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## Newsletter of the USGS National Wildlife Health Center

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## Large-scale bird die-offs relatively common

The recent events in Arkansas and Louisiana increased concern over large-scale die-offs of birds. While they are always a concern, they are not that unusual. Over the past 10 years there have been over 175 wild bird mortality events reported to the National Wildlife Health Center (NWHC) exceeding 1,000 birds. Infectious disease, weather, poisoning, trauma, starvation are just some of the causes for these large scale mortality events.

USGS and a network of partners across the country work on documenting these wildlife mortality events in order to provide timely and accurate information on locations, species and causes of death. New and ongoing wildlife mortality events nationwide are listed on the NWHC website at: [http://www.nwhc.usgs.gov/mortality\\_events/ongoing.jsp](http://www.nwhc.usgs.gov/mortality_events/ongoing.jsp).

These data are not all-inclusive. Information on some outbreaks may not be

received until months after the event, but efforts continue to make the information as complete as possible.

For the most recent information on the black-bird die-off investigations in Arkansas and Louisiana, please see the NWHC website at: [http://www.nwhc.usgs.gov/science\\_feature/](http://www.nwhc.usgs.gov/science_feature/).

## Virulent Newcastle disease virus in double-crested cormorants

Beginning in July 2010, double-crested cormorants displaying neurological signs including lethargy, paralysis of the wings and legs, twisting of the neck, and/or erratic swimming were observed at nesting colonies located in Maryland, Minnesota, North Dakota, and Wisconsin. Double-crested cormorants submitted to the USGS-National Wildlife Health Center from these sites tested positive for virulent Newcastle Disease virus (NDV). Newcastle Disease virus belongs to

the group of viruses known as avian paramyxovirus-1 (APMV-1). This APMV-1 virus is often lethal to double-crested cormorants; it's designation as virulent NDV indicates potential virulence to poultry. Additional mortalities at these sites included American white pelicans, ring-billed gulls, California gulls, and mallards; however, the cause of death in these species was attributed to other diseases including West Nile virus, salmonellosis, and aspergillosis. For a

summary of recent NDV mortality events involving wild birds and the geographic expansion in the eastern US, see the Wildlife Health Bulletins (Sep 2010, Dec 2010) at [http://www.nwhc.usgs.gov/publications/wildlife\\_health\\_bulletins/index.jsp](http://www.nwhc.usgs.gov/publications/wildlife_health_bulletins/index.jsp).

## Grebe mortality at San Diego reservoir



Western Grebe,  
Photo Copyright Tom Munson

Multiple agencies responded to a mortality event of Western and Clark's grebes at Sweetwater Reservoir in San Diego County, California. Initial reports indicated more than 250 grebes were known dead with few other species affected. Carcasses were in various states of decomposition; mortality was estimated to have begun around July 1, 2010. Examination of grebe carcasses by the USGS-National Wildlife Health Center, the San Diego County Veterinarian, and the California Animal Health and Food Safety Laboratory all revealed severe emaciation on gross examination of affected birds. Laboratory testing

did not identify any bacterial or viral pathogens, parasites, or toxins in tissues or water samples. Mortalities continued throughout July and totaled 600 birds, which comprised about 90% of the resident grebe population. No abnormal environmental conditions were noted during field investigations, and no other nearby areas were affected. Fish surveys conducted by California Department of Fish and Game identified schools of shad throughout the lake, and populations were consistent with other similar lakes in southern California. The cause of this mortality event is still undetermined. A substantially larger

mortality event involving an estimated 150,000 eared grebes occurred at the Salton Sea in 1991-1992. The cause of this mortality event remains undetermined as well, although field signs and carcass conditions (e.g., gulping fresh water, excessive preening, and allowing close approach) were dissimilar (Meteyer et al. 2004).

Meteyer, C. U., Audet, D. J., Rocke, T. E., Radke, W., Creekmore, L. H. and Duncan, R. (2004) Investigation of a large-scale Eared Grebes (*Podiceps nigricollis*) die-off at the Salton Sea, California, in 1992. *Stud. Avian Biol.* 27: 141-151.

## Disease spotlight: avian cholera

Most species of birds and mammals can become infected with different strains of *Pasteurella multocida*; however, avian cholera in wild birds is primarily caused by one strain, Type 1. The species of birds most commonly affected are ducks and geese, coots, gulls, and crows.

The bacteria can be transmitted by bird-to-bird contact, contact with secretions or feces of infected birds, or ingestion of food or water containing the bacteria. Aerosol transmission may also occur. The bacteria may survive up to 4 months in soil and water.

Large die-offs are seen primarily in wild ducks and geese where the disease affects birds peracutely. The sudden appearance of large numbers of dead birds in good body condition with few, if any, sick birds is observed. Death may be so rapid that birds literally fall out of the sky or die while eating with no previous signs of disease. Sick birds appear lethargic, and when captured may die within minutes. Other signs include convulsions; swimming in circles; throwing the head back between the wings; erratic flight, such as flying upside down or trying to land a foot or more above the water; mucous discharge from the mouth; soiling or

matting of the feathers around the vent, eyes, and bill; pasty, fawn-colored or yellow droppings; or blood-stained droppings or nasal discharge.

