

## Psittacines and 'Bird Flu': Parrots as "Innocent Bystanders" in the Avian Influenza Scare

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In this article, I hope to inject a cautionary note about the harmful effects that mere fears of an incipient pandemic of highly pathogenic avian influenza (HPAI) have had, specifically on parrots, both in captivity and in the wild. I am not referring to any direct effects of the disease on the birds *per se* (see below), but rather, to the actions of humans who are afraid that these birds might contract and pass on HPAI. I refer to this as the "innocent bystander" role of parrots, which are increasingly being caught up in the crossfire over fears about almost anything "avian". I do this because there are steps that we can take in anticipation of such problems. Central to these steps is to have a working knowledge of the epidemiology of this disease in parrots at our fingertips.

Many animals including psittacines can acquire influenza; however, it is usually a form of the virus which is of low pathogenicity and which cannot be readily spread to other species. In contrast, the current outbreak of the H5N1 strain is highly pathogenic avian influenza or "HPAI." In this overview, I will use "HPAI" and "H5N1" interchangeably except where indicated otherwise. Short overviews of HPAI are provided in references # 1, 2 and the entire chronology of H5N1 has recently been made available through the WHO on-line [3]

Torrey and Yolken [#4] write in their excellent and timely book Beasts of the Earth:

*" The influenza pandemics of 1918, 1957 and 1968 were each the result of a genetic shift of the virus that created new strains...For a microbe originally transmitted from an animal to a human to then spread from human to human usually requires the microbe to undergo some reassortment of genes or mutations."*

Environmental conditions that favor such mixing include close physical contact and over-crowding, and poor hygiene--in other words, bird and animal markets, and the cages of smugglers, are perfect set-ups. Except in these circumstances, or under severely inhumane conditions of very poor breeder husbandry, exotic parrots are generally not found in these settings.

In contrast, the role of migratory fowl in spreading HPAI is still controverted. Strong arguments have been mustered against it by conservationists, some of whom have suggested that 'poultry flu' is a more appropriate term than 'avian

flu' [#5-7]. Nonetheless (and despite the fact that psittacines are generally neither "migratory" nor "waterfowl"), parrots (being exotic birds) are likely to be reflexively associated with avian influenza in some people's minds, an image worsened by seeing them in bird markets in SE Asia and elsewhere alongside ducks, chickens and other fowl which can harbor "bird flu." Some disturbing decisions have been based upon such lumping together:

- In Brussels in 2004, several hundred parrots were put down in one quarantine center (and 450 birds in another center) because they had passed through the same Customs Inspection Center during the "at-risk period" when HPAI-positive hawk-eagles had passed through. However, all tests for the parrots subsequently returned **negative** for H5N1.
- Also in 2004, 28 smuggled Indonesian cockatoos (*Cacatua moluccensis* and *Probosciger aterrimus*; both on Appendix 1 of CITES) were confiscated at CKS Airport in Taipei. Although samples for avian influenza testing were obtained, the birds were *immediately* 'culled' without waiting for the test results. The next day, tests on all 28 returned **negative**. Quarantine was not even considered. This episode is exemplary of the problem--no alternatives were even contemplated.



*Photo of 4 of the 28 cockatoos culled in Taiwan out of fears that they might harbor avian influenza--fears that were disproven when negative test results returned less than 24 h. later (Source: Taipei Times)*

- In 2005, 500 smuggled Indonesian parrots, probably cockatoos (species uncertain) were appropriately confiscated by the authorities of the Philippines, but then apparently were immediately sacrificed without

further considering the use of either **quarantine** or **laboratory testing** for the presence of avian influenza

- 346 lovebirds from Europe were killed in the Philippines because the plane that shipped the birds made a brief stopover at Bangkok (Thailand) airport and they "could not take any chances," according to Airport quarantine chief Davinio Catbagan, that HPAI had somehow contaminated the shipment.
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- I have been told by an authority who deals with the illegal wildlife trade on a daily basis that these examples of the unnecessary culling of parrots and other birds are only "the tip-of-the-iceberg." How sad an irony it is that wildlife officers and customs agents-- the last lines of defense for these beleaguered birds against their captors-- have instead at times become their executioners!
  
- Recently, after a circumscribed number of people became sick with suspected HPAI in Indonesia and a handful was confirmed to have died from it, panic alone has caused some people to simply release their cage birds.

