

Health Issues of the International Trade of Falcons and Bustards in the Middle East: the Need for Regional Monitoring and Regulation?

Dr Tom Bailey, Dr Fred Launay and Dr Tim Sullivan, National Avian Research Center, Environmental Research and Wildlife Development Agency, PO Box 45553, Abu Dhabi

Дундад Дорноос Олон улсад худалдаалагдаж буй шонхор, жороо тоодгийн эрүүл мэндийн асуудлууд: Бүс нутгийн хяналт, зохицуулгын шаардлага

Үржүүлсэн шувуудын хувьд улс хоорондын шилжилт хөдөлгөөн олон улсын хэмжээнд нэн их байдаг. Байгальд буй шувуудыг олон тоогоор барьж, тээвэрлэхэд үүссэн гэнэтийн шинжтэй нөхцөл байдал, идэш тэжээлийн өөрчлөлтийн улмаас тэдгээрийн үхэл хорогдол их байх нь тодорхой. Шувуудыг барьж тээвэрлэх явца тэдгээрийн олонх нь үхэж эсвэл амьдрах чадвар нь их доройтдог. Мөн олон зүйл шувууг нэг дор хамт байлгаснаар халдварт өвчин их тархах аюултайг Шувууны олон улсын карантины төвийн судалгаа баталж байна.

Шувуудыг худалдаалах явцад үүсэх эрүүл мэндийн асуудлууд, ялангуяа Дундад Дорны орнууд дахь шонхор, жороо тоодгийн худалдааг зохицуулах, хяналт тавих асуудлыг энэ илтгэлд хөндсөн юм. Абу Дабигийн шонхор шувууны эмнэлэгт үзүүлж буй шувуудын эздээс авсан асуулт, хариултад үндэслэн энэхүү илтгэлийг бэлтгэлээ. Судалгааны дүнд гарч буй урьдчилсан дүгнэлт, эмнэлгийн бүртгэл зэрэг нь Дундад Дорны орнуудад худалдаалагдаж буй жороо тоодог, шонхорын тоо толгойн одоогийн ерөнхий төлөвийг тооцоход чухал мэдээ баримт болж байдаг билээ.

Summary

Internationally there is a considerable movement of captive birds between countries. The nature of the trade in captive birds in which large numbers are caught in the wild and then exposed to the rigors of transit, together with sudden changes in diet and environment, means that a high mortality is inevitable. Birds caught in their native habitat by trapper's pass through the hands of dealers and middlemen prior to import. The result is that many birds may be dead or in poor condition by the time that they arrive at their destination. These factors, along with the mixing of different species during transit mean outbreaks of infectious disease are frequently diagnosed in international avian quarantine centers. The purpose of this paper is to review some of the health problems associated with the unregulated trade of birds, with particular attention to the trade in falcons and bustards in the Middle East and to propose recommendations to monitor and regulate this trade.

Background

Internationally there is a considerable movement of captive birds between countries. Commercial consignments, destined for sale in exotic animal shops, are imported mainly from Asia and Africa to Europe, North America and the Middle East. For example, several million birds are exported each year from India each year (Inskipp, 1975) and the world annual trade in captive birds is estimated at 2-5 million (Hemly, 1994). The nature of the trade in captive birds in which large numbers are caught in the wild and then exposed to the rigors of transit, together with sudden changes in diet and environment, means that a high mortality is inevitable (Ashton, 1984; Bailey et al, 1999). Birds caught in their native habitat by trapper's pass through the hands of dealers and middlemen prior to import. The result is that many birds may be dead or in poor condition by the time that they arrive at their destination. These factors, along with the mixing of different species during transit mean that disease outbreaks of Newcastle disease, salmonellosis, chlamydiosis, trichomoniasis and parasite infestations are frequently diagnosed in avian quarantine centers in the UK (Ashton, 1984), United States of America (Clubb and Roskopf, 1996), and United Arab Emirates (Bailey et al, 1999).

