



FALCO

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MEFRG Objectives:

To provide:

A central body for the co-ordination of research activities related to falcons and falconry.

A common forum for the exchange of information and for promoting collaborative research programmes.

To promote:

Research on health and disease in falcons, falcon moulting in the Middle East, falcon nutrition, domestic breeding. Field studies on falcon migration, taxonomy, morphometrics, reproductive biology and behaviour. Improved management conditions for captive falcons through educational awareness programmes. Greater understanding of falconry as a part of Arab cultural heritage.

To hold:

International workshops and conferences on veterinary aspects, falcon biology topics, falconry and conservation issues.

To publish:

Papers on aspects of falcon conservation, falcons and falconry.

A biannual newsletter/journal containing contributions on medical, biological and conservation topics of common interest, new developments and recent medical advances.

Membership:

Membership is open to any veterinary surgeon, biologist, conservationist or falconer working in the Middle East or any other person interested and contributing in the fields of medical, biological and conservation aspects of falcons and falconry worldwide.

Photographs:

Front Cover: Recently fledged Saker, Qinghai, China (Andrew Dixon)

Back Cover: Portrait of female Saker, Mongolia (Mark Etheridge)

Falco is published biannually and contains papers, reports, letters and announcements submitted by Middle East Falcon Research Group Members. Contributions are not refereed, although every effort is made to ensure information contained within FALCO is correct, the editors cannot be held responsible for the accuracy of contributions. Opinions expressed within are those of the individual authors and are not necessarily shared by the editors

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www.savethesaker.com



Saker sheltering from a summer snowstorm at its roost site on an electricity pole in NW Sichuan, China (Photo: Andrew Dixon)

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Editorial

In this issue we give a brief overview of a busy field season undertaken by surveyors and researchers in Europe and Asia in 2007, all of whom were funded by the Environment Agency of Abu Dhabi (EAD). The 'fledgling' Southeast Europe Saker Network (SESN) co-ordinated projects across eight different countries in Southeast Europe (no mean feat in itself) and this work has presented us with a clearer picture of the current status of the Saker in most of these countries. In the Pannonian basin of eastern Europe the Saker has adapted well to agricultural landscapes, finding breeding sites in Raven nests on electricity pylons. There is some evidence of a decline in the Vojvodina region of Serbia but on the positive side the species has expanded its range along power lines into neighbouring Croatia. Here the Saker feeds predominantly on birds and voles rather than sousliks, which are the staple mammalian prey of the power line nesting Sakers in the steppes of Moldova and Ukraine. In the south, the Saker is probably extinct in Bulgaria and has only a tentative foothold in Romania. Future research in these areas will be directed at understanding the habitat requirements of Sakers and encouraging recolonisation using artificial nests and, in Bulgaria at least, the possibility of reintroduction.

The Saker is presently a rare breeding bird in Turkey despite an apparent abundance of suitable nesting sites and prey in the steppic landscape of Anatolia. Is this the result of illegal trapping of Sakers on their breeding grounds? The article by Lobkov and co workers on Gyrfalcons in Kamchatka demonstrates that even in this remote part of the world the trapping of migratory falcons is rife. Certainly trapping is a major problem in China as the article by Ma Ming and Chen Ying demonstrates. As we go to press trappers, with the consent of the Ministry of Nature and the Environment, are again active in Mongolia despite the current trade ban imposed by CITES following the Significant Trade Review requested by the United Arab Emirates. We wait to see what develops in this situation as the current trade does not appear to be demonstrably sustainable and thus does not meet the criteria imposed by CITES.

Trapping is just one of many problems faced by migratory species and the satellite tracking of Saker Falcons from Mongolia has led to the discovery of a major and increasing threat posed by new electricity distribution lines to migratory and wintering raptors in remote areas of western China. Better foresight in the design of power poles could dramatically reduce mortality rates in raptors and the frequency of power outages caused by bird electrocutions. Publicity,

education and the retrofitting of insulation is urgently required to address this problem.

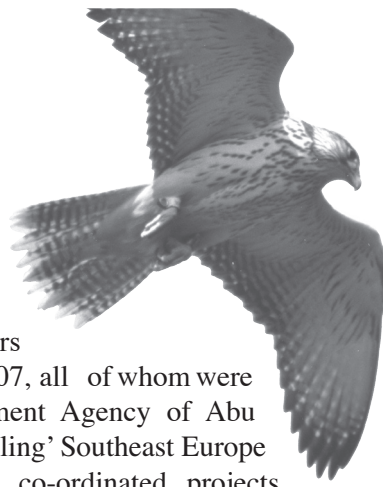
Considering the threats faced by migratory falcons, the Governments of the United Kingdom and United Arab Emirates are co-leading an initiative to explore the development of a new agreement to help conserve migratory birds of prey and owls in the Africa-Eurasian region. This follows decisions by the World Working Group on Birds of Prey and Owls (Budapest 2003) and the Convention on Migratory Species (Nairobi 2005) calling for action to tackle the threats faced by these birds. This initiative is progressing via a forthcoming intergovernmental meeting in Scotland (22nd to 25th October 2007) to discuss the possible form of a new agreement to help conserve migratory raptors. See the following website for more details: <http://www.cms.int/species/raptors/index.htm>.

Just as the trapping of falcons for falconry is impacting on wild falcon populations, the article by Dr Olivier Combreau from the National Avian Research Center demonstrates the wastage caused by the smuggling of live Houbara Bustards from Pakistan into the Middle East where they are used to train falcons. Falconers need to realise that for every live smuggled Houbara that ends up in the Middle East at least ten have probably died in transit and that the end result is less wild birds to hunt. In addition there is the real risk that this trade will one day introduce avian influenza into a Gulf country, generating tremendous negative publicity for the sport of Arab falconry.

In a paper describing the devastating effects of highly pathogenic avian influenza on falcons in Saudi Arabia Dr Jaime Samour and colleagues also consider the role played by the trade in wild falcons trapped in Central Asia and smuggled into the Middle East. The authors observe that there is a need to improve the legislation governing the import and export of birds into these countries and to reinforce the existing laws related to quarantine regulations at border posts.

The treatment of cryptosporidium, an emerging parasitic disease of captive falcons, is presented by Drs Rodriguez and Forbes and we also reprint discussions in the letters section between veterinarians on the Birdmed internet discussion group on the challenges of treating this condition. Other veterinary articles cover topics from anaesthesia, blood pressure monitoring, blood gas values and mycoplasma infections.

So a diverse range of veterinary and ecological articles to stimulate us. With the emergence of new conservation pressures and diseases affecting both captive and wild populations there appears to be plenty of work to keep those of us who care about birds of prey busy for another season.



Notes from the Field 2007

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Introduction

Through a contract to International Wildlife Consultants Ltd., the Environment Agency of Abu Dhabi has funded survey, research and conservation work on the Saker Falcon *Falco cherrug* in several countries across Eurasia. This long-standing commitment to falcon research and conservation continues to improve our understanding of the status and ecology of Saker Falcons in several regions of their extensive global breeding range and has resulted in the development of wildlife management programmes that have a measurable benefit for the conservation of the species. In this article I outline some of the projects that have been undertaken in 2007; more detailed descriptions of the individual studies will appear in future issues of *Falco* or other ornithological journals. In Europe, Saker Falcon surveys have been undertaken in Bulgaria, Croatia, Macedonia, Moldova, Romania, Serbia, Turkey and Ukraine as part of a co-ordinated programme of the South-east Europe Saker Network (SESN), in order to more accurately determine the true status of the species in this hitherto poorly recorded region. In Asia, survey work was undertaken in China and Kazakhstan, whilst research directed at developing wildlife management programmes was undertaken in Mongolia.

South-east Europe Saker Network (SESN)

Our surveys of Sakers in Europe are directed at the Balkans and countries surrounding the Black Sea, an area which the European Single Species Action Plan for the Saker Falcon (Nagy & Demeter, 2006) highlights as having “poor quality” population figures. The SESN was established to act as a focus point for Saker researchers in the region to exchange information, ideas, equipment and to provide seed-funding for the development of long-standing conservation programmes.

In **Bulgaria** a second field season was spent searching for breeding Sakers after the failure in 2006 to locate any pairs in former breeding haunts. Again, in 2007, there were no confirmed breeding pairs, though several sightings of single birds were reported in the country, raising hopes that these could eventually breed. Dimitar Ragyov (Central Laboratory of General Ecology) will erect 36 artificial nests this autumn, 12 in trees and 24 on electricity pylons in the hope of attracting wandering Sakers to settle and breed. In conjunction with this attempt at encouraging natural recolonisation of the country, SESN has made the first tentative steps towards developing a re-introduction programme. To this end, Elena Kmetova of the Green Balkans spent

time at the IWC falcon breeding facility in Carmarthen in order to learn the techniques and requirements of a captive-breeding programme.

In **Croatia**, Darko Grlica (“Drava” Nature Society) undertook extensive survey work in Slavonia in eastern Croatia, which lies on the edge of the Pannonian Basin where the former steppe grasslands of Central Europe reached their south-western limit. The former range distribution of the European Sauslik, now extinct in Slavonia, reflected the limits of the steppe grasslands (Tvrtković, 2006). There is little information available regarding the historical range and status of the Saker in Croatia but it is likely that the species was closely tied to the steppe grasslands and floodplains of the major rivers. It is estimated that 5-10 breeding pairs occur in Croatia though specific information is somewhat limited. In the Danube floodplains up to two pairs have possibly bred in White-tailed Eagle nests within the Korpački rit Nature Park in recent years (T. Mikuska), with an estimated five pairs in the alluvial wetlands of the Danube (Mikuska & Mikuska, 1994). Sakers have also been reported during the breeding season from the floodplains of Sava River (Radović *et al.*, 2003), whilst in Podravina and central Slavonia birds were seen at power line pylons in agricultural landscapes (D. Grlica). In 2007, two Saker Falcon eyries were located in Raven *Corvus corax* nests on electricity pylons in eastern Slavonia, the first confirmed breeding records in agricultural landscapes, where it appears that the diet comprises mainly birds and voles. Both nests were successful and obviously represent a western extension of the Vojvodina breeding population in neighbouring Serbia.



Photo 1. A young Saker fledged from a nest in Croatia in 2007 (D. Grlica)

In **Macedonia**, Branko Micevski (Institute of Biology) surveyed the steppic areas of the country but found no evidence of breeding Saker Falcons. Interestingly, the population of Imperial Eagles *Aquila heliaca* that exist here do not feed on sousliks, they do not exist in central Macedonia, but instead feed primarily on voles in agricultural landscapes. There is little data on the previous status of the Saker in this former Yugoslavian republic but up to the 1960s it was reportedly a regular winter visitor to Macedonia from November to April. It is possible, during former times when the breeding population was much larger in the Balkans that Sakers may have bred in Macedonia. Nowadays, Lanner Falcons *Falco biarmicus* still breed in the country and this region is potentially very interesting as contact zone where *biarmicus* and *cherrug* may possibly hybridise, if not recently then in the past (see Boev & Dimitrov, 1995; Nittinger et al., 2007).

In **Moldova**, a survey team lead by Nikolai Zubkov and Andrei Munteanu (Institute of Zoology) carried out searches in known former nesting areas and along power lines in the country. At the beginning of the 20th Century the Saker Falcon was a common and widespread species in the republic (Osterman, 1914), and up until the 1970s was breeding in many woods of Prut and Nistru valleys with an average density of about 1.2 pairs per 1000 ha of forest. Apart from a sighting of a single bird in the Prut valley, the only confirmed breeding records in Moldova comes from the steppe zone of the far south, where in 2007 five pairs of Saker Falcons were located breeding in Raven nests on electricity pylons. These birds feed primarily on European and Spotted Sousliks (*Spermophilus citellus* and *S. suslicus*) and the breeding population in Moldova appears to be limited by the availability of their favoured prey. This population is closely linked geographically and ecologically to the steppe populations of neighbouring Ukraine and breeding takes place on power lines that traverse these two adjoining countries. In **Ukraine**, survey work by Yuri Mylobog and Vitaly Vetrov continued in the steppe zone of the south where Sakers breed on electricity power lines.

In **Romania** surveyors from the Milvus Group (Robert Zeitz and Zoltan Domahidi) and the Danube Delta National Research and Development Institute (Andu Dorosencu) undertook surveys of the Dobrogean region of the country incorporating parts of the Danube Delta. The field survey covered 39 100 km² squares in Dobrogea, which were pre-selected on the basis of their suitability for Sakers and the spread of their geographical coverage. However, there were no breeding Saker Falcons found in any of these squares. Observations at three previously known territories showed that all were occupied at some point but none were successful at producing fledged young and only one pair was proved

to have actually laid eggs. On a more positive note an adult pair of Sakers and a juvenile were seen together in a wooded area on the 11th June, and this youngster may have been bred locally but no nest could be found. This combination of targeted observations and wider coverage of 10 x 10 km survey squares provides good evidence that the Saker is a rare breeding species in Dobrogea and is not simply overlooked.

In **Serbia**, Slobodan Pusović has continued his long-term study of Saker Falcons in the Vojvodina region, where Saker Falcons have been occupying Raven's nests built on electricity pylons since the early 1980's. The population in Serbia, estimated at 55 pairs in 2007, is now mainly concentrated in power lines in the northern region of Vojvodina, with no known pairs in the alluvial forests of the major rivers or the mountainous region of Fruska gora. There is a project underway in Serbia to install artificial nesting platforms on electricity pylons, which will provide permanent and safer homes for the Sakers in place of the Raven nests that they currently use.

In **Turkey**, a survey team from Bulgaria worked with a Turkish raptor enthusiast, Mehmet Deli, to survey former breeding locations of the Saker Falcon in central Anatolia and eastern Turkey. The work was supported by Dr. Zafer Ayas (Hacettepe University). Searches of these sites turned up just three breeding pairs, two in central Anatolia and the third in eastern Turkey. Turkey is a vast country with many apparently suitable areas for Sakers with an abundant supply of sousliks, but the species is nonetheless very scarce. During the survey work, the team obtained evidence that Syrian falcon trappers have been caught attempting to catch Sakers in eastern Anatolia and indiscriminate trapping of breeding birds may be responsible for the apparent population decline over the last 25 years.



Photo 2. A brood of five Sakers in Central Anatolia 2007 (D. Ragyov)

Survey work in Asia

In **Kazakhstan**, Anatoliy Levin (Institute of Zoology) continued his long-term monitoring of the Saker Falcon population in the northern and southern foothills of the Tarbagatai Ridge. In this hill range, Anatoliy encountered 20 active nests and succeeded in microchipping 34 nestlings. The microchipping scheme has been primarily aimed at recording any wild-caught Sakers that are trapped and eventually find their way to veterinary hospitals in the Middle East, however one microchipped bird was traced via another source. This bird was microchipped as a nestling in a brood of two males in the Manrak Mountains of eastern Kazakhstan on the 10th June 2002 and was killed in February 2006 by locals near Urumqi, Xinjiang in northwest China. The microchip was found when the bird was stuffed to be sold as a taxidermy specimen in the markets of Urumqi.

In **Mongolia**, a team headed by Nyambayer Batbayer (Wildlife Science and Conservation Center) recorded occupancy rates, breeding success and post-fledging survival of Saker Falcons breeding at artificial nest sites in two widely separated study areas. In conjunction with this work, Dr. Batsaikhan (National University of Mongolia) is supervising a Masters student Amarsaikhan Saruul in a demographic study of Brandt's Voles. These small rodents are a key component of the diet of the Saker in the steppe ecosystem of central Mongolia and are regarded as agricultural pests that can cause desertification in areas where their population



Photo 3. Microchipped Saker from Kazakhstan that was killed near Urumqi in February 2006 (Ma Ming)

increases significantly. This study is examining the potential impact of raptor predation on the population cycles of Brandt's Voles and is being conducted in areas where the raptor population has been increased due to the provision of artificial nest sites. A second Masters student, Gankhuyag Purev-Ochir, has been studying the diet of Sakers in the steppe zone and will develop a key for identification of mammalian and avian prey remains in the pellets of Saker Falcons. An English PhD student, Mark Etheridge undertook his second field season of research in order to collect



Photo 4. A young Saker fitted with a satellite transmitter in northern Mongolia 2007 (A. Dixon)

data to quantify productivity from artificial nests and to determine post-fledging survival rates using radio tags and wing tags as individual markers. Ultimately, this information will be used to produce a model that could be used to determine quotas for a sustainable harvest of wild Saker Falcons. Currently the harvest continues in Mongolia with only lip service paid to determining the impact of this trade on the wild population. Work began this season on affixing artificial nests to power lines in order to reduce the risk of Saker Falcon nests being removed by line workers when they clear nests from the transmission lines; these artificial nests will also act as more permanent nest sites for Sakers, which could then deter problem species such as Ravens and Upland Buzzards (*Buteo hemilasius*) from building their nests on the power line. French and Japanese film crews filmed the work of the project teams in Mongolia this year for documentaries on the 'Saker in falconry' and the 'control of rodent plagues' respectively. In addition, an expedition was made to the forest steppe zone of

northern Mongolia in order to fit a satellite transmitter tag to a nestling Saker Falcon; part of an ongoing study into the migratory movements of Sakers.



Photo 5. A Saker Falcon electrocuted on a 10 kV power line in Madoi County, Qinghai (Ma Ming)

In **China** Prof. Ma Ming (Xinjiang Institute of Ecology and Geography) and a team of students surveyed the eastern Junggar Basin of Xinjiang for 8 days in April, finding five nests occupied, compared to 6 and 10 occupied in the study area in 2005 and 2006 respectively. In June and July an expedition was made to the Tibetan Plateau in Qinghai in order to visit the wintering grounds of Sakers that had been tracked via satellite telemetry from Mongolia in 2006/7. We collected data for the wintering area from the local weather station and described the habitats and available prey species that the birds exploit. On visiting these areas we identified a new and serious problem for raptors through the proliferation of new electricity distribution lines. There is a great deal of investment in local infrastructure with a number of remote villages

and settlements now being connected to the electricity supply. Beneath the power poles of one new 10 kV line running 16.1 km from Madoi we found the electrocuted carcasses and remains of 28 Upland Buzzards, three Saker Falcons and a Raven. The majority of these birds were killed by poles with overhead jump wires (19 of 200 poles were of this type and 12 of these had dead birds below). The satellite tracking has revealed not only an important wintering ground for Mongolian Saker Falcons but also a new and developing threat to these birds. Future plans are to work with local electricity distribution companies to retrospectively insulate the problem power poles on these lines. In addition to being an important wintering area the Tibet-Qinghai plateau also supports a substantial breeding population of Sakers. We collected feather samples from breeding sites for future DNA studies that may be able to determine if there is any gene flow between the Mongolian and Tibetan breeding populations.

