

**IDAHO DEPARTMENT OF FISH AND GAME**

**Cal Groen, Director**

**Project W-179-R-7**

**Progress Report**



**WILDLIFE HEALTH LABORATORY**

Study I, Job 1

July 1, 2007 to June 30, 2008

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September 2008

Boise, Idaho

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**PROGRESS REPORT  
IDAHO DEPARTMENT OF FISH AND GAME**

**GRANT NUMBER:** W-179-R

**SEGMENT NUMBER:** 7

**GRANT TITLE:** Wildlife Health Laboratory

**AGREEMENT PERIOD:** July 1, 2007 to June 30, 2008

**ABSTRACT**

During 2007-2008 project year, the Idaho Department of Fish and Game (Department) 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 2,000 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 44 species of animals including bighorn sheep, mule deer, white-tailed deer, elk, black bear, grizzly bear, wolf, wolverine, mountain lion, sage-grouse, waterfowl, raptors, and other birds. Necropsies were performed on 165 animals to determine cause of death. The Enforcement Bureau submitted 33 cases with 204 items of evidence 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 4 animal restraint and drug handling courses for Department 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 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 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 Game 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 2007-2008 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 severe weather and the change in elk management in eastern Idaho, elk were fed and trapped in the project year.

During 2007-2008 project year, WHL personnel processed more than 2,000 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 21 mountain goats were captured in Utah and transported to one release area in the Salmon Region.

The ungulate ecology project initiated by the Department in 2004 was continued during this project year. A number of elk, moose, wolves and 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 2007-2008 project year, Department personnel collected 935 brain and lymph node samples from elk, moose, 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.

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

## Necropsies

There were a total of 165 animals necropsied during 2007-2008 project year. The species examined included: bald eagle, golden eagle, barn owl, pygmy owl, bat, black bear, grizzly bear, beaver, bighorn sheep, Canada goose, crow, elk, flying and fox squirrel, gull, red-tailed hawk, Swainson's hawk, mourning dove, woodpecker, pigeon, quail, raven, robin, mallard duck, mountain goat, mountain lion, mule deer, white-tailed deer, osprey, raccoon, sage- and ruffed grouse, tundra swan, turkey, widgeon, wolf, and wolverine.

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.

Surveillance for West Nile Virus (WNV) was continued in the project year. In 2007, the number of cases of WNV in mosquitoes, birds, horses, and humans were significantly less than in 2006. A total of 82 birds, predominantly corvids, raptors, and sage-grouse, were submitted for testing with 15 positive birds detected (six American crows, three red-tailed hawks, one black-billed magpie, one common raven, one golden eagle, one Swainson's hawk, one American kestrel, and one unidentified hawk). A total of 97 horses were tested in 2007 for WNV, with 16 positive; however, the number of horses tested is decreasing as veterinarians and owners make diagnoses without laboratory confirmation. A total of 132 human cases were reported in Idaho in 2007 with one fatality. WNV activity was confirmed in the northern counties of Idaho, but some cases appear to have been associated with out-of-state travel.

## FORENSIC TESTING

The forensic biologist handled 33 cases with 204 items of evidence submitted by conservation officers throughout the state. We have accomplished our goal of providing a full service forensic DNA testing program for the Department. 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 wildlife 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, black bear, and bighorn sheep. Cause of death and X-ray analysis for presence of lead was also 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 are cooperating on a project to evaluate the potential impact of WNV on raptor species in southwestern Idaho in cooperation with the U.S. Geological Survey (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 43/66 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 spring and summer 2008.

## **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 Department personnel every two years. A total of 44 Department personnel were certified through four training classes in spring and summer 2008. The course was open to outside agencies which included the Nez Perce Tribe and several city and county law enforcement agencies.

## **PACKAGING AND SHIPPING GUIDELINES**

WHL personnel have developed new packaging and shipping guidelines for biological specimens to meet federal regulations. These guidelines pertain to all biological specimens (research and forensic samples are included) that are being packaged and shipped via commercial carriers, regardless of whether they are being shipped in state or between states.

## **LIAISON WITH OTHER AGENCIES**

The WHL has worked with other state, federal, and private organizations on wildlife health issues. WHL personnel represent the Department 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 towards eradication of brucellosis in bison and elk in the Greater Yellowstone area.

WHL veterinarians represent the Department 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 the Department at the U.S. Animal Health Association. Representation is through membership on the Captive Wildlife, Brucellosis, Tuberculosis, and Wildlife Disease committees. These committees provide discussion forums for agencies 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 Chapter 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 Department/WHL projects and research at the 2007 U.S. Animal Health Association Meeting and the 2008 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 BHS 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 BHS. *In preparation.*

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

Drew, M. L., and D. E. Towell. 2008. Translocation of bighorn sheep (*Ovis canadensis*) in Idaho. Respiratory Disease Workshop, Boise, Idaho, USA.

Drew, M. L. 2008. Health assessment of bighorn sheep (*Ovis canadensis*) in Idaho. Respiratory Disease Workshop, Boise, Idaho, USA.

Drew, M. L., and A. Ward. 2008. Bighorn sheep interactions with livestock, 1994-2008. Wildlife Disease Association Annual Meeting, Edmonton, Alberta, Canada.

- Drew, M. L. 2008. Surgical placement of abdominal transmitters in two mule deer (*Odocoileus hemionus*). Wildlife Disease Association Annual Meeting, Edmonton, Alberta, Canada.
- Rudolph, K. M., D. L. Hunter, R. B. Rimler, E. F. Cassirer, W. J. Foreyt, W. J. DeLong, G. C. Weiser, and A. C. S. Ward. 2007. "Microorganisms Associated with a Pneumonic Epizootic in Rocky Mountain Bighorn Sheep (*Ovis canadensis canadensis*)" *Journal of Zoo and Wildlife Medicine* 38(4):548-558.
- Rudolph, K. M. 2008. "Microorganisms Associated with a Pneumonic Epizootic in Rocky Mountain Bighorn Sheep" 20 minute talk at the 2008 Sheep Research Symposium: "Respiratory Disease in Wild and Domestic Sheep", March 7-8, 2008, Boise, Idaho, USA.

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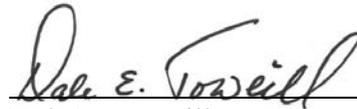
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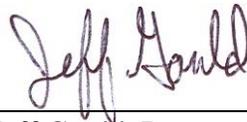
IDAHO DEPARTMENT OF FISH AND GAME



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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.

