

Pathogens Associated with Native and Exotic Trout Populations in Shenandoah National Park and the Relationships to Fish Stocking Practices

Frank M. Panek, U.S. Geological Survey, National Fish Health Research Laboratory, Kearneysville, WV 25430

James Atkinson, U.S. National Park Service, Shenandoah National Park, Luray, VA 22835

John Coll, U.S. Fish and Wildlife Service, Lamar Fish Health Center, Lamar, PA 16848

Abstract: Threats to native fish populations from practices such as fish stocking and from invasive and non-native species and their associated disease concerns are important natural resource management issues in National Parks. Prohibitive or restrictive fish stocking policies in National Parks were developed as early as 1936 in order to preserve native fish assemblages and genetic diversity. Despite recent efforts to understand the effects of non-native or exotic fish introductions, park managers have limited information regarding the effects of these introductions on native fish communities. Shenandoah National Park (SHEN) was established in 1936 and brook trout (*Salvelinus fontinalis*) restoration within selected streams in the park began in 1937 in collaboration with the Virginia Department of Game and Inland Fisheries (VDGIF). The only known stocking records associated with park streams during the 1930s were in the survey reports completed by the U.S. Fish and Wildlife Service in Leetown, West Virginia, during the 1950s. These reports suggest that most accessible streams were annually stocked by the Commonwealth of Virginia with hatchery reared fingerlings and catchable size trout through 1949. This practice was continued by the U.S. Fish and Wildlife Service through 1955. We know that all fish stocked within Shenandoah National Park originated from a limited number of hatcheries including the former Fish Culture Station at what is now the Leetown Science Center in Kearneysville, West Virginia, the Erwin National Fish Hatchery in Erwin, Tennessee, and the Montebello Fish Cultural Station in Nelson, Virginia, operated by the VDGIF. A preliminary sampling of brook, brown (*Salmo trutta*) and rainbow trout (*Oncorhynchus mykiss*) from 28 streams within the park from 1998–2002 revealed the presence of several pathogens. These pathogens included *Renibacterium salmoninarum*, *Yersinia ruckeri*, and infectious pancreatic necrosis virus (IPNV). In order to investigate the relationships of the occurrence of fish pathogens with stocking histories we classified the streams into three categories: 1) streams within the park with no known stocking records, 2) streams within the park that were historically stocked, and 3) streams within the park that were historically stocked and presently stocked downstream of the park boundary by the VDGIF. The occurrences of the three pathogens above were summarized relative to this stocking history. *R. salmoninarum*, the causative agent of bacterial kidney disease, was the most prevalent pathogen and found to occur in all three species. The pathogen is endemic to fishes within the park. In general, we found an increase in the occurrence of *R. salmoninarum* in brook, brown, and rainbow trout associated with stocked streams. The pathogen was ubiquitous in samples from streams with wild populations of non-native brown or rainbow trout.

Proc. Annu. Conf. Southeast. Assoc. Fish and Wildl. Agencies 61:158