

Veterinary Viewpoints

edited by Amy Worell, D.V.M.
Woodland Hills, California

Question: I am finding it difficult to locate information on Newcastle Disease. Specifically, I would like to know the answers to the following questions:

A. Where does the disease originate from and how is it spread? Are songbirds resistant?

B. Are birds that are indigenous to America susceptible to the disease?

C. There are a large number of birds smuggled into this country each year. Since Newcastle Disease is rarely heard of, is it really relatively scarce and just an attempt by the government to control the citizens?

D. Is the whole Newcastle thing just a creation of the poultry lobby and actually an attempt of bureaucracy to prevent new bloodlines from entering into our bird collections through illegal means?

P. Overhage, Arizona

Answer #1: A. There are four major strains of Newcastle Disease recognized in the United States. These classifications vary slightly in other countries. Three strains are endemic in the United States. The most virulent form, exotic Newcastle Disease or VVND (Viscerotropic Velogenic Newcastle Disease), was the first foreign disease eradicated from the United States following a devastating outbreak in 1972. It is interesting to note that this eradication program, which involved large numbers of cage and aviary birds in addition to millions of poultry, gave rise to the formation of AFA. Aviculturists were concerned at that time, as they are today, with depopulation of *presumed* infected birds.

The reservoir for VVND is tropical jungle birds, primarily those of Central and South America, and those in South East Asia. Newcastle Disease was described in 1926 in Newcastle, England (hence the name), and the following year, was also found in Java and

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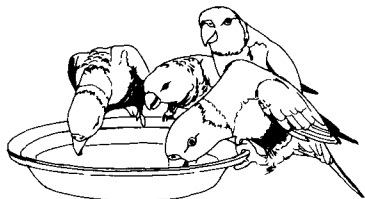
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Korea. Some early writers suspected the disease was spread around the world by infected pet birds traveling on sailing ships and, thus, the first outbreak of the disease was in England.

B. Newcastle Disease has been reported as occurring in almost every order of birds from hummingbirds to ostriches. Some birds, especially passerines, often become only transiently infected with minimal mortality or morbidity. Psittacines and some soft-bills (mynahs), on the other hand, can become carriers. Some psittacines have been documented to be carriers for more than one year following experimental exposure. Migratory waterfowl are a well known reservoir for some of the milder forms of Newcastle Disease.

C. Newcastle Disease seems to occur seasonally or cyclically, especially in Mexico and Central America. This season tends to coincide with the baby Amazon season. Almost annual spring-time Newcastle Disease outbreaks occur and they are almost invariably linked to young, smuggled Amazons which are the most commonly smuggled birds. In 1988 we were lucky and had no major outbreaks. In 1987, however, we were not so lucky and smuggled birds became mixed with birds in legal trade. Outbreaks followed in ten states, and nearly 1,750 birds were depopulated. These birds were purchased from a legitimate importer who was subsequently convicted of smuggling birds. Unfortunately, many innocent people and birds were injured by these smugglers. It is important to note that one of the states in which outbreaks occurred was New York, which a year prior had started to enforce their ban on the sale of imported birds. A similar outbreak in 1986 also resulted in convictions but, fortunately, little disease spread.

D. As a naive young veterinarian, I also wondered "what's the big deal about Newcastle Disease?" until I saw it. It definitely *is not* a government attempt to control the citizens, nor an attempt by the poultry industry to limit the genetic diversity in private collections. Unfortunately, Newcastle Disease is a very real threat to both the poultry and pet bird industry.

Bird smugglers risk their birds, and their customers' birds, to the very real threat of Newcastle Disease and psittacosis. In addition, smuggling is putting uncontrolled pressures on some bird populations which cannot sustain these pressures. These include the Mexican red headed Amazon, or green cheeked Amazon (*Amazona viridigen-*

alis). The habitat of this species is shrinking rapidly and it is still being smuggled every year despite legal protection in Mexico.

Smuggling is illegal and buying or selling smuggled birds is illegal. Smuggled birds are considered contraband and fall under the same laws as do illegal drugs. Those who aid smugglers, such as veterinarians who treat smuggled birds, or people who assist in the buying and selling of smuggled birds, are also subject to felony charges. These charges include "aiding and abetting" or "knowingly engaging in conduct which involves the sale of illegally obtained birds," and can be tried under the Lacey Act. It is the policy of AFA to denounce smuggling or trade in illegally obtained birds, and it should be the policy of responsible aviculturists to denounce smuggling. There are plenty of legal birds available for captive propagation.

