



FALCO

The Newsletter of the Middle East Falcon Research Group
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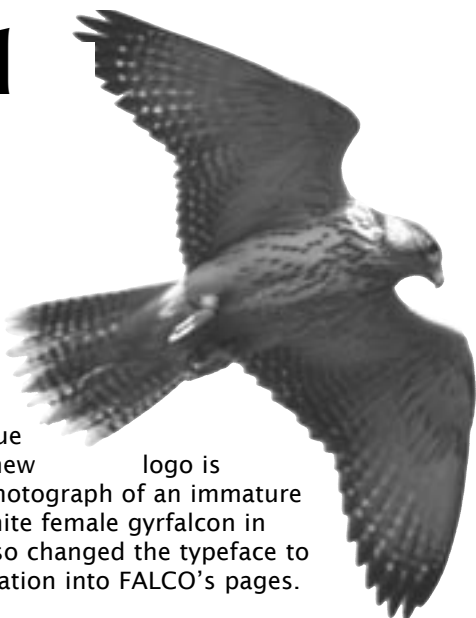
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Immature black gyr x saker

FALCO is published quarterly 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 editor cannot be held responsible for the accuracy of contributions. Opinions expressed within are those of the individual authors and not necessarily shared by the editor.

Editorial



Welcome to the Winter 1998 edition of FALCO. The changes continue apace! Our new logo is taken from a photograph of an immature captive-bred white female gyrfalcon in flight. We've also changed the typeface to fit more information into FALCO's pages.

This issue contains material on a wide variety of subjects: from conference reports to falcon fieldwork; from papers on modern taxonomic concepts to falcon trapping in Saudi Arabia. An encouraging report comes from the Lahore Conference on falcon and houbara issues (page 4): such international co-operation in this field bodes well for the future.

I would like to stress the importance to the MEFRG and falcon conservation - of obtaining microchip (PIT) and ringing data. For several years, fieldworkers and researchers such as Robert Kenward in Kazakhstan, David Ellis in Mongolia, NARC fieldworkers in Russia, Kazakhstan, Kyrgyzstan, Mongolia and Siberia, have been ringing birds to ascertain migration routes and as part of an attempt to understand harvest and survival rates of young and adult birds. This data is essential to future conservation efforts. Please, if you have any such records, forward them to the MEFRG, c/o Chris Eastham, at the editorial address, where they will be databased for conservation purposes. If you have any queries about the database, please contact Chris. Thank you.

This issue is being translated into Arabic and Russian editions. FALCO is also available on-line at the ERWDA website <http://www.erwda.gov.ae>

On a personal note, this is my last issue as editor of FALCO; I will shortly be leaving to work on a PhD on the history of raptor conservation. I'd like to thank all those who have contributed to this and previous issues. Please send your contributions for the next issue to 'The Editor, FALCO' at the current editorial address.

Helen Macdonald

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:

Regional workshops on veterinary medical aspects, falcon biology topics, falconry and conservation issues.

International Conferences on veterinary medical aspects, falcon biology topics, falconry and conservation issues.

To publish:

Joint papers on aspects of falcon conservation, falcons and falconry.

A quarterly 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.

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1998 Falcon and Houbara Conference

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The Conference was held on 30 and 31 October 1998 in Lahore, Pakistan. Hosted by Brigadier Mukhtar Ahmed of the Houbara Foundation Pakistan and the Falcon Foundation Pakistan, it was opened by the Chief Minister for the Punjab. Delegates included Ministry officials and specialist biologists from Afghanistan, China, Kazakstan, Kyrgyzstan, Mongolia, Pakistan, Russia, Saudi Arabia, Tajikistan, Turkmenistan, the United Arab Emirates and Uzbekistan. Biologists reported on the status of saker falcon and houbara bustard in their own countries.

Afghanistan

Abdul Wajid reported that no institutions are functioning for conservation efforts in Afghanistan. Falconry has been practiced for centuries in Afghanistan on a sustainable basis, hunting many species of birds, but rarely Houbara. Twenty-two years ago, Arab falconers began hawking in Afghanistan legally and sustainably in agreement with the Government. With the current war, no practical conservation law is being enforced, and doors are open to poaching and corruption. The Taliban is reluctant to stop the hunting and the income it brings, and shepherds report that numbers of houbara are decreasing. Falcons are being trapped over about 60% of the land area of Afghanistan and are smuggled to dealers in Pakistan. Poverty-ridden local people are not benefiting from this trade. There are no public awareness programmes on these issues, and many other species of raptors are trapped by people believing they are falcons.

Uzbekistan

Dr Elena Kruezberg reported that a project by UAE falconers to breed houbara in captivity is underway in Uzbekistan. Falconry is practised in Uzbekistan, and its saker populations are both migratory and resident. Following the publication of high falcon prices, large numbers of people attempted to trap falcons and other raptors including eagles. Trapping activity has declined somewhat over the last couple of years, with the realisation that there was no market for these birds. A breeding project for falcons exists which bred 11 sakers in 1996 and 50 in 1998. These have been used to increase the numbers of breeding stock. Eventually production will be used for releasing birds into the wild.

Kyrgyzstan

Mr Kuvan Kasiev, Chief of the Kyrgyz Department of Biodiversity and Nature Reserves, explained that falconry using eagles, falcons and goshawks is traditional in Kyrgyzstan. They have a falconry festival supported by about 50 falconers, but the total number of falconers is not known. With independence in 1990, falcons became objects of trade.

The government has made attempts to stop the smuggling: in 1998, Syrians were twice caught smuggling falcons at airport customs. The National Avian Research Center began a monitoring program in Kyrgyzstan in 1998 but had problems with the personnel on the Kyrgyz side. New personnel will be contracted in 1999. The notorious Pakistan falcon trader, Omar Farouk, has set up a joint venture on falcons in Kyrgyzstan. Kyrgyzstan has little suitable habitat for houbara, although the species migrates through the northern part of the country in the autumn.

Kazakstan

Dr Levin reported on the situation in Kazakstan. Pre-1990 the population of sakers in Kazakstan was estimated at 5-10,000 pairs. Today, the saker is in a critical position in many parts of Kazakstan due to the trapping of both young and breeding birds. The National Avian Research Center saker monitoring programme is continuing there. Dr Boris Gubin reported that 70% of the world population of houbara are found in Kazakstan. The inclusion of the houbara in the Red Data Book has not helped the species but simply made it more difficult to work and to publish material on houbara. A lack of finance means that protected areas are less well warded than before, and there are no funds to support a study on houbara or to initiate a conservation programme on the species. He called for a co-ordinated study of houbara in central Asia and the establishment of protected areas and controls on hunting

Russia

Professor Galushin of the Russian Bird Conservation Union reported on the monitoring programme carried out in 1997 and 1998 as part of the National Avian Research Center's saker programme. Field expeditions revealed a retreat of the saker population from many of its western areas. Many lowland saker populations fluctuate with changes in food supply such as susliks, whereas the Altai population, living on Daurian pikas, has been more stable. The main strongholds for sakers in Russia are now in the Altai and Tuva regions, with smaller populations in the middle Volga and Crimea. The current range is only about 1/20th of reports from 20 years ago. Galushin's total estimate for the whole of Russia was 2-3000 pairs. He estimated that the decline is partly due to a loss of saker prey-base: mammal populations have been affected by changes in land use. Decline has also resulted from the trapping of up to 1000 sakers a year, many by Syrian students in Southern Siberia. In 1997, 200 sakers were confiscated; in 1998, 50, but many more were smuggled without being caught. In the Trans-Baikal area, sakers often nest in the nests of Imperial Eagles. This population is also on the decline.

Tajikistan

Dr Rustam Mouratov reported that Tajikistan, an independent state since 1990, is 93% mountainous with a rich biodiversity including 41 species of

raptors. Migrating Gyrfalcons have been found here in the winter months. Approximately 20 pairs of *coatsi*-type sakers and 6 pairs of *milvipes*-type sakers breed here, but many more are seen as migrants: at least 100 migrate through the north in autumn. They have no resident peregrines but *calidus* visit in the winter. They have about 10 pairs of shaheens but about 2 pairs a year are destroyed. The law protects falcons but is not enforced in Tajikistan. They have prepared a program for monitoring raptor populations and have established a captive breeding center. Only 1-2 sakers have been discovered in local markets but recently quoted high prices of falcons have motivated trapping and probably more than 100 sakers are smuggled out every year, especially by Syrian trappers. In 1998, 31 sakers were confiscated from 2 Syrians at the airport. The government considers saker populations to be in decline. Local people take young from the nest but the foreign trappers have taught them now to trap adults. The decline in agriculture and less hunting has, however, improved habitat for falcons

Turkmenistan

Mr Chichaev Gueldi reported that falconry is traditional in Turkmenistan, mainly with the saker falcon and also sometimes together with Tarzi dogs. In 1998 they set up a National Association of Falconry and Protection for falcons in Tajikistan. Their major aim is to protect falcons as a basis for falconry but one of their problems is the isolation of the country and they need help from other nations.

Mongolia

Dr Shijirmaa reported on the monitoring of sakers undertaken in Mongolia, where the government issue a small quota to export sakers for falconry. The saker monitoring programme supported by NARC is now well under way. Two field teams surveyed study areas in 1998 and located approximately 100 breeding pairs. The provisional estimate of sakers in Mongolia is around 2800 pairs.

China

Dr Gao Xingyi (Xinjiang Institute of Biology and Geography Research of the Chinese Academy of Sciences) reported on the houbara fieldwork undertaken with NARC in Western China. Dr Fred Launay, NARC's Head of Ecology, reported on satellite tracking results showing the movement of houbara from China north across Southern Kazakhstan into Afghanistan, Pakistan and the Gulf. NARC is making preparations for saker surveys in China.

