



# FALCO

The Newsletter of the Middle East Falcon Research Group  
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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.

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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**FALCO online**

Previous issues of FALCO as well as instructions for authors can be downloaded from:  
<http://www.falcons.co.uk/default.asp?id=131>

also see new Saker Conservation information portal:  
[www.savethesaker.com](http://www.savethesaker.com)



**Editorial**



Staff changes delayed FALCO issue no. 25, so we have amalgamated the winter and summer issues in this one-off double issue. Dr Eugene Potapov, after years of service to Falco, has now moved to join his family in America. Eugene established many of the teams working on Asian Sakers and his efforts have been of incalculable benefit to the species. Thanks to him we have got our first estimates on numbers and distribution of the Saker in Asia and he has played a major role in disseminating this information and in running conferences. With modern communications, Eugene's expertise is still only a mouse-click away and we wish him all the best in Philadelphia.

Eugene's replacement is Dr Andrew Dixon who has worked extensively on Peregrine surveys in UK. Andrew has just completed his first field season in China and Mongolia and now has much more insight into the problems faced by Sakers there. Andrew will be co-editing Falco with Dr Tom Bailey.

Over the years Falco has published many field studies on the Saker in Kazakhstan, Russia, China and Mongolia. There was little published information from these countries prior to these studies, which were funded by ERWDA, Abu Dhabi. Consequently, it has been this UAE funded research and the associated Falco publications that have been used as the primary data source on Saker Falcons in Asia by international conservation agencies and states signed up to multi-lateral environmental agreements.

Following representations made by the UAE, the Saker Falcon was included in the CITES Review of Significant Trade at the 19th meeting of the CITES Animals Committee in Geneva (August 2003). The Saker Falcon was added to the existing list of species under review because, on the basis of ERWDA research, it was thought to represent an exceptional case where new research information indicated an urgent conservation concern. The document prepared by ERWDA, highlighting the concerns of the UAE, was subsequently circulated to the relevant CITES authority in each of the range states where Saker Falcons occur. These range states were requested to provide comments on the UAE documentation, though only a few states subsequently responded.

At the 20th meeting of the CITES Animals Committee in Johannesburg (March-April 2004) it was decided that the CITES Secretariat would classify their level of 'concern' for each of the range states, based on available information on populations and levels of trade. The Saker Falcon was provisionally categorized as being of 'urgent concern' in the following range states where available information indicates serious problems with the implementation of Article IV for the export of specimens: Iran, Kazakhstan, Kyrgyzstan, Mongolia, Pakistan, Russian Federation, Saudi Arabia, Turkmenistan and Uzbekistan. There was a further consultative meeting on trade in falcons for falconry in Abu Dhabi (May 2004) and subsequently, the Secretariat transmitted their concerns to the range states named above. By the time of the most recent, 21st meeting of the CITES Animals Committee in Geneva (May 2005) none of these range states had responded to the CITES Secretariat with comments on the status and trade of Saker Falcons in their countries. Currently, the CITES Animals Committee is now, in consultation with the Secretariat, formulating recommendations for range states where Saker Falcons are categorized as being of 'urgent' and 'possible concern'.

This slow pace of change illustrates one of the problems with multi-lateral environmental agreements such as the CITES convention. We must wait and see what the CITES Animals Committee and Secretariat finally produce as 'recommendations' for the range states where there is urgent concern; a process that may take a few more years before any implementation. In any case, will these 'high-level' recommendations, whatever they may eventually turn out to be, deliver any real measurable conservation benefit to the Saker Falcon? What is clear, is that without the ERWDA-funded field-based studies in Asia there would be no current information on Saker Falcons for many of the countries where the species is now regarded as being of urgent concern.

As well as the political machinations surrounding the Saker, Avian Influenza is of increasing concern, especially as cases have occurred recently in the UAE. An update on this is included in this edition. Avian Flu is a good example of why the Middle East Falcon Research Group was first established: to improve communication between field biologists and veterinarians to tackle issues affecting birds both in the wild and in captivity.

We wish to thank Dr Dan Brimm and Lisa Jerez for their generous financial contributions that have allowed us to provide Arabic summaries for the main articles. This will enable Falco to reach a much wider audience in the Arabian Peninsula and promote conservation issues amongst Arab falconers.



الانتاجية العدد

أدى لتغير في هيئة الحورير إلى تأخير العدد من 25 من "الفاقور"، وإذا ما بقي عدد النشأة والصيف في عدد واحد مزدوج بعد نقل الفكاور / إيوين بوتوف إلى الولايات المتحدة الأمريكية ليعتد إسهامه هناك بعد سنوات اعتباراً في خدمة "الفاقور"، وكان لفاقور إيوين هو من نشأ العديد من الفرق التي تبحث في الموضوعات المتعلقة بـ "الصقور" والهجرات الموسمية، حيث أفادت هذه السنوات من جهود إيوين لإحياء لاصص، ويعتقد أن إيوين لم يأت إلى الحورير على أول تغيرات أعداد الصقور الحرة وتوزيعها في فترة آسيا، كما أنه لعب دوراً كبيراً في نشر هذه المعلومات وفي تنظيم المؤتمرات، ولا تزال خيرات الفكاور / إيوين متاحة بسهولة للجمع من خلال وسائل الاتصال الحديثة لها على إلا أن تضغط على زرف طفاً وتحت تسمى في كل أنحاء والتوزيع في محل عمله الحالي بواسطة فلايبيليا.

حل الفكاور / أندرو نيكمون محل الفكاور / إيوين، وكان لفاقور / أندرو قد قدم بيانات إحصائية (مروج) مكثفة حول صقور الشاهين في إنجلترا، وقد نشي فكاور / أندرو للفرق التي من أول موسم صيد له في الصيف، ومتقنياً، ويقع الآن بـ 100 ميل من شرق إنجلترا، في "الصقور الحمراء"، هناك ويستترك هو وفكاور / أندرو يقيم في "الصقور الحمراء".

قامت "الفاقور" على مدار سنوات بنشر العديد من الدراسات الميدانية حول "الصقور الحرة" في كازاخستان، وروسيا، والصين، ومتقنياً، علماً بأنه لم ينشر سوى قليل من المعلومات من هذه البلدان قبل هذه الدراسات والتي موهبتا هيئة أبحاث البيئة والحدائق القومية وتضمينها في أبو طيبى. كانت هذه الأبحاث الممولة من دولة الإمارات العربية المتحدة ومضوعات "الفاقور" المرتبطة بها هي التي استخدمتها الولايات المتحدة الأمريكية لدراسة "الصقور الحرة" في قارة آسيا، والتي ولدت على العلاقات البيئية الممتدة الأثر لتكميم تبيئات الأحياء حول "الصقور الحرة" في قارة آسيا. ثم أيدج "الصقور الحرة" في "مراجعة الشارة البيئية" في الأبحاث التي تنوعت في الأبحاث الميدانية بالمحولات، الثانية "الإقليمية لتجارة الدورية" في المحولات البيئية لمدينة "ألتاير" (سائيس) والذي عدت في جيب (أغسطس 2003) وأضيف "الصقور الحرة" في قائمة الحماية للأصناف المهددة بالانقراض في تلك الأراضي. طفق الأبحاث التي قامت بها هيئة أبحاث البيئة والحدائق القومية وتضمينها - بأنه يمثل حالة استثنائية لثراء المعلومات الجديدة المنقاة من الأبحاث أن الحدف عليه يمثل "حالة عاجلة" للحفاظ على هذا النوع من الطيور. وقد تم لاحقاً تحرير الورقة التي أعدتها هيئة إيوين إحصائيات دولة الإمارات بنوع "الصقور الحرة" إلى القائمة ذات الصلة التابعة للاتفاقية "اسباين" في كل دولة من دول المراجع ذات الصلة، حيث طلبت من هذه الدول إيدج "الصقور الحرة" لمخاطبتها على هذه الورقة، ولكن لم يستجب سوى بعض منها فيما بعد.

تقرر في الإجماع فشرين لإقليمية الصقور الحمراء بالمحولات" الثانية لإقليمية سائيس والذي عدت في مدينة جوهانسبرج (جنوب أفريقيا) في 2004 أن تقوم أمته الاتفاقية بتصنيف مستوى "المحولات" فخصمه بها شكل دوله من دول المراجع على أساس المعلومات المتاحة حول عدد السكان ومستويات التجارة على أنه قد تم تصنيف "الصقور الحرة" مؤقتاً كـ "حالة عاجلة" في دول المراجع الثالثة حيث تشير المعلومات المتاحة إلى وجود مشكلات خطيرة في تنفيذ المادة رقم 4 فيما يتعلق بتصدير "الصقور الحرة"، إيران، وكازاخستان، أفغانستان، وباكستان، والاتحاد الروسي، والمملكة العربية السعودية، وتركمانستان، وأوزبكستان. كما عدت إجماع استشاري لدراسة حول "الصقور الحرة" في "الصقور الحرة" في أبو طيبى (نوفمبر 2004)، وقامت أمته الاتفاقية لاحقاً بتبني "مواثيق" في دول المراجع الثلاثة، أي: أنه متى وقت اتفاق الإجماع الواحد والعشرين لإقليمية الصقور الحمراء بالمحولات" الثانية لإقليمية سائيس في جيب سوكرا (أكتوبر 2005)، لم يرد أي دولة من دول المراجع هذه على أمته الاتفاقية بالملاحظات المطلوبة من وضع "الصقور الحرة" والتجارة فيه في هذه الدول. وتقوم اللجنة في الوقت الحاضر بالتشاور مع أمته الاتفاقية بصياغة توصيات لتقديمها إلى دول المراجع حيث يصنف هذا الصقور على أنه "حالة عاجلة" واحد الشؤون المحتملة.

يظهر هذا الإفق البيئي للتغير إحدى المشكلات التي تلازم الاتفاقيات البيئية متعددة الأطراف مثل اتفاقية سائيس، وعلاوة على ذلك فإنها تبرز ما سطره به "اللجنة المعنية بالحيوانات" وأمانة الاتفاقية في نهاية المطاف من "الوصايا" التي ألزم المراجع حيث "الحالة عاجلة"، وهي صيغة عامة تأخذ معنى سنوات أخرى قبل أن تترى أي تدابير للتفكير وإعلى حل، بل صيغة هي توصيات "الجمعية العامة" على ما تكون عليه في النهاية - أو فائدة عملية حقيقية للصقور الحرة في مناطقها على نوعه والامر البارز لأمم هو أنه بدون الدراسات الميدانية التي جرت في فترة آسيا وتبني من هيئة أبحاث البيئة والحدائق القومية وتضمينها لم يكن يوجد أية معلومات حالية عن "الصقور الحرة" الكثير من الدول التي يعثر فيها هذا النوع إلا حالة عاجلة للأمن.

ولصافة في المحفلات السياسية التي تحيط بـ "الصقور الحرة"، تعتبر لظواهر الطيور من الشؤون المتزايدة أيضاً، خاصة بعد ظهور حالات في الآونة الأخيرة في الإمارات العربية المتحدة ويوجد في هذا لعدد تحديث حول هذا الموضوع والظواهر القليلة مثال جيد لفرص التي تنتج من أجل "الجمعية البيئية المعنية بالصقور في الشرق الأوسط" في لندن، والذين اتفقوا على "مواثيق" في عامه الأحياء (البيولوجيين) والأطباء البيطريين الميدانيين لمعالجة القضايا التي تركز على الطيور في البرية والأسر جميعاً. نود أن تقدم بعزلة الشكر للفكاور / إيوين بريم بارز، حريز مساهماتها السالفة السبقية والتي مكنتنا من تقديم مخلصات للتغلات الفرنسية باللغة العربية. وهذا من شأنه أن يخلق "الفاقور" إلى جمهور قراء أوسع نطاقاً في الجزيرة العربية ويروج لقبائل المحفظ على الأبحاث بين المترجمين العرب.