In the Middle East there is a large trade in domestic and exotic species of birds imported from Africa, Asia and Europe for the domestic

poultry industry, exotic pet market, private wildlife collections and for traditional pastimes such as falconry. In Abu Dhabi, the Environmental Research and Wildlife Development Agency (ERWDA) operates the only National avian quarantine unit, where, since 1998 houbara bustards (*Chlamydotis undulata macqueenii*) confiscated from illegal traders are given medical care and are rehabilitated according to IUCN guidelines (IUCN, 2000). Additionally, in 1999 ERWDA opened the Abu Dhabi Falcon Hospital (ADFH) to provide a veterinary service to the local falconry community and where hunting falcons, including recently trapped wild falcons that have entered the local falconry activities receive medical care. Once trapped, the birds are exposed to a wide spectrum of infectious diseases, as they are transported from trappers to dealers and through markets to the ultimate point of sale in the Middle East.

In 1984 the Falcon Programme of ERWDA initiated a microchipping scheme of wild falcon populations, which involves monitoring movements of falcons into, out of, and within the Middle East (Anon, 2000). A recent discussion document entitled “*Microchips and their uses in monitoring movements of sakers and peregrines in Asia and the Middle East*” was circulated to interested parties in the Middle East and Asia and fully describes this programme. This on-going falcon microchipping scheme and the recently initiated programmes to rehabilitate houbara bustards, both initiatives of ERWDA, represent the first attempts by a regional government agency to address the trade in avian species in the Middle East.

Table 1. Some examples of the introduction and spread of infectious diseases that are associated with the movement of birds (from Cooper, 1993).

<u>Disease/organism</u>	<u>Bird species implicated</u>	<u>Location/comments</u>
Newcastle disease	Various species of imported birds in quarantine	USA, UK, Holland, Canada
Avian influenza	Various species of imported birds in quarantine	UK, Japan
Psittacine pox	Imported psittacines	USA
Reoviruses	Imported parrots	UK
Salmonella typhimurium	Various species of imported birds in quarantine	UK
Ticks and hippoboscids	Imported ostriches	USA, potential spread elsewhere as ostrich farming develops

Table 2. Known causes of mortality of smuggled houbara bustard flocks in the Middle East and Pakistan (from Bailey et al, 1999).

Year	Country	No. birds	% mortality	Cause
1986	UAE	30	100	PMV-1
1993	Bahrain	123	100	Avian pox
1993	UAE	36	33	PMV-1
1994	UAE	22	77	Aspergillosis
1995	UAE	200	50	PMV-1
1996	Pakistan	1,400	25	Multiple*
1997	Pakistan	1,500	22	Multiple*
1998	UAE	34	59	Avian pox
1998	UAE	24	25	PMV-1
1998	UAE	95	49	Multiple**

*includes pox, PMV-1, aspergillosis and secondary mixed bacterial infections.

**includes pox, PMV-1, reovirus, adenovirus, *Pseudomonas* sp. and *Salmonella* spp.

The purpose of this paper is to review some of the health problems associated with the unregulated trade of birds, with particular attention to the trade in falcons and bustards in the Middle East and to propose recommendations to monitor and regulate this trade.

Health Problems Associated with the Trade of Imported Birds

International examples

The history of the international movement of pet birds is interwoven with that of major diseases such as chlamydiosis and Newcastle disease (Clubb and Roskopf, 1996; Bailey et al, 1999). International examples of the introduction and spread of infectious diseases that are associated with the movement of birds are presented in Table 1 (adapted from Cooper, 1993). The risks posed by outbreaks of infectious disease in domestic poultry industries spread from imported birds is considerable. For example, in 1971 outbreaks of Newcastle disease in poultry in the USA were linked to the importation of parrots from South America (Ashton, 1984). Eleven million chickens were destroyed in the epizootic and the total control programme cost 56 million dollars, which made the imported parrots the most expensive shipments of birds in history! Outbreaks such as these lead to government action and in response to the epidemics of Newcastle disease in the UK in the 1970's government regulation was introduced to control the import of captive birds (Ashton, 1984).

Table 3. Infectious diseases of smuggled houbara bustards and their significance to poultry, falcon and human health (from Bailey et al, 1999).

