

bats; in the case of Nipah virus, it is domesticated livestock [2]. Transmission of Nipah and Hendra viruses may follow ingestion of insects or fruit partly digested by bats [4], and a similar mechanism is suggested to account for the presence of Ebola virus in primates and duikers following fruiting events [4]. The intermediate animal may amplify the infection, increasing the chances of transmission to humans.

Bats comprise 20 percent of the diversity of mammalian species, so it should not be surprising that they are the zoonotic host for a number of infections. Expert opinion is that they are not over-represented as hosts for infections [4]. Why infections endemic in bats should be so pathogenic in humans is less clear, but may relate to the (currently poorly understood) bat immune system: bats, lacking bone marrow in their hollow bones, may have different antiviral responses, possibly including viral inhibitors.

What are the implications for humans and bats in Europe? Horseshoe bats are widely distributed from Australia to Europe, but the species cited in the Chinese study are not indigenous to Europe [9]. Bat migration and trade in bats for traditional medicines have the potential to introduce new infections into European bat species. There are also risks from the spillover effect: intermediary species may be imported having already acquired infection from bats, or could acquire infections already endemic in European bats [10]. Finally, global travel and migration mean that new human infections arising anywhere in the world could potentially become a problem in Europe.

References:

- [1] Li W, Shi Z, Yu M, Ren W, Smith C, Epstein JH et al. Bats are natural reservoirs of SARS-like coronaviruses. *Science* 2005;310:676-9.
- [2] Field H, Young P, Yob JM, Mills J, Hall L, Mackenzie J. The natural history of Hendra and Nipah viruses. *Microbes Infect* 2001; 3(4): 307-314.
- [3] Pourrut X, Kumulungui B, Wittmann T, Moussavou G, Delicat A, Yaba P et al. The natural history of Ebola virus in Africa. *Microbes Infect* 2005;7:1005-1014.
- [4] Dobson A.P. What links bats to emerging infectious diseases. *Science* 2005;310:628-9.
- [5] Wu D, Tu C, Xin C, Xuan H, Meng Q, Liu Y et al. Civets are equally susceptible to experimental infection by two different severe acute respiratory syndrome coronavirus isolates. *J Virol* 2005;79:2620-2625.
- [6] Tu C, Crameri G, Kong X, Chen J, Sun Y, Yu M et al. Antibodies to SARS coronavirus in civets. *Emerg Infect Dis* 2004;10:2244-2248.
- [7] Fooks AR, McElhinney LM, Pounder DJ, Finnegan CJ, Mansfield K, Johnson N et al. Case report: isolation of a European bat lyssavirus type 2a from a fatal human case of rabies encephalitis. *J Med Virol* 2003;71:281-289.
- [8] Childs JE. Zoonotic viruses of wildlife: hither from yon. *Arch Virol Suppl* 2004;1-11.
- [9] EUROBATs secretariat [homepage on the internet]. Bonn: UNEP / EUROBATs Secretariat; c2005. The agreement on the conservation of populations of European bats: Protected species.
- [10] Muller T, Cox J, Peter W, Schafer R, Johnson N, McElhinney LM et al. Spill-over of European bat lyssavirus type 1 into a stone marten (*Martes foina*) in Germany. *J Vet Med B Infect Dis Vet Public Health* 2004;51:49-54.

-Adapted from *ProMED*, 10 Nov 2005. Source: *Eurosurveillance Weekly Vol. 10 / Issue 11 [edited]*, <http://www.eurosurveillance.org/ew/2005/051110.asp#1>

USGS/National Wildlife Health Center's Quarterly Wildlife Mortality Report

White pelican mortality due to West Nile virus. In late July 2005 wildlife biologists from the Nevada Department of Wildlife and the U.S. Fish and Wildlife Service began observing sick and dead American white pelicans (*Pelecanus erythrorhynchos*) at saline wetlands in western Nevada. Over 90% of the pelicans observed were adults and 45 affected pelicans were picked up at the wetlands through early September. Sick birds were lethargic and lacked muscle coordination. Oral swabs from seven birds were

confirmed positive for West Nile virus (WNV) by the State of Nevada WNV surveillance system. Subsequently, two of three adult pelicans submitted to the NWHC for diagnostic evaluation were positive for WNV by virus isolation. Significant mortality of juvenile American white pelicans also continued for the fourth consecutive year in Montana, North Dakota, South Dakota and Minnesota colonies. Similarly, mortality first noted in late June and July, continued until the birds fledged in August. Banding and surveillance data are being analyzed to determine the overall losses and fledging success in these colonies. There is concern that continued annual WNV mortality will have a negative impact on this species. If histopathology links the pelican mortality in Nevada to WNV, it will be the first reported mortality event involving primarily adult white pelicans.

