



# FALCO

The Newsletter of the Middle East Falcon Research Group  
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**Objectives of the MEFRG** ([www.mefrg.org](http://www.mefrg.org)):

**Provide a forum for information exchange on matters relating to falcons and falconry in the Middle East**

**Promote and/or improve the understanding of:**

- The cultural heritage of Arabic falconry
- The utilisation and management of quarry species
- The conservation of wild falcons used in Arabic falconry
- The management of falcons in falconry
- Advances in veterinary and aviculture care of falcons
- International issues impacting on, or arising from, Arabic falconry

**The objectives of the MEFRG will be achieved by**

- Holding regional workshop meetings and international conferences
- Publishing and distributing a paper and electronic Newsletter (**FALCO**) on issues of common interest to the MEFRG
- Coordinating and hosting a website and maintaining an online subscribers database

We welcome the submission of articles for **FALCO**. Please bear in mind that **FALCO** is not a scientific journal and we would like authors to remember that articles should be accessible to a diverse readership comprising falconers, biologists, veterinarians and policy makers. We are interested in authoritative, accurate and informative articles related to the subject areas listed below

### Falconry

articles about the practice of falconry of interest and relevance to Arabic falconers

### Falconry Heritage

articles about Falconry Heritage of interest and relevance to Arabic falconers

### Quarry Management

articles on the conservation and management of quarry species utilised in Arabic Falconry or of interest to Arabic falconers

### Raptor Conservation

articles on the conservation and management of raptors used in Arabic falconry, but also more generally of any raptors in the Middle East

### Avian Health and Management

articles on veterinary and avicultural issues specifically originating from work carried out in the Middle East, but external studies that are relevant to improving the health of raptors in the Middle East will be considered

### Research Biology

articles on biological research of falcons used in Arabic falconry, to cover issues such as migration, taxonomy, genetic research, etc

### International Issues

articles and updates on international policy decisions and discussions relating to falconry, conservation, trade and animal health that is of relevance and interest to Arabic falconry

### Public Awareness and Education

articles on initiatives that can contribute to a better understanding of Arabic falconry and the wider issues surrounding it

### Technical Updates

reviews and updates on new products/equipment etc. that may be useful for biologists, falconers and vets working with raptors

### Photo Section

interesting images of relevance to subjects covered by the MEFRG

### Raptors in the News

summary of recent press releases relating to subjects covered by the MEFRG

### What's New in the Literature

Review of recently published scientific literature relevant to the objectives of the MEFRG

We also accept and publish Book Reviews and Letters. If you are in doubt about whether or not an article fits any of the above categories please contact the editor:

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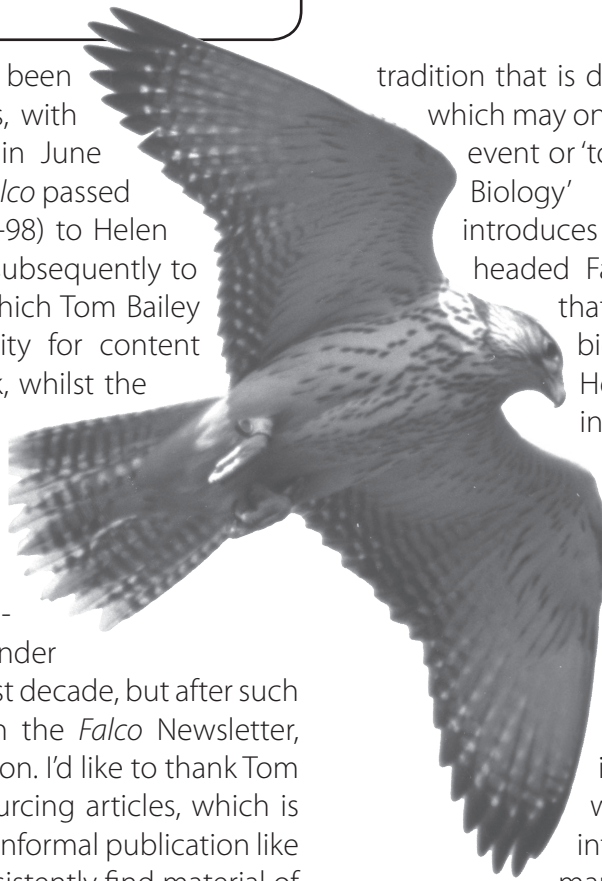
### Cover picture

Juvenile Red-headed Falcons recently fledged from their nest in Bangladesh by Md. Abu Bakar Siddik

### Back Cover picture

Gyrfalcon at it nest, Yakutia, Russia by Ed Duthie

The *Falco* Newsletter has been in production for 20 years, with the first issue published in June 1994. The task of editing *Falco* passed from Jaime Samour (1994-98) to Helen McDonald (1998-99) and subsequently to a joint editorial team in which Tom Bailey primarily took responsibility for content relating to veterinary work, whilst the other joint-editor, Nigel Barton (1998-2003) and Eugene Potapov (2003-05), took responsibility for the remaining content and production. I have co-edited *Falco* with Tom under this arrangement for the last decade, but after such a long time working with the *Falco* Newsletter, Tom has decided to move on. I'd like to thank Tom for all his hard work in sourcing articles, which is not always easy for a small informal publication like ours, and his ability to consistently find material of interest and relevance to his fellow veterinarians in the field of avian medicine. *Falco* has a wide remit that will continue to include aspects of 'Avian Health and Management', so I appeal to veterinarians to continue submitting material that you think will be of interest and value to your peers.



tradition that is disappearing as a way of life and which may only continue in future as a cultural event or 'tourist attraction'. In the 'Research Biology' theme, Mohammad Foyzal introduces us to his studies on the Red-headed Falcon in Bangladesh, a species that has received little attention from biologists in the past. Our 'Avian Health and Management' article in this issue has been contributed by Marino García Montijano and co-authors, and deals with the issue of lead toxicosis in birds of prey that have been shot. Shooting of birds of prey is all too prevalent, particularly in the Mediterranean and Middle East, but also at game estates in Western Europe. So sadly this work will be of relevance and interest to veterinarians working in many countries.

### **An appeal for contributions**

We would like to see more readers share their opinions, experience and knowledge through *Falco*. We can accommodate articles written in Arabic and English that fit within the subject areas listed opposite.

**Andrew Dixon**

Editor, *Falco* Newsletter



### **Thanks Tom! Tom Bailey co-editor of *Falco* 1998-2014**

In this issue, within the theme of 'Falconry Heritage', Takuya Soma describes the mechanism of a traditional eagle hunting expedition by Kazakh falconers in the Altai Mountains of Mongolia. This detailed account is an important record of a

# Status and breeding ecology of the Red-headed Falcon in Bangladesh

### Mohammad Foysal

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### Introduction

In 2002 when I was a teenage boy I was fascinated by a pair of Red-headed Falcons, and I made a plan to study their biology and ecology and in doing so I discovered that this is a little studied bird. My study of the Red-headed Falcon encompasses aspects of breeding biology, ecology, diet during the breeding and nonbreeding season, roosting behaviour and movement.

The Red-headed Falcon *Falco chicquera* is a rare resident of Bangladesh (Khan, 1996, Naoroji, 2007, Siddiqui et al., 2008). The species was formerly regarded as conspecific with the Red-necked Falcon *Falco ruficollis* of Africa, but now many authorities treat them as distinct species.