Category	Agent	Poultry risk	Zoonotic risk	Falcon risk
Viral	Paramyxovirus type 1	S	No	S
	Paramyxovirus type 2	S	No	S
	Avian pox	S	No	UK
	Avian leucosis	NS	No	UK
	Avian reovirus	UK	No	UK
	Adenovirus	UK	No	UK
Fungal	<i>Aspergillus fumigatus</i>	NS	No	NS
	<i>Candida albicans</i>	NS	No	UK
Bacterial	<i>Chlamydia psittaci</i>	S	Yes	S
	<i>Salmonella</i> sp.	NS	Yes	S
	<i>Pseudomonas aeruginosa</i>	NS	No	S
	<i>Clostridium perfringens</i>	NS	No	S
	<i>Pasteurella multocida</i>	NS	No	S
Parasitic Protozoa	<i>Trichomonas</i> sp.	NS	No	S
	<i>Giardia</i> sp.	NS	Yes	
	Haemopterus sp.	NS	No	NS
	Leucocytozoon sp.	NS	No	NS
Endoparasites	Helmints, cestodes	NS	No	NS
	Acantocephala			

Key: UK - unknown, NS -not significant, S - significant

Table 4. A list of the common medical problems of trapped lugger falcons in Pakistan (Bailey et al, in 1998).

Capture	Traumatic injuries – caused by trapping, particularly the feet. Infected traumatic injuries.
Transportation	Deaths during transport – birds are often 'bound' during transport.
Management and environment	Enteritis – following the feeding of poor quality/decomposed meat. Starvation - when large numbers of birds are kept in small rooms there is food competition and the weaker birds die. Traumatic injuries caused by poorly designed rooms made with abrasive materials such as bricks.
Infectious diseases	Keratitis/conjunctivitis related to traumatic injuries and seeling. Bumblefoot - often the only perching surface is contaminated with rotting food and faeces or is of abrasive quality such as brick. Viral diseases such as Newcastle disease and avian pox. Aspergillosis Trichomoniasis Upper respiratory tract infections

Review of Health Issues of the Houbara Bustard Trade

There is a large illegal trade in free-living houbara bustards, trapped in Pakistan, Iran and Afghanistan which are exported to the Middle East where they are used by some falconers to train their falcons (Bailey et al, 1999). It has been suggested that 4,000-7,000 houbaras are traded in this way from Pakistan each year (Goriup, 1997), while accurate information on the flow of birds from other countries is unknown. The mortality of the birds transported to the Middle East is high and entire shipments can die after arrival in Gulf countries. Recently published data on the mortality of known smuggled houbara bustard flocks in the Middle East and Pakistan is presented in Table 2. Poor husbandry, crowded transport conditions, exposure to infectious diseases carried by domestic birds and insufficient food and water are responsible for the majority of deaths (Bailey et al, 1999). Data on the infectious diseases of smuggled houbara bustards and their significance to poultry, falcon and human health are presented in Table 3. In the survey from which the data presented in Tables 2 and 3 was derived no single disease entity was responsible for the majority of morbidity or mortality seen in smuggled birds; instead the birds presented with a “cocktail” of diseases. The susceptibility of imported houbara bustards under conditions of stress to viral diseases concurs with investigations on other imported wild avian species (Ashton, 1984; Shortridge et al., 1991; Doyle, 1997; Shortridge & Burrows, 1997). This trade may have more impact on the status of the houbara bustard than direct hunting with falcons. Other species of African bustards are also imported into the Middle East from Southern and Eastern Africa under similar conditions (Goriup, 1987).

Review of Health Issues of the Falcon Trade

The health of falcons in the Middle East is affected by the unregulated trade that exists in two ways. Firstly, wild caught falcons are exposed to diseases after they are trapped, during transportation and when they arrive in the final country of sale. Table 4 presents information on the health findings in larger falcons (*Falco jugger*) that are trapped in Pakistan. Although the wild-trapped larger and more valuable falcons, sakers (*Falco cherrug*) and peregrines (*Falco peregrinus*), that are sold into the falconry market are kept in better conditions than the smaller

Table 5. Examples of diseases seen in the Middle East that have the potential to be transmitted from souk derived training quarry or food sources to falcons.

<u>Disease</u>	<u>Source</u>
Newcastle disease virus	Pigeons, quail, poultry, waterfowl from souk Illegally traded bustards
Herpesvirus	Pigeons
Tuberculosis	Pigeons, quail, poultry, waterfowl from souk
Salmonellosis	Pigeons, quail, poultry, waterfowl from souk Illegally traded bustards
Chlamydiosis	Pigeons, quail, poultry from souk Illegally traded bustards
Trichomoniasis	Pigeons, quail, poultry from souk Illegally traded bustards

“barak” falcons, these conditions may be observed in the larger falcons in falcon souks in Pakistan and in the UAE. Secondly, once the falcons are in training they come into contact with infectious diseases when they consume 1) training quarry (e.g. houbara bustards, gulls or pigeons) or 2) food items (e.g. pigeons or quail) that have been imported with no health considerations or that have been housed in facilities in contact with other traded animals. Table 5 lists examples of significant diseases of falcons that have the potential to be transmitted from souk derived training quarry or food sources.

