

Blazer, V., W. K. Vogelbein, C. Densmore, H. Kator, D. Zwerner and J. Lilley (2000). "Etiology and pathogenesis of skin ulcers in menhaden, *Brevoortia tyrannis*: does *Pfiesteria piscicida* play a role?" Marine Environmental Research **50**(1-5): 487-488.

The toxic dinoflagellate, *Pfiesteria piscicida*, is widely blamed for adverse human health effects, acute fish kills, and skin-lesion events in fishes, particularly menhaden, *Brevoortia tyrannis*, inhabiting coastal waters from Delaware to North Carolina, USA. In response, we initiated studies to clarify the etiology and pathogenesis of presumed 'Pfiesteria-specific' menhaden skin lesions. Histopathologically, all lesions (>150 fish examined) were associated with a highly invasive and pathogenic fungus eliciting severe tissue necrosis and intense granulomatous inflammation. Severity and extent of the host response indicates that ulcers were at least 1 week old or older. Maryland and Virginia currently use menhaden ulcers as one of several indicators of local *Pfiesteria* activity. However, their chronic nature, advanced age, and consistent fungal involvement suggest that their use for this purpose may not be valid. We recently isolated an *Aphanomyces* sp. from the menhaden lesions which by appearance in culture, temperature growth curves, pathogenicity studies in snakehead and positive immunohistochemical staining with polyclonal antibodies suggest the infectious agent is *A. invadans* (cause of epizootic ulcerative syndrome in Asia, Japan and Australia) or a very closely related species. Ongoing research will address pathogenicity of the fungus in menhaden, genetic comparisons of isolates, and the role of environmental stressors, including *P. piscicida*, in initiation of the infection.