In 2007 we have continued to employ field assistants in our projects in order to help train local biologists and/or gain experience and an understanding of the EAD funded research work on Saker Falcons. We would like to thank the following for their valued input this season: Ivo Angelov, Dimitar Demerdziev (Turkey); Paul Andreano, Bratislav Grubac (Mongolia), Paul Stafford, Carl Ashford (China).

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Population Status of the Gyrfalcon in Kamchatka

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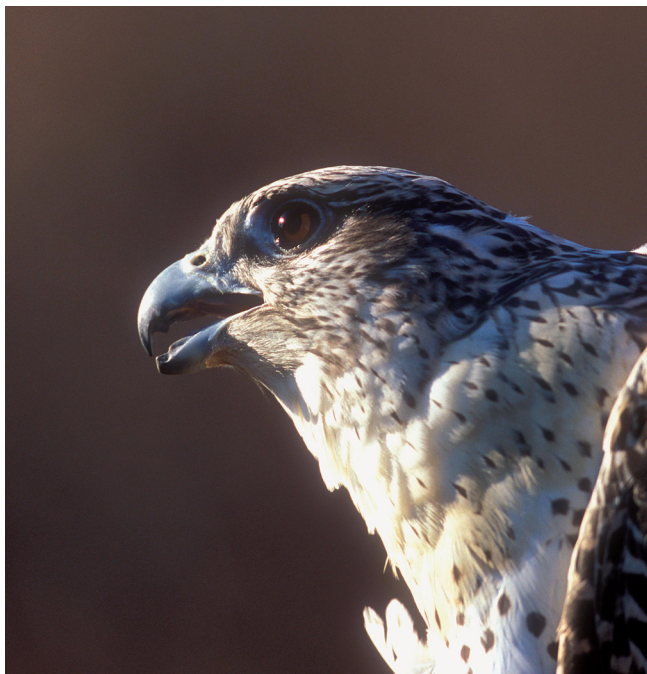
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Introduction

The Kamchatkan-Koryakian region is one of the most important breeding sites for the Gyrfalcon in Eurasia (Lobkov, 2000; Potapov and Sale, 2005). However precise status and distribution of the species in the region is still not certain and there is practically no data on their biology from Kamchatka. A decline in the number of Gyrfalcons in this region, caused primarily by industrial scale trapping and taking chicks from nests, has provoked concern (Gordienko & Nechitaïlov, 2000; Lobkov, 2000; 2003). This article summarizes part of a much larger publication by the authors on the ecology of the Gyrfalcon in Kamchatka, to be published in the Russian journal *Ornithology*.



Siberian Gyrfalcon (Photo: Dr. Yuri Artukhin)

Methods

In 2005 and 2006 we investigated the Gyrfalcon population on the Kamchatka Peninsula by surveys on foot, by car, from water and by helicopter. Some survey routes and areas were selected in advance based on prior information, whilst others were explored opportunistically *en route*. During our investigation of river valleys, mountain slopes, river and coastal banks we counted the number of rocky outcrops and noted

their exposition, length, the presence of faecal stains and suitable host nests. Sites were searched for pellets and feathers. When we saw Gyrfalcons we tried to determine their plumage characters, differentiating by three categories: grey, light and white.

For each of the survey plots we determined the area and number of Gyrfalcons recorded. Each inhabited nest, territorial pair and fledged brood was considered as a breeding site. Records of Gyrfalcons that could not be certainly identified as breeding birds (e.g., hunting or fly-by birds) were regarded as supposed pairs. The sizes of the survey plots that we could investigate thoroughly varied from 9 to 1,630 sq. km (they differed by configuration of the landscapes). In investigations of the largest of them, staff members and temporary workers of Specially Protected Natural Territories took part in the surveys.

Counts of Gyrfalcons on autumn nomadic movements, migration and in winter were conducted by a combination of visual observations from cars and from counts at observation points at suitable sites. There were several such observation points on our survey routes in places where there were extensive open spaces, occupied by copses, meadows, tundra and agricultural fields. We also made counts on the main mountain passes, watersheds, in the widest parts of the largest rivers valleys and on the coastal plains. The counts covered entire southern parts of the Kamchatka Peninsula within the borders of Elizovo, Ust-Bolsheretskiy, Milkovski, Bystrinskiy and Ust-Kamchatskiy districts. In Olga Bay (the Gulf of Kronotsk) counts in the year 2005 were conducted by collaborators from Kronotsk Nature Reserve, mainly A.P. Nikanorov. Observations lasted from 1 to 8 hours. Some observation points near towns Petropavlovsk-Kamchatskiy and Elizovo were visited several times. Sometimes we used feral pigeons as lures to attract Gyrfalcons, which considerably increased the chances of sightings, for example, in forested areas.

Results and Discussion

Borders of the Gyrfalcon breeding distribution in Kamchatka

Practically the entire continental part of land adjoining the Kamchatka Peninsula from the north (the Koryak Mountains, Parapolskiy Dol and Penjina River basin) is included in the Gyrfalcon breeding range. Within this region there were more than 40 places where we obtained summer records of Gyrfalcons, found territorial pairs, broods or nests. Within the borders of the Koryak Autonomous district there are no large areas without territories of Gyrfalcons, though there are differences in nesting densities. In large intermountain depressions typified by lake, bog and tundra landscapes, Gyrfalcons breed, sometimes in isolated 'clusters', on rock outcrops (which are scarce) and in riverside forests.

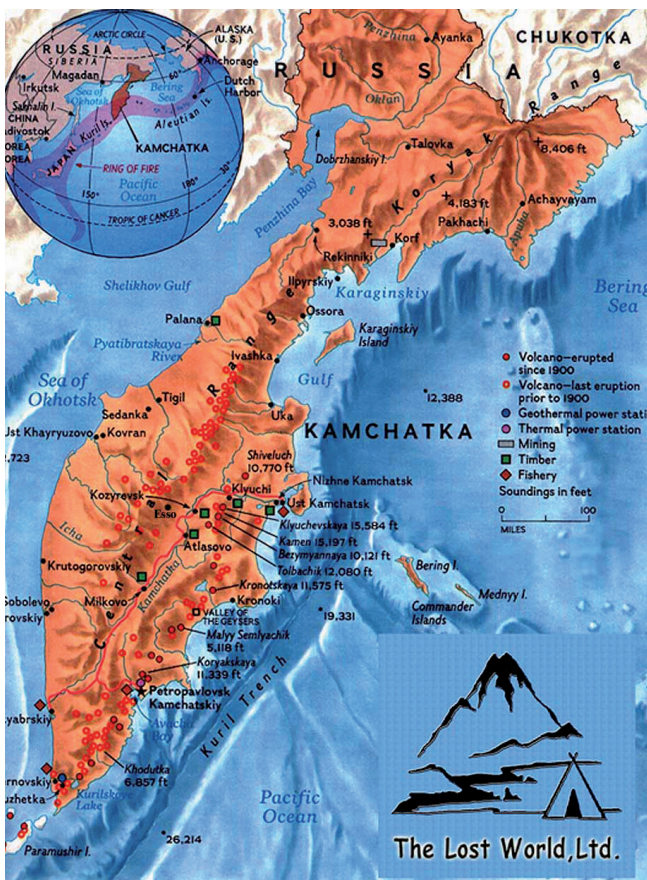
There are different opinions regarding whether the Kamchatka Peninsula is included in the breeding range of the Gyrfalcon. The absence of descriptions of nests in publications from Kamchatka has caused doubts in reliability of their breeding records. In last recent reviews of the Gyrfalcon distribution in northeast Asia, the Kamchatka Peninsula is either completely excluded from the breeding range (Krechmar & Kondratiev, 1996; Andreev, 1998) or it's limited to the northernmost part of the peninsula (Potapov & Sale, 2005). We have analysed the published data on summer finds of Gyrfalcons in the Kamchatka Peninsula, researched archive material from diaries and also collected information from local people. We identified 22 active nests from the Kamchatka Peninsula; 14 of these were in the most northern regions of peninsula where the Gyrfalcon distribution is similar to the adjacent in continental districts, whilst another eight nests are described from southern regions of Peninsula. In the process of investigation of these nests during 2005 and 2006 we found another six active nests. Thus, we know there are certainly at least 29 Gyrfalcon territories in the Kamchatka Peninsula. In addition, taking into account abandoned nests, records of broods, adult and young birds we have designated another 30 sites, where the Gyrfalcon probably occurs. This is evidence not of occasional breeding of the Gyrfalcon in the Kamchatka Peninsula but of their regular breeding throughout the entire peninsula apart from the southernmost edge.

These Kamchatkan nest discoveries, the southernmost nesting sites of the Gyrfalcon within the species range, are in accordance with the known phenomenon of the latitudinal inversion of the ranges of Arctic birds in Kamchatka. Penetration far to the south along the western Pacific shore of many birds of Arctic and Subarctic origin is caused by a combination of severe climatic conditions, formed under influence of the cold oceanic stream, cold seas and orographic barriers in North-Pacific shore of Asia (Lobkov, 2003).

Preliminary population estimate

The territory of the continental region of Koryakia is 222,300 km² and the entire area is considered suitable for breeding. We consider the territory of the Kamchatka Peninsula in total to be 250,000 km² and from this area we exclude the area of coastal lowland swamp-tundra along the Western-Kamchatkan Plain (at least 30,400 km²), in the Central Kamchatkan Plain (8400 km²) and on some large coastal lowlands in the mouths of rivers of Eastern Kamchatka (560 km²), where Gyrfalcons certainly don't breed and where there are no suitable breeding sites. In addition, the southernmost margin of peninsula (2250 km²) should be excluded too because Gyrfalcons are absent there. Thus, for the Kamchatka Peninsula the potential breeding area covers 208,390 km², while total area of the Kamchatkan-Koryak region that suitable for breeding Gyrfalcons is 431,690 km².

An estimation of the Gyrfalcon population can be made by extrapolation of the data for the period 2001-06 from the survey polygons (i.e., a plot of 18,000 km² on the Kamchatka Isthmus and plots of 8,077 km² and 10,108 km² in the south of the Kamchatka Peninsula), which comprises only 8.4% of the suitable breeding area for the Gyrfalcon within the boundary of the Kamchatkan-Koryak region. Therefore we consider our calculation to be a preliminary estimation of the Gyrfalcon population status. In the first method to estimate the population we extrapolated from data obtained in the plot on the Kamchatka Isthmus to the adjacent continental regions of Koryakia and the northern part of Kamchatka Peninsula, because the distribution of Gyrfalcons in these regions is rather similar. However, because Gyrfalcon distribution in the southern part of the Kamchatka Peninsula (i.e., below 58° N) is somewhat different we extrapolated from the data in the other two plots. The second method of estimating the population is based on the average breeding density found in the Kamchatkan-Koryak Gyrfalcon population, expressed as km² per breeding pair. The calculated mean density of Kamchatkan-Koryak Gyrfalcon population was 878.2 km² (including unconfirmed nest sites) to 1058.9 km² (based on confirmed nests) per breeding pair (Table 1).



Map of Kamchatka and adjacent continental area of Koryak



Siberian Gyrfalcon (Photo: Dr. Yuri Artukhin)

Table 1 Estimation of Kamchatka-Koryak breeding population of Gyrfalcons

	Population estimate (breeding pairs)			
	Extrapolation from survey plots		Estimated from breeding density	
	min	max	min	max
Continental region of Koryakia	173	272	210	253
Kamchatka Peninsula	157	392	197	237
All region	330	664	407	490

From Table 1 we can see that the size of the Kamchatkan-Koryak population of the Gyrfalcon is presently about 500 (330–660) breeding pairs. This estimation confirms existing notions that the Kamchatkan-Koryak population of the Gyrfalcon is one of the biggest and most important across the global range of the species. Existing estimations of the Gyrfalcon in different regions of its range (Potapov & Sale, 2005), indicates that the Kamchatkan-Koryak population consists of 7–19% of Russian population and 3–8% of the world population.

Distribution and number of Gyrfalcons outside the breeding season

Migrating, wandering and wintering Gyrfalcons can be found over the entire Kamchatka-Koryak region but their distribution is uneven. Most birds from the northern part of the region, with short-daylight hours and snow cover in winter, wander to more southerly districts, mainly along the Kamchatka Peninsula. The number of Gyrfalcons in the northern region decreases in autumn and winter, especially in December and January, and from September-October numbers increase considerably everywhere on the Kamchatka Peninsula. The main areas of sightings on the Kamchatka Peninsula are given in Table 2, though it's possible to

meet them practically everywhere at suitable sites (in the presence of open spaces, large water bodies and large settlements).

In the winters of 1985 and 1986, in parallel with an international count of Steller's Sea Eagles, we conducted the first count of wintering Gyrfalcons in Kamchatka. Questionnaires distributed to participants of the count requested, in addition to data on the Steller's Sea Eagles, an estimate of the number of Gyrfalcons in an area selected by them. We derived information for 42,000 km² in 1985 (15.7% of the peninsula) and for 47,000 km² in 1986 (17.5%); from these areas 600-700 Gyrfalcons were estimated. Extrapolating from this data, excluding the area where Gyrfalcons are not found, we suggest that 3-3,500 birds winter across the entire Kamchatka Peninsula (Lobkov, 2000; 2003). This exceeded existing estimations of the number of Gyrfalcons in the whole territory of the ex-USSR (Galushin & Peterva, 1982; Pererva, 1984). It is clear that the number of Gyrfalcons in Kamchatka in autumn and winter is considerable and it is higher than the number breeding in the region, possibly because Gyrfalcons from other regions concentrate in Kamchatka. Indeed, Gyrfalcons ringed as chicks in Alaska have been caught in Kamchatka in winter (Lobkov, 1978; Artyukhin *et al.*, 2000). Also, Gyrfalcon which migrate from Alaska to the Shantar Islands pass through Kamchatka (McIntyre *et al.*, 1994). We have also heard reports that in autumn 2005, in the Olyutor region, local people have caught a Gyrfalcon marked in Greenland.

The Gyrfalcon in autumn-winter in Kamchatka.

In autumn and at the beginning of winter 2005 we covered 6,800 km searching for Gyrfalcons from Petropavlovsk-Kamchatskiy to Ust-Bolsheretsk, Esso and Ust-Kamchatsk, i.e. practically everywhere, where there are roads. Not a single Gyrfalcon was recorded. Additionally, 278 hours of observations were spent at 31 points, where 11 Gyrfalcons were counted. Comparison with analogous indices obtained in 1975-76 and in 1995-98, suggests that there has been a decrease in the occurrence of Gyrfalcon in the south of Kamchatka Peninsula.



Siberian Gyrfalcon (Photo: Dr. Yuri Artukhin)

Table 2 The number of Gyrfalcon sightings in autumn and winter (September-March) on the Kamchatka Peninsula in 1971–2006

Orographic areas and sea coasts	Number of registration	%
Sea of Okhotsk coast	77	14.7
West Kamchatka lowland	187	35.7
Sredinnyy ridge	4	0.8
Central Kamchatka Lowland	6	1.1
Eastern volcanic area	32	6.1
Eastern coastal plane	173	33.0
Pacific Ocean coast	45	8.6
Total	524	100.0

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Saker Falcon Trade and Smuggling in China

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Introduction

China possibly has the largest breeding Saker Falcon population of any country in the world, though it is difficult to obtain accurate population estimates for any country in the species' Central Asian breeding range (Dixon, 2005). Certainly, significant breeding numbers occur across the vast Tibetan-Qinghai plateau encompassing parts of northern Sichuan and Gansu, whilst the species also breeds in the semi-deserts and mountains of Xinjiang (Ma *et al.* 2006) and the steppes of Inner Mongolia. In addition to the breeding population Sakers from breeding grounds in Kazakhstan, Russia and Mongolia occur throughout winter and/or during passage in these areas, but as with the breeding

population there is no data available to quantify the size of the passage and wintering population in China. Nevertheless, it is believed that the Chinese Saker population is in decline due to serious poaching for falconry (MacKinnon & Phillipps, 2000), though data quantifying the decline and evidence to ascertain its cause, or causes, is sadly lacking. A number of potential factors could have a detrimental impact on breeding and wintering Saker Falcons in China, including large-scale habitat changes, loss of food supply, electrocution from power lines and poaching for the falconry trade. In this article we reveal the scale of poaching that occurs in China, which leaves us in no doubt that this has a serious impact on the conservation status of the Saker Falcon in the country.

The falconry tradition dates back very early in China and the history of hawking can be traced back to around 1500 B.C. (Ye *et al.*, 2002). However, since the passing of legislation in 1989 hunting with falcons and hawks is now illegal in China and the traditions are gradually being lost. Despite this, falconry still exists in China and it is estimated that there are some 500 falconers

in the country, mainly in the northwest, north and northeast utilizing at least 14 different species of birds of prey (Ye *et al.*, 2002). Saker Falcons are not widely used as hunting birds in China and when they are used it is mainly by peasant farmers to hunt hares. There is no market within China for wild-caught Saker Falcons, so the trapping of this species is conducted wholly for international trade, the end point in a chain of traders being Arabian falconers. The continued demand and high prices paid for wild-caught Saker Falcons from Arabic falconers fuels this trade.

