# GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: ***Pasteurella multocida***

***Pasteurella multocida*** 正體中文

**System:** Terrestrial

| Kingdom | Phylum | Class | Order | Family |
|---|---|---|---|---|
| Bacteria | Proteobacteria | Gammaproteobacteria | Pasteurellales | Pasteurellaceae |

**Common name** avian cholera (English)

**Synonym** *Bacterium mutocidum* , (Lehmann and Neumann, 1899)
*Micrococcus gallicidus* , (Burrill, 1883)

**Similar species** *Actinobacillus spp.*

**Summary** The species Pasteurella multocida includes a heterogeneous group of Gram-negative bacteria that are inhabitants of the upper respiratory tract of many vertebrate hosts, including birds, cattle, swine, cats, dogs and rodents. Members of this species are responsible for a number of infections that normally are secondary to colonisation of the upper respiratory tract, including avian cholera (in waterfowl, chickens and turkeys), respiratory disease and hemorrhagic septicemia in ruminants (cattle, sheep, goats and bufallo), atrophic rhinitis in pigs and snuffles/septicemia in rodents (mice & rabbits). These infections are primarily transmitted by the respiratory route and are associated with crowding and other stressors. P. multocida is also a rare cause of infection in humans that is normally associated with dog or cat bites or scratches. Colonisation and disease causation in a particular host tends to be associated with specific subgroups, suggesting that they may represent lineages adapted to growth and survival in related host species.

view this species on IUCN Red List

## Species Description
*P. multocida* are nonmotile, small, coccoid, or rod-shaped bacillus that often exhibit bipolar staining (Campbell *et al*., 1999).

## Habitat Description
*P. multocida* are inhabitants of the upper respiratory tract of a wide range of vertebrate host species (i.e. chickens, turkeys, cattle, swine, cats, dogs, rabbits). The host species are considered the primary reservoir for these bacteria and their presence in the external environment is thought to be transitory in nature.

## Reproduction
According to Campbell *et al*. (1999), bacteria reproduce asexually using binary fission. Binary fission is a type of cellular division in which each dividing daughter cell receives a copy of the single parent chromosome.

## Nutrition
Campbell *et al*. (1999) write that in order to grow in nature or in the laboratory, a bacterium must have an energy source, a source of carbon, other required nutrients, and a permissive range of physical conditions such as oxygen concentration, temperature, and pH.

**General Impacts**
This species is an important cause of disease in wild and domesticated animals. According to Mensik and Samuel (2002), during cholera outbreaks in waterfowl, owls, hawks and eagles may become infected after feeding on diseased carcasses. Clinical signs of fowl cholera following infection may be manifested peracutely or acutely, with previously healthy birds suddenly being found dead or profoundly ill. This bacterium kills swiftly, sometimes in as few as six to twelve hours after infection. Before death, the birds may exhibit convulsions, uncoordinated fluttering, stiffness and rapid breathing. Birds that do not die acutely may show signs of listlessness, shivering and huddling. Respiratory sound, sneezing and sticky nasal discharges are sometimes observed. The feathers surrounding the vent, eyes and beak may become matted with secretion. The droppings, which may start out as pasty and yellow, may become bloodstained due to intestinal ulceration. Birds chronically affected with fowl cholera show weight loss, abdominal distention, lameness, and joint enlargement. Live bacteria released into the environment by dead and dying birds can subsequently infect healthy birds, and as a result, avian cholera can spread quickly through a wetland and kill thousands of birds in a single outbreak.

**Management Info**
Preventative measures: Since infections caused by *P. multocida* are usually secondary to overcrowding and other stresses that reduce the overall health of the animals, measures to limit overcrowding and exposure to other stressors would reduce the risk of infection.
\r\nPhysical: In the face of an outbreak, control is directed at attempts to limit transmission of the disease. In outbreaks of avian cholera in waterfowl it is recommended that all carcasses are collected and burned. Dead birds floating on the water not only serve as a source of contamination but also act as decoys to lure more waterfowl into infectious water. Contaminated pools can be drained and then cultivated or flushed by flooding with pumped or floodwaters. In severe outbreaks, it is occasionally recommended that attempts be made to limit the scavenging activities of gulls, which are resistant and can act as transmitters of fowl cholera.