Newcastle disease in Nevada double-crested cormorants. During routine colonial nesting bird surveys at Anaho Island NWR on 8/16/06, U.S. Fish and Wildlife Service biologists discovered 10 dead and 3 sick double-crested cormorant fledglings at a nesting colony with an estimated population of 2,000 cormorants. The sick fledglings, which showed some degree of flaccid paralysis and hemorrhage from the mouth, were euthanized and submitted to the NWHC. Hemagglutination inhibition tests identified virus isolates as NDV. Samples of the viruses were sent to the USDA National Veterinary Services Lab, which confirmed the identification as NDV and determined that the isolates were highly pathogenic for chickens. NVSL conducted genetic analysis of the virus isolates and reported that they were different from the NDV strain that affected domestic poultry in southern California, Nevada and Texas in 2002 and 2003. However, the viruses were determined to have a high genetic homology with strains isolated from double-crested cormorants in the United States since 1992.

Botulism type C at Bear River MBR. From late July to mid-September U.S. Fish and Wildlife Service personnel picked up the carcasses of approximately 6,000 waterbirds from a 1,800 acre wetland management unit at Bear River Migratory Bird Refuge at the Northeast edge of the Great Salt Lake. The primary species involved were dabbling ducks and small wading birds. Ducks that were submitted to the NWHC in early August were positive for botulism type C toxin. The birds were negative for West Nile virus by virus isolation. Bear River MBR has a history of major botulism die-offs tracing back to the early part of the twentieth century. No significant mortality due to botulism type C has been documented since 1997 and 1998. More than 500,000 birds were estimated dead in 1997 and 10,627 birds were picked up in 1998.

Trematodiasis at Upper Mississippi National Wildlife Refuge, Wisconsin (UMNWR). Blue wing teal (*Anas discors*) began succumbing to trematodiasis in late August, the first time the small puddle ducks have been involved in the seven recurring outbreaks at the UMNWR since Fall 2002. Mortality attributed to infection by two tiny flukes, *Sphaeridiotrema globulus* and *Cyathocotyle bushiensis*, had its earliest start yet for waterfowl in their fall migration period. By the end of August, nearly 200 teal and about two dozen other dabbling ducks, including mallards (*Anas platyrhynchos*), shovelers (*Anas clypeata*), pintail (*Anas acuta*), and black ducks (*Anas rubripes*), had been found dead. The birds were feeding in wild rice beds in an area of UMNWR where mortality from the trematodes had not previously been recorded. Carcasses of each species found were submitted to the NWHC for necropsies. Ongoing research on the distribution of invertebrates on the UMRNWR and in nearby waterways will help to determine if the non-native faucet snail, *Bithynia tentaculata*, which can act as both primary and secondary host to the flukes, is increasing its range in the Mississippi River. Monitoring of later-arriving coots and diving ducks will provide data for comparison to die-offs in previous years.