Strategy Plan

Dr Fox and Dr Launay reported on the Global Strategy Plan for Arab Falconry. This conservation document is currently being prepared by ERWDA. It calls for hunting controls and proper organisation to ensure that houbara populations and habitat, and the supply of falcons is managed on a sustainable basis.

Falcon and Houbara Conference Day Two

The second day of the conference was spent on working groups discussing issues such as conservation measures, research priorities, and the legal framework of controls by which houbara and



EUGENEPOT POV

**Saker Falcon and chicks,
Mongolia 1998**



Delegates at the Lahore Conference



falcons could be sustainably managed. It was a good opportunity for delegates from neighbouring countries to get together and discuss common problems and their possible solutions. Several of the countries involved such as Russia, Mongolia, Pakistan, and the UAE, are CITES signatories, and some of the former Soviet Union countries were signatories when they were part of the Soviet Union, but seem uncertain as to their current status. Ways should be found to implement some of the CITES obligations regulating trade in birds of prey and houbara.

General Item on the Permit System

In **Kazakhstan**, biologists would like to see a more open system from the government for issuing permits. Currently the government issues permits secretly: nobody knows who they are issued to, or how many are issued. They estimate that each permit costs 4-\$5000 US.

In **Mongolia** a limited number of permits are issued, each permit costing \$2700 US, which goes to Central Government. Of each permit, 10% goes to the Conservation Department of the Government, and \$210US to the local community to use as they wish. Last year the Government confiscated 47 illegally taken

sakers.

In **Pakistan** the government has issued quotas for licences since 1980. It charges \$400 US for a trappers licence, \$200 US per bird for the sale. This is for internal use in Pakistan. A licence to export the bird costs \$400 US and is allowed only by dignitaries and VIPs who sponsor a dealer to export the bird. The quota is controlled by federal government at 250 birds per year and the NW Frontier Provincial government quota is 600+ birds. These are sakers and peregrine falcons. The Conference considered ways in which there could be more coordination between exporting and importing countries, bearing in mind that some of them are CITES signatories.

Thanks

The delegates were unanimous in thanking Brigadier Mukhtar and our Pakistan hosts for arranging the Conference and looking after everybody so well. It was a landmark in Asian Falcon and Houbara Conservation.

Report on the 5th World Conference on Birds of Prey and Owls, Midrand, South Africa 1998

Helen Macdonald

70 indigenous species of raptor? South Africa: a perfect country for the 5th World Conference on Birds of Prey and Owls. Held in tandem with the Biomedical Conference, the WWGBP conference was extremely well-attended. The delegates' heavy schedule was lightened by trips to a Cape Griffon vulture colony, to a cheetah breeding centre (where we saw the EWT's first captive bred Egyptian vulture), and to a splendid formal meal celebrating 25 years of the Endangered Wildlife Trust. Sessions of special interest to MEFRG members include the following, though the numbers of excellent papers presented preclude mention of each one. The Proceedings are currently in preparation.

Satellite Telemetry to study raptors convened by Bernd-U. Meyburg and Mark Fuller. Papers included Meyburg and Paillat on satellite tracking of Steppe eagle migration and Henny, Seegar et al on the location of wintering Peregrines from the Kola Peninsula in Russia.

Falcons in Asia and the Middle East Falcon Research Group chaired by Vladimir Galushin and Nick Fox, included papers on new developments on the western border of the Saker range (W. Baumgart), the status of the Lugger in Pakistan (A. Mukhtar *et al*); organochlorine residues in peregrines in Taymyr, Northern Siberia (J. Quinn), and papers on the status of the Saker in Mongolia (D. Shijirmaa *et al*), Kazakhstan (A. Levin *et al*) and European Russia (V. Galushin and V. Moseikin).

Conservation Biology of the World's Migratory Raptors: Status and Strategies Keith Bildstein and Reuven Yosef chaired this session of papers on the biology, conservation and the political aspects of migratory raptors.

Other sessions included Predation and Feeding Ecology; Distribution; Raptors in Urban Environments, Conservation Models for Raptors of the World; Current Studies of African raptors; Biology and Conservation of the Vultures of the World, Islands and Raptors, and the impact of Electricity Structures on raptor populations.

General sessions included a paper by Andreas Helbig on Genetic differentiation and phylogeny of raptors; a topic revisited on 11 August, with a session on **Taxonomy, phylogeny, development in raptor DNA studies and other theoretical aspects**, convened by Michael Wink and Anthony van Zyl. Robert Kenward and Michael Wink's paper on the use of DNA fingerprinting to determine annual survival rates in Saker Falcons was particularly interesting and pertinent.

A series of workshops and round table discussions

held on 9 August included a **legislation and trade workshop** convened by Jemima Parry Jones and David Newton. The end of the conference brought with it a session on Resolutions chaired by the tireless Robin Chancellor with assistance from Nick Williams. Many Resolutions were proposed, debated and ultimately passed in this important session. Resolutions were then forwarded to the Raptor Research Foundation's annual general meeting for ratification. Resolutions of especial interest to MEFRG members are (briefly) as follows:

Resolution 12

RECOGNISING that scientific and veterinary studies on birds of prey play a vital part in the conservation of these birds and that such work often requires the international movement of samples (derivatives) taken from species subject to controls under the Convention on the International Trade in Endangered Species of Wild Flora and Fauna (CITES), and NOTING that diagnostic and other samples usually need to be examined promptly if meaningful results are to be obtained, and NOTING that CITES controls on the movement of such derivatives can cause delay in delivery of valuable material, prove excessively time-consuming and are at times impossible to follow, and NOTING that some countries are not signatories to CITES or lack CITES issuing facilities, THIS CONFERENCE urges the CITES Secretariat and Signatories to the Convention to devise a system which would permit the rapid movement between countries of samples (derivatives), for example, blood smears, biopsies and tissues for DNA studies, for scientific research or veterinary purposes.

Resolution 13

RECOGNISING that the CITES appendices require regular revision to encompass new understanding of animal demography and changes in patterns of trade, and RECOGNISING that direct costs to CITES administration authorities and indirect costs, for example, to research workers, should be concomitant with conservation benefits that result from regulations REQUESTS the CITES Secretariat to review its appendices with up-to-date recommendations from raptor biologists, taking note of IUCN criteria and with particular emphasis on:

1. Raptor species or sub-species with globally small and vulnerable populations in the wild.
2. Raptor species with population dynamics that cannot sustain a high yield.
3. Raptor species liable to be affected by Trade in the next decade.
4. Reviewing the status of raptor species in appendices on a 5-year basis.
5. Urging the European Union to adopt the same principles.
6. Downlisting species that no longer meet CITES criteria.

Resolution 14

RECOGNISING that captive breeding and reintroduction of endangered species can be important proven conservation methods and that speed and timing of movements are vital for the success of the methods. RECOGNISING that the statistics from TRAFFIC in CITES movements show an increasing preponderance towards captive-bred birds, and consequently a decreasing proportion in the trade of wild birds, and RECOGNISING that the current situation penalises the movement of captive-bred birds rather than encourages it. REQUESTS CITES to urge all member countries to

accelerate the process for issuing export/import permits to meet these conservation efforts.

Resolution 15

RECOGNISING that some bird of prey populations are under pressure from live harvesting URGES all governments which issue permits to harvest birds of prey on an annual quota system to do so: 1. only where an adequate monitoring programme of the breeding population shows that such a harvest is sustainable long-term, and 2. only for juvenile birds, not for adults, in order to minimise impact on the donor population.

3rd International Raptor Biomedical Conference



J IMES MOUR

Dr Jaime Samour
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The 3rd International Raptor Biomedical Conference was held at the magnificent facilities of the ESKOM Conference Center in Midrand, a suburb of Johannesburg in South Africa, from the 9th to the 11th of August 1998.

On the 9th August, participants had the choice of attending 'Wet Labs' or short courses at the world class Oonderspoort Veterinary School. The courses were on the 'Ophthalmology of birds of prey and owls' by Dr Rudiger Korbelt, 'Orthopedics in Raptors' by Dr Patrick Redig and 'Rehabilitation techniques in raptors' by Dr Karen Trendler. The courses were superbly organised and gave us the opportunity to get an update of the latest developments in these disciplines. After the course, many of us even had the opportunity to visit the excellent facilities of the school, but in particular the small and large animal hospitals.

The main Conference was held on 10 and 11 August. The sessions were divided into several areas. On the first day, the sessions included topics on 'Pathology and Microbiology', 'Environmental diseases and mortality factors', 'Management of raptors and falconry birds' and 'Medicine and therapeutics.' In

the evening, participants had the opportunity to present short papers in a 'Free communications and poster presentations' session. On the second day, sessions included topics on 'Surgery and Anaesthesia', 'Rehabilitation and post-release monitoring and survival', 'Breeding and genetics' and 'Legal and ethical aspects.'

Most papers were well presented and the quality of the photographic material was simply the best I have seen for a long time. Some papers were outstanding and the presenters made every effort to bring out the latest developments in medical and clinical research.

Some papers worth mentioning included the presentation by Dr David Remple and Mr Neil Forbes on the use of antibiotic impregnated polymethylmethacrylate beads as a collateral

treatment for bumblefoot; the illustrative lecture by Mr Nigel Harcourt Brown on tendon repair and replacement in the pelvic limb of birds of prey, and the paper by Professor Ullie Wernery on clostridial enterotoxemia in falcons. We were very lucky to have Dr Patrick Redig presenting the latest techniques on fractures repairs in raptors, as well as Dr Rudiger Korbelt presenting different techniques on ophthalmoscopy in raptors. This does not mean that these were the only useful papers. We had, in fact, a wide range of topics, from the basic anatomical studies of the wing in falcons, to the use of the most sophisticated techniques to study viral diseases in birds of prey. For all participants, the Conference served a dual purpose: to learn from the presentations and to have the opportunity to meet old friends (and new ones too!) and to exchange views and news from around the raptor world. I personally enjoyed the Conference. I just wished that more participants had made the trip to South Africa. I guess some may have found the costs involved too high. Nevertheless, the Conference was truly an enjoyable experience. The credit should go to the organisers, especially Dr. S. Lumeij for shouldering such a herculean task. I certainly look forward to attending the next Conference and to experience, once more, the intense feeling of being surrounded by colleagues and friends.

