

Jakub Kreisinger - summary of the Ph.D. thesis:

Predation is an important selective force affecting many evolutionary and ecological processes. Anthropogenic landscape changes often alter these processes due to qualitative and quantitative changes in the predator community. This thesis contains four papers that are focused on various aspects of the nest predation, antipredation strategies and distribution of predators in the landscape modified by human activities.

The first contribution "*Nest protection in mallards (Anas platyrhynchos): Untangling the role of crypsis and parental behaviour*" (Kreisinger & Albrecht 2008) focus on the effect of antipredation strategies on the reproductive success in a ground nesting bird, mallard. Our data are consistent with the hypothesis that multiple antipredation strategies including nest site selection parental antipredation behavior and crypsis due to clutch concealment by the nest material during incubation recesses reduce simultaneously the risk of the clutch predation in birds. Contrary to some previous studies, the relative effects of crypsis and parental anti-