

## **Fisheries Division - Muskie Piscirickettsia (Muskie Pox) Update**

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In May of 2002, the Michigan Department of Natural Resources (MDNR) collected several muskellunge exhibiting red skin rashes from the Anchor Bay area of Lake St. Clair. The rounded rashes reached up to one inch in diameter. Laboratory analysis at Michigan State University by Dr. Mohamed Faisal, revealed the association of these lesions with a Gram-negative, curved, intracellular bacterium that occurred as rings or curved rods. Based on their shape and culture characteristics, the organism was determined to be a *Piscirickettsia*-like organism (Figure 2).

*Piscirickettsia salmonis* (*P. salmonis*) was the first "rickettsia-like" bacteria to be recognized as a pathogenic agent of fish. *P. salmonis* infects a wide range of salmonid fish species causing a systemic infection associated with high mortalities in Chile, Norway, Ireland, and Canada. This organism has never been found in any non-salmonid fish species. *Piscirickettsia* as a group are not known to infect human or other terrestrial animals.

In 2003, laboratory analyses were performed on 26 muskies from 5 inches to 50 inches in length collected from different areas of the US side of Lake St. Clair (Figure 1). The fish sampled included both visibly sick (bearing external lesions and sunken eyes – Figures 3-7) as well as apparently healthy individuals (no external symptoms). All muskies were found to be infected with this bacterium suggesting that the bacteria is widespread in the lake and a range of infection concentrations were seen. Muskies with external lesions were characterized by high numbers of *Piscirickettsia sp.*, while low numbers of bacteria were found in the apparently healthy fish.

Molecular testing techniques indicate that the bacterium is closely related to *P. salmonis*, but is actually a different species. Tests also indicated that the bacterium is quite sensitive to antibiotics.

Research in 2004 will focus on understanding the disease's course and determining its affect on the muskie population and the rest of the fish community in Lake St. Clair. This information is necessary to develop a management strategy to control the disease and slow its spread. This spring's and summer's sampling focus will be on muskies along with likely prey species, with an emphasis on determining what other species in the lake may be infected by or act as a reservoir for this bacteria. MDNR will also continue to monitor the rate of external symptoms in Lake St. Clair muskies.

Anglers who catch infected fish with visible signs as shown in Figures 3-7 are requested to contact MDNR at the address below with the report to include the estimated size of the fish and the GPS location. Anglers who want to minimize the chance of spreading the infection among fish they catch and release are encouraged to clean their baits, landing nets, and boat decks with a solution of dilute household bleach (1/4 cup per gallon) followed by thorough rinsing in water.

For more information on *Piscirickettsia* in Lake St. Clair's muskellunge, please contact:

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Figure 1. Lake St. Clair locations sampled in 2003 for muskie *Piscirickettsia* sp. infections.