State	Location	Dates	Species	Mortality	Diagnosis	by
AK	Cape Glazenap and Operl Island	07/20/05-08/07/05	Short-Tailed Shearwater Fulmar Glaucous Gull Common Murre Unidentified Kittiwake	149	Emaciation	NW
AZ	Lakeview and Flagstaff	07/04/05-07/22/05	Red Crossbill Lesser GoldFinch Pine Siskin Mourning Dove	20	Salmonellosis	NW
CA	Alameda NWR, Alameda Point	06/03/05-08/25/05	California Least Tern	274	Undetermined	
CA	Delevan NWR and Sacramento NWR	07/10/05-10/20/05	Mallard American White Pelican	320	Botulism type	NW
CA	Lake Isabella	08/12/05-09/15/05	Clark's Grebe Western Grebe	1,000 (e)	Open	NW
CA	Sacramento NWR	07/01/05-07/20/05	House Finch American GoldFinch	15	Viral Infection: WNV suspect	NW
CA	Santa Rosa and San Jacinto Mountains	07/25/05-08/15/05	Bighorn Sheep	7	Broncho- pneumonia	CAF
CA	Tule Lake NWR	08/09/05-10/05/05	Gadwall American Coot Mallard Lesser Scaup Pintail	1,447	Botulism type C	NW
DE	Woodland Beach Wildlife Area	08/12/05-08/14/05	Semipalmated Sandpiper Lesser Yellowlegs	10 (e)	Toxicosis: suspect	NW
GA	Brunswick,	07/03/05-07/28/05	Canada Goose	24 (e)	Open	SCW
ID	Lewiston	04/01/05-06/30/05	Red Crossbill Pine Siskin	28	Salmonellosis	ID
IN	Hammond, George Lake	09/01/05-09/23/05	Mallard Semipalmated Sandpiper Least Sandpiper Killdeer Semipalmated Plover	60 (e)	Botulism type	NW, PUL
MA	Monomoy NWR South Monomoy Is.	07/23/05-09/01/05	Common Tern	2,600 (e)	Salmonellosis	NW, TU
MD	City Yacht Basin, Havre de Grace	08/08/05-09/30/05	Mallard Unidentified Gull Canada goose Great Blue Heron	136 (e)	Botulism type	MD, NW
MD	Coaches & Poplar Islands, Chesapeake Bay	09/14/05-12/01/05	Great Blue Heron	20	Steatitis	NW
MD	Poplar Island, Chesapeake Bay	08/15/05-12/01/05	Laughing Gull Common Tern Unidentified Gull Great Black-Backed Gull Mute Swan	40(e)	Botulism type C	NW
ME	Acadia NP	07/11/05-07/24/05	Wood Frog Green Frog	50 (e)	Viral Infection: Ranavirus	NW
MI	Townsend Park, near Grand Rapids	08/20/05-10/15/05	White-Tailed Deer	15 (e)	Eastern equine encephalitis	MSU
MN	Lac Qui Parle	07/02/05-08/15/05	American White Pelican	1,800 (e)	Viral Infection: West Nile virus	NW
MN	Lake Superior	09/07/05-09/07/05	Unidentified Warbler White-Throated Warbler Swainsons Thrush	100 (e)	Trauma: weather	MN
MN	Mud Lake	09/01/05-09/20/05	Mallard Blue-Winged Teal American Coot Green-Winged Teal Unidentified	900 (e)	Botulism suspect	MNS
MT	Bowdoin NWR	06/30/05-09/30/05	Wigeon, American Eared Grebe American Coot Green-Winged Teal	35 (e)	Botulism type	NW
MT	Medicine Lake NWR	06/23/05-08/18/05	American White Pelican	300 (e)	Viral Infection: West Nile virus	NW
MT	Stinger Creek,	09/01/05-09/07/05	Northern Leopard Frog	3 (e)	Open	NW
ND	Chase Lake NWR	06/17/05-08/23/05	American White Pelican	1,500 (e)	Viral Infection: West Nile virus	NW
ND	Horsehead Lake	07/18/05-08/29/05	Ring-Billed Gull	186 (e)	Botulism type C	NW

