



**Oponent's review of Doctoral dissertation thesis by Bilal Kabeer
'Bird communities at an offshore island of Abu Dhabi, Sir Bani Yas, UAE'
Faculty of Tropical Agrosiences, Czech University of Life Sciences Prague**

The proposed PhD thesis focuses on the bird community and breeding biology of selected bird species on the Sir Bani Yas Island (SBYI), UAE. The study area serves as a wildlife reserve for protection of many migrating, wintering and breeding species and the detailed studies of ecological requirements and management effects on avian community in the area are highly desirable. The study is exceptional in its target to study management changes in originally species-poor desert habitats, which are positive for many birds. The general introduction clearly declares the importance of birds as sensitive environmental indicators useful for conservation purposes and justifies conservation message of the thesis.

The title of dissertation suggests a focus on the bird community as a whole. However, only the first of three studies is focused on the community, while the remaining three ones concern three selected bird species. Therefore, I would welcome (in Aims, Chapter 2) to better point out and explain why just these three species were chosen. Otherwise, it could suggest that (random) species with suitable data were included in the thesis. Therefore, I am asking how the three selected species can be considered as models in any (conservational) respects (which can be useful for the follow-up studies)?

The review of literature (Chapter 3) is logically structured and has concise paragraphs, taking into account all key and relevant topics of conservation science. It is clear that the author is familiar with the actual findings in conservation science and their applications in protection of birds and their habitats. On the other hand, this broad introduction is sometimes too general without targeting the specific conditions of the studied environment. At least, it would certainly be worthwhile to highlight specific conditions of nature conservation and impacts of habitat change in the Arabian desert ecosystem. Furthermore, I think that there is also a lack of considerations of possible risks arising from increased competition among native and introduced (newly settled) species, which might negatively influence native desert populations.

The core of the thesis are three published papers and one submitted manuscript. In all of them, the candidate is the first author. The key contribution of main author is clearly declared and confirmed by signatures of all co-authors. All four studies are embedded in a broader biological context with a clear conservation message.

The first study (Chapter 4) is a submitted manuscript and addresses the entire bird community in the studied ecosystem. The work is prepared carefully and with the author's enthusiasm. The study offers a concise description of the community over time and in relation to habitats, but I believe that the data have a bit greater potential to better show how the diversity of birds inhabiting artificial and natural habitats differ. It would be useful to distinguish which species remain resident throughout the year, which stay only temporarily and which breed here. The breeding species best reflect suitability of various habitats and their different status can lead to different management recommendations. This more detailed insight can be done to highlight e.g. the importance of certain habitats and management at a certain time of year. Also, some minor adjustments are needed before final publication. For example, (1) equitability (described



in Data analysis) has its own formula derived from Shannon index but this is not mentioned in the ms; (2) Figure 2 does not list names of all species; (3) You should better describe and interpret the results in Table 3, as I believe that most readers will not understand the presented results; (4) Figure 7 must be accompanied by an explanation, otherwise it is completely incomprehensible.

Chapter 5 is dedicated to the Saunders's Tern and provides summary data on breeding behavior and threatening factors. However, the parts of the work are not sufficiently interconnected in discussion to clarify why, for example, egg measurements were needed in this study, or what important information was provided by measuring adult behavior at the nest to clearly show the risks for breeding terns. It is true that the obtained dataset does not allow very detailed analysis, so it is certainly appropriate to recommend further research on this species. The subsequent study would compare the results with the currently published work by M. Almalki in Saudi Journal of Biological Sciences (Dec 2020), showing high nest predation rate in this species elsewhere. In addition, there are some ambiguities that I do not understand. First, I don't understand the terms 'non-social pairs' (p. 45) and 'incubation routine' (p. 48). Second, how did you calculate the correlation between the hatching success (binary data?) and distance from the sea, service road, and neighboring nests (p. 48)? Third, how is it possible that brooding of chicks strongly prevails during the day, although nights are definitely colder? It would be useful to attach nice graphs showing the daily dynamics of behavior to better illustrate the distribution of daily activities.

Chapter 6 is aimed at a smaller avian predator, the Common Kestrel. The kestrel population appears to be increasing (probably as a response on growing supply of prey?) and may be important in the future for maintaining balance in the regulation of small mammals, which threaten, for example, songbird nests. It is certainly good that this work was initiated and I recommend continue in monitoring of the kestrel population in detail, alongside with habitat changes across the area. However, the summaries presented would merit more detailed elaboration to get more targeted conservation recommendations. For example, I would like to know if there is some kind of variation in use and hunting success of kestrels within the available pastures, which could indicate an uneven availability of food with regard to the nature and management of the pastures. Furthermore, it would be interesting to discuss whether the variability in clutch size and hatchling size relates to the supply of suitable pastures and/or food supply around the nests. What type of pasture is the best for kestrels? Is it the same pasture like for ungulates? It is not suggested in the study. The percentage of fledging success (p. 61) was calculated by dividing number of fledglings with the number of hatchlings. This proportional indicator can be dubious sometimes, as it shows the same value (0.5) for one fledgling from two hatchlings and for two fledglings from four hatchlings, whereas the feeding of two hatchlings is more demanding than just one hatchling. Why not to use the mere number of fledglings as an indicator of breeding success?

The fourth study (Chapter 7) focuses on breeding of the Osprey and use of artificial nest substrates by this species. Although this work is not based on a large dataset and does not come exclusively from the SBYI to which this dissertation is target, it clearly declares the importance of solid substrates to support the population of this species. It is therefore important for conservation purposes in the area of interest too.



The chapter Synthesis and Conclusions (Chapter 9) is clear and concise, with correct and not exaggerated conclusions. I am convinced that the thesis is a great springboard for further detailed studies of the SBYI birds and suggestions for other useful conservation measures to enhance and maintain high biodiversity in this unique location. In the subsequent studies, I recommend replacing direct observations with a self-collection technique (e.g., cameras or loggers) that allows continuous sampling of large datasets. Such data will increase the potential for more in-depth studies aimed at a detailed insight into the ecology of the species of interest.

Summary of the review: None of my comments (which are more like ideas for further research) question that the candidate Bilal Kabeer is an educated ecologist and conservationist who can look at detailed issues in a broader context. The submitted dissertation confirms that the author is a researcher with great potential for systematic work covering a large field of avian research and conservation science in (sub)tropics. He is experienced in fieldwork, data analysis and writing scientific papers. I highly recommend the submitted thesis to the defense and award its author a Ph.D. title at the Faculty of Tropical Agrosciences, Czech University of Life Sciences Prague.

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