The scale of illegal trade

Saker Falcons have been trapped in China for export to the Middle East since at least the early 1990's, beginning in Xinjiang and then spreading to other regions such as Qinghai, Ningxia and Inner Mongolia by the end of the decade (Li *et al.*, 2000). As with any illegal trading activity it is extremely difficult to assess the true scale of the smuggling operations and the number of detected cases probably represents only a small proportion of the total trade but over the period 1992-98 a total 947 Saker Falcons were confiscated in China and about 2000 smugglers were arrested (data in Li *et al.*, 2000). It has to be said that in China it is difficult to get verifiable information on seizures and according to the Xinhua News Agency, in the four years from 1992-95 customs and police seized over 1000 smuggled falcons and caught some 3000 poachers (mostly local farmers) in Xinjiang, Gansu and Qinghai alone (*Beijing News*, November 23rd 2006). These figures give some indication of the scale of falcon trapping in China and the extent to which local farmers have become engaged in the trade to supplement their incomes in the poorest regions of the country currently affected by drought and desertification. There are complications associated with enforcing national Chinese Wildlife Protection Law in the autonomous regions of northern and western China where ethnic cultural and religious traditions can result in an otherwise illegal wildlife trade being tolerated. However, the problem isn't driven by Chinese nationals but by foreigners who arrive in the country, mainly from Pakistan and Middle Eastern countries, and pay locals to trap and keep the birds before they are finally exported. The penalty meted out to foreigners caught trapping Saker Falcons is usually so small that it offers no discouragement (Li *et al.*, 2000) and the procedures involved with prosecuting foreigners is so complex and expensive that local police forces cannot afford to deal with foreign-related falcon smuggling cases (*Beijing News*, November 23rd 2006).

Smuggling routes

Originally much of the transportation was done by air with Saker Falcons being smuggled out of China directly from Urumqi or via Beijing to destinations in the Middle East such as Sharjah in the UAE or

Islamabad in Pakistan (Li *et al.*, 2000). In some cases birds are transported by smugglers to these destinations via second countries such as Thailand and Singapore. However, since 2001 the Chinese government has intensified its operations against the falcon smugglers and increased security at airports following the attacks of 9/11 has meant that the criminals have been forced to change their smuggling routes out of the country or to use smaller regional airports such as at Tianjing, Qingdao, Guangzhou and other cities (*Beijing News*, November 23rd 2006). Typically the smugglers pack the falcons in their luggage, often with their eyes stitched closed, and under such appalling conditions many birds do not survive the long flights.

Many birds are transported by road across the Xinjiang-Pakistan border, with birds being conveyed here from other parts of China. Kunjirap Highway Port in the Kashgar prefecture of Xinjiang is frequently used by falcon smugglers and once into Pakistan the birds are often passed along a chain of traders and dealers on their passage to Arab countries.

Poaching methods

Typically, foreign nationals posing as tourists or businessmen come to China to purchase Saker Falcons from local poachers. Most come from Pakistan and some bring their own trapping equipment to catch Saker Falcons themselves. The relatively high income generated by trapping and selling falcons encourages locals to participate in this illegal activity and Chinese-foreigner joint hunting troops operate across large areas of the Sakers' habitat during the main passage period in September and November. The trappers and smugglers prefer juvenile and immature Sakers, with blue or green feet; older Sakers with yellow feet are more difficult to train and control. Sakers are caught using bait pigeons or partridges fitted with a harness of nooses or by the use of a dho-gaza net. Poachers sew the eyelids of the falcons shut or hood the birds to make them more docile and bind their wings and legs to prevent them moving (Photo 1). During transportation, where they are smuggled in confined spaces, many of the Sakers die, become seriously injured, diseased or so damaged they are in no fit state to be sold on.



Photo 1. Sakers recovered during illegal transit from China in 2004 (Ma Ming)

Export from China

In the battle between law breakers and enforcers, smuggling and anti-smuggling measures continue to escalate. Initially, the Pakistanis used anti-ultraviolet boxes to hide the falcons, which only revealed large black squares when passed through an X-ray machine. There was a high mortality rate associated with this due to the high temperature and lack of oxygen in the boxes, and once this method was discovered detection rates were very high (estimated as 75-95%), consequently this method of smuggling has declined. Another method was for a Pakistani to wear loose robes and tie Sakers around his waist or thighs. However, experienced security staff were able to see through this trick so this method has also fallen out of favour. Now, the criminals often drug Sakers sleeping pills (or even alcohol) and hide them inside boxes with bottles of frozen water, which will ensure a low-temperature during transportation. They normally drill air holes in these boxes to ensure an adequate supply of oxygen. This method normally requires the co-operation of customs officials at border points, but the customs officers who abuse their position in this way have been successfully prosecuted (e.g. in Urumqi International Airport).

Through Kunjirap Port Sakers have been discovered being transported in cages mixed with chickens, on coaches and in cars. Birds have been found hidden under loose robes, in empty televisions and in thermos flasks. Some smugglers operate small scale operations transporting one or two birds whereas larger amounts are often smuggled by organized gangs of Chinese outlaws (e.g. in Kashi Prefecture).

Price

The reported purchase price of a wild-caught Saker Falcon in Xinjiang, Gansu, Ningxia, Qinghai Provinces averages about US\$625 (range US\$125 to US\$750), whereas prices quoted in Korla, Hejing and Hotan in Xinjiang Province can reach up to US\$5,000. In Ningxia the purchase price of a high-quality falcon has risen from 4,000 yuan (US\$509) in 1991 to 20,000-50,000 yuan (US\$2,543-6,358) in 2001 (*Beijing News*, November 23rd 2006). These quoted falcon prices seem remarkable given that in 2000 Li *et al.* (2000) indicated that in China the purchase price of a Saker Falcon was only “tens of dollars”, suggesting there is some exaggeration in the quoted value of these birds to trappers. Nevertheless, even a value of “tens of dollars”, with the average annual income for a farmer being less than 500 yuan (US\$64) it is easy to see why many locals are keen to be involved in the illegal falcon trade. There may even be some advantage to the foreign buyers in promoting a myth that the falcons can be sold for thousands of dollars in that it will encourage more locals to trap birds and eventually part with them for far less than they anticipated.

Laws in China

Article 341 of Chinese Criminal Law states: “Criminals who illegally poach, slay, purchase, transport, trade any rare and endangered wild animals, when the circumstances are serious, can be sentenced to imprisonment from 5 to 10 years; for particularly grave offences, sentenced to imprisonment above 10 years, together with fines or confiscated property.” (According to the article 3 of the interpretation of law [2000] 37, “serious circumstances” means more than six falcons. “particularly grave circumstances” means more than 10 falcons).

In an example of a crackdown on Saker Falcon smuggling, the Tianjin Customs caught a gang of smugglers and the chiefs were sentenced to death with a reprieve. From August to September in 2000, these smugglers illegally purchased 44 Sakers, bribed and colluded with customs officials, and intended to trade outside China for profit. The principal offenders Mrs. Wang Yuhua and Mr. Zhang Ying were arrested for smuggling rare animals, and sentenced to death with a reprieve, deprived of political rights for life and had all their personal property confiscated (extracted from “*Beijing Youth Daily*” July 30, 2001).

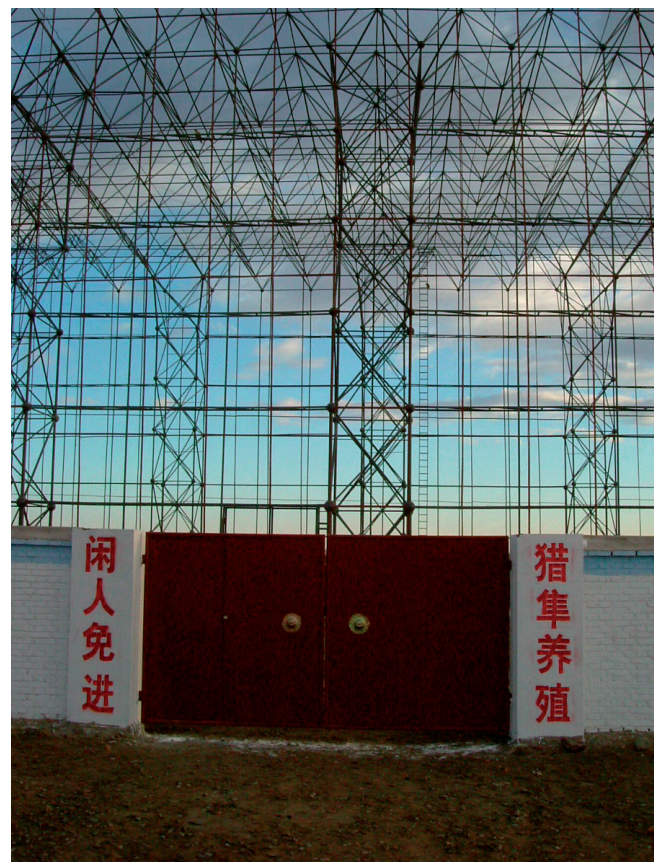


Photo 2. The biggest cage for Saker “breeding” in China. The Chinese words say “Saker Centre”. (Ma Ming).

Trade by the Chinese authorities

Whilst the Chinese authorities patchily enforce the national Wildlife Protection Law in relation to the trapping of Saker Falcons, by sentencing some nationals

to death (albeit reprieved) but failing to prosecute many foreigners, some state departments have even made moves to become engaged in the trade themselves! In 2004 in Qitai County, Xinjiang the Forestry Bureau invested US\$575,000 in a Saker Falcon breeding centre. This “breeding centre” comprises an enormous cage that is completely useless for breeding falcons yet the officials then sought out locals to trap Saker Falcons and take chicks from their nests to put in this cage. The aim of this breeding centre is to produce birds to sell on the international market, yet this facility could never achieve its stated aim and can only be a temporary holding place for wild-caught birds before they are sold on. So far, the number of Sakers legally captured and exported from in Xinjiang is at least 60-100 birds annually, with dead specimens provided to museums, schools, research institutions, and live specimens to other “breeding centres”, bird markets, wildlife parks and zoos. Alarmingly, there are now other people and companies starting to develop this same design and deal in Saker Falcons for profit.

Since 1981 China has been a signatory to CITES and the country has been engaged in international trade of wild-caught falcons. This trade has been far from transparent and yet China was exempt from the restrictions placed on other countries by the CITES Animals Committee in their recent Significant Trade Review. Details of the number, age and origin of Saker Falcons legally

exported by China with CITES permits are lacking but the Xinhua News Agency reported that “owing to the government’s protective policy, from 1983 to 2001 China only exported 180 falcons to Middle Eastern countries”. This low number has been cited as one of the reasons for the rampant illegal trade (Beijing News November 23rd 2006) and raises the worrying prospect that a legal trade could be promoted as a tool to reduce the demand for illegally trapped birds. Given the current lack of expertise in captive breeding in China and the ridiculous, ill-thought out “breeding cages” that have been developed it is possible that any legal trade would simply rely on the sale of wild-caught birds.

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Highly Pathogenic Avian Influenza H5N1 Phenotype Infection in a Saker Falcon (*Falco cherrug*)

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Introduction

Avian influenza is an infectious disease transmitted by a virus of the family *Orthomyxoviridae*. The avian influenza family is divided into A, B and C phenotypes. Only the avian influenza virus phenotype A is of any significance in veterinary medicine. The influenza virus contains two surface antigens which are important for their identification and control. The haemagglutinin (H) is responsible for the capability to agglutinate erythrocytes and to attach and penetrate the host cell and the neuraminidase (N) is involved in the release of newly formed viral particles from host cells (Ritchie, 1995). Currently there are 16H (H1 to H16) and 9N (N1 to N9) phenotypes identified in free-living birds and poultry throughout the world (WHO 1980; Spielman

et al., 2004). Avian influenza virus phenotypes H5, H7 and H9 represent a high pandemic potential (Webster & Hulse, 2004). The virus is commonly transmitted through direct contact with faeces and aerosols from infected birds and through contaminated water in overcrowded ponds and lakes (Ritchie, 1995).

In the past 8 years, different avian influenza strains have been isolated in the Middle East mainly from domestic chickens (*Gallus domesticus*) (Naem, 1998; Wernery *et al.*, 2001), quails (*Coturnix japonica*) and houbara (*Chlamydotis undulata*) and red-crested (*Eupodotis ruficrista*) bustards (Wernery *et al.*, 2001). In addition, the highly pathogenic subtype H7N3 was isolated from a peregrine (*Falco peregrinus*) falcon (Manvell *et al.*, 2000). This was the first report of the isolation of a highly pathogenic avian influenza phenotype in a falcon in the Middle East. The current report is framed around an infection with the highly pathogenic avian influenza virus phenotype H5N1 in a saker falcon (*Falco cherrug*).

Clinical case

An adult, female, saker falcon was presented to the hospital of the Fahad bin Sultan Falcon Center, Riyadh, Kingdom of Saudi Arabia for general examination on the 25th October 2005, with a history of anorexia for the

past two days and the passing of green stained urates. The falcon was imported into the country as a juvenile (< 9 months old) bird the previous year. The presenting falconer was its second owner and, as far as it was ascertained, the falcon had not been taken outside the country for the past year. The bird was mildly dehydrated and weak, but otherwise relatively bright and responsive. Consent was obtained and the falcon was subjected to a comprehensive clinical examination under anaesthesia including physical examination, ventro-dorsal and latero-lateral radiographs and endoscopy of the upper digestive system. Clinical laboratory studies included the collection of blood samples for general haematology and blood chemistry analyses.

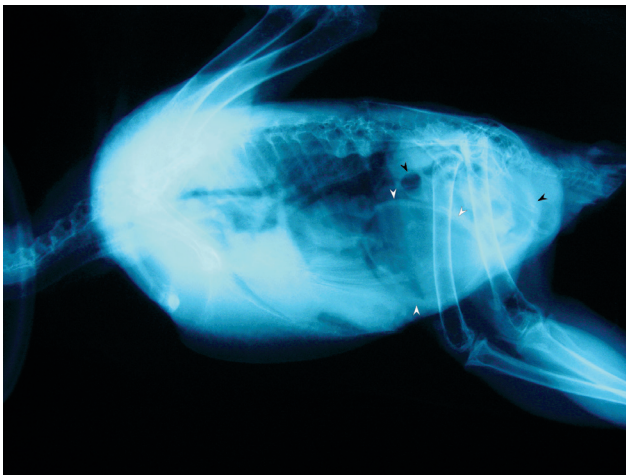


Figure 1. Survey radiograph obtained in the latero-lateral positions showed a severely distended ventriculus together with a distinctly inflamed ventricular wall

Radiology examination showed a distended ventriculus with thickening of the ventricular wall, in addition to mild enlargement of the liver and the spleen. Haematology assays revealed a total white blood cell count within normal range of $7.1 \times 10^9/l$ (mean + standard error of mean) (normal value $5.7 \pm 0.31 \times 10^9/l$, $2.8 - 8.4 \times 10^9/l$, Samour *et al.*, 1996) and a mild heterophilia of $6.6 \times 10^9/l$ (normal value $4.14 \pm 0.24 \times 10^9/l$, $2.18 - 5.96$, Samour *et al.*, 1996) with absolute heterophilia (93%). Approximately 50% of the heterophils showed loss of granulation. The only significant finding in the blood chemistry analyses was a severely elevated AST (242 U/l, normal range 45 – 95 U/l, Jennings, 1996). The owner requested admission for treatment. Therapy included the administration of piperacillin (Pipril, Lederle Lab, UK) 100mg/kg im BID and 1 ml/kg im of a multivitamin preparation (Multivitamin, Arnolds Veterinary Products, UK). Support therapy included the administration of 20 ml of an oral carbohydrate-electrolyte solution (Spark-Electrovet, Vetafarm, Australia) via a stomach tube. The falcon vomited a small amount of this solution immediately after administration. The falcon was placed in an isolation room within a quarantine unit. The falcon was found

dead the following morning. A detailed post-mortem examination was carried out on the same day. Different tissue samples were collected for bacteriology and virus isolation. Bacteriology studies were carried out at the laboratories of the Centre, while histopathology and preliminary virus isolation studies were conducted at the Central Veterinary Research Laboratory (CVRL), Dubai.

Post-mortem examination showed a distended ventriculus with petechial haemorrhages around the isthmus. The liver was slightly enlarged and congested. There was also hydropericardium with mild pericarditis. Both lungs were slightly congested. No significant growth was observed on bacteriology culture. The histopathology report included myocardial necrotic foci with some cells showing intranuclear inclusions, marked haemosiderosis of hepatocytes with some necrotic foci, marked perivascular oedema of the lungs and meningeal congestion. Virology testing was carried out at the CVRL in Dubai. The samples showed a strong positive reaction to the avian influenza virus. Consequently, samples were sent to the Friedrich-Loeffler Institute in Germany for further virology identification studies. The results showed that the virus originally isolated at CVRL was the highly pathogenic avian influenza virus phenotype H5N1. The closest relatives of this particular strain were recent H5N1 isolates from Novosibirsk in Russia and Mongolia.

Discussion

The clinical symptoms displayed by the falcon at the time of admission together with observations made at the clinical examination, the preliminary laboratory results obtained and the post-mortem findings lead to establish a tentative diagnosis of Newcastle disease viscerotropic form (Samour & Naldo, 2004; Samour *et al.*, 2005).

Common post-mortem findings included distension of the proventriculus and thickening of the proventricular wall and petechial haemorrhages around the isthmus. Similarly, such findings have been observed at post-mortem examinations in falcons affected with Newcastle disease (Samour & Naldo, 2004). In the present study, the falcon also showed enlargement and congestion of the liver and bilateral pneumonia.

Due to reports of clinical cases in both humans and avian species in South East and Central Asia during early autumn 2005, a comprehensive biosecurity programme had been set up at the hospital including the daily disinfection of all clinical and hospital facilities using an approved disinfectant (F10, Health and Hygiene, South Africa) and a fogging unit. In addition, all clinical and keeping staff wore protective uniforms including protective clothing, face masks and gloves at all times. Foot baths were placed at the entrance and

exits of all buildings using the same disinfectant (F10). All admissions with suspected viraemia were placed in an isolation facility under strict quarantine rules and access to the room totally restricted. These quarantine and hygiene precautions may have been responsible for containing the virus within the facility and avoiding the infection of members of staff. All personnel were subsequently screened and tested negative. However, testing of all inpatients at the time resulted in five positives birds prompting the destruction of all 37 falcons of various species housed at hospital and moulting facilities.