Negative Feedback

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The start of another season and throughout the Middle East and other parts of the world, falcons are being bought and sold. Colour, size, plumage pattern, region of capture: all influence price. Some falcons will be purchased by falconers and used by themselves within the Kingdom of Saudi Arabia, others are bought as gifts for uncles and brothers or Sheikhs within the Gulf region. This is the time of year when falcons remind the people of their desert traditions and strengthen relations, businesses and friendships across Middle Eastern countries. It is by this virtue that they are so highly valued.

There is firm belief that a resource is 'provided' for the benefit of the people, it is there to be used. Despite the recognition that 'years ago this area used to be full of sakers, ten in every tree' and despite the accepted fact that 'one day there might be no more,' trapping pressure is increasing, precipitated by the escalating price of a dwindling natural resource. The attitude is very much that of 'living for the day.' Several weeks ago I was on the Red Sea coast south of Jeddah: so was every one else, or so it seemed. I had been invited down to one of the many trapping camps established in this region during the autumn migration. Arriving in the evening, the trappers were just finishing training their falcons. The trapping method used in this area is to release a pigeon with a noose harness once a wild falcon has been sighted.

When the falcon binds to the pigeon, a Lanner or Barbary falcon is released which has been trained to try and take the prey away from the wild falcon. All three birds come tumbling down and are restrained and separated as quickly as possible by the trappers following the flight. It is these Lanner and Barbary falcons which were being trained upon my arrival. Much to my horror, Pallid and Montagus Harriers with bundles of red cloth tied to their feet were being used as substitutes for prey-carrying falcons. Inevitably they succumbed to an over-eager falcon at some stage during the proceedings.

By nightfall the coastal plain, or Tihama, revealed the numerous camps established for the season. After another month the falcons will have passed, the rains will arrive and the sabkah sands will become impassable for vehicles. The night is filled with the hum of generators as the trappers return to camp. Only one falcon caught that day, an adult peregrine tiercel. We drove off into the night to see the falcon in one of the camps. Probably three or four years old, straight out of the breeding population. How many young might this handsome fellow have produced during his lifetime? Spread-eagled and panting in the sand, with his immune system breaking down before my eyes, this one falcon produced enough topics of

discussion to last the entire weekend. I was blessed with Samir, a local falconer/trapper and English teacher.

We sat down on the rug to a meal of bread and bean soup, tea and dates, smoked shisha pipes and talked falcons late into the night. There is always a fine line between telling the rights and wrongs, do's and don'ts, and explaining as simply as possible the advantages and disadvantages of doing things in different ways. If the listener through discussion can be lead through a series of questions and answers into reaching logical conclusions for himself, then far more is achieved than simply laying down the law. Apart from the novelty of having an expat in the camp, the group really seemed to appreciate discussing and learning about falcons. 'If the small Peregrine has babies they will not all be small, if the big Peregrine has babies they will not all be big.' 'Big Peregrine and small Peregrine make babies together and some will be big and some will be small.' 'No, the first egg is not always female and neither does the colour of the tongue determine whether it will be a strong hunter!' By the early hours, with glazed looks and the mind filled with more than it could cope with, we fell to sleep under the stars.

After first prayer we set out. In the past I imagine camps were established along the coast and trappers moved on foot or by camel. No longer. At dawn the horizon was full of vehicles on the move covering every piece of land, ever hopeful of spotting their prize. Old Bedouin scanned the sands from their trusty old Toyota pickups, the New Kids on the Block raced around in their Wrangler jeeps, some had even hired a vehicle for the day or borrowed one with a promise of a share in the profits. Apart from the potential trapping effects on large falcon populations, many other raptors migrate along this coastal highway, and fall victim to people trying to make their fortune. Within the last two weeks at the National Falcon Hospital I have been presented with a Steppe Buzzard in an orange carton, a Kestrel on a shoelace, a Montagus Harrier in a chicken basket, a Pallid Harrier with a leg missing and a male Barbary



BRIG DIERMUKHT R HMEED

falcon which eclipsed my previous feather imping record of seventeen: twenty-nine feathers later I had rebuilt a Barbary! How long it remained in that condition I will never know - it was for resale.

All these birds were brought to the clinic with one common denominator - the question - 'How much can I sell it for?' They all left with the same answer: 'Less than the consultancy fee I'm going to charge you if the bird is not released a.s.a.p.!' Whatever the person's nationality, all shared a common look of disappointment, disbelief and shattered dreams of wealth. Falcons are as much in demand as ever before and as prices increase for wild-caught falcons so the number of people trying to trap and sell increases. The man on the beach trapping buzzards and harriers might be discouraged, the man from Caucasus who sat in front of me with a list of 20 falcon species requesting that I condemn the 'desirables' with a cross from his black marker pen, less easily. His parting words of 'but my government wants to know' added a new dimension to the problem. Needless to say, his piece of paper left unmarked but I am sure it didn't remain that way for long.

By 10am the temperature had soared to a sweaty forty degrees and we returned to camp. Everyone came in empty-handed that day. Not only had no falcons been caught, no falcons had been seen other than the Sooty falcons chasing passerines along the dune tussocks. We sat out the searing heat, ate dates, drank tea for six hours and discussed the benefits of astroturf, water, stress-free handling and veterinary hospitals. However, unlike the average cat or dog owners who are willing to pay whatever it costs for



Pallid Harriers in the souk at Sharjah, UAE

Whiskers to get better, falconers, and especially trappers, are far more practical. If the treatment costs more than the falcon, then they'll buy a new falcon. Similarly, if a trapped falcon becomes sick, sell it as quickly as possible before it starts to cut into the profits. The only way to improve health care among trapped falcons, reduce the numbers of redundant harriers, buzzards and eagles being trapped and increase the awareness of the trappers and falconers is to get amongst them. If approached in the correct way, they appreciate the effort made by 'outsiders', they learn something, we learn something, and lots of tea is consumed in the process.

Unfortunately things are never as simple as they first appear. Whether the trappers are in Jeddah, Syria, Pakistan or China, many of them are on the breadline. One falcon could potentially provide a family for an entire year, although most of the profit will go to the dealer moving them out of the country. With entry visas for the United Arab Emirates being relatively easy to acquire, more and more people are bringing falcons with them as part of their tax-free shopping trip. Saudi Arabia still has its falcon markets but many Princes travel to the Emirates to purchase falcons.

So where does this leave us? There is a demand for falcons throughout the Middle East; always has been. However, thirty years ago there were limited numbers of trappers, fewer established falcon markets, falcon prices were considerably lower and the average man on the street did not enter the equation. Nowadays twenty percent of the demand in the United Arab Emirates is satisfied by the purchase of captive-bred falcons, the figure in Saudi Arabia is almost negligible. Prices for wild-caught falcons are increasing, and this fact seems to be common knowledge the world over. Southern Arabia and the Gulf States have been trading routes in anything precious since the Queen of Sheba was around. The situation is no different today. For the business-minded, the falcon is as valuable a commodity as diamonds from Russia. The ease with which falcons can be transported from countries as far away as China and Mongolia is increasing, and to add to the problem, people are travelling from the Middle East to the source countries to be at the front of the queue to get the pick of the falcons.

Trappers readily agree that falcons are less common, falconers accept that prices are escalating due to increasing wishes to own the best falcon and because of the rising price associated with a decreasing commodity, associated with the price increase is a rise in the number of people trying to trap falcons and so begins the negative feedback. Somewhere there has to be a break in the downward spiral. The trapper has his family to feed, the businessman has his financial appetite to satisfy, the Arab falconer needs to fulfil the urge to hunt and retain his cultural link with the desert, then there is the man from Caucasus whose 'government needs to know.' At what level should the problem be addressed?



Trapping now impacts birds across their range: this male saker was found dead in 1996 at a saker nest site in Kazakhstan, toes caught in nooses of twine placed all around the nest ledge.

N. TOLYEVIN

The Paradox of Industrialisation in Mongolia: expansion of Sakers into flat areas is dependent on industrial activity

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Environmental Protection Agency, Mongolian
Ministry of Nature and the Environment.

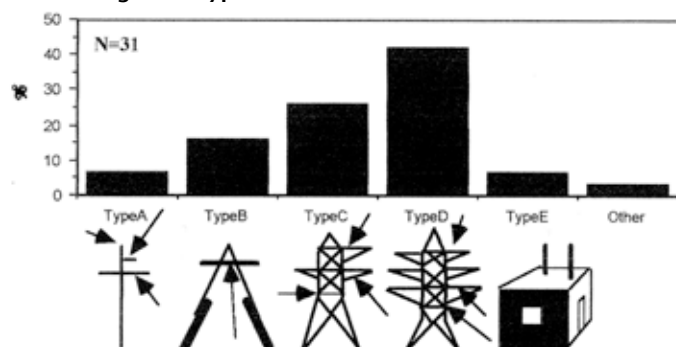
Mongolia is a diverse country which stretches from taiga biome to extreme deserts. It has several high-mountain systems such as the Mongolian Altay, Khangay and Khentey, but is mostly either flat steppe, or rolling plains with few landmarks. In some parts, groups of cliffs break up the horizontal landscape of the steppe, and some gentle slopes on elevated parts of the steppes. Suitable nest habitats for cliff-nesting birds are scattered across huge plains, and usually located in clusters. Sakers occur in most biotic zones of Mongolia including mountains, steppes, and semi-deserts (Fomin & Bold 1991). Saker nests are usually located on cliffs or trees as well as on human-made, artificial structures such as wells, abandoned buildings and electric poles (Ellis 1997). Almost all artificial nest structures have appeared over the last 50 years, and this has provided more breeding sites for Sakers.

