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Tracking Vultures from the Caucasus into Iran

MICHAEL J. McGRADY[1*] & ALEXANDER GAVASHELISHVILI[2]

[1] *Natural Research, Ltd, Am Rosenhügel 59, A-3500 Krems, Austria –*

[2] *Georgian Center for the Conservation of Wildlife, Nutsubidze Plateau 3, 1-7-10, Tbilisi, Georgia – Email: kajiri2000@yahoo.com*

** Corresponding author. Email: mikejmcgrady@aol.com*

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Abstract: The work was undertaken as part of a broad response to the large-scale poisoning of *Gyps* vultures in south Asia. It shows that birds from the Caucasus travel to Iran, and that Iran may be important in conservation efforts. We fitted four Eurasian Griffon Vultures, *Gyps fulvus* with satellite-received transmitters (PTTs) in Georgia and Armenia in 2004 and 2005. Three birds left the areas where they were fitted with tags in autumn and headed south into the mountainous areas of Iran. One vulture was found dead in an area of paddyfields near the Caspian Sea. One vulture travelled to central Saudi Arabia in winter, and then returned to the colony where it had been fitted with the transmitter. A Cinereous Vulture, *Aegypius monachus* that we tracked also wintered in central Saudi Arabia and moved through Iran from and to a summertime range in the Caucasus region.

Keywords: Tracking, satellite, transmitter, *Gyps fulvus*, *Aegypius monachus* Griffon Vulture, Caucasus, Iran.

ردیابي کرکس‌ها از قفقاز در ایران

چکیده: این بررسي به دنبال وقوع موارد بسیار زیادي از مسمومیت زیـاد کـرکس‌هـا (*Gyps*) در جنـوب آسـیا انجـام گردید. فرستنده‌هاي ماهواره‌اي بر روي چهار کرکس (دال معمولي) (*Gyps fulus*) در سـال‌هـاي ۲۰۰۴ و ۲۰۰۵ در کشورهاي گرجستان و ارمنستان نصب شدند. سه کرکس نواحي محل نصب فرستنده را در پاییز تـرك کردنـد و از درون نواحي کوهستاني ایران به سمت جنوب عبور کردند. یك کرکس از چهار کرکس داراي فرستنده، به صورت مرده در یك ناحیه شالیزاري نزدیك سواحل خزر پیدا شد. یك کرکس نیز در زمستان به سمت عربستان سعودي سفر کرد و به کلوني خود در جایي که فرستنده نصب شده بود، برگشت. یك کرکس سیاه (*Aegypius monachus*) که زمستان‌گذراني آن در مرکز عربستان سعودي ردیابي شده بود، از طریق ایران به دامنه تابستان‌گذراني خود در قفقاز برگشـته بـود. نتـایج این بررسي نشان مي‌دهد که پرندگان از قفقاز به ایران سفر مي‌کنند، بنابراین ایران مي‌تواند مکان مهمي جهت حفاظـت از کرکس‌ها باشد.

INTRODUCTION

India has lost over 95% of its *Gyps* vultures due to poisoning by Diclofenac, a non-steroid, anti-inflammatory drug (Green *et al.* 2004). The main species affected are Oriental White-backed Vulture *Gyps bengalensis*, Long-billed Vulture *G. indicus*, and Slender-billed Vulture *G. tenuirostris*. Declines are being seen also in Nepal, Tibet, and Pakistan, and are probably occurring across the breeding ranges of these species. The loss of so many scavengers may have an effect on human health because carcasses remain longer and it appears that the feral dog population is increasing as a result of the loss.

Also, there are cultural consequences. For example, Zoroastrians rely on vultures to remove their dead, and now corpses brought to their 'city of the dead' are not being eaten. Recent work suggests that probably all *Gyps* species are vulnerable to

Diclofenac poisoning (R. Cuthbert, pers. comm.).

A very broad response to the vulture crisis is underway, including many cooperating individuals and organizations across the world. A summary of the current situation of the decline and the response can be seen on:http://www.vulturerescue.org/.

A component of this response has been to look at the likely threat to *Gyps* vultures in the regions surrounding the southern Asian areas where declines have been most notable.

In the Caucasus we have enhanced and extended Eurasian Griffon, *G. fulvus* colony monitoring and have fitted some vultures with satellite-received radio transmitters (PTTs). The primary aim of fitting the transmitters was to document movement of the vultures, as it was feared that they might move into areas where Diclofenac was being used. This work in the Caucasus has been a cooperative effort between local (the Georgia Center for Conservation of Wildlife, the Armenian Society for the Protection of Birds and the Azerbaijan Ornithological Society) and UK-based organizations (Natural Research and the RSPB). The background to our work can be obtained from Gavashelishvili (2003), Gavashelishvili & McGrady (2002, 2006, in press), Gavashelishvili *et al.* (in press a, b) and Katzner *et al.* (2004).

