Membership Update
The Vermont Fish and Wildlife Department and the Massachusetts Division of Fisheries and Wildlife will soon be the newest members of the NWDC, bringing our total membership to eight states. By working together throughout the region, we aim to detect and respond to diseases of wildlife in a proactive and timely manner. We are grateful to our members for their indispensable collaboration in this effort!

Update on highly pathogenic avian influenza
Randy Mickley (USDA WS)

USDA-APHIS-Wildlife Services MA/CT/RI Program is participating in a national surveillance survey of dabbling, a.k.a. puddle ducks to watch for evidence of highly pathogenic avian influenza in the northeastern United States.

Avian influenza (AI) virus is naturally found in some species of waterfowl and shorebirds. This past December a highly pathogenic (HPAI) form of this virus, H5N8, was found in both poultry and wild birds in the Pacific Northwestern United States and Canada.

USDA-APHIS-Wildlife Services, with concern about the potential impact on wild birds and domestic poultry in the United States, is collecting samples from migratory dabbling ducks from across the country.

In MA/CT/RI, Wildlife Services is collaborating with state waterfowl biologists as well as waterfowl hunting enthusiasts to gain access to birds to sample. These samples aid in the early detection of HPAI in the United States. Such early detection can provide state veterinary and public health officials with valuable information to protect livestock and wildlife.

Samples from freshly dead or sick wild birds are also of interest for this HPAI surveillance. Contact the USDA-APHIS-Wildlife Services Wildlife Disease Biologist, Randall Mickley, at 508-476-2715 or the WS State Office at 413-253-2403 to report any sick or freshly dead wild birds.

Editor’s note: The USDA APHIS Wildlife Services is working closely with the USGS National Wildlife Health Center (NWHC), the U.S. Fish and Wildlife Service and state wildlife agencies to conduct enhanced mortality and hunter-harvest surveillance in wild birds. For additional background, see http://www.nwhc.usgs.gov/publications/wildlife_health_bulletins/WHB_2014-05_H5N8.pdf
Diagnostic Cases

OSTEOCHONDROMATOSIS IN A DEER
Dr. Elizabeth Buza, PADLS

A female White-tailed deer (*Odocoileus virginianus*) was submitted by the Pennsylvania Game Commission which appeared to have been struck by a car. The deer attempted to ambulate but was unable to rise. The deer had numerous masses on it forelimbs and head. Due to poor prognosis, the deer was humanely euthanized and submitted to New Bolton Center Large Animal Diagnostic laboratory for an autopsy.

Upon gross examination, a large, 30 x 25 x 11 cm, round, hard multilobular mass protruded from the left shoulder region (Fig. 1). On cut section, the mass was composed of red to tan hard bony tissue that surrounded the head of the right femur. At this point the top differential diagnosis was a metastatic osteosarcoma.

The masses were histologically examined. The tumors were composed of an outer layer of disorganized cartilage which progressed from immature woven bone to mature bony trabeculae. Overlying the masses was an outer layer of reactive fibrous connective tissue (similar to periosteum). The masses effaced the nasal cavity and expanded the skeletal muscle and lung with compression of surrounding normal tissue. The pulmonary masses seemed to originate from blood vessels as occasionally free osteoclasts were observed within adjacent vessels.

The gross and histologic characteristics of the masses were consistent with a diagnosis of osteochondromatosis. To our knowledge, this is the first reported case of osteochondromatosis in a deer. Osteochondromatosis, also known as multiple cartilaginous exostoses, is an uncommon condition in which multiple benign, cartilage-capped tumors arise from the surface of bones formed by endochondral ossification. Flat bones, especially those of the skull are commonly involved. This is typically an incidental condition found at autopsy; however clinical signs may result due to compression of adjacent tissues.

Osteochondromatosis has been described in humans,
horses, dogs, a pig, a macaque, and cats; however in cats the condition has a different biological behavior as well as etiology. The peculiar aspect of this case is the potential pulmonary metastasis. In cats, malignant transformation of osteochondromas to chondrosarcomas have been reported. The pulmonary masses in this case histologically resemble the benign skeletal masses; therefore it most likely does not represent malignant transformation. This is the first reported case of osteochondromatosis in a deer with potential novel site of extraskeletal pulmonary involvement.

