

Mycobacteriosis of Striped Bass in Chesapeake Bay: A Lethal Bacterial Disease

Mycobacteriosis is an emerging infectious disease that affects well over 75% of the resident striped bass in Chesapeake Bay. Signs of the disease include unsightly skin ulcers (Fig 1) and pale lesions in the internal organs, mainly the spleen. It is believed that once infected, striped bass ultimately die. Annual tag-recapture studies in Maryland and Virginia waters indicate that since the late 1990's and concurrent with the first reports of this disease, natural mortality (e.g. mortality other than that attributable to fishing) has gone up significantly in the Bay. This has generated concern among scientists, fishermen, and resource managers that the disease is having a significant adverse impact on the stock. One of our recent studies has provided the first evidence that disease-associated mortality is in fact occurring in Chesapeake Bay striped bass. However, we do not yet know the extent of this mortality, nor do we understand the ecology of the mycobacteria (e.g. where in the environment they are found), the routes of transmission for the infection, or the environmental stressors (e.g. temperature, hypoxia etc.) that modulate disease expression. We believe this infectious disease is a grave concern and that additional research is desperately needed to find answers to the many remaining scientific questions.



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To conduct the necessary research we have assembled a multi-disciplinary team of scientists at the Virginia Institute of Marine Science (VIMS) and at Old Dominion University. We are using field-based modeling approaches (Fig 2) to investigate the disease impacts (mortality), as well as laboratory disease challenges in the new state-of-the-art VIMS Seawater Research Laboratory (Fig 3) to address routes of disease transmission and the role of environmental factors in disease expression. Our long-term goals are: 1) to develop a better understanding of disease dynamics, 2) to clarify potential stock impacts, and most importantly, 3) **to develop predictive models of the disease and more effective management strategies aimed at better protecting this vital fishery resource.**



Our research directly addresses a primary *Stripers Forever* goal which is to “further define and overcome the impact of mycobacteriosis on stripers and humans as part of the management process”. Contributions from *Stripers Forever* would directly support mycobacteriosis research in the Dr. Wolfgang Vogelbein at VIMS (www.vims.edu). It could be used to fully or partially support a graduate student (e.g. tuition, research supplies, boat time etc) or it might be used to fund a specific study that addresses a particular research question (e.g. a laboratory challenge study investigating the impacts of temperature on disease transmission/progression). It might also be used to help us build the infrastructure necessary to better support this type of research at VIMS (e.g., construction of aquatic disease challenge systems, fish holding systems etc).



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