Mongolia has traditionally exploited its steppes for grazing: they represent the largest pasture in the world. Natural pastures make up 85% of the total land area, and are in constant use. Pastures are inhabited by a number of wild animals including the Saker. Grazing traditions have not altered significantly over the last centuries and therefore no significant changes took place in the habitats suitable for Saker falcons.

drivers were equipped with radios to warn traffic wardens of 'animal-on-track' situations. The cabins were abandoned, and became good nest sites for sakers as well as other birds of prey (see photo above). Apart from these cabins, Saker Falcons could build their nests under railway bridges (Figure 1, half of the 'Other' category). The creation of the Trans-Mongolian railway also triggered the construction of several telegraph and power lines which initially ran parallel to the railway. This network has since expanded dramatically (Figure 2).

Currently all aimag centres as well as most villages (somens) are interconnected with telephone-telegraph lines. These telegraph poles are generally unsuitable as nesting sites for sakers except for 'corner' poles located at places where the line changes direction. Such poles usually have two,

Figure 1: Types of artificial nest sites





three or four legs with several beams in the upper part. These beams offer good places for nests (type B, Figure 1).

In addition a new electric-powerline network was created in the late 1970s connecting the largest cities and settlements (Figure 3). Currently only centrally located cities and settlements are part of the network. These cities are all located between Ulaanbaatar, Seyshand, Erdenet, Darkhan and Tsetserleg. This system is supplied with electricity by powerplants in UlaanBaatar, Darkhan, and Erdenet, but most of the power comes from the Irkutsk Hydroelectric dam, Russia, and the whole system was designed to supply Erdenet copper smelter and UlaanBaatar. There is a small part around Choibalsan, which has been net-worked with a local system. Most of the country has not yet been interconnected with the electric powerline system, and relies on small diesel stations scattered in the regional centres. The networked powerline carries high-voltage current and is built of metal pylons which serve as a good nesting sites (Figure 1 type C, D). Sakers also very occasionally build their nests on less-suitable pylons (Figure 1, type A). The high-voltage of the powerline acts as a splendid protection for the birds, as safety considerations usually scare climbers off.

The availability of artificial structures in regions where natural nest sites are extremely limited thus makes a significant amount of territory available for Sakers for breeding. Such territories would never otherwise be occupied by sakers, and it is only the impact of industry which has created these structures. A lack of human disturbance due to safety reasons (powerlines) economic recession (mechanised wells), or technological improvement (railway cabins) has made it possible for the Saker Falcons to use these structures for their benefit.

In the past, few, if any, artificial structures were

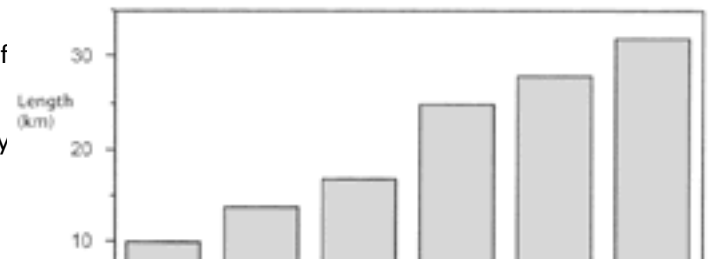
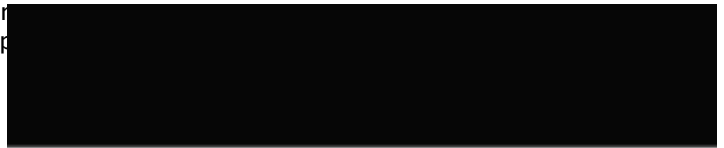


Figure 2. Total length of telegraph and telephone lines in Mongolia (data for 1990 -estimated). (Mongolian National Atlas, UlaanBaatar, Moscow 1990, In Russian, Sodnom, N, Yanshin, A.L. - Editors in Chiefs). No significant recent developments have been reported.

available for falcon nesting. Russian scientist Przhevalskiy left no record of such a phenomenon despite his thorough studies in numerous expeditions in Mongolia (Przhevalskiy 1876). Baumgart (1978) made several study visits to Mongolia in the 1970s, but does not mention Sakers breeding on artificial nest structures. In the 1970s several expeditions visited Mongolia, but did not record the breeding of Sakers on human-made structures. Even when Sakers were specifically wanted for collections, no nests were found on pylons or on wells (Potapov 1986). It appears that the Falcons began to utilise human-made structures only in the 1990s when most of them ceased to be used. It coincided with a major economic depression and the withdrawal of Soviet military troops.

The economical and political situation could make several predictions of the further use and availability for the Saker Falcons of human-made structures. It appears that railway cabins and abandoned mechanised wells will remain in the steppe for

Industrial revolution on a large scale commenced in Mongolia only in the mid 1940s. It significantly affected agriculture through the creation of artificial electric or diesel-powered wells. Traditional Mongolian wells, used for centuries, are a simple hole in the ground, with walls reinforced with stones, bricks, or sometimes wood. The water is taken from the well with a bucket. Such wells have no roofs or cabins erected around them and thus do not offer nesting structure for Sakers. The existing network of wells was expanded through the development of a new type - the drill well. This technology was introduced in Mongolia in the late 1960s. The drilled well consists of a metal pipe inserted into a narrow, drilled hole in the ground. The water is pumped either manually by rotating a large metal bar, or mechanically using either an electric motor or by a simple one-cylinder diesel engine. These mechanically powered wells have concrete walls and a roof (usually wooden). The expansion of these wells reached its maximum in 1970s-80s, when 63.8% of pastures were irrigated with water from mechanical wells. These mechanical wells are now, however, mostly abandoned, because it was too expensive to maintain the engines, and a lack of spare parts and the expense of diesel fuel made them impossible to operate. All of these abundant mechanical wells are used as breeding sites by doves, and some by Saker falcons (type E, Figure 1).

Two large scale industrial actions have dramatically altered the Mongolian wilderness. One was the creation of the Mongolian railway in 1949-1950, forming a short-cut on the Transiberian railway, and the other was the expanding network of electrical

some time (2-3 decades) until they are ruined by weathering. It is extremely unlikely that they will be restored and/or subsequently used in the same way. There is no chance that new wells or railway cabins of these types will be built as there are new, more economical solutions available. It appears that the existing electric powerline network will remain in place for a good number of decades, but it is unlikely that this system will expand into new territories, unless new big mines are established on the territory of the country. New oil developments suggest that some oil pumps could be used as nest sites, similar to powerline pylons. So far this has not occurred, but the development trend suggests that it might happen in the nearest future. Naturally the actual occupancy of such sites will depend on disturbance factors and the environmental policies of oil companies.

In any scenario in the context of Mongolia, the expansion of Saker Falcon into flat steppes and semi-deserts and therefore an increase in falcon numbers depends on artificial nest structures such as wells, pylons and railway cabins, and their suitability for the birds. In other words: the utilisation of flat steppes by Saker Falcons depends on industrial action in such places. Isn't it a paradox?

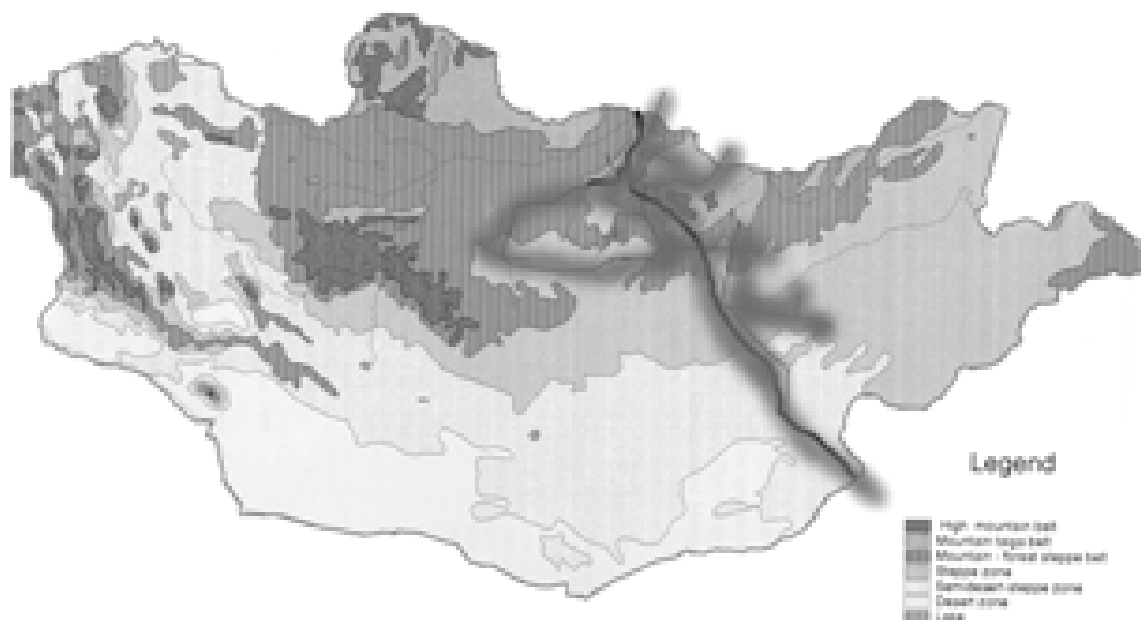


Figure 3. Geobotanical zones of Mongolia and areas of available artificial structures along railways (thick line) and powerlines (thin lines) Adapted from vegetation map of Mongolia in Z. Batjargal & Z. Enkhabat - Eds. Biological Diversity of Mongolia. Ulaanbaatar 1998.

