Satellite Tracking of Raptors – How PTTs Changed Our Lives

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The first author had already become preoccupied with raptors for two of his schoolboy years when, in 1964, he came across a small book about the Lesser Spotted Eagle *Aquila pomarina* (LSE). Two aspects of the biology of this species immediately fascinated him. First, the so-called 'Cain and Abel struggle', also known as cainism, whereby the eldest chick ("Cain") kills its younger sibling ("Abel"), and secondly, the species' lengthy migration routes to southern Africa, the longest of any raptor breeding in Germany.

He was interested not only in how and why cainism occurred, but also the question as to whether this phenomenon could be used to protect this endangered species, by using human intervention to prevent the death of the younger sibling, thereby doubling the reproductive rate of the breeding pair.

Photo by Bernd-U. Meyburg

First eyrie of LSEs where two nestlings fledged due to our human intervention, Slovakia, August 1968.

The LSE was once widely distributed in Germany but, over the 20th Century, its German breeding range had shrunk to a small region in the northeast of the then German Democratic Republic (GDR or East Germany) to the north of Berlin. Although the nearest breeding site was only some 50 km away from my flat, it proved impossible to visit. As a resident of West Berlin, all attempts to arrange observation and studies of these birds were unsuccessful. The Cold War was at its height and West Berlin, surrounded by a Warsaw Pact country, was seen as a particularly bitter enemy of the Eastern Bloc.

Nevertheless the senior author did not give up and he was able to begin eagle observations and experiments in 1968 in Czechoslovakia instead. He managed to make contact with local raptor specialists and get the necessary permits to visit. He soon made friends with Jan Švehlik from Kosice, and his room in his parent's flat was quickly converted into a laboratory which we equipped with an incubator so we could artificially hatch the second-laid eggs and hand-rear the chicks.

Our big day came at the beginning of August that year. Two second-hatched chicks, which had been hand-reared in captivity and ringed, were returned to their nests in the wild and they later fledged with their siblings. We observed them for as long and as well as we could after they flew from the nest, wondering whether both young eagles would continue to be cared for by their parents. This proved quickly and happily to be the case. The next question was whether both would be fit enough to survive the long migration to Africa and back. This was an open question as satellite telemetry (ST) was unheard of at that time, but I already had this dream.

1989 signalled political change and the end of the GDR, an important and decisive moment in my life. During the final months of the GDR regime there were no more political restrictions to LSE research. Telemetry studies, up until then unthinkable, were suddenly possible. At almost the same time an old dream, research into the migration of the LSE to southern Africa using telemetry, came closer to being realized. Satellite transmitters (PTTs) had now become more and more miniaturized and finally reached a size and weight which enabled them to be fitted to this medium-sized eagle. In 1992 the great moment came. We fitted the first nestling with a transmitter weighing 50g.

In 1994 we were able to fit transmitters to the first four adult eagles in Germany and Slovakia. In one case it was possible to document the eagle's complete migration to Zambia, its wintering there, and its spring migration back to its breeding territory in Germany. Luck played a big part here as the transmitters were still battery powered. This meant that they had to be programmed so as to be active only for several hours every few days in order to extend the battery life to almost a year. This complete documentation of the annual route of a European migrant was the first of its kind.

As the population of the LSE in Germany continues to decline and the expansion of the EU increases the threat to the populations beyond the former territory of the GDR, through Poland and into the Baltic States and Slovakia, our previous experience of thwarting cainism came to the fore again. In 2004 two young LSEs flew from an eyrie located to the north of Berlin in Brandenburg. One of them had been captive-reared in a conservation station, before being returned to its nest to fledge. As a result, more second-born eaglets were also captive-reared in 2005 and 2006 and put back in their eyries with their siblings just before the latter flew from the nest.

Our old question still remained unanswered though. Were these rescued birds fit enough to migrate to southern Africa and back? In 2007 we got at least part of our answer. Two of Europe's biggest nature conservation organizations started to support the project making it possible to satellite track young LSEs on a larger scale. At the same time we also began to import young Abels from Latvia since not enough nests were found early enough in Germany to rescue the second-hatched chicks.

Photo by Bernd-U. Meyburg

Two chicks of the LSE shortly after hatching. The smaller one would normally disappear within a few days due to cainism.

In 2007 six young eagles were fitted with PTTs in three nests, each eyrie containing a German and a Latvian fledgling. The second big question arose: Would the young birds from Latvia take the same route as the German ones to arrive at the Bosphorus to continue along the Mediterranean coast to Africa?

In late September the birds left Germany. The Abels migrated at least as well as the Cains. Two of the three Latvian Abels migrated exactly on the same route as the German eagles. One of them was tracked as far as Zambia. Its German nest companion, however, decided to winter in southern Sudan,