

Reviewer assessment report for the PhD thesis of Tomáš Telenský

Title: Impact of Climate Change on Czech Bird Populations

Overall assessment of the Thesis

The main aim of the above mentioned PhD thesis can be summarized as an assessment of the effects of climate change (e.g. minimum winter temperatures, mean spring temperatures, actual to potential evapotranspiration, etc.) on the growth and trend of bird species populations in Czech Republic. In brief, as well explained by the candidate in the Introduction section of his Thesis, the two most prevalent hypotheses on long-distance migrant declines, related to changes in climate are:

- 1) The trophic mismatch on the breeding grounds, which is a result of raising spring temperatures. Birds shift their breeding phenology slower than their food,
- 2) The impact of climate, droughts in particular, in sub-Saharan Africa, their wintering grounds.

With this on mind, the author used data from repeated annual monitoring programmes in Czech Republic (provided by among others by the Czech Society for Ornithology), focusing the presence and abundance of breeding birds, to assess the trend of several species, considering mainly long distance migrators and mountain species.

The topic is very important in ecology, especially for conservation planning, because we know that climate change is one of the most important drivers of biodiversity decline in the world.

Among the most interesting results presented in the Thesis, I can highlight:

The results confirmed a strong effect of climate change on bird populations of mountain areas, based on Czech data from 1984 to 2011 (Giant Mountains). With increasing spring temperatures species moved upwards and birds breeding at higher altitudes had more negative trend.

The candidate found that the response of bird species to changes in winter temperatures was stronger in species feeding animals, probably due to changes in prey availability, strongly associated to winter temperatures. Overall, resident bird species responded negatively to lower winter temperatures.

The first paper presented, instead, is mainly a methodological paper, comparing the data quality from the regular Breeding Bird Monitoring programme and the Atlas mapping in Czech Republic. Methodological articles such these are essential in order to assess the cost-effectiveness of survey strategies used for research in the field.

Comments about the PhD candidate

The author had performed an adequate literature review, handling the main topics focused in the thesis, with adequate references. Furthermore, the PhD student focused with clarity on important concepts of population dynamic and conservation, as bird species trends, etc.

The methodology applied in the Thesis was a good combination between skills on statistics, remote sensing and conservation ecology. During the thesis work, the student demonstrated to be able to obtain a good level of understanding of the main metrics used to assess the bird population trends, often used to assess the community responses to climate change events. Additionally, the PhD candidate was able to handle data organization and data analyses process, as well as write scientific articles.

The main findings presented in this work of PhD thesis could be suitable as a tool for conservation planning.

Summarizing, my impressions about the candidate are all positive and somebody who, after some years handling with field work, data analyses and modelling, is able to recognize that “nature is always more complicated than expected” is certainly on the right way in ecology.

Finally, I would only suggest to the candidate to put his hands actively on the publications, because considering the interesting data used, and results obtained, he should be able to publish more papers as first author.

Final comments and questions

I am very satisfied with the PhD thesis presented by Tomáš Telenský and supervised by Dr. Jiri Reif, and then I recommend and give my full support in his effort to obtain the PhD at the Charles University in Prague.

I listed just few comments and questions, which I would be grateful to discuss with the author during the defence of his thesis.

Some technical comments on the Thesis text:

Introduction, page 9:

“Climate and it’s changes in time and space have been shaping bird populations since their evolution birth.”

I suggest correcting in:

"Climate and it's changes in time and space have been shaping bird populations evolution."

Question 1. Where was submitted the paper # IV (Impacts of climate change on long-distance 1 migrants: A demographic framework). Any update from the journal?

Question 2. Can you briefly explain the main reasons because the bird species inhabiting on high mountains are more susceptible to climate change than other bird species?

Question 3. How is possible to link the main results of this PhD thesis to the concept of ecological resilience of bird communities?

Question 4. Is the candidate interested (or already active) on testing the “transferability” of his primary results on other countries? Which countries? A more large spatial scale test? Please, explain.

Federico Morelli

Prague, 22 August 2018