Wild-caught falcons are still imported into the Middle East, in particular to Saudi Arabia, Kuwait, Bahrain and Qatar. A large number of these birds are trapped in Central Asian countries at the time of the year with the highest incidence of avian influenza cases in both human and birds. There is a need to improve the legislation governing the import and export of birds into these countries and to reinforce the existing laws related to quarantine regulations at border posts. It can be speculated that the falcon may have been infected by eating a migratory bird within the country or by direct or indirect contact with another falcon during a falconry gathering. Although none of these could be definitely confirmed. The need and the use of quarantine facilities and the implementation of biosecurity measures at markets, avian collections and falcon hospitals in the Middle East cannot be overemphasized.

Arabic Falconry and the Illegal Houbara Trade in Arabia

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The houbara bustard in Asia benefits from protection by two international conventions, the Convention of Migratory Species of Wild Animals (CMS) and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The Asian houbara is in Appendix I of CITES, which means that all trade or transportation of houbara across international borders is prohibited, unless sanctioned through a system of permits. All the range States of the Asian houbara are signatories to the CITES convention except Turkmenistan, Iraq, Bahrain and Oman. The Asian houbara is listed in Annex II of the Convention of Migratory Species (CMS). The UAE ratified the CITES convention in 1990 and has recently built up the legal framework to proceed with the confiscation of houbara and other birds illegally smuggled into UAE. The hunting, capture, and transaction of houbara in the UAE fall under a federal law that regulates the movement and possession of individuals of this species.

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In spite of efforts recently made worldwide for enforcing animal trade legislations following the risk of bird flu transmission, large numbers of houbara continue to be trapped, mainly in Pakistan and Iran, and shipped to Arabia for use in training falcons to hunt. Beside the risk of importing deadly diseases into the Arabian peninsula, conservationists are concerned that this live trade may have an impact on the status of the houbara as high as that of falconry and habitat degradation.

The National Avian Research Center (NARC) is the designated facility to receive houbara confiscated by UAE customs authorities. Upon confiscation, the NARC Veterinary Science Department is responsible for the health, welfare, and husbandry of birds housed at the Quarantine Station. Houbara undergo full quarantining procedures and are dealt with in compliance with internationally recognised IUCN Guidelines for the Placement of Confiscated Animals, which include the destroying of diseased and injured birds and release of rehabilitated birds back into the wild. To date, NARC has admitted about 1,500 confiscated houbara at its quarantine station of which less than 50% survived and about 20% were released in UAE, Pakistan, and Iran. Due to the absence of appropriate management and veterinary care during the illegal trade process

from capture to customer, large numbers of birds are diagnosed with various infectious or viral diseases upon arrival at NARC quarantine and euthanasia is often the only acceptable solution.



Figure 1. Dead Houbara resulting from illegal trade

We urge falconers to refrain from utilizing wild caught houbara bustards for falcon training purposes. Various alternative solutions are available such as the use of other bird species and an improvement and modernization of falcon training methods. Tremendous progress has been recently made in the captive-breeding of the houbara and hundreds of individuals are now produced every year in the Middle-East. This allows the potential for the re-stocking and re-introduction of individuals in depleted houbara populations in the Middle-East and it offers a captive-bred alternative to falconers for both hunting and falcon training. All this will help reduce the pressure on wild birds.



Anaesthesia of Falcons with a Combination of Injectable Anaesthesia (Ketamine-Medetomidine) and Gas Anaesthesia (Isoflurane)

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Introduction

The combination of ketamine-medetomidine has been used in a large number of avian species as the sole anaesthetic agent (Lawton 1996, Heidenrich 1997, Lumeij & Deenik 2003, Paddleford 1999, Samour 2000). The combination of ketamine-medetomidine used as an induction agent before isoflurane gaseous anaesthesia in falcons and with atipamezole, an α_2 antagonist, to reverse the effects of medetomidine, has not been previously reported in the literature. Ketamine by itself is a good sedative but a poor anaesthetic, with

poor muscle relaxation and little analgesia, although there is little respiratory or cardiovascular depression (Flammer 1989). Medetomidine has sedative and analgesic properties, but it also has hypotensive, bradycardic and hypothermic effects (Lawton 1996). Ketamine-medetomidine combination provides deep sedation and good muscle relaxation with no arrhythmias or respiratory depression (Jalanka 1989). Isoflurane provides very good muscle relaxation, good analgesia and little respiratory depression (Lawton 1996).

The purpose of this article is to report a safe dose rate of a combination of ketamine-medetomidine as the induction agent and isoflurane as the maintenance agent, with atipamezole, an α_2 antagonist, to reverse the effects of medetomidine, for selected procedures, specifically endoscopy.

A total of 26 clinically healthy saker falcons (*Falco cherrug*) were anaesthetised at Dubai Falcon Hospital (DFH) in October 2004. A combination of 3 mg/kg ketamine (ketavet®, 100 Delvet Pty Ltd) and 0.06 mg/kg medetomidine (Domitor®, Novartis Australasia Pty Ltd) was injected intramuscularly (i.m.) in the pectoral muscle without any physical restraint. When the falcons became unsteady on the perch, they were manually caught and anaesthesia was induced with isoflurane given by mask at 2% and then maintained at 1% (range 0.5-3%) in 800-1100 ml/min oxygen. The clinical examination included: 1) physical examination, 2) faecal and crop parasitology, 3) haematology, 4) endoscopic examination of the lower respiratory tract to manually remove *Serratospiculum* sp. parasites and check for the presence of any other abnormalities. Haematology results were all within normal reference ranges for the species (Samour and others 1996). Endoscopy was performed in the caudal thoracic airsacs and trachea using standard techniques.



Photo 1. A combination of 3 mg/kg ketamine and 0.06 mg/kg medetomidine was injected intramuscularly in the pectoral muscle without any physical restraint.



Photo 2. Falcons became unsteady on the perch after the ketamine-medetomidine i.m. injection.

	Time to (Minutes)						
	Induction period			Recovery period			
	Dropped wings	Sitting down	Loss of balance on the perch	First movement	Head up	Standing up	Keeping balance on the glove
Mean	2:48	3:54	4:29	3:45	4:18	7:22	9:57
SD	1:36	2:32	2:40	1:34	2:06	2:45	2:40
Min	1:12	1:44	2:00	1:05	1:06	2:04	5:40
Max	7:12	13:20	13:25	7:00	7:06	13:2	14:46

Table 1. Anaesthesia parameters (mean, standard deviation, minimum and maximum) in 26 sakers given intramuscular ketamine-medetomidine to induce anaesthesia, isoflurane to maintain anaesthesia and atipamezole as a medetomidine reversal.

SD Standard deviation, Min Minimum value, Max Maximum value



Photo 3. Falcons were manually caught when they became unsteady on the perch.



Photo 4. Clinical examination of falcons included crop parasitology.

At the completion of endoscopy, 5 mg/kg of marbofloxacin (Marbocyl® 10%, Vétoquinol) and 2 mg/kg of carprofen (Rimadyl®, Pfizer) were given i.m. and s.c. respectively and 0.15 mg/kg of atipamezole (Antisedan®, Novartis Australasia Pty Ltd), an $\alpha 2$ antagonist, was administered i.m. All birds in the study were observed carefully during the periods of induction, anaesthesia and recovery and the following information was recorded: weight (kg), time to dropped wings after ketamine-medetomidine injection, time to sitting position, time to loss of balance on the perch, time to first movement after atipamezole injection, time to head up, time to standing up and time to being able to balance on the glove. Anaesthesia was scored as good in all cases. . Anaesthesia parameters are summarised in Table 1.

A smooth induction with minimal stress was observed after i.m injection of ketamine-medetomidine ($4:29 \pm 2:40$ minutes). Good muscular relaxation was noted during the gaseous induction period after 2 minutes of isoflurane at 2%. Isoflurane was reduced at 1% after 2:00-4:30 minutes. The maintenance period lasted for $18:11 \pm 5:02$ minutes. The recovery period lasted for $9:57 \pm 2:40$ minutes. The recovery was smooth and uneventful. Normally, birds lifted up their tails and their heads to adopt a sitting position, after $7:22 \pm 2:45$ minutes they stood up and after $9:57 \pm 2:40$ minutes they were able to keep balance on a glove. We recommend that the falcon should be left resting on a block for a further 5 minutes before transportation in order to avoid residual ataxia.

The dose rate presented in this article for ketamine-medetomidine and isoflurane, with atipamezole as a reversal agent of medetomidine, provided good anaesthesia for clinical examination and endoscopy in falcons. This anaesthetic protocol proved to be safe and caused little apparent stress to the birds. Further studies should be carried out to see if the anaesthetic response varies with different species. The use of medetomidine is preferable to xylazine because medetomidine is more potent, so a lower dose rate is required, and it can be antagonized by atipamezole, which is more effective than yohimbine and can be administered



Photo 5. The combination of ketamine-medetomidine and isoflurane, with atipamezole as a reversal agent of medetomidine, provided good anaesthesia for endoscopy in falcons.

i.m. (Paddleford 1999). Ketamine may give up to 30 minutes anaesthesia (Samour 2000), but after a total induction period (injectable + gaseous induction) of $7:15 \pm 3:06$ minutes and a maintenance period of $18:11 \pm 5:02$ minutes, when atipamezole was injected ketamine was already metabolised and wing flapping for several minutes (Samour 2000) was not observed in any case.



Photo 6. Falcons lifted up their tails and their heads to adopt a sitting position during the recovery period.

Using a combination of ketamine-medetomidine as induction agent allows: 1) a smooth induction with good muscle relaxation which results in no stress for the falcon and, consequently, less probability for the staff and the bird to be hurt during physical restraint, 2) a decrease in the isoflurane concentration required to maintain anaesthesia, which diminishes the risk of cardiopulmonary collapse by excessive concentrations of inhalant anaesthetics (Paddleford 1999) in falcons and reduces exposure of veterinarians to isoflurane, excessive exposure to which can lead to an increased risk of genetic damage in humans (Hoeruf 1999).



Photo 7. Approximately 10 minutes after atipamezole injection, falcons were able to keep balance on a glove.

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Non-Invasive Indirect Blood Pressure Measurements in Falconiformes

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Summary

The measurement of the indirect systolic blood pressure of anaesthetised falcons is described. Values obtained were significantly higher than those published from other species and were used by the authors as guidelines for fluid therapy in hypovolaemic patients. The mean systolic blood pressure measured was 202mmHg +/- 27.57.

Materials and Methods

Forty seven falcons of varying age, sex and weight were included in this study. Species included 16 Gyr falcons (*Falco rusticolis*), 3 Peregrine falcons (*Falco peregrinus*), 25 Gyr x Peregrine hybrids and 3 Gyr x Saker hybrids (*F. rusticolis* x *Falco cherrug*). All birds were presented for a “pre-purchase” check and the owners had reported no clinical abnormalities.

Anaesthesia was induced with 5% isoflurane (“Attane” – Minrad Inc, USA) and oxygen by mask and maintained on 2.5 – 3% isoflurane. No pre-anaesthetic drugs were administered. The birds were placed in dorsal recumbency and all blood pressure (BP) measurements were taken after 5 minutes of anaesthesia.



Figure 1: Equipment required for measurement of indirect blood pressure measurement in birds.

An inflatable paediatric BP cuff (Arden – Welch-Allyn, USA) was placed on the left wing at distal humerus. Care was taken to ensure no feathers were trapped between the cuff and the skin. Birds over 1 Kg body weight were fitted with an “Arden Neonate 2 cuff” with

a 4.2 to 7.1cm range and birds less than 1 Kg body weight were fitted with a “Arden Neonate 1 cuff” with a 3.3 to 5.6 cm range. The cuff width was at least 40% of the diameter of the distal humerus at the point of cuff placement, as recommended by Lichtenberger 2005.



Figure 2: Cuff placed at the distal humerus.

The *ulnaris superficialis* artery was located as it crossed the ventral surface of the proximal radius and ulnar. Ultrasound contact gel was applied over the artery and used to move feathers from the field. An 8.0MHz ultrasonic Doppler probe with headphones (Vmed technology, Redmond, USA) was used to detect blood flow in the vessel.



Figure 3: Picture showing correct placement of probe.

The cuff was then inflated using a sphygmomanometer until no blood flow was detected in the artery. The cuff was slowly deflated and at the point when an audible pulse was heard a pressure reading was taken from the sphygmomanometer. Five consecutive readings were taken from each bird.

Results

The average indirect systolic BP of all birds was 202mmHg (SD 27.57). The average for birds less than 1 Kg (in which the smaller cuff was used) was 194mmHg while that for birds over 1Kg was 206mmHg. There was no significant difference using parametric T and F tests ($P>0.05$) between Gyr falcons and Gyr Peregrine hybrids, between sexes and also between results obtained with a large cuff and a small cuff.



Figure 4: Measurement of blood pressure using a sphygmomanometer.

Discussion

This work gives an estimate of indirect systolic pressure in falcons. The pressure can be affected by many factors including anaesthesia, temperament of the bird and handling methods. These measurements were taken under anaesthesia to prevent injury to the bird, its' plumage when placing the BP cuff and also the handler. It was also felt that anaesthesia would give more consistent results as it would eliminate hypertension related to handling stress and be more practically applicable in the Middle East where most birds are examined under isoflurane anaesthesia. Measurements were taken after 5 minutes of anaesthesia to reduce the variable effects of handling during anaesthetic induction.

Birds have larger hearts, strokes volumes, cardiac outputs and mean arterial pressures than mammals of comparable size (Smith *et al* 2000). Lichtenberger

(2004) stated that normal systolic arterial blood pressure for psittacines at her clinic ranged from 90 to 140mm Hg and that she would consider a bird with levels below 90mmHg to be hypotensive. These measurements are markedly different from the results we have obtained in falcons where the average overall systolic BP was 202mmHg with a range of 150 to 261mmHg. These higher values may reflect the differing cardio-vascular physiology of a predator required to hunt "on the wing" compared to more sedentary pet psittacines. In support of this Straub *et al* (2003) stated that aortic systolic blood flow velocities in anaesthetised buzzards were significantly higher than in psittacines. It is also worth noting that the birds in this study were mostly "unmanned" and were subjected to a car ride before restraint for anaesthetic induction. Thus it is likely this environment had stimulated their sympathetic nervous system. Wilson and West (1986) showed that noradrenaline had a significant effect in raising the mean arterial blood pressure of ducks when given intra-venously. Lichtenberger also used a "Parks" unit in her work but it is unclear if anaesthesia was used. This differs from our use of the "Vmed" Doppler probe which may also have contributed to the differing results

Conclusions

The authors would consider mean arterial blood pressures below 150mmHg in a falcon to be hypotensive using this methodology. Hypovolaemic animals presented to the author with venous refill times of over 2 seconds in the ulnar vein have had mean arterial blood pressures of between 90 and 120mm Hg when measured using the above method. We have subsequently used a minimal value of 150mm Hg as a guide for fluid administration volumes in hypotensive birds. The use of indirect blood pressure monitoring allows clinicians to treat hypovolaemic patients more accurately, often with bolus fluids, avoiding the difficulties of continuous intra-venous infusion.

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Use of Paromomycin in the Treatment of a *Cryptosporidium* Infection in Two Falcons

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Summary

Cryptosporidium sp is an Apicomplexa protozoa that causes damage to the epithelial cells of the gastrointestinal, respiratory and urinary tracts in vertebrates. It has been reported in different avian orders but has not been reported in Falconiformes. This paper describes an upper respiratory infection and conjunctivitis caused by *Cryptosporidium* sp in two falcons, and its successful treatment with paromomycin at a dose of 100 mg/kg twice a day orally.

Introduction

Cryptosporidium are protozoa, included in the phylum Apicomplexa, class Sporozoa, order Eucoccidiiida. There are three species that affect different avian species *Cryptosporidium baileyi*, *C. meleagridis* and *C. parvum*. Cryptosporidiosis has been described in several avian orders (Nakamura et al., 1988; O'Donoghue, 1995; Kwon et al., 2005; Rohela et al., 2005), but it has not been described before in Falconiformes.

The *Cryptosporidium* life cycle is direct and monoxenus. The cycle starts with the inhalation or ingestion of oocysts (4-8 µm in diameter), containing 4 sporozoites. Following release of the sporozoites, trophozoites are formed, as the epithelial cell encapsulates each sporozoite within its membrane. The trophozoite evolves to a meront type I which releases 4 to 8 merozoites, at this point the merozoites can form new trophozoites continuing the asexual cycle or forming a meront type II which initiates the sexual phase of the cycle. The meront type II releases more merozoites that become either a microgamonts or macrogamonts. The microgamonts fertilize the macrogamonts forming oocyst that may be excreted or re-infect the host. The endogenous phase occurs in the luminal border of epithelial cells of the respiratory, urinary and gastrointestinal tracts. Their location has been described as intracellular, but extra-cytoplasmic. In the respiratory tract the parasite affects the mucociliary function causing rhinitis, conjunctivitis, tracheitis, sneezing and dyspnoea. In the gastrointestinal tract it has been recorded affecting, salivary glands, the small and large intestine and cloaca.

Clinical report

A 3 month old, female gyr falcon (*Falco rusticolus*), kept in a large bird of prey collection, of mixed species, presented to with anorexia, respiratory difficulties and a bilateral ocular discharge. The bird was bright and alert, perching normally but showing mild inspiratory and expiratory stridor and bilateral conjunctivitis.

The bird was anaesthetized and the trachea was scoped. A mild inflammation with mucus accumulation was noted in the proximal trachea. Swabs were taken from the trachea. The bird was intubated and an air sac tube placed. An intravenous catheter was placed. An ophthalmological examination was performed and identified a mild conjunctivitis with inflammation of the third eyelid. Swabs were taken from the conjunctiva. Smears were examined in-house using a Diff-Quik stain. They showed a small number of extracellular rods, some epithelial cells, mucus, some inflammatory cells and a number of unidentified pale staining ovoid cyst like structures (Figure 1). Swabs and unstained smears were submitted for bacteriology, culture and sensitivity, cytology and PCR.

