

# Greater Spotted Eagle

WINTERING IN ZAMBIA



**Left** *The juvenile Greater Spotted Eagle, photographed while wintering in India.*

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The distribution range of the Greater Spotted Eagle *Aquila clanga*, from West to east, extends from East Poland across to Ussuriland and Manchuria on the Pacific Ocean, in easternmost Russia and China. From north to south it runs from the southern edge of the taiga to the rim of the steppe zone. Once clearly much more common, the species is today very rare throughout its range.

As well as being the rarest, the Greater Spotted Eagle is also the least studied of all European eagle species. As part of a long-term programme we are endeavouring to raise the level of knowledge and increase the protection of this highly endangered species, by using the most advanced technology, such as satellite tracking, to investigate its migration and overwintering habits.

Until now, very little has been known about the geographical location of this species' wintering grounds in Africa. Ringing provides no clues because of the small number of birds ringed and the minimal recovery rate. According to the relevant field guides, it is a Palearctic winter migrant to Africa, chiefly north-east Africa, and is unknown south of the Equator. Formerly recorded as being quite common in Eritrea, its recent status is obscure. Accurate records are scarce and many are doubtful, as the species is often mistaken for a Steppe, Tawny or Lesser Spotted Eagle.

With the help of satellite telemetry, by means of a small transmitter harnessed to the bird and tracked by way of two NASA satellites, we succeeded for the first time in proving that a Greater Spotted Eagle spent more than two months in Zambia, far further south than its previously known or presumed wintering grounds. ▷



On 18 and 20 July 1996 a pair of Greater Spotted Eagles were successfully trapped in our study area in the Biebrza National Park in north-east Poland in order to fit them with satellite transmitters. We used the Dho-gaza method, whereby the eagle attacks a live eagle owl tethered to a perch in front of a mistnet and becomes entangled in the net. It causes no harm to the bird and we have already caught many different species of eagles in this way.

To our great surprise, the male had typical juvenile plumage over a large area of its rump, showing the whitish to yellow spots which are clearly larger and more numerous in this species than in the young Lesser Spotted Eagle *Aquila pomarina*. Each spot measured approximately 30 x 15 millimetres and, apart from other field marks, these identified it beyond any doubt as a Greater Spotted Eagle. To our knowledge there is no record in the literature of a breeding Greater Spotted Eagle, or any other eagle species, showing partial juvenile plumage. Cases have been known in a few other eagle species of birds with wholly immature plumage breeding successfully. This has occurred most frequently among Imperial Eagles of both species (*A. heliaca* and *A. adalberti*). The rest of the plumage was normal and corresponded to typical adult coloration.

**Above** *The Greater Spotted Eagle which was tracked, by means of a satellite transmitter, from Poland to Zambia.*

**Opposite** *The eyrie and breeding habitat of the Greater Spotted Eagle in Poland.*

Of the many measurements taken, only a few are given here: weight 1 550 grams with empty crop; wing length 51.8 centimetres; wingspan 167.5 centimetres.

The irises of both male and female were dark brown in colour. The colour of the iris is the most positive indicator when distinguishing between adult Lesser and Greater Spotted Eagles, since the species overlap to some extent in body size and colour of the plumage. This distinguishing mark is, however, little known and scarcely referred to in the literature. The adult Lesser Spotted Eagle has an amber-coloured iris. From a short distance or with the help of strong binoculars, perched adults of both species can be positively identified using this field mark.

This, however, does not help in the identification of young individuals of both species, since the young Lesser Spotted Eagle also has a dark iris. At what age the change in colour occurs, and how long this takes, remains unknown. The young of both species are, however, generally easy to distinguish by their plumage.

On 20 July the eagles' nest contained one almost fully fledged young and a dead half-grown nestling. Both parents, each fitted with a satellite transmitter, could now be tracked to their wintering grounds and back to their nesting territory. ▷





*A comparison of the adult Greater Spotted Eagle (left) with the adult Lesser Spotted Eagle (right) clearly shows the difference in eye colour. Since the species overlap to some degree in body size and plumage coloration, the difference in eye colour is the most reliable indicator when distinguishing between them.*

The young bird, also fitted with a transmitter, left the nest territory a few days after the female but several days before the male, and was tracked as far as Albania. The female spent the Winter in Chad but the male once again surprised us. It flew to Zambia, 13 degrees of latitude farther south than a Greater Spotted Eagle had ever been recorded before. Previously, the southernmost observations of Greater Spotted Eagle were of single birds in Uganda and Kenya. There was not a single record from Tanzania.