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The Scale of Production and Use of Hybrid Falcons in Falconry

Extract from a 60 page discussion document on the legal, environmental and moral aspects of the production and use of hybrid falcons in falconry. The document was compiled from input from a team of expert biologists, falconers and breeders, chaired by Dr Steve Sherrod (UK) and Dr Nick Fox(UK). It was presented along with draft recommendations on the production and use of hybrids to the North American Falconers Association at its annual meeting in Vernal, Utah, October 1998

This is a global situation. Birds bred in Europe or North America may be sold in the Middle East and flown in Asia or North Africa. Birds from Asia are imported into North America. The risk is not necessarily in the country in which the bird is bred, but is in the country where the bird is flown free.

It may be useful to look at the frequencies of hybrids in captive collections and the reasons for them. Hybrids between various *buteos* and *accipiters* are infrequently made because they are difficult to produce, have few obvious advantages as hunting birds, are probably sterile, and therefore do not attract much of a market. They will probably remain marginal curiosities, and of no significance to wild populations.

Hybrids between Gyrfalcon and Saker seem to occur in all gradations both in the wild and in captivity and may not merit the title hybrid as this group appears to be a super-species. In falconry this intermediate form is larger and faster than a typical saker and more heat resistant and disease resistant than a typical gyr. All gradations appear to breed readily and indefinitely in captivity. Chris Eastham is nearing completion on a study of the morphometrics of the Saker complex and also we hope soon to receive completed DNA studies on the relationships within *Hierofalco* from Dr David Parkin, University of Nottingham, UK and Prof Wink, University of Heidelberg, Germany.

Hybrids between Gyrfalcon and Peregrine are popular in the Gulf States because they are large and fast. When lost to the wild in desert areas they do not survive long because there is usually not a sufficient prey base of medium sized birds for their survival and they are slow to adapt to small mammals, having been trained solely for houbara. The falcons are flown sharp and probably have at most only three days of energy reserves in which to make a kill. Those which do not perish often come to humans and are eagerly trapped by locals thinking of reward money. However they are poorly cared for and without proper resuscitating treatment, also die. The local peregrines tend to be small, desert adapted varieties: Red Shaheens *F. p. babylonicus* and Barbary Falcons *F. pelegrioides*, unlikely to pair with big gyr/peregrines. Arab falconers have learnt not to release hybrids and we have not heard of any hybrid being ordered to be released since 1995. Instead, Arab falconers have little qualms about having unwanted birds destroyed.

In Europe female gyr/peregrines are used for pheasants, ducks and crows and males for grouse, partridges and rooks. In America they are used for desert grouse and for ducks. In most ways they hunt like large peregrines. The peregrine/saker is used primarily in Europe where it combines the speed of the peregrine with the tenacity and willingness to take prey on the ground of the saker. It is thus more



suitable for hunting crows than the pure peregrine or saker.

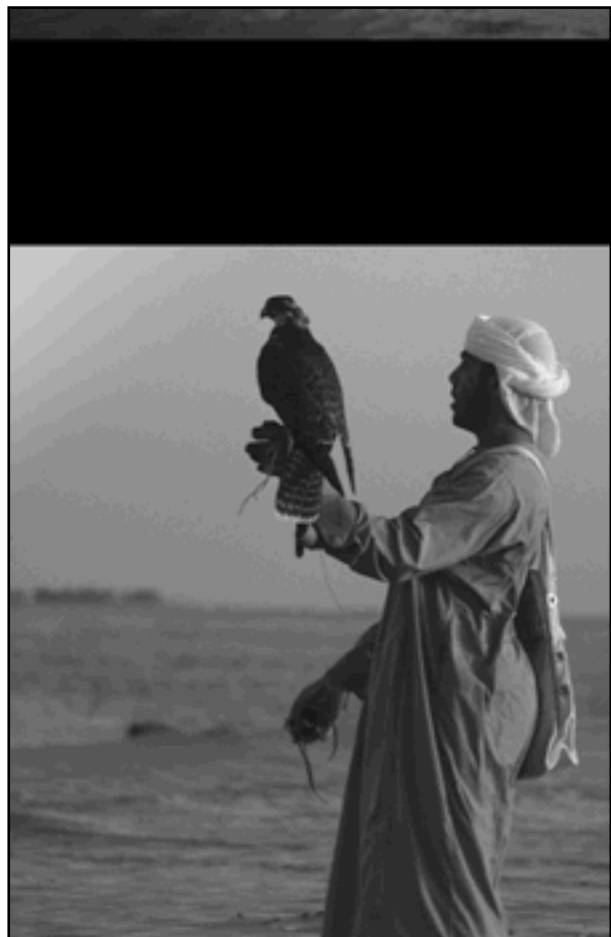
The National Avian Research Center's monitoring programmes for source breeding populations of Arab falconry peregrines and sakers have not revealed any recognisable captive-bred or hybrid falcons at nests. However, we have discovered one breeding wild calidus peregrine in Siberia wearing Arab jesses.

Why hybrids and exotics are used

In the Gulf States, large hybrids are in demand because they are larger, faster and more glamorous than pure breeds, and because they are less prone to disease, seldom carry internal parasites (such as *Serratospiculum*) and, being less stressed in captivity, moult better. Now that Arabs have learnt to manage them, these birds consistently outperform wild-caught falcons. It seems unlikely that this trend in Arab falconry is reversible; many Arabs have set up their own breeding programmes and even if western countries stopped producing hybrids, production would be taken over in Arabia or Pakistan or in the former USSR countries. At present, Saudi falconers still prefer traditional wild-caught falcons.

Since 1993, as the former USSR opened its borders, trapping pressure on wild sakers in Asia has increased tremendously and the National Avian Research Center in Abu Dhabi has supported local biologists to monitor this species. At present, because of the imbalance of the economies among Asian countries, we do not see any practical means on the ground for reducing this trapping rate. However, captive bred hybrids are now gaining a major share of the Arab falconry market. More than 50% of Sheikh Zayed's falcons (out of an annual purchase of about 300 birds) are captive bred, mainly hybrids. We also monitor the markets in Pakistan and the Gulf: prices for wild falcons were down at least 50% in 1997 and many birds remained unsold. Thus captive breeding is the key element at present to reduce the market pressure on Asian wild falcon populations.

The Arab market has stimulated large scale commercial production of hybrids which has had both positive and negative effects. While the availability of female hybrids for western falconers has decreased, the males, which are a by-product, are increasingly available and at prices well below production costs. Commerce has stimulated research and development into many aspects of producing birds for falconry, and in ancillary equipment such as radiotelemetry. This has produced spin-off for western falconers and for conservation. In terms of resources, it is more expensive to breed hybrids than to breed pure-breeds and it should be borne in mind that the commercial breeder, from the business standpoint, produces hybrids not because he wants to, but as a response to market demand. If falconers did not demand hybrids, breeders would not continue to produce them.



M. RTYNP-TERSON

Environmental Contaminants and Movements of Saker Falcons *Falco cherrug* in Central Asia

Abstract of paper by R.E. Kenward, R.H. Pfeffer, E.A. Bragin, A. Levin and I. Newton, published in *Holarctic Birds of Prey* (see review page 21)

Analyses of eggs, blood samples and feathers from Saker Falcons in Central Asia were used to investigate levels of environmental contamination, in relation to the migratory movements of the falcons revealed by ringing, microtransponders and radio-tags. Ring and microtransponder recoveries showed that Sakers from northern Kazakhstan migrated to the southwest as least as far as the Middle East, with radio-tagged young returning to natal areas after their first winter. There was no good evidence of migration for sakers in more southern and eastern parts of Kazakhstan, and some radio-tagged young wintered locally. These southern falcons had higher concentrations of DDE than those in the north, but all organochlorine and heavy metal residues were an order of magnitude lower than those typical of some European raptors. Neither the migratory nor the sedentary Saker Falcons in Central Asia are currently at risk from these pollutants. Moreover, the very low contamination of feathers with heavy metals may help distinguish Asian from European Sakers, so that trapping in the Middle East could be used to monitor trends in different Saker Falcon populations.

The Black Shaheen *Falco peregrinus peregrinator* in Sri Lanka: a report of the 1997 field season

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Abstract

*Observation was made on two pairs of Shaheen Falcons (*Falco peregrinus peregrinator*) for a total of 226.5 hours. Both pairs had one juvenile but one male juvenile died of unknown reasons at fledging. The second juvenile was a female, which could be caught for measuring and blood sampling. Three further pairs of Shaheen Falcons were found, the distances between the pairs ranging from 5.2 km to 20 km. Of the three additional pairs only one pair was found to have reared a single juvenile bird. Arguments are provided to explain the theory of a K-selected Peregrine subspecies. Habitat evaluation on 64 km² was made with aid of a land use map for one Black Shaheen pair. Eight nesting sites were evaluated regarding their preferences. The average height of the nesting sites was calculated as 282 m above sea level. The rocks preferred by the Shaheen are on 374 meter high, and the preferred aspect of the nesting face is estimated as south east.*

Introduction

During an initial 10 day field trip in March 1995 a few previously unknown nest sites of the Black Shaheen were found. An area considered to be suitable for further research was selected. The following year, 1996, it was planned to start the field survey at this selected area which was favoured to be the best study area. Unfortunately the population of local people increased very rapidly over the one year because of government settlement schemes. Normal working at this study area thus became unfeasible. An alternative area, occupied by a pair of Shaheen Falcons was soon selected approximately 100 km south at the Wellawaya area. This site was also previously unknown. The first part of direct observation was carried out from April to May 1996. This first direct observation of a pair of Shaheens was basically just for information and to design future observation plans. The pair displayed the whole repertoire of breeding behaviour but neither the nest ledge nor any juvenile bird could be spotted. Since the two pairs of falcons, one found in March 1995 and the other pair at the Wellawaya area visited from April to May 1996 displayed breeding behaviour but produced no juveniles, it was decided to start the 1997 survey one month later in the season.