International Guidelines

At its 18th session, Perth, Australia, the General Assembly of IUCN (Prescott-Allen and Prescott-Allen, 1996) issued the following recommendation (18.24) on the conservation of wildlife through wise use as a renewable natural resource:

The IUCN affirms that ethical, wise and sustainable use of some wildlife can provide an alternative or supplementary means of productive land use and can be consistent with and encourage conservation, where such use is in accordance with adequate safeguards, namely;

Sound, scientifically-based monitoring mechanisms to ensure that such use is maintained at levels, which can be sustained by wild populations without adversely affecting the species’ role in the ecosystem or the ecosystem itself.

Compliance with national and international obligations and policies.
Provision for the protection of wild animals from avoidable cruelty and suffering.

To develop guidelines based on scientific, socio-economic and traditional knowledge, the principle of equitable allocation of resources and distribution of benefits.

To undertake field projects to research and test factors needed to ensure successful sustainable use of wildlife.

To review as appropriate existing programmes involving the use of wildlife and recommend modifications necessary in order to conform with IUCN guidelines.

The ERWDA has initiated local and regional projects on bustards and falcons and is recognised as one of the leading agencies in the Middle East promoting the sustainable use of these species.

Recommendations

It is generally accepted that rigid control policies, e.g. banning trade, rarely deals with a problem because it causes the price of birds to increase and with it the likelihood of unsupervised illegal importation (Ashton and Cooper, 1984). What is needed is to use measures that have been successfully implemented in other countries and adapt them to the situation in the Middle East. Measures that should be considered by regional environmental agencies include:

Preimportation standards in countries exporting birds - Foreign holding facilities should be designed where bird can be assessed, uniquely identified and receive appropriate medical treatment before export.

Enforce international treaties - Most notably the Convention on International Trade in Endangered Species of Fauna and Flora (CITES) should be enforced at the exportation and importation ends of the trade chain.

Improve transportation methods - The International Air Transport association has laid down detailed specifications for the transport of imported birds according to size and species. All import licenses should require that transportation conditions meet these international standards.

Introduce import regulations - Generally such regulations are governed by the value and disease status of the national poultry industry. If a bird satisfied import criteria (individual/flock history, health screening results) they would be sent to a licensed/approved quarantine facility.

National quarantine - Quarantine is the single most important management process in preventing disease outbreaks, either in local terms of having a quarantine unit for a captive breeding collection, such as the houbara bustard programme of NARC, or in National terms where National quarantine facilities can be used to minimise disease entry into a country.

Recommendations specific for the falcon-houbara bustard trade in the Middle East

1. Monitor bird souks to quantify the falcon trade (numbers & species).
2. Compile a census of the falcons in the Middle East in collaboration with the regional falcon hospitals.
3. Develop the existing MEFRC PIT scheme to quantify effect of trade on wild falcon populations.
4. Establish a National Working Group on Bird Trade to advise regional government policy makers on what National regulations and initiatives are needed.
5. Initiate regional training of staff in airports/ports that are involved in first stage of detecting illegally imported birds.
6. Increase awareness of both the health and conservation issues relating to the bustard and falcon trade amongst falconers.

Conclusions

The current unregulated trade in wild falcons and bustards in the Middle East represents an issue that is relevant to both veterinarians concerned with the health of populations of captive domestic and exotic avian species, and to biologists concerned with managing self-sustaining free-living populations of these species. Long-term conservation solutions for wildlife species in trade must be based on a balanced approach of effective regulation when necessary, development of positive economic incentives and motivation of well informed consumer choice (TRAFFIC, 2000). In the context of the Middle East this means that attempts to enforce international treaties, such as CITES, by National governments should go hand in hand with efforts to increase conservation awareness to the main consumers, in this case the falconers. The social position of the falconers and their political and financial influence means that without their support, efforts to regulate the wildlife trade will fail. However, if

conservationists can demonstrate that the benefits of regulation will include improved health of their falcons, more houbara in the hunting grounds and an enhanced reputation of their sport, support by falconers and falconry organisations may be forth-coming.