### Biology and ecology of Red-headed Falcon in Bangladesh

There is little published information on the Red-headed Falcon in the Indian Subcontinent (but see Dharmakumarsinhji, 1954; Dharap, 1974; Khan, 1978; Subramayana, 1982, 1985; Foysal, 2010; Naoroji, 2011). In this study, I identified eleven breeding pairs of Red-headed Falcon in six districts of Bangladesh (Dhaka, Narayangonj, Gazipur, Noakhali, Barisal and Cox's Bazar), whilst breeding was suspected for a further seven breeding pairs. I first saw signs of breeding in December with observations of mating and of the female feeding her mate, with nest site occupancy observed in January. Nests, most built by House Crow *Corvus splendens*, were located in trees (e.g., Coconut *Cocos nucifera*, Palmyra Palm *Borassus* spp., Debdaru *Polyalthia longifolia*) and man-made structures (almost all on electric pylons). Six nests were located in trees and 17 in man-made structures. Red-headed Falcons laid their eggs at the end of January to early February.



Juvenile Red-headed Falcon



The incubation period was >35 days (N = 3 pairs), which I determined by female behaviour: I considered that incubation began when females stopped roosting away from their nest at night, and considered that the eggs had hatched when females brought food to the nest instead of feeding outside of it. The period from night roosting at nest to first bringing food to nest was longer than 35 days. The incubation period of the closely-related Red-necked Falcon of Africa is reported to be 32-34 days, which is longer than any other falcon of comparable size (Osborne, 1981). My observations suggest that the incubation period of the Red-headed Falcon in Asia may be even longer, though more research is needed to accurately determine incubation periods. Both sexes shared incubation duty, but it was largely undertaken by the female.

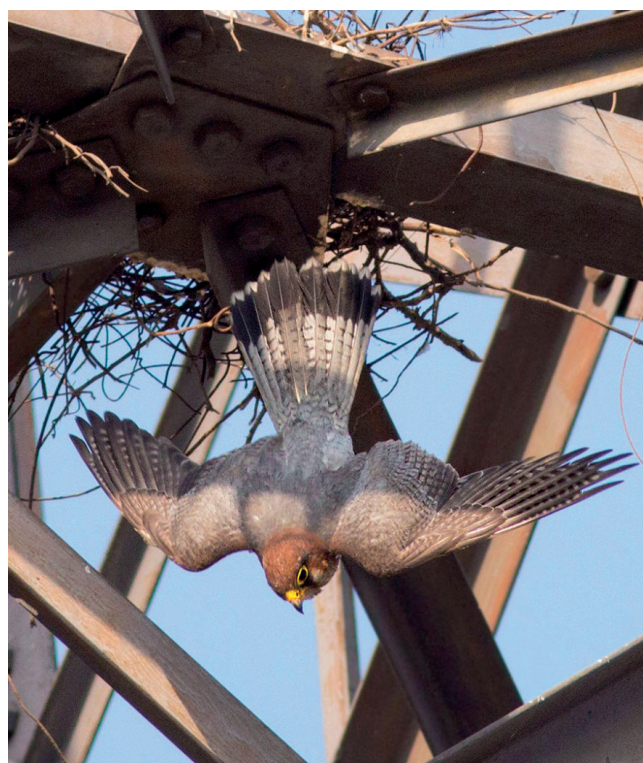
It was only possible to examine two nests, and in these the clutch sizes were 3 and 4 eggs. Chicks leave nest at end of March to early April after >30 days in the nest. Brood sizes at fledging ranged from 1-4 fledglings. In a few cases new breeding attempts were noted after loss of the first clutch. In one case, one pair successfully reared a single chick from a replacement clutch, resulting a late fledging date.

During my intensive study of three breeding pairs, I noted that in all cases females fed males throughout the breeding period, from the onset of breeding to the post-fledgling period. Females stopped hunting from onset of the breeding to late nestling period. This behaviour has been noted previously, but was considered to represent isolated instances (Subramanya, 1985; Naoroji, 2011). Males delivered food to females and infrequently females fed males from onset of the breeding to fledging period. Diet consists mainly of House Sparrow *Passer domesticus* followed by *Pipistrellus* bats (urban population). Red-headed Falcons may consume more *Pipistrellus* bats than previously thought, particularly urban breeders. Foraging was recorded near an estuary, in agricultural land and in densely populated urban areas.

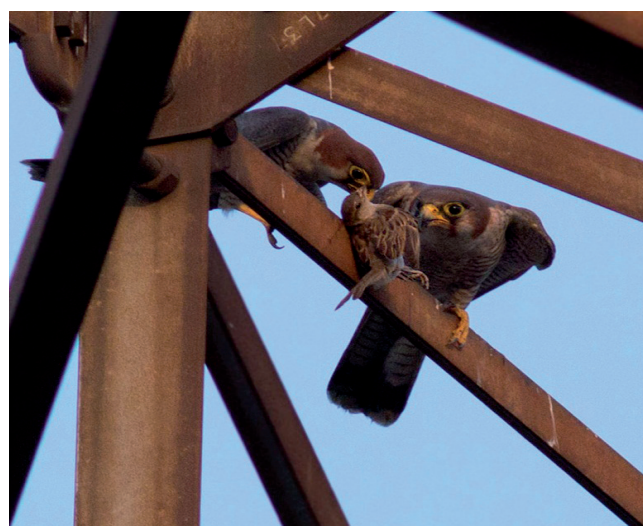
The roosting sites of four pairs were determined and studied during breeding and post-breeding periods. Two pairs used the same site almost exclusively throughout the year, and one pair infrequently used the same site throughout of the year.



*Female feeding chicks*



*Female Red-headed Falcon diving from her nest to attack a House Crow*



*Male passing prey, a House Sparrow, to his mate*



Pair of Red-headed Falcon perched on electricity cable

### Acknowledgements

I'm very grateful to Nick P. Williams and Tom J. Cade for their important suggestions and comments on my manuscript. Thanks go to Shafiqur Rahman and Abu Bakar Siddik for taking photographs. My heartiest gratitude to my birder friends Omar Shahadat, Shafiqur Rahamn, Abu Bakar Siddik and others for their company and assistance in the field.

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Juvenile Red-headed Falcon





*Sibling Red-headed Falcons in a playful chase*

**All photographs illustrating this article were taken by Md. Abu Bakar Siddik**

*"It was very enjoyable to spend time in the field with these fascinating falcons and falcon researcher Mohammad Foysal for 2-3 months. I fired off 30,000+ shots with my camera and many of them are still waiting on my hard drive. Couldn't resist to share some images from the album, more images will be included soon on my page <http://facebook.com/shovonclicks>".*

# It's not only shot prey! Intra-articular lead intoxication in birds of prey.

**Marino García Montijano<sup>1</sup>, Raúl Andrés de Diego<sup>1</sup>, Carmen Carrasco Losada<sup>1</sup> and Jorge García de la Fuente<sup>2</sup>**

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## Introduction

Lead shot ingestion is one of the commonest causes of toxicosis in raptors worldwide. Lead toxicosis in raptors was first described many years ago (Jacobson et al., 1977) and since then it has been described in other species (Falandysz et al., 1994; Mateo et al., 2003).

Lead poisoning can produce many different symptoms in birds. Some of the typical nervous alterations that present are the inability to fly, walk or even perch, incoordination, ataxia, muscular spasms, convulsions, blindness, screaming and changes in the voice (Lumeij, 1985). The symptoms observed in subclinical lead toxicosis are unspecific, such as lethargy, slow emptying of the crop, the shredding of food, anorexia, diarrhoea and green coloured urates and urine (Mautino, 1997) which makes it more difficult for the clinician to diagnose.

