

The Saker Falcon *Falco cherrug* in the Kyrgyz Republic

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ABSTRACT

In 1997 the Central Administrative Board of Hunting of the Republic of Kyrgyzstan and the National Avian Research Center, Abu Dhabi, NARC initiated a monitoring project to undertake research on the biology of the Saker Falcon in the Kyrgyz Republic. The Republic is mountainous: over half is above 3000m, and the resident Saker population is thought to be of the subspecies *F.c. coatsi*. Sakers also migrate across the country to and from breeding grounds further north. As part of NARC's Falcon Programme on species of falcons used or affected by Arab falconry, the project is investigating the numbers and distribution of the Saker in the Kyrgyz Republic, with the aim of permanently conserving this species in the future. The project also seeks to obtain data for other NARC projects in the falcon programme, including behavioural and breeding data on the Saker Falcon, morphometric data and biomedical samples such as blood and feathers. These samples will be analysed for both pesticide and heavy metal contamination, and will also be used for genetic analysis. This paper presents the results from the first field season, 1998.

INTRODUCTION

The breeding range of the Saker Falcon *Falco cherrug* extends throughout most of Central Asia, but information on the status of the Saker in Kyrgyzstan is minimal. At the beginning of this century it was described as abundant (Sushkin 1908), but more recent investigations have described the population as suffering a decline during the 1970s and 1980s due to increased disturbance and, to a lesser extent, the taking of young birds for falconry (Shalna & Sorokin 1981, Vorobyov & Shukarov 1985). Estimates for a total breeding population in the Lake Issyk-kul area have been given as 12-15 pairs (Shalna & Sorokin 1981, Galushin and Pereva 1983).

In June 1997 The National Avian Research Center, Abu Dhabi, signed a Research Agreement with the Central Administrative Board of Hunting of the Republic of Kyrgyzstan to undertake a collaborative research programme on the status, productivity and biology of the Saker Falcon in Kyrgyzstan. A team of local biologists were trained in fieldwork techniques in November 1997. The first field expedition took place from 1 May - 15 June 1998, with a local team joined by fieldworker Erin Gott.

KYRGYZSTAN

Kyrgyzstan occupies an area of approximately 198,500 km². Bordered on the north by Kazakhstan, on the west by Uzbekistan, on the east by China and on the south by Tajikistan, 94% of the country is mountainous. Around 40% of the country is 3000m or above, with three-quarters permanently under snow and glaciers. The dominant geographical feature is the Tian Shan range, running south-east to south-west, defining a natural border between Kyrgyzstan and China. The mountains of the Pamir-Altai system occupy its southern part.

Habitat types vary considerably, from the hot deserts of the southwestern Osh and Kazarman areas to moist coniferous woodland in the northeastern Karakol. The Lake Issyk-Kul area varies between these two climatic types and vegetation type may change from desert to mountain steppe within a twenty minute drive. The lake itself, 170km long and 70km across, is 700m deep.

Kyrgyzstan has a population of approximately 5 million. In the summer, rural families and their livestock move to the mountain steppe, known locally as the jilo, until winter weather forces them back to the villages. The average monthly wage is approximately US \$25. Peregrines *Falco peregrinus* are not recorded as breeding in Kyrgyzstan, although there is a small population of Red-naped Shaheen *F. babylonicus*.

STUDY AREA

The 1998 study area was composed mainly of the area around Lake Issyk-Kul and adjacent jilos. This area was described as a traditional Saker breeding area by local people. The western end of Lake Issyk-kul (Balykchy) has an elevation of 1600m and is 195km from Bishkek. This area shows the most open landscape around the perimeter of the lake, mainly desert with craggy mountains and hills. The rest of the lake is surrounded by mountains exceeding 4000m. A single trip was also made into high altitude jilo around At-Bashy.

METHODS

Nest sites were discovered by the presence of faecal stains, perched or flying adults, screaming chicks or by local knowledge of sites previously used by Sakers. If a site looked active, but adult falcons or chicks appeared absent, then a closer look was taken by gaining a direct vantage point on an adjacent cliff or hill and/or searching for prey remains at the base of the nesting cliff. If no results were found at a nest site traditionally used by Sakers, then the site was recorded as empty. Once a nest was discovered to be used by breeding Sakers, the age and number of young within were assessed through direct observation by spotting scope or binoculars. The location and altitude of all active and inactive nests were recorded using a Magellan 2000 Global Positioning System (GPS). Nest coordinates were marked on 1:50,000 regional air charts. Each nest was given an id code based on the name of the study area and the number of the nest: eg. the first nest found in study area Clara has the id code *Clara nest 1* (CN1).

For each nest we recorded the amount and type of vegetation, distance to water, height and aspect of cliff and nest, distance to nearest source of prey, possible disturbances and nest type. Prey remains and pellets were collected and analysed visually.