We fitted vultures in the Caucasus with PTTs and followed their movements. A large proportion of these birds moved into or through Iran. This paper reports general findings of the radio tracking work so far, and illustrates that Griffon and other vultures that breed in other countries come to and pass through Iran. Therefore, Iran is important to vultures on a regional scale. Along with its own breeding populations, movements by vultures into and through Iran should be taken into consideration when applying the large scale measures needed to conserve vultures. We highlight in particular the movement of a Griffon Vulture, whose PTT was found in northern Iran.

METHODS

Working in the Caucasus in 2004 and 2005, we fitted three nestling and one subadult Eurasian Griffon Vultures with PTTs. Nestlings were removed from their nests so that PTTs could be fitted safely. The subadult was captured using leg-hold traps placed around a carcass (Pendleton *et al.* 1987). PTTs weighed about 80 g (http://www.northstarst.com), were fitted as backpacks using Teflon ribbon and a degradable link that allowed the tag to fall free from the bird after some time (Dunstan 1972) and programmed for a duty cycle that would nominally function over more than 3 years. The transmitters were tracked via the Argos system, which is not a GPS system. Each transmitter is identified by a unique number. We report on transmitter ID numbers: 29563, 29565 and 29677. The transmitters incorporate movement and temperature sensors, so we sometimes had insight into whether a bird was dead or the tag had fallen from the bird. Each location estimated by the system comes with a measure of accuracy. The most precise (best quality) locations have a nominal accuracy of <150 m, but it is generally accepted that data from animals tracked by the Argos system are best applied to large-scale movements; overall accuracy is more of the order of 1-5 km.

RESULTS

Figure 1 shows the locations of four vultures that we tracked via satellite, as part of the Darwin Initiative funded cooperative research. The vulture carrying the tag 29563 was hatched near Kazbegi, Georgia, and was last heard on 18 October 2004, still in the Greater Caucasus five months after fitting. The vulture carrying tag 29677 was from a colony in northern Armenia, and was last heard from on 17 October 2005 on

the Turkey-Iran border NW of Uromiyeh, three months after fitting.

The juvenile vulture with satellite tag 29565 was from a colony in northern Georgia, near Kazbegi. It remained in the Greater Caucasus until at least 18 October 2004. It then moved SE and was located in SE Azerbaijan in mid-November. It probably crossed into Iran on about 15 November, where it was first located in a mountainous steppe area near the city of Zanjan (Zanjan province). Two subsequent locations were in Gilan province around Emamzadeh-Hashem and Lasht-e-Nesha, near the city of Rasht, suggesting that the bird flew along the Sefidrud River, which carves a long valley through the Alborz Mountains. Afterwards, many locations were from Rudsar (a flat area with paddyfields in eastern Gilan province), from Ramsar to Tonekabon (a narrow strip of land between the Caspian Sea and the mountains (both areas being characterized by paddyfields in Mazandaran province) and a single point near Chalous. This bird was found dead by a shepherd and the transmitter was collected and returned to the Mazandaran Provincial Office of the Department of the Environment (DoE).

In addition, we tracked a subadult Griffon Vulture in 2004, PTT ID 47806 (Figure 2). It was fitted with a tag in May 2004 at a colony near Kazbegi in the Greater Caucasus in northern Georgia. In late November 2004 this bird headed south and crossed northwestern Iran on its way to wintering grounds in north central Saudi Arabia, arriving on about 23 December. On 18 January 2005 this bird started to head north, crossing Iraq and passing again through northwestern Iran and arriving back again at the colony where it was trapped on 3 February. It was last heard in the vicinity of the colony on 8 August 2005.

DISCUSSION

Our limited data show that Griffon Vultures from the Caucasus make large movements, and there were some common characteristics of these movements: three out of four birds moved south toward or into Iran, and these all occurred in the autumn. One bird was not seen to move south, but we stopped receiving transmissions at about the time we would have expected it to move.

We do not know if western Iran-eastern Turkey is part of a migration corridor for vultures, but two of the Griffon Vultures that we tracked flew south, and one returned to the north through this area. We also tracked via satellite a juvenile Cinereous Vulture *Aegypius monachus* in 2004 from southeastern Georgia. It moved south in the autumn (November) through western Iran and near the city of Tabriz. Like the subadult Griffon we tracked, it spent its winter in central Saudi Arabia (late January – mid March) and headed north, using in spring much the same route it used in autumn. It was last heard on 17 July 2005 near Astrakhan in southern Russia (Gavashelishvili 2005). Additionally, a *G. fulvus* fitted with a wing tag (Figure 3) in Odzun, northeastern Armenia on 5 August 2004 was found dead at 33°45.3'N, 50°42.2'E, Siklefti and Ab-barik core zone in Mouteh Wildlife refuge, Isfahan in January 2005.

