BioOne COMPLETE

Neutralizing Activity Against Infectious Pancreatic Necrosis Virus in Striped Bass, Morone saxatilis, from the Chesapeake Bay

Author: Wechsler, S. J.

Source: Journal of Wildlife Diseases, 23(1) : 154-155

Published By: Wildlife Disease Association

URL: https://doi.org/10.7589/0090-3558-23.1.154

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Downloaded From: https://bioone.org/journals/Journal-of-Wildlife-Diseases on 28 Mar 2024
Terms of Use: https://bioone.org/terms-of-use

Journal of Wildlife Diseases, 23(1), 1987, pp. 154–155

Neutralizing Activity Against Infectious Pancreatic Necrosis Virus in Striped Bass, *Morone saxatilis*, from the Chesapeake Bay

S. J. Wechsler, Florida Cooperative Fish and Wildlife Research Unit, 117 Newins-Ziegler, University of Florida, Gainesville, Florida 32611, USA; **P. E. McAllister,** U.S. Fish and Wildlife Service, National Fish Health Research Laboratory, Box 700, Kearneysville, West Virginia 25430, USA; **and F. M. Hetrick,**[1] Department of Microbiology, University of Maryland, College Park, Maryland 20742, USA

Striped bass can be inapparent carriers of infectious pancreatic necrosis virus (IPNV) (Wechsler et al., unpubl. data), and develop virus-neutralizing antibody after challenge with IPNV (Wechsler et al., 1986, Vet. Immunol. Immunopathol. 12: 305–311). Because IPNV has been isolated from striped bass (Schutz et al., 1984, J. Fish Dis. 7: 505–507) in a hatchery on the Chesapeake Bay, Maryland, we tested wild striped bass in selected areas of the Chesapeake Bay in 1984 and 1985 to determine if these fish had IPNV or virus-neutralizing antibody.

Young-of-the-year striped bass were seined in traditionally important nursery areas. Juvenile striped bass were caught by hook and line, and adults with gill nets. Tissue samples were stored on ice for 1–2 days prior to assay for virus. We used the virus plaque assay (Wechsler et al., 1986, op. cit.) with Chinook salmon embryo (CHSE-214) cells to detect IPNV in homogenized tissues from individual fish. Samples of blood were obtained from the caudal vein, stored at 4 C for 1–2 days, and then centrifuged. Individual samples were diluted 1:100 in phosphate buffered saline (pH 7.2), heated at 42 C for 30 min to inactivate complement (Sakai, 1981, Bull. Jpn. Soc. Sci. Fish. 47: 565–571), and stored at 4 C or −20 C until they were tested for the ability to neutralize the striped bass isolate of IPNV (IPNV-Sb), and a European IPNV isolate of a different serotype (IPNV-Ab). Striped bass serum samples were considered to have IPNV-Sb neutralizing activity if the diluted sample neutralized more than 50% of total plaques of IPNV-Sb, but did not neutralize IPNV-Ab. Nonheated salmonid serum contains a 6 S factor that neutralizes IPNV (Kelly and Nielsen, 1985, Fish Pathol. 19: 245–251). We believe the virus-neutralizing activity in striped bass blood to be attributable to immunoglobulin because the blood samples were heated prior to assay, and neutralizing activity was not detected in experimental striped bass until after the fish were exposed to IPNV (Wechsler, 1986, Ph.D. Dissertation, University of Florida, Gainesville, 106 pp.)

Virus was not isolated from any of 105 young-of-the-year striped bass or 45 older striped bass assayed for IPNV. Specific IPNV-neutralizing activity was present in 10% of the older (1–3 yr) fish caught in the winter of 1984–1985, and in one of the young-of-the-year striped bass (Table 1).

