

# **CHAPTER 08**

## **SUMMARY & CONCLUSION**

## SUMMARY AND CONCLUSION

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### Summary

- ❖ The recent advances in modelling techniques and field studies along with existing records help in improving conservation and management approaches for vulnerable and threatened species. This is significant and reliable because the prediction distribution model helps in finding the possibilities of new populations of threatened species in the new projected areas, where no scientific exploration reached so far. There are also possibilities of a relocation of the threatened species in newly predicted areas which may further help for promoting and strengthening its long-term conservation and habitat management.
- ❖ However considering the tough topography and inaccessible mountain terrains of the Eastern Himalaya, Sikkim and Khangchendzonga Biosphere Reserve, the recommendation will be given to the distribution patches predicted under 'very high potential' threshold category of MaxEnt model map in the current study may offer vital clues for more scientific explorations. This will help to assess whether the Himalayan Pheasants are merely vulnerable or rare to be at risk of becoming extinct in the near future in the wilderness of the Khangchendzonga Biosphere Reserve, Sikkim, Eastern Himalaya, or elsewhere. For evaluation of ecological status and conservation management of Himalayan Pheasants, the further recommendation will be given for field level systematic population explorations for Himalayan Pheasants as the global priority.

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- ❖ The study helps to weigh up the geometric constraints and the effect of environmental forces and in giving shape to the present structure and community composition of woody taxa of the forest of the Khangchendzonga Biosphere Reserve. The spatial and temporal distribution of the species of any forest is not only affecting the topography and anthropogenic activities but is equally contributed by the influence of climatic forces. Additionally, the relationship between the species richness pattern and climatic variables showed a declined trend of species richness to the decreasing temperature, humidity, and precipitation along the altitudinal gradient of the study area.
- ❖ Understanding the adaptability of species in different climatic conditions and in different community composition is needed for their conservation and habitat management stratagem. Furthermore, it was observed that the different pheasants used different types of the forests and habitat range which offer the diversity of Himalayan Pheasant in the study area. Therefore, the mountain forests offer different types of habitats in respect to climatic variables in the particular site of the forest which is very essential for the species that are found in very restricted habitat(s) and also harbours a rich gene pool of both the floral and faunal elements in the forests. Due to different habitats of the study area, the Himalayan Pheasants use a specific habitat range for sustaining their existence in the forests which is crucial in understanding their habitat composition in the forests for conservation perspectives.

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- ❖ The climate change is a more rapid process in the Himalayas which has had significantly affected the ecology pattern of the species. However, in the present study, the similar trends are highlighted; the habitat range of the Himalayan Pheasants is altering compared to the last 2 or 3 decades. The present study reports a new record of habitat range of Blood Pheasant up to 4900 m asl. The shifting of its habitat range towards higher altitude may be the signal of changes in their behavioural ecology in response to climate. The results indicated that the habitat of the Satyr Tragopan is under threat because they are found in a narrow stretch of habitat range from 2800 m -3400 m asl of ecotone of the cold temperate and subalpine regions in the Khangchendzonga Biosphere Reserve where community's composition is often changed.
- ❖ Therefore, conservation directives should focus on a long-term monitoring mechanism in the Himalayan landscape to allow interpretation of the changes in behavioural ecology pattern of the Himalayan pheasants. This should be related with the upward range shifts to extreme elevations and their associated habitat's composition in respect to climate change in order to strengthen the conservation management of Himalayan pheasants by involving policymakers, community people, government and non-governmental organizations.
- ❖ Based on three ensemble models (GCMs) of future climate projection of different scenarios under RCP-2050, the present study revealed that the most suitable habitats of the Himalayan Pheasants will be shifting towards higher altitude and latitude landscapes and would be lost in low altitude and latitude landscapes under the future climate scenarios RCP -2050. The trend of habitat

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shifting to higher altitude and latitude are gradually becoming more prominent and significant and the potential habitat of the Himalayan Pheasants will shrink with greenhouse gas intensification.