Raptors can ingest lead pellets from animals that have been shot by humans and abandoned in the field, or by hunting birds that have lead pellets in their digestive tract. This is quite common in waterfowl because they congregate in lakes, marshlands and swamps that are often highly contaminated with lead shot. Other potential route of uptake of lead in birds of prey is via inhalation (Blanco et al., 2003).

There are many potential sources of lead that can be lethal for wild and domestic birds, such as leaded paint, lead fishing weights, contaminated sediments from mining and smelting activities, etc. but the most common source associated with clinical lead poisoning in raptors is the ingestion of lead ammunition used for hunting (Pain, 1992; Fisher et al., 2006).

In human medicine some clinical cases of intra-articular lead intoxication have been described

(DeMartini, 2000). The authors have not found any published reference of intra-articular lead intoxication in birds of prey.

## Case report

A wild Common Kestrel *Falco tinnunculus* and a Tawny Eagle *Aquila rapax* used in falconry were presented with intra-articular lead ammunition inside their digit joints, with articular changes, some degree of lead bullet erosion and different symptoms compatible with those of lead intoxication.

## Common Kestrel

A wild adult male Common Kestrel from a wildlife rehabilitation centre was presented because irregular food intake, progressive weight loss, and yellow-green colored urates. The bird was found on the ground 35 days before presentation and presumed to have had a flight accident. On clinical examination the bird appeared in bad body score and low weight, with dirty plumage around its beak. Abnormalities within the haemogram included a PCV of 36% and slight leucocytosis (12,400 wbc/ $\mu$ l). On X-ray a consolidated fracture of the right tibiotarsus and a lead pellet in the intra-articular space, located between the 2<sup>nd</sup> and 3<sup>rd</sup> phalangeal bones in the digit II of the left foot, were found (Figure 1). The keepers assumed the pellet was from an old shot as the skin over the pellet was normal. A blood lead test was made using an electrochemical method (Lead Care II System) and the results were 48.3  $\mu$ g/dl. Surgery to remove the lead pellet from the joint was performed and treatment with a chelating was initiated (Ca EDTA, 50 mg/kg BID IM for 7 days; Figures 2, 3 and 4). After the treatment a blood lead test was repeated and in this time the results were 3.2  $\mu$ g/dl. The bird overall appearance improved, ate and gained weight normally. Once it was confirmed that the bird was able to fly strongly, it was released 30 days after starting the treatment.





Figure 1

### Tawny Eagle

An adult male Tawny Eagle from a zoo falconry exhibition was presented at the hospital.

The falconers complained about his behaviour changes (sometimes aggressive towards any of them), his loss of appetite and poor flight performance. The eagle presented with bad plumage, poor body condition and continuous deep "duck-like" vocalizations.

The haemogram result showed only an altered PCV of 38%. The radiograph showed a metallic pellet located between the 2<sup>nd</sup> and 3<sup>rd</sup> phalangeal bones in the digit II of the right foot (Figure 5).

We decided to make a test to determine the lead concentration in the blood and the results were 31.4 µg/dl. Next day the lead pellet was extracted and a chelating therapy with Ca EDTA, 50 mg/kg



Figure 2



Figure 3



Figure 4

BID IM was initiated. Eight days after starting the chelating therapy, the lead levels in blood were 4 µg/dl and we decided to finish the treatment. The owners noticed a general improvement in the bird but the continuous deep vocalizations didn't disappear.

## Discussion

Lead ingestion is the most common route of intoxication in birds. This is the reason why we decided to present these particular cases of systemic lead intoxication from intra-articular ammunition in two birds of prey.

In the oral intoxication, when the ammunition is ingested and reaches the acidic environment of the ventriculus, it is dissolved and absorbed by the body tissues. This could cause either acute poisoning that could result in death (Mateo et al., 1998), or chronic intoxication generating sub-lethal effects. The lead absorbed, affects the structure and function of different organs and systems such as kidney, bone, the hematopoietic system and the central nervous system, mainly affecting behavior, reproduction (Buerger et al., 1986), immune response (Redig et al., 1991) and physiology (Fair & Ricklefs, 2002).

Lead absorption is influenced by different factors like the form and the size of the ingested particles, the acidity of the ventriculus, the gastrointestinal transit and the presence of nutriment on it. It has also been demonstrated that some dietary components such as amino acids, vitamin D, proteins and fats, because of their ability to bind to lead, increase its solubility and absorption.

The lead is absorbed and distributed through the blood in the different body tissues. First of all, the lead binds with high affinity to the erythrocytes. Then, it is distributed to the soft tissues, producing toxicity in target organs such as the liver, kidneys, marrow bone and the central nervous system; and finally, the lead is disseminated into the bone tissue (Pokras and Kneeland, 2008).

Generally, in the bone tissue the lead remains inert without producing toxic effects. However, in certain situations a massive calcium mobilization could be given in the bones, releasing the lead again back to the blood. This can occur in old bird, in birds with diets that are poorly balanced or low in calcium, in birds on certain medications, in cases of egg laying (eggshell formation), hyperthyroidism, etc. The lead deposited in the bone marrow interferes with the hematopoietic system.

When gunshot fragments are located in soft tissue, normally they become encapsulated by



Figure 5

fibrous tissue and remain inert (DeMartini et al., 2001). However, this is not what happens when the fragments are found within the intra-articular capsule where they are in contact with acidic synovial fluid (Harding et al., 1999). In these cases, the mechanical forces inside the joint act on the lead fragments producing foreign body reactions, mechanical damage to the cartilage, synovitis, and arthritis. Furthermore, the inflamed synovial membrane increases the lead absorption into the systemic circulation, causing the plumbism (Slavin et al., 1988). The systemic symptoms of the intra-articular lead intoxication may appear months after the bird was shot. This, in many cases, makes it really difficult for the clinician - who without those symptoms wouldn't suspect of a lead intoxication - to make the diagnosis.

We do not know if the animals could have ingested lead in any of its forms and intoxicated themselves before hospitalization. Whilst we discounted this in both cases, we consider it was highly unlikely in the Tawny Eagle because it was fed a frozen commercial diet. We advise that lead shot fragments are removed when they are located in the intra-articular space of the joints in raptors.



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## Shooting Birds of Prey.

The shooting of birds of prey is widespread. The latest 'Birdcrime' report produced by the RSPB ([https://www.rspb.org.uk/Images/birdcrime\\_2013\\_tcm9-384665.pdf](https://www.rspb.org.uk/Images/birdcrime_2013_tcm9-384665.pdf)) reveals in 2013 there were at least 49 confirmed cases of birds of prey being shot in the United Kingdom. In the UK, birds of prey are mostly shot to protect game birds or racing pigeons from predation, although the preferred method of illegal killing employed by gamekeepers is to use poisons.

Elsewhere in the European Union, the shooting of raptors is a major issue, particularly in Malta. Over the past three years alone, BirdLife Malta has received shot birds of 17 raptor species.



*Red-footed falcons are listed under the Global IUCN Red list as a threatened species, but that did not protect this bird which was recovered by BirdLife Malta last June after being illegally shot.*  
© Andre Raine ([www.birdlifemalta.org](http://www.birdlifemalta.org)).

In the Middle East, and in other Mediterranean regions, shooting birds is considered a 'traditional sport', and the killing of birds of prey is commonplace. Similar reports of indiscriminate shooting come from North Africa and from Kuwait in the Arabian Gulf.

We present three examples from a remarkable series of photographs taken by Jean-Michel Delaunay. The Peregrine used the balcony of Jean-Michel's apartment in the Mediterranean coastal port of Sète for eight consecutive winters. A detailed account, together with a selection of stunning illustrations, has recently been published in the journal *Alauda* (Delaunay & Isenmann, 2014).