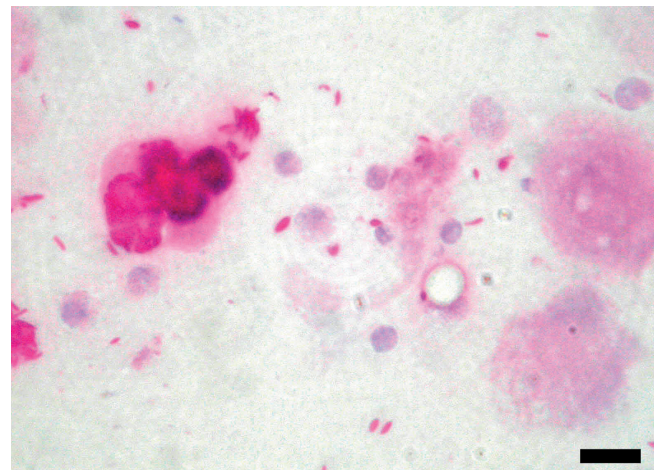


Figure 1. *Crypto conjunctival cytology: Cytology preparation from conjunctival swab in gyr falcon with bilateral conjunctivitis, stained with Giemsa, the Cryptosporidia are the pale blue circular structures of 4 micrometers diameter (scale bar 10 micrometers) (Picture courtesy of Mark Stidworthy).*

Treatment was started with itraconazole 10 mg/kg BID PO, marbofloxacin 10 mg/kg BID PO, meloxicam 0.2 mg/kg SID PO, and nebulisation with F10, diluted 1:250 with saline 0.9 %. The bird was hospitalised and, over the next 5 days a slight improvement was observed in the clinical signs, although the bird remained anorexic (but the anorexia was still present). The lab results showed presence of *Cryptosporidium* sp, confirmed by positive fluorescence after auramine staining (Kang et al., 1996), the PCR revealed *C. parvum*. Bacteriology yielded a light growth of *Klebsiella* sp. sensitive to the antibiotherapy in use. Due to the slow improvement, paromomycin (Humatin®, Parke Davis, France) was

added to the therapy at a dose of 100 mg/kg PO BID for 1 week, tablets were crushed and given mixed with food by crop feeding. A significant improvement was observed 48 hours after initiating therapy with paromomycin. Complete resolution of the respiratory signs allowed the air sac tube to be removed. The bird was discharged 24 hours later, by which time she was eating. Treatment was pursued with paromomycin (5 days), marbofloxacin (5 days) and itraconazole (2 weeks). 7 days later, clinical signs recrudesced; a further 7 days course of paromomycin was therefore administered. On completion of the medication the owner reported complete resolution of the clinical signs. Ten months later the conjunctivitis recurred again, although on this occasion the respiratory signs were less severe, paromomycin treatment was repeated, in conjunction with meloxicam and itraconazole, with resolution of the clinical signs.



Figure 2. Hybrid pre tx: Conjunctivitis in a hybrid gyr/saker falcon due *Cryptosporidium* infection.

The second case was a hybrid Gyr/Saker falcon (*F. rusticolus* x *F. cherrug*), adult, The bird was a 13 year old, captive bred male; this falcon was kept as part of a large collection of falcons, in an aviary with a female, at the time of presentation. The female did not show any clinical signs. The bird presented bright and alert, with a mild bilateral conjunctivitis and sinusitis; the owner did not report any other abnormalities. The bird was still eating, and behaving normally in the aviary. The bird was in good body condition. Mild conjunctivitis was observed but no other abnormalities were detected on physical examination (Figure 2). Swabs from both conjunctivae were collected and in-house Diff-Quik stained. A number of small size pale ovoid structures were observed. The swabs were sent to an external lab that confirmed the presence *Cryptosporidium* sp organisms by positive fluoresce with auramine stain associated with mucus and exfoliation of epithelial cells, secondary bacterial colonization was observed. The PCR identified the protozoa as *C. baileyi*. Treatment was started on paramomycin 100 mg/kg PO BID for 7

days, the bird was discharged, the bird was seen again after 10 days, observing a complete resolution in the clinical signs (Figure 3).



Figure 3. Hybrid post tx: Eye appearance of the hybrid gyr/saker post treatment.

Discussion

There are a number of different factors that can affect the presentation and severity of the clinical signs in *Cryptosporidium* infections:

The resistance of the oocysts:

These parasites are resistant in the environment, they can remain viable for 2-6 months at temperatures of 4° C, they are, however, quite sensitive to desiccation and temperatures below 0° C. They also show significant resistance to chemical disinfection, and their small size makes effective water filtration methods (in water treatment) difficult.

Husbandry:

Both cases shared similar husbandry: both birds were part of a large bird of prey collection, consisting of a mixed population of species, including many other falcons of similar breeding.

The infectious dose:

Studies comparing experimental and natural infection have demonstrated that small numbers of oocysts can cause infection and that infection is not necessarily a function of the number of organisms. Experimental studies in chickens have revealed that 100 oocyst given orally can cause a severe clinical disease.

Host species:

The organs affected and the severity of the infection appears to be related to the species affected.

Age:

There is reducing susceptibility to the infection and a diminished severity of the clinical signs with an increase in the age. In the first case the young age of

the Gyr falcon may have contributed to the severity of the clinical signs. The clinical signs in the older bird were far less severe.

Immune status:

In humans, and other species, there seems to be a clear relationship between the immune status and the development and severity of the clinical signs caused by *Cryptosporidium*. In both these cases the species affected, a gyr falcon and a hybrid gyr/saker, both demonstrate a predisposition to immunosuppression, arising through stress. This may therefore be an important factor to consider.

Association with other pathogens:

Cryptosporidium has been considered (as) an opportunistic pathogen in many species. In this case the presence of *Klebsiella spp*, makes it difficult to quantify the role of *Cryptosporidium* as a primary pathogen.

Diagnostic methods for *Cryptosporidium* include direct visualization from faeces or swabs taken from affected epitheliums in the respiratory tract, additional diagnostic methods include several staining methods such as safranin-methylene blue, auramine and mepacrine using potassium permanganate and carbol fuchsin as counterstains. Direct immunofluorescence staining, ELISA or PCR which allows the identification of *Cryptosporidium* species.

Paromomycin is an aminoglycoside antibiotic that has been used in mammals for *Cryptosporidium* prophylaxis (Gookin et al., 1999). The antiprotozoal action of paromomycin is presumably the inhibition of protein synthesis. The real mechanism of action is, however, completely unknown in cryptosporidiosis. Paromomycin does not clear intracellular infection, but it reduces the elimination of new infective oocysts and has been shown to be more effective than other chemotherapeutic agents (Giacometti et al., 1999; Sreter et al., 2002). Renal failure in cats has been reported associated with oral paromomycin therapy, although altered absorption due to intestinal mucosa damage may have been involved in these side effects (Gookin et al., 1999). Paromomycin has been used in psittacines at a dose of 100 mg/kg orally BID (Clubb, 1996), with success in controlling clinical signs. Higher doses have been reported in laboratory studies performed with rodents without side effects. In the present case, the treatment was effective at this dose and a rapid response was evident within 48 hours.

There is a controversy in the efficacy of these drugs in these two cases, the paromomycin has been shown very poor intestinal absorption in mammals when given orally, due to this fact its efficacy in mammals when the protozoa is affecting the respiratory and renal systems is limited.

Paromomycin has been used in combination with azythromycin to treat *Cryptosporidium*, in humans with AIDS, with success. Other drugs such as nitazoxanide have been used in immunosuppressed models, with relapse of the infection as soon as the therapy was discontinued. Mangiferin has showed similar anticryptosporidial activity to paromomycin, at the same dose, used against *C. parvum* in rats. Enrofloxacin have been used in chickens, showing lower efficacy reducing the oocysts output than paramomycin (Sreter et al., 2002)

Prevention of *Cryptosporidium* infections through environmental control may prove quite difficult due to the resistance of the parasite to extreme temperatures and several disinfectants, direct exposure to sunlight and low levels of humidity decrease the load of *Cryptosporidium* in the environment. Peroxygen-based disinfectants have showed high efficacy inactivating *Cryptosporidium parvum* oocysts. If the disinfection is not possible the bird's exposure to the parasite should be reduced by avoiding areas previously occupied by infected animals. Attempts to develop vaccination in poultry have been not consistent in the development of immunity.

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Mycoplasma Infections in Hunting Falcons in the United Arab Emirates

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Summary

Mycoplasma organisms were isolated from the trachea (n=17), airsac (n=1), choanal slit (n=1) and pharynx (n=1) of 20 hunting falcons. Eighteen falcons showed clinical signs of air sacculitis (n=14) with and without pus production, weakness with poor performance (n=2), rales (n=1) and weight loss (n=1). Two mycoplasma positive falcons did not show clinical signs. From the 20 mycoplasma isolates, 11 were positively identified; 9 as *Mycoplasma (M.) buteonis* and 2 as *M. falconis* by DNA isolation, amplification of the 16SrRNA gene and signature region of the 23SrRNA gene, and cycle sequencing of PCR products. Nine isolates were not definitively identified.

Introduction

Mycoplasma infections and mycoplasmosis in raptors have been described by different authors. Air sacculitis, catarrhal tracheitis and catarrhal-fibrinous pneumonia were described by Furr et al. (1977); Boelske and Moerner (1982); Poveda et al. (1990) and Lierz et al. (2002). Several different mycoplasma species have been isolated from diseased raptors. Pigeons are known mycoplasma carriers and are likely to act as a source of infection for raptors (Heidenreich 1997). Recently, a disease caused by *M. gallisepticum* killed more than twenty eagles in Alabama, USA (Promed 2003). However, colonization of non-diseased raptors by mycoplasmas has also been reported by different authors (Poveda et al., 1994; Morishita et al., 1997). Here we report both mycoplasma infection and mycoplasmosis in hunting falcons in the U.A.E.

Material and Methods

Swabs were taken from the trachea, choanal slit and airsac of 20 hunting falcons as described by Lierz et al. (2002) and Wernery et al. (2004). One swab was immediately placed into solid mycoplasma transport medium (Mycoplasma Experience, Surrey, UK) and in the laboratory streaked onto mycoplasma solid medium (Mycoplasma agar base, Oxoid CM 401) containing mycoplasma selective supplement (Oxoid SR059C). The plates were incubated for eight days at 37°C in an atmosphere containing 5% CO₂. When typical mycoplasma colonies were visible under an inverted microscope, they were inoculated into 2 ml

mycoplasma broth (Mycoplasma Experience, Surrey, UK), which was freeze dried. The freeze dried isolates were then sent to the Friedrich Loeffler Institute in Germany for identification by Polymerase chain-reaction and DNA sequencing (Nicholas et al. 2002). Finally a chladogram of the isolated mycoplasma strains was established.

Results

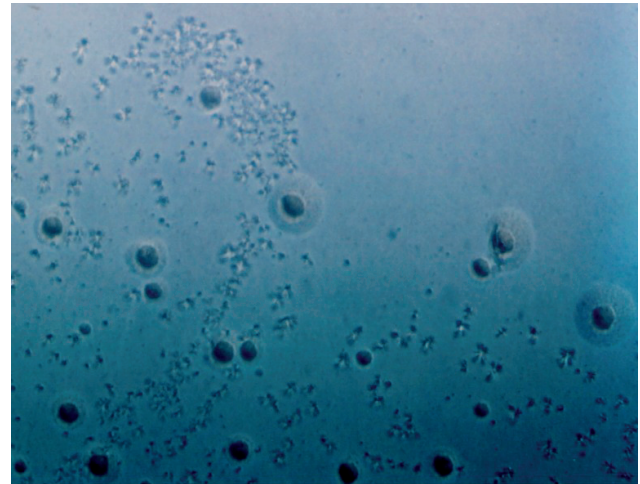


Figure 1: *M. falconis* morphology on solid medium

Mycoplasma organisms (Fig. 1) were isolated from twenty falcons of which eighteen suffered from air sacculitis, poor performance, rales and weight loss. Nine mycoplasma isolates were identified as *M. buteonis* and two as *M. falconis*. Nine isolates could not be identified. No other pathogens including *Chlamydoiphila* were detected, indicating that mycoplasma organisms were likely responsible for the air sacculitis and other ailments detected in the hunting falcons. The chladograms (Figs. 2 and) of the isolated mycoplasma strains show the relation to other species.

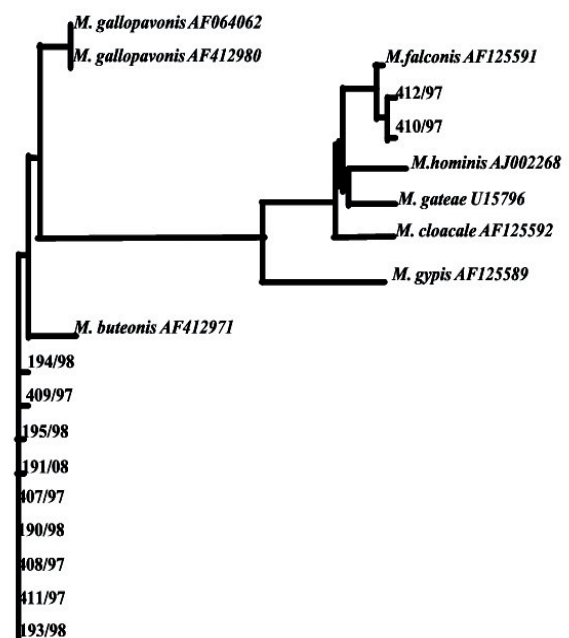


Figure 2: Chladogram based on 16S rRNA gene sequences of mycoplasma strains from hunting falcons and type strains of related species

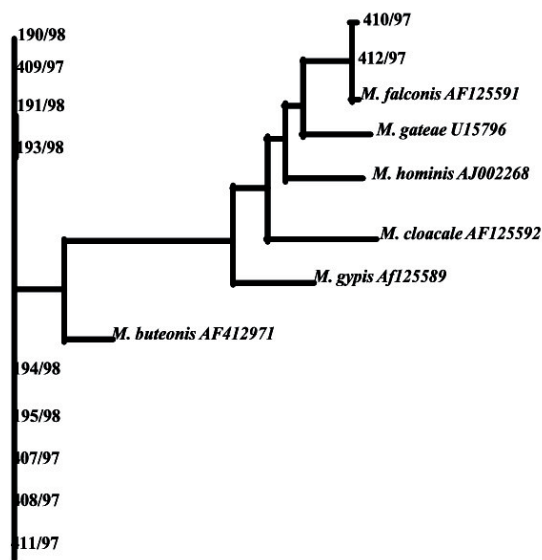


Figure 3: Chladogram based on 23S rRNA signature sequences of mycoplasma strains from hunting falcons and type strains of related species

Discussion

Mycoplasma organisms were isolated from the trachea (n=17), airsac (n=1), choanal slit (n=1) and pharynx (n=1) of 20 hunting falcons. Eighteen falcons showed clinical signs of air sacculitis (n=14) with and without pus production, determined by endoscopy in falcon hospitals, weakness with poor performance (n=2), rales (n=1) and weight loss (n=1). Two mycoplasma positive falcons did not show clinical signs. From the 20 mycoplasma isolates, 11 were positively identified;

9 as *M. buteonis* and 2 as *M. falconis* by DNA isolation, amplification of the 16SrRNA gene and signature region of the 23SrRNA gene, and cycle sequencing of PCR products. Nine isolates were not definitively identified.

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Promed, August 2003.

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Letters to the Editor

Discussion on Cryptosporidium Therapy on ‘Bird Medicine Discussion List 28 May 2007

The following discussion on the Web-Based BirdMed Discussion Group took place on May 28th 2007. Many thanks for the contributors for allowing *Falco* to reproduce their opinions.

Question 1 to Birdmed Discussion Group

I am after advice on treating cryptosporidium in falcons. We have had a few cases over the past years but it does appear to be a disease we are seeing with increasing frequency. Typical signs are similar to those reported by Neil Forbes and Alberto Barbon (EAAV proceedings, Zurich, 2007) - we see upper respiratory tract disease, change in voice, conjunctivitis, mucoid tracheitis and rarely airsacculitis. We are seeing this condition in adult birds and juveniles - today in a 1 month old captive bred gyr (fed on quail) and given bottled water. We are confirming diagnosis by cytology (tracheal swab) and sending samples for PCR in the UK. We seem to be seeing both *C. parvum* and *C. baileyi* based on PCR results to date.

I have one case that the falconer was happy for us to hospitalise with confirmed *C. baileyi*, so have gone

through all the medicines we have in the hospital and am now running out of ideas and options! The bird has had the following treatments, had a cytology sample collected and checked weekly and is still positive (cytology positive, we have not repeated PCR). These are the potentially anti-cryptosporidium treatments we have used in chronological order

1. Halofunginone 0.5 mg/kg once a day 14 days orally
2. Toltrazil - 15mg/kg for 2 days orally
3. Azithromycin 40 mg/kg once a day for 7 days orally and nebulised once a day with F10 solution
4. Paramomycin 100mg/kg twice a day orally and nebulised once a day with a solution of Paramomycin for 3 weeks
5. Clindamycin 25 mg/kg twice a day orally

The good news is the bird is doing well, and none of these therapies have produced any negative effects, but it still has a mucoid tracheitis.

As a further note we had an outbreak of cryptosporidium in a group of captive bred young stone curlew last year (*C. parvum*) which died showing enteric signs, not respiratory signs. We tried halofunginone and spiramycin, and the halofunginone seemed to knock them off their appetites, but they were pretty sick so

it might not have been the fault of the drug, which I also noticed in one falcon (hence I have tended to use a lower dose of halofunginone - 0.5mg/kg - a reptile dose, rather than the avian dose of 2.5mg/kg). There was no effect on the cryptosporidium and the mortality in the stone curlews was high. In comparison in falcons this seems to not result in mortality, except in one case that had aspergillosis, amyloid and a whole load of other issues going on. Any other suggestions for dealing with this gratefully received. Or is it a case of waiting for self-cure in the falcons?

