

This animal was the third case of CWD in Canada and the first in an animal born in this country. The previous cases of CWD, a mule deer (*Odocoileus hemionus*) from an Ontario zoo and a game farm elk from Saskatchewan, were imported from the USA. The dam of the current animal was imported from South Dakota in 1988. CWD behaves like a transmissible disease, and it has been suggested that lateral transmission may occur among captive elk (Miller et al. 1998. Epidemiology of chronic wasting disease in captive Rocky Mountain elk. *JWD* 34:532-538). The source of the disease in the current case remains unknown. Surveys for CWD among hunter-killed wild deer and surveillance of game farmed animals is ongoing in the region. *Adapted with permission from the CCWHC Newsletter, Vol. 5(3).*

Chlamydiosis in Wildlife Workers. *Chlamydia psittaci* is an unusual bacterium that occurs in many species of birds. It usually does not cause disease, and healthy birds may shed the organism in their droppings. The bacterium can remain alive in the environment for long periods and may be inhaled with dust from dried bird feces. Human infection has been known to occur for many years; two recent cases in western Canada demonstrate a risk for wildlife personnel. In the spring of 1998, an enforcement officer inspected the premises of 15 aviculturists in Saskatchewan. Birds in the collections were predominantly native waterfowl. He subsequently developed stiffness and muscle aches, chills and a persistent fever. A physician diagnosed pneumonia. Eleven days later, the individual requested the physician perform serology for *C. psittaci*, which was positive. In total, the individual was sick for 4 weeks. The second individual was involved in waterbird carcass cleanup during botulism outbreaks in northern Alberta in the summer of 1998. He developed aggressive flu-like symptoms followed by a prolonged hacking cough, generalized weakness, and difficulty in breathing. A blood test was positive for *C. psittaci*. Individuals usually recover well after appropriate antibiotic therapy but in some cases the infection can be persistent and recurrent, requiring aggressive and consistent treatment.

The exact source of infection for these individuals will never be known, but it is likely they were exposed to airborne stages of *C. psittaci* while examining buildings in which waterfowl were held and while handling bird carcasses. Because human chlamydiosis of this type is uncommon, most physicians are unfamiliar with the disease or only associated it with exposure to parrots or other psittacines. If a person develops clinical signs as described above after working with birds, it is important to inform the physician that the person may have been exposed to chlamydiosis so that appropriate tests can be conducted and proper antibiotic therapy can be implemented. *Adapted with permission from the CCWHC Newsletter, Vol. 5(3).*

1998 Hemorrhagic Disease Outbreak in the U.S. For the last 19 years, the Southeastern Cooperative Wildlife Disease Study has conducted a survey tracking the incidence of hemorrhagic disease in the United States. The success of this survey, based on a mailed questionnaire, has traditionally been excellent, thanks to the efforts of wildlife managers and deer biologists in the various states. In 1998, many states reported substantial virus activity during the summer and fall. Essentially all the virus isolates were epizootic hemorrhagic disease virus serotype 2 (EHDV-2). Large scale deer die-offs were reported in Arkansas, Illinois, Iowa, Kansas, Kentucky, Missouri, Nebraska, South Dakota, Tennessee, Virginia, and Washington. Several other states reported focal losses or evidence of convalescent cases including Alabama, Georgia, Indiana, Maryland, Oklahoma, and South Carolina. The survey also disclosed that California is continuing to have outbreaks of deer adenovirus, a disease that mimics hemorrhagic disease.

Awareness of the hemorrhagic disease syndrome is increasing among wildlife managers, and it is suspected that deer biologists will soon be factoring the impacts of hemorrhagic disease occurrences into their deer populations and harvest models. In addition, hemorrhagic disease certainly has gotten the attention of some deer farmers who have suffered heavy losses among white-tailed deer maintained in enclosures in hemorrhagic disease endemic areas. *Adapted with permission from the SCWDS Briefs, Vol. 14 (4).*

Botulism Mortality on the Canadian Prairies. Avian botulism continues to cause high waterfowl losses in the prairies this year, but, rather than being restricted primarily to a few large lakes in the southern regions of the provinces, as occurred in 1997, the disease was more widespread. In Alberta, approximately 165,000 avian carcasses were collected, with 80% of the losses occurring on lakes in the boreal forest ecoregion of northern and north-central Alberta. Approximately 19,400 carcasses were collected in Saskatchewan. The statistical estimate of mortality at Old Wives Lake was 52,000, and an estimated mortality of 10,000 occurred at Crane Lake. Approximately 20,000 avian carcasses were collected in Manitoba. The total number of carcasses collected in the summer of 1998 from lakes in the Canadian prairies was 204,000. Preliminary results of a study to determine the efficiency of carcass cleanup showed that less than 25% of avian carcasses on a marsh are retrieved; therefore, total estimated animal botulism mortality for known outbreaks in the three prairie provinces was likely in excess of 1 million birds. *Adapted with permission from the CCWHC Newsletter, Vol. 5(3).*