Avian cholera is highly contagious and can spread rapidly. Prompt action is needed to prevent and minimize the spread of the disease. Careful carcass collection and disposal helps reduce the amount of bacteria in the environment. Recommendations are site specific.

Additional information is available at: [http://www.nwhc.usgs.gov/publications/field\\_manual/chapter\\_7.pdf](http://www.nwhc.usgs.gov/publications/field_manual/chapter_7.pdf)

## White-nose syndrome revised case definitions and bat submission guidelines

Revised case definitions for white-nose syndrome (WNS) and new bat submission guidelines to the National Wildlife Health Center for the current hibernation season are now posted on our website.

The case definitions were developed in conjunction with laboratory representatives from the WNS National Plan

Diagnostic Working Group and standardize the interpretation of available laboratory test results.

Winter 2010/2011 bat submission guidelines will assist with prioritizing appropriate field samples for laboratory submission and to meet the primary objectives of identifying new geographic locations and bat species affected with WNS. A Wildlife Health Bulletin

announcing these new documents has been released.

Both the revised case definitions and submission guidelines can be found at: [http://www.nwhc.usgs.gov/disease\\_information/white-nose\\_syndrome/USGS\\_NW\\_HC\\_Bat\\_WNS\\_submission\\_protocol.pdf](http://www.nwhc.usgs.gov/disease_information/white-nose_syndrome/USGS_NW_HC_Bat_WNS_submission_protocol.pdf)

## Puffer fish die-off in Hawaii

The USGS National Wildlife Health Center Honolulu Field Station (HFS) is investigating a die-off of striped puffer fish (*Arothron hispidus*) occurring on the islands of Hawaii, Maui, Molokai, Lanai, and Oahu.

Mortality has been ongoing since February 2010 on the island of Hawaii; March on the

island of Maui; and April on the island of Oahu.

Affected puffer fish are appearing on the water surface and on shorelines. Fish on the water surface are puffed up, are unable to right themselves, and soon die.

For a complete summary of this event, see the USGS Wildlife Health Bulletin 2010-05 (August 2010) at

[http://www.nwhc.usgs.gov/publications/wildlife\\_health\\_bulletins/WHB\\_2010\\_05\\_PUFFER.pdf](http://www.nwhc.usgs.gov/publications/wildlife_health_bulletins/WHB_2010_05_PUFFER.pdf)

For more information, please contact: Dr. Thierry Work, HFS Wildlife Disease Specialist at 808 792-9520 or by email:

[thierry\\_work@usgs.gov](mailto:thierry_work@usgs.gov)

## White-nose syndrome may cause catastrophic imbalances in life support processes of bats

USGS National Wildlife Health Center pathologist Carol Uphoff Meteyer is one of the lead authors of the paper, "Wing pathology of white-nose syndrome in bats suggests life-threatening disruption of physiology," which was published August 2010 in

BMC Biology. The article proposes damage to bat wings from the fungus associated with white-nose syndrome (WNS) may cause catastrophic imbalance in life-support processes, according to newly published research. This imbalance may be to blame for the more

than 1 million deaths of bats due to WNS thus far. The electronic version of this article can be found online at: <http://www.biomedcentral.com/1741-7007/8/135>

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*Physiological imbalance may be to blame for the more than 1 million deaths of bats due to WNS thus far.*

## Avian influenza training module currently available through the MCEIRS Online Training Portal

The NWHC partnered with the Minnesota Center of Excellence for Influenza Research and Surveillance (MCEIRS) at the University of Minnesota and helped create an online training module, Avian Influenza: Detection in Wild Birds.

The module covers techniques for collecting samples in wild bird

populations, the selection and use of personal protective equipment, and the handling and shipment of samples.

Each module contains several e-learning lessons and a knowledge check to reinforce your learning, and continuing education credit and certificates are available.

More information can be found at the MCEIRS website.

<http://www.mceirs.umn.edu/training/welcome>

## Wood stork mortality at Blackburn Bay, Florida



Adult wood stork  
Photo credit: USFWS/George Gentry

In July 2010, a small group of wood storks (mostly juveniles) in Sarasota County were involved in an unusual mortality event. Clinical signs observed in affected birds included disorientation, incoordination, and “drunken”-type behaviors. Many had evidence of trauma presumably from wandering into traffic and died shortly after arriving at a rehabilitation facility. Mortalities totaled 16 birds although a rookery population of approximately 40 storks was considered at risk in the area. Water samples collected during this event did not identify any harmful algal blooms in the area. Toxicology results from one of two birds that died from traumatic injuries

identified several compounds including common euthanasia drugs pentobarbital (and its metabolite metabarbital) and phenytoin, benzenemethanol (a local anesthetic), methamidophos (an organophosphate), and D-limolene (a citrus oil-based pesticide). In addition, this bird also tested positive for botulism type C although it is possible that these results were confounded by the other toxins present. Three affected storks did survive this event with supportive care.