Tom Bailey, Dubai Falcon Hospital, Dubai, UAE

Reply from: birdmed on behalf of Andres

Montesinos

You still have sulfa therapy, spyramicin and albendazol options. These two drugs combined are used in humans with AIDS and concurrent infections with cryptos resistant to paromomycin / azytromycin. In case of enteric symptoms you could try to get Hyperimmune bovine colostrum, which is used in some reptiles with crypto resistant infections. My experience with crypto in falcons or other birds, specially parrots, is that it is always associated to other immunosuppressing diseases (pox or PBF) and several cases were self cure cases.

Andres Montesinos, Maria Ardiaca, Centro Veterinario Los Sauces, Madrid (Spain).

Reply from: birdmed on behalf of Alberto Rodríguez Barbón

In terms of therapy you could try combination of paromomycin + azythromycin which seems to have some synergistic effect (PALMIERI F, et al. Pulmonary cryptosporidiosis in an AIDS patient: successful treatment with paromomycin plus azithromycin, Int J STD AIDS 2005; 16(7):515-7). Another option would be enrofloxacin which I think you have not used, it has been proved to decrease the output of oocysts although seems to be less effective than paromomycin, (SRETER T, et al. Anticryptosporidial prophylactic efficacy of enrofloxacin and paromomycin in chickens, J Parasitology 2002; 88(1): 209 – 11) but due the low absorption of the paromomycin when given orally maybe it is a better option in case of respiratory infection, you could try enro nebulisation too. I think it would be worth it, if you have the bird at the hospital, try to rotate the cages, to decrease the load of oocysts in the environment and reduce reinfection, in terms of cleaning the cages, seems that peroxide based disinfectants are quite effective (QUILEZ J, et al. Efficacy of two peroxygen-based disinfectants for inactivation of *C. parvum* oocysts, Appl Environ Microbiology 2005; 71(5):2479-83)

Alberto Rodriguez Barbon, MRCVS, European College of Avian Medicine and Surgery Resident Great Western Referrals United Kingdom.

Question 2 to Birdmed Discussion Group

What dose of albendazole do you suggest in raptors -I see a dose range of 5-50mg/kg recommended, with a caution that it is toxic in pigeons at doses of 50-100 mg/kg?

Reply from: birdmed on behalf of Andres

Montesinos

Yes, I'm afraid to use more than 25 mg/kg in raptors. I've seen toxicoses in goshawk using 50 mg/kg. First signs of toxicoses are severe leucopenia and depression. IME, we start with 25 mg and check wbc. We treat for 8 days. We consider that more days could be dangerous.

Acknowledgements

Many thanks to the Birdmed discussion group and Drs Barbon and Montesinos for allowing us to publish their observations



Book Review

Anatomical and Clinical Radiology of Birds

of Prey including interactive advanced

anatomical imaging. Saunders Elsevier. Jaime

H. Samour MVZ, PhD, Dip ECAMS and Jesus

L. Naldo DVM. ISBN-13: 978 0 7020 2802 1.

279 pages

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Nad AL Shiba Veterinary Hospital, PO Box 116345, Dubai, UAE. Chris@nadvethosp.com

The aim of this text according to the authors was to produce a reference atlas on the anatomical and clinical radiology of birds of prey that could be used within the veterinary profession. Samour and Naldo certainly go some way to achieving this goal with an extensive catalogue of standardised radiographic images. The book can essentially be divided into four main sections; radiographic technique, anatomical radiology of representative species, clinical radiographic conditions and advanced imaging techniques. The latter is touched on in the text but expanded upon in far greater detail within the interactive DVD that is included.

Following the introduction in chapter one there follows a well illustrated chapter on radiographic techniques. The illustrations of restraint and positioning will assist the general practitioner in reproducing the diagnostic views shown in the book but also includes tips that may be of some use to the more experienced avian veterinarian. Magnification radiography, myelography, contrast radiography, angiography and urography are all touched upon later in the chapter.

Chapter three opens with an explanation of the species differences that exist when radiographing the major organ systems in birds of prey. These differences are

then highlighted by standardised radiographs thanks to the careful selection of representative species by the authors. The species illustrated include two falcon (Saker, *Falco cherrug* and Gyr, *F. rusticolus*) and two owl (Barn Owl, *Tyto alba* and Eagle Owl, *Bubo bubo*) species, a Steppe Eagle (*Aquila nipalensis*), Palm Nut Vulture (*Gypohierax angolensis*), Eurasian Honey Buzzard (*Pernis apivorus*) and Red Kite (*Milvus milvus*). For each species views of the skull, body, forelimb, hindlimb and foot are presented and comprehensively labelled.

Clinical and pathological conditions are covered in chapter 4. Where applicable, colour plates are used alongside the corresponding radiographs to highlight the clinical and radiographic changes present. Conditions of the feet, orthopaedic and traumatic problems, management related diseases, infectious diseases, degenerative diseases and neoplastic diseases are all covered in some detail. Chapter 5 covers some common mistakes made when interpreting radiographs

Chapter 6 and the accompanying DVD cover advanced imaging techniques such as ultrasound, MRI and CT scanning. The importance of DICOM (Digital Imaging and Communications in Medicine) standards are introduced and discussed and the interactive DVD gives the practitioner some exposure to this technology. Full body MRI and CT section images from a Lanner falcon and Tawny owl are stored on the disc and 3D reconstructions from this data are presented. A free version of DICOM software is also available for the reader to download and this can be used to manipulate and examine images in the CT and MRI database. My only criticisms of this book are restricted to this chapter and the DVD. I found the DICOM software extremely confusing to use and the tutorial inadequate in its step by step approach. The section images of CT, MRI and ultrasound scans are also not anatomically labelled meaning the viewers' interpretation of structures cannot be verified. Although a useful tutorial on taking digital images from radiographic films is available on the DVD there is no section on the use of digital radiography which is proving very useful in current raptor medicine, especially for soft tissue imaging.

In conclusion this book is a well illustrated and informative text with something to offer both the student and the specialist raptor practitioner. It helps to strengthen our foundation of knowledge in avian and raptor medicine at a time when, as Nigel Harcourt Brown says in the foreword, "cutting edge topics based on small numbers of cases" seem to be the order of the day. I would recommend all veterinarians involved with birds of prey to purchase this book.



What's New in the Literature

Role of birds of prey as carriers and spreaders of *Cryptococcus neoformans* and other zoonotic yeasts.

Cafarchia C, Romito D, Iatta R, Camarda A, Montagna MT, & Otranto D. *Med Mycol.* 2006, 44 (6): 485-92.

In the last 20 years, cases of human cryptococcosis, have increased in immunocompromised patients. In several instances, the cases have been associated with the exposure of the patients to bird droppings. In order to investigate birds of prey as potential carriers and spreaders of *Cryptococcus neoformans* and other yeasts of importance in human infections, 182 swab samples were collected from the cloacae of several species of birds of prey (Group I) and 32 faecal samples from aviaries in which the birds were housed (Group II). Samples were also taken from digestive tract of 60 dead birds (Group III). A total of 454 samples were cultured from which 215 colonies of yeast like fungi were recovered and identified. *Cryptococcus neoformans* var. *grubii* was isolated from three cloacae samples (4.8%) collected from *Falco tinnunculus* and from one sample (3.1%) obtained from *Buteo buteo*, as well as from samples collected at the aviaries in which these birds were kept. Overall, 18 samples (9.9%) from Group I, 13 (40.6%) from Group II, 12 crops (20%), three proventriculi (5%) and 12 cloacae (20%) from Group III yielded positive cultures for yeasts. The results indicate that birds of prey and in particular, *F. tinnunculus* and *B. buteo*, may act as carriers and spreaders of *C. neoformans* and other zoonotic yeasts.

NSAIDs and scavenging birds: potential impacts beyond Asia's critically endangered vultures

Cuthbert, R, Parry-Jones J, Green R & Pain D. *Biology Letters* 2007, 3, 1, 90 – 93.

Veterinary treatment of livestock with diclofenac, a non-steroidal anti-inflammatory drug (NSAID), has caused catastrophic declines of Gyps vultures in Asia. This has highlighted a lack of knowledge on the potential impacts of NSAIDs on scavenging birds. Surveys of veterinarians and zoos document the outcomes of the treatment of over 870 scavenging birds from 79 species. As well as diclofenac, carprofen and flunixin were associated with mortality, with deaths observed in 13 and 30% of cases, respectively. Mortality was also found following treatment with ibuprofen and phenylbutazone. NSAID toxicity was reported for raptors, storks, cranes and owls, suggesting that the potential conservation impact of NSAIDs may extend beyond Gyps vultures and could be significant for New

World vultures. In contrast, there were no reported mortalities for the NSAID meloxicam, which was administered to over 700 birds from 60 species. The relative safety of meloxicam supports other studies indicating the suitability of this NSAID to replace diclofenac in Asia.

Pathogenicity of *Mycoplasma lipofaciens* strain ML64, isolated from an egg of a Northern Goshawk

(*Accipiter gentilis*), for chicken embryos.

M. Lierz, R. Stark, S. Brokat & H. M. Hafez. *Avian Pathology*. 2007, 36 (2), 151-153.

Some *Mycoplasma* species are well-known avian pathogens and are of importance in poultry breeder flocks due to their pathogenic potential for embryos. *Mycoplasmas* are regularly detected in birds of prey, and a strain of *Mycoplasma lipofaciens* that was isolated from an egg of a Northern Goshawk (*Accipiter gentilis*) was examined for its pathogenicity in specific pathogen free chicken embryos since birds of prey eggs were not available for this purpose. The strain was found to be pathogenic, causing a high mortality as well as dwarfing, curled toes and infiltrations of heterophils in the liver, kidney, intestine and chorioallantoic membrane.

Prevalence of mycoplasmas in eggs from birds of prey using culture and a genus-specific mycoplasma polymerase chain reaction.

M. Lierz, N. Hagen, N. Harcourt-Brown, S. J. Hernandez-Divers, D. Lu'schow & H. M. Hafez. *Avian Pathology*, 2007, 36 (2), 145-150.

Mycoplasmas are commensals and pathogens of different avian species, especially poultry and passeriforms. The role of mycoplasmas in raptors has not yet been completely determined, and especially not the possibility of vertical transmission. Therefore 424 raptor eggs were examined for the occurrence of mycoplasmas using culture, and 155 of these eggs with a *Mycoplasma* genus-specific polymerase chain reaction (PCR) assay. This PCR was tested for its sensitivity and specificity, especially for use in a bird population of unknown mycoplasma status (prevalence and species). The size of the amplified PCR product was large (1013 base pairs) to enable use of the product for species differentiation by sequencing. Culture and PCR yielded only one positive result, in an egg of a Northern Goshawk (*Accipiter gentilis*). The isolate was identified as *Mycoplasma lipofaciens* using an immunobinding assay, as well as by sequencing part of its 16S rRNA gene.

Epornitic of avian pox in common buzzards (*Buteo buteo*): virus isolation and molecular biological characterization

Rampin T, Pisoni G, Manarolla G, Gallazzi D & Sironi G. *Avian Pathology*. 2007. 36; 2; 161-165.

Six common buzzards from a bird rescue centre showed wart-like lesions on their toes. The lesions consisted of multiple crusty and proliferative nodules surrounded by skin swelling. Histologically, epithelial cell hypertrophy and hyperplasia with ballooning degeneration and large intracytoplasmic inclusion bodies consistent with avipoxvirus infection were seen. The virus was isolated in embryonated chicken eggs. Positive chorioallantoic membranes and samples of skin lesions were submitted for polymerase chain reaction. Molecular characterization based on the 4b core protein indicates a 100% homology of the isolated poxvirus with avian poxviruses belonging to subclade A2. However, analysis of 139 locus does not reveal similarities of the isolate with other avian poxviruses.

Examination of mercury concentration in the feather of 18 species of birds in southwest Iran.

Zolfaghari G, Esmaili-Sari A, Ghasempouri SM & Kiabi BH. *Environ Res*. 2007;

This paper presents the levels of mercury (Hg) in tail feathers from different species of birds, in southwest Iran (Khuzestan to Persian Gulf). Between April and October 2005, we collected tail feathers from 77 birds belonging to 18 species, mostly raptor birds. The birds were collected for the Museum Natural History, Faculty of Natural Resources and Marine Sciences of Tarbiat Modares University. Hg concentrations were evaluated in relation to taxonomic affiliation and trophic level. Feather Hg concentrations ranged from 0.09 to 2.01mg/kg dry wt. We found a significant difference in feather Hg concentrations across taxonomic groups ($p < 0.001$) with highest concentrations in common kestrel and saker falcon (*Falconidae*) (1.87mg/kg) followed by greater spotted eagle, sparrowhawk, goshawk, griffon vulture, buzzards, marsh harrier (*Accipiteridae*) and owls (*Strigidae*). Blue-cheeked bee-eater (*Meropidae*) had intermediate values, followed by European roller (*Coraciidae*), and lapwing (*Charadiidae*), whereas black francolin, see-see partridge and chukar (*Phasianidae*) (0.18mg/kg) contained the least amount of Hg. There was a significant difference in feather Hg concentrations in relation to trophic levels, at confidence level of 99% ($p < 0.001$). There was an increased pattern in the amount of mercury from herbivorous birds up to vertebrate predators, so that the amount of mercury in vertebrate predators (1.30mg/kg) was more than 1.5 times as much of the invertebrate predators (0.7mg/kg)

and more than 6 times as much of the herbivorous birds (0.18mg/kg). We also measured Hg levels in secondary feathers of raptor birds. Paired samples t-test showed that the concentrations of mercury were significantly higher ($p < 0.001$) in the tail feathers (1.2mg/kg) than secondary (0.71mg/kg). However, Hg levels are below the range found by other authors to cause behavioural change or reduce reproduction (5mg/kg). It seems that exposure of some birds with mercury for a long time causes their high concentration of mercury.

Phylogeography and population structure of the saker falcon (*Falco cherrug*) and the influence of hybridisation: mitochondrial and microsatellite data.

F. Nittinger, A. Gamauf, W. Pinsker, M. Wink and E. Haring. *Molecular Ecology*. 2007, 16, 1497-1517.

Microsatellite as well as sequence analysis of the mitochondrial control region were applied to infer phylogeography and population genetic structure of the saker falcon (*Falco cherrug*). Furthermore, we compared the patterns of mitochondrial haplotypes with the variation of microsatellite alleles among the species of the hierofalcon complex (*F. cherrug*, *Falco rusticolus*, *Falco biarmicus*, *Falco juggar*) to test hypotheses on population history. Historical samples from museum specimens of *F. cherrug* were analysed together with samples from contemporary populations to investigate possible influences of hybrid falcons escaped from falconry on genetic composition. In the mitochondrial DNA analysis, none of the four species represents a monophyletic group. Moreover, there are no clearly defined groups of haplotypes corresponding to taxonomic entities. In the microsatellite analysis most of the variation is shared between species and no clear differentiation by private alleles is found. Yet, with a Bayesian clustering method based on allele frequencies, a differentiation of *F. cherrug*, *F. rusticolus* and two geographic groups of *F. biarmicus* was detected. Results from both nuclear and mitochondrial markers are compatible with the previously postulated 'Out of Africa' hypothesis assuming an African origin of the hierofalcons. From an ancestral African population, *F. cherrug*, *F. rusticolus* and *F. juggar* split off in separate wave of immigration into Eurasia and South Asia. A combination of evolutionary processes, including incomplete lineage sorting as well as hybridization, may be responsible for the currently observed genetic patterns in hierofalcons.



News and Announcements

H5N1 in wild hawk in Japan was Qinghai strain

As announced by the government's Ministry of the Environment on Tuesday [18 April 2007], a wild Mountain Hawk Eagle, which had been found alive during January 2007 in the village of Sagara, Kumamoto Prefecture, Kyusyu Island, but which had died shortly afterwards, was found to be infected by H5N1 virus belonging to the Qinghai Lake strain. This strain was similar to the strain found in 2 chicken farms in Miyazaki and Okayama Prefecture this year [2007]. Confirmation was by gene analysis by the team of Tottori University.

A ProMED-mail post
<promed@promedmail.org>

Hopes soar after vulture chick hatches

One of the world's most threatened birds has bred in captivity for the first time in India. The news has given scientists and conservationists further hope for saving Asia's declining vulture populations.

The single chick, a White-rumped Vulture *Gyps bengalensis*, was hatched at a breeding centre in Pinjore, Haryana, as part of a breeding programme undertaken by BNHS (BirdLife in India) and the RSPB (BirdLife in the UK). Scientists had not expected the birds to breed successfully in captivity until at least 2008. "The egg was laid in November and since then, we have been waiting and hoping," said Dr Vibhu Prakash, Principal Scientist for the vulture breeding programme at BNHS "This success shows that we have got the conditions right, so now we can plan ahead with confidence to breed many more vultures in the future."

Captive breeding is being used in India to help ensure that Asian vulture populations recover after populations of three vulture species - White-Rumped Vulture, Indian Vulture *Gyps indicus* and Slender-billed Vulture *Gyps tenuirostris* - declined by more than 95 percent in just three years in the 1990s. Subsequent research found a link between the apparent vulture declines and a veterinary drug, diclofenac, being used in treating livestock. Many millions of vultures are thought to have died as a result of feeding on the carcasses of livestock treated with the drug.

Vultures, being highly efficient scavengers, are a crucial part of South Asia's ecosystems. In recent years they have continued to decline by between 22 and 48 percent each year. Vulture numbers are now so low that the birds' survival is largely dependent on captive breeding success, as well as stopping the use of diclofenac. The drug is currently being phased out in India, Pakistan and Nepal. Chris Bowden, Head of the RSPB's Vulture Conservation Programme said: "The hatching of this vulture chick is a hugely important milestone and

shows that the vulture breeding programme really can help save the vultures once diclofenac is removed from the environment.

In January 2006, scientists from the RSPB and the Zoological Society of London proved that the drug meloxicam was a suitable, and safe, alternative to diclofenac. Conservationists are now promoting the use of this safer drug in veterinary practice: "The increasing availability of meloxicam means that farmers and vets can switch to the new drug. But this must happen immediately if we are to avoid losing the last remaining wild vultures," urged Dr Asad Rahmani, Director of the Bombay Natural History Society.