Griffon Vultures are probably resident in at least 17 locations in Iran and are visitors mostly to hilly or mountainous areas in many provinces (Evans 1994), and mostly in the west, but extending from the northern border with Armenia and Azerbaijan to Baluchistan in the south. Although the vulture that was found dead near the Caspian Sea was in an area and in habitat not normally associated with Griffons, it was not very far, in terms of vulture ranging, from areas that do hold breeding Griffons (*e.g.* Alborz Mountains, Arasbaran, Golestan) (Scott *et al.* 1975, Evans 1994, Mansoori 2001).

Figure1. Movements of three nestling Eurasian Griffon vultures fitted with PTTs in the Caucasus in 2004-2005. Numbers identify the satellite tag.

The movement of the other vultures in western Iran took them through or along the Zagros Mountains, where vultures also reside (*e.g.* Oshtrankuh and Golestan) (Scott *et al.* 1975, Evans 1994, Mansoori 2001).

None of the birds flew to areas where Diclofenac is known to have caused poisonings in vultures, but central Saudi Arabia was used in the winter by one Griffon and one Cinereous Vulture. Central Saudi Arabia holds resident Griffons (Evans 1994). We do not know the extent to which Diclofenac is used for domestic animals in any of the countries through which passed the vultures that we tracked.

The data we present highlight the need for more information on resident vultures in Iran and Iran's importance as a transit country (and perhaps winter destination) for vultures from farther north in the Caucasus. The only information that we have on Griffon Vulture status and distribution in Iran comes from Scott *et al.* (1975), Evans (1994), and Monsoori (2001). This lack of information, particularly for Eurasian Griffon, may undermine their conservation. Although we are focusing to some extent on Griffon Vultures because of the conservation challenges they face, we are also interested in the other vultures of the region: Cinereous *A. monachus*, Bearded *Gypaetus barbatus* and Egyptian *Neophron percnopterus* Vultures.

The transmitter collected in northern Iran has been returned to us and we aim to renew the battery and put it out on another griffon in the region, perhaps in Iran. Not only are we monitoring and tracking via satellite vultures from the Caucasus, but we are also fitting them with wing tags and sightings of these in Iran are possible (Figure 4).