Falcon Population Estimates: how necessary and accurate are they?

Andrew Dixon

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Ornithological survey work is concerned with mapping bird distribution patterns and/or estimating abundance. Abundance can be either an absolute or relative measure; the former is an estimate of actual population size in a particular area whilst the latter is comparison of numbers between areas, or between different time periods within a single area. Ornithologists strive to estimate abundance in order to gauge population sizes mainly for conservation purposes, but also at times for economic or wildlife management reasons i.e., without adversely affecting wild populations. In this article I shall illustrate why this may not necessarily be true, but first I would like to consider the validity of absolute population estimates themselves.

**National Peregrine Surveys in the United Kingdom**  
The United Kingdom is a relatively small, heavily populated country that is home to a large number of active bird watchers (the RSPB membership exceeds 1,000,000 people) and a healthy population of Peregrine Falcons (*Falco peregrinus*). However, it was not always thus for the Peregrines; in the 1950's and 1960's the insidious effects of organochlorine pesticides severely reduced their population. Ironically, this decline was detected as a result of the 1961 Peregrine Enquiry, which was a national survey initiated because it was claimed that the Peregrine population was increasing and causing significant harm to racing pigeons. Prior to this first national survey, we only had a fragmented knowledge of the size of the British Peregrine population and little idea of population trends. Repeat surveys in subsequent years proved vital to identify the extent of the decline and then subsequently monitor the success of measures that were taken to reverse the situation (i.e., the effect of restrictions on pesticide use). In the UK the Peregrine population continues to be closely monitored and is the subject of decadal National Peregrine Surveys, which have taken place in 1971, 1981, 1991 and 2002 (the latter having been postponed in 2001 because of the foot and mouth outbreak in Britain). These surveys have charted the expansion of the breeding distribution and an increase in the number of breeding pairs throughout Britain.

The National Peregrine Surveys are undertaken mainly by an army of amateur ornithologists, many of whom have a vast amount of experience studying Peregrines, and their efforts are co-ordinated on a regional basis by governmental and non-governmental organisations. The estimates obtained by these surveys are believed to be accurate assessments of the Peregrine breeding population and are regularly used by government and non-governmental organisations in decision-making processes. Given the number of expert surveyors, the high level of geographic coverage, the restricted nest-site choice of Peregrines and their ease of detection, it is difficult to imagine how these national surveys could provide anything other than accurate population estimates. So, are the National Peregrine Surveys accurate?

Region	Estimated No. of Occupied Territories in 2002
England	519
Wales	288
Scotland	592
Northern Ireland	92
<b>United Kingdom Total</b>	<b>1492</b>

Table 1: Results of the 2002 National Peregrine Survey in the four corners of the United Kingdom (taken from Banks et al., 2003).

The most recent National Peregrine Survey, conducted in 2002, produced a UK estimate of 1492 occupied territories (see Table 1). The population in Wales comprised 90 coastal territories and 198 inland territories. Subsequently, the RSPB produced an assessment of the Peregrine breeding population in Wales during 2002 (Thorpe & Young, 2004), which included additional information from several sources as a result of questions raised by the South Wales Peregrine Monitoring Group (SWPMG) regarding the validity of the National Survey results. This reassessment recorded 89 coastal territories and 232 inland territories; a 17% increase in the number of inland territories recorded in Wales. Many of these 'unrecorded' sites were within a 4000 km<sup>2</sup> study area intensively covered by the SWPMG. If there was a similar level of under-recording in the remaining 10,000 km<sup>2</sup> of Wales the error of the National Peregrine Survey population estimate for Wales could be significantly greater than 17%. It seems that counting Peregrines in the UK may not be as straightforward as originally assumed, and to illustrate this point it's worth noting that the National Peregrine Survey identified three territories within the

example, within Kazakhstan there are regions with discrete Saker Falcon populations that are separated by vast areas with relatively few, if any, breeding pairs. The factors affecting these different populations are not necessarily the same or have the same impact; some populations may be stable, some declining and others even increasing. Some may be 'sink' populations and others 'source' populations. A recent study of Peregrine Falcons in California found evidence of such population sub-structuring, with a sink population in southern coastal habitats and source populations within the northern interior and urban habitats (Kauffman et al., 2004). This study emphasised the need to understand the demographic rates of sub-populations rather than rely on an overall population count for a large geo-political region.

In the case of the Saker Falcon we want to know what biological populations are declining, identify the causal factors and ultimately rectify or ameliorate the problem. It may be more appropriate to identify and survey discrete biological populations, some of which may

range across several countries. The Saker Falcons of the Altay mountains arouse much curiosity in terms of their phylogenetic identity, and the birds within this distinct biological region comprise a logical 'population unit'. This biological population unit spans territory within Russia, Mongolia, Kazakhstan and China, thus studies will require international co-operation by survey teams working in their respective countries. Other biological population units can be identified within the distribution range of the Saker Falcon and the importance of identifying the demographic rates of these populations cannot be underestimated. An important point to realise is that it is not necessary to obtain overall population estimates in order to determine if a population is stable, declining or increasing.

Once we know that certain populations are declining we can try to identify the causal factors; these may be habitat changes, a reduction in prey availability, an increased mortality rate (such as a high frequency of electrocutions) or a high level of trapping for falconry. Some of these factors may not necessarily impact on the

Country	1990 median	2003 median	% decline
Afghanistan	40	40	0
Austria	8	8	0
Bulgaria	35	45	Increase
China	1,100	1,100	0
Croatia	13	13	0
Czech Republic	12	12	0
Hungary	100	150	Increase
Iran	50	50	0
Iraq	60	60	0
Kazakhstan	2,000	200	90
Kirghizistan	550	175	68
Moldova	6	6	0
Mongolia	2,668	1,100	59
Pakistan	10	10	0
Romania	4	20	Increase
Russian Federation	2,041	625	69
Serbia & Montenegro	13	13	0
Slovakia	35	20	43
Turkey	55	55	0
Turkmenistan	60	50	17
Ukraine	130	130	0
Uzbekistan	1,250	125	90
<b>TOTAL</b>	<b>10,238</b>	<b>4,005</b>	<b>61</b>

Table 2. Data compiled by Birdlife International in their assessment of the conservation status of the Saker Falcon. Recent estimates based on further survey work have been obtained for Kazakhstan (>1,500 bp; Karyakin et al., 2004), Russian Federation (2000 - 3000 bp; Gtushin, 2004).



Wast, uninhabited landscapes present difficulties for accurate surveys of breeding Saker Falcons. (E. Potpour)

SWPMG study region that were hitherto unknown to the fieldworkers intensively surveying this area!

**Saker Falcon population estimates**  
If such a large margin of error exists in the results of a National Peregrine Survey in Britain, what are the margins of error in falcon surveys in other, much larger, less populated and generally inaccessible parts of the world? In recent years, small teams of surveyors have made Herculean efforts to estimate the breeding Saker Falcon (*Falco cherrus*) population in countries such as Kazakhstan, Russia, Mongolia and China. In all cases these surveys represent initial attempts at quantifying the Saker Falcon breeding population within a geo-political boundary, but it has not been possible to gauge the precision of these estimates. So why do we strive to obtain these estimates if their accuracy is so suspect? Decisions relating to environmental issues are taken at government level and these governments all work within geopolitical boundaries, so it makes sense to define populations at the country level. The decision-makers within governments need to base their conservation actions on sound, scientific evidence that produces facts and figures about the subject concerned. Surveys and estimates of abundance provide the "facts and figures" required by the decision-makers but the precision of these estimates is often ignored. Once a "number" has been produced it is frequently repeated and any caveats relating to its reliability become lost over time. Birdlife International undertook a recent review of the

status of the Saker Falcon and a core part of this review relied on country-level population estimates (see Table 2). Undoubtedly, these population estimates represent the 'best available' information but it appears that little emphasis is placed on the validity or plausibility of these estimates. For example, the population estimate of 200 bp in Kazakhstan was based on Levin (2001). However, the fact that this estimate is based on studies conducted within a fraction of the Saker Falcon's breeding range in Kazakhstan is not mentioned in the table. In 2004, survey teams led by Anatoly Levin and Igor Karyakin have covered 'new' areas of Kazakhstan and discovered hitherto unrecorded Saker Falcon populations, so that now the population is believed to be in excess of 1500 breeding pairs. Perhaps it is time to re-evaluate the value of country-scale population estimates in light of their obvious unreliability, particularly where the values relate to widespread species occupying vast, sparsely populated countries such as Kazakhstan. In any case, even if country-scale population estimates are accurate are they really worth the huge expenditure of effort and resources required to obtain them?

**Population demography**  
The geo-political populations defined in most survey estimates are often no discreet biological populations. Geo-political boundaries do not necessarily coincide with biological boundaries and species breeding within a large country might actually comprise several, smaller sub-populations and these sub-populations may themselves span several different countries. For



## The Peregrine Falcon in Turkmenistan.

Nikolai N. Efimenko

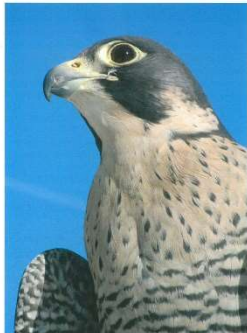
Kopetdag State Nature Reserve, Turkmenistan  
kamahina@ngo-in.org

<sup>1</sup>Translated and shortened from the original version: Efimenko, N.N. 2004. Sapsan v Turkmenistane [The Peregrine Falcon in Turkmenistan]. Strepet. Vol.2. No.1. 88-99. In Russian.

The author has collected field data on the Peregrine Falcon (*Falco peregrinus*) in Turkmenistan over the last 20 years (1983-2004) and, in addition he has researched the collections held by the department of ornithology in the Zoological Institute of the Russian Academy of Sciences (St. Petersburg), the Zoological Museum and the Chair of Biogeography of Moscow University.

### Introduction

Two subspecies of the Peregrine Falcon occur in Turkmenistan i.e., *F. p. calidia* and *F. p. brookei* and they can be distinguished within the region on the basis of their occurrence, habitat choice and feeding behaviour. The Peregrine Falcon that breeds in the tundra and on the islands of the Northern Arctic Ocean (*F. p. calidia*), occurs during winter in the southern Caspian Sea from Lenkorm to Gorgan and Atrak, normally at the sites with a large concentration of waterfowl. These 'tundra' Peregrine Falcons arrive at their wintering sites, together with their waterfowl prey, from the middle to late October. The number of 'tundra' Peregrine Falcons wintering in southeastern Trans-Caspia is directly related to the abundance of their avian prey at wetland complexes (Dementiev, 1952; Dementiev et al., 1955).



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birds can occupy single nests for several years (Efimenko, 1990, 1992). In central Kopetdag one nest was occupied by the Peregrine Falcon for 5 years. The distance between occupied nests on Darabakerkeldag ranged from 2.5-11.0 km. The Peregrine Falcon begins population in February-March. In central Kopetdag population was observed on 13<sup>th</sup> and 26<sup>th</sup> February, and 7<sup>th</sup> March (two different pairs); in southwestern Kopetdag on 22-28<sup>th</sup> March. Four populations were recorded on 13:19, 7:21, 11:40 and 16:30, and they took place on a rock ledge and on a dry juniper branch. During this period of population busts the male twice (at 13.25 and 15:50) provided food for the female, bringing small Passerine birds to her.