Methods

Observations - Direct observation was carried out by watching the activities of the birds from dusk to dawn. The following listed points were recorded on data sheets and were divided into four groups. The different groups are 'activity', 'vocalisation', 'defence', 'climate' and the date and time. A fixed 10 minute recording interval was used, except for climate data, which were recorded in 30 minute intervals. (see table 1)

Whenever possible the observation was split regarding a time budget for two nest sites, so at the end of the observation period approximately the same time was spent for each nest site. Also the time of the day was evenly distributed to two nest

TABLE1:Subjects to be recorded on a separate observation data sheet

ACTIVITY	VOCALISATION	DEFENCE	CLIMATE
not visible	screaming/begging	stooping at intruder	temperature
perching on rock	kozik/honks	chasing intruder	humidity
perching on tree	defence call/warning	being attacked	sunshine
preening		other disturbance	cloudy
eating			rain
flapping flight			heavy rain
soaring/gliding			fog/mist
chasing each other			light wind
stooping at something			wind
			storm

Table 2: Habitat type classification according to land use map

Type	Definition	Remarks
Water	Rivers, brooks, natural lakes and irrigation tanks	
Rock	Bare masses of stone or ground where nothing grows	
Ghena	Type of grassland which originates from fire clearing	A form of 'shifting cultivation' is still used in parts. If the yield decreases over time, the people leave the area and shift to another place to start another fire clearing
Grassland	Natural grass stock	
Forest	Monsoon Forest	This type of forest depends mostly upon the winter monsoon which brings rain in October/November. The leaves of the trees are sometimes dropped partly or completely during the dry season. Growing on humid soils, trees are evergreen throughout the year. Gallery forests along water courses also belong to this category
Scrub	Most typically small growing trees and bushes	Resulting from clear cuts that have been made a long time ago; a secondary forest type
Gardens	Consisting of many different plants which are of use to the native villagers	Artificial, created by local people
Paddyfields		Food source for the native peoples and extensively used
Other plantations	(Covering a variety of cultivations)	Sugar plantations have greatly expanded in recent years; coconut plantations, teak wood plantations, rubber plantations and cashew nut plantations are all included in this category

sites.

Falcon capturing - For measurements and blood sampling different capturing techniques were tested to suite to the circumstances of the study area. Only one attempt per day was made. If the trapping attempt failed the method was modified and the next attempt made the following day.

Habitat types - The habitat types were classified using the land use map. Nine different habitat types have been classified according to the land use map, shown above (see table 2)

To start the habitat evaluation the nest site of the Wellawaya pair was taken as the zero point. From this zero point grid cells have been defined with a size of 1 km by 1 km. For each grid cell of 1 km² a smaller grid was overlaid. This small grid was of the size of 100 meters by 100 meters (1 hectare). The grid was overlaid on the map and the habitat types have been counted for an area of 64 km². The range of the evaluation area was limited to 4 km North and 4 km South from the zero point (assumed nest site) and also 4 km West and 4 km East of this point.

The geographical location of each nest site found this year and from previous years was determined using a GPS (Global Positioning System). The



altitude of the measuring location was also noted. The total height of the individual rock as well as the height of the nest ledge were taken from topographical maps at a scale of one inch - one mile. The direction of the nest ledge or rock face was determined by estimating the direction in 45° degree steps of a full circle with 360° degrees (0°/360° = north, 90° = east, 180° = south, 270° = west).

OBSERVATIONS

After having cleared all official matters in the capital city Colombo the field survey began on May 13th. It took one day travelling by car from Colombo to reach the Wellawaya area where the base camp was established. The only route to the nest site was blocked due to heavy rain during the night before. Parts of the road had been washed away so the rock face where the falcons used to be in 1996 could only be reached by walking. Most of the equipment had to be left behind

and only the most essential things were carried to the rock. As in 1996, the pair of Black Shaheens was found at the same location. Additionally one juvenile bird was flying around and begging for food. The juvenile was female and appeared recently fledged. It was obvious that she had problems in landing. Several times she fell down and swung up again for another attempt on a different spot. These problems were most obvious on branches growing out of the rock. The juvenile, still not experienced in flight, flew most of the time alongside the rock face which is about 300m long. In a few instances the juvenile could be observed flying along

the cliff very close to the rock and grabbed what might have been food remains during the flight. The food was either eaten on a flat place somewhere in the cliff or during soaring flight.

After this initial observation the next nesting site at Buttala, 14 km east of the Wellawaya pair, was checked. The Buttala pair, also first discovered in 1996 was still resident in 1997 but no juveniles were observed.

Initial trapping attempts were made over the following days. Previous experience has showed that the Shaheen never comes down to the ground. Because of this

Table 2: Habitat types according to the land use map for the Wellawaya pair.

Paddy fields	107 ha		1,70 %
OtherPlantations	81 ha	1,29 %	
Gardens	787 ha		12,51%
Scrub	1.953 ha	31.05 %	
Forest /Jungle	1.680 ha	26.71%	
Grassland	0	0.0%	
Ghena	1.296 ha	20.61%	
Rock	34 ha	0.54%	
Water	351 ha		5.58%
Total	6.289 ha	100.00%	

behaviour, the trapping attempts were always carried out either on the top of the rock where the birds had to pass anyway or at some appropriate flat ledges in the rock face. A pair of Black Eagles (*Ictinaetus malayensis*) inhabited the same area but preferred the higher elevations of the rock. The Black Eagle was also first discovered in 1996 when he passed the rock face by gliding over the jungle at the bottom of the steep cliff.

The different habitat structures (types) were identified. Different land use points were selected on a map and then subsequently checked in the field. Each type of habitat (land use) was photographed, registered and additional peculiarities were noted.

Another pair of Shaheen Falcons was found during the habitat evaluation. This new site (Handapanagala) is 5.2 km Southeast from the Wellawaya pair. From this time on, the pairs of Wellawaya and Handapanagala were studied alternately. The Handapanagala pair showed breeding behaviour but neither a juvenile bird nor active nest could be spotted. On May 27th the remains of a juvenile male Shaheen were found approximately 50m from the rock cliff and on the upper third of the rock. The dead juvenile, lying on the jungle floor, had not finished its feather growth, since the primaries and tail feathers were not fully grown. The cause of death could not be ascertained. Comparison with the Wellawaya pair led to the assumption that both juveniles must have been hatched about the same time. Further evidence for this assumption was found by a comparison of the tail feathers of both juveniles. Both juveniles displayed stress marks at about the same distance from the tip of the tail feather. I was informed by local people that weather conditions had been very bad for a period which coincided with the estimated date of the stress marks. Heavy rainfall and thunderstorms, unusual for that specific season, may have caused a starvation period for

the juveniles and subsequently these markings in the tail feathers have emerged.

The rock cliff of the Handapanagala pair was thoroughly checked but there was no sign of another juvenile bird. Another pair of Shaheen Falcons was discovered 9.6 km east from the Handapanagala pair and exactly 10 km south of the Buttala pair. This pair, named as Bambara pair, was observed only for a short period and no juveniles were seen. A second control observation at the Buttala pair was made but again only the two adults were observed. The study on the Shaheen falcons was concentrated alternately on the Wellawaya pair and the Handapanagala pair. A total of 226.5 hours were spent: 126.3 hours for the Handapanagala pair and 100.25 hours for the Wellawaya pair. The juvenile female of the Wellawaya pair was trapped on the top of the cliff, 160 meter above the ground. This juvenile was in good healthy condition. Except for a misshapen left alula feather and the heavy stress marks in the tail feathers no other abnormal conditions were obvious. This juvenile female weighed 716 grams and was measured and blood samples for DNA analysis were taken.

During the trapping attempts an owl trap was used with an artificial moveable owl. The owl was shaped and coloured like the native Forest Eagle Owl (*Bubo nipalensis*). The falcons showed no reaction, although they passed within a few meters of the trap. A paper kite with the shape of a Common Buzzard (*Buteo buteo*) was also used to provoke any reaction. Even with a very short distance to the breeding cliff (the closest distance was approx. 50 meters) the kite was ignored by the falcons.

The Handapanagala pair in particular displayed very aggressive behaviour towards intruders. Despite not having a juvenile, they attacked every other bird of prey which reached the rock cliff closer than 100 meters. In one instance a Crested Hawk Eagle (*Spizaetus cirrhatus*) passed the cliff and was knocked down to the ground by both adult Shaheens.

On June 12th I left the study area for Colombo via the mountain zone. At Rawanaella Falls about 20 km north-west of the Wellawaya site another pair of Shaheen Falcons was discovered together with one juvenile. All three Falcons started from a steep rock cliff and climbed up into the sky and disappeared towards the south. The evaluation of the nesting sites of the pairs found in 1997 and of the previous years is shown in Table 3, below.

