IDAHO DEPARTMENT OF FISH AND GAME

Cal Groen, Director

Project W-179-R-6

Progress Report

WILDLIFE HEALTH LABORATORY

Study I, Job 1

July 1, 2006 to June 30, 2007

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IDAHO DEPARTMENT OF FISH AND GAME

GRANT NUMBER: W-179-R
SEGMENT NUMBER: 5
GRANT TITLE: Wildlife Health Laboratory
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ABSTRACT

During the 2006-2007 project year, the Idaho Department of Fish and Game (IDFG) Wildlife Health Laboratory (WHL) in Caldwell, Idaho, was actively involved in the collection of biological data in support of wildlife management and research with regard to various aspects of wildlife health. More than 2,912 biological samples from a variety of wildlife species were collected for serology, complete blood counts, serum chemistries, bacteriology, virology, parasitology, and toxicology. These samples represented over 45 species of animals including bighorn sheep, mule deer, elk, black bear, mountain lion, wild turkey, waterfowl, raptors, and other birds. Necropsies were performed on 306 animals to determine cause of death. The Enforcement Bureau submitted 27 cases to the Forensics Laboratory. Several papers and abstracts were submitted for publication, including papers written and submitted in collaboration with individuals at the Caine Veterinary Teaching and Research Center and other institutions. WHL personnel offered 6 animal restraint and drug handling courses for IDFG biologists and officers as well as personnel from city, county, state, and federal agencies in Idaho. WHL personnel were involved in disease investigations and multi-agency research projects with the University of Idaho; Oregon Department of Fish and Wildlife; Washington Department of Fish and Wildlife; U.S. Department of Agriculture, Animal and Plant Health Inspection Service; Idaho State Department of Agriculture; and Idaho Department of Health and Welfare.

OBJECTIVE

The primary objective of the WHL is to provide support for the wildlife management and research activities of the IDFG Bureau of Wildlife personnel. Health assessment and disease surveillance of all wildlife populations is the major function of the WHL in these activities. The second objective of the WHL is to direct and implement wildlife health and disease research. The services provided by the WHL have management and research applications; therefore, data obtained from WHL analyses are reported to the wildlife managers, researchers, and other state and federal agencies. Information is disseminated on disease issues in the western states by active participation in the Western Association of Fish and Wildlife Agencies, Western Wildlife Health Committee. In addition, the WHL houses the forensic lab biologist for the Bureau of Enforcement who provides expertise for enforcement cases requiring DNA techniques and equipment.

DISEASE DATA COLLECTION

Biological Samples and Animal Capture

Pathogens can be present in individuals or within a population without showing any significant signs of disease. As environmental and population conditions change with time, the significance of pathogens change. Factors that influence disease processes including nutrition, trace mineral levels, stress, habitat quantity and quality, and human interactions must be considered in evaluation and management of disease in wildlife. One of the primary objectives of the WHL is to establish baseline data on diseases and disease exposure in wildlife populations and to monitor the health of these populations, through time, with continued sampling and analyses.

During the 2006-2007 project year, several wildlife health issues were investigated. Surveillance of elk in eastern Idaho for Brucellosis was continued and a variety of management options were implemented to deal with this disease. Because of weather and the change in elk management in eastern Idaho, no elk were fed or trapped in eastern Idaho in the project year.

During the 2006-2007 project year, WHL personnel processed more than 2,912 biological samples collected from wildlife throughout the state. Samples were collected for complete blood counts (hematology), serology, serum chemistry, virology, bacteriology, mycoplasmosis, internal and external parasites, trace minerals, and toxicology.

Health assessments were conducted on animals captured as part of other projects within the Department. A total of 212 pronghorn antelope were captured in Utah and transported to 3 release areas in Idaho. A total of 100 mule deer and elk were captured, sampled, marked, and released as part of the ongoing ungulate ecology project. General health assessment of these animals indicated no pathogens of significance.

The ungulate ecology project initiated by IDFG in 2004 was continued during this project year. A total of 207 elk and 437 deer were captured, sampled, marked, and released. Health assessment included collection of blood and feces from each individual captured. General health assessment indicated no pathogens of significance.

Chronic Wasting Disease (CWD) has been an important topic nationwide for a number of years. During the 2006-2007 project year, Department personnel collected 1,137 brain and lymph node samples from elk, mule deer, and white-tailed deer. These samples were collected primarily from hunter check stations and some road kills or necropsies throughout the state of Idaho. During the upcoming project year, the WHL plans to continue the surveillance program at hunter check stations throughout the state.