In Kopetdag the Peregrine Falcons laid eggs in late March, whilst clutches at different stage of incubation were recorded between 31 March and 26 April. A full clutch consists of 2 or 3 eggs. In 32 cases the clutch consisted of 2 eggs and in 2 nests of 3 eggs. Both sexes participate in incubation, but the female for considerably longer periods than the male. During 14h 30 min observation the male incubated for 1h 20 min. Observation indicates that the female incubates at night. A female was observed leaving the nest to attack a Bearded Vulture and a Griffon Vulture, which were flying 15-20m from the nest. The male also defends the nest area and drives away all large birds within a radius 30-100m from the nest, swiftly attacking them.

The eggs hatch in the last ten days of April, and nests usually have two chicks and more rarely one or three chicks. White downy chicks for 13 years observations in Kopetdag were recorded between 10<sup>th</sup> April and 9<sup>th</sup> May. Both parents fed the chicks. During 4h 30 min of observations 16 feeding visits were recorded. From observation at three nests the recording interval between feeding visits ranged from 1 h 20 min to 2 hours (1st nest), 11 min to 2 hours (2nd nest) and 53 min to 4 hours 10 minutes (3rd nest). In the morning and evening the Peregrine Falcons fed the chicks more frequently than in the afternoon. The male caught and plucked the prey and either brought food directly into the nest or vocalised to his mate, who then left the nest to collect

the prey. The female fed the chicks and on one occasion was observed catching success prey in a rock crevice 100-150 m from the nest. Feathered chicks with incompletely grown remiges and rectrices were recorded between from 15<sup>th</sup> to 29<sup>th</sup> May (over 13 years). At this age the chicks were feeding independently, in rare cases the female provided assistance. To observe the nest, both parents used constant perches on rock ledge or on the dry branch of juniper at 20-150 m from the nest.

Between the middle of May and the beginning of June the chicks leave the nests. The first fledglings in Kopetdag were recorded between 27<sup>th</sup> May and 07<sup>th</sup> June (10 years of observation; 15 records). In Kugitang by the middle of May 2004 fledglings were flying together with the male at four different nesting territories. Adults continue to feed fledglings after they have left the nest. In the central Kopetdag, during 7 hours of observation, three feeding visits were observed. During the first three days fledglings were noted 5-20 m from the nest ledge. The parents either brought food to chicks or dropped it from short distance above the nest. Within 10 to 14 days of fledging adult falcons passed prey to chicks in mid-air, or dropped it from high up to which the fledglings rushed. Chicks flying together with parents in Kopetdag were recorded between 22<sup>nd</sup> June and 22<sup>nd</sup> July (12 years of observation, 20 records), whilst in Kugitang flying broods were noted from 19<sup>th</sup> May to 13<sup>th</sup> June. Broods without parents were sighted, on three occasions between 6<sup>th</sup> and 19<sup>th</sup> September.

The nesting period of the Peregrine Falcon (egg-laying to fledging of chicks) lasts 60-65 days. In 37 nests 74 eggs were laid and 74 chicks fledged. We did not register the loss of any eggs, chicks and adult birds. All chicks fledged successfully. On average, each successfully breeding pair raised 2 chicks (data for 1983-1996).

### Nesting habitat

In the mountains of Turkmenistan (Kopetdag, Kugitang), as well as within the borders of the main range, the Peregrine Falcon *F. p. brookei* is permanently resident nesting on inaccessible cliffs in deep gorges and hunting on the inclined plateaus of the watersheds (Efimenko, 1990).

The vegetation of the nesting habitat of the Peregrine Falcon in central Kopetdag (c.400 m) is the semi-desert *Artemisia tarsonomi* associated with mountain slopes, which from 1200-1600 m, is gradually replaced by sparse juniper forests of *Juniperus turcomanica*. According to our data, up to 76 bird species have been recorded in habitats attached to nesting sites of Peregrine Falcons, the majority of which (62 species) are breeding species, mainly Passeriformes (32 species), which serve as prime prey species for Peregrine Falcons.

### Nesting ecology

In the mountains of Turkmenistan *F. p. brookei* utilises old nests of the Raven (*Corvus corax*), Griffon Vulture (*Gyps fulvus*), Bearded Vulture (*Gypsohalia barbata*) situated in niches or on the ledges of vertical cliffs about 20-100 m high. Sometimes the Peregrine Falcon occupies empty niches without an old nest of another species and

the prey. The female fed the chicks and on one occasion was observed catching success prey in a rock crevice 100-150 m from the nest. Feathered chicks with incompletely grown remiges and rectrices were recorded between from 15<sup>th</sup> to 29<sup>th</sup> May (over 13 years). At this age the chicks were feeding independently, in rare cases the female provided assistance. To observe the nest, both parents used constant perches on rock ledge or on the dry branch of juniper at 20-150 m from the nest.

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### Prey species

The Peregrine Falcon is a typical ornithophage. We have collected 178 food remains from 34 bird species (see Table 1), which are scattered unevenly throughout the season. In both prey species 26 (76.5%), and volume 153 (85.9%) Passeriformes dominated absolutely, especially in the spring-summer-autumn period (79.7%). The remaining 8 species of Non-Passeriformes birds are represented by 25 specimens (14.1%). During the autumn migration of the Black-throated Thrush (*Turdus atrogularis*) this species dominated (N = 31 specimens); locally breeding species included *Carduelis caniceps* (N = 11), Craig Martin *Pyropegoe ruficeps* and Red-fronted Serin *Serinus pusillus* (N = 10), Black Redstart *Phoenicurus ochruros* and Parus ater (N = 9). Considerably rarer were *Ammodramus griseogularis*, Wood Pigeon *Columba palumbus*, Hoopoe *Upupa epops*, *Muscicapa striata* and *Monticola solitarius* (N = 1).

### Conservation measures

Within the borders of Turkmenistan the Peregrine Falcon *F. p. brookei* occupied 15 known nests in Kopetdag and four pairs in Kugitang. Five pairs breed within the borders of Kopetdag Nature Reserve and four pairs within the Kugitang Nature Reserve. Probably, the Peregrine Falcon numbers are higher, because we did not investigate all the potential nesting area. I estimate that the total number of *F. p. brookei*

Table 1. The Peregrine Falcon food spectrum by seasons

Species	Winter	Spring	Summer	Autumn	Total specimens (%)
<i>Alectoris chukar</i>	2(1.15)	1(0.6)	-	-	3(1.7)
<i>Ammodramus griseogularis</i>	-	1(0.6)	-	-	1(0.6)
<i>Columba palumbus</i>	-	1(0.6)	-	-	1(0.6)
<i>Columba livia</i>	2(1.15)	2(1.1)	1(0.6)	-	5(2.8)
<i>Streptopelia turtur</i>	-	1(0.6)	2(1.1)	-	3(1.7)
<i>Apus apus</i>	-	2(1.1)	4(2.3)	-	6(3.4)
<i>Merops apiaster</i>	-	3(1.7)	2(1.1)	-	5(2.8)
<i>Upupa epops</i>	-	1(0.6)	-	-	1(0.6)
<b>Total Non-Passeriformes</b>	<b>4(2.3)</b>	<b>12(6.7)</b>	<b>9(5.1)</b>	-	<b>25(14.1)</b>
<i>Pyropegoe ruficeps</i>	-	2(1.1)	8(4.5)	-	10(5.6)
<i>Delichon urbica</i>	-	3(1.7)	4(2.2)	-	7(3.9)
<i>Lullula arborea</i>	-	2(1.1)	2(1.1)	-	4(2.2)
<i>Lanius isabellinus</i>	-	2(1.1)	2(1.1)	1(0.6)	5(2.8)
<i>Pyrrhocorax pyrrhocorax</i>	-	1(0.6)	1(0.6)	-	2(1.1)
<i>Sylvia hortensia</i>	-	1(0.6)	2(1.1)	-	3(1.7)
<i>Sylvia albaea</i>	-	2(1.1)	-	-	2(1.1)
<i>Muscicapa striata</i>	-	1(0.6)	-	-	1(0.6)
<i>Oenanthe picata</i>	-	1(0.6)	1(0.6)	-	2(1.1)
<i>Monticola saxatilis</i>	-	1(0.6)	2(1.1)	-	3(1.7)
<i>Mastotritus</i>	-	-	1(0.6)	-	1(0.6)
<i>Phoenicurus ochruros</i>	-	6(3.4)	3(1.7)	-	9(5.1)
<i>Turdus atrogularis</i>	1(0.6)	-	-	3(1(6.8)	3(1(7.4)
<i>Turdus torquatus</i>	-	3(1.7)	2(1.1)	-	5(2.8)
<i>Turdus merula</i>	-	2(1.1)	-	1(0.6)	3(1.7)
<i>Turdus viscivorus</i>	2(1.1)	-	1(0.6)	1(0.6)	4(2.2)
<i>Parus ater</i>	1(0.6)	1(0.6)	5(2.8)	2(1.1)	9(5.6)
<i>Sitta tephronota</i>	-	2(1.1)	1(0.6)	1(0.6)	4(2.2)
<i>Passer indicus</i>	-	3(1.7)	-	-	3(1.7)
<i>Petronia petronia</i>	1(0.6)	-	3(1.7)	2(1.1)	6(3.4)
<i>Fringilla coelebs</i>	1(0.6)	-	-	2(1.1)	3(1.7)
<i>Serinus pusillus</i>	1(0.6)	3(1.7)	3(1.7)	3(1.7)	10(5.6)
<i>Carduelis caniceps</i>	1(0.6)	3(1.7)	3(1.7)	4(2.25)	11(6.2)
<i>Acanthis camahina</i>	1(0.6)	2(1.1)	1(0.6)	1(0.6)	5(2.8)
<i>Mycerobas carpinus</i>	2(1.1)	1(0.6)	2(1.1)	2(1.1)	7(3.9)
<i>Emberiza cia</i>	-	2(1.1)	-	1(0.6)	3(1.7)
<b>Total Passeriformes: %</b>	<b>11(6.2)</b>	<b>44(24.7)</b>	<b>47(26.4)</b>	<b>51(28.0)</b>	<b>125(68.9)</b>
<b>TOTAL specimens: %</b>	<b>15(8.4)</b>	<b>56(31.5)</b>	<b>56(31.5)</b>	<b>51(28.6)</b>	<b>178(100)</b>



in Turkmenistan is approximately 25-30 breeding pairs. The most recent Red Data Book of Turkmenistan (Saparmurodov, 1999) only mentions the wintering subspecies of Peregrine Falcon *F. p. calidia*. The presence in Turkmenistan of breeding Peregrine Falcons is not mentioned at all, though the data on nesting of this form had been published (Efimenko, 1990, 1992, 1998). We aim to include the sedentary breeding subspecies, *F. p. brookei*, in the next edition of the Red Data Book of Turkmenistan.

Though its number still remains stable, the constant and increasing logging in the mountains, the hunting of large mammals, bird trapping for the illegal trade can all significantly influence the number of breeding Peregrine Falcons. Therefore the conservation of tree-abundant vegetation at nesting sites and the protection of passeries, which are the main food for breeding Peregrine Falcons, is important. The establishment of resting zones, signing the agreement with Iran about a ban of logging of juniper is the best way to conserve the local population of *F. p. brookei* in Turkmenistan.