Wood storks are listed as endangered by the US Fish & Wildlife Service although reclassification of the southeastern US breeding population to threatened status is

currently under review. They are the only stork species regularly found in the US. Their diet consists mainly of fish although they occasionally consume crustaceans, amphibians, reptiles, mammals, birds and arthropods. There are anecdotal reports of wood storks feeding on landfills or their run-off water which may explain the source of exposure to the various compounds identified in this case, although this could not be confirmed.

## Rabies in Brazilian free-tailed bats

In August 2010, several thousand dead and sick Brazilian free-tailed bats were found in the vicinity of a roost site in Williamson County, Texas. Bats were reportedly seen flying during the day and landing on the ground too weak to fly. The cause of death in these bats was determined to be rabies virus, a member of the Lyssavirus group. A large-scale

rabies-associated mortality event, such as the one observed at this site, generally decreases the frequency of contact among bats in the population, resulting in decreased transmission of the virus and subsequent recovery of the bat population as long as environmental conditions (e.g., food supply) remain favorable. Due to the large population size at this

roost (estimated to be over one million bats), officials with the Texas Department of Transportation confirmed that notices were already in place at the site to remind the public never to handle bats.

## National Wildlife Health Center diagnostic services and submission guidelines

The National Wildlife Health Center (NWHC) provides complete diagnostic services, which includes direct access to Field Investigation Team (FIT) Wildlife Disease Specialists to assist field personnel with carcass submission, wildlife disease questions, or outbreak management support through phone, email, and on-site assistance.

The FIT are regionally based and are sources of information for choosing appropriate diagnostic specimens, communication and interpretation of results, and field response activities.

Timely submission of suitable samples and a comprehensive event history are key components toward determining the correct diagnosis.

Prior to submission, contact a member of the FIT to obtain shipping approval and discuss shipping arrangements.

Freezing/thawing impedes isolation of some pathogens and damages tissues. The NWHC prefers chilled specimens if they can be sent within 24-36 hours of collection or death. The FIT will provide guidance on freezing samples on a case-by-case basis. As a general guideline, if you cannot call or ship within 24-36 hours, freeze the animal(s).

Specimens should be shipped by overnight service, Monday through Wednesday, to guarantee arrival at NWHC before the weekend. If specimens are fresh and need to be shipped on Thursday or Friday, special arrangements can

be made with a FIT member.

A specimen history form and tracking number are required before specimens arrive at the Center. These may be sent to a FIT member either electronically or by FAX. Packages will not be opened if a specimen history form does not arrive first.

Instructions for collection and shipment of avian and mammalian carcasses, as well the required specimen history form, can be found at our website.

[http://www.nwhc.usgs.gov/mortality\\_events/reporting.jsp](http://www.nwhc.usgs.gov/mortality_events/reporting.jsp)

Due to new restrictions, specimens should be sent to the National Wildlife Health Center, Necropsy Loading Dock. The new address can be found on the shipping instructions.

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**USGS National Wildlife Health Center**

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(608) 270-2400

FAX:  
(608) 270-2415

We're on the Web!  
Visit us at:  
<http://www.nwhc.usgs.gov/>

**To report a wildlife mortality event, contact a member of the NWHC Field Investigation Team**



*If your agency would like to report an event or needs assistance, please contact:*

Western U.S.:  
Vacant Position  
(contact Drs. White and Ballmann in interim)

Central U.S.:  
Dr. LeAnn White  
608-270-2491  
[clwhite@usgs.gov](mailto:clwhite@usgs.gov)

Eastern U.S.:  
Dr. Anne Ballmann,  
608-270-2445,  
[aballmann@usgs.gov](mailto:aballmann@usgs.gov)

Hawaii, Pacific Islands:  
Dr. Thierry Work,  
808-792-9520,  
[thierry\\_work@usgs.gov](mailto:thierry_work@usgs.gov)

Nationwide, single animal cases only:  
Jennifer Bradsby,  
608-270-2443,  
[jbradsby@usgs.gov](mailto:jbradsby@usgs.gov)

**Disclaimer**

Information presented in this newsletter represents the most current data available to the USGS National Wildlife Health Center at the time of publication. For mortality event details, we encourage researchers to contact us to acquire data directly.

External request forms for

mortality information can be obtained from Jennifer Bradsby at 608-270-2443 or by email:  
[jbradsby@usgs.gov](mailto:jbradsby@usgs.gov).

Information presented in this newsletter is not intended for citation as scientific literature.

For citable information or general information

regarding the Center, please contact Gail Moede Rogall, Information Specialist/Outreach Coordinator, at 608-270-2438 or by email:  
[gmrogall@usgs.gov](mailto:gmrogall@usgs.gov)

**Words for thought...**

“Today's problems cannot be solved if we still think the way we thought when we created them.” - Albert Einstein