Wild turkeys were trapped and translocated in the Panhandle and Clearwater regions. Birds were trapped, marked, and sampled for disease exposure. A total of 141 birds were trapped in the Panhandle for transport to Utah, but 105 birds were sero-positive for mycoplasmosis. All but 25 birds were diverted for release in Region 3. A subset of 10 birds were euthanized and cultured for mycoplasmosis. All 10 birds were positive for *Mycoplasma gallopavonis*, which is known to cross-react with other *Mycoplasma* spp. on the serological tests.

Wolf capture was done using physical capture techniques and helicopter darting. Drug protocols were developed and biological samples (blood and feces) were obtained from some captured individuals.

Assistance was provided for IDFG and Montana State University personnel involved in trapping black bear and grizzly bear in the Panhandle. Drug delivery and chemical immobilization protocols were developed to provide safe and effective handling of these animals.

Necropsies

There were a total of 306 animals necropsied during the 2006-2007 project year. The species examined included barn owl, great horned owl, crow, robin, raccoon, bighorn sheep, red-tailed hawk, Swanson's hawk, sage-grouse, cottontail rabbit, jackrabbit, mule deer, English starling, elk, white-tailed deer, kestrel, moose, duck, golden eagle, bald eagle, squirrel, black bear, magpie, trumpeter swan, skunk, Canada geese, antelope, turkey, mountain lion, pine siskin, finch, mourning dove, wolf, coyote, frog, night hawk, gopher, and muskrat.

Necropsy results on songbirds indicated diseases associated with bird feeders including Salmonellosis, Avian pox and Trichomoniasis. Waterfowl mortality diagnosed by the WHL included trauma, botulism, and organophosphate intoxication.

The most common cause of bighorn sheep mortality diagnosed by the WHL was acute bronchopneumonia caused by *Pasteurella multocida*, *Mannheimia (Pasteurella) haemolytica*, and *Mannheimia* (*Pasteurella) trehalosi*. Other mortality factors identified included gunshot (poaching), predation, and other disease processes including mycoplasmosis in several sheep from the Lost River Range east of Mackay, Idaho.

Wolf necropsies indicated the continued presence of lice (*Trichodectes canis*) and tape worm (*Echinococcus)*, previously detected last year in Idaho. Wolves are most likely the definitive host of this previously unrecognized parasite in the state.

Idaho led the country in West Nile Virus (WNV) cases in 2006. Nearly 1,000 human cases with 21 fatalities were documented by the Center for Disease Control. Significant numbers of corvids (magpies, crows, ravens) and raptors of many species were found to be infected with WNV. The effect of the virus on avian populations in Idaho is unknown, but it appears that negative impacts were severe in some local areas. In addition, 14 sage-grouse were found dead with WNV as a primary cause. The sage-grouse season in the Southwest Region was closed to hunting. The virus has not been found in the northern third of the state at this time.

FORENSIC TESTING

The forensic biologist handled 27 cases submitted by conservation officers throughout the state. We have accomplished our goal of providing a full service forensic DNA testing program for IDFG. Family and species identification of blood and meat evidence is available for all big

game animals. Gender determination using DNA technology is available for all big game animals on submitted evidence samples of blood, meat, hair, bone, and antler. Individual identification (or the DNA matching test) is now available for blood, meat, hair, bone, and antler samples from mule deer, white-tailed deer, elk, moose, and black bear. Cause of death and X-ray analysis for presence of lead was conducted.

RESEARCH ACTIVITIES

Research continues to be an important objective of the WHL. Numerous projects are in progress or in various stages of completion.

The WHL cooperated on statewide research projects in mule deer ecology, predator ungulate ecology, and bighorn sheep survival. The animals were captured using a variety of methods including net gunning, darting, and mugging on drive-net operations. Animals were radio-collared, ear-tagged, measured, evaluated for health status, and sampled depending on the capture protocols.