The 'tundra' Peregrine Falcon (*F. p. calidia*), though it is under protection within the framework of Khazar Nature Reserve (Red Data Book of Turkmenistan SSR, 1985), cannot be totally protected. Mass poaching over recent years in the southeastern Trans-Caspian Sea region leads to the destruction of ancient wetland even in the nature reserve. Consequently, the wintering areas for waterfowl, which form the food base of the tundra Peregrine Falcon, are deteriorating (Kartman, 1991). To conserve the over-wintering Falcons and their prey it is necessary to develop a programme for the stable development of the region. The signing of international nature-conservation agreements between Turkmenistan, Iran, Azerbaijan, Uzbekistan, Kazakhstan and Russia should help conserve of migration routes and the wintering ground of the tundra subspecies of the Peregrine Falcon.

### الشاهين في تركمانستان

نیکولای ایفیمینکو

تم رصد شاهین من صفر شاهین في تركمانستان: "شاهين كلباس" ويقطن الشتاء في جنوب شرق تركمانستان، والشاهين البريوي، وينتقل (يشغل) في كوبيتاج وكوجيتانج، ويمكن تمييز السلالتين: عن بعضهما بعضا عن طريق استناد الموطن واختيار للزينة، وهو ما يحدد توريثهما في تركمانستان. ويعد عدد سلالات شاهين كلباس التي تقطن فصل الشتاء على وقره طوبو الماء في مجتمعات الأرض البنية، بينما تزيد أعداد سلالة brookei بوفرة العاصيف في منطقة ككازان. ويصل العدد الإجمالي لسلالات البريوي في تركمانستان في 30-25 زوجا ممثلا، ويمكن تمييز خمسنتين نيكوتوجيا تكثرها بما يلي: الزواج في فبراير-مارس. وضع البيض في مارس - حضانة كاملة لبيضتين (إلزاما جانا بيشة أو ثلاث)، فتن البيض في أبريل - وتلاحظ أول الأفراس في منتصف مايو. وتستمر فترة الحضانة في الأفراس من 60 إلى 65 يوما، وتكثف نسبة نجاح التفاح التفاح في 100 في المائة.

## The Project for Falcon Conservation. Breeding Techniques, Health Management and Conservation Value of the First and Largest UAE Falcon Breeding Centre under Artificial Conditions

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Falcon breeding is an important issue for UAE traditions. There are several falcon breeding Centres all over the world, but a special one, ProFaCon, was set up in the UAE in 1996 from an idea of His Highness Sh. Khalifa bin Zayed Al Nahyan. After few years of trials, we found an efficient way to work and our breeding production has increased every year. At the moment we breed about 220 falcons every year. This Centre applies the usual falcon breeding techniques, but they have been adapted to the environmental conditions of the Middle East.

In UAE the very extreme summer environmental conditions (temperature, humidity, light) do not allow birds (the northern bird species) either to survive or to reach "breeding status". Consequently we needed to modify the environment to suit the needs of our falcons. Total artificial environmental conditions are used to be able to breed northern falcons (*Falco rusticolus*, *Falco peregrinus*, *Falco cherrug* and their hybrids) in the desert.

**ProFaCon Breeding Facilities**  
We have building dedicated to imprinted animals and buildings dedicated to the breeding pairs.

### Building for natural pairs

The typical room for a pair is 6m x4 m and 3 m high. All rooms are provided with nests, perches, a water basin, a feeding table and one-way glass windows. Each room is also provided with air-conditioning and full spectrum light program to manipulate the photoperiod. A CCTV system is installed in each room, so we can follow the bird's activities all day long. The water, the light and the temperature controls are located outside of each cage, in order to avoid any disturbance to the birds.

### Building for imprinted animals

Each imprinted bird has an individual chamber of about 1.5 m x 2 m. They are provided with almost the same equipment.

### ProFaCon Breeding Stock

Our Breeding stock comprises:

- 1- Natural pairs
- 2- Imprinted birds (hand-reared to donate sperm and to accept artificial insemination)

The management is different for imprinted birds compared with natural pairs. For natural pairs we try to minimize the contact and the disturbance, with the imprinted ones, we need to maintain daily closed contact and a relationship. The amount of work dedicated to imprinted animals is higher than for the natural pairs.

Our original stock came from abroad but, at the moment, our target is to use our own produced birds to substitute, slowly, the old breeders. In this way we will have a better knowledge of the birds history (how was it reared? was it used for falconry? could have been exposed to some disease? did it have any disease which could effect breeding?). Also for the imprinting animals our preference is to rear our own future breeders. The manner in which they are raised and handle, makes a lot of difference in succeeding collecting semen or in accepting an insemination.

Daily and yearly management  
Everyday the keepers check all birds and feed them. If any problems are seen, it is reported to the manager. Good quality fresh food is critical to successful management and reproduction of any animal. We own a rat farm, we buy day old chicks from proven hatcheries and, only during breeding season we buy and kill fresh quails. No pigeons are used, in order to avoid bringing disease into the breeding project.

Once a year, during autumns, we catch and check the birds. At this time we clean and disinfect their rooms.

### Breeding Season

#### Hormonal cycles and behavior

To breed successfully, birds must follow a perfect synchronization of physiological and morphological changes. Because in the UAE we cannot rely on natural environmental conditions (too hot, not enough light time, too dry) to synchronize the birds, we artificially create and manipulate the elements involved in the breeding cycle.

In temperate regions the most important factor influencing and synchronizing the breeding is the photoperiod. In spring, when the brightness and daylight increase, the photoreceptors located on the hypothalamus and telencephalon are stimulated. The stimulated hypothalamus produces releasing factors (LHRH-1, LHRII-III). The releasing factors reach the adenohypophysis, in the blood, and stimulate the production and release of LH and FSH. These 2 hormones stimulate the



gonads developments. The gonads produce progesterone, androgens and estrogens which causes the breeding behavior. (Gwinnier et al, 2000; Pesci, 1999).

#### How we manipulate the photoperiod

In autumn we decrease the daylight length slowly from 16 to 8 hours a day and approaching the winter season, we also decrease the room temperature slowly from 15-20°C to 5°C. In January we start to increase the daylight (as naturally happens), and we arrive at 14-16 hours of daylight in June-July. Birds have much better vision than humans. They are able to see a much wider spectrum of light (tetrachromatic vision). They can also see UV light. This changes their perception of light and of colours. For this reason in the breeding chamber we installed "full spectrum light". The temperature remains low for longer time (around 5°C up to April and then slowly increases up to 10°C and then 15°C) as in a normal winter. Humidity remains constant at about 50 % all year. Some variations can happen, depending on the external humidity, but this does not appear to influence breeding. The feeding time is only 2 times a day during autumn, then we increase the feeding times to 3-4 times a day during courtship period and we feed 4-5 times a day when the chicks are in the nest.

#### Artificial insemination, incubation and hatching

Imprinted males are used as semen donors. The semen is used to inseminate imprinted females or females in a natural pair, in order to obtain hybrids. The eggs are collected everyday and substituted under the female with dummies. The eggs are cleaned, disinfected and artificially incubated in a term. After hatching, the birds are moved in brooders for 2-3 days and then they are kept in boxes under a warm light. The birds are hand-reared to 10 days. In this period we apply 2 closed rings, one on each leg. One is in compliance with the UAE government regulation, and one is with a Profacon ID. When birds are 10 days old they are moved to foster parents, except for the few that we imprint. When chicks are old enough, they are moved from the parents and sent for hatching. Young birds are placed in locking boxes, which simulate a nest, in a non-urbanized

region. The boxes are opened and the birds are allowed to fly free in the wild in order to let them mature physically and mentally. They are constantly monitored and provided with food. The regions chosen for the hatching are usually windy to encourage young falcons to spend a lot of time in the air. When the birds are almost independent, they are trapped and sent to falconers for falconry training.

#### Flock medical management

The veterinarians involved in this job must understand the principles of falcon breeding management as well as avian medicine and disease.

Our job is mainly to establish a preventive medicine program and it is composed of 5 main duties:

- 1) Quarantine: for all new birds arriving to join the breeding project.
- 2) Disinfection protocol: vets set up a protocol of disinfection which is applied in our breeding Centre.
- 3) Aviany visits: annual flock examination is performed in November.
- 4) Emergency care: sometimes breeding birds get sick. The keepers report the problem to the manager and he calls the veterinarian.
- 5) Paediatric problems: the veterinarian manages hatching problems such as yolk retention.

#### Conservation value

Falconry is an important part of Arabic culture in the Gulf. Preserving it is like preserving their past and their traditions. The very rapid economic development and the increase of hunting activities have caused an increased demand for falcons to use for falconry. This demand has created a dangerous market for wild falcons taken from the wild and then traded in the UAE. We think that the only way to protect the wild falcons is to break the market by introducing captive falcons at a lower price than the wild ones.

This project reflects the desire of His Highness Sh. Khalifa Bin Zayed to use captive bred falcons instead of wild ones, reducing the number of trapped falcons, and, at the same time, giving a very important example to Emirate falconers of a viable alternative.

#### References

- Gwinnier, H. and Hsu, M.: 2000, The Pinnel Gland, Circadian Rhythms and Photoperiodism. In: Starbuck's Avian Physiology, 5th edition. Academic Press, San Diego, CA, USA. Pp 557-565.
- Pesci, M.E.: 1999, Anatomia e fisiologia della riproduzione negli uccelli. Ceso SCI/VAC on Medicina Aviare, Via Treccani 20, 26100 Cremona Italy.

### مدرج الحظاظ على الصاور. أسباب الإختلال، وإدارة الصحة وقم الحفظ في أول وأكبر مركز إختار الصاور في الإمارات العربية المتحدة

تكتون ابراهيم خليل شمس - كيم، روجيبر خريما لوتو - تكتون ابراهيم خليل شمس - تكتون ابراهيم خليل شمس

تتبع رعاية الصاور وأصنافه منذ أكثر من ثلاثة أجيال في دولة الإمارات العربية المتحدة، وقد زاد الطلب على الصاور المتنامية في الصاور في الإمارات العربية المتحدة منذ أكثر من ثلاثين عاماً. إن الإحتلال التجاري للصاور في الإمارات العربية المتحدة في عام 1996 أثار قلقاً في الإمارات، وذلك من عدم مصادره الصاور، فهذه الممارسات غير الأخلاقية قد تسببت في انخفاض أعداد الإمرات من التكاثر ببناء مستدامات كاملة للشباب بالإحتلال الصاور. يتم التحكم في فترة الحضانة والصورة ونوعية الموراثة المستطاب من خلال إدارة الإحتلال الصاور. إن الإحتلال الصاور في الإمارات العربية المتحدة أصبح الآن من الأمور التي تهتم بها الجمهور، ويتميز ذلك بالاهتمام الواسع الذي تولاه الجمهور المحلي والعالمي، والعرض الدولي للصاور، وإزالة الصاور في حالات الطوارئ.

## Avian influenza virus - A Potential threat to falcons in the middle east



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In recent months there have been increasing reports of Avian flu in both wild and captive birds in Asia. This raises a number of concerns for people working with birds of prey both in the wild and in captivity. The Association of Avian Vets (2005) has attempted an overview of the transmission routes of the disease in captivity, and what can be done to halt the disease, but their emphasis, naturally, is on birds in captivity, not wild ones. Avian flu in wild birds can have quick and devastating effects. In May 2005 about 150 Blue-headed geese died on migration at Qinghai Lake in China. A wild peregrine also died in China last year and it seems reasonable to suppose that raptors eating prey birds with flu risk contracting it themselves. Symptoms in poultry include: depression, running nostrils and eyes, shortness of breath or wheezing, and green urates. In poultry the incubation period is 2-14 days (Swayne and Halvorson, 2003).

