



**Universitatea
Transilvania
din Braşov**

HABILITATION THESIS

SUMMARY

Title: Aspects of the distribution, population size, ecology and pathology of bird and mammal species of game and conservation interest

Domain: Forestry

Author: Assoc. Prof. dr. IONESCU Dan Traian

University: Transilvania of Braşov

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The habilitation thesis presents synthetically the scientific and professional achievements of Assoc. Prof. dr. Dan Traian Ionescu during the post-doctoral period, on topics related to the distribution, abundance and population's dynamic, ecology and pathology of wild birds and mammals, as well as the perspectives and directions in which expects to develop personal research and didactic activity, in line with the doctoral activity in the forest sciences.

The first chapter shows an introduction to the author's current scientific concerns, in the context of biodiversity conservation, by research direction. The chapter ends with the enumeration of the scientific works on the basis of which the habilitation thesis was developed.

The second chapter present a long-term study on the distribution, ecology and population trends of colonial waterbirds that breed in man-made wetlands, i.e. under special conditions. The eight identified colonial species used three major types of nest-building habitat: reed beds, flooded shrubs or trees, and artificial islands. From a statistical point of view, no effect was identified between substrate type (emerged and woody vegetation) and population trend for two colonial species from Rotbav. For the connection between the area of the colonies and the pairs number evolution, in the mixed colony from Dumbrăvița, the number of pairs increased significantly with the increase of the area occupied by the colony. Three species (*Nycticorax nycticorax*, *Ardea purpurea* and *Ardea alba*) held more than 1% of the national minimum or maximum breeding population, which emphasizes the importance of this location for colonial birds in the center of the country. For four of the species (*Ardea alba*, *Egretta garzetta*, *Nycticorax nycticorax* and *Ardeola ralloides*) a significant increase in the number of breeding pairs was calculated, and for none of them there was a negative population trend during the 10 years of monitoring.

Chapter three focuses on the distribution and abundance of forest indicator bird species, from forest habitats located in the central part of Romania (the Persian Mountains), formed by deciduous stands. Two systematic/ecological groups of indicator birds have been considered: owls and woodpeckers. Following the application of official standard methodologies, the two national species of *Strix* owls were identified: *S. aluco* and *S. uralensis* and seven species of woodpeckers. For two consecutive years, the distribution of species, the frequency of identification, the relationship with altitude and the type of stand, etc., were highlighted. Also, significant variations in the number of individuals of owls were found in the two years, including by sex. The densities obtained for the two owl species were similar to those calculated in the eastern part of the country (Moldova). In the case of woodpeckers, the

most abundant species was *Dendrocopos major*, then *Leiopicus medius*. It somewhat surprises the abundance of two of the most important species from a conservation point of view: *Dendrocopos leucotos* and *Picus canus*. All results indicate optimal forest habitats, at least for species of community interest and habitat indicators. For the first time at national level, the number of woodpeckers was assessed according to forest management. From a statistical point of view, no significant difference was found between the total number of woodpeckers in stands with active forest management (main cuttings, thinnings) and that in forests without intervention or with low-intensity cuttings. However, for most species, their number was higher in the second category.

The identification, distribution and activity of two carnivorous semi-aquatic mammal species, one of which is of community interest (Otter *Lutra lutra*) and the other non-native invasive (American mink *Neovison vison*) were discussed in the fourth chapter. Contributions are made to the knowledge of the distribution of the American mink in Romania, with the latest data from the center of the country, detailing the monitoring schemes with live capture traps. The daily and seasonal activity of the Otter was studied in three areas of the country, being the first large-scale study of its kind at the national level.

In the fifth chapter, the author approaches a topic of bird's ecology, namely the food of three species of protected birds of prey. For the Eagle Owl *Bubo bubo*, the trophic spectrum was analyzed at a historical level in two breeding areas in the center of the country. In the food selection parameters were used, such as: the mean prey weight (MPW), the diversity of prey species (through the Shannon and Wiener index) and uniformity. A great diversity of species was found (at least 62, of which birds predominate - 38 species, followed by mammals - 20 species). The most common prey was Rats (*Rattus spp.*), followed by Eurasian Hamsters (*Cricetus cricetus*). In the case of birds, the Eagle Owl used as food species from 5 ecological groups, predominating forest birds. Concerning the biomass, the most consistent prey was represented by pigeons. Mammals constituted over 80% of the prey biomass, and birds only 16%. In contrast to the Eagle Owl, the Short-eared Owl *Asio flammeus* whose winter food was analyzed in the south-east of the country, had a much poorer and homogeneous diet, consisting of only 4 species (3 mammals and a bird). The field Vole (*Microtus arvalis*) accounted for 96% of the prey. The food of the third species - the Peregrine Falcon *Falco peregrinus* was analyzed in a breeding area in the center of the country. it fed exclusively on birds, of which 16 were wild species. Prey size and weight were highly variable. Feral Pigeon was the main food, with over 40% of the total prey.

Chapter six addresses an interdisciplinary topic of great current interest: the role of wild mammals as a reservoir for some parasites and as vectors for the spread of parasites and related diseases. Thus, the parasitology of the Golden Jackal (*Canis aureus*), a mammal with an expanding range, was studied in terms of nematodes of the genus *Dirofilaria* and the exceptional mode of subcutaneous fixation of ticks. An extensive synoptic study was also carried out regarding the spread of tick species in Romania in relation to wild animal hosts, with an emphasis on mammal species of hunting interest. The role of the Red Fox as the host of at least 4 species of ticks, but also of other mammals, such as: the Golden Jackal, the Wild Boar and the Roe Deer, was thus highlighted.

The final part of the habilitation thesis presents synthetically the evolution and development plan of the author's career, which also includes the directions, respectively the main themes that will be addressed in the research, didactic and doctoral school plans.