Striped bass develop virus-neutralizing antibody after ingesting fish containing IPNV (Wechsler, 1986, op. cit.), and IPNV has been isolated from Atlantic menhaden (*Brevoortia tryannus*) in the Chesapeake Bay (Stephens et al., 1980, J. Fish Dis. 3: 387–398). Possibly the striped bass in the Chesapeake Bay consumed IPNV-infected menhaden and developed virus-neutralizing activity.

Although IPNV has been recovered from many nonsalmonid fish species

Received for publication 28 March 1986.

[1] To whom requests for reprints should be sent.

Downloaded From: https://bioone.org/journals/Journal-of-Wildlife-Diseases on 28 Mar 2024
Terms of Use: https://bioone.org/terms-of-use

TABLE 1. Occurrence of neutralizing activity specific for the striped bass isolate of infectious pancreatic necrosis virus in striped bass from the Chesapeake Bay, Maryland.

Survey date	Location	Year-class	No. positive/no. tested*
Dec. 1984	Choptank River	1982–1983	9/49 (18%)
Feb. 1985	Upper Bay	1982–1983	6/94 (6%)
July 1985	Upper Bay	1985	0/5
Aug. 1985	Choptank River	1985	1/45 (2%)
Aug. 1985	Upper Bay	1985	0/3
Sept. 1985	Upper Bay	1985	0/6
Sept. 1985	Upper Bay	1984	0/20

* Number of striped bass blood samples (diluted 1:100) that neutralized more than 50% of total plaques of the striped bass isolate of IPNV, but did not neutralize the European IPNV isolate (IPNV-Ab) per number of samples tested.

(McAllister et al., 1984, Helgol. Meeresunters. 37: 317–328), this is the first report of IPNV-neutralizing activity in a wild, nonsalmonid species of fish.

Contribution No. 7228 of the Journal Series of the Institute of Food and Agriculture Sciences, University of Florida, Gainesville, Florida, 32611. Funds for this study were provided by U.S. Fish and Wildlife Striped Bass Emergency Committee, No. 14-16-0009-1544, WO. No. 17. Striped bass were provided by personnel of the Maryland Department of Natural Resources. We especially thank J. Boone, J. Uphoff, D. Costen, and R. Lukacovic for their assistance.

Journal of Wildlife Diseases, 23(1), 1987, pp. 155–159

Plague in a Free-ranging Mule Deer from Wyoming

E. Tom Thorne,[1] Tom J. Quan,[2] Elizabeth S. Williams,[3] Tonja J. Walthall,[1] and Dale Daniels,[4] [1]Wyoming Game and Fish Department Laboratory, Box 3312, University Station, Laramie, Wyoming 82071, USA; [2]Plague Branch, Centers for Disease Control, Fort Collins, Colorado 80522, USA; [3]Wyoming State Veterinary Laboratory, Department of Veterinary Sciences, University of Wyoming, Laramie, Wyoming 82071, USA; and [4]Wyoming Game and Fish Department, Sundance, Wyoming 82739, USA

Plague, a bacterial disease caused by *Yersinia pestis*, occurs in many areas of the western United States and other regions of the world. It commonly involves rodents (e.g., sciurid ground squirrels) and associated carnivores or scavenger species preying upon affected rodent populations. Occasionally humans become infected, either by the bite of infective rodent fleas or by direct handling of infective animals.

Received for publication 10 December 1985.

Reports of plague in big game or domestic animals, however, have been limited. Federov (1960, Bull. W.H.O. 23: 275–281) summarized early reports of natural and experimental plague infections in camels (*Camelus bactrianus* and *C. dromedarius*) in Russia. Two outbreaks of human plague in Libyan villages in 1972 and 1977 were traced to the preparation and consumption of meat from infected camels (presumably *C. dromedarius*) (Bytchenko, 1976, cited by B. Velimirovic, 1979, *In* CRC Handbook Series in

Downloaded From: https://bioone.org/journals/Journal-of-Wildlife-Diseases on 28 Mar 2024
Terms of Use: https://bioone.org/terms-of-use