It is caused by an orthomyxovirus with different strains and pathogenicity. The H5 and H7 acrotopes are highly virulent and contagious causing up to 90% mortality. The highly virulent H5N1 strain has been found in the outbreaks in East Asia, not only in several poultry species (including quail), but also in falcons (Marvell et al. 2000) and ducks. This is the strain that caused the outbreak of Hong Kong flu in humans. Currently several virus strains are undergoing mutation thus making the virus more dangerous both for humans and for some bird species normally immune to it. The main problem is that it cannot be predicted whether, when or how a strain will make a mutation. In 1999 a previously low pathogenic strain H7N1 mutated after 9 months and caused the death and destruction of 13 millions birds in Italy. A similar outbreak with an originally low pathogenic strain H2N3 started in 1992 in Mexico and could not be controlled until 1995.

The main transmission routes are through fecal material and respiratory secretions. As well as bird-to-bird transmission, humans can carry the disease on contaminated hands or equipment.

### Diagnosis and control

The differential diagnosis list for avian influenza should include PMV-1, infectious laryngotracheitis, Chlamydia psittaci sp., Mycoplasma spp. and other respiratory and gastro-intestinal pathogens (Swayne and Halvorson, 2003). In poultry there may be concurrent infection with other viruses and bacteria, such as Mycoplasma spp. and even E. coli. Either blood or swabs from the cloaca and upper respiratory tract are suitable for virus isolation from live birds. Liver, trachea, lungs, spleen and brain are the best organs to sample from dead birds. Paired samples (acute and convalescent) are needed to confirm an infection. A specific Avian Flu ELISA test is currently being trialled at the Abu Dhabi Falcon Hospital to provide a specific diagnosis.

Presently no specific treatment exists for infected birds and in the future it may be necessary to develop vaccines from isolated strains of influenza. Amantadine has been shown to experimentally reduce mortality in poultry, but its use regularly gives rise to amantadine resistant viruses (Swayne and Halvorson, 2003). All methods for controlling the spread of this disease in poultry are based on surveillance measures, preventing contamination and controlling the movement of people.

Apart from the report by Marvell et al (2000), the disease has only been reported in humans in the Middle East. Wernery et al (2001) described an outbreak of influenza A subtype H9N2 in houbara bustards imported into Dubai from Pakistan. Clinically the bustards showed anorexia, lethargy, opisthotonus, head flicking, ocular and nasal discharges and a severe dyspnoea that was characterised by a snoring

sound. Pseudomonas aeruginosa, Clostridium perfringens and PMV-1 were also isolated and these agents may have contributed to both the symptoms and the high mortality (21 of 22). Wernery et al (2001) experimentally infected two houbara bustards with the isolate and both birds showed the same clinical signs and died after 3 days.

As wild houbara live at very low densities it is likely that they have little exposure to avian flu and that they only contract it once in captivity by contact with other birds. There is a significant risk of illegally smuggled houbara contacting infected birds and thus transmitting it to trained falcons.

### Risk assessment

The main reservoirs and transmission routes are where any birds are kept in close proximity such as the poultry industry (Capua and Alexander 2004). In wild birds the risks are highest in flocking species such as waterfowl exposed to faecal contamination and to raptors that prey on sick birds. Steps need to be put in place to break these transmission routes by import controls, quarantine and frequent monitoring of flocks both in captivity and in the wild. In 2004 the EU suspended trade in exotic birds including raptors, from several Asian countries, but where there is uncontrolled trade in wild birds into the Middle East, especially via intensive housing with middlemen, then cross-contamination can occur in species that would normally have little exposure to it in the wild.

Avian flu can mutate and infect man (Alexander 2005). For field biologists, this means taking care when handling sick birds, and obtaining specimen material for analysis in the lab. For falconers the main risk is probably not that their falcons have avian flu on arrival, but that it may pick it up from an

infected quail or poultry or from a sick prey bird. Only safe food from screened sources should be used and any falcon showing symptoms should be immediately isolated not just from other birds, but from humans as well. Falconry is an occupation in which humans are in close proximity to birds, and in confined spaces such as cars.

- The problem needs to be tackled from different angles to reach an effective Avian Influenza virus prevention network. Major disease prevention solutions comprise:
- Establishment of suitable quarantine facilities at airports, customs and centers receiving confiscated birds.
  - Establishment of quarantine-hygiene protocols.
  - Establishment of a small working group of veterinarians, Ministry officials, etc to establish a task force for a potential disease outbreak.
  - Routine screening of all imported falcons and other bird species for Avian Influenza virus.
  - Routine screening of large bird markets, farms.
  - Training of staff working with birds.
  - Liaising with field biologists to sample wild birds.

### Conclusion

A possible spread of Avian Influenza virus in falcons in the Middle East cannot be ruled out and should be seriously considered. A disease prevention programme should be established and quarantine measures should be implemented. Steps should be taken for field biologists and vets to link up in order to monitor wild birds. Our protocols for disease monitoring of wild raptors could be improved.

### فروس إلفولوزا الطيور - خطر كامن يهدد الصقور في الشرق الأوسط

طبيب بيطر/ماجستير جينيل مولر (عضو الكلية الملكية للجراحين البيطريين)

لا تشكل المشكلات الناجمة عن إلفولوزا الطيور خطراً يهدد الصقور الأندلسية والبرية في بلدان أسبوية عدة بحسب بل وتعدّها حتى تتمكّ عامل خطر لإصابة الإنسان به - عاملاً يتسم بشدة وطوّقه رغم عدم تقديره للتقدير اللائق - نظراً لإمكانية الانتقال وتحويل الفيروس، وتعتبر الطيور المهاجرة والتخالات البرية مستودعاً كبيراً للفيروس. وقد تمّ الإبلاغ في الأونة الأخيرة القرع عن حالات إصابة صقور شاهين بإلفولوزا الطيور في الصين، ويسبب الخطر الصامت من جراء انتقال هذا النوع من الإلفولوزا عن طريق أسبويد (أو إمرار) صقور الشاهين البرية في بلدان الشرق الأوسط أخذ هذا الخطر يأبم جدية شديدة، لأنّ مبع احتماله يقتلّه إلى الإنسان.

References  
Alexander, D. J.: 2005, Avian influenza viruses and human health. OIE/FAO Conference.  
Capua, I and D. J. Alexander, 2004, Avian Influenza: recent developments. Avian Pathol. 33 (4): 393-405.  
Marvell, R. J., P. McKinney, U. Wernery and K. Frost, 2000, Isolation of highly pathogenic influenza A virus (H7N3) from a peregrine falcon. Avian Pathol. 29 (6): 655-637.  
Swayne, D.E. and D. A. Halvorson, (2003) Influenza. In: Saif, Y.M. (ed), Diseases of Poultry, 11th edition. Iowa State University Press, Iowa. Pp 135-160.  
Wernery, U., L. Molnar, R. Marvell, J. Kinne, and S. Joseph. 2001, Influenza virus infection in houbara bustards (Chlamydotus udundata macquensis) in the United Arab Emirates. Proceedings of the European Association of Avian Veterinarians, Munich, March 6-10, 2001. :271-276.





## Letter to the Editor Cont.

marine mammals" and "It is also prohibited to damage birds' nests or destroy their eggs".

Therefore there are applicable laws at the Federal level in the UAE which can address the issue of illegal hunting of birds and other animals as mentioned above.

Contributed by Pratul Somar & Abhalekshar Alkhamri, Environmental Research & Wildlife Development Agency (ERWDA), Abu Dhabi, UAE.

## South Asian Vulture Crisis

Dear Sir,  
Dichlorofenac cannot be the major cause of the colossal vulture mortality in South Asia as has been suggested in the article by Ojha et al (2004) at Falco 24. It can kill vultures if administered directly and through the carcass of freshly dead cattle that have been treated with the drug. But how can you assume that such a large percentage of cattle are treated by this drug, that all die immediately and kill huge populations of vultures all over India? The truth is that vultures started vanishing before introduction of diclofenac (Anur & Azeez 2004, Rank & Sahabara 2004, Satheesan 2004, Vijayan 2004). Some of the major causes that have brought about vulture mortality and decline are given below:

Harassment, gun-shooting, and persecution of vultures by authorities continued unabated for a decade and a half (1986-1995) at various airports. When I had said that airport authorities had killed a few thousand vultures, the real impact was on the birds that escaped persecution and harassment, which were driven to safer havens such as Protected Areas and villages without aerodromes, leading to competition for food (carcasses and carnivore kills) and falling easy prey to poison-baits and increasing their mortality rates (Satheesan 1999a, 1999b, 2000a-c, 2001a-d, 2004).

Drums tied to a tree to disturb and ward off vultures roosting and nesting in Sajaji Zoo & Garden, Boronda and other localities (Vyas 2004). Vultures roosting and nesting destroyed coconut palms and reduced yield of coconuts which forced the villagers to persecute and harass vultures by stone-throwing, cracker-firing and gun-shots (Jethava 2004). Destruction of roost and nest trees of vultures in Gujarat is also reported by Khacher (2004), Gadhvi, et al (2004).

Denial of food to scavenging birds to save aircraft from scavenging birds all over India around airports (10 km in radius of airport in cities and villages) (Satheesan 1999a, 2000a-c, 2001a-d, 2004).

Scarcity of carcasses because of cattle-owners selling sick and old cattle to slaughterhouses before they die a natural death (Eg: Maldhari in Dhurgahara and Gir Forest) (Dhanoocha 2004).

Rampant poisoning of wild and domestic animals by poachers, carcasses of which are fed on by vultures (Kannan 1993, Satheesan 2000a-c, 2001a-d, 2004). Dead vultures were observed falling down from trees in Lakhotra, Jamnagar district, 1985-86, in northwest India in July 1993 (Anant 2004, Satheesan 2004). It appears that villagers living around Protected Areas in Uttar Pradesh, Madhya Pradesh, Rajasthan, and Himachal Pradesh are commissioned to kill carnivores by poisoning (Hindustan Times, 31 Dec. 1999). In Uttar Pradesh alone 10 tigers were killed by poisons between 1997 and 1998 (Satheesan 2001a-d). Is it a wonder if tigers cannot be traced in Sariska Tiger Reserve in Rajasthan? Probably the vultures which bore the brunt of poison baits laid for tigers have vanished from Sariska and hence tigers became more vulnerable and succumbed to poachers' poison baits.

Direct and indirect poisoning of vultures by cattle rustlers and villages may explain a great percentage of vulture deaths all over India (recorded in Kachch and Surendranagar in Gujarat, parts of Rajasthan including Bharatpur - Satheesan 2000a-c, 2001a-c, 2004, Shah 2004). A photograph showing several vultures lying dead around a cow carcass apparently poisoned by cattle-rustlers in Motivirani village, Kachch district of Gujarat is clear evidence of poisoning of vultures (Tiwari 1999). 54 cows of Rabari community were killed in two villages, Indrapra (46 cows killed on Monday) and Boda (8 cows killed on Tuesday) of Gandhinagar district of Gujarat by forcing them to feed on potato plants excessively sprayed with pesticides (Ray 2006) is another example of intentional poisoning.

Trapping of Vultures by poachers at Gaspur AMC carcass dumping ground near Ahmedabad city (Bhat & Pandya 2004). Vultures are trapped by traders all over India for sale to zoos and circus companies (Satheesan 1999a & b, 2000a-c, 2001a-d, 2004).

