

Family break-up and emancipation of the young

It is relatively difficult to observe family ties after leaving the breeding site since the birds stray ever further from the nest towards the end of the emancipation of the young. Direct observation furnishes barely adequate information on the actual events.

This is equally valid for wing-marking and VHF telemetry. In these cases it is very difficult to judge whether the parents and young leave together or separately. Only ST can provide such information with precision. Thus, with this in view, we tracked a family of GSEs.

The two adults and their young were fitted with satellite transmitters in north-east Poland. Family ties broke up at the nest site with the departure of the female three or four days before the young bird. The male departed last on migration, a week after the female. The adults immediately set off towards the Bosphorus, whilst the young headed too far south, probably dying in Albania at the end of October after having flown 1,687 km.

Visits to neighbouring nests by Lesser Spotted Eagle

It has been generally accepted that nesting LSEs are strictly territorial and defend the area around their nests from intruders of the same species. It was thought that females looking after young remained, like the parents of other species, within a perimeter of only a few kilometers around the nest until autumn. ST studies and DNA analyses have proved to us that this commonly accepted hypothesis has been wrong. One female tracked by GPS transmitter on at least two occasions went over 50 km from the nest containing her young and also visited another active nest in the vicinity. It was equally proved that at least two "foreign" females visited her own nest, one with a nest 57 km away, and spent quite a while there. Visits to the pair by strange females was also confirmed by direct observation.

These flights during the period of rearing the young and at a considerable distance from the nest came as a great surprise and, as far as we know, have not so far been observed in other raptor species. It is even more astonishing considering that the birds paying these visits stayed quite a long time without the occupants raising any objection, for we saw no particular signs of aggression on their part.

Breeding success can be influenced by migration

The date of the adults' arrival at the nest site often seems to determine the ability to breed of numerous species of migratory birds of prey. This is particularly evident when both partners arrive too late. An overdue return may inhibit egg-laying, as we have been able to observe in recent years with LSE populations. The most striking example of this was in 1997, during which most German pairs arrived abnormally late and only a third of them managed to breed. The same phenomenon took place in 2007 in Latvia where only 7% of the pairs laid.

It was generally but erroneously assumed that this delayed return from wintering was caused by bad weather conditions encountered during the spring migration, such as led in storks, for example, to catastrophic reduction in breeding success.

Thanks to ST we were able to prove for the first time in 1997 that not only was the return to Europe overdue but also the departure in autumn 1996 had been delayed.

In 1997 two of the eagles began their spring migrations on 14 and 16 March respectively, comparatively late according to the results from previous studies.

The birds arrived two to three weeks late at their breeding sites. The eagle fitted with PTT 16865 crossed the Bosphorus on 17 April at a time when it would normally have reached its nest territory; it in fact arrived there on 4 May. On 12 April the bird with PTT 16867 was near Konya in Turkey, 430 km from the Bosphorus, whereas by this date many eagles have generally arrived north of Berlin.

This delay did not solely concern birds carrying transmitters; practically all eagles arrived with a similar delay in 1997, not only in Germany but also in Latvia. We presume that in many cases, as with the birds tracked by satellite, their departure on migration began too late the previous autumn and it was not the bad weather conditions during the spring migration which caused the nesting failure for many pairs in 1997.

GPS locations permit precise study of territory size and habitat use

Between 2004 and 2007 we were able to analyse territorial behaviour, home range sizes and habitat use by eight adult LSEs (six males and two females) fitted with GPS transmitters in Germany, several of which are still being tracked. The territory area of four males during one breeding season was a minimum of 32.78 km². The fifth male, which was tracked for two years, used territories of 93.78 km² in 2005 and 172.29 km² in 2006. The average size of these six territories was 72.29 km². The areas of activity of the two females differed greatly in size, although both bred successfully.

Now we can not only check our eagles' daily movements via the Internet during their migration period, we can also check on the location of birds who have returned to their breeding territories. Part of our current research is the evaluation of eagle habitat use by means of digital maps, air and satellite photographs, direct observation, etc. This means spending even more time on the computer and using increasingly complicated technology. Our eagle-watching techniques of the past, armed with binoculars and notebook, dodging the secret police in former East Germany, and the techniques we use today are worlds apart. Our eagle watching is no longer restricted by governmental regimes as we can now 'watch' our eagles migrate over many political boundaries around half of the world.

Photo by Christiane Meyburg



Bernd Meyburg with Steppe Eagle



Photo by Bernd-U. Meyburg

Eyrie of Eastern Imperial Eagle *Aquila heliaca* with adult and two offspring. We tracked a relatively large number of adult and juv. Imperial Eagles in Saudi Arabia, Hungary and Slovakia.



Photo by Bernd-U. Meyburg

Portrait of the first Imperial Eagle (an adult male) tracked with a GPS PTT.