So the question should be asked: **could unnecessary cullings be threatened or carried in the Unites States**, especially if fear reached a sufficiency high level? Regrettably I believe that it could. Lest we forget, exactly that happened in California and British Columbia, Canada during the epidemic of Exotic Newcastle Disease of 2004. And it may already be starting with HPAI (see below). As responsible people concerned about parrots--indeed about all wildlife and animals--we need to be informed and have positions and responses prepared in advance, lest that were to occur here. So here is some background information regarding the apparent susceptibility of psittacines to HPAI.

There has been only limited systematic, direct study as of the time of this writing concerning the prevalence of AI or HPAI in psittacines. Karesh and colleagues found no evidence of avian influenza (assayed by agar gel immunodiffusion) in a health survey of parent- and hand-raised scarlet- and blue and gold macaws in Southwestern Peru in 1994 [ 8 ]. Others found similarly negative serologic results in three species of Amazon parrots, as well as Thick-billed parrots, in Mexico in 1997[9]. Regarding captive psittacines, surveillance for H5N1 was systematically carried out at live bird markets in Hong Kong; although a substantial prevalence was detected in chickens, ducks and geese, psittacines yielded only negative results [studies cited in 10].

Lastly, Alexander [11] indicated that avian influenza was rare in imported pet birds notes that: *"Since 1975 when the first isolates from caged birds were recorded, isolates, from all sources, have been mainly of H4 or H3 subtypes. The majority of influenza viruses from caged birds come from passerine species and only rarely are psittacines infected. Although the presence of influenza viruses in birds held in quarantine is monitored continually in several countries around the world, there appear to have been periods, often lasting several years when no isolations have been made."* [11]

Lacking additional direct studies, I attempted to access reports available in the world's recent, generally-available literature dealing with psittacines (especially cockatoos and larger parrots, since these are commonly traded species endemic to the southeast Asian nations of most concern with regard to the current outbreak of HPAI). I also talked to a number of prominent virologists (including those who receive the limited number of psittacines still imported into this country ). As of the middle of October, 2005, neither Ms. Lorraine Otto (carrying out a parallel search) nor myself had been unable to locate a single adequately-documented case of a large psittacine which had contracted H5N1 influenza. There are reports describing H9N2 influenza in Indian ring-necked parakeets (*Psittacula krameri manillensis*) [ 12] and H9N1 in "parakeets" (cited in 13]. Additionally, budgerigars are clearly susceptible to H5N1 in an experimental setting-- less so than zebra finches, approximately the same as geese, emus and house finches, but more than house sparrows and starlings[10,13]. In Cambodia, in the second of two outbreaks of H5N1 at Tamao Zoo, 2 of 30 (6.7%) recent psittacine introductions (species unidentified) in an aviary were claimed to have died of H5N1, whereas 86 of the total population of 347 birds (24.8 %) were affected [14]. However, no data are provided to document or to amplify this claim more fully. Likewise, the rumor that a Palm cockatoo and a Goffin's cockatoo died in Jakarta's Ragunan Zoo at the time of the H5N1 outbreak in Indonesia remains unsubstantiated. In both zoos, there seemed to be a relative resistance of psittacines to H5N1 , as suggested above.

Recently a Red-lored Amazon parrot was imported in the U.S. and found to have H5-subtype avian influenza. Although this case turned out to be of the lower-pathogenicity N2 strain, it is informative because, even though the parrot was symptomatic, the authors write:

*"Although detection of H5 avian influenza in birds in the U.S. typically results in euthanasia of the infected birds, an alternative strategy using strict quarantine measures and repeated diagnostic testing was used. The bird recovered from the initial clinical signs after four days and was released from quarantine nine weeks after initial presentation following two consecutive negative virus isolation and RRT-PCR results [15]."*

Clearly, this represents the preferred scientific and humane approach, but it is not the one being followed in a significant part of the world.

How ironic it is, then, that the bird which was claimed to introduce HPAI to the United Kingdom was also the first parrot seemingly to be diagnosed with spontaneous H5N1!