**Site fidelity during eight consecutive winters of an Arctic Peregrine Falcon *Falco peregrinus calidus* at Sète, a French Mediterranean seaport**

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Like previous reports of Peregrine Falcons *Falco peregrinus* wintering in cities (e.g. Dixon et al., 2012; White, 2013), we have reported a further example of wintering site fidelity showed by an individual belonging to the *calidus* subspecies breeding in Arctic Eurasia (Delaunay & Isenmann, 2014). This bird, born in 2005, was first observed in January

2006 and, subsequently, recorded during seven consecutive winters (2006/2007 to 2012/2013) on the same balcony of an occupied flat at the 15<sup>th</sup> floor of a building at Sète (43° 25'N - 03° 43'E). Each of the winters 2006/2007 to 2012/2013, the bird stayed for about 7 months (October to April) and he returned, without exception, each evening to spend the night at the same microsite. The birds was not seen again in winter 2013/2014.

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# Eagle Hunters in Action: hunting practice of Altaic Kazakh falconers in Western Mongolia

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### The demise of hunting within modern-day Altaic Kazakh falconry

Altaic Kazakh eagle masters in Bayan-Ölgi Province, Western Mongolia still have some unbroken ties with “actual hunting” in the context of local livelihoods. For the nomadic herdsman, the hunting season for foxes starts from 20 October once they are settled in the area of their winter pasture. The latter half of November, when snowfall is expected, is particularly suitable for hunting (Fig 1). However, most eagle masters do not go to hunting in winter nowadays and some young eagle owners do not have any hunting experience. There are only a handful of falconers who actually go hunting at least once a week. The hunting practice has almost disappeared in contemporary Altaic Kazakh falconry.

In this article I report, as an invited participant, on hunting excursions by two eagle masters, uncle (S-22) and nephew (S-11) relatives aged 46 and 19 years-old respectively (Fig 2). My ethnographic research was carried out from 20 November 2011 to 26 January 2012 (60 days), when I mainly stayed with the family of the nephew at their winter pasture near Sagsai village. During this time we spent 10 hunting days in the Agjal Mountains (Fig 3), which is one of traditional hunting areas on the northern bank of the Khovd River.



Fig 1. A hunting eagle grasping a fox in training



Fig 2. S-11 (right) and S-22 (left) on the hill searching for prey



Fig 3. Traditional hunting field “Agjal Mountains”

### Eagle Hunters in Action

#### Hunting Activity in the Agjal Mountains

There are three main hunting areas surrounding Sagsai village; Kara-Yurok, Kogula-Tube and Agjal. In the Agjal Mountains there are 9 hunting points situated on prominences or hilltops for a clear overview of the foothills. The difference in elevation between the hunting points and the foothills can be more than 200 m and the maximum inclination > 50 degrees. The craggy, steep and complex terrain of the Agjal Mountains provide ideal breeding habitat for foxes and have long represented the ideal hunting area.

#### Hunting Days and Duration

Hunting should take place once every 2-3 days, and if only one horse is used for hunting, the continuous duty should be demanded for a maximum of 3-4 days a week at most. Actual hunting days in winter should not be more than



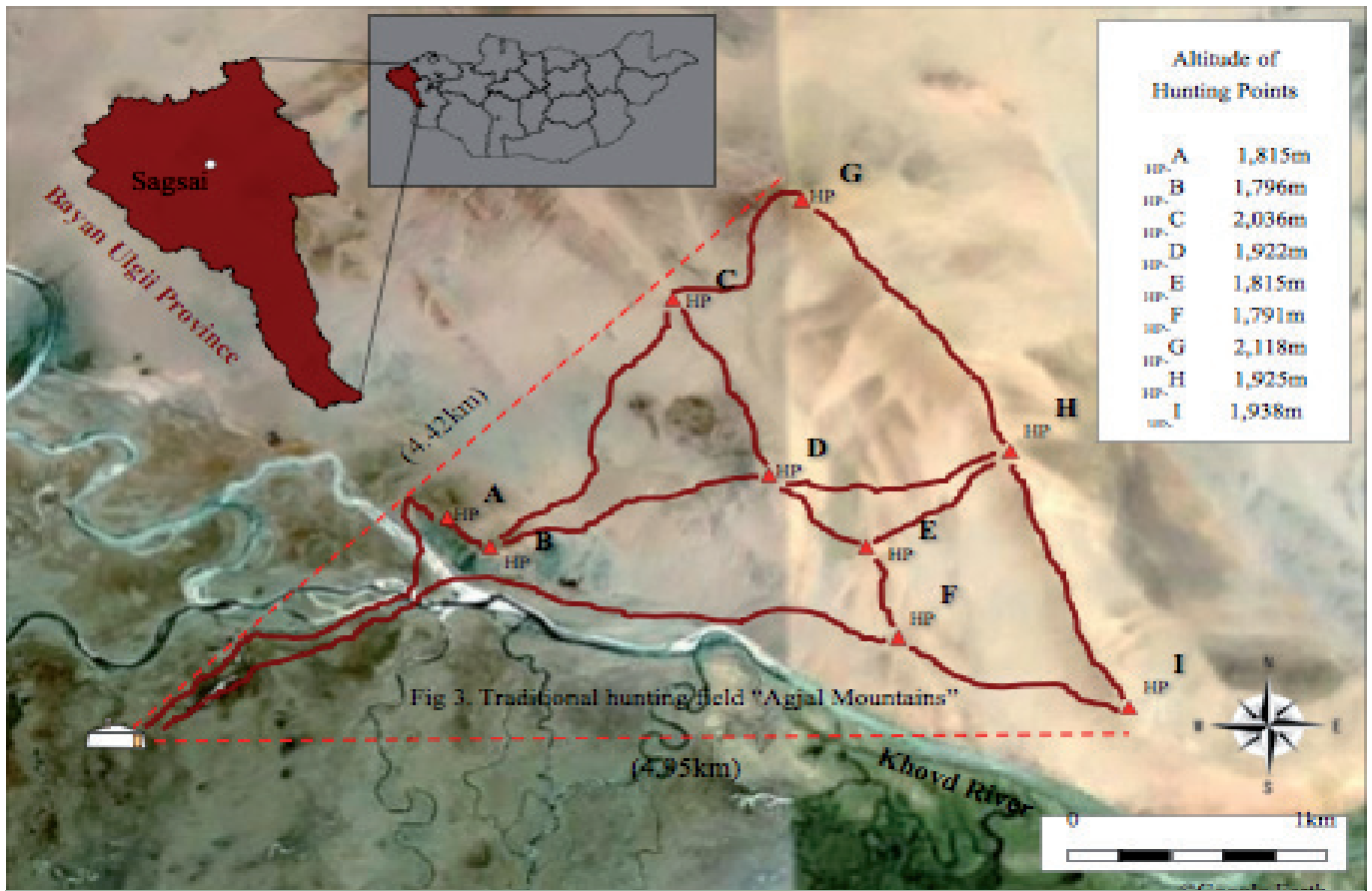


Fig 4. Hunting routes and points in the Agjal Mountain (refined from Google Earth™)

60 days, as even in the past, and in general should last for 20–40 days (within the 150 day period from 1 October to 28 February). The best conditions for hunting are after a snowfall when there is a light covering of snow on the mountain landscape. Snow cover assists both the hunter and eagle in spotting the fox, improving the success ratio for capture. Hunting activities are finished mostly by the end of February or are occasionally practiced until *Navruz* (the Islamic New Year) on 22 March. The maximum hunting duration in winter is 7-8 hours per day at most, due to the short day length: at winter solstice (21 December), sunrise is at 08:50 and sunset at 17:05 local time (UTC +7hour).