ND	Lake Sakakawea	07/25/05-07/25/05	Eared Grebe Sandpiper, Unidentified American Coot Franklin's Gull Common Tern	13 (e)	Viral Infection: West Nile virus	NW
NE	Keith County, Lake McConaughy	09/19/05-09/25/05	Green-Winged Teal	200 (e)	Botulism type C	NW
NV	Anaho Island NWR	08/09/05-09/15/05	Double-Crested Cormorant	130 (e)	Newcastle Disease Virus	NW, NVL
NV	Humboldt Sink	07/21/05-09/06/05	American White Pelican American White Pelican	45	Viral Infection: West Nile virus	NV, NW
NV	Las Vegas Valley	06/01/05-09/12/05	Duck, Unidentified American Coot White-Faced Ibis Killdeer Black-Necked Stilt	102	Botulism type C	CAF
OH	Grigg's Reservoir Park, Columbus	09/10/05-09/15/05	Hybrid, Domestic Mallard	10 (e)	Botulism suspect	
OH	Griggs Reservoir Park, Columbus,	07/15/05-08/15/05	Mallard	30 (e)	Botulism type C	NW
OH	Urbana City Park, Urbana	08/13/05-08/19/05	Hybrid, Domestic duck Canada Goose	15 (e)	Botulism suspect	
OR	Coastal Beach 2 miles South of Newport	07/10/05-10/31/05	Common Murre Brandt's Cormorant	360	Emaciation	NW
SD	Bitter Lake, Waubay NWR	07/06/05-08/18/05	American White Pelican	1,000 (e)	Viral Infection: West Nile virus	NW
UT	Bear River MBR	07/25/05-09/15/05	Duck, Unidentified Pintail American Avocet White-Faced Ibis Mallard	6,000 (e)	Botulism type C	NW
VA	Byrd Park, Richmond	07/25/05-08/19/05	Mallard Canada goose Unidentified, Domestic Or Hybrid Goose	26	Botulism suspect	VA
VA	Cedar Island	08/10/05-08/25/05	Laughing Gull Black Skimmer Herring Gull Great Black-Backed Gull Black-Bellied Plover	100 (e)	Botulism type C	NW, VA
WA	Ocean Shores	07/15/05-ongoing	Alaskan Sea Otter	3	Parasitism: Protozoal encephalitis	NW
WA	Pend Oreille River Between Usk and Cusick	07/01/05-08/01/05	Double-Crested Cormorant	25 (e)	Starvation	WAS
WI	Appleton	08/23/05-09/15/05	Mallard	60 (e)	Botulism type C	NW, WVW
WI	Channel 15, NWHC,	09/14/05-09/14/05	Ovenbird Black and White Warbler Unidentified Warbler Red-Eyed Vireo Tennessee Warbler	400 (e)	Trauma: tower strike	NW
WI	Green Bay	07/25/05-09/01/05	Double-Crested Cormorant	20 (e)	Botulism type C	NW, WI
WI	Horicon Marsh Wildlife Area	09/23/05-ongoing	American White Pelican Shoveler Green-Winged Teal Pectoral Sandpiper Wood Duck Blue-Winged Teal	60 (e)	Botulism type C	NW
WI	Horicon NWR	07/15/05-08/08/05	Mallard Wood Duck Blue-Winged Teal Green-Winged Teal Unidentified	5,600 (e)	Botulism type C	NW
WI	Horicon NWR, Main Pool	08/08/05-09/01/05	American White Pelican	10	Viral Infection: West Nile virus	NW

WI	Lake Onalaska, Upper Miss NWR	08/30/05-ongoing	American Coot Lesser Scaup Blue-Winged Teal Ring-Necked Duck Mallard	4,350 (e)	Parasitism: <i>Cyathocotyle bushiensis</i> and <i>Sphaeriootrema globulus</i>	NW
WI	Nelson Lake	09/22/05-09/26/05	American Coot	10	Trauma: gunshot	NW
WI	W. of Fredonia	07/27/05-07/27/05	Canada Goose	10	Open: toxicosis	NW, WI
WY	Lodge Creek Lagoon	08/25/05-09/09/05	Columbia Spotted Frog	41 (e)	Fungal Infection chytrid	NW
WY	Yellowstone NP, Gibbon Meadows	06/30/05-06/30/05	Western Toad	2	Viral Infection (suspect): Iridovirus	NW
WY	Yellowstone NP, near Tanager Lake	07/15/05-08/01/05	Columbia Spotted Frog	100 (e)	Viral Infection (suspect): Iridovirus	NW

Updates:

FL	Atlantic coast/beaches Orange, Nassau, St. Johns, Volusia, Brevard Co.'s	06/09/05-08/01/05	Greater Shearwater Shearwater, nos Unidentified Gull Northern Gannet Unidentified Tern	734	Starvation	FMR, NMF, NW, SCW, UFL
WA	Yakima, Selah, and Tieton	05/31/05-06/30/05	Evening Grosbeak	234	Salmonellosis	NW, WA

(e) = estimate; * = morbidity, not mortality

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WDA SECTION NEWS

NEWS FROM THE EUROPEAN SECTION

VII European Wildlife Diseases Congress. S.Vincent (Aosta) Italy 27-30 September 2006. Second Announcement. Topics will include: Wildlife and emerging infectious diseases; Mutual transmission of infectious diseases between wildlife and livestock; Wildlife diseases in conservation; Wildlife disease surveillance; Free topics.

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More information on: www.ewda2006.it. accessible from March.

The EWDA. The European Wildlife Disease Association (www.ewda.org) represents the European section of the Wildlife Disease Association (WDA, www.wildlifedisease.org). The EWDA encourages the exchange of knowledge on wildlife diseases between scientists, wildlife veterinarians and other workers with a common interest in European wildlife. At the moment the EWDA has 120 members