Territory Mapping of the Avia-fauna of the Most Common and Characteristic Habitats of the Aggtelek Karst Region

Ph.D Thesis

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3. SCIENTIFIC RESULTS

3.1. TERRITORY MAPPING OF THE AVIFAUNA OF THE MOST COMMON AND CHARACTERISTIC HABITATS OF THE AGGTELEK-KARST REGION

- During a five years study using territorial mapping techniques I identified the dominant and subdominant species in three characteristic forest habitats and their population density trends.
- Using territorial mapping techniques, nesting bird communities in extrazonal beech forests and hornbeam-oak forests were characterized and compared to the data of other surveys. For the first time in Hungary I used the low error high precision territorial mapping to characterize bird communities of karst scrub-forests.
- I found that from the three studied forest habitats the karst scrub-forest has the highest divesity of nesting bird populations. I also found that the karst scrub-forest has a more solid structure of bird communities than the hornbeam-oak forest and extrazonal beech forest.
- Among the bird communities living in hornbeam-oak forest and extrazonal beech forest habitats similar structures were revealed through many years regarding the composition and domination of species, which are the result of unique weather conditions.
- After having analysed my records I could identify the best periods suitable for censusing bird communities. Accordingly I have shown that such a period can be identified only in the case of hornbeam-oak forests, while it is not possible to do in the other habitats.
- I analyzed the population density trends for 18 bird species in the past 5 years and compared the results with previous results from the country. I also examined the population density trends from a different approach of similar species groups. Nevertheless, I did not find any significant trends.
- In the case of 17 bird species I analyzed the most appropriate periods for censusing, which is of a great importance in carrying out national censuses of the studied species.

3.2. POPULATION TRENDS OF THE HUNGARIAN DIPPER POPULATION AND ITS CONSERVATIONAL QUESTIONS

- Based on a large data set I elaborated and succesfully tested an efficient sex identification method for the Dipper.
- I have followed the changes of the Hungarian Dipper population in the past 24 years and registered their disappearance. Meanwhile, by applying the method of ringing and recapture I found that the young Dippers are more mobile, while the old Dippers are more resident.
- I have characterized the breeding characteristics of the Hungarian Dipper population (eggs, second brood, nesting success). It has revealed the reason for the significantly smaller clutch size and nesting success.
- Using the data obtained by capture and recapture I have modelled and estimated the survival rate of the studied population. I have shown that the survival rate of Hungarian Dippers decreased drastically compared to earlier Hungarian data and to those from other countries
- I have shown that the reason of population decreases can be the decreasing amount of rainfall which directly caused the diminishing water output of the creeks.
- I have stated that the amount of water output is affected by both the rainfall and human activities (privatizing creeks, human water use, forestry).
- I have characterized the nutritional composition of the population during the winter, spring and summer, showing the importance of Trichoptera species during the breeding season.
- Based on the results of various analyses, I have shown that the Hungarian Dipper population is a satellite population, which makes it especially sensitive to climate changes. Besides it is connected to creeks of karst areas.
- The low reproductive success shown in my study and decreasing survival rates plays an important role in the population decrease. These are largely affected by the water output of creeks and direct human impacts as well.

3.3. POPULATION DYNAMICS OF THE RED-BACKED SHRIKE AND ITS CONSERVATIONAL QUESTIONS IN THE AGGTELEK-KARST REGION

- I have found that the breeding population of the Red-backed Shrike in the Aggtelek-karst region has a significantly high density.
- During the 8-years study the breeding success was not density dependent.

- Regarding the nest site preferences I have shown the preference of cultivated lands, which could be a result of the unfavorable structure of vegetation in uncultivated areas.
- I have shown that the size of the bushes providing shelter for the nests affects the breeding success suggesting a relation between nest-predation and bush size.
- I have pointed out that the breeding success is greatly affected by the type of land use. Breeding success is the highest on uncultivated lands, while among cultivated lands the success is the highest on plough-lands.
- During my survey I have found that the preservation of breeding populations of this species is depending on the existence of less intensificated (chemical-free, fertilizer-free, based on handwork), diversely cultivated agricultural areas with small fields and on the existence of large bushes.