

QUARANTINE: UNWANTED EXPENSE OR NECESSARY HEALTH INSURANCE FOR ZOOLOGICAL COLLECTIONS?

Tom Bailey¹ and Chris Lloyd²

¹The Dubai Falcon Hospital, Dubai, United Arab Emirates.

²Nad Al Shiba Veterinary Hospital, Dubai, United Arab Emirates.

Quarantine is derived from the Latin word *quadraginta* (meaning forty) and is defined as a period of isolation. In ancient times quarantine was used to protect the citizens of ports from diseases such as 'Bubonic Plague' that would arrive on trading ships.

Nowadays quarantine is one of the most fundamental steps taken to prevent the introduction of disease into a country, and is also considered a basic component of preventative medicine programmes in wild and domestic animal collections. While no quarantine policy can guarantee that exotic pathogens will not enter an animal collection, a good quarantine protocol can minimise these risks. A sound quarantine strategy should be based on the following factors:

- An assessment of risk for the animals to be quarantined. This would take into account the species, recent health history, animal source and susceptibility to disease.
- The existence of asymptomatic carriers and the reliability of diagnostic techniques in their detection.
- The morbidity and mortality rates of these diseases in the animal populations.
- Known methods of disease transmission.
- The relationship between stress of captivity and the outbreak of disease.
- The role and efficacy of vaccines and treatment.

The detection of disease during the quarantine period can be improved by:

- Testing the animals at the beginning and end of the quarantine period.
- Careful observations shortly after arrival when the animals are stressed.
- Using reliable and proven diagnostic tests or using sentinel animals.
- Post mortem examinations on all animals that die during quarantine.
- Careful monitoring and reporting after release from quarantine.

Purpose built quarantine facilities, such as those at the National Avian Research Center (NARC) in Abu Dhabi described by Naldo *et al* (1997) and specialised veterinary screening come at a cost. Dr Francois Lampen, formerly Veterinary Officer at NARC (Lampen, 2000) calculated that the cost of a successful 45 day quarantine for one houbara bustard including staff time, diagnostic testing at the start and end of the quarantine period and feeding, was \$US150 in 2000. This estimate did not include the running costs of the facility. The costs involved with quarantining a bird that died part-way through the 45 day period and was submitted for comprehensive post mortem examination was \$US 300 (Lampen, 2000).

However, how do these figures compare to the costs of a disease entering the collection? The cost of captive bred houbara bustards destined to become breeders and exchanged between breeding projects has been in the order of \$US 15-20,000 per bird, while on the black market a smuggled wild-caught houbara bustard (*Chlamydotis undulata macqueenii*) used to train falcons can exchange hands for \$US 1,200-1,400 \$US. These figures are self explanatory and justify the establishment of a specialised quarantine facility. The importance of quarantine in rehabilitating confiscated bustards is described by Bailey *et al* (2000) and Lampen *et al* (2005).

While many collections do not have the luxury of purpose built quarantine facilities it is surprising how few have any quarantine protocol at all. It must be assumed in these cases that collection managers are unaware of the risks or choose to ignore them. Even the most basic facilities are to be encouraged and may save the collection a great deal of money in lost stock and veterinary bills. At its simplest, quarantine involves the isolation and observation of new animals in separate facilities for 40-45 days before they are mixed with an established collection. Such a facility should be situated as far from the main collection as possible.



A large group of confiscated houbara bustards in the quarantine unit. ©Tom Bailey

To conclude, the effects of disease entering a collection can be devastating, as we have seen with the culling of animals in the highly publicised avian influenza outbreaks in Asia and in the foot and mouth outbreak in the UK. Zoological collections in the Middle East, an area where avian influenza, Newcastle disease, foot and mouth disease, PPR and rinderpest are known to occur, need to carefully consider the role of quarantine in collection planning and consider quarantine not as an unnecessary cost, but as an insurance policy against the expenses and dire consequences of disease.

Some articles referred to in this article may be downloaded in full as pdfs from www.wmenews.com



A sheep showing signs of foot and mouth disease virus (courtesy Dr J. Kinne, CVRL)

References

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