This review demonstrates how the regional trade in falcons is closely linked to the trade in bustards, and is ultimately part of a larger global and potentially unsustainable trade in avian species. The Environmental Research and Wildlife Development Agency has been one of the first government organisations in the Middle East to start initiatives to deal with these issues and is in a good position to formulate solutions to deal with this complex problem. In 1998 initiatives were taken in Abu Dhabi and Sharjah to confiscate illegally imported houbara bustards when they entered the UAE, and attempts to rehabilitate and release these birds back into suitable habitats have also been initiated. Since its' inception in 1993 NARC has a proven track record in promoting the sustainable utilisation of falcons and bustards regionally and has both the professional expertise (aviculturalists, biologists and veterinarians), facilities (avian hospital and captive breeding centers) and vision (falcon and houbara strategy plan) to play a key role in coordinating such initiatives.

Acknowledgements

We thank H. H. Sheikh Khalifa bin Zayed Al Nahyan, President of the ERWDA Board of Directors and H. H. Sheikh Hamdan bin Zayed Al Nahyan, Vice President of the ERWDA and Mr. M. Al Bowardi, ERWDA Managing Director, for their support of the veterinary science programme of NARC.

References

- Anon (2000) Microchips and their uses in monitoring movements of sakers and peregrines in Asia and the Middle East. Supplement of Falco, Newsletter of the Middle East Falcon Research Group, January 2000.
- Ashton, WLG (1984) The risks and problems connected with the import and export of captive birds. *British Veterinary Journal*. 140: 317-327.
- Ashton, WLG & Cooper, JEC (1989) Exclusion, elimination and control of avian pathogens. ICBP Technical Publication No. 10. Pp 31-38.

- Bailey, TA, Fox, NC, Mukhtar, A, Toosi, A and Samour, JH (1998) Reconciling conservation interests with health and medical issues of the lagger falcon in Pakistan. 3rd International Raptor Biomedicine Conference, Midrand, South Africa. Pp 7-8.
- Bailey, TA, Silvanose, CD, Naldo J, Combreau, O, Launay, F, Wernery, U, Kinne, J, Gough, R, & Manvell, R (1999) Health considerations of the rehabilitation of illegally traded houbara bustards *Chlamydotis undulata macqueenii* in the Middle East. European Association of Avian Veterinarians Conference, Italy, 1999.
- Clubb, SL & Rosskopf, WJ (1996) History of importation of birds into the United States. In *Diseases of Cage and Aviary Birds*. (eds Rosskopf, W & Woerpel, R), Williams and Wilkins, Baltimore. Pp 904-914.
- Cooper, JEC (1993) Historical survey of disease in birds. *Journal of Zoo and Wildlife Medicine*. 24: 256-264.
- Doyle, KA (1997) Avian quarantine. *Australian Veterinary Journal*. 75: 645-647.
- Goriup, P.D. (1987) Selling out East Africa's bustards. *SWARA*. 10: 20-22.
- Goriup, P.D. (1997) The world status of the houbara bustard *Chlamydotis undulata*. *Bird Conservation International*. 7: 373-397.
- Hemly, G. (1994) *International Wildlife Trade: A CITES Sourcebook*. Island Press, Wahington DC. Pp 55-56.
- IUCN. (2000) IUCN guidelines for the placement of confiscated live animals. IUCN/SSC Re-introduction Specialist Group. IUCN, Gland, Switzerland.
- Prescott-Allen, R & Prescott-Allen, C (1996) Assessing the sustainability of uses of wild species. Occasional paper of the IUCN Species Survival Commission, No. 12. IUCN, Gland, Switzerland. Pp 119-120.
- Shortridge, KF, Burrows, D & Erdie, J (1991) Potential danger of avian paramyxovirus type 3 to ornithological collections. *Veterinary Record*. 129: 363-364.
- Shortridge, KF & Burrows, D (1997) Prevention of entry of avian influenza and paramyxoviruses into an ornithological collection. *Veterinary Record*. 140: 373-374.
- TRAFFIC (2000) Realistic solutions and innovation needed to control international wildlife trade. TRAFFIC report on CITES conference in Nairobi. <http://www.traffic.org/cop11/newsroom/pressrelease.html>