ABSTRACT

Predation is the most common cause of reproduction failure and it strongly influences breeding performance in birds, impacting the whole species population dynamics as well as it represents a major force in the evolution of avian life-history strategies. Investigating the factors driving predation rates, or quantifying predation consequences, is highly relevant for evolutionary ecology as well as for species conservation, especially in a rapidly changing world. In this dissertation, I investigate links between nest and chick predation, environmental factors, life-history and anti-predatory strategies, together with consequences for population dynamics and conservation. I use shorebirds as a uniquely suitable model system for three reasons: i) they are globally distributed; ii) have predominant ground nesting strategy and high interspecific similarity in nest appearance to potential predators; iii) are sufficiently well-studied in terms of nest predation all over the world.

In the two first sections of this dissertation, *Predation in the agricultural landscape* and *Interspecific interactions and anti-predatory strategies*, **Chapter 2** supports the thermoregulatory hypothesis of nest lining size rather than anti-predatory adaptation. **Chapter 3** discusses, from the perspective of predation, the twofold advantage for chicks hatched from bigger eggs earlier in the breeding season with better food availability. **Chapter 4** presents a finely tuned solution of how to effectively mark nests against agriculture machinery, but not attract predators at the same time. **Chapter 5** describes the current state of shorebirds in the Czech Republic and discuss the new agri-environmental scheme for Northern Lapwing on arable land, effectively promoting the whole biodiversity of the agricultural landscape. **Chapters 7** and **8** highlight the importance of anti-predatory umbrella effect of active nest defenders for timid species precipitating into the whole marshland bird community species composition, richness and abundance. On the contrary, **Chapter 9** questions the effectiveness of shorebird breeding associations with terns and reports high nest predation near Caspian Lake. Two chapters review peculiarities from shorebird breeding (nest scrape reuse, **Chapter 6**) and foraging ecology (inter and intraspecific predation among shorebirds, **Chapter 10**).

In the last section, *Global perspectives on nest predation*, nest predation patterns are examined from large spatial and temporal perspectives with the use of 38,191 nests from 237 populations in 111 shorebirds species over 149 localities across all continents, covering the time span of last 70 years. There are three main novel outputs from **Chapter 11**: i) the first global evidence for the latitudinal gradient in offspring predation of wild populations with the highest historic predation rates in the tropics; ii) an extremely rapid increase in nest predation recorded in the North temperate region and especially in the Arctic recently, rendering these breeding grounds an extensive ecological trap for migratory shorebirds; ii) a revealed link between climate change and nest predation rates, thus demonstrating a global-scale impact of climate change on trophic interactions between predators and prey. Furthermore, climate change and life-history traits impact on population dynamics (**Chapter 12**), biparental incubation reduces nest predation rates and nest predation is the significant predictor of population dynamics in shorebirds (**Chapter 13**). Shorebirds are declining globally, therefore further disentangling and relevance assessment of particular factors driving population dynamics of shorebirds is urgently needed and precipitation of these findings into conservation practice essential to secure future for our admirable shorebirds.