WHL personnel cooperated on a project to evaluate the potential impact of WNV on raptor species in southwestern Idaho in cooperation with the USGS Raptor Research Unit at Boise State University and the USGS National Wildlife Health Laboratory in Madison, Wisconsin. The project was initiated in 2005 and continued through the project year. Oral swabs and blood were collected from kestrels, barn owls and Swainson's hawks to determine exposure to WNV. A total of 43 out of 66 samples from kestrels, barn owls, and Swainson's hawks were found to have titers to WNV, with titers present in both adults and young of the year. The project will be continued in 2007.

CHEMICAL IMMOBILIZATION TRAINING

WHL personnel are responsible for instructing and certifying biologists and conservation officers in capture techniques using chemical immobilization. Certification for use of controlled substances is required of IDFG personnel every 2 years. A total of 83 IDFG personnel were certified through 6 training classes in spring 2007. The course was open to outside agencies which included Idaho State Department of Agriculture and several city and county law enforcement agencies.

LIAISON WITH OTHER AGENCIES

The WHL has worked with other state, federal, and private organizations on wildlife health issues. WHL personnel represent IDFG on the Technical Advisory and the Information and Education committees for the Greater Yellowstone Interagency Brucellosis Committee (GYIBC). The GYIBC is a multi-agency task force of state and federal personnel that meets to enhance inter-agency communication and work toward eradication of brucellosis in bison and elk in the Greater Yellowstone area.

WHL veterinarians represent IDFG on the Western Wildlife Health Committee of the Western Association of Fish and Wildlife Agencies. This committee provides information to the agency

directors about disease issues in wildlife and coordinates disease surveillance and dissemination of current disease problems in the western USA.

The WHL veterinarians represent IDFG at the U.S. Animal Health Association. Representation is through membership on the Captive Wildlife, Brucellosis, and Wildlife Disease committees. These committees provide discussion forums for agency and the public on specific topics and provide information for federal and state regulatory agencies on wildlife disease issues and their relationship with livestock diseases.

Strong affiliations are also in place with the University of Idaho, Washington State University, and Boise State University. These affiliations help the WHL direct and collaborate on research projects on wildlife health. In addition, the WHL has worked cooperatively with the National and Idaho chapters of the Foundation of North American Wild Sheep (FNAWS). WHL personnel also work with the Peregrine Fund and its activities in monitoring birds and nest sites.

PRESENTATIONS AT SCIENTIFIC MEETINGS

WHL personnel made presentations on IDFG/WHL projects and research at the 2006 U.S. Animal Health Association Meeting and the 2006 Wildlife Disease Association Meeting.

ABSTRACTS AND PUBLICATIONS

WHL personnel collaborated on several publications and presented abstracts at scientific meetings during the project year.

Peer-reviewed Publications

Drew, M. L., and G. C. Weiser. Long-term monitoring of bighorn sheep in contact with domestic livestock. In preparation.

Drew, M. L., and G. C. Weiser. Disease survey of domestic goats and their potential relationship to disease in bighorn sheep. In preparation.

Weiser, G. C., D. L. Miller, J. Rhyan, and M. L. Drew. Antibiotic effects on bighorn bacterial flora. In preparation.

Drew, M. L., and K. Amass. 2006. How much Telazol is in the bottle? Mislabeling problems from 1999-2006. Wildlife Disease Association Annual Meeting, Storrs, Connecticut, USA.

Drew, M. L. 2006. Possible introduction of parasites with wolves in Idaho. Wildlife Disease Association Annual Meeting, Storrs, Connecticut, USA.

Drew, M. L. 2006. The use of haldol for long distance transport of pronghorn. Wildlife Disease Association Annual Meeting, Storrs, Connecticut, USA.

Drew, M. L. 2006. Organophosphate intoxication of birds and mammals in Idaho, 1999-2005. Wildlife Disease Association Annual Meeting, Storrs, Connecticut, USA.

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FEDERAL AID IN WILDLIFE RESTORATION

The Federal Aid in Wildlife Restoration Program consists of funds from a 10% to 11% manufacturer's excise tax collected from the sale of handguns, sporting rifles, shotguns, ammunition, and archery equipment. The Federal Aid program then allots the funds back to states through a formula based on each state's geographic area and the number of paid hunting license holders in the state. The Idaho Department of Fish and Game uses the funds to help restore, conserve, manage, and enhance wild birds and mammals for the public benefit. These funds are also used to educate hunters to develop the skills, knowledge, and attitudes necessary to be responsible, ethical hunters. Seventy-five percent of the funds for this project are from Federal Aid. The other 25% comes from license-generated funds.