

## **TEMPORAL RELATIONSHIP OF VIREMIA, $\alpha$ AND $\beta$ INTERFERON PRODUCTION, AND CIRCULATING ANTIBODIES IN ORBIVIRUS-INFECTED WHITE-TAILED DEER.**

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Epizootic hemorrhagic disease virus (EHDV) and bluetongue virus (BTV) cause the most important infectious disease complex of white-tailed deer (WTD). While the resultant clinical syndrome and lesion are well-described, little is known about the defense mechanisms of infected animals. The objective of this study was to elucidate the host defense responses seen in orbivirus-infected WTD. In each of two trials, eight WTD were infected with EHDV-2, then challenged at day 28 post-inoculation (PI) with homologous (EHDV-2; first trial) or heterologous virus (BTV; second trial). Every two days, animals were examined and blood was collected for CBCs,  $\alpha$  and B interferon production (IFN), viral isolation, and antibody production. Surviving animals were euthanized and necropsied at day 56 PI. All animals became viremic by day 4 PI after initial EHDV-2 and BTV-10 infection. Some EHDV-2-infected deer remained viremic until day 56 PI. Generally, viremia peaked at day 6 PI, coinciding with peak  $\alpha$  and B IFN levels. Circulating antibodies developed by day 10 PI. In contrast to short-term viremias previously reported in EHDV-infected WTD these prolonged viremias suggest WTD may play an important role in the maintenance of orbiviruses and are potential sources of infection for livestock.

## **RETROSPECTIVE REPORT ON GASTROINTESTINAL AND ECTOPARASITES FROM GRAY WOLVES (*CANIS LUPUS*) SUBMITTED TO THE NATIONAL WILDLIFE HEALTH CENTER, 1988-1994. R. A. Cole, N. J. Thomas, C. L. Roderick, and C. U. Meteyer. National Biological Service, National Wildlife Health Center, 6006 Schroeder Rd., Madison, WI 53711**

We conducted a retrospective survey of parasitological results reported in necropsy records for 48 gray wolves (*Canis lupus*) submitted to the National Wildlife Health Center from 1988-1994. Twenty-five females, eight of which were immature, and 23 adult males were collected from Wisconsin (N=17), Minnesota (N=23), Michigan (N=3), USA and Ontario, Canada (N=5). Ninety-four percent of the wolves had parasites. The most common nematode was Oslerus olseri in the lung and trachea from 25% of wolves. Uncinaria stenocephala and Ancylostoma caninum were found in 17% and 10% of the wolves, respectively. Two genera of cestodes, Taenia spp. (44%) and Echinococcus granulosus (27%) were reported. The trematode, Alaria sp. was recovered from 35% of the carcasses. Three ectoparasites were common; Trichodectes canis (33%) Dermacentor spp. (15%) and Ixodes spp. (10%). Oocysts and/or sporocysts of Sarcocystis spp. were reported from 10% of wolves with an additional 6% having sarcocysts in cardiac or striated muscle. Intensity of infections was not described in necropsy reports.

## **CALIFORNIA'S OFFICE OF OIL SPILL PREVENTION AND RESPONSE: WILDLIFE REHABILITATION, VETERINARY, AND BIOMEDICAL PROGRAMS. David A. Jessup, Jonna A.K. Mazet, Office of Oil Spill Prevention and Response, California Department of Fish and Game, 1701 Nimbus Road, Suite D, Rancho Cordova, CA. 95670**

Catastrophic oil spills and toxic substance spills can cause considerable environmental damage and loss of animal life. In 1990 the legislature of California enacted SB 2040 (Lempert, Keene, Seastrand) which placed a \$.04 per barrel tax on oil transported or processed in California, the proceeds of which are to be used to prevent spills, to respond to spills, to clean up those which occur where no responsible party is identified (orphan spills), to rehabilitate affected wildlife habitat, and to care for wildlife affected by oil. To meet the mandated response capabilities for oiled wildlife OSPR has developed a veterinary team, built and outfitted a pair of mobile veterinary laboratories and washing and care trailers, and a Mobile Oily Bird Care and Rehabilitation Trailer (MOBCART). Four small trailers containing supplies needed in the first 24 hours of

an oil spill have been built, stocked and deployed to strategic locations along the California coast. This response equipment is capable of reaching any location in California within 24 hours.

The legislation (SB 2040) states "The administrator shall establish rescue and rehabilitation stations for sea birds, sea otters, and other marine mammals." To comply with this charge OSPR is building a facility at University of California Santa Cruz (next to Long Marine Laboratory) for veterinary care, rehabilitation and research on oiled marine wildlife. When completed in the winter of 1996 the facility will have cost approximately \$5 million dollars and will be capable of caring for 125 sea otters, and be flexible enough to care for other species of marine animals and house ongoing research projects. To further meet the above goal a second piece of legislation SB 775 (Watson) was passed by the California Legislature allowing OSPR to use the interest from the \$50 million dollar emergency response fund (a total of approximately \$7 million dollars over a 3 year period) to establish an Oiled Wildlife Care Network for the entire California coast in conjunction with existing scientific, educational and wildlife rehabilitation facilities. Current plans call for these additional centers to be developed in San Diego, Orange County, Los Angeles, Santa Barbara, the San Francisco Bay Area and Humboldt County.

Under the Oiled Wildlife Care Network and recent changes in Title 14 of the California Code minimum veterinary care standards, minimum wildlife rehabilitation facility standards, and minimum training required for all persons working on oiled wildlife in California are prescribed. Participants in the Network will share pertinent information, improve and standardize treatment protocols and cooperate in research.

SB 2040 also says "The administrator shall conduct studies and evaluations necessary for improving .....oil spill wildlife rehabilitation..." And further states "The administrator shall evaluate potential adverse impacts on the environment and public health including, but not limited to, adverse toxic impacts on water quality, fisheries, and wildlife with consideration to bioaccumulation and synergistic impacts...." Currently OSPR is funding research at several California Universities and at Hubbs/Sea World Research Institute. Research programs address the effects of oil on various organ systems in sea otters (using mink as a model), immediate detection of trace amounts of oil in the fur and feathers of live animals, characterizing the potential effects of oil on the immune response of sea otters, characterizing the immune response of harbor seals including differentiating the effects of the rehabilitation process from exposure to oil and other health hazards, establishing baseline health information for pinnipeds, updating information on the status of marine mammal populations and delineating populations at greatest risk of exposure to oil, and establishing baseline health information on key marine bird species and population status.

All of this research is designed to improve our ability to care for oiled marine wildlife, and to improve our ability to determine both the immediate and the sublethal effects of oil pollution on marine animal populations. This will enable Federal and State trustee agencies to complete comprehensive wildlife injury assessments as part of the Natural Resource Damage Assessment (NRDA) process. Settlements with responsible parties will enable trustee agencies to undertake restoration of injured wildlife resources. In summary, progressive programs for response, rehabilitation, and research for oiled wildlife are conducted by the Veterinary Services Unit of the California Department of Fish and Game-Office of Oil Spill Prevention and Response.