Susan Clubb, DVM
Miami, Florida

Answer #2: VVND, or Velogenic Viscerotropic Newcastle Disease, is a paramyxovirus. It is spread from bird to bird by contaminated food from fecal or respiratory secretions.

Songbirds are susceptible. All species of birds are susceptible, however, the susceptibility varies from species to species. There are some species which are more susceptible than others, and the disease does not affect all species in the same way.

Birds that are indigenous to the United States are susceptible to the disease. The real threat of VVND is to the poultry industry. There are strains of the paramyxovirus that are species specific. That is, these strains are specific to only one species of bird. One example is the Paramyxovirus I, which has a devastating effect on pigeons. This disease is seen in show and racing pigeons, and has been found throughout the United States and Europe in wild pigeons. Fortunately, an effective vaccine has been developed.

Newcastle Disease (VVND) outbreaks are rarely heard of because of government controls through quarantine stations. In outbreaks within the quarantine stations, the entire shipment of birds is either sent back to the countries of origin, or they are humanely euthanized. It is *because* of quarantine stations that VVND has been so well controlled over the years.

Poultry are highly sensitive to this virus and the threat to the poultry industry is very real. In the 1970s,

when an outbreak of VVND was discovered in California, there was a very real potential for loss of the poultry industry in that state.

Fortunately, few outbreaks of VVND, outside of quarantine stations, have been reported. Most recently, in 1988, an outbreak was discovered in the Washington D.C.-Pennsylvania area. In all cases where the disease has been found, other than in quarantine stations, the outbreaks have been traced to smuggled birds.

Robert Altman, DVM
Franklin Square, New York

Answer #3: Newcastle Disease is a viral disease of poultry, wild and cage birds. It is found worldwide. Songbirds can be resistant and birds indigenous to America are susceptible. There are three strains of this virus: 1) Lentogenic strains — these are mild and produce few or no signs of illness and very few deaths; 2) Mesogenic strains — these produce respiratory and central nervous system involvement, a drop in egg production in laying hens, and few mortalities; 3) Velogenic strains — these have a very short course of illness with severe involvement of the respiratory, digestive, and neurological systems. Most birds affected with this strain die.

Newcastle Disease is not rare. We do not often hear about it because of strict controls of birds entering the United States. The weaker forms of this disease have been in this country since the early 1940s and are controlled by repeated vaccinations in poultry. Velogenic Newcastle Disease occurred in the United States in 1941, 1946, 1951, 1972, 1977, 1979 and 1980. Because of its devastating effect on the poultry industry, the 1971 outbreak cost \$52 million to eradicate. This strain is usually introduced by smuggled or imported cage birds or fighting cocks. The quarantine program and efforts at preventing smuggled birds is *not* a government effort to control citizens nor is it a creation of the poultry lobby to limit gene pools of exotic birds. It is an honest, needed effort to protect the poultry industry from this devastating disease.

James M. Harris, DVM
Oakland, California

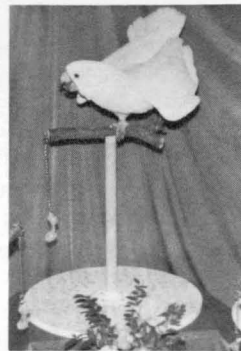
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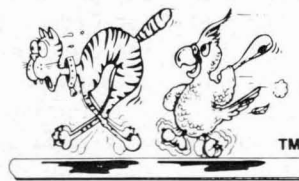
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they were all clean. They have, to date, had five clutches of eggs. Some are fertile and some are clear. I am placing the eggs in the incubator several days before hatching. The ones that hatch I feed from day one. Several eggs have died just before hatching without even pipping. The babies that do hatch are large, strong, and have had good weight gains.