Conclusions

In addition to the two pairs of Shaheen Falcons from Buttala and Wellawaya, 3 further pairs were found. The distances between the pairs ranged from 5 km to 20 km. Of these 5 pairs, only 2 pairs had each reared one juvenile. The Handapanagala pair had one male juvenile which died at an age of about 4 weeks. An initial assessment is that the Black Shaheen Falcon does have a very low reproduction rate. Further evidence for this theory is supported by the presence of non-breeding pairs. The Wellawaya pair discovered in April 1996, normally the middle of the

Table 3: Nest site parameters from 8 Shaheen pairs discovered during the field surveys 1995 to 1997

	n	mean	SD	V	min	max
altitude of assumed nest ledge (m) 365	8	282.5	56.92	3.240,29		200
altitude of rock (m)	8	374.25	142.34	20.260	213	665
direction of rock face	176°	-	-	-	-	-

breeding season, had no juveniles at this time, and no nest ledge could be spotted. The same applies to a pair of Shaheens found March 1995 about 100 km north of the Wellawaya site. This pair was also checked in 1996 and again showed no signs of active nesting or juveniles. Also the Buttala pair first discovered in 1996 and visited again in 1997 had no juveniles. In addition to its low reproduction rate the Black Shaheen Falcon of Sri Lanka does not breed every year. This fact caused the troubles in the preliminary stages of the project estimating the breeding times of the Sri Lankan Black Shaheen Falcons. To date it has not been possible to evaluate the clutch size of the Black Shaheen Falcon. A smaller clutch size compared to the average clutch size of the Peregrine Falcons would support the statement of a relatively K-selected species.

As far as these surveys are concerned, it is obvious that nest sites are not the limiting factor for the Shaheen population. It seems that food supply plays a more important role especially in this tropic region. Furthermore it is assumed that the Shaheen Falcon of Sri Lanka probably has a smaller clutch size. The mortality of juveniles may have the strongest influence to the population density. Sri Lanka is a

tropical island close to the equator and has therefore no clearly marked breeding season as in temperate climates. This in turn means that the prey availability during the year is changing on a very flat amplitude. In other words the Shaheen Falcons have to depend on a certain given level of prey availability in every season of the year with no marked peaks during the breeding/rearing phase. It is assumed that the Sri Lanka Shaheen Falcon and also the South Indian Shaheen live in a very stable habitat, having a very low reproduction rate and are comparatively long living birds. Further research should provide evidence for this assumptions.

Acknowledgements

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Species Concepts and their relevance to the taxonomy of the Desert Falcons

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When studying the taxonomy of desert falcons it is disturbing to discover that there is now more disagreement over what is meant by a 'species' than at any other time in the history of classification. This is no more so than in the classification of birds. Although the binomial system, formalised by Linnaeus, to classify plants and animals continues to be the means by which species are named, the concept of species has changed a number of times over this century. These changes are obvious when looking at the way biologists, falconers and other raptor enthusiasts have changed their ideas concerning the classification of desert falcons.

Three main species concepts have been used this century. The first is the *Morphological Species Concept* (MSC) which can be traced back to the philosophies of Plato and Aristotle, and which continued to be used until the first half of the twentieth century. This concept defines species purely by their phenotypic traits rather than their genetic complement or potential interbreeding. The number of species classified was large because each group of individuals that exhibited a slight phenotypic difference were considered a different species.

The MSC is very similar to the Arabic classification of falcons, developed by Arab falconers over many years of trapping different types of migratory falcons. Arabs classify falcons purely on physical appearance: using plumage colour and pattern, and the size and shape of the bird. In Al-Timimi's book 'Falcons and Falconry in Qatar' (1987) eleven saker types are described. For example, blonde or pale falcons are called *Ashgar*, red sakers are called *Ahmar*, golden sakers are called *Tibri*, and black sakers are called *Sinjari*. In the nineteenth century Iranian falconers classified nine

types of passage saker and three types of eyass saker (Mirza, 1908).

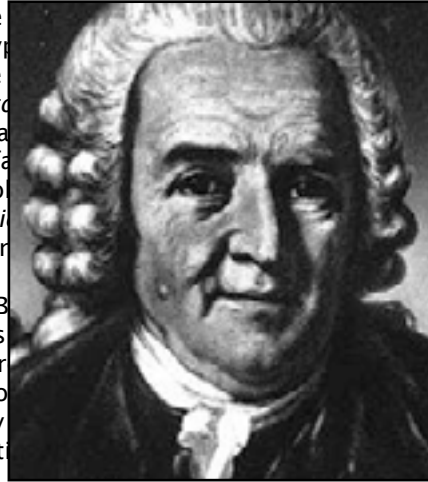
The classification of desert falcons in western countries using the MSC treated subspecies as full species. Jourdain (1910) used the name *Falco milvipes* to describe the mountain race of saker. Menzbier (1891, 1901) and Sushkin (1938) assigned the two colour types of sakers found in the Altai Mountains into separate species, the grey type *Falco lorentzi* and the dark brown type *Falco altaicus*. Ornithologists in the 20th century considered gyrfalcons (*Falco gyrfalco*) to comprise of three species - the Iceland falcon, the Greenland falcon, and the Norway falcon (Brodrick, 1855). The British Ornithologists' Union in 1915, recognised two species, *Hierofalco* and *Hierofalco islandus* (cited in Ber

The second species concept is the Biological Species Concept (BSC) which states that 'a species is a group of interbreeding populations that are reproductively isolated from other groups by reproductive mechanisms such as hybrid sterility or hybrid inviability'. First proposed by the geneticist Dobzhansky in 1937 and developed further by Ernst Mayr in 1942, the BSC groups geographic forms of the same 'kind' into one species. This is because the geographic forms interbreed where their ranges coincide, or would interbreed if their ranges were to overlap.

When ornithologists began to use the BSC the numbers of species decreased and numbers of subspecies increased. Sakers were described as having up to six subspecies (Dementiev, 1951). Gyrfalcons, which range in colour from black grading through varying shades of grey to white, were divided into seven subspecies (Dementiev, 1960). Later, however, it became more popular to classify gyrfalcons in terms of one species with different colour phases and no subspecies due to the lack of identifiable geographic pattern. Lanners, which show distinct geographic variation, were divided into five subspecies (Leonardi et al. 1992). Luggers, on the other hand, exhibited no geographic variation. Ripley (1982), however, assigned the lugger to a subspecies of lanner, *Falco biarmicus jugger*. Meinertzhagen (1954) grouped all species of desert falcons into one single species - *Falco rusticolus*. He stated that if the desert falcons were laid down next to each other then a perfect gradation can be seen, ranging from the pure white falcon of Greenland to the dark brown in *F. r. obsoletus* and *F. r. altaicus*, passing through the *F. r. cherrug* and *F. r. jugger* groups with cream on the head and bluish-brown mantles to the lanners, *F. r. biarmicus*, with pure cream heads and blue-brown backs. Kleinschmidt (1901, 1958) used the term Formenkreis to describe this group of falcons, the literal translation of which is 'ring of forms'. Under this classification each form is considered to be a race of the species *Hierofalco* indicated by the nomenclature, for example, *Falco hierofalco gyrfalco* and *F. hierofalco mexicanus*.

The BSC became very popular but had some inherent

problems. The first was the naming of subspecies and how to define the geographic range of a subspecies. How different should a population be from a neighbouring population before it could be classed as a subspecies? Amadon (1949) created the 75% rule, which stated that a population could be allocated subspecies status if 75% of the population were separable from all members of overlapping populations. Mayr (1969) created the coefficient of investigation to investigate whether two populations were separated. Defining geographic ranges of species is also a problem due to clinal variation, particularly true of gyrfalcons.



Carl von Linné (Linnaeus)

problem was that although the BSC could be used to define sympatric populations with relative isolation, it is possible to assess whether or not populations are interbreeding, with allopatric populations this is not the case. Gyrfalcons and sakers are often kept fully in captivity and their offspring are often bred in captivity. Could they hybridise in the wild if their ranges overlapped? Perhaps the falcons inhabiting the same geographic areas are the result of such a hybridisation event. Research is showing that hybridisation is more common than originally thought. Mayr & Short (1970) recorded hybrids from over 10% of the North American bird species. Grant & Grant (1992) and Gill (1998) discuss the widespread genomic compatibility and potential for hybridisation among strikingly different birds. What does this mean in terms of hybridisation between the desert falcons? If their ranges did overlap then surely they would interbreed.

The third and most recent species concept is the Phylogenetic Species Concept (PSC). With the PSC subspecies are not recognised. Each population of sexually reproducing organisms that possesses at least one diagnostic character present in all population members but absent from all closest relatives is considered a species. This means that each geographically distinct form is classified as a species. The PSC is becoming increasingly popular with taxonomists because the theory easily incorporates such problems as interbreeding between slightly different geographic forms. In addition, the evolutionary history of the species is incorporated into the concept.

What does this mean for the taxonomy of desert falcons? Well, it could mean that the main four recognised members of the group, namely sakers, lanners, luggers and gyrfalcons, could be divided into many more species. The number of desert falcon species could be identified using a combination of classification techniques, such as molecular and morphometric analysis. Molecular research is, at present, not able to identify population differences in any of the four desert falcon species. Morphometric analysis, on the other hand, does show variation between populations of sakers, lanners and gyrfalcons. The question then is whether these differences are enough to warrant species recognition under the PSC?

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The Saker Falcon

Adapted from book 24 of 'De Animalibus' by Albertus Magnus translated by James Scanlan

Albertus Magnus, Saint (1200-1280), was called Albert the Great and known as *doctor universalis* for his wide interest in natural science. An influential teacher, church administrator, and preacher, Albert was a key figure in the assimilation of Aristotelian philosophy into medieval Scholasticism and the revival of natural science that it inspired. *De Animalibus* was written some years after the *De Arte Venandi cum Avibus* of Frederick II, though Albertus Magnus' writings on falcons and hawks are included in the binding of the Vatican edition of *De Arte*. Book 24 of Albertus' *De Animalibus* is entirely about falconry and the birds used in the sport.