- ❖ Overall, the predicting climate-driven habitat shifting of the Himalayan Pheasants as a suitable model species will offer suitable guidelines for improving conservation and management approaches for the same and others associated climate sensitive vulnerable species of the Himalayas.
- ❖ The traditional knowledge and perception based information of particular species are the baseline data for conservation directives and biodiversity management. The traditional knowledge and perception based information along with the field data, literature, and the projection model will help to solve many queries related to biodiversity management and conservation strategies for any targeted species. Unfortunately, most of the traditional knowledge and perception based information on long time observations is vanishing due to the lack of proper documentation which is the vital clue for any finding related to biodiversity management and conservation strategies.

### **Conclusion**

The recent advances in modeling techniques, field studies and local perception along with existing records help in improving conservation and habitat management approaches for vulnerable and endemic species before they are forced to go through the door of extinction.

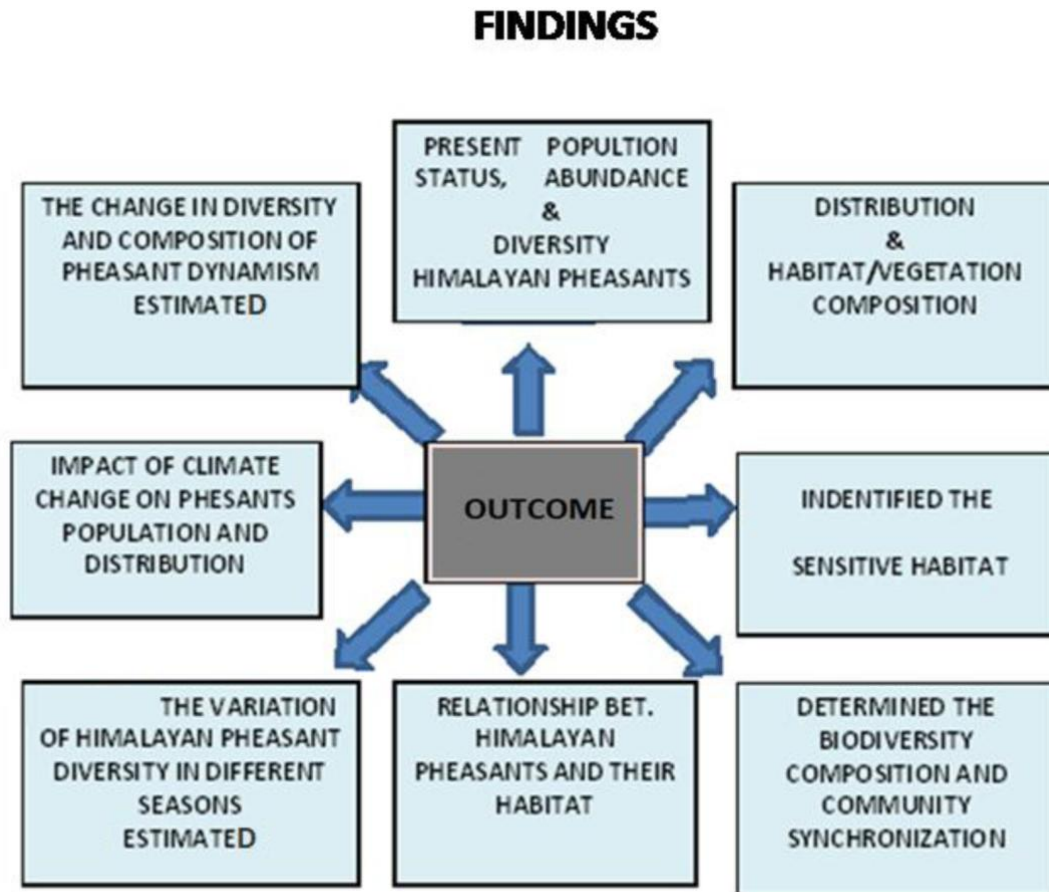


Plate 10: Pictorial representation of a flowchart of the outcome from research work.