



Opponent's review of the doctoral thesis written by Bikram Shrestha:

Implication of snow leopard distribution, population dynamics and landscape genetics, and prey preference for its conservation in Nepal

The thesis presented is based on 7 papers - two published in international journals with impact factor (PLOS ONE and Scientific Reports) and 5 as chapters in a monograph edited by his supervisor Kindlmann P. (ed.) Population dynamics of snow leopard, Springer, Dordrecht (in press). In all articles, the doctoral student is the first author. On the thesis pages 4-5, the supervisor confirms that his doctoral student contributed to all studies substantially. These pages are followed by English and Czech abstracts. Individual papers are linked by an introductory text on 10 pages. This introduction to the topic and student's own work is based on 61 references. This introductory text is divided into several chapters: Introduction, Main questions and hypotheses, Materials and methods, Results and discussion, Conclusions and References. The individual papers are presented in the appendix. I will focus on this introductory text written by the thesis author only.

Concerning the topic, the dissertation is focused on a scientifically supported protection of a very rare species, the snow leopard. The thesis deals with species distribution, population dynamics, genetics and landscape connectivity, food ecology and the man – leopard conflict in several areas of the Nepalese Himalayas during the years 2014-2016.

The individual studies are excellent, and are all the more valuable because the findings were obtained in a hard-to-reach environment of the high mountains on an almost mystical species, the snow leopard. The structure of the introductory connecting text more or less follows the individual studies, so that on the one hand the reader easily and quickly gets an overview of the studied issues. On the other hand, here the author was not able to release his creativity and connect the individual studies into a more synthetic text. However, with the attached articles, the dissertation is a very important comprehensive contribution to the species protection, which is also a typical umbrella species. Thanks to the thesis methodological extent, it can be considered a very important contribution to the scientific conservation on an international level.

I have a few specific questions and comments to the study:

- 1) Chapter “Main questions and hypotheses” (p. 13). Having called the chapter, it must be said that there are no hypotheses. How would some specific hypotheses sound?
- 2) The habitat suitability model is an important part for defining home ranges and then protected areas. In addition to suitable habitats, however, there are also unsuitable areas in the home range, for various reasons. How were these unsuitable areas (e.g. water area, open plains) evaluated in relation to the home range area? Is there any threshold level of the suitable habitat area for a leopard home range?
- 3) Does the leopard consume prey caught by another predator or even a carcass? The leopard takes a long journey for food. How is the food offer and food preference put together?



- 4) About 450 items of leopard occurrence were used. How was the distribution model verified?
- 5) Why are not the food offer and shelter potential the most important factors in this area, which are crucial for the occurrence in the most species.
- 6) Concerning the photo-trap placing. Density is usually expressed as number of individuals per area. Were the traps placed equally over the areas of potential occurrence or the traps were located into the places of the most probably leopard occurrence. Have you discovered any new animal species for the area?

I have formulated the above questions and remarks only to stimulate discussion, as it should be clearly stated that the colleague, Bikram Shrestha, submits a thesis, which includes very useful papers, with sophisticated methodology, already published or just published, which will certainly find a great response in professional but also laical public. Therefore, it can be stated that the submitted thesis clearly meets the requirements for a dissertation at the Institute of Environmental Studies at the Faculty of Science, Charles University. Therefore, I recommend this dissertation for the oral defense procedure.

In Č. Budějovice on May 15, 2021

prof. RNDr. F. Sedláček, CSc, PřF JU v ČB