After crossing Uganda and the Western part of Tanzania in a southerly direction, the male flew over the Tanzania/Zambia border on 17 or 18 December 1996, and spent from 19 to 23 December in the North Luangwa National Park. It then flew on to the South Luangwa National Park, which it reached on 28 December, having thus travelled 9270 kilometres from its breeding site in Poland. It stayed for two months in the north-east part of the park, about 14 kilometres West of Mukasanga and 28 kilometres north of Kakumbi. The most exact location was received on 9 January 1997, 12.52.0° S / 31.51.21° E. The area is mixed woodland, predominantly Mopane and Terminalia.

We were in permanent e-mail contact with observers in the South Luangwa National Park and transmitted to them the co-ordinates received by the Argos satellite system. Nick

Aslin and Mike Bailey, of the Kapani Safari Lodge, managed to get within five kilometres of the eagle but were unable to proceed further. The area was very wet underfoot and much of their progress was impeded by flooded dambos (drainage areas) which were difficult to bypass.

Up to this stage, the eagle had been located by satellite more than 525 times, with 114 of these during the 1996/97 overwintering season in Zambia. Although this species is closely related to the Lesser Spotted Eagle, the overwintering behaviour is fundamentally different. To date, the Lesser Spotted Eagles which we have fitted with satellite transmitters cover ever-widening distances of hundreds, even thousands of kilometres wandering over their wintering grounds in Africa south of the 10th latitude. In contrast, the Greater Spotted Eagle in Zambia made use of only a very small area, which reflects the behaviour of other members of the species which have been similarly studied.

On 9 March the eagle was located for the last time on its wintering grounds. On that day it left the South Luangwa National Park and by midday on 10 March it had already flown nearly 300 kilometres northwards. It spent the night of 10 March only three kilometres south of the border with Tanzania, that is, 414 kilometres distant from its winter quarters. The homeward journey proceeded ▷

quickly, with the bird covering up to 350 kilometres each day, and reaching Suez after three weeks. After arriving at its breeding site the eagle with its transmitter was sighted several times by observers.

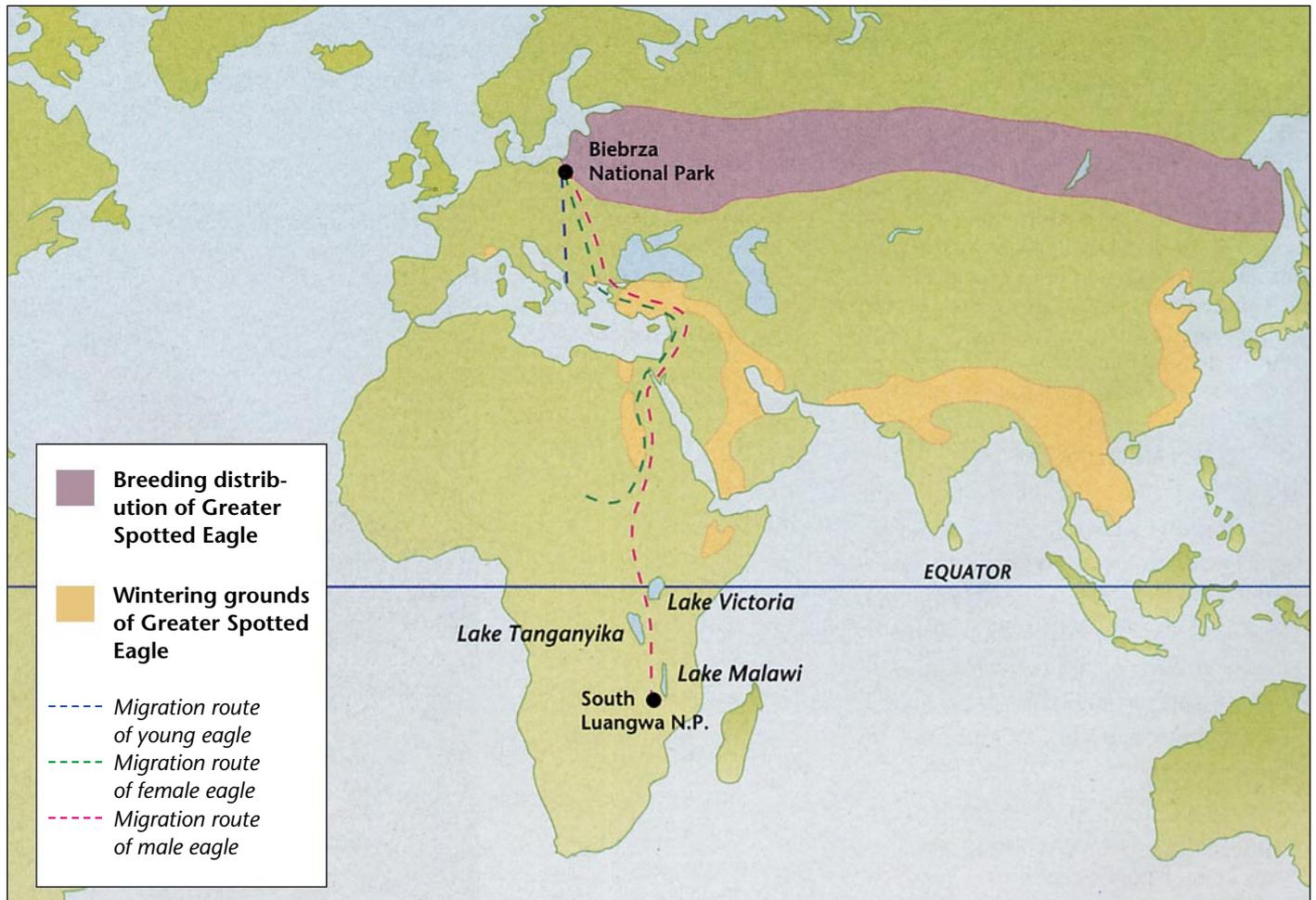
It appeared to have retained the juvenile plumage in the area over the rump. In the previous year during the fitting of the transmitter, the feathers in this region had not appeared worn. This was thus clearly not a question of the juvenile plumage not having moulted out, but of an area in which, due to some genetic defect, the juvenile feathering renewed itself after the moult. An interesting and surely most unusual anomaly.