Clutch size was recorded and, where possible, the number of fledged chicks per nest. A series of morphometric measurements were taken from chicks as described in the ERWDA Handbook of Falcon Protocols. (Fox *et al.*, 1997) The age of chicks was estimated using reference photographs from the Handbook, and chicks were sexed by comparing their measurements with tabulated values in the Handbook. Blood smears were taken for later biochemical study. Young birds were fitted with leg rings and passive integrated transponders (microchips). Blood samples were taken from the brachial vein for later genetic, pesticide and biomedical analysis.

RESULTS

Of 35 traditional Saker nests, 5 were occupied by breeding Sakers. Three of these 5 nests were found in separate traditional study areas around Lake Issyk-kul. The 3 Issyk-Kul nests were similar, with variations in surrounding vegetation percentage and type. Nest AN1 near Balykchy was located in semi-desert and BN1 and CN1 were found in mountain steppe 'jilo' type habitat. All three were found at approximately the same altitude, between 1778 and 2125m. Each active nest was found within a cluster of abandoned traditional nests. The nearest inter-nest distance for the nests we found was 47.1km (AN1-BN1); the greatest 178.6km (BN1-CN1). The two remaining active nests were found in the Ak-Say Study area (DN1 and DN2) with an internest distance of 15.9km. Nests DN1 and DN2 were found in high altitude mountain steppe (3528m and 3405m) where the dominant vegetation was short grass. At night temperatures at these nests dropped below zero, with frequent snow, before climbing to 23-25 degrees during the day.

Abandoned nest sites appeared similar to the active sites. Habitat type does not seem therefore to be a limiting factor for the breeding Saker population in Kyrgyzstan.

Feeding Ecology

Low altitude nests AN1, BN1 and CN1 showed a variety of avian prey remains, most of which were of Rock Dove (*Columba livia*) and Chukar (*Alectoris chukar*), Jackdaw (*Corvus monedula*) and small, unidentified birds. 25 - 50% of castings recovered from these similar sites were of mammalian origin. Rock Doves, Chukars, Jackdaws and small birds were abundant around these sites. Nests DN1 & DN2 were found in high altitude mountain steppe at approximately 4000m above sea level. 13 castings were collected from DN1, 5 of which were mammalian in origin, with remaining castings composed primarily of Red-billed Chough (*Pyrrhocorax pyrrhocorax*). Prey remains were also mainly of Red-billed Chough, the only exceptions being Rock Dove and 1 young marmot skin. Of 17 castings collected from DN2 only 4 were mammalian in origin, the remainder composed mainly of Red-billed Chough and Rock Dove. Red-billed Chough remains were also well-represented at this nest site, with few Rock Dove and other small bird remains. There appeared to be fewer prey available at Ak-cy compared to Issyk-kul. Pigeons, Ravens (*Corvus corax*), and marmots were the commonest species seen. Wing remains of Red-billed Choughs found at sites DN1 and DN2 were of full-grown birds rather than newly-fledged and inexperienced corvids (Bagyura, Haraszthy & Szitta 1994).

Table 1 Prey from 5 Saker nests

Common name	Scientific name	Prey remains	Nest
BIRDS			
Rock Dove	<i>Columba livia</i>	18	AN1, BN1, CN1, DN1, DN2
Chukar	<i>Alectoris chukar</i>	5	AN1, BN1, CN1
Collared Dove	<i>Streptopelia decaocto</i>	1	AN1
Jackdaw	<i>Corvus monedula</i>	1	BN1
Red-billed Chough	<i>Pyrrhocorax pyrrhocorax</i>	22	DN1, DN2
Carrion Crow	<i>Corvus corone</i>	1	BN1
Unidentified small birds	-	17	AN1, BN1, CN1, DN1, DN2
Total		65	
MAMMALS			
Red-tailed Jird	<i>Meriones erythrourus</i>	1	AN1
Bobby Marmot	<i>Marmota bobac</i>	2	DN1, DN2
Unidentified		16	AN1, BN1, CN1, DN1, DN2
Total		19	

Quantifying diets using prey remains and pellets can result in a bias in favour of avian prey (Bagyura, Haraszthy & Szitta 1994). However, it appears from this initial survey that the diet of Sakers in Kyrgyzstan does differ from that of Sakers in Kazakhstan and Mongolia. There was little evidence of a single major prey base supporting the breeding population, and Kyrgyzstan's prey base seems to be largely avian. 76.5% of collected prey remains were avian species, while 40% of castings were mammalian. Differences between sites also showed a strong difference between diets in two habitat types used by Sakers in Kyrgyzstan. Prey remains appeared to be periodically cleared from nests by the adult Sakers, a phenomenon previously reported in Hungary (Bagyura, Haraszthy & Szitta 1994).