References:

RANAVIRUS IN WOOD FROG TADPOLES
Dr. Inga Sidor, NHVDL
Staff of NH Fish and Game submitted six freshly dead wood frog tadpoles (Rana sylvatica) to the NHVDL. The tadpoles were collected in July, 2014 as part of a mass mortality event in a series of connected ponds on private property. [Side note: The person who reported the dead frogs to NHFG was J. Ann Eldridge, an artist who does beautiful etchings of wildlife and environments (http://www.jaelridge.com/portfolio.html)].

One of the six tadpoles had two fully emerged legs; three had partially emergent legs and were undergoing metamorphosis (Fig. 3). There was moderate to marked, multifocal reddening and petechial (pinpoint, round) hemorrhages in the skin on the rostral ventrum and on the legs.

Histologic examination revealed patchy, multifocal apoptosis of cells within glomeruli and renal hematopoietic interstitium. There was multifocal, mild necrosis of epithelial cells within lung, accompanied by rare heterophils; rarely pulmonary epithelial cells contained globular cytoplasmic eosinophilic inclusions. Small numbers of necrotic cells were present within liver and spleen; more extensive hepatic necrosis was present in one tadpole.

Necrosis in multiple organs, as was observed in these tadpoles, is typical of ranavirus infections in this species. The timing of the die-off with the advent of metamorphosis also suggests ranavirus as the cause of mortality. The presence of ranavirus was confirmed by molecular testing. Connected ponds, as described by J. Ann Eldridge, may exchange infectious virus via contaminated water, sediment or scavenging of dead tadpoles, with a relatively short interval between exposure and signs of infection and death.

There is only one report describing previous mortalities at unspecified locations in New Hampshire attributed to ranavirus (previously described as iridovirus): in pickerel frogs in 1999, and bullfrogs in 2000 (Green et al. 2002). Given the lack of routine surveillance for this pathogen, wider distribution within the state and region is suspected.

![Figure 3. Wood frog tadpoles with moderate to marked, multifocal reddening and petechial (pinpoint, round) hemorrhages in the skin on the rostral ventrum and on the legs. Photo by Dr. Inga Sidor.](image)

References:
NWDC Database Update

Diagnostic results from NWDC cases are housed in a central database that was created and is maintained by the Canadian Wildlife Health Cooperative (CWHC). This database is unique because it was custom-made solely for wildlife disease data. NWDC members and diagnostic laboratories have access to NWDC data, and can conduct searches and data downloads. Data can be searched by numerous criteria including species, location, date received, necropsy findings, and diagnosis. Once a dataset is identified through a search, the export function provides a complete list of fields that can be exported into an Excel spreadsheet.

During the past year, Dr. Joanna Proszowska-Szewerniak (DVM), a recent graduate of the Master’s in Conservation Medicine program at Cummings School of Veterinary Medicine, has been helping enter diagnostic cases in the NWDC database. She is also developing user-friendly instructions on conducting searches and exporting data. We will make these instructions available in your agency’s dropbox folder by February 15, and are happy to give in-person instruction at this year’s training workshops.

On a related note, we encourage members to use the online specimen submission form (the URL and additional instructions are in the NWDC Member Guide). When completing the form, please be sure to include any information that may be related to the death of the animal, including any observations of the behavior of the animal prior to death, details related to the carcass condition or location, extreme weather events. In addition, specific location information is critical to accurately map and track wildlife mortalities. Thank-you for your attention to these details.

Educational opportunities provided by the NWDC

We hosted a webinar, “Diseases of reptiles and amphibians in the Northeast, U.S.,” on December 4, 2014. Topics included Snake Fungal Disease, ranavirus and chytrid in amphibians, and various diseases of turtles. We’d like to thank Drs. Jeffrey Lorch (USGS National Wildlife Health Center), Maria Forzán (Canadian Wildlife Health Cooperative), and Matthew Allender (University of Illinois) for their excellent presentations, and for participating in subsequent, productive discussions regarding these diseases.

NWDC will conduct workshops on wildlife health and disease for member states this spring. Please contact nwdc@tufts.edu if you are interested in learning more about these workshops or if you have suggestions for additional educational opportunities.