Poaching of vulture eggs for food and medicinal cure of TB and Asthma (in Khambhat of Central Gujarat, in Gir Forest) (Jethava 2004).

Destruction of nesting sites, eggs, and young for various reasons (in Mahuva Tehsil, Gujarat, Prakasham and Guntur in Eastern Andhra Pradesh, and some tribal areas in Madhya Pradesh) (Rao 1992, Satheesan 1999b).

Felling of most and nest trees of vultures for construction and developmental activities (Several places including Agra) (Satheesan 2000a-c).

Discussion in papers regarding environmental contaminants, dichlorofenac, and viral disease as major cause of vulture decline reveal that none of these hypotheses has been conclusively proved. The most one can say there has been some vulture mortality due these factors. These hypotheses have originated in the laboratory and have less connection with the ground reality.

My observations on vultures show that since 1980 vultures started disappearing from our study areas (10-25 km in radius of over 30 Indian aerodromes) because of human persecution.

In a real sense, two earlier articles in the Newsletter for Birdwatchers were the first to report that the vulture crisis was reaching a climax. One such article by Rao (1992) indicated that his vulture survey of two districts in Andhra Pradesh (Guntur & Prakasham) since 1981 had drawn a bleak and his interviews with the members of Bandha community, the erstwhile vulture-eaters of the state, had revealed that the vultures had disappeared at least a decade earlier i.e. in the 1970s. Vultures became locally extinct in Anamika Hills in Tamil Nadu State of the Indian Union in the 80s because of villagers laying poison baits to kill cattle-lifting carnivores (Kannan 1993).

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## References

- Anant, R.J. 2004. Status of Vultures in Protected Areas of Jamnagar, Gujarat State. In Proc. of the Workshop on Current Status of Vultures in Gujarat, September 19, 2004.  
Anur, P.R. and Azeez, P.A. 2004. Vulture population decline, dichlorofenac, and avian gout. Current Science, 87(5): 10.  
Dhanoocha, D. 2004. Status of vultures in Dhurgahara. In Proc. of the Workshop on Current Status of Vultures in Gujarat, September 19, 2004.  
Gadhvi, L., Dodiya, P.P. and Dhadhali, J. 2004. Status of Vultures in Bhavnagar. In Proc. of the Workshop on Current Status of Vultures in Gujarat, September 19, 2004.  
Jethava, A. 2004. Status of Vultures in Gir Forest and its surrounding areas. In Proc. of the Workshop on Current Status of Vultures in Gujarat, September 19, 2004.  
Kannan, R. 1993. Local extinction of vultures in and around the Anamika Hills. Newsletter for Birdwatchers 33: 55.  
Khacher, L. 2004. Our Vultures - A Population of Senior Citizens. In Proc. of the Workshop on Current Status of Vultures in Gujarat, September 19, 2004.

## Announcements for Falco

### Conservation Workshop for Eagles and Vultures of Arabia

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The 6th annual Conservation Workshop for the Fauna of Arabia was held at Arabia's Wildlife Centre and the Breeding Centre for Endangered Arabian Wildlife in Sharjah, UAE, on the 20th-22nd of February 2005. The eagles, vultures, caracaras and freshwater insectivores of Arabia were on the programme this year. Dr Nigel Collar from BirdLife International kindly chaired the avian group, which consisted of regional wildlife managers, field biologists and avian veterinarians. The final report of the workshop is being compiled.  
Further information can be obtained from the Breeding Centre Sharjah at [www.breedingcentresharjah.com](http://www.breedingcentresharjah.com).

### Illegal shipment of Martial Eagles from Tanzania

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Four juvenile martial eagles were shipped from Dar es Salaam to Paris via Dubai at the end of July 2004. They were refused entry at Paris and were returned to Dubai, where custom's officials confiscated the shipment. The shipment consisted of 294 birds including hornbills, marabou storks,

flamingos, turacos and startlings. The birds were sent to the Breeding Centre for Endangered Arabian Wildlife in Sharjah for rehabilitation after having been housed for at least 4 days.

All four eagles suffered from varying degrees of bumble-foot, a likely reflection of the length of time spent in captivity. They were further dehydrated, showed respiratory compromise and were loose infested. The eagles will be transferred to Eagle Encounters in Stellenbosch (South Africa) for further rehabilitation and assessment for release.

For more information see:  
Verreempen, P. 2004. Animal trade and its consequences. EAZA News, 48: 24-25.

### Final Announcement The 4th SYMPOSIUM ON ASIAN RAPTORS - MALAYSIA 2005. "TOWARDS CONSERVATION OF ASIAN RAPTORS THROUGH SCIENCE & ACTION".

Venue: Taiping, Perak, Malaysia (West Malaysia)

Date: 28 - 31 October 2005. The Asian Raptor Research and Conservation Network (ARRCN) is organizing the 4th Symposium on Asian Raptors from 28 - 31 October 2005 in Taiping, Malaysia, hosted jointly with the Malaysian Nature Society.

Details at:  
[http://www.sib.biglobe.ne.jp/~raptor/FINAL\\_ANNOUNCE-4thAsianRapSym2005.htm](http://www.sib.biglobe.ne.jp/~raptor/FINAL_ANNOUNCE-4thAsianRapSym2005.htm)

حفظ حول من الحفاظ على الطيور والنسور في الجزيرة العربية  
القرنين في نفس مكان نورس

عقدت منظمة التسمية العالمية حول الحفاظ على الطيور في الجزيرة العربية في مركز شبه الجزيرة العربية بمركز إكتار الحدائق العمودية والحدائق المائية في مدينة الدمام في الجزيرة العربية من 28-31 أكتوبر 2005 ولمزيد من المعلومات يمكنك زيارة موقع مركز إكتار بالشارقة [www.breedingcentresharjah.com](http://www.breedingcentresharjah.com)

تحويل طيور محاربة من تزلها  
القرنين في نفس مكان نورس

تم شحن أربعة جوان محاربة للثدي من دار السلام في باريس مرورا دبي في نهاية شهر يوليو 2004. لم يرد واحد متوقفاً في باريس وأعيدت مرورا دبي إلى دبي حيث قامت السلطات الحجرية بمصادرة الشحنة التي تتركبت من 294 طائرًا. وقد تم إرجاع الطيور إلى مركز إكتار الحدائق العمودية والحدائق المائية بالشارقة لإعادة تأهيلها بعد أن هُتمت أربعة طيور على الأقل في الواقع.

الافتتاح الأخير للتدوة الرابعة حول الطيور الأسودية الجارحة - ماليزيا 2005. "الحفاظ على الطيور الأسودية الجارحة من خلال العلم والعمل".

المكان: تايبيج، بيرك، ماليزيا (جزء ماليزيا)

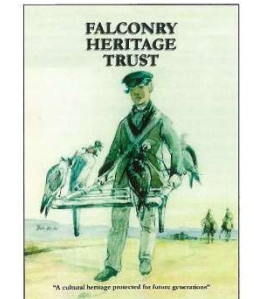
التاريخ: 28 - 31 أكتوبر 2005. شبكة التسمية العالمية للطيور الجارحة والمحافظة عليها "تدوة الأسودية الجارحة من 28 - 31 أكتوبر 2005 في مدينة تايبيج بمركز إكتار بالشارقة، حيث تستضيفها بالتعاون مع مركز إكتار الحدائق العمودية من مواصل من موقع الويب:  
[http://www.sib.biglobe.ne.jp/~raptor/FINAL\\_ANNOUNCE-4thAsianRapSym2005.htm](http://www.sib.biglobe.ne.jp/~raptor/FINAL_ANNOUNCE-4thAsianRapSym2005.htm)

### Falcons Trust launched at UK Falconry Fair

The Falconry Heritage Trust (FHT), which was launched on the opening day of the UK Falconry Fair (1st May 2005), will protect centuries of falconry related heritage for future generations, while making it available on the Internet to all today's falconers and others interested in falconry heritage. British falconer, falcon breeder and author, Nick Fox is one of the founding members of the Trust, which is supported by the International Association for Falconry, which in itself represents some 53 associations from 40 countries where falconry is part of the cultural heritage. "I conceived the idea while in the bath on a visit to Japan," says Fox. "There I was seeing a falconry heritage that was so different to ours in the West and I thought two things: firstly, that others should be able to access this if only in 'virtual' form; and secondly, that it must be recorded and preserved for future generations. It was something of an eureka moment and this launch is the beginning of what I hope will be, a global initiative to record and protect falconry."

The Trust will enable regional conservation committees to record electronically the diversity of falconry heritage, which covers the written word, artefacts, art, epicurean, photographs, and audio/visual recordings. Items may be gifted to the Trust or retained by owners and their heirs but recorded on the website for global access. Whilst privately held items will remain confidential to those accessing the site, open collections, such as the Archives of American Falconry, will be cross referenced to enable visitors to access them in person.

The Trust will be a registered charity enabling it to collect items and raise funds within the carefully constituted charity legislation of the UK. Although primary access to the website will be free, downloading items will attract a charge. The Trust can be contacted by email [fht@falcons.co.uk](mailto:fht@falcons.co.uk) and a website is in the process of being developed. More information will be included in future issues of Falco.



Ojha, J.L. et al. 2004. Diagnostic investigations of vulture mortality: the anti-inflammatory drug diclofenac is associated with visceral gout. Falco 24: 13-15.

Rank, D.N. and Sahabara, R.H. 2004. Dichlorofenac is it only real threat to vulture existence?. In Proc. of the Workshop on Current Status of Vultures in Gujarat, September 19, 2004.  
Rao, K.M. 1992. Vultures endangered in Guntur and Prakasham districts (A.P.). Newsletter for Birdwatchers 32: 6-7.

Ray, J. 2004. Pesticides kill 54 cows in Gujarat town. The Asian Age, 18 February.

Shah, Y. 2004. Status of Vultures in Surendranagar District. In Proc. of the Workshop on Current Status of Vultures in Gujarat, September 19, 2004.

Satheesan, S.M. 1999a. The decline of vultures in India. Vulture News 40: 35-36.

Satheesan, S.M. 1999b. Vulture-eating communities in India. Vulture News 41: 15-17.

Satheesan, S.M. 2000a. Serious vulture-hits to aircraft over the world. In Proc. 25 Meeting of the IBCS (Amsterdam) 2000. WP/SA 3: 113-126.

Satheesan, S.M. 2000b. Vultures in Asia. In Raptors at Risk. Chancellor, R. D. & B. U. Meyburg (eds) WWGHP, Hancock House, U.K.

Satheesan, S.M. 2000c. The role of poisons in the Indian vulture population crash. Vulture News 42: 3-4, 8(2): 22-23.

Satheesan, S.M. 2000d. Save vultures in peril before they perish, paper presented at the International Conference on "Use of poison in natural environment" organized by Black Vulture Conservation Foundation, Spain, at Alceda, Mallorca, from 2-5 March 2000.

Satheesan, S.M. 2000e. A new dimension to the conservation of scavenging raptors, paper presented at the III International Congress on Scavenging birds held at Guadalajara, Spain from 28 April to 3 May.

Satheesan, S.M. 2001a. Vultures on death row. Down To Earth, 9(21): 48-49. Centre for Science Communications, CSE, New Delhi.

Satheesan, S.M. 2001b. Vulture Population Decline in India - A Case Study. Vulture Newsletter 1(1): 1-8. Centre of Excellence in Vulture Research and Conservation Monitoring Studies, Ajmer.

Satheesan, S.M. 2001c. The great Indian vulture decline. Sanctuary Asia June: 78. Mumbai.