The babies have been cultured at two weeks of age and the vet found light growth of *E. coli*. They were treated with Chloramphenicol and Nystatin. They were recultured at seven weeks and were clean. We cultured the parents and they also had light growth of *E. coli*. They were treated and then recultured. The nest boxes have also been disinfected. The eggs that die are cultured but we have not found anything. My questions are:

A. Why are the eggs not hatching? Is the hen not incubating them properly?

B. What lab work can be done on the eggs that do not hatch? I am concerned about a viral problem.

C. What lab work should I have done on the parents?

B. Pellegrino, New York

Answer #1: There are many possible causes of low hatch rate of eggs. Disturbances such as rodents can pull hens off their eggs. I would suggest eggs be submitted to the laboratory for bacterial, viral, and mycoplasma culturing. I would also do the same procedures on the parents by submitting cloacal swabs in proper transport media formulated to grow viruses and mycoplasma. You will need to work with your veterinarian on this problem. Have the doctor contact the laboratory first and arrange for the tests, obtain fresh supplies and have samples collected and transported properly. If no pathogens are isolated, consider re-examining the adults, including a laproscopic exam of their gonads. In any case, carefully explore the aviary for any distractions.

James M. Harris, DVM
Oakland, California

Answer #2: The writer has not supplied enough information for me to be able to answer the questions comprehensively, so I will make some suggestions as to the nature of the problem. Additional information such as what tests were performed on the parents is not included and should be reviewed. In addition, it is not made clear as to whether some of the eggs in each clutch were fertile and some were clear

or whether there were entire clutches that were fertile and other clutches that were entirely clear. This is very important.

It is stated that the eggs were incubated for several days prior to hatching. There was no indication as to either the temperature or humidity during incubation. Improper temperatures can cause mortality. It is also important to know the month of the year the eggs were laid. If these were early clutches, it may well be that the male bird was not ready for breeding and thus the non-fertilized eggs would result. The eggs that died were cultured and nothing was found. There was no indication as to what the eggs were cultured for. Certainly viral isolation would be indicated on both the sterile eggs and the embryos that died.

I believe that this problem is a problem of management rather than one of bacterial, fungal or viral infection, since all of the hatched chicks survived. It is necessary to give a great deal more information in order to give a more comprehensive answer.

Robert Altman, DVM
Franklin Square, New York

Answer #3: A. First, in a hen which is laying five clutches of eggs a year, she may be so busy laying eggs and sitting that she did not copulate at the proper time for copulation. She may have started laying too early in the season for the male to be ready or laid eggs after he was no longer active in the fall. It was impossible to tell from the letter if entire clutches were fertile or just some eggs in a clutch.

B. The poor hatching is usually due to a hen which is not incubating properly. If environmental temperatures are low or the clutches are large, she may not be able to incubate them properly. If she is easily distracted from her nest the eggs may also cool excessively.

C. Lab work may not reveal problems of incubation. The fact that some eggs hatch and the chicks thrive suggests that this may be a management rather than disease problem. We have found that eggs which were chilled during the first few weeks of incubation may die during hatching or in the first few days.

D. Close observation is probably more useful than lab work to uncover the cause of this problem.

Kevin Clubb, DVM
Miami, Florida

Answer #4: Unfortunately, easy answers to the above asked questions

are not possible. Potentially, the problems encountered may be due to a variety of problems rather than to one single factor with a simple solution. A variety of changes may be necessary to improve the fertility and hatchability of the already producing birds.

A good look at the diet and environment of the birds is probably the first step. For example, potential aviary distractions, such as loud or aggressive neighboring birds, may need to be relocated. Your diet should also be reviewed to ascertain its potential adequacy for producing parents.

A thorough workup on the adult birds is also a good idea. Complete blood tests, fecal parasite examinations, psittacosis elisa tests, radiographs, viral serology, and bacterial cultures might all be considered.

A review of the incubation process is also in store. Incubation temperature, humidity, location of the incubator, and number of times per day the eggs are rotated should all be considered.

Eggs that fail to hatch may do so for a large number of reasons. These include malposition of the baby, improper incubation parameters, genetic defects, dietary deficiencies, and disease problems. Eggs that do not hatch may be examined for bacterial, viral and mycoplasma organisms, but often with great expense. Histopathology can also be performed on the fetus but, in my experience, tends to be less productive. As several of the babies did hatch and survive, I think the possibility of a disease related problem is less likely. Good luck.