We were naturally eager to know whether the eagle would again overwinter in Zambia. We had so far not succeeded in tracking a Greater Spotted Eagle over such a long timespan, but since this bird was equipped with a solar-powered transmitter which had a theoretical lifespan of several years, we were highly optimistic. And we were in luck. On 23 November 1997 the bird was once again located in Tanzania, only 20 kilometres north of the Zambian border and 54 kilometres east of Lake Tanganyika. This was only 480 kilometres distant from its wintering

grounds. On 3 December there followed a location of top quality from the old wintering site in South Luangwa National Park – less than 500 metres from the most precise location of the previous season, on 9 January 1997. The bird had thus returned exactly to its former winter quarters.

The question naturally arose as to whether this was the only eagle to migrate so far south or whether the species had in the past simply been overlooked. The fact that in the field even leading specialists often fail to distinguish the Greater Spotted Eagle from the Lesser Spotted Eagle, for which Zambia is a major wintering area, suggests that hitherto the species has been overlooked. In addition, it was living in highly inaccessible terrain and its chosen quarters, despite full knowledge of the coordinates, proved impossible to reach.

It is obvious that the number of birds wintering south of the Equator must be small, simply because the species is extremely rare and the eastern breeding population spends the Winter in Arabia and Asia. One adult bird from West Siberia tracked by us overwintered in the Yemen. Where the eventual migratory divide runs is unknown. It could be the Ural mountains. Only a few hundred pairs ▷





breed west of this mountain chain. Of these, perhaps 10 or 20 individuals may overwinter south of the Equator, so one can imagine how slight the chance is of sighting one of them, and then identifying it correctly. It is not surprising, therefore, that satellite telemetry is producing more and more faunistic revelations. □

#### ACKNOWLEDGEMENTS

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We are also grateful to the Poznan Zoo for providing a live eagle owl to use as a decoy in trapping the eagles.

*The surviving offspring of the bird that travelled to Zambia, in juvenile (above) and sub-adult (right) plumage.*

#### SATELLITE TELEMETRY SYMPOSIUM

The senior author of this article, Dr. Bernd-U. Meyburg, will be attending the 5th World Conference on Birds of Prey and Owls, to be held in Gauteng, South Africa in August this year, where he will convene a session on satellite telemetry: 'Satellite telemetry to study movements and habitat utilization of raptors'.

Many bird of prey species spend over half the year on migration and on their wintering grounds. The movements of raptors have been investigated for the past 100 years mainly by ringing and observations at bottleneck areas. In recent times, satellite telemetry has made possible the worldwide automatic location of birds over an extended period. Initially, because of the size and weight of the transmitters, only large bird species could be so equipped. Today, however, satellite transmitters have been so improved that it is now possible to track medium-sized raptors.

As the sensitivity of reception increases and transmitters are further improved, we may expect relatively soon to acquire many fresh data on aspects such as migration routes, resting and wintering areas, speed of migration, orientation, and dependence on weather conditions.

*For further details about the conference, contact the Raptor Conservation Group, PO Box 72334, Parkview 2122, South Africa; fax +27-11-6464631; e-mail nesh@global.co.za or WWGBP@aol.com*

