



Universiteit Leiden



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### **Thesis evaluation of: Pavel Pipek: “How the Yellowhammer became a Kiwi: stories hatched at the field margins of bioacoustics and invasion ecology”**

The thesis consists of five brief introductory chapters on: thesis content overview, birdsong dialects, avian invasions, yellowhammer ecology, and thesis aims. After that the candidate presents the core of the thesis, which consists of three papers on geographic variation in birdsong across Europe (published in *J. Ornithol.*), in the Czech Republic (unpublished Citizen Science data), and a comparison between Great Britain and New Zealand (published in *Ecography* as first author). A fourth paper concerns a critical review of historical records of yellowhammer transports and releases from England to New Zealand (published in *NeoBiota* as first author). After brief general discussion and conclusions inserts, there is an additional commentary on the historical records of yellowhammer transports and releases from England to New Zealand (published in *Notornis* as first author) and another paper on geographic variation in birdsong in Switzerland (published in *Ornithologische Beobachter*).

Evaluation at a glance: The general introduction is brief but has a personal style which I can appreciate. The chapter on birdsong addresses the literature on dialects reasonably well, while the chapter on avian invasions provides a nice background to the concept of invasion stages and impact of alien species. The contribution on yellowhammer ecology is very short and the same is true for the thesis aims. Overall the booklet concerns a nice overview with interesting details and fascinating stories on geographic variation in the songs of this well-known bird species.

I really enjoyed reading the thesis and the yellow hammer dialect system is a great opportunity for research. Each of the chapters and appending commentary papers are a

useful contribution to the literature and have been published or soon will be published. As there are three thesis papers for which Pavel was not the first author, it was important for me to evaluate the quantity to know his contribution there. The respective first authors on these papers have declared:

Petrusková et al. 2015, chapter 6: *“The role of Pavel Pipek in the Czech citizen science project has been very important (he was not involved in the very beginning but provided an important support in subsequent years, and in data processing and paper writing). He has been an important source of data – online recordings, geo-referenced map points from previous work, and finally created all maps. Furthermore, he substantially contributed to writing of the original manuscript and its revision during the peer review.”*

Diblíková et al. unpublished, chapter 7: *“Pavel Pipek contributed significantly to the development and maintenance of the citizen-science project “Dialects of the Czech Yellowhammers”, analysed part of the recordings, created map figures and substantially contributed to manuscript writing. He contributed to discussions how to run the PCA on quantitative parameters of the “dialect syllables” in the Czech story (page 87), but did not run the analysis himself.”*

Ambühl et al. 2017, appendix 2: *“Pavel Pipek updated the “Yellowhammer Dialects” website to allow hosting of the Swiss project. He also collected some recordings from online repositories, analysed several recordings, created most of the figures, and took part in the writing and revision of the paper.”*

These statements, together with the first-authored papers included in the thesis, make me confident about a positive assessment on the quantity: the number of papers, embedded in an appropriate introductory and discussion text, is well-beyond what I believe is sufficient for a PhD-degree.

In terms of quality, a number of statements can be made. All papers are interesting and deserve publication in the peer-reviewed literature. However, the thesis is largely of a descriptive and administrative nature. There is little conceptual development, little ecology and there are no experimental approaches in the thesis. Also the amount of analytical parts is limited, reflected in only two graphs included in the thesis (on page 87 and page 143). I therefore believe the contribution to science is on the low end of what I have seen for a PhD-thesis and some parts are more journalistic than scientific. Citations to unpublished work do promise that there is cool stuff to come, but it is not in this thesis yet. That having said, there is obvious value in descriptive work and the mapping of geographic variation provides overview and insight that will serve future studies.

I also missed some depth in other ways. There were many opportunities to study or explore or even just discuss the link with habitat or speculate about playbacks that would test certain questions. As another example, on the map on page 93, there are repeated clusters of BhB1 and BIBh dialects in the distribution of yellow hammer songs in the Czech Republic. This suggests that a sequence shift is a plausible mechanism for the

emergence of a new dialect. I was surprised not to find any of this sort of speculation about possible mechanisms for dialect change or historic reconstructions of emerging or merging song variation. It would have been feasible to hypothesize about possibilities for dropping, adding and duplication of elements (X B and C) and evaluate what possibilities do occur and how often. I am almost certain that this would yield interesting new questions about why and when.

Overall, the thesis is well-written, but in the introductory chapters 1 to 5, there are many shortcomings in the English. It may for example be “Always not easy” (page 21), but I believe it would be better to say “not always easy”. In many places the problems concern the absence of “the” or “a”, which does not affect comprehension but does not come across as proper academic level. At other places, the problems are just sloppiness: e.g. Close-ended or closed-ended (page 27) or “worst” or “words” (page 47). Other problems concern incorrect verbs related to singular or plural subjects. None of these notes apply to the papers published or in preparation for publication. I therefore believe that some collaboration and feedback will solve the problem.

In conclusion, the thesis is a nice piece of work. Despite the lack of some depth and experimental and analytical extensions that I would have liked, there are plenty of interesting perspectives introduced and explained by the PhD-candidate. Especially the combination and integration of a biological and historical topic has been an interesting choice and opens up the way for many future studies. The quality of all chapters is acceptable for the peer-reviewed literature and the quantity is well-beyond what is needed for a PhD-degree. My overall assessment would therefore be a positive one. I have listed some questions below that I would like to hear the candidate about.

Best wishes,

A handwritten signature in black ink, appearing to read 'Hans Slabbekoorn', written over a horizontal line.

Hans Slabbekoorn

Questions:

1. The journal of Animal Behaviour has this statement in their guidelines to author: "Preference is given to studies that test explicit hypotheses rather than being purely descriptive." Could you explain what the benefits are of an experimental approach and highlight to what extent your descriptive approach still contributes to scientific progress and whether there are explicit tests in your thesis that have answered scientific research questions.
2. Explain the physical basis for frequency-dependent propagation of sound through the environment and address why the statement in the second sentence under Hypothesis 1 on page 30 is wrong.
3. Lachlan et al. 2013 published on The Progressive Loss of Syntactical Structure in Bird Song along an Island Colonization Chain in the prestigious journal of Current Biology. I did not find the study cited in the thesis, but could their findings in chaffinches also apply to the situation in New Zealand? And if not, what mechanistic explanation could be underlying the potential discrepancy?
4. How were the conclusions by Moulton and collaborators affected by the use of erroneous data and would qualitative or quantitative arguments, based on the latest views on colonization events in New Zealand, make their interpretation shift again among different hypotheses such as Propagule Pressure and the FDR-effect?
5. More philosophical (referring to a statement on page 7): Why do you need to be naïve to think out of the box? And how and where did you during your thesis work?