

Parent-offspring interactions in birds are evolving in the context of parent-offspring conflict over the allocation of resources, as well as parent-offspring individual recognition. Parent-offspring recognition is crucial when the offspring is raised in the condition of breeding colonies. Parent-offspring conflict arises because parental investment towards current reproduction can come at a cost to longevity and future reproduction. Long-living birds are expected to secure their own survival, so their own needs are in an apparent conflict with the costly parental care. Moreover, under conditions of high temporal and spatial variability in marine food supplies, selection should favour a flexible foraging strategy and parental investment. For these reasons, long-lived, colonial seabirds with a single chick broods constitute an ideal system to study the parent-offspring interactions. Brood size, restricted to single chick eliminate the conflict between siblings – a factor possibly confounding the issue of signalling in chicks and parent-offspring conflict.

The present project will focus on an Arctic seabird, the little auk (*Alle alle*). This is a typical, colonially breeding seabird with long-term pair bonds in a socially monogamous breeding system. Both little auk parents share incubation and caring over a single, semi-precocial chick, however, at the end of the chick rearing period, there is a transition from biparental to male-only care. Individual recognition seems to be crucial at the fledging stage, during its first flight and at sea, when parental presence is crucial for the young bird to survive. Special feature of little auks are bimodal foraging flights, i.e. long and short flights, serving to cover energetic demands of parents and offspring, respectively. Parent little auks are sometimes able to change the chick feeding frequency, thus, duration and frequency of long and short trips may be a subject of negotiation in the axis of parent-offspring conflict.

The aim of the project is to determine the characteristics and functionality of the vocal signals in the parent-offspring interactions. The planned study will help to understand the mechanisms of the call signals production in chicks, as well as it will provide information about parent-offspring behavioural interactions.

The little auk, due to its ecological and biological characteristics, is considered a model species in studying the effects of oceanographic and climatic changes in the Arctic. It forages on energy-rich zooplankton species associated with cold Arctic waters. Thus, the predicted shift towards a warmer climate scenario will impair the little auk time and energy budget, as well as breeding success. This, the most numerous Arctic seabird, composing the pelagic food webs, is an essential element of the ecosystem. Changes in its population number and range of distribution will have serious consequences for the structure and functioning of the Arctic ecosystems.