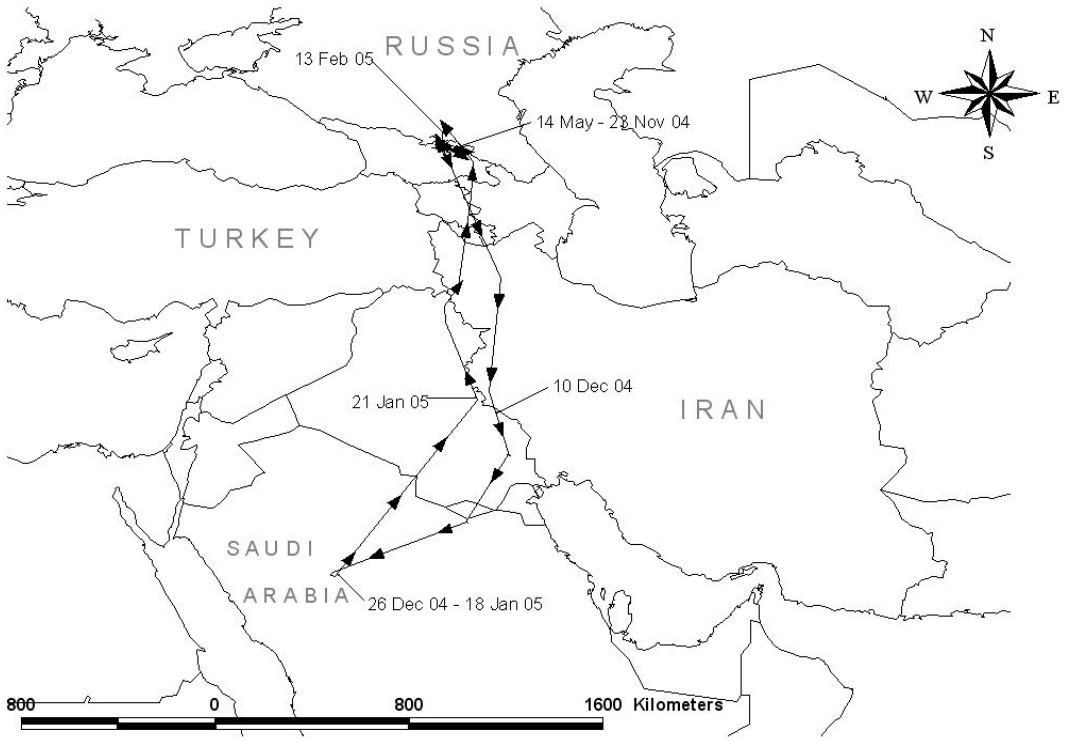

Figure 2. Movements of a subadult Griffon Vulture tagged (ID 47806) at a colony in northern Georgia in May 2004.

Figure 3. A wing tag found on a dead *Gyps fulvus* in Mouteh Wildlife Refuge, Isfahan in January 2005.

Figure 4. Griffon vulture fitted with wing tag and PTT in 2004 in Kazbegi, Georgia being held by A. Gavashelishvili (Photo by T. Katzner).

Individuals or organizations interested in cooperating with us or informing us about sightings of wing tagged vultures should visit our web sites (www.natural-research.org and www.gccw.org) or contact us directly using our mail or e-mail addresses.

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REFERENCES

Dunstan, T.C. 1972. A harness technique for radiotagging raptorial birds. *Inland Bird Banding News* **44:** 4-8.

Evans, M.I. (ed.) 1994. *Important Bird Areas in the Middle East.* BirdLife Conservation Series No. 2. BirdLife International, Cambridge, U.K. 410 pp.

Gavashelishvili, L. 2005. *Vultures of Georgia and the Caucasus.* GCCW and Buneba Print Publishing. Tbilisi. 96 Pp.

Gavashelishvili, A. & McGrady, M.J. 2002. Preliminary results of a predictive model for breeding site selection by the bearded vulture (*Gypaetus barbatus*) in the Caucasus. *In:* Sakoulis, A., Probonas, M., & Xirouchakis, S. (Eds.). *Proceedings of the 4th Bearded Vulture Workshop, Natural History Museum of Crete, University of Crete, Greece.* Pp. 87-94.

Gavashelishvili, A. & McGrady, M. 2003. Vultures in Georgia. *In:* Katzner, T. & Parry-Jones, J. (Eds.). *The Workshop - Conservation of Gyps vultures in Asia. North American Ornithological Conference 24-28 September 2002, New Orleans, Louisiana, USA*. pp. 18-19.

Gavashelishvili, A. & McGrady, M.J. 2006. Some results of research on Cinereous vulture *Aegypius monachus* in Georgia. *Vulture News* **54:** 4-10.

Gavashelishvili, A. & McGrady, M.J. (in press). GIS-based modelling of vulture response to carcass appearance in the Caucasus. *Journal of Zoology* (Accepted June 2005)

Gavashelishvili, A., McGrady, M.J. & Javakhishvili, Z. (in press a). Breeding site selection by bearded vulture (G*ypaetus barbatus*) and Eurasian griffon (*Gyps fulvus*) in the Caucasus. *Animal Conservation* (Accepted August 2005).

Gavashelishvili, A., McGrady, M.J. & Javakhishvili, Z. (in press b). Planning the conservation of the breeding population of cinereous vultures (*Aegypius monachus*) in the Republic of Georgia. *Oryx* **40(1):** 76-83.

Green, R.E., Newton, I., Shultz, S., Cunningham, A.A., Gilbert, G., Pain, D.J. & Prakash, V. 2004. Diclofenac poisoning as a cause of vulture population declines across the Indian subcontinent. *Journal of Applied Ecology* **41:** 793-800.

Katzner, T., Gavashelishvili, A., Skylarenko, S. McGrady, M., Shergalin, J. & Bildstein, K. 2004. Population and conservation status of griffon vultures in the former Soviet Union. *In:* B.U. Meyburg & Chancellor, R.D. (Eds.) *Raptors Worldwide. World Working Group on Birds of Prey, MME-Birdlife Hungary.* Pp. 235-240.

Mansoori, J. 2001. *A field guide to the birds of Iran*. Zehn-aviz Publishing, Tehran. 490 pp. [In Persian]

Pendleton, B., Giron, A., Millsap, B.A., Cline, K.W. & Bird, D.M. (eds.) 1987. *Raptor management techniques manual.* National Wildlife Federation, Washington, D.C.

Scott, D.A., Moravvej Hamedani, H. & Adhami Mirhoseini, A. 1975. *Birds of Iran*. Department of the Environment (DoE), Teharan. 410 pp. [In Persian]