

# Should I stay or should I go? Dispersal behaviour in Collared Flycatchers

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Global environmental change is causing fast changes in climates and habitats worldwide. When conditions become too different, animals might no longer be able to live in places that used to be suitable. Some species might go extinct, but others cope with the changes by moving to areas where conditions are still suitable for them. If we want to protect species we need to understand why birds decide to move, what areas they are most likely to move to, and if they are successful in reproducing after moving to these new areas. In that way, we can identify the best ways to protect species, and have protected areas in the right places.

In my project, I wanted to understand this moving behaviour (dispersal) in Collared Flycatchers. The Collared Flycatchers is a migratory bird species that spends the winter in Africa and the summers here in Sweden on Gotland, as well as large parts of Eastern Europe and Asia. I wanted to understand whether the decision to disperse was actually a good choice. I did this by comparing how well the birds that dispersed compared to birds that did not disperse. I compared the number of eggs they laid, and the number of chicks that hatched from these eggs (hatchlings). I also compared if birds that dispersed and did not disperse started breeding at the same time. I expected that birds that disperse might start breeding later, because they have to first find a new breeding site before they can start breeding.

I tested all these questions by setting up an area of nestboxes on Gotland. I compared the birds that were breeding in these new boxes (so these were birds that dispersed to this new area) to birds in a nestbox area nearby that had already existed for many years (so in this area, I assumed that birds had not dispersed).

When looking at breeding success, I did not find any differences between the number of eggs and hatchlings between birds that dispersed and birds that did not. We can therefore conclude that dispersing is not a bad decision, breeding success did not get worse for birds that dispersed. Dispersing can therefore be a good strategy if local conditions are changing due to global change, because breeding success is still the same after dispersing. However, this study is only looking at one species, and is looking at this dispersal behaviour over a very small distance on one island. It is therefore not possible to give any general conclusions about what would happen with other species, especially when there are big changes in large areas.

When I looked at the results for the timing of breeding, I actually found that the birds that dispersed started breeding later, as I predicted. From the results from this project I cannot say if this could be a problem or not, but we know that there is a very narrow window of time in which there are a lot of insects in the forest. It is important that birds time their breeding during this window of time, because they need the high insect availability in order to feed their chicks. Breeding late might therefore mean that there could be fewer insects available, possibly resulting in less survival of the chicks. The survival of the chicks is not something we looked at in this project, so that would be useful to do in the future.

In general, it is important to emphasise that dispersal behaviour is very different between species, and that it will also differ between areas. If we want to use the knowledge about dispersal for protecting species, it is therefore very important to do detailed research on the specific species of interest.