### Excursion Routes and Hunting Points

The basic hunting route links each of the nine hunting points (Fig. 4), but the sequence and route depends on the situation and encounters with animals. Hunting points on top of a ridgeline or hill provide clear open views toward the foothills, and a hill top point, where falconers get an overview both of the northern and southern foothills, is the perfect location for prey searching. Falconers preferentially release their eagles toward the southern foothills. One of the reasons for this is to release their eagles into the upper windward

current which gives the eagle added lift. A typical hunting excursion is described below (also Fig 4):

**(1)** The hunters initially visited HP-A from the western sector of the Agjal Mountains. Then they visited HP-B at the top of a small hill situated at the north bank of the Khovd River. In advance, a falconer climbed to HP-A - HP-B while the beater stood by directly beneath HP-A. Then, the beater moves toward a position underneath HP-A and HP-B, and then to a position underneath HP-B. The falconer on the top of the hill also gradually moved toward HP-B in parallel with the beater at the foothill. Several times, when signs of hiding foxes were encountered on the way, they searched insistently to flush the animal.

**(2)** When they could not find or catch any quarry, they moved to HP-C, HP-D, HP-E, or occasionally to HP-F. They also looked for footprints on the snow cover and tried to trace them back to detect a burrow or hole of an animal. In particular, HP-E and HP-F have complicated topographic features with various small-scale ridgelines and valleys (Fig 6). As a result, encounters with prey animals were most frequent around these points.



Fig 5. A sloop at HP-B

(3) When searching for prey at these points ends, hunters often climb up to HP-G, the highest point in the Agjal Mountains (2,118m). This point is regarded as a good location and provides a sweeping view of most of the foothills. On each hunting point or while prey-searching, hunters very frequently whistled at a particular scale near the eagle's head. This sound seemed to be too soft to frighten prey from a hiding place and some hunters state that the whistling sound increases the eagle's aggression.

(4) Afterwards, the hunters moved east to HP-H and HP-I along the highest ridgeline (Fig 7). Hunters often go down to visit HP-E and HP-F again from HP-H. Meanwhile, the beater is normally left at the lower foothill of each point (HP-G, HP-H, and HP-I) and moves eastward in parallel with the falconers on the highest ridgeline.



Fig 6. Landscape at HP-E and HP-F

During my observations, hunters regularly visited HP-A–B, HP-E–F and HP-G–H in every hunting operation. There are also two irregular points (HP-Z1 and HP-Z2) that were visited only once each. However, topographic conditions are similar to other points on the regular hunting route, situated on the hill and providing a clear view of the lower foothills. From HP-A to HP-G (or HP-H) on the regular route, a single excursion distance is *ca.* 6.4–7.8km and normally took about five hours in a single direction. The total distance of a round excursion between HP-A and HP-I (the most remote point from home) is *ca.* 20 km. However, additional walking distance should also be added to cover the assiduous prey searches along the route between each hunting point.

Mobility is extremely restricted, and hunters cannot effectively move directly between hunting points because of landscape topography. The total ascent is reached to  $\pm 390\text{m}$  from HP-A to HP-G, and  $\pm 450\text{m}$  from HP-A to HP-I in elevation. In



Fig 7. Landscape at HP-G from HP-H

connection to these restrictions hunting mobility, the easternmost HP-I is 5.7 km in walking distance (5.0 km in direct distance) and the northernmost HP-G is 6.1 km in walking distance (4.4 km in direct distance). Thus, hunting duration and distance covered is constrained by topography. The sphere of daily hunting activity takes place within *ca.* 4.0–6.0 km direct distance from home.

### Cooperation with Beaters

Hunting is inevitably done in cooperation with one or more beaters (*kagush*). I did not see a single falconer alone in the hunting field during the 2011/12 seasons. In the past, a hunting party consisted of three to five falconers with beaters - and possibly even more members - who visited





Fig 8. S-22 is obeying designation from a beater at HP- H

the hunting field as a group. This is based on the old style of falconry. If the initial attack on the prey failed (*"fly on head"* = unsuccessful attack), a second eagle would be released to attack the prey. When the second attack was also unsuccessful, a third eagle was released. This plural pursuit by hunting birds is known as *"check"* among British falconers.

According to the most common way of hunting, falconers move to the top of the hill or ridgeline (Fig 8) while beaters standby at the lower foothill. Then, they proceed in parallel toward same direction. When there are more than two beaters they walk in parallel at different elevation along the foothill together; likewise, falconers also standby at intervals along the ridgeline if there are several participants. The beaters search for prey by shouting and making loud sounds by hitting his saddle with his whip. Lees and niches behind rocks are scoured thoroughly to flush prey that may be

hiding there. When the beater discovers quarry he starts chasing it and shouting to disturb its action and drive it into a small hole or niche. The falconer also flies his eagle toward the prey.

The hunting operation is mostly handled by the primary beater who governs hunting harvest with correct decision-making. The beater designates activities during hunting, such as *"proceed"*, *"return"*, *"stop"*, *"release the eagle"* etc., with signs to the falconer. Therefore, in the local falconer's rule, the first harvest (mostly fox) will belong to the initial beater as a reward. In the case of only a one-fox harvest, the falconer who caught it has the right only to the set of front leg fur - the *"Pushpak"* (crucial for making a traditional Kazakh hat). Nevertheless, during my excursions the beater rarely detected prey, suggesting that a large number of participants are necessary for the hunting party to be most effective.





Fig 9. S-11 and S-22 caught a fox from his burrow hole

### Fox Hunting for Eagle Food

The hunter can obtain 2–4 kg of flesh and organs from an adult fox. This amount provides 10 days food for a hunting eagle during the winter. A certain amount of fox flesh will contribute to reduce the feeding burden, which means that fox hunting must be done by all eagle owners. In the case of a capture on 4 December 2011 (Fig 9), the pelt was taken by the uncle and the body was given to the young nephew. The whole flesh was consumed by the eagle within 7 days. Falconers never give animal fat or blood to eagles in winter. If an eagle eats fat and blood, it loses its aggression to hunt because of its full stomach. In general, the flesh of

fox species is mainly muscle with little blood and a low fat ratio. From a nutritional standpoint, fox flesh seems to be ideal for a winter diet and 10 foxes would be desirable to cover feeding expenditures during a winter season (Fig 10). In a practical sense eagle ownership i.e., “to possess a golden eagle”, means that the owner must be an active hunter in terms of continuation of taming and hunting arts.

### Conclusion

Altaic Kazakh eagle falconry intends to hunt foxes as a primary target for fur acquisition. The hunting place and season is naturally limited by topography and winter day length. When hunting was more frequently practiced, hunters provided more flesh for their hunting eagles from wild game and other quarry. However, the decline of hunting is now an unstoppable phenomenon as a result of increasing feeding costs to maintain a hunting eagle at home. Besides, productivity of Altaic Kazakh falconry would not be as high now as it was in the past. As a result, the actual hunter population has decreased, and beaters, inevitable hunting cooperators, tend to avoid such a harsh burden. This kind of “de-contextualisation” of falconry culture is one of central concerns now endangering Altaic Kazakh falconry tradition.



Fig 10. A local eagle master proud of his harvests



# Emeraid Carnivore Critical Care Diet



### Neil Forbes

Great Western Exotic Vets, Vets Now Referral Hospital,  
10 Berkshire House, County Park Estate, Shrivenham Rd,  
Swindon, SN12NR, UK.