NWHC Quarterly Mortality Report. Multiple avian cholera outbreaks began this quarter in the western United States; outbreaks were most numerous in California, but a single epizootic occurring on the Great Salt Lake represented the greatest magnitude of mortality. In California, outbreaks occurred through-

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out the length of the state from Del Norte County in the north to Imperial and Riverside Counties (Salton Sea) in the south. Approximately 42,000 waterfowl and coots have been collected at these California outbreak sites. Although snow geese, the waterfowl species typically associated with avian cholera outbreaks, predominated in some of the pick-ups at refuges in the Sacramento National Wildlife Refuge (NWR) Complex, ruddy ducks and American coots were the species most involved in outbreaks in the northern part of the state and other central valley sites. Also of note, over 700 Aleutian Canada geese (2% of the population) died from avian cholera this winter at the San Joaquin River NWR.

The largest avian cholera event this winter occurred on the south of arm of the Great Salt Lake where approximately 35,000 birds (primarily eared grebes and lesser numbers of California gulls) died from this disease. Avian cholera die-off events occurring on the Great Salt Lake as well as involving primarily eared grebes are rare. This is only the third documented avian cholera epizootic on the Great Salt Lake reported to NWHC. All three of these die-offs have involved eared grebes. In 1994, an estimated 10,000 eared grebes and 5,000 northern shovelers died from avian cholera and in 1995 1,000 eared grebes and northern shovelers were involved.

Pathologists at the USGS National Wildlife Health Center (NWHC) in Madison, Wisconsin and the Southeastern Cooperative Wildlife Disease Study (SCWDS) at the University of Georgia have found changes in the brains of coots, mallard, wigeon and ringed-necked ducks from Woodlake, North Carolina that are similar to the changes found in the brains of American coots and bald eagles with vacuolar myelinopathy. The disease had not previously been documented in species other than American coots and bald eagles. In addition, bald eagles collected from 4 new locations (near Woodlake, North Carolina; Aiken, South Carolina; and Strom Thurmond Lake and Lake Juliette, Georgia) and coots from Aiken, South Carolina appear to also have the same brain disease. In Arkansas, at least 58 bald eagles and an unknown number of coots have died from this disease since it was first detected in 1994.

Coot and scaup mortality due to *Leygonimus* and *Sphaeridiotrema* parasites occurred again this fall on Shawano Lake in Wisconsin. As in previous dieoffs, *Leygonimus* was found in the coots in large numbers, and *Sphaeridiotrema* in the scaup. Approximately 3,000 of the 3,500 birds picked up during the 4 week dieoff were coots.

QUARTERLY WILDLIFE MORTALITY REPORT

October 1998 to December 1998

Location	State	Dates	Species	Mortality	Diagnosis	*Reported by
Lake Yuriria, Guana-juato, Mexico		09/01/98-10/16/98	Unidentified Duck Unidentified Heron Cattle Egret Unidentified Phalarope Ruddy Duck	850 (e)	Botulism (not typed)	NW
City of Davis wetlands	CA	12/13/98-ongoing	Unidentified Duck Ruddy Duck	3,500	Avian cholera	CFG
Colusa & Delevan NWRs	CA	12/15/98-ongoing	American Coot American Wigeon Snow Goose Northern Pintail Ross' Goose	12,000 (e)	Avian cholera	NW
Hayward—Water treatment wetlands	CA	12/01/98-ongoing	Ruddy Duck Northern Shoveler	250	Avian cholera	CFG
Lake Earl Wildlife Area	CA	12/21/98-ongoing	American Coot Ruddy Duck Bufflehead Unidentified Grebe Unidentified Loon	5,100	Avian cholera	CFG
Salton Sea NWR—New River Delta	CA	12/18/98-ongoing	Eared Grebe Ruddy Duck Northern Shoveler Ring-billed Gull Herring Gull	1,500 (e)	Avian cholera	NW
San Joaquin River NWR; Page Lake	CA	12/18/98-ongoing	Canada (Aleutian) Goose Canada (Cackling) Goose American Coot Mallard	1,165	Avian cholera	NW

