

Time to Fledge: Tracking First Migration in Cuckoos

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The long-distance, solitary migration, crossing oceans and deserts, of many songbirds remains equally fascinating and mysterious. Travelling alone without guidance from experienced conspecifics: how do the young manage to locate their wintering grounds, how do they know their



Photo by Kasper Thorup

Cuckoo tagged with 5g Solar PTT.

direction and when to stop, are they able to compensate for wind displacement, and from a research perspective not least – do many fail and why? As migrants are showing widespread declines, understanding their biology and how their lifestyle fits into the seasonally changing environment has become even more urgent.

The migration routes of most migrants are roughly known based on ring recoveries, and the use of geolocators

has recently revolutionised our ability to map annual spatiotemporal schedules of even the smallest migrants. However, tracking the first migration remains extremely difficult: mortality is high and most disperse, making the later recovery of, for example, geolocators a chance event. Additionally, understanding their migration programme in detail requires knowing the fate of all individuals (also those that fail) and, in most cases, some experimental manipulations. This means that because most migrants are so small, the study of their orientation and navigation has mainly taken place in the laboratory simply because it has been impossible to extend it to free-flying birds.

Most solitary migrants are still too small to be satellite tracked. However, the common cuckoo is just large enough and, given its most special biology, it is well suited for studying the inborn migration programme that juveniles use. Being a nest parasite, the adults lay eggs in other species' nests, and the young cuckoo never sees its parents. They are long gone when the young cuckoo fledges after being raised by its foster parents. The young cuckoo is presumably left to travel to Africa all on its own.

Several aspects of migration in adult cuckoos have already been studied, documenting surprisingly similar routes in South Scandinavian cuckoos, flexible navigational response after displacement, and differences in mortality along different routes. While we tracked the migration patterns in adult cuckoos, we also initiated an effort to track the migrations of the young on their first migration through the MATCH project. Would they really travel on their own, and would they follow the same routes as those that we knew adults were using?



Tagged cuckoo in flight. Photo by Palle Sørensen

For the first pilot study, we aimed at tagging young cuckoos raised by reed warblers, but it soon became apparent that the young left the nests at a too young age for carrying the transmitters. This was solved by tagging cuckoos raised by redstarts in nest boxes. In this case, fledging can be controlled, ensuring that tagged birds would be of sufficient size and weight for carrying the transmitters. This was only possible because of collaboration with ongoing intensive nest-box studies involving the effects of cuckoo parasitism.

With tagged young cuckoos raised by redstarts in nest boxes in Finland, we were finally able to track one young all the way to the wintering grounds in Angola, where also many adults spend the winter! Interestingly, the young were travelling on a different route from the breeding grounds, first travelling southwest from Finland, involving extensive sea-crossings, to a prolonged stopover, and then changing route to travel straight south to the wintering site. It seemed clear that the young were not following experienced conspecifics.



Migration route of young cuckoo travelling from Finland to wintering grounds in Angola.

The main challenge continues to be the high tag loss. Simply from natural causes, we expect a high proportion of cuckoo chicks to get lost. The cuckoo lays a comparatively large number of eggs presumably to compensate for the difficulties in reaching independence when raised by foster parents. And migration is, for all species, a dangerous undertaking. To extend the study of the migration orientation programme in young cuckoos, we are trying to circumvent the initial

high loss associated with the transition to independence. Thus, we are now working in collaboration with the Biological Station Rybachy at the Courish Spit on the Baltic Coast. Here, cuckoos, including both young and adult, are caught on migration during routine ringing operations. The young caught here are already independent. Of course, we have to trade off this with the lack of knowledge of the exact breeding grounds and host species, but this allows us to track young cuckoo migration in

more detail and ideally, in addition to longer-time tracks revealing the ontogeny of migration, we shall be able to displace birds to study their inborn orientation system.