This bird was initially stated to be an Orange-winged Amazon parrot, although later reports identified the bird in question to be a Blue-headed Pionus. This parrot had been imported from Suriname in a mixed shipment of 148 psittacines and softbills, all of which were subsequently culled. This shipment passed through the Heathrow Airport Animal Reception Center on September 16, 2005. The parrot was subsequently delivered to a purported 'quarantine center', Pegasus Birds, operated by Brett Hammond, an alleged smuggler and convicted tax evader, where it was kept in shared airspace with a large number of birds from Taiwan, where it died one month later on October 16. It is known that as many as 32 birds died prior to October 16 at this facility; [16]. This 'quarantine facility' has been described as "a group of ramshackle sheds in the garden of a semi-detached house" [ 16 ], suggesting the possible role of poor husbandry and overcrowding in the propagation of disease. It is important to underscore that this parrot was allegedly tested for avian influenza prior to shipment and was found to be negative [17]; thus, there is no evidence that HPAI was acquired in the wild .

Within a few days of the diagnosis of HPAI in this one parrot , the following events ensued in rapid succession, the first signs of panic in the UK appeared. It was reported that "many parrot owners are trying to get rid of their parrots while others are being threatened by neighbors as bird flu panic spreads...Birdline, an organization which rescues dozens of birds every year, said its phones were ringing off the hooks as people pleaded with them to take away their pets. Gary Wilcox, founder of Birdline, said :'*I had one woman [who] thought the bird was going to kill her baby...People are not getting the information they need and we have to stop the misinformation and panic.*'" (18).

Not long after this ill-informed panic began, In the last few days, there was a striking reversal. Doubts were raised whether that parrot was ever the source of the positive test for H5N1, since samples from multiple birds were pooled for screening tests at the quarantine station. In fact, 53 of the 101 mesias in that station had died previously, some with a positive test for H5N1. The second theory (that the parrot had contract avian influenza from the mesias by sharing the same airspace), has now given way to the third and final conclusion that the Pionus never had "bird flu". Rather, some of its biological material was mixed in with the sample from mesias ( although the exact cause of the parrot's

death still remains undefined). This is, in fact, was the gist of the final report [19] by DEFRA (Department for Environment, Food, and Rural Affairs, UK) on this incident.

**This in fact provides additional exculpatory evidence that parrots are not likely to be important hosts or vectors for HPAI, since apparently none of the other parrots caught influenza from all the infected mesias which occupied the same air space.** It also demonstrates the power of ignorance and fear as threats to psittacines , merely because they are birds.

**In conclusion,** psittacines are certainly not totally immune to HPAI. However, extant data suggest that the order psittaciformes as a whole may be relatively resistant to these viruses and that there may even be a hierarchy of susceptibility among psittacine species (cf. 10 as precedent).

As "innocent-bystanders", many parrots have been culled by wildlife or customs officials (needlessly, in the opinion of this author) merely out of fear that they might harbor HPAI. Tony Juniper has referred to the parrot which was first diagnosed with H5N1 in the UK as "an icon of the menace" [20] and has expressed similar concerns as mine about the potential effects on endangered avian species. Concerns about transmission by parrots under normal circumstances should be small and handled relatively easily, and certainly objectively and scientifically. It is one thing if a parrot acquires H5N1 and dies of it as a so-called "dead-end host." --**an event which has yet to be documented in the extant world's literature. It is quite another thing to extend that finding to infer that parrots (or any type of bird) are capable of acting as a biological vector and transmitting H5N1 to other birds or to humans.** The same concerns may well apply to our own birds if HPAI appears in or near our home towns. The potential dangers to both companion and wild birds from the rising panic over avian influenza should not be underestimated.

On the other hand, concerns about HPAI in migratory wild birds, coupled with the temporary conclusion that lone parrot died from this affliction in the UK, have coupled to provide the impetus for mobilizing soporific politicians to enact at least temporary bans against the importation of wild birds. Already there are signs that they could provide a similar impetus for widespread interdiction of the inhumane conditions of bird "fairs", bird "markets" and, in fact, for a marked increase in efforts at the interdiction of the trapping and smuggling of wild birds. Thus, psittacines have assumed the somewhat unlikely roles of both innocent bystander-victims, and silent advocates for a total ban on trade in wild birds. While these latter benefits would seem at the present time to greatly outweigh the negative effects, only our knowledge, vigilance, and advocacy will prevent that delicate balance from tipping in the wrong direction if a pandemic does indeed occur.

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