When injury or disease occurs, the body enters an 'ebb phase', where all but core body systems close down to conserve energy, this is associated with 'clinical shock'. The body defence and repair mechanisms then kick in, suddenly requiring increased metabolic energy; this phase is referred to as 'hyper-metabolism'. Hyper-metabolism, most commonly occurs at a time when the patient has a reduced or non-existent appetite, typically not wishing or being able to feed. Where hyper-metabolism is concurrent with reduced food intake, protein energy mal-nutrition occurs, resulting in an accelerated form of starvation. In the body's attempt to meet the metabolic requirements, there is a massive depletion in the body's protein and fat stores – any falconer can associate with this.

The failure to fuel the hypermetabolic state results in reduced immune response, delayed healing, weakness of skeletal, cardiac and gastro intestinal

muscle, anaemia, cachexia and potentially death. Amino acids (protein building blocks), balanced Omega 3 and 6 poly unsaturated fatty acids, dietary nucleotides (to provide RNA and DNA precursors), together with fats and carbohydrates (to provide energy) are required in formats such that they can be instantly used (a critical care diet) to make a positive contribution to negate hyper-metabolism (Forbes 2012). Modern critical care diets are 'semi elemental', so as to be easily absorbed and readily digestible, they comprise the essential building blocks, which can be immediately assimilated and used in a positive manner as soon as they are fed. Diets must mix readily to pass down a catheter or tube, the demands of hyper-metabolism can be met by reasonable frequency and volumes of feedings.

### Administration of food to the in appetent falcon:-

**Gavage Feeding** – a longstanding technique which has saved many sick raptors. Commercial diets (typically pet animal recovery diets) have been available for many years. Such diets were not

### Saker Falcon Global Action Plan

designed with birds in mind, some birds will vomit others fail to maintain or gain weight, as the diets are not optimally energy dense. This technique is ideal where supplementary feeding is only likely to be required for 2-3 days. The value of the technique is optimised, where a high energy density diet is utilised (such as Lafeber Carnivore Care).

**Ingluviotomy feeding** – this technique has been described in detail elsewhere (Huynh et al. 2012). A 5-6 Fr feeding tube is advanced from a surgical opening in the crop wall, via the distal oesophagus to the mid proventricular region. The tube is sewn in place, and the syringe attachment end is then attached to the bird's back. The technique is invaluable where you have head, neck or crop trauma, such that normal feeding is impaired, or where supplementary feeding or liquid medication is anticipated to be required for a protracted period, especially in well trained or imprint falcons. In such cases, the bird will typically remain standing unrestrained on block or glove, whilst food and any medication is administered via the tube.

The product currently considered ideal and preferable for tube/gavage feeding is the Lafeber Emerald Carnivore Critical Care Diet. Full product details are available at [Lafebervet.com](http://Lafebervet.com) but it is true to say it is the first semi elemental diet designed for use in carnivorous birds. The food, contains 37.8% protein (to build and recover), 34% fat (for energy) and minimal fiber (<4.5%). All necessary vitamins, essential amino acids, Omega fatty acids etc., are all incorporated. The food is provided as a dry powder, in sealed sachets or tubs. The shelf-life of Emerald Carnivore is approximately 18 months from the date of manufacturing (stored in a cool dry place) and storage may be extended by freezing unopened packets. Once Emerald are opened, it should be kept refrigerated and should be used within 9 months of opening. When using the product, care must be taken not to contaminate the open pot with utensils, as bacterial proliferation may subsequently occur.

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The Coordinating Unit of the Convention on the Conservation of Migratory Species of Wild Animals (CMS) Raptors Memorandum of Understanding (MOU) announced that the Saker Falcon Global Action Plan (SakerGAP) is now available online at the CMS website.

The SakerGAP is a ten-year plan (2015-2024), developed by the Saker Falcon Task Force, to support initiatives aimed at conserving wild Saker Falcon populations throughout their range, and to ensure that any use of the species in traditional falconry is sustainable. The Task Force was established as part of a Concerted Action process adopted at the tenth meeting of the Conference of the Parties (COP 10) to the CMS. More than 50 government representatives, specialists and stakeholders from more than 20 countries have joined the Task Force.

In July 2014, the SakerGAP was unanimously endorsed by CMS Scientific Councillors at the 18th meeting of Scientific Council, which convened in Bonn, Germany. It will be presented for final approval at the forthcoming CMS COP 11 in Quito, Ecuador, in November 2014. The Saker Falcon Task Force has also put forward four Flagship Proposals, including creating an Online Information Portal to engage 10 falcon hospitals, falconers and trappers within a Saker Falcon Network; deploying 100 satellite tags to track the movements of selected falcons; and erecting artificial nest platforms and new "bird-safe" electricity poles.



## Past and Present Status of the Saker Falcon, *Falco cherrug* (Aves: Falconidae) in Bulgaria.

Ragyov D, V Biserkov, G Gradev, I Ivanov, E Stoynov, G Stoyanov, D Domuschiev and A Dixon

2014. *Acta Zoologica Bulgarica* 66: 299-308.

Evidence for the presence of Sakers in Bulgaria dates from 1500-3000 years ago. The first documented records of breeding Sakers go back to the 13<sup>th</sup> century. We collected 337 breeding records of Sakers in Bulgaria (1860-2013), comprising 176 locations (52 Confirmed, 16 Probable and 108 Possible). Our study suggests that in the 19<sup>th</sup> century the species was scarce and/or localised in its distribution range, with a declining population. The decline has continued through 20<sup>th</sup> and 21<sup>st</sup> Centuries. Recently, 94% of the total number of known breeding locations were surveyed (N=165; including all Probable and Confirmed locations and 90% of the Possible locations). The survey covered 31,000 km<sup>2</sup> (c. 28% of Bulgarian territory) and revealed more than 33% of the known breeding populations of Long-legged Buzzard, Peregrine Falcon, Golden Eagle, Imperial Eagle and Egyptian Vulture. Only three Sakers (single birds) were recorded in 2011, 2012 and 2013, with no further confirmation for the breeding. The last documented Confirmed breeding records were in 1997 (a successfully fledged young) and 1998 (the nest failed during the nestling period). The restoration of the Saker breeding population requires an integrated approach, by operating at various scales from the landscape to the species level.



Captive-bred sakers at a hacking site; part of a pilot reintroduction project in Bulgaria (Photo: D. Ragyov)

## Male territories and the lek-like mating system of MacQueen's Bustard *Chlamydotis macqueenii*.

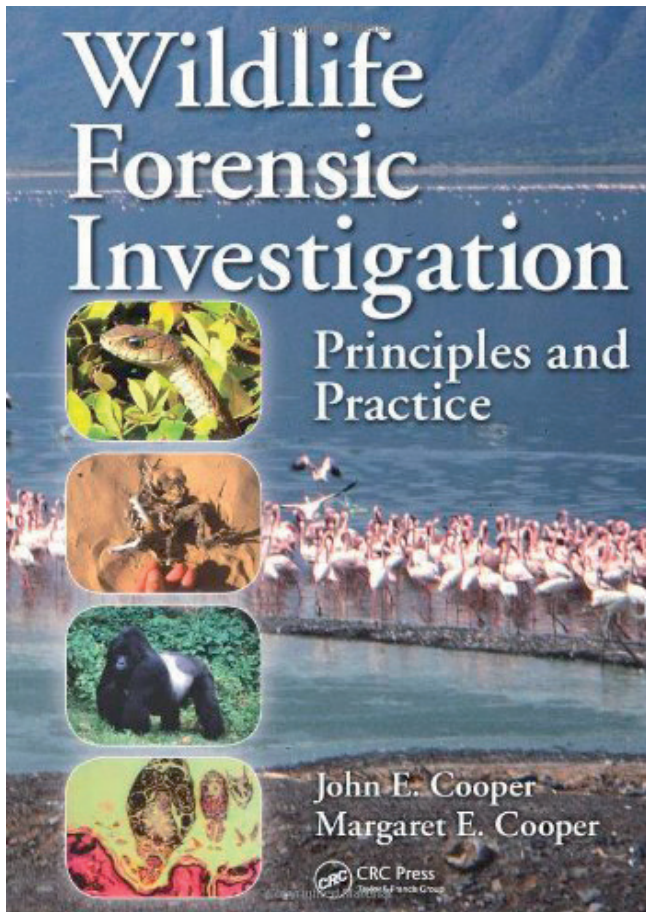
Riou S and O Combreau

2014. *Journal of Ornithology* 155: 959-967. (Open Access)