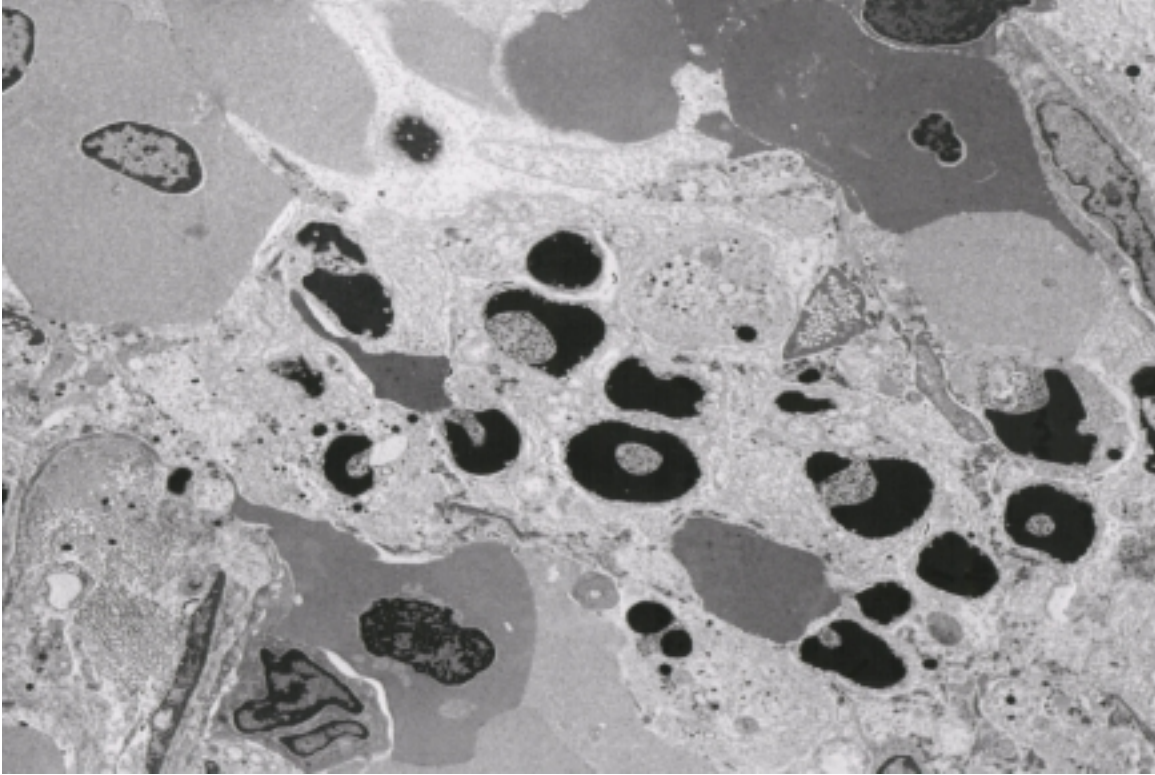


Figure 2. Donut shaped bacteria are *Piscirickettsia* sp. at very high magnification.

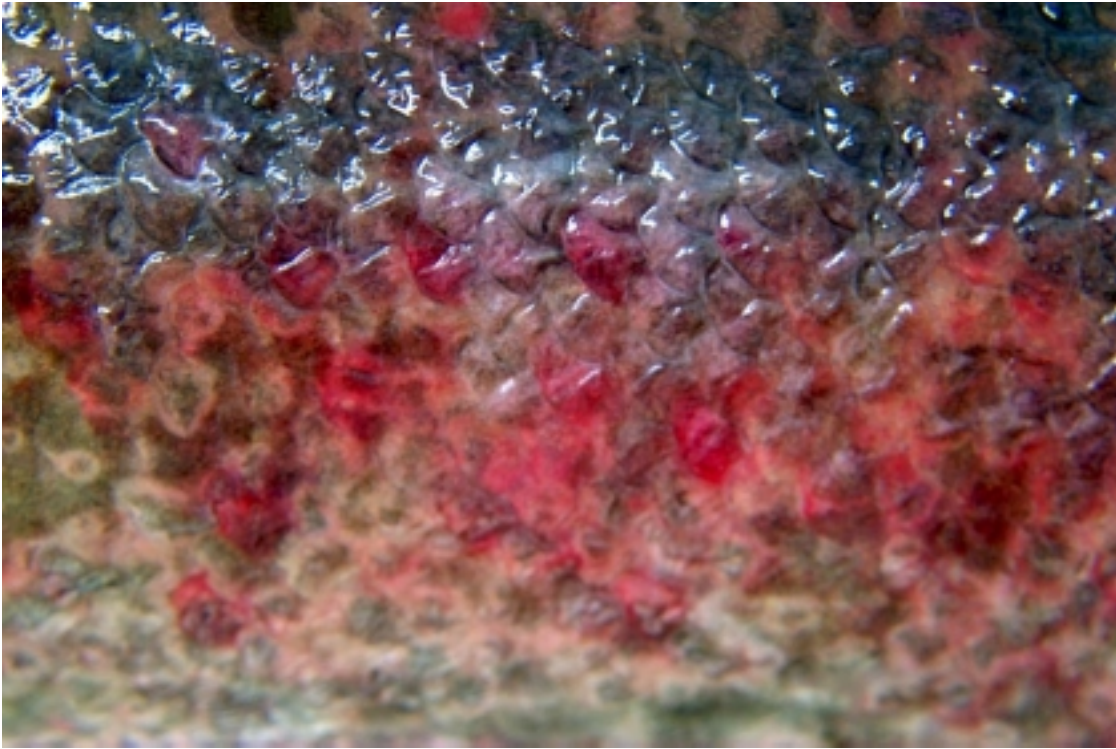


Figure 3. Photo of a muskie with visible signs of *Piscirickettsia* sp. infection.