QUARTERLY WILDLIFE MORTALITY REPORT

October 1998 to December 1998

Continued

Location	State	Dates	Species	Mortality	Diagnosis	*Reported by
San Luis & Merced NWRs	CA	12/27/98-ongoing	American Coot Northern Shoveler Green-winged Teal Ruddy Duck Mallard	9,708	Avian cholera	NW
Yolo Bypass Wildlife Area	CA	12/21/98-ongoing	Ruddy Duck American Coot Northern Shoveler Unidentified Egret Snow Goose	8,700 (e)	Avian cholera	CFG
Hoschton	GA	10/04/98-10/16/98	Mourning Dove	5	Parasitism: trichomoniasis	SC
Lake Juliette	GA	11/20/98-12/15/98	American Coot Bald Eagle	100 (e)	Vacuolar myelinopathy	SC, NW
Strom Thurmond Lake	KS	11/13/98-12/31/98	House Sparrow	8	Salmonellosis	NW
Wichita	MT	07/01/98-09/30/98	Pine Siskin	300 (e)	Salmonellosis	NW
Stevensville & Hamilton area	MT	07/01/98-09/30/98	Evening Grosbeak			
Woodlake	NC	10/23/98-ongoing	American Coot Bufflehead Ring-necked Duck Mallard Bald Eagle	300 (e)	Vacuolar myelinopathy	NW, SC
Lostwood NWR	ND	10/26/98-11/04/98	Snow Goose Ross' Goose White-fronted Goose Canada Goose	650 (e)	Necrotic enteritis	NW
Harlan County Reservoir	NE	10/30/98-11/02/98	Double-crested Cormorant	40 (e)	Parasitism: renal coccidiosis	NW
Hudson River near Stillwater	NY	12/22/98-ongoing	Snow Goose	75 (e)	Parasitism: <i>Sphaeridiotrema globulus</i>	NY
White Plains	NY	11/30/98-11/30/98	American Crow	12 (e)	Toxicosis: diazinon	NY
Milford, Lakewood Park Apts.	OH	11/04/98-11/04/98	Mallard	6	Botulism type C	NW
Savannah River Ecology Lab	SC	12/11/98-ongoing	American Coot Bald Eagle	50 (e)	Vacuolar myelinopathy	NW
Terry County	TX	12/20/98-12/28/98	Sandhill Crane	75 (e)	Mycotoxicosis suspect	NW
Laguna Atascosa NWR	TX	12/19/98-12/25/98	Snow Goose	20 (e)	Lead poisoning	NW
Great Salt Lake	UT	10/13/98-11/30/98	Eared Grebe California Gull Unidentified Duck Unidentified Shorebird	34,960	Avian cholera	NW
Salt Lake City	UT	12/30/98-12/30/98	European Starling	100 (e)	Toxicosis: starlicide	NW
Highway 50 near Tacoma	WA	10/17/98-10/17/98	European Starling	350 (e)	Trauma: impact	NW
Maple Valley Flowage	WI	10/28/98-11/10/98	Trumpeter Swan	5	Open	NW
Shawano	WI	10/20/98-11/16/98	American Coot Lesser Scaup Blue-winged Teal Mallard Ring-necked Duck	3,653	Parasitism: <i>Leyogonimus</i> sp. Parasitism: <i>Sphaeridiotrema globulus</i>	NW
Updates:						
Acworth	GA	08/05/98-08/05/98	Mallard	5 (e)	Toxicosis Bendiocarb	SC
Powder Springs	GA	03/24/98-03/24/98	Common Grackle	12 (e)	Toxicosis: diazinon	SC
Springfield	IL	08/05/98-08/12/98	Mallard	8 (e)	Toxicosis: organophosphorus compd. suspect	NW
Canadaigua Lake	NY	09/03/98-09/03/98	Mallard	6 (e)	Toxicosis: diazinon	NY
Mineralwells	WV	05/01/98-08/15/98	Mourning Dove	10	Parasitism: trichomoniasis	SC
Marathon County	WI	09/28/98-09/28/98	Canada Goose	11	Trauma/electrocution (storm)	WI

Diagnosis	*Reported by
cholera	NW
cholera	CFG
itis: trichomoniasis	SC
olar myelinothy	SC, NW
onellosis	NW
onellosis	NW
olar myelinothy	NW, SC
otic enteritis	NW
itis: renal	NW
ccidiosis	
itis: <i>Sphaerotrema globu-</i>	NY
osis: diazinon	NY
ism type C	NW
olar myelinothy	NW
otoxicosis sus-	NW
ct	
poisoning	NW
cholera	NW
osis: starlicide	NW
ma: impact	NW
	NW
itis: <i>Leyonimus</i> sp.	NW
itis: <i>Sphaerotrema globu-</i>	
osis Bendi-	SC
arb	
osis: diazinon	SC
osis: organo-	NW
osphorus	
pd, suspect	
osis: diazinon	NY
itis: trichomoniasis	SC
ma/electrocuc-	
on (storm)	WI

e = estimate.