Satheesan, S.M. 2001d. Vulture feeding stations: Strategy for revival. Science Reporter: February: 22-23. NISCOM, New Delhi.

Satheesan, S.M. 2001e. Poison-baiting experiments on vultures in India. Vulture News 45: 34-39.

Vyas, R. 2004. Disappearance of the Gyps bengalensis from a small pocket of urban area of Vadodra City. In Proc. of the Workshop on Current Status of Vultures in Gujarat, September 19, 2004.

The following articles appeared on the Russian language website and have been translated for the interest of Falco readers by Ievgeny Shevchuk.

### Smuggling of Saker Falcons is stopped

22.08.2005

A Russian citizen was seized by the Siberian Customs Branch at the Tashkent customs post in the Alai region. He had crossed the Russian-Mongolian border smuggling a consignment of 19 Saker Falcons. The birds were hidden in five boxes with ventilation holes. Subsequently, 11 of these birds were released back into the wild, 5 were unfit for release and are currently held in captivity and three died. At the present time a criminal case of "smuggling" according to clause 188 of the Criminal Code of the Russian Federation is being initiated. It should be noted that Saker Falcons are an endangered species listed in the Red Data Book. Trapping and export of the birds from their natural habitats is banned according to the Convention on International Trade in Endangered Species (CITES).

Extracted from:  
[http://www.customs.ru/ru/press\\_of\\_news/index.php?14286-7706](http://www.customs.ru/ru/press_of_news/index.php?14286-7706)



### Customs officers of Shermetievo airport have stopped an illegal attempt to export Goshawks from Russia 09/06/2005

Documents were presented at Shermetievo customs for a forthcoming cargo shipment to Japan. According to this declaration there were 10 Goshawks in two wooden boxes that had been trapped in the summer of 2004 and marked with internal microchips. However, an inspection of the cargo revealed that in these boxes were 10 Goshawk chicks aged about 2-3 weeks old and there were no microchip markers in these birds. This attempt to export chicks, without the required CITES permission, was illegal and a criminal case against the exporters has been started. The Goshawk chicks were confiscated and are now in the hands of the International Fund for Animal Welfare (IFAW), situated in Losinyi Ostrov National Park in Moscow.

Extracted from:  
<http://www.rg.ru/2005/06/14/pticy-anons.htm>



## What's new in the literature

Zivanovits, P., Forbes, N.A., Zvonar, I.L., Williams, M.R., Lierz, M., Prusac, C. & Hatzel, M.M. Investigation into the seroprevalence of falcovirus antibodies in raptors in the UK using virus neutralization tests and different herpesvirus isolates. *Avian Pathology*. 2004; 33: 299-304.

Increasing numbers of reports of clinical falcovirus infection (Falcovirus; FHV-1) have been seen in the UK since 1996. The aim of this epidemiological study was to investigate the seroprevalence of FHV-1 and owl herpesvirus (Striped herpesvirus-1; SHV-1) infection in the UK, using virus neutralization tests, and to evaluate the prevalence of herpesvirus infection in captive and wild raptor populations. The results, using the English FHV-1 CVI 5293 isolate, revealed a seroprevalence of 3.57% (102/252). The seroprevalence for SHV-1 was 12.3% (86/55). Analysis of the data by captivity status, age and species revealed that the family Falconidae showed the highest seroprevalence with 6.7% (5/75), while only one of 104 captive Accipitrinae was positive for FHV-1 (0.96%). The incidence of FHV-1 neutralizing antibodies in owls was 5.5% (4/73), representing only wild individuals. Eighty-nine serum samples were additionally tested using two other FHV-1 isolates, the German isolate Merlin 186097 and the Dutch isolate Peregrine Z100. The seroprevalence of FHV-1 were 28.1% (25/89) and 32.6% (29/89), respectively. All these samples, however, were negative using the CVI 5293 isolate.

Naldo, J.L. & Samour, J.H. Radiographic findings in captive falcons in Saudi Arabia. *Journal of Avian Medicine and Surgery*. 2004; 18: 242-256.

Radiographic records were reviewed from 1702 falcons of different species that were presented to the Falcon Specialist Hospital and Research Institute of the Fahad bin Sultan Falcon Centre, Riyadh, Kingdom of Saudi Arabia, from September 1, 1998, to March 1, 2002. The most common radiographic findings were homogeneous and nonhomogeneous increased radiopacity and localized soft-tissue densities of the lungs and air sacs, hepatomegaly, presence of lead particles or excessive amounts of sand in the gastrointestinal tract, gastrointestinal tract dilatation, and bone fractures. These findings contribute to the scant information available about health and disease of falcons in the Kingdom of Saudi Arabia in particular and in the Middle East in general.

Naldo, J.L. & Samour, J.H. Causes of morbidity and mortality in falcons in Saudi Arabia. *Journal of Avian Medicine and Surgery*. 2004; 18: 229-241.

Clinical records from 3376 falcons of different species presented to the Falcon Specialist Hospital and Research Institute of the Fahad bin Sultan Falcon Centre, Riyadh, Kingdom of Saudi Arabia, from September 1, 1998, to March 1, 2001, were reviewed to determine causes and mortality of morbidity in falcons in Saudi Arabia. The most common causes of morbidity were infectious diseases, traumatic injuries, toxicosis, and metabolic or nutritional diseases. The most common causes of mortality were bacterial and fungal diseases, bacterial/fungal coliform-type injuries, injuries inflicted by other birds, lead and ammonium chloride toxicosis, goop, sour crop, and low body condition. These findings contribute to the limited available information about morbidity and mortality in falcons in Saudi Arabia in particular and in the Middle East in general.

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Erben, M. Idiopathic epilepsy in a Ger-Saker-Falcon (*Falco tinnunculus* L. Falco cherrug?) *Kleinfierpraxis*. 2004; 49: 511-516.

A two-year-old male ger-saker falcon (*Falco tinnunculus* L. Falco cherrug) with seizures is presented. After ruling out potential differential diagnoses for seizures in birds, the falcon is suspected of having idiopathic epilepsy. As a response to a treatment with Phenytoin, the falcon showed a significant reduction of seizures in terms of intensity and quantity. The treatment has been controlled by measurement of blood phenobarbital level. Finally, differential diagnoses for seizures in birds are discussed.

Tella, J.L., Carrete, M., Sánchez-Zapata, J.A., Serrano, D., Gavrilov, A., Sidorovskii, S., Ceballos, O., Donazar, J.A. & Hiraldo, F. Effects of land use, nesting-site availability, and the presence of larger raptors on the abundance of vulnerable lesser kestrels *Falco naumanni* in Kazakhstan. *Oryx*. 2004; 38: 224-227.

The lesser kestrel *Falco naumanni* is a cavity-nesting falcon that breeds colonially in steppe-like habitats. Circum-Mediterranean populations declined sharply during the 20th century and the species is categorized as Vulnerable on the IUCN Red List. We investigated the numbers of breeding pairs in Kazakhstan, previously considered to be an important area for the species, where it still inhabits natural steppe and semi-natural grasslands and breeds on cliffs. The availability of cliffs for nesting does not seem to be limiting as most cliffs are unoccupied. However, lesser kestrels tended to breed on small cliffs, where larger predatory raptors are abundant. Abundance of lesser kestrels was also related to land use. Cliffs in semi-natural grasslands were apparently preferred over those in natural steppe, while those in agricultural landscapes were avoided despite the lower presence of larger raptors. Large-scale transformation of steppe and grasslands into intensive agriculture might have reduced lesser kestrel numbers, and with the development of new agricultural projects, monitoring and conservation programmes for lesser kestrel populations are urgently required in Kazakhstan.

Rodríguez, R., Pricto-Montaña, F., Montes, A.M., Bernal, L.J., Gutiérrez-Panizo, C. & Ayala, I. The normal electrocardiogram of the unanesthetized peregrine falcon (*Falco peregrinus*). *Avian Diseases*. 2004; 48: 405-409.

The mean duration and amplitudes of the lead II electrocardiogram were determined in the peregrine falcon (*Falco peregrinus* brookei) using 10 birds ranging in age from 1.5 years. Electrocardiograms were performed on unanesthetized falcons in order to avoid the anaesthesia effect on the electrocardiogram, by a method that seems to induce a tonic immobility-like reaction. All the falcons had a normal sinus rhythm, with a mean heart rate of 286 beats per minute. Mean durations of PR, ST, QT, and RR intervals were higher (but not statistically significant) in females than in males, except for the ST segment, with similar values in both sexes. P-wave deflections were positive in all birds, and aVR and aVL and negative in aVR. The normal patterns of wave forms of the QRS complex in all leads were of QS and rS types, except for aVR and aVL, which presented an I configuration. The mean electrical axis was negative, with an average of -99.9 degrees. T-wave deflections were positive in I, III, and aVF leads II

and negative in aVR and aVL. The data collected in this study may serve as a guide for electrocardiographic monitoring of peregrine falcons.

Wetterer, A.J. & Redig, P.T. Arthrodesis as a treatment for metacarpophalangeal joint luxation in 2 raptors. *Journal of Avian Medicine and Surgery*. 2004; 18: 23-29.

Two raptors, a juvenile prairie falcon (*Falco mexicanus*) and an adult female great horned owl (*Bubo virginianus*), were presented with luxation of the metacarpophalangeal joint. Additionally, the falcon had a distal metacarpal articular fracture, and the owl had an open wound at the luxation site. After supportive care, both birds were treated by arthrodesis of the metacarpophalangeal joint. A Type I external skeletal fixator was applied to stabilize the joint and to allow bony fusion to occur. Bony fusion occurred in 6 and 9 weeks in the falcon and the owl, respectively. Full flight capacity was restored, and both birds were released into the wild. Arthrodesis represents a viable option for the treatment of metacarpophalangeal joint luxations or articular fractures of the associated bone in avian species when treatment by resection and stabilization fails.

Ito, H., Sudo-Yamaji, A., Abe, M., Murase, T. & Yasuda, T. Utility of cross-species amplification among raptors. *Japanese Journal of Zoo and Wildlife Medicine*. 2004; 9: 39-43.

The populations of some species of raptors, such as the golden eagle *Aquila chrysaetos* and the mountain hawk-eagle *Accipiter gentilis*, have been recently reduced due to habitat destruction. Conservation of habitats and genetic diversity for raptors is crucial. However, there is little genetic information on raptors. In this study, 8 microsatellite markers isolated from the peregrine falcon *Falco peregrinus* and gyrfalcon *Falco naumanni* were applied to 6 other raptors. It was shown that the number of loci polymorphisms detected by polymorphic chain reaction (PCR) in the black kite *Micrus circaeus*, goshawk *Accipiter gentilis*, kestrel *Falco tinnunculus*, marsh harrier *Circus spilonotus*, golden eagle and mountain hawk-eagle were 2, 5, 3, 2, 2 and 1, respectively. The mean numbers of alleles per locus polymorphisms were 5.4, 3.3, 2.2, 2.5 and 2, while the mean expected heterozygosity per locus were 0.438, 0.077, 0.423, 0.278, 0.528 and 0.375, respectively. The probability that a randomly chosen individual would match a given genotype for all the loci was 4.24 x 10<sup>-2</sup>, 3.39 x 10<sup>-4</sup>, 3.38 x 10<sup>-2</sup>, 3.14 x 10<sup>-1</sup>, 9.55 x 10<sup>-2</sup> and 5.7 x 10<sup>-1</sup>, respectively. Except for one marker, these markers were detected in at least one species and showed their usefulness. We examined the efficiency of cross-species amplification among raptors and selected useful microsatellite markers for analysing genetic polymorphism, which will be valuable for conservation and research in the future.