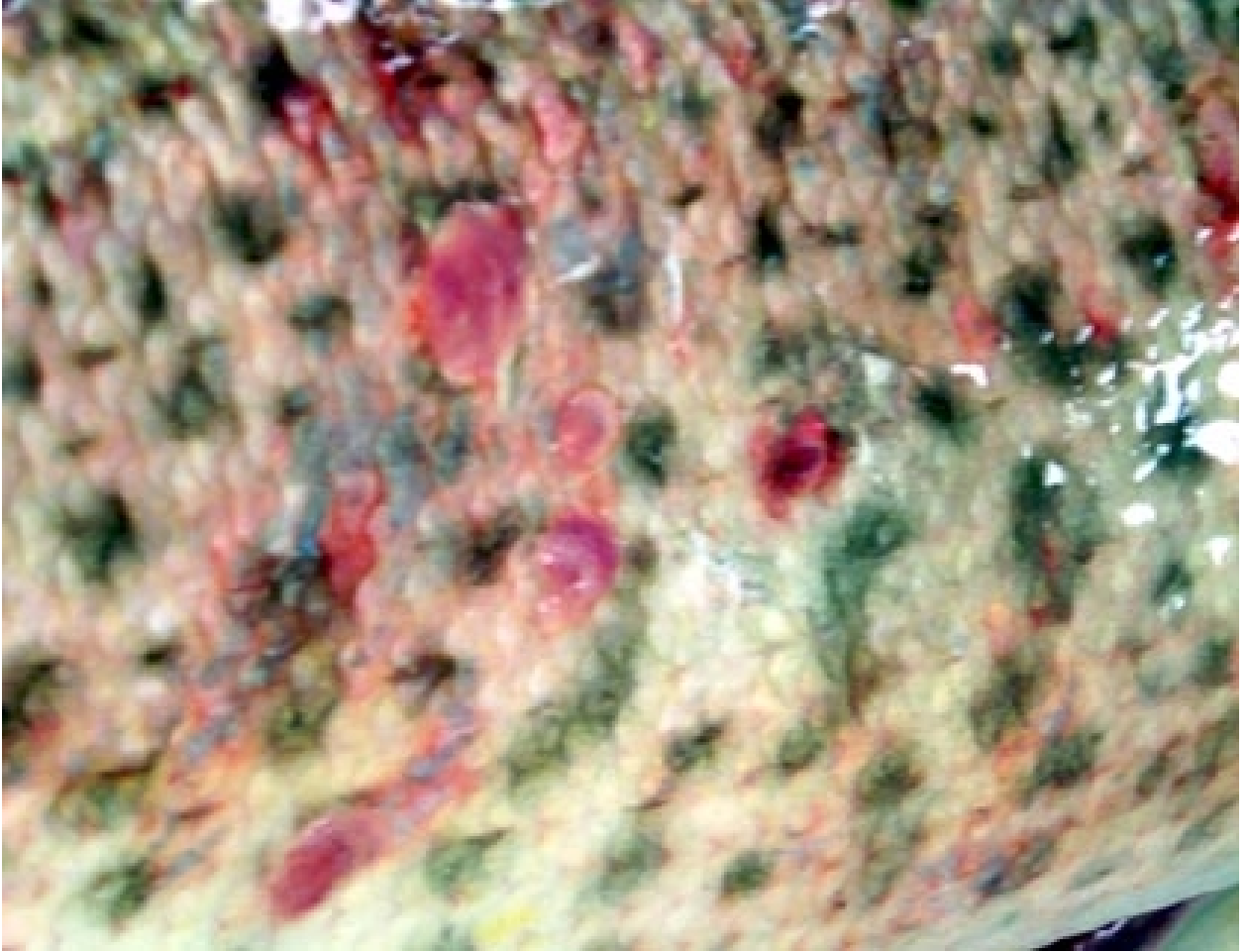


Figure 4. Close-up of *Piscirickettsia* sp. sores on a muskie.



Figure 5. Another symptom of *Piscirickettsia* infections are deeply sunken eyes as this muskie has from Lake St. Clair.



Figure 6. Typical sores from a *Piscirickettsia* infection on a muskie from Lake St. Clair.



Figure 7. St. Clair muskie showing typical *Piscirickettsia* sores.