. It is possible that the water is diluted enough in the spring and winter to permit the mussels to migrate up stream for a considerable distance; but the concentrated condition of the sewage during low periods possibly kills those that venture up stream or perhaps causes them

to migrate down stream if the water way is open. However, no shells with the dead animals were found in our investigations and it may be that the empty shells and valves found represent beds that have been killed by the sewage in earlier years. It is possible for mussel shells to be preserved for hundreds of years, if buried in the mud or sand, and to retain the epidermis as fresh as recently living shells, and it is not at all impossible that these empty valves may represent a fauna killed several years ago by the concentration of sewage and wastes.

Detailed studies covering these and other points are now in progress and additional field work will be carried on in the fall, after which a more extensive paper will be prepared.