Lekking is a promiscuous breeding system in which females visit groups of displaying males only for the purpose of mating. The spatial organization of these groups can range from tight aggregations of individuals, or leks, to loose clusters of males displaying on exploded-leks, and it can also include males seemingly displaying alone. As the distance between displaying males increases, it becomes possible for them to hold fixed territories and for females to select mates not for their genetic quality, as on true leks, but for the quality of the resource on their territory, i.e., resource-defense polygyny. Here, in a 2-year study of a breeding population of MacQueen's Bustard *Chlamydotis macqueenii* in southwest Kazakhstan, we used GPS and radio-tracking coupled with observation to understand male territoriality and the spatial distribution of sites, and we followed the breeding behavior of cryptic females using nest locations and genetic paternity analysis.

We found that males were faithful throughout the season and across years to a small and exclusive territory centered on their display site. These sites were significantly overdispersed in space and thus we could not delimit any leks in a study area spanning 350 km<sup>2</sup>. Females nested in the vicinity of male territories and sometimes inside them, but based on a sample of six resolved paternities, they did not favor the territory of their mate for nesting.

This is inconsistent with the hypothesis of resource-based female choice and implies that the breeding system of MacQueen's Bustard can be treated as a special case of lekking, albeit without male aggregation. Six broods were fathered by at least five different males, which lends support to the hypothesis that overdispersion of male sites is related to variability in female mate choice, and thus low male mating-skew in a lekking system.



### **Wildlife Forensic Investigation: Principles and Practice**

**John E. Cooper and Margaret E. Cooper**

Taylor and Francis/CRC Press, Boca Raton, Florida, USA.  
ISBN 978-1-4398-1374-4 (hardback)

This book provides an in-depth introduction to the rapidly evolving field of wildlife forensics – that is, the application of forensic science to the conservation and protection of non-domesticated animals, both in the wild and in captivity. It chronicles aspects of the history of management, conservation and environmental protection, with an emphasis on their global importance in the twenty-first century. The primary focus of the book is the crucial role of wildlife forensic investigation with regard to live animals, dead animals and samples and the text covers national, regional and international legislation. The authors discuss the welfare of free-living and captive non-domesticated species and consider the damage that can be inflicted on humans and property by wildlife. The content and scope are greatly enhanced by case studies from experts in diverse parts of the world who describe relevant aspects of their work. Key features of the work are that it:

- Covers the entire investigative process of wildlife forensics
- Describes the personnel and agencies involved in wildlife investigation
- Discusses the investigation of both live and dead animals
- Includes international case studies
- Offers appendices for equipment, useful document templates, specimen forms and other sources of information
- Provides an extensive range of references and further reading, in different languages
- Is extensively illustrated with photographs and line drawings depicting forensic cases and investigative techniques

It covers the whole Animal Kingdom, including invertebrates, not just the more charismatic mammals and birds. In addition, it has a practical “hands-on” approach and is written by people who have experience of working in the field, not just in the laboratory. There are legal chapters written by knowledgeable and experienced lawyers. There is a substantial amount of information about birds of prey in this book. Topics covered include the conservation and protection of free-living raptors, the adverse effects of chlorinated hydrocarbons, diclofenac and other chemicals, micro-chipping and identification, and welfare parameters.

The Appendices contain recommended record sheets for clinical and post-mortem examination and for the investigation of samples.



## H is for Hawk

**Helen MacDonald**

Jonathan Cape Ltd. ISBN 9780224097000

Helen Macdonald's book, *H is for Hawk*, has been awarded the 2014 Samuel Johnson prize, the most prestigious accolade in nonfiction. The Samuel Johnson Prize for Non-Fiction is an annual British prize for the best non-fiction writing in the English language. The book is the first memoir to win the Samuel Johnson prize in its 16-year history. It was described by the chair of the judging panel, Claire Tomalin, as "an extraordinary book that displayed an originality and a poetic power. None of us on the panel were either naturalists or wildlife enthusiasts but this book just took hold of us."



*'In real life, goshawks resemble sparrowhawks the way leopards resemble housecats. Bigger, yes. But bulkier, bloodier, deadlier, scarier, and much, much harder to see. Birds of deep woodland, not gardens, they're the birdwatchers' dark grail.'*

As a child Helen Macdonald was determined to become a falconer. She learned the arcane terminology and read all the classic books, including T. H. White's tortured masterpiece, *The Goshawk*, which describes White's struggle to train a hawk as a spiritual contest.

When her father dies and she is knocked sideways by grief, she becomes obsessed with the idea of training her own goshawk. She buys Mabel for £800 on a Scottish quayside and takes her home to Cambridge. Then she fills the freezer with hawk food and unplugs the phone, ready to embark on the long, strange business of trying to train this wildest of animals.

*'To train a hawk you must watch it like a hawk, and so gain the ability to predict what it will do next. Eventually you don't see the hawk's body language at all. You seem to feel what it feels. The hawk's apprehension becomes your own. As the days passed and I put myself in the hawk's wild mind to tame her, my humanity was burning away.'*

Destined to be a classic of nature writing, *H is for Hawk* is a record of a spiritual journey - an unflinchingly honest account of Macdonald's struggle with grief during the difficult process of the hawk's taming and her own untaming. At the same time, it's a kaleidoscopic biography of the brilliant and troubled novelist T. H. White, best known for *The Once and Future King*. It's a book about memory, nature and nation, and how it might be possible to try to reconcile death with life and love.

*'I have waited for over thirty years for this book. Few falconry books are great literature and even fewer impart the art, philosophy and history that constructs our part in a hawk's life. Falconry is not a hobby, it is a way of life. Rarely is it captured with such impact, not since Ronald Stevens does the reader enter a falconer's life and log on to all that is involved. If you want to understand about why we falconers are so single-minded and seem so obsessed then you must read this book.'*

Nick Kester, Amazon Review.