* National Wildlife Health Center (NW); Southeastern Cooperative Wildlife Disease Study (SC); New York State Department of Environmental Conservation (NY); California Department of Fish and Game-Wildlife Investigations Laboratory (CFG); Wisconsin Department of Natural Resources (WI).

Written and compiled by Kathryn Converse and Terry Creekmore, NWHC. The Quarterly Wildlife Mortality Report is also available on the Internet at <http://www.emtc.nbs.gov/nwhcchrome.html/>. To report mortality or if you would like specific information on these mortalities, contact one of the following NWHC staff: Eastern US—Kathryn Converse or Kimberli Miller; Western US—Lynn Creekmore or Linda Glaser; Hawaiian Islands—Thierry Work. Phone (608)270-2400, FAX (608)270-2415 or E-mail Kathy.converse@nbs.gov. National Wildlife Health Center, 6006 Schroeder Road, Madison, WI 53711.

AVAILABLE PULICATIONS AND AUDIOVISUALS

Chronic Wasting Disease Video: Chronic wasting disease (CWD) is a fatal neurologic disease of deer and elk caused by infectious proteins or "prions". Diseases caused by prions are often referred to as transmissible spongiform encephalopathies. This video informs viewers about this transmissible encephalopathy of cervids, describes and demonstrates the appearance of animals with CWD, and explains how to collect appropriate samples for diagnosis of the disease.

The video was produced by the Wyoming Game and Fish Department in cooperation with the University of Wyoming, Colorado Division of Wildlife, and the Colorado Department of Public Health and Environment. It was produced for the Western Wildlife Cooperative of the Western Association of Fish and Wildlife Agencies. The video is 13 minutes long and costs \$10.00 U.S. per copy plus \$4.00 U.S. per shipment for shipping and handling. To order, contact: Wyoming Game and Fish Department, Attention: AE, 5400 Bishop Road, Cheyenne, Wyoming 82006 USA. Telephone: (307) 777-4570.

Bulletin d'Information sur la Pathologie des Animaux Sauvages en France (BIPAS). Volume 19 of BIPAS has recently been published. It contains a summary of findings from the French SAGIR (Surveillance Sanitaire de la Faune Sauvage) network for the first half of 1998 and a short review on tuberculosis in wildlife. There is a case report on an osteochondroma in a wild boar and a preliminary report on investigations of pneumonia in chamois. There are also articles on the role of the SAGIR network on the health of mountain wildlife, various aspects of keratoconjunctivitis in Alpine ibex and a report on meningoencephalitis of unknown cause in ibex. A compilation of papers on diseases of wildlife in Europe published from 1992 to 1998 is also included. Copies of BIPAS can be obtained from Marc Artois, Laboratoire d'Etudes sur la Rage et la Pathologie des Animaux Sauvages, CNEVA Nancy, BP 9, 54220 Malzeville, France (telephone: +33 3 83 29 89 50; fax: + 33 3 83 29 89 59; e-mail: marc.artois@nancy.cneva.fr).

NEWS FROM AUSTRALASIA

WDA Australasia now has a web page courtesy of David Middleton. It can be reached through the Wild Health Australia web page located at <http://www.wha.org.au>.

"Be good to your mother."

Contributed by Peter Holz, Australasian Newsletter Editor

NEWS FROM EUROPE

Caspian Environment Program—Bio-Resources Network. Within the Caspian Environment Program, the World Bank has assisted in the establishment of a Bio-Resources Network (Bio-Net) as a resource group of scientists from the Caspian countries and outside the region. The Bio-Net's purpose is to assist the scientists to collaborate in designing and implementing projects that will contribute to conservation and restoration of the Caspian environment. An initial Bio-Net workshop which took place in Bordeaux in November 1997, brought together a small group of scientists to exchange current information on Caspian bio-resources and biodiversity problems. The proceedings from this workshop have now been published.

The Caspian states and international organizations held a meeting of the Caspian Environment Program Steering Committee 2-3 May 1998 in Ramsar, Iran. The Caspian states reached decisions on a number of key points related to start-up of the program including: adoption of a final version of the concept paper as the organizational framework for the Caspian Environment Program, adoption of the draft UNDP/Global Environment Facility (GEF) Program Brief as the technical basis for implementation