The first species of superior falcons, the noblest of all, is the one that some call the saker [*sacrum*]. Symmachus calls it 'britannicus' and another author refers to it as 'aelium' or windborne falcon; some also call it 'aeryphylum' or the falcon that loves heights. As we mentioned before, it delights in flying at great heights and disdains the lower levels. It has heavy, knobby legs, talons more brutal than an eagle, a frightening appearance, flaming yellow eyes with a hint of redness, an imposing head, a powerful beak, great yokes or wingfolds which it is forever spreading as if it is anxious to fly, and finally a somewhat long tail, a feature unique to the saker as compared to other falcons. It is almost as large as a good-sized eagle, but neither an eagle nor any other kind of raptorial bird will fly beneath it because of fear of its savagery. As soon as the other birds spy a saker falcon, they emit a chorus of terrified squawks, and flee to a dense thicket of trees or down to the ground, preferring the danger of being caught by hand over the peril of flying in the open where they are easy game for the falcon.

Customarily sakers fly in pairs; therefore, when they are tamed, two are trained to sleep on a single perch. They accept human commands as if they had always lived in the company of men. There is no large bird they will not hesitate to bring to ground, nor does it satisfy them to kill only one, for they will destroy as many as they encounter. Sakers even go so far as to capture baby goats and tear out their eyes and small brains with murderous claws.

They prefer to be fed in a most fastidious fashion, always opting mainly for fresh hearts and brains and the especially wholesome meats of an animal which has so recently been slaughtered that the vital heat emanates from the carcass. They eat almost as much as a large eagle.

This species of falcon is a regal bird, capable of flying



Illustration from Frederick II *De Arte Venandi cum Avibus* (c.1250)

and pursuing its quarry for extremely long period of time. It is not uncommon for a saker falcon to persist in a chase for two to three hours; in exceptional circumstances it achieves creditable results all on its own. It revels in the company of men and hunting dogs and enters quite willingly into the spirit of the chase, as if it gloried in displaying its powers to the spectators.

The saker possesses those physical characteristics we mentioned as being indigenous to every species of falcon, including the spotted face, the bodily shape, the unique behaviour and the cry. Though the saker has a terrifying cry, it rarely gives vent to it. When recalling this bird from the chase, the falconer must shout with a loud voice to reach the high flying hunter. The cadge to which it is recalled should be large enough to be visible at a great distance. Nonetheless, if the bird does not return quickly, there is no need to worry, since the saker is accustomed to return by itself to its own roost.

Clipped Wings: extracts from the press:

Tradition Goes High-Tech In Gulf

by Hani Yarid. From *Arabia online*.

More than fifty years ago the American short story writer, Richard Connell predicted in "*The Most Dangerous Game*" that hunting would cease to be 'a sporting proposition.' General Zaroff, the antagonist of Connell's story, a veteran hunter gets tired of hunting, partly, as a result of the facilities the new technology provides and thus taking away part of the thrill and excitement of traditional hunting. But this is not the case with Gulf modern hunters.

Hunting in Arabia and other Arab regions hasn't always been just 'a sporting proposition;' it was once a way of life. According to Islam tradition, Muslims have to teach their children swimming, archery and riding. So, hunting has always been an integral

part of everyday life in Arabia as well as many Arab regions whether using bows during the old good days or using the high-powered shotguns during the oil era. Moreover, people, Bedouin in particular, had to go hunting in the oases to get their food. That's why, perhaps, Arabs have two words with nuances of meaning for hunting. Whereas 'Al Seid' has kind of relaxing and leisurely connotation, 'Qans' or 'Qanees' contains more struggling and eking-out association. So, the relative availability of food has rendered hunting a dated sport especially for the young, but this is not the case for Gulf young people as long as new innovations have come into hunting.

Since hunting hasn't always been an easy task, Arabs used to brag about their adventures in the desert or in the wilderness, but not any more with the wide use and the availability of hunting technology. A few decades ago, all a hunter needed in the Gulf was a falcon, a good horse or camel and a few days of supplies. Nowadays no self-respecting hunter goes out with less technology than it takes to launch the space shuttle.

That's why, probably, many a young Emirati has taken to hunting with enthusiasm.

Young people of today don't have to ride camels or horses; they drive utility 4-wheel drive vehicles. At night they resort to night vision binoculars. Satellite phones are being used to make up for the lack of signposts and landmarks. So, this kind of high-tech communications has come to be taken for granted. Arabs of the Gulf would spend several thousand dollars on technology for their falconry. Some Western companies manufacture falcon trackers used to track back falcons after unsuccessful chase. It also sells some more exceptional gadgetry including a remote control trampoline-style pigeon launcher, which looks as bizarre. The pigeon is placed into the miniature trampoline, which folds over the top of it. A remote controlled spring mechanism then launches the doomed bird into the air for the falcon to chase. Well, is this real hunting?

Review: Holarctic Birds of Prey: Proceedings of an International Conference **B.-U Meyburg, R.D. Chancellor and J.J. Ferrero (editors). Adenex, WWGBP, Calamonte 1998**

Three years after the 4th WWGBP Conference in Badajoz, Spain, the Proceedings are finally available. Papers are published either in English or Spanish (mainly the former), and are prefaced by summaries from the convenors of each session. These summaries, by luminaries such as Ian Newton, Charles Henny and Keith Bildstein, are concise commentaries on the sessions which also examine the wider significance of each topic to raptor biology and conservation.

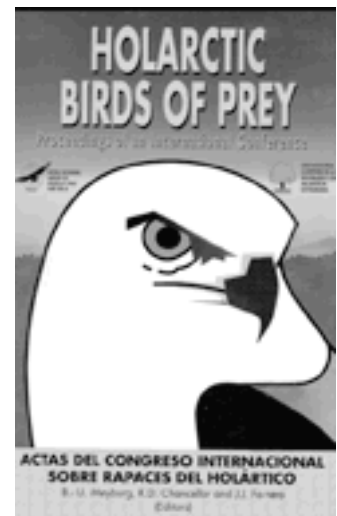
The eight parts of the Proceedings are: Molecular Systematics of Holarctic Birds of Prey and Owls; Breeding Biology of Raptors; Biology and Conservation of Diurnal Raptors; Supporting Raptor Populations in danger of extinction through Captive Breeding; Biology and Conservation of Holarctic Owls; Raptors: Contamination and Development; Socio-Economic Aspects of Raptor Conservation; Migration of Birds of Prey.

The breadth of topics and the standard of papers is generally excellent. Some sections suffer slightly from the delayed publication. For example, Wink, Seibold, Lotfikhah and Bednarek's excellent paper on molecular systematics states that the saker has three haplotypes explained by past hybridisation events - type I with peregrine and II with gyrfalcon. This has recently been refuted. (Helbig, 'Genetic differentiation and Phylogeny of Raptors: what can DNA studies contribute?' oral presentation at WWGBP 5th Conference 1998).

A paper by Clayton White and Lloyd Kiff 'Language Use and Misapplied, selective 'science': their roles in Swaying Public Opinion and Policy as Shown with Two North American Raptors.' should be required reading for all those involved in raptor conservation. It illustrates beautifully the political complexities

of wildlife management decisions and shows how conservation legislation may not, in fact, reflect the actual conservation status of a species; may not, in fact, be based on sound biological criteria at all. Eye-opening.

My advice? Buy it. My only criticism is that the production values of the Proceedings do not match the quality of its contents. Although printed on good quality paper, the covers are of thin card and nowhere near as robust as previous WWGBP Proceedings. For the price, however, the Proceedings represent superb value, and are an essential addition to your library. Fewer copies were printed than originally planned, and supplies are limited. Copies cost US \$ 35/ £ 20/ DM 55/ FF 170.



To obtain a copy, contact the

World Working Group on Birds of Prey and Owls (WWGBP), P. O. Box 52, Towcester NN12 7ZW England

Helen Macdonald

Call for microchip and ring recoveries

Each breeding season field-biologists for the National Avian Research Center Falcon Research Programme implant microchips (PITs) and fit rings to wild saker and peregrine falcon chicks, juveniles and adults in the range countries. Occasionally recoveries of these marked birds are made in the falcon hospitals of Arabia.

The numbers of recoveries have recently declined and it is possible that valuable information is being lost. The purpose of this marking project is to investigate falcon populations that are targeted by trappers, and the sustainability or otherwise of harvest rates. This information is obviously of crucial importance in conserving falcon species affected by Arab falconry.

Previously, microchips implanted in wild falcons were prefixed with 111. Now, however, this prefix is no longer in use and wild birds are marked with random identification numbers.

If you are marking birds, or find a bird with an unknown PIT or ring number, please send the following information to the MEFRGdatabase at the editorial address:

DATE:
IDENTIFICATION NUMBER:
SPECIES:
SEX:
AGE:
LOCATION OF MARKING OR RECOVERY:

If the falcon is recovered in a hospital then it is worth asking the falconer where he acquired the falcon. Additional data such as body measurements and photographs would be worth collecting for morphometric studies.

Please could all details of falcons marked and recovered be sent to the address below, where the information will be recorded on the Microchip and Ring Database. Many thanks.

Chris Eastham
MEFRGPITand Ringing Scheme Co-ordinator
The Falcon Facility, PO Box 19, Carmarthen SA33 5YL, Wales, UK

Microchip recoveries winter 1998

28 November 1998 - Female saker PIT 015-050-032, tagged by Dr Robert Kenward in Kazakstan 1997, scanned by Dr Jaime Samour at the Fahad bin Sultan Falcon Center, Riyadh.

17 December 1998 - Female peregrine PIT 001-827-359, tagged at the Abu Dhabi Falcon Research Hospital in October 1993, scanned by Dr Jaime Samour at the Fahad bin Sultan Falcon Center, Riyadh.

Many thanks to Dr Jaime Samour, Dr Robert Kenward and Dr Michael Lierz