## نشاطات صقّارو النسور: ممارسات الصيد لصقاري المجتمع الكزخي في غربي منغوليا

تاكويا سوما

ما زال كبار صيادو النسور في المجتمع الكزخي الأُلطي في منطقة "بيان-ألجي" بمنغوليا الغربية يحافظون على بعض من عُرى لا تنفصم مع "الصيد الحقيقي" في إطار سبل العيش المحليّة. يبدأ موسم صيد الثعالب للرعاة الرحل من 20 أكتوبر بعد استقرارهم في منطقة الرعي الشتويّة، ويعتبر النصف الثاني من شهر نوفمبر، حين يتوقّع تساقط الثلوج، الوقت الأفضل للصيد. مع ذلك، فإن معظم سادة الصيد بالنسور لا يذهبون للصيد في الشتاء هذه الأيام في حين لا يمتلك الشباب من مُقنتي النسور أي خبرة في الصيد. لا يوجد الآن سوى حُفنة من الصيادين الذين يذهبون للصيد مرة واحدة على الأقل في الأسبوع. اختفت تقريبا ممارسة الصقّارين للصيد في المجتمع الكزخي الأُلطي المعاصر. أقدّم في هذا المقال، كمساهم مدعوّ للمشاركة، تقريرا عن رحلات صيد مع اثنين من كبار ممارسي هذه الرياضة في مراعيهما الشتويّة قرب قرية "ساجساي". قضيت في هذه الرحلات 10 أيام من الصيد في جبال "آج جال"، إحدى مناطق الصيد التقليدية على الضفة الشماليّة لنهر "خوفد".

### حالة وبئنة تربية صقر اليويؤ أحمر الرأس في بنجلادش

محمد فيصل

هناك أحد عشر زوجا متكاثرا من صقور اليويؤ أحمر الرأس في ست مناطق من بنجلادش (في دكا وناراينجونج وغازيبور ونواخالي وباريسال وكاكسباجار)، في حين يُشْتبه في تكاثر سبعة أزواج أخرى. تقع الأعشاش في الأشجار وفي منشآت من صنع الإنسان، حيث يوضع البيض في يناير/فبراير وتقوم الإناث بالحضن بشكل رئيسي لأكثر من 35 يوما. تتراوح أعداد الفراخ ذات الريش القادرة على الطيران من 1 إلى 4 للعش، وقد لوحظ إنشاء أعشاش بديلة عند فشل العش. في هذه الدراسة، تغذت هذه الصقور الحمراء الرأس بشكل أساسي على طيور الدوري *Passer domesticus*، وكذلك على الخفافيش الصغيرة *Pipistrellus* في مناطق حضرية. شوهدت الإناث وهي تغذي رفيقها طيلة دورة التكاثر. تعود الصقور إلى مواقع جُثومها المفضلة عادة في وقت متأخر من المساء وتستخدم نفس المواقع تقريبا على مدار السنة.

### الفرائس لا تُقتل بالطلقات فقط! تسمّم داخلي بالرصاص في الطيور الجارحة

مارينو جارسيا مونتخانو، وراؤول أنديريز دي ديجو، وكارمن كاراسكو لوسادس، وخورخه جارسيا دي لا فوينتو

نصّف في هذا التقرير حالتين مرضيتين تحت-سريريّتان بالتسمم لطيورين جارحين يُستخدمان في الصقارة؛ صقر عوسق أوراسي برّي *Falco tinnunculus* وعقاب أصح *Aquila rapax*. عثر في كلا الطيرين على رصاص ذخيرة في مفاصل الأصابع وتغيّرات مورفولوجية بالمفاصل. استندت التشخيصات على ذكائر (تاريخ) الطيور المصابة والعلامات السريريّة وتحليل الدم والأشعة وقياس مستويات الرصاص في الدم بوسائل كهروكيميائيّة (نظام LeadCare® II System, Magellan diagnostics, USA). أجريت جراحة لكل من الطيرين لإزالة شظايا الرصاص من المفاصل وبدأ علاجهما باستخدام عقار  $\text{CaNa}_2\text{EDTA}$ . أظهر كل من الطيرين تحسنا صحياّ عامّا وانخفضت مستويات الرصاص إلى أقل من 5 ميكروغرام / ديسيلتر ( $\mu\text{g}/\text{dl}$ ).



في هذا العدد، وضمن موضوع "تراث الصقارة"، يصف لنا تاكويما سوما نشاطات رحلة تقليدية للصيد بالنسور مع الصقارين الكرخ في جبال منطقة ألطيا في منغوليا. إن هذا الوصف المفصل هو سجل هام لتقليد بدأ يتلاشى كنمط للحياة وقد لا يبقى في المستقبل إلا كحدث ثقافي أو عنصر "جذب سياحي". أمّا في موضوع "أبحاث البيولوجيا" فيقدم لنا محمّد فيصل دراساته في صقر اليؤيؤ أحمر الرأس في بنجلادش، وهو نوع لم يُعره علماء الأحياء إلا القليل من الاهتمام في السابق. يقدم مارينو جارسيا مونتيخانو ورفاقه مقالة هذا العدد في موضوع "صحة وإدارة الطيور"، وتتعلق بقضية تسمم الطيور الجارحة بالرصاص الذي يطلق عليها. إطلاق النار على الطيور الجارحة أمر واسع الانتشار، وخاصة في منطقة البحر الأبيض المتوسط والشرق الأوسط، وكذلك أيضا في ميادين الصيد في أوروبا الغربية. لذلك، وللأسف، فإن هذا العمل سيكون له أهمية وفائدة للأطباء البيطريين العاملين في العديد من البلدان.

لقد قمنا بتحديث قاعدة بيانات عناوين البريد التي نستخدمها في توزيع نسخ *فالكو* المطبوعة. نشكر كل من كتب إلى مكتب التحرير للتأكيد على رغبتهم في تلقي النسخة الورقية للنشرة بالبريد. إذا أحببت إضافة اسمك أو حذفه من قاعدة بيانات العناوين فيرجى الاتصال بنا بالبريد الإلكتروني وتزويدنا باسمك وعنوانك البريدي الكامل. علماً بأن كل أعداد *فالكو* متوفرة في موقعنا الإلكتروني.

## دعوة لتلقي المساهمات

نتمنى أن نرى المزيد من مشاركة القراء بأرائهم وخبراتهم ومعارفهم من خلال *فالكو*. يسعدنا تلقي المقالات المكتوبة باللغتين العربية والإنجليزية التي تتعلق بالمواضيع المدرجة في الصفحة المقابلة.

## أندرو ديكسون

المحرر، نشرة *فالكو* الإخبارية

## كلمة العدد

تصدر نشرة *فالكو* الإخبارية منذ 20 عاما، وصدر عددها الأول في يونيو 1994. انتقلت مهمة تحرير *فالكو* من خايمي سامور (1998-1994) إلى هيلين ماكديونالد (1998-1999) ثم إلى فريق تحرير مشترك يضطلع فيه توم بيلى في المقام الأول بالمحتويات المتعلقة بالعمل البيطري بينما يتولى مديري التحرير المشاركين نايجل بارتون (1998-2003) ويوجين بوتابوف (2003-2005) مسؤولية بقية المحتوى والإنتاج. لقد شاركت توم بيلى في تحرير *فالكو* وفق هذا التنظيم طيلة العقد الماضي، لكن توم بيلى بعد هذه الفترة الطويلة من العمل في نشرة *فالكو* اتخذ قرارا بالمضي إلى موقع عمل آخر. أود أن أشكر توم على عمله الشاق في الحصول على مصادر المقالات، وهو أمر ليس بالسهل لنشرة إخبارية كنشرتنا، وعلى قدرته على الحصول باستمرار على المواد التي تهتم البيطريين في مجال طب الطيور. تغطي *فالكو* باستمرار تشكيلة واسعة من الاهتمامات تشمل جوانب "صحة وإدارة الطيور"، لذا فأنا أهيّب العاملين في مجال البيطرة مواصلة تقديم المواد التي ترون أنها ستحوز على اهتمام وتقدير زملائكم.



بالغ الشكر لتوم بيلى – المحرر المشارك لنشرة *فالكو* 1998-2014



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