BirdLife News Alert, January 9th 2007

http://www.birdlife.org/news/news/2007/01/vulture_hatches.html

Kuwait on alert after bird flu detected

Kuwait announced on Sunday [25 Feb 2007] that it had detected the deadly strain of avian influenza in poultry and birds and had shut the nation's only zoo, AFP reported. The 20 cases of the deadly H5N1 avian influenza were detected in birds, mainly falcons.

A nationwide emergency response program was implemented, which included a ban on all bird imports, the temporary closure of Kuwait Zoo and bird markets. Blood samples from all people suspected of having had contact with the infected birds were taken, and tests were underway. About 30 teams were dispatched to various parts of the country following the discovery of the virus. Kuwait is a member of the 6-nation Persian Gulf Cooperation Council which has recently adopted measures to prevent the spread of avian flu, including the ban of birds, poultry and their products mainly from countries in Asia and Europe, where bird flu cases have surfaced. The last case of avian flu in Kuwait was discovered in November 2005.

A ProMED-mail post

<<http://www.promedmail.org>>

Kuwaiti government denies illegal falcon trade as cause of bird flu outbreak

Kuwaiti authorities have denied an allegation that illegal falcon trade may have caused an outbreak of bird flu that has plagued the emirate, local daily Kuwait Times reported Wednesday. During a Tuesday parliamentary session, a number of Kuwaiti lawmakers submitted documents claiming that several falcon shipments for "influential people" had been imported recently without proper testing.

However, Jassem al-Bader, head of Public Authority for Agricultural Affairs and Fish Resources, refuted the allegation, saying that all the imported falcons had received strict test and were found healthy, said the

Times. But he then admitted that there used to be a ban on bird imports, which was eased since July 2006. "Lifting the ban on falcons was a catastrophe. Why were they exempted from the ban despite warnings by doctors?" lawmaker Jamaan al-Harbash was quoted as saying.

According to the daily, lawmakers have decided to ask the parliament's health committee to study the situation and report back, said the report. Kuwait reported 20 birds, including 18 falcons, were tested positive for the deadly H5N1 strain of the bird flu on Feb. 25 and so far the bird flu cases have reached to 132. In November 2005, Kuwait detected the first case of a bird infected with the H5N1 strain, a flamingo at a seaside villa.

According to the World Health Organisation, the H5N1 strain, the most aggressive form of the disease, has killed about 170 people worldwide and has seen millions of birds culled.

Source: Xinhua News Agency

Russian Gyrfalcons released to wild by IFAW

This October, police confiscated five rare, endangered falcons at a Moscow area airport, during an attempt to smuggle them into Russia. The birds – called gyrfalcons – are native to the Chukotka population in Russia. Gyrfalcons are the largest and strongest of all falcons and have been highly prized as the best possible bird for falconry since the Middle Ages.

Four of the birds were sent by Russia's environmental watchdog to IFAW's wildlife rehabilitation center in Moscow. One of the falcons died. All four gyrfalcons were fully rehabilitated and were released to the wild on the Kamchatka peninsula this week.

Only about 1,000 gyrfalcon pairs remain in the wild in Russia. Their main habitat is above the Polar Circle, from the Kola peninsula to Chukotka. Prior to winter, the birds move south but not far from their main habitat. This year the remaining population of Chukotka gyrfalcons has already migrated to Kamchatka. "The gyrfalcon is a very rare falcon species, but because of their remarkable hunting skills there is a big demand for these birds among falcon hunters in the Middle East. IFAW's goal is to protect these wonderful birds from poachers and smugglers, and to return them to their natural habitat to help conserve the rare species of Russia," says Masha Vorontsova, IFAW's Russia director.

The gyrfalcon is listed both in the Red Book of endangered species and on the CITES Appendix I list. The latter designation prohibits any commercial use or transportation of the animals mentioned. For scientific purposes or an official exchange between

states, a special import-export license is needed. IFAW works within Russia to help the government effectively enforce CITES regulations.

The smuggling of rare birds of prey from or through Russia is a growing problem. Raptors like saker falcons and peregrine falcons, also CITES species, are endangered by illegal smuggling. In September 2003, customs officials in the Yekaterinburg airport in Russia's Urals region intercepted an illegal shipment of saker falcons en route to Dubai. In autumn 2004, 30 saker falcons were sent from Mongolia, via Novosibirsk and Moscow, to one of the Gulf states. Although a CITES license was presented to the customs, the birds were temporarily seized by the Sheremetyevo airport in Moscow due to the suspicious shipment description. The birds were ultimately allowed to fly to their destination because of shortcomings and contradictions in the Russian customs legislation. Just last year, 11 gyrfalcons were intercepted by police in one of the Moscow airports, but very soon reported dead – a very suspicious case as well. Currently, there are more than 10 gyrfalcons seized by police and being kept in Moscow shelters.

Smugglers prefer female falcons due to their size and outstanding hunting features in comparison to the male birds – a reason for higher prices as well. Such preferences create a critical danger to the populations.

09 November 2006

<http://www.ifaw.org/ifaw/general/default.aspx?oid=197761>

In the frame of “Conservation of Saker in the Carpathian Basin” Hungarian-Slovak LIFE-Nature project a young Saker will be equipped with a satellite tag in Csákvár, Hungary on 7th June.

The Saker will be tagged by the experts of Bükk National Park, BirdLife Hungary and Pro Vértés Nature Conservation Fund. Altogether 46 Sakers will be equipped in Hungary and Slovakia during the project until 2010. Tagging Sakers helps experts to track their movements, and explore migration routes, roosting and wintering places. It is an important element of the conservation programmes. There is little known about the movements of young Sakers, thus there is little information about the threatening factors as well. Tracking them helps to understand migration patterns of young Sakers along with the threatening factors and that enables experts to take the necessary conservation measures.

Primary aim is to tag young birds because adult Sakers mostly stay in or around their eyries all year around according to recent knowledge.



Photo: Kovács Attila (MTI)

The species has a special place in Hungarian nature conservation partly because its rarity and partly because their role in ancient Hungarian myths. Saker, also called Turul, is the only one raptor species that plays a role in Hungarian traditions.

The Hungarian Saker population shrank to 30 known breeding pairs by the 1970s. As a result of conservation efforts launched in the 1980s, there are about 140-150 pairs nowadays. Nevertheless the number of Sakers is continuously decreasing in most of the other parts of the world, thus it is extremely important to maintain the Hungarian conservation programme.

In 2006 a joint Slovak-Hungarian Saker conservation programme was launched with the support of EU's financial instrument called LIFE-Nature. With the lead of Bükk National Park, 16 organisations from Hungary and Slovakia are participating in the project that aims to facilitate practical conservation efforts.

Taken from the website of the Saker Life project

<http://kerlife.dyndns.org/en/content/show?datatype=life>

Al Maha Desert Resort the backdrop for unique conservation film documentary

Dubai, UAE, 25th January, 2007

Emirates Al Maha Desert Resort & Spa and the Dubai Desert Conservation Reserve (DDCR) take centre stage in a unique documentary film showcasing conservation of endangered Saker falcons.



The young Saker falcons in their hacking box at Al Maha.

The film - featuring breathtaking aerial footage of falcons against the backdrop of Al Maha and the DDCR's desert landscape - has been made by German public TV broadcaster Bayerischer Rundfunk, part of the leading national ARD channel, with collaboration between His Highness Sheikh Butti bin Maktoum bin Juma Al Maktoum and renowned wildlife filmmaker Christian Herrmann.

Sheikh Butti's U.A.E. Falcon Breeding Centre has conducted pioneering research into the breeding and rearing of endangered falcons, culminating in the release of these falcons back into the wild. The documentary covers all the complex stages of this process, from hatching to the eventual release of a small group of birds.

New high-tech, lightweight High Definition mini-cameras were used to film never-before-seen aerial footage taken from a remote-controlled model aircraft, showing young falcons hunting a lure while being trained to follow and hunt their prey. The camera was also fitted into specially-designed nesting boxes, allowing close-up recording of the six falcons featured in the film.

The 30 minute film - "Al Maha, Through the Eyes of a Falcon" - is the brainchild of Christian Herrmann, one of Germany's leading wildlife filmmakers. Scheduled for broadcast

in Germany and other European countries this month, it will also be screened onboard Emirates' aircraft worldwide, highlighting the conservation efforts of the DDCR and Al Maha

Even before its first screening, the film has been nominated for two prestigious film festivals; the International Wildlife Film Festival in Montana, U.S.A., and Canada's Banff International Film Festival, with more nominations set to follow.

Filming took more than eight months to set up and record in 2006 and follows the progress of young Saker falcons bred in Sheikh Butti's falcon breeding centre, from chicks to fledglings, and then to young adults. The film also highlights the work conducted in the DDCR by its Conservation Manager Greg Simkins as he trains the falcons to fly, explore and hunt in the desert around Al Maha.

H.H. Sheikh Ahmed bin Saeed Al Maktoum, Chairman & Chief Executive Emirates Airline & Group, and also Chairman of the DDCR, said: "This film is a memorable and striking record of an exciting conservation initiative, clearly demonstrating the value of the conservation work being done by the DDCR and Al Maha. I'm very pleased that this project was captured on film, and hope that its worldwide exposure will encourage interest in wildlife conservation and Dubai's efforts to promote this."

Saker falcons, which migrate through Arabia from their breeding areas in Uzbekistan on the way to Ethiopia, are an endangered species.



The film concludes with Sheikh Butti releasing the birds back into the wild in Uzbekistan, a primary breeding area for Saker falcons and the start of their migratory route which passes through Arabia and onwards into Ethiopia.

Sheikh Butti said: “My family has used falcons in the noble tradition of falconry for many generations, and over the last twenty years this has changed from training falcons caught in the wild, to falcons bred in captivity. I have been proud to be part of this exciting change; culminating in 2006 with the release of these captive-bred falcons, bred in the U.A.E., back into the wild. “Together with Al Maha and the Dubai Desert Conservation Reserve I hope I will not be the last to make such a contribution, and that we will be able to give back to nature what she has so generously given to us. This is essential for our future generations to come. Thank you to all who made this possible.”

Furthering research into the Saker falcon’s lifecycle, the birds were fitted with satellite tracking devices on their release, and their progress is now charted along their migration routes on a weekly basis. Information gathered will lead to a better understanding of the threats faced by the species along the routes, and hopefully their eventual breeding within their natural habitat.

Greg Simkins said: “Saker falcons are endangered largely due to loss of habitat, and because they have traditionally been captured from the wild for use in falconry. They don’t breed naturally in the U.A.E., only passing through on their migration routes. These days most birds are bred specifically for falconry, and birds used in falconry in the U.A.E. are bred in captivity. “We all thought it would be good to give something back to nature by rearing Sakers for release in their natural breeding ground, in the hope they will increase their population in the wild.”

The six birds’ lives began when Sheikh Butti and falcon breeder Howard Waller successfully incubated and hatched the chicks, two females and six males. The ARD crew spent many painstaking hours in the desert surrounding Al Maha filming the birds, taking full advantage of the pristine desert landscapes.

Christian Herrmann said: “It was very difficult and intricate work to get the shots we wanted, with falcons hunting mid-air against the backdrop of Al Maha. But eventually we captured some stunning footage, which I’m sure will thrill everyone who sees it. “This has been a marvellous project to work on, and we have received fantastic support from everyone involved. We’re very excited about the final edited film, which has been produced in German, English and Arabic versions. For

the first time ever, we mixed and narrated a documentary in three languages, and producing a version to follow Arabic narration was a big challenge.”

Since the six birds were released in October, Greg Simkins has been receiving satellite navigation information from the system tracking them. He said: “So far they seem to be fine, and if they get through the first year the project will have been a huge success,” he said. “If that’s the case we’ll definitely look at repeating the exercise to release a lot more falcons into their natural habitat.”

The DDCR covers 225 square kilometers, five per cent of Dubai’s total land area. It is the largest protected land area under conservation management in the Gulf, and the only one of its kind in the Middle East.

Al Maha was instrumental in setting up this unique reserve, which received permanent protection under Ruler’s Decree, and its management also serves on the Dubai Conservation Board, chaired by H.H. Sheikh Ahmed bin Saeed Al Maktoum.

The Reserve operates as a National Park with land area under wildlife management, and is the only location in the country where visitors can experience the desert and its wildlife.

Peregrine Conference (Poland 2007) **19th – 23rd September, Piatrowo/Poznan**

This Conference was a result of international cooperation by organisations from Poland, Hungary, Romania, Slovakia and Germany supported by the Visegrad Fund, Polish-German Cooperation Foundation and International Council for Game and Wildlife Conservation CIC. It followed on from previous conference held in Włocławek, Poland in 1994 (proceedings in *Acta Ornithologica*, vol. 30, No 1, 1995), providing an update on the Peregrine situation in Europe and elsewhere in the world.

During three days of the meeting 30 presentations were given by delegates from 14 different countries, with information from a further six countries provided in the poster displays. William Heinrich (Peregrine Fund, USA) opened the first session with a presentation on the Peregrine population recovery in the USA, describing the reintroduction, management and monitoring work that has been undertaken by falconers, biologists and conservationists in the United States. For those interested in getting more information, the story has been well documented in *The Return of the Peregrine* (ed. by Tom Cade & Bill Burnham). The Peregrine has now been de-listed from its ‘Endangered’ status in

the United States and in some states it is now possible for falconers to obtain permits to legally take young Peregrines for falconry.

The second session was opened by Prof. Robert Kenward (IUCN), who gave a thought-provoking presentation on the role of 'sustainable use' in wildlife conservation. In contrast to the United States, the prospect of 'using' wild Peregrines for falconry is anathema to many European conservationists. Nevertheless, the conservation of wildlife across the globe will necessarily incorporate the concept of 'sustainable use' and the European conservation model may not be the most effective strategy in other continents such as Africa and Asia. Gert Kleinstauber (Working Group for the Protection of the Peregrine, Germany) opened the sessions on the second day by providing an update on the programme to restore the tree-nesting Peregrine population in Germany. Whilst the Peregrine population overall is doing well in Germany, the tree-nesting population of the north-east is still very much diminished and active reintroduction measures are in place to re-establish this breeding habit. The final session of presentations was opened by Prof. Vladimir Galushin (Moscow Pedagogical University, Russia) who described the positive changes in the Peregrine population of Russia since the last European symposium on the species.



Photo 1. Environmental pollutants decreased productivity of Peregrine Falcons in the 1950s-1970s and continue to pose a potential risk in some regions. (Photo: A. Dixon)

Within the sessions there were many interesting talks on the population status and trends of Peregrines in Wales (where the burgeoning population presents challenges for an accurate census), in Finland (where the recovery is restricted to the forest bogs in north of the country), in Northern Ireland (where Peregrines are adopting numerous quarry nesting sites), in Sweden and California (where reintroduction has played a significant role in re-establishing the population) and in the Czech Republic, Slovakia, Romania and Bulgaria (where natural recovery has been documented by recent survey work).

Detailed studies of the diet of urban nesting Peregrines in the UK and Poland has revealed that a very wide range of prey species are taken, contrary to popular perception that these city dwelling predators feed solely on Feral Pigeons. Interestingly, during periods of spring and autumn passage their diet comprises a significant proportion of nocturnal migrants. Reintroduction projects and ecological studies of tree-nesting Peregrines in Germany, Poland and Australia have improved our understanding of nest site selection in Peregrines. Evidence from marked birds has revealed that the future nest site choice of individuals, especially males, is primarily determined by the nest site in which they were reared. However, in Germany, there is a tendency for birds reared in tree-nests to move away from this nesting habit, presenting further challenges to those attempting to re-establish tree-nesting behaviour in the northeast of the country.

There were presentations on the role played by falconers in the recovery of Peregrine populations, particularly through the reintroduction of captive-bred birds. However, potential risks posed by escaped falconry birds, especially hybrids, to natural populations was a theme of discussions. The impact and extent of this potential risk to the genetic make-up of wild falcon populations requires further investigation and research. The major threats posed by organochlorines and heavy metals have to a large extent receded in Europe and the USA but have not disappeared altogether. Presentations from Germany, California and Sweden showed that some environmental contaminants have proved to be very persistent and new chemicals pose future risks.

The conference ended with resolutions to support the establishment of a subsidiary agreement on African-Eurasian migratory raptors under the Convention of Migratory Species, a call for the establishment of a European monitoring system for environmental contaminants and recognition of the unique and threatened status of the European tree-nesting population.



عدوى المَفْطُورَة MYCOPLASMA في الصقور الصيادة في الإمارات العربية المتحدة

يو. فرنيري، هـ. هوتزل، إس. جوزيف، م. جوزيف

تم عزل اسمعُويَّات المَفْطُورَة من الرغام (n=17)، والكيس الهوائي (n=1)، وفعنة المنعرية (n=1)، والبلعوم (n=1) لعشرين صقر صياد. وظهر على 18 منها عوارض سريرية لالتهاب الكيس الهوائي (n=14) مع أو بدون وجود إفرازات قيحية، والضعف، وانخفاض الأداء (n=2)، والخرخرة (n=1)، وانخفاض الوزن (n=1). بينما لم تبد أي أعراض سريرية على صقرين أظهرتا نتائج إيجابية لوجود المَفْطُورَة. من مستفردات المَفْطُورَة العشرين التي أخذت تم تأكيد الإيجابية في 11 منها: في تسعة كمفطورة بوتونيوس *buteonis*، وفي اثنتين كمفطورة فالكونس *falconis* عن طريق عزل حمض الدنا *DNA*، وتضخيم جين *16SrRNA*، والمنطقة المميزة لجين *23SrRNA*، والتوالي الدوري لمنتجات البوليمريس *PCR*. لم يتم التحديد الدقيق لتسعة من المستفردات.