Lierz, U. & Lierz, M. Therapy of chronic superficial keratitis in birds: grid keratotomy (case report). *Praktische Tierärzt*. 2003; 84: 276-282.

A grid keratotomy was performed in a saker falcon (*Falco cherrug*) suffering from a chronic non-healing superficial ulcer, which did not resolve under single treatment with antibiotics. Keratotomy was performed twice at an interval of ten days. As a result, vascularization of the cornea and epithelial adhesion to the stroma was achieved. The cornea healed within the next ten

days. The method is described and compared to other possible treatments. Grid keratotomy presents a promising, simple and cheap procedure for treating chronic superficial corneal ulcers in birds.

Tarelli, W. & Ricceri, N. Aegyptiella-like inclusion bodies in two raptors of prey from central Italy. *Revue de Médecine Vétérinaire*. 2003; 154: 715-717.

Two diurnal free-ranging birds of prey, a Peregrine falcon (*Falco peregrinus brookei*) and a Marsh-Harrier (*Circus aeruginosus*), exhibited Aegyptiella-like inclusion bodies in red blood cells in association with compatible clinical signs. This study suggests that aegyptiellidiosis may affect seasonally migratory birds in Central Italy.

Ziman, M., Colagross-Schouten, A., Griffey, S. & Siedman, R. Haemoprotozoan spp. and Leucocytozoon spp. in a captive raptor population. *Journal of Wildlife Diseases*. 2004; 40: 137-140.

Raptors are commonly infected with two blood parasites of the family Haemaphyspartidae, Haemoprotozoan spp. and Leucocytozoon spp. To determine if age or length of time in captivity influences prevalence of Haemoprotozoan spp. and Leucocytozoon spp. infection in captive raptors, blood samples were collected from 55 birds from April 1999 to May 2000. Blood smears were examined for parasitemia and influence of age and length of time in captivity at the time of simple collection were compared. We found juvenile and adult birds were more likely to be infected with Leucocytozoon spp. than were nestlings (P=0.006) and birds present for >365 days were more likely to be infected with Haemoprotozoan spp. and/or Leucocytozoon spp. than were birds captive for <365 days.

Yamazaki, T. Promotion of the raptor research and conservation in Indonesia. *Japanese Journal of Zoo and Wildlife Medicine*. 2004; 9: 9-15.

In 1995 we started the Java Hawk Eagle project to promote the research and conservation of this raptor in Indonesia. The Java Hawk Eagle (*Sphrapetus barbutus*), the national bird of Indonesia, is also an umbrella species ranking high in the food chain of the ecosystem. Although Asia (including Indonesia) is rich in biodiversity and has many kinds of raptors, very little research pertaining to raptors has been done. Therefore, the establishment of this project would have been effective in encouraging the research and conservation of not only raptors and their habitats but also other wildlife and the natural environment of Indonesia. Of great necessity is building the relationship of the local people with wildlife conservation organizations, the economic foundation of which supports initiative activities and raptor researchers towards the long-term establishment of further research and conservation. Through continuous contacts with Indonesian government agencies, JICA biodiversity teams, NGOs, students and local people during the past 9 years, the recognition of the meaning and the nature of raptors has become fixed among the people, so that voluntary research and conservation projects for raptors could be carried out. Furthermore, coveys were conducted by local inhabitants and NGOs and the expansion of the range of the national park based on the results of research by staff members is being discussed.

Zoology in the Middle East  
Papers on Birds of Prey and Housbara Bustard published in Vols. 1-30

Years of publication: Vol. 1: 1986; 2: 1988; 3: 1989; 4: 1990; 5: 1991; 6: 1992; 7: 1992; 8: 1993; 9: 1993; 10: 1994; 11: 1995; 12: 1996; 13: 1996; 14: 1997; 15: 1997; 16: 1998; 17: 1999; 18: 1999; 19: 1999; 20: 2000; 21: 2000; 22: 2001; 23: 2001; 24: 2001; 25: 2002; 26: 2002; 27: 2002; 28: 2003; 29: 2003; 30: 2003.

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Al-Melhim, W.N., Amir Z.S., Disi A.M. & Katbeh-Hader A.:

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Articles on the Housbara Bustard, published in the *Ukrainian Ornithological Journal* "BERUKU"

Availability: Most volumes are still available. Requests should be addressed to the publisher: [http://www.gocities.com/beruk\\_uuk/beruk.htm](http://www.gocities.com/beruk_uuk/beruk.htm) 200513

Survival rates of released Housbara Bustard from Housbara Research and Rehabilitation Center (Salkovik Rahim Yar Khan, Punjab, Pakistan). - M.S. Nadeem, M. Asif, H. Rashid. - *Berkut*, 12 (1-2), 2003. - P. 83-92.

The survival rates of released Housbara Bustard was studied at three different localities in Pakistan by radio tracking. Survival rate was 60.0 % after 4 months in Nag Valley, with

20.0 % birds predated and 20.0 % lost. In Khaipur, 46.67 % birds survived for 2 months, 26.67 % were predated, 6.66 % lost and 20.0 % hunted. In Rahim Yar Khan 80.0 % birds survived for 1.5 months whilst 20.0 % were lost. Food availability, predator density and hunting activities may be factors that influence the post-release survival rate of released Housbara in Pakistan. (English).

Key words: Pakistan, Housbara Bustard, *Chlamyotus undulata*, rehabilitation, survival.

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Profile of gonadal hormones in the male and female Housbara Bustard during the year. - T. Mahmood, M.M. Ahmed, M.S. Nadeem. - *Berkut*, 13 (1), 2004. - P. 110-114.

The present study was undertaken to estimate the levels of reproductive hormones i. e.: testosterone, estradiol and progesterone, to investigate the breeding biology of Housbara Bustard. The male and female birds were used from Housbara Research and Rehabilitation Center (HRC) Rahim Yar Khan. The plasma blood samples of 5 male and 5 female birds were collected during non-breeding and breeding seasons. Testosterone, estradiol and progesterone were measured by RIA (Radioimmunoassay). The results showed that there was no significant difference in the levels of testosterone during non-breeding and breeding seasons. The level of estradiol was lower during non-breeding season (9.70 ± 0.72 ng/ml) and higher during breeding season (14.35 ± 0.77 ng/ml) and there was a significant difference in the levels during non-breeding and breeding seasons (p < 0.01). There level of progesterone was higher during non breeding season (0.72 ± 0.10 ng/ml) while it was lower during the breeding season (0.55 ± 0.10 ng/ml). Thus there was a significant difference in the values of progesterone during non-breeding and breeding seasons (p < 0.001). (English).

Key words: Pakistan, Housbara Bustard, *Chlamyotus undulata*, physiology, reproductive hormones.

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A study of parasites of Housbara Bustard in Punjab, Pakistan. - M.S. Nadeem, A. Tanveer, M.S. Akhtar. - *Berkut*, 13 (1), 2004. - P. 122-126.

Housbara Bustard is trapped (illegally) during their migration to wintering areas. They are smuggled to the Middle Eastern States, where falcons are trained utilizing the Housbara as quarry. The operation being illegal, the Government functionaries confiscate such illegal consignments. The birds, thus caught due to crowded conditions, poor husbandry and insufficient food supply are usually sick and diseased. To rehabilitate such birds Housbara Foundation International Pakistan (HFIP) established a Housbara Research and Rehabilitation Center (HRC) in 1996. Droppings of healthy, weak and sick birds were collected and studied for parasites. The eggs of different parasitic species were observed in different groups of Housbara. Sixty percent of the freshly

arrived birds in 1999 were infested with trematodes, cestodes and nematodes. Birds which were already in captivity (1997), showed 53 % infestation of cestodes, trematodes and nematodes. Similarly 40 % healthy, 55 % ophthalmic, 47 % weak and 60 % birds arrived from Karachi were found with eggs of different parasites in their droppings. Highly percent birds recovered from different diseases at HRC were also found harbouring endoparasites. Only 6 Housbara (13.6 %) out of 44 collected from the wild were infested with eggs of endoparasites.

Key words: Housbara Bustard, *Chlamyotus undulata*, nematodes, Pakistan, parasite.

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Habitat, Population, Breeding Activities and Threats to Housbara Bustard in Nag Valley (Pakistan) in 1999-2001. - M.S. Nadeem, A.A. Mian, H. Rashid, M. Asif. - *Berkut*, 13 (2), 2004. - P. 244-257.

Nag Valley is located 270°41' N and 65° 14' E between Besima and Pangaur in the south-west of the District Kharian. It is a narrow valley having an area about 1500 km<sup>2</sup>. Its altitude varies between 1100 m and 1600 m. Surveys were carried out to study the Housbara habitat and population density. A total of 118 plant species belonging to 61 families were recorded. Vegetation was very specific according to soil type. The most dominant species on the basis of importance value were *Zyzyphium oxyterium*, *filicaria stricta*, *Pennisetum distans*, *Convolvulus spinosus*, *Osteosia aucheri*, *Astragalus stockii*, *Cymbopogon parvicaulis*, *Haloxylon ammodendron*, *Haloxylon eriboth*, *Fagonia indica* and *Peganum harmala*. Two new species *Dioscorea tomouosa* and *Cynonimorium songaticum* were recorded from Nag area. The density of wintering Housbara was 0.141 ± 0.024 ind./km<sup>2</sup> in 1999, which gradually decreased to 0.116 ± 0.023 in 2000 and 0.103 ± 0.023 ind./km<sup>2</sup> in 2001. The decline was 17.92 % in 2000 and 10.92 % in 2001. The density of breeding Housbara in Nag Valley was 0.041 ± 0.021 ind./km<sup>2</sup> in 1999, which decreased to 0.038 ± 0.019 in 2000 and 0.034 ± 0.020 ind./km<sup>2</sup> in 2001. The decline was 8.09 % in 2000 and 10.53 % in 2001. There were 20-30 pairs of Housbara during breeding season in Nag. Excessive hunting, overgrazing, poaching, deforestation and shrinkage of habitat are the main threats to breeding population.

Key words: Housbara Bustard, *Chlamyotus undulata*, Pakistan, ecology, conservation.

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Bibliography of Arabian ornithology

A by-product of the Atlas of the Breeding Birds of Arabia project (ABBA) has been to produce an extensive list of references, published and unpublished, which provide information concerning birds in Arabia. This working bibliography is a valuable resource and will eventually be



published separately (perhaps as a supplement to Sandgrouse). The current version of the draft bibliography contains in excess of 1800 references. A soft copy will be sent free of charge to anyone interested in Arabian birds who would like it. It is not currently available in database format and neither does it have keyword tools in the soft copy. However, it is a useful research aid as it can be searched for individual words such as species, places, subjects or second authors etc., using the edit and find facility in a word processing package. The live document is continually being updated and the ABBA project would appreciate comments from readers if they notice errors, have suggestions for improvements or have additional references for Arabia. Those requiring a free copy should e-mail the ABHA coordinator (versioning for MSWord 2000) / WordPerfect 9.0. A soft copy on disk is CD (including surface postage). Hard copies are not available but can be printed, 40 pp, at £10 each (including surface postage). They are available from Michael C. Jennings, Coordinator Atlas of the Breeding Birds of Arabia, Warrens Farm House, Warrens Drive, Somerset, Cambridgeshire, PE28 3WD England, e-mail: [arabian.birds@btid.pipes.com](mailto:arabian.birds@btid.pipes.com)

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