Amy Worell, DVM
Woodland Hills, California ●

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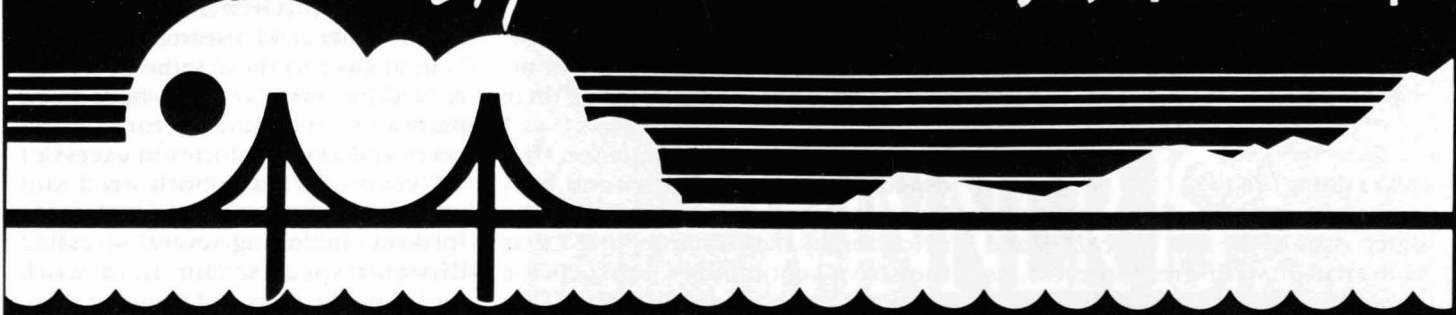
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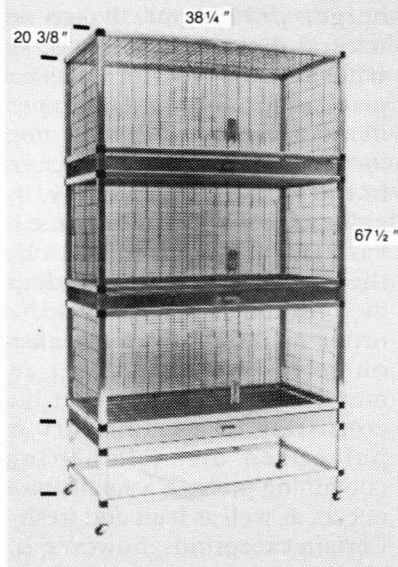
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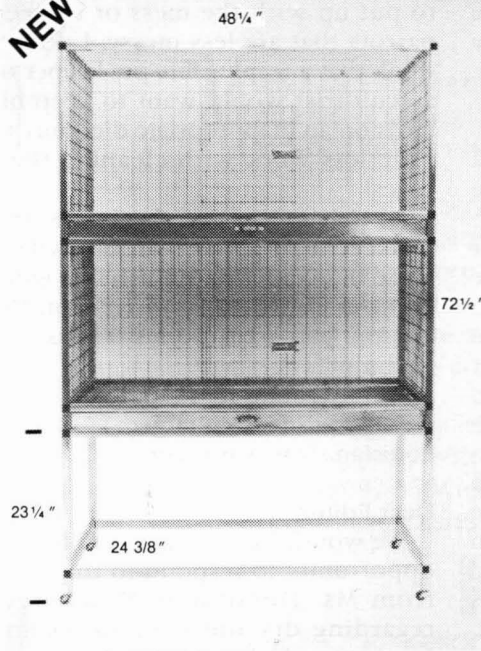
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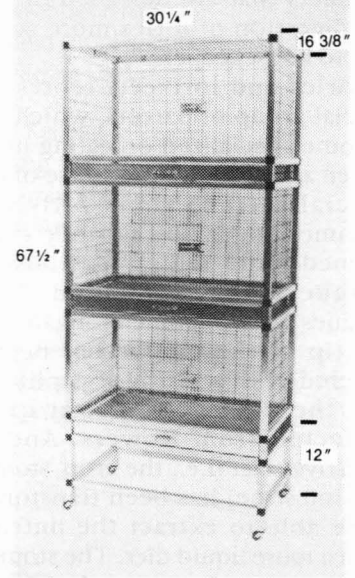


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