قياسات غير مباشرة وغير باضعة لضغط الدم للصقريات

كريستوفر لويد، كريستيانا هيبيل، ريناتا بادرتوفا

وصف لقياس غير مباشر لضغط الدم الانقباضي لصقور تحت التخدير. كانت القيم المستقاة أعلى بشكل مميز عن تلك المنشورة عن أنواع أخرى واستخدمها المؤلفين كالخطوط الدليلية للمعالجة بالسوائل للمرضى الذين يعانون من ناقص حجم الدم. كان متوسط ضغط الدم الانقباضي الذي تم قياسه $202\text{mmHg} \pm 27.57$.



Saker in Qinghai, China.

(Photo: Andrew Dixon)

عدوى أنفلونزا الطيور H5N1 من نمط ظاهري عالي الأمراض في صقر الغزال *Falco cherrug*

ج. هـ. سامور، ج. ل. نالدو، يو. فيرنيري، م. بير

قدمت أنثى صقر الغزال إلى مركز فهد بن سلطان للصقور في الرياض بالمملكة العربية السعودية في شتاء عامي 2003 و 2005 كانتا تعانين من القهم (فقد الشهية) لفترة قصيرة وبول مصبوغ بالخضرة. خضعت الأنثيين لفحوص سريرية شاملة بما فيها فحص جسدي، وصور شعاعيه بطنيه-ظهيرية وجانبية-أمامية، وتحاليل كيمياء الدم، وتنظير داخلي للسبيل الهضمي العلوي. نفقت أنثى الصقر بعد فترة قصيرة من وصولهما. أظهرت التغييرات تالية الموت تثخينا لجدار مقدم المعدة، ونزيف حبريا في البرزخ، والتهاب كبد معتدل، والتهاب الطحال، والتهاب الأمعاء، والتهاب الكلية، والتهاب رئوي ثنائي الجانب. تبين من التحاليل الفيروسولوجية وجود عدوى أنفلونزا الطيور H5N1 و H5N1 من نمط ظاهري عالي الأمراض. تناقش النتائج الباثولوجية فيما يتعلق بنمطين ظاهرين مختلفين تم عزلهما.

تخدير الصقور باستخدام مزيج من المخدر المحقون كيتامين-ميدوتوميدين ومخدر الغاز أيزوفلورين

سي. مولير، تي. أ. بيلي، أ. سومّا

يهدف هذا المقال إلى تقديم تقرير عن الجرعة الآمنة لمزيج من كيتامين-ميدوتوميدين *Ketamine-Medetomidine* كعنصر محفز و أيزوفلورين *Isoflurane* كعنصر الصيانة، واستخدام أتيايميزول وهو عنصر $\alpha 2$ مضاد، لعكس آثار الميدوتوميدين في إجراءات مختارة، وفي التنظير الداخلي على وجه الخصوص. تم تخدير 26 من صقور الشاهين السليمة صحيا في مستشفى دبي للصقور. واستخدم مزيج من 3مجم/كجم من الكيتامين و 0.06مجم/كجم ميدوتوميدين في حقن عضلي دون أي تقييد جسدي. إن استخدام مزيج من كيتامين-ميدوتوميدين كعنصر محفز يتيح: (1) تحريض سلس مع ارتخاء جيد للعضلات مما يؤدي لانعدام الإجهاد للصقر وبالتالي، تقليل احتمال تعرض الموظفين أو الطير للأذى أثناء التقييد الجسدي، و (2) تخفيض تركيز الأيزوفلورين المطلوب لصيانة التخدير، مما يؤدي لتخفيض خطر حدوث انهيار قلبي رئوي الذي قد تجلبه التركيزات العالية من المخدر التنشقي لدى الصقور.

استخدام باروموماسين في علاج عدوى خفيّة الأبواغ في صقرين

أ. رودريجز جباربون، ن. فوربس

خفيّة الأبواغ *Cryptosporidium sp* هي ابيكومبليكسا من شعبة الأولي تسبب تلفا في الخلايا الظهارية للمجري المعدية-المعوية والتنفسية والبولية للفقاريات. وقد سجل العثور عليها في عدة أنواع من الطيور ولكنها لم تسجل في رتبة الصقاريات. يصف هذا التقرير عدوى في أعلى الجهاز التنفسي والتهاب الملتحمة بسبب خفيّة الأبواغ في صقرين، والعلاج الناجح باستخدام باروموماسين بجرعة فموية 100 مج/كجم مرتين في اليوم.

وضع أعداد صقور السنقر في كامتشاتكا

بي. ج. لوبكوف، يون. جيراسيموف، أ. في. جوروفينكو

تتكاثر صقور السنقر عادة في كل أنحاء شبه جزيرة كامتشاتكا فيما خلا منطقة أقصى الجنوب. يستند تقديرنا المبدئي لعدد صقور السنقر المتكاثرة في منطقة كورياك- كامتشاتكا على استقراءات من المناطق التي جرى مسحها. اشتملت المنطقة المسوحة في عام 2005 تغطية مساحة 8007 كلم²، بينما بلغت 10108 كلم² مربع في عام 2006 (أي قرابة 3,9% و 4,9% من المنطقة المناسبة لتكاثر صقر السنقر على التوالي). قدر التعداد في كورياك- كامتشاتكا بقرابة 500 (330-660) زوجا متكاثرا، أي ما يساوي 7 إلى 19 بالمائة من التعداد الروسي و 3 إلى 8 بالمائة من التعداد العالمي. ووجدت أعلى كثافات تكاثر في المناطق الجبلية، وكانت تزيد 7 أضعاف عن تلك في المناطق الواجهة. بالإضافة إلى ما سبق، فإن كامتشاتكا هي إحدى أهم المناطق لصقر السنقر خارج موسم التكاثر. تهاجر صقور السنقر خلال شبه الجزيرة من مناطق أخرى في شمال شرق آسيا وحتى من شمال أمريكا.

الصقارة العربية والاتجار غير المشروع في طير الحبارى

الدكتور أوليفر كومبريو

يتمتع طير الحبارى في آسيا بالحماية من ميثاقين دوليين، اتفاقية حفظ الأنواع المهاجرة من الحيوانات البرية، و سايتس (الاتفاقية الدولية للاتجار بالأحياء البرية المهددة بالانقراض) CITES. ورد طير الحبارى في الملحق الأول لـ سايتس مما يعني منع كل لاتجار والنقل لطير الحبارى عبر الحدود الدولية إلا إذا أقرّ من خلال نظام التراخيص. رغم الجهود التي بذلت مؤخرا عبر العالم لفرض تشريعات الاتجار بالحيوان بعد تعاضم خطر انتقال أنفلونزا الطيور، ما زال اصطياد عدد كبير من طيور الحبارى خاصة في الباكستان وإيران، ونقلها إلى المنطقة العربية لاستخدامها في تدريب الصقور على الصيد مستمرا. إضافة إلى خطر استيراد الأمراض الفتاكة إلى جزيرة العرب، فإن العاملين في مجال الحماية يتخوفون من أن الاتجار بالحيوانات الحية قد يكون له تأثير على وضع الحبارى يماثل في الحدة التأثير السيئ على الصقارة والموائل. حتى تاريخه؛ استقبل المركز الوطني لأبحاث الطيور في محطة الحجر التابعة له قرابة 1500 من طيور الحبارى المصادرة بقي أقل من 50% منها على قيد الحياة، وأطلق 20% منها في الإمارات العربية المتحدة، والباكستان وإيران. إننا نحث الصقارين على الامتناع عن استخدام الحبارى المصادرة لأغراض تدريب الصقور. إن هناك العديد من السبل البديلة كاستخدام أنواع أخرى من الطيور، وتحسين وتحديث أساليب تدريب الصقور. لقد تم إحراز تقدم هائل في إكثار طيور الحبارى في الأسر، وتوضع المئات منها في الشرق الأوسط كل عام. يتيح ذلك إمكانية إعادة تكثير الأعداد وإعادة تقديمها حيثما استنزفت أعدادها في الشرق الأوسط، كما يقدم بديلا من الحبارى المكثرة في الأسر لغرضي الصيد وتدريب الصقور.

الإتجار بصقر الغزال وتهريبه في الصين

ما مينج، تشن ينج

يتم اصطياد صقر الغزال بالفخاخ في الصين للتصدير للشرق الأوسط من أوائل تسعينيات القرن الماضي، بدءا من شينجيانغ وانتشر في نهاية العقد إلى مناطق أخرى مثل كنجهاي ونيغشيا وداخل منغوليا. وكل نشاطات الإتجار غير المشروع فإنه من الصعب جدا تقدير المدى الحقيقي لعمليات التهريب، ولا يمثل عدد الحالات المكتشفة إلا جزءا يسيرا من الإتجار الإجمالي، إلا أنه تم مصادرة 947 صقر غزال في الصين في السنوات 1992-1998، وألقي القبض على قرابة 200 مهربا. إن تنفيذ القانون الصيني لحماية الحياة البرية، وتطبيق العقوبات على المخالفين أمر متفاوت. وقعت الصين الاتفاقية الدولية للاتجار بالأحياء البرية المهددة بالانقراض في عام 1981 وتتعاطى الدولة الإتجار الدولي بالصقور المأسورة في البرية، لكن هذا الإتجار بعيد عن الشفافية. وقد تم إنشاء عدة مشاريع سينة التخطيط كوسيلة لتوسيع التجارة في الصقور من الصين.

ملاحظات من حفل العمل 2007

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موجز

من خلال عقد مبرم مع المستشارين الدوليين للحياة البرية، مولت هيئة البيئة - أبو ظبي عمليات مسح حقلي وأبحاثا وأعمال محافظة لصقر الغزال في عدة بلدان عبر أوراسيا. ما زال هذا الالتزام الطويل الأمد لأبحاث الصقور يحسن من فهمنا لوضع وبيئة صقر الغزال في عدة مناطق من المدى العالمي الواسع لتكاثرها، وقد نتج عنه تطوير في برامج إدارة الحياة البرية كان له فوائد ملموسة في الحفاظ على هذا النوع. في هذا المقال نقدم بشكل موجز عناوين لأهم المشاريع التي تمت في عام 2007؛ وستظهر عروض أكثر تفصيلا في الأعداد القادمة من نشرة *Falco* وغيرها من النشرات ذات الصلة بعلم الطيور. في أوروبا، تم إجراء عمليات مسح لصقر الغزال في بلغاريا وكرواتيا وماسدونيا وملدوفا ورومانيا وصربيا وتركيا وأوكرانيا كجزء من برنامج منسق لشبكة صقر الغزال في جنوب شرق أوروبا، بهدف التحديد بشكل أكثر دقة لوضع النوع في تلك المناطق الأوروبية التي كانت ضعيفة السجلات حتى الآن. أما في آسيا فقد جرت عمليات مسح في منطقتي شينجيانغ وكنجهاي في الصين وفي كازاخستان، بينما جرت أبحاث في مجال برامج إدارة الحياة البرية في منغوليا.



Saker brooding small chicks at an artificial nesting site in Mongolia, 2007.

(Photo: Mark Etheridge)

تستطيع في العدد أن نقدم إجازا سريعا عن موسم العمل الحقلّي الدائم النشاط لخبراء المسح والباحثون في أوروبا وآسيا في عام 2007، والتي مولت جميعها من قبل البيئة - أبو ظبي. قامت شبكة صقر الغزال في جنوب شرق أوروبا SESN الناشئة بتنسيق المشاريع عبر ثمانية دول مختلفة في شرقي أوروبا (وهو أمر غير هين بحد ذاته) ونتيجة لهذه الجهود أمكننا أن نحصل على صورة أوضح لأوضاع صقر الغزال في معظم تلك البلدان. في الحوض البانوني بشرق أوروبا، تمكن صقر الغزال التأقلم مع السهول الزراعية، وأن يجد مواقع للتكاثر في أعشاش الغربان على أعمدة الضغط الكهربائي العالي. وإن كان هناك بعض الدلائل على انخفاض التعداد في منطقة فوجفودينا الصربية إلا أن أعداد النوع قد ازدادت على طول خطوط الكهرباء في كرواتيا المجاورة. يتغذى الصقر هناك بشكل رئيسي على الطيور وفتران الحقل عوضا عن سناجب السليلك التي تشكل الغذاء الرئيسي الرئيس للصقور التي تعيش على خطوط الكهرباء في سهوب مولدوفا وأوكرانيا. أما في الجنوب، فيغلب أن يكون صقر الغزال قد انقرض في بلغاريا ولم يعد له سوى موطن قدم ضئيل في رومانيا. ستوجه جهود الأبحاث المستقبلية في تلك المناطق إلى فهم الاحتياجات المولية لصقر الغزال وتشجيع إعادة الاستيطان باستخدام أعشاش صناعية وربما، في حالة بلغاريا على الأقل، احتمال إعادة التوطين.

في الوقت الراهن، يعتبر طير الغزال طيرا نادر التكاثر في تركيا، رغم الوفرة الواضحة لمواقع التعشيش في سهوب الأناضول. هل يعتبر هذا نتيجة للصيد غير القانوني بالفخاخ لصقور الغزال في موقع تكاثرها. تظهر مقالة لوبكوف وزملانه عن صقر السنقر في كامتشاتكا أنه، وحتى في ذلك الموقع النائي من العالم، فإن الصيد بالفخاخ للصقور المهاجرة أمر شائع. إن الصيد بالفخاخ هو بالتأكيد مشكلة كبرى في دول آسيا كما يتبين من مقالة ما مينج و تشن ينج. وبينما تمثل هذه النشرة للنشر، ينشط صيادو الفخاخ من جديد لقبول من وزارة الطبيعة والبيئة المنغولية، على الرغم من حظر الاتجار الحالي الذي فرضته سايتس (الاتفاقية الدولية للاتجار بالحياء البرية المهدة بالانقراض CITES) بعد المراجعة الهامة للاتجار التي أجريت بطلب من الإمارات العربية المتحدة. ننتظر لنرى تطورات الوضع حيث أن الاتجار الحالي لا يمكن تعزيره ولذا فهو لا يتماشى مع المعايير التي فرضتها سايتس.

يعتبر الصيد بالفخاخ واحدا من العديد من المشاكل التي تواجه الأنواع المهاجرة، وأدت المتابعة بالأقمار الصناعية لصقور الغزال من منغوليا إلى اكتشاف الخطر الرئيسي والمتزايد الذي تمثله الخطوط الجديدة لتوزيع الكهرباء بالنسبة للجوارح المهاجرة والتي تبيت شتويا في أقاصي شرق الصين. إن الأمر لا يعدو أن يكون سهوا من شركات توزيع الكهرباء، وأن نظرة أفضل للعواقب في تصميم أعمدة الكهرباء سيؤدي إلى تناقص دراماتيكي في معدلات موت الجوارح، وأرقام حوادث انقطاع الكهرباء الناتجة عن الصقور الكهربائي للطيور. إن الدعاية الإعلامية، والتثقيف، وإعادة تجهيز العزل كلها أمور مطلوبة بشكل عاجل لمواجهة المشكلة.

استجابة للأخطار التي تواجه الصقور المهاجرة تتولى حكومتي المملكة المتحدة والإمارات العربية المتحدة في القيادة المشتركة لمبادرة تهدف إلى استكشاف تطوير اتفاقية جديدة تساعد في الحفاظ على طيور الفرائس (البازيات) واليوم المهاجرة في منطقة أفريقيا-أوراسيا. يأتي ذلك قرارات لمجموعة العمل الدولية لطيور الفرائس (البازيات) واليوم (بودابست 2003) واتفاقية الأنواع المهاجرة (نيروبي 2005) اللتان طالبتا باتخاذ الإجراءات لمعالجة الأخطار التي تواجهها تلك الطيور. ستتطور هذه المبادرة من خلال اجتماع بين الحكومات في سوتلندة (من 22 إلى 25 أكتوبر 2007) لبحث الشكل المحتمل لاتفاقية جديدة للإسهام في حماية الطيور الجارحة المهاجرة. للمزيد من التفاصيل يرجى مراجعة الموقع التالي <http://www.cms.int/species/raptors/index.htm>.

كما يقوم الصيد بالفخاخ للصقور البرية بالتأثير السلبي على تعداد الصقر البري، تظهر مقالة للدكتور أوليفر كومبريو، من المركز الوطني لأبحاث الطيور، الهدر الناتج عن تهريب طيور الحبارى الحية من الباكستان إلى الشرق الأوسط لاستخدامها في تدريب الصقور. إن على الصقارين أن يعوا أنه في مقابل كل طير حبارى يصل للشرق الأوسط تموت عشرة طيور على الأقل في عملية النقل، وأن المحصلة النهائية هي توفر عدد أقل من الطيور للصيد. إضافة لذلك فإن هناك خطرا حقيقيا أن تؤدي تلك التجارة إلى جلب أنفلونزا الطيور إلى دولة خليجية، مما سينتج عنه انتشار كبير سلبي لسمعة الصقارة العربية.

في تقرير يصف الآثار المدمرة لأنفلونزا الطيور ذات النمط الظاهري العالي في الصقور بالمملكة العربية السعودية، يصف الدكتور خايمة سامور وزملانه الدور الذي يلعبه الاتجار بالصقور البرية التي تصاد في أواسط آسيا وتهرب إلى الشرق الأوسط. يشير المؤلفون أن هناك حاجة لتحسين القوانين التي تحكم استيراد وتصدير الطيور إلى تلك الدول وتعزيز القوانين الحالية المتعلقة بإجراءات الحجر في نقط الحدود.

يقدم الطبيبين رودريجز و فوربس وصفا لعلاج حَيَّة الأبوغ cryptosporidium، وهو مرض طفيلي متزايد الانتشار بين الصقور الأسيرة، ونعيد في قسم الرسائل نشر نقاشات بين الأطباء البيطريين في مجموعة النقاش بموقع بيردمد Birdmed حول تحديات علاج هذه الحالة. تغطي مقالات بيطرية أخرى مواضيع تشمل التخدير، ومراقبة ضغط الدم، وقيم غازات الدم، وعدوى المفطورة mycoplasma.

إذا هناك تشكيلة متنوعة من المقالات البيطرية والبيئية مثيرة للاهتمامنا. مع بزوغ ضغوط جديدة في المحافظة وأمراض تؤثر في أعداد الطيور الأسيرة والطيقة، يبدو جليا أن علينا نحن المهتمين بطيور الفرائس بذل الكثير من الجهد لموسم آخر.