Breeding Ecology

The 5 nests held a total of 19 chicks, 10 male, 6 female and 3 unsexed, of which 15 fledged successfully (see Table 2). Hatch date was around 1 May. One nest contained 3-5 day old chicks on 4 May and another contained 42-45 day old chicks on 14 June, with some variation either side of this date. It was difficult to assess chick mortality as 3 of the 5 nests were found after the chicks were 30 days old. Of the 5 nests, chicks from AN1 and BN1 fledged successfully and recently-fledged chicks were found at DN2. All the 6 chicks at nests CN1 and DN1 were close to fledging when last seen. No unhatched eggs were found within any of the nests. Four unrelated Saker chicks, one from each of the 4 nests, were sampled for DNA and pesticide analysis. At the time of writing, initial results show that no blood parasites were present in the samples taken.

Table 2. Numbers of chicks in each successful nest surveyed

<i>Nest</i>	<i>Male</i>	<i>Female</i>	<i>Unsexed</i>	<i>Total fledged</i>
AN1	2	3		5
BN1	1		3	1 male (rest stolen)
CN1	3	1		3
DN1	2	1		3
DN2	2	1		3 (in very poor condition)
Total:	10	6	3	15

Evidence of illegal trapping was plentiful. Chicks from BN1 were presumed stolen. On May 5, BN1 held four 10-12 day old chicks. On May 26, only a single male chick remained. We found signs of human interference. Nest DN2 contained three recently-fledged chicks, one of which was seen perched in an inaccessible site near the nest. The remaining chicks were found on the ground short distances from the nest. These chicks were near to starvation, could be picked up without protest, and were approximately 200g lower in body mass than an average chick of their ages. Although the chicks were in very poor physical condition, their overall plumage was in fair condition; they showed relatively few 'stress marks' on their feathers. The adult male falcon was present at the nesting cliff but we did not see the female.

PROBLEMS AND DISCUSSION

The falcon trade

The falcon trade has become a severe problem for Kyrgyzstan's nesting raptor populations. After the fall of the Soviet Union, Kyrgyzstan and Kazakhstan were the first of the newly independent CIS countries to openly welcome foreign trade and travel. As the demand for falconry birds rose in the oil-rich Middle East and the rumour of high prices being paid for 'wild' birds reached the CIS, it took little time for the Kyrgyz people to begin 'harvesting' falcons with the prospect of getting rich. There were also rumours of people shooting raptors and trying to sell them. We were informed that

a small population of breeding Sakers near Nyrin had been wiped out by such persecution. The biggest problem is thought to come from people robbing nests of both eggs and chicks, and trapping adults, primarily the female. Females are much preferred as falconry birds in the Middle East because they are larger than males. There are local reports of single male Sakers returning to traditional nest sites. The taking of adult birds, and especially female birds, exerts a far greater pressure on the population than the taking of juvenile birds on migration, the traditional source of falcons for Arab falconry.

The field team was approached on three occasions by local people selling falcons. On the first occasion the 'falcon' was in fact a Long-legged Buzzard (*Buteo rufinus*) kept in a chicken pen in a back yard. The second was an immature Saker just beginning its first moult. Kept in a wood shed, this falcon's asking price was \$3000 USD. We were told by the owner that an Arab had looked at the falcon that day and was likely to buy it. The third occasion, we were approached by a man who told us he had 5 chicks from 2 different nests for sale. By the time we got around to looking at them, we were told that they had all died, but that he could probably get more.

Because the average Kyrgyz has little or no knowledge of raptors, Sakers are not the only birds suffering from this trade. Many different species of raptors are trapped and offered for sale. The problem is exacerbated by poor husbandry, leading to high mortality in trapped birds.

In conclusion, neither habitat nor prey base appear to be a limiting factor for the breeding Saker population in Kyrgyzstan. Pressure on the population by illegal trapping appears to be the main factor affecting the Saker, and, by association, other raptors in this country.

REFERENCES

- BAGYURA, J., L. HARASZTHY & T. SZITTA 1994. Feeding Biology of the Saker Falcon *Falco cherrug* in Hungary. In Meyburg, B-U. & R.D. Chancellor (eds). *Raptor Conservation Today*, WWGBP/ The Pica Press: 397-401.
- BAUMGART, W. 1991. *The Saker Falcon*, (English translation by Nigel Barton), der neue Brehm-Bucherei, Berlin.
- FOX, N.C., C.P. EASTHAM & H.J. MACDONALD 1997. *ERWDA Handbook of Falcon Protocols*. ERWDA, Carmarthen.
- GALUSHIN, V.M. & V.J. PERERVA 1983. Status of Rare Raptors in the USSR. W.W.G.B.P., Bull. Nr. 1: 212-214.
- SHALNA, A.A. & A.G. SOROKIN 1981. On rare species of birds of prey of the Issyk-Kul depression. *Ecology and conservation of birds: abstracts of VIII All-Union Ornithological Conference*, Kishinev: 237.
- SUSHKIN, 1908. *Birds of the Mid-Kirghiz Steppes*. Moscow.
- VOROBYOV G.G. & E.D. SHUKAROV (eds.) 1985. *Birds: Red Data book of Kirghiz SSR*, Frunze: 33-56.

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