

**Dr hab. Michał Gładalski**

**Department of Experimental Zoology and Evolutionary Biology**

In 2003 I began studying environment protection at the Faculty of Biology and Environmental Protection, University of Łódź. My scientific interests then were focused on science as a systematic enterprise that builds and organizes knowledge in the form of testable explanations and predictions about the Universe. I was actively taking part in scientific activity of Botanical Section of Biologists Scientific Society University of Łódź. During the third year of studies I took part in a series of lectures by professor Jerzy Bańbura "Outline of Ethology and Behavioural Ecology", and this experience focused all my interests on evolutionary biology and behavioural ecology and numerous literature devoted to these issues. My M.Sc. thesis "Comparative morphometric analysis between reed warbler *Acrocephalus scirpaceus* and marsh warbler *Acrocephalus palustris*" was completed at the University of Łódź in 2008 and then I was employed as an assistant teaching scientist at the Department of Experimental Zoology and Evolutionary Biology, Faculty of Biology and Environment Protection, University of Łódź. I started to study issues concerning secondary cavity nesting birds and I focused on two particular species: blue tits and great tits. During that time I collected materials for my PhD thesis "Variation in reproductive traits of the blue tit in an urban parkland and a forest", completed in 2013 at the University of Łódź.

The purpose of the study of the evolution of life history traits of organisms is to explain the diversity and complexity of life cycles. Most importantly, the large diversification between species, variation of traits within species and natural selection that has led to such variation in adaptive strategies are studied. This theory also allows us to understand the effect of natural selection, the key mechanism of the evolution of life history traits. Evolution of life histories is driven basically by the size-dependences of three parameters: the resource acquisition rate, metabolic rate and mortality risk. The combination of size-dependence of this three aspects produce a variety of locally optimal life histories. Resources invested in one aspect of life history can not be used in another aspect, and therefore some evolutionary trade-offs are formed. For example, resources can be invested directly into current reproduction or, alternatively, as an investment, to grow and maintain soma in good condition, allowing for delayed aging, thus future reproduction and long-term reproductive activity. Life history traits have a direct influence on the fitness of an organism. In hole-nesting birds, the timing of reproduction, clutch size, hatching success and fledgling success are considered to influence fitness. Avian breeding traits are potentially influenced by a cocktail of factors. Main factors

may be external abiotic (weather – ambient temperature, rain, solar activity and resource constrains like nesting sites, etc.), external biotic (parasitism, competition, etc.) or internal biotic (physiology, genetics, etc.). The external environment in which each bird operates is complex, with all the factors being combined in a network of relations. This network is not constant, but changes from year to year.

An essential component of the plastic reproductive strategy in tits is the date of first egg, which is an evolutionary consequence of the complex relationship between phenology, physical conditions and abundance of food. The timing of breeding season is clearly correlated with the ambient temperature before the onset of laying. Spring temperatures influence the development of vegetation, which stimulates the growth of arthropod populations, finally bringing about food abundance for insectivores.

**Diplomas and academic or artistic degrees, including their name, place, year of attainment, and title of doctoral thesis**

2008. M.Sc. in environmental biology, specialisation nature conservation, Department of Biodiversity Studies, Teacher Training and Bioeducation, Faculty of Biology and Environment Protection, University of Łódź, Poland

Title: „Comparative morphometric analysis of reed warbler *Acrocephalus scirpaceus* and marsh warbler *Acrocephalus palustris*” (supervisor: dr Zbigniew Wojciechowski)

2013. PhD in biological sciences, specialization: evolutionary biology and behavioural ecology, Department of Experimental Zoology and Evolutionary Biology, Faculty of Biology and Environment Protection, University of Łódź, Poland

Title: Variation in reproductive traits of the blue tit *Cyanistes caeruleus* in an urban parkland and a forest (supervisor: prof. dr hab. Jerzy Bańbura)

2018. Habilitacja: evolutionary biology and behavioural ecology, Department of Experimental Zoology and Evolutionary Biology, Faculty of Biology and Environment Protection, University of Łódź, Poland,

Title of the scientific accomplishment: “Long term variation in brood characteristics of the Blue Tit *Cyanistes caeruleus* and the Great Tit *Parus major* in an urban parkland and a forest”