**Pathway**
Mensik and Samuel (2002) observed that avian cholera often affects the same wetlands and bird populations each year. Outbreaks of the disease also tend to follow the migration routes of some species, most notably snow geese. These disease patterns have caused wildlife biologists to hypothesize that bacteria either live year round in affected wetlands or are transmitted by carrier birds.

**Principal source:** Research Provides New Insights on Deadly Disease (Mensik and Samuel, 2002) Dr. Anthony B. Schryvers. Professor, Department of Microbiology & Infectious Diseases Faculty of Medicine University of Calgary Canada.

**Compiler:** National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG)

**Review:** Dr. Anthony B. Schryvers. Professor, Department of Microbiology & Infectious Diseases Faculty of Medicine University of Calgary. Canada.

**Pubblication date:** 2005-01-24

**ALIEN RANGE**

**[4]** UNITED STATES

**Red List assessed species 5: CR = 1; EN = 2; NT = 1; LC = 1;**

Diomedea amsterdamensis **CR**
Phoebetria fusca **EN**
Thalassarche carteri **EN**
Phalacrocorax capensis **NT**
Podiceps nigricollis **LC**

## BIBLIOGRAPHY

**8** references found for **Pasteurella multocida**

**Managment information**

Mensik, Greg and Samuel, Michael D. 2002 *Research Provides New Insights on Deadly Disease*. National Wildlife Health Center.
**Summary:** A report on the management of avian cholera and preventative measures.
Available from: http://www.nwhc.usgs.gov/research/avian_cholera/cholera_insights.html [Accessed 12 May 2003]

Vanhooser, S.L. Undated. *Common Poultry Diseases in Small Farm Flocks in Oklahoma*. Oklahoma State University.
**Summary:** A report on the economic and agricultural impact of avian cholera.
Available from: http://www.ansi.okstate.edu/exten/poultry/f-8300.pdf [Accessed 15 May 2003].

**General information**

Campbell, Neil A., Reece, Jane B. and Mitchell, Lawrence G. 1999. *Biology Fifth Edition* . Addison Wesley Longman, Inc. Menlo Park, California.
**Summary:** A biology text book. Used for bacteria reproduction info.

DNR (Department of Natural Resources of Michigan). UNDATED. *Fowl Cholera*. Available from: http://www.michigan.gov/dnr/0,1607,7-153-10370_12150_12220-26650--,00.html [ Accessed 12 May 2003]
**Summary:** A report on Fowl Cholera, and the causative agent *P. multocida*. There is information on transmission and detection.

EC (Environment Canada). UNDATED. *Avian Cholera a Big Killer of Waterfowl.*
**Summary:** A report on the effects of avian cholera, including its transmission, symptoms and prevention.
Available from: http://www.taiga.net/yourYukon/col78.html [Accessed 12 May 2003]

Lehr, M. UNDATED. *Marsh Life Sciences*. University of Vermont.
**Summary:** A report on various aspects of marsh life including avian cholera.

Available from: http://www.uvm.edu/%7Emlehr/lehr.html [Accessed 12 2003]

Mutters, R., Ihm, P., Pohl, S., Frederiksen, W., and Mannheim, W. 1985. *Reclassification of the genus Pasteurella Trevisan 1887 on the basis of deoxyribonucleic acid homology, with proposals for the new species Pasteurella dagmatis, Pasteurella canis, Pasteurella stomatis, Pasteurella anatis, and Pasteurella langaa.* Int. J. Syst. Bacteriol. 35:309-322. Available from: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=747 [Accessed 12 May 2003]
**Summary:** A reference on the taxonomy for various species.

Samuel, M.D and Rocke, T.E. UNDATED. *The Role of Lesser Snow Geese as Carriers of Avian Cholera in the Playa Lakes Region*. Texas Parks and Wildlife.
**Summary:** A report on the transmission of Avian cholera into the Playa Lakes Region.
Available from: http://www.tpwd.state.tx.us/hunt/research/wildlife_research_highlights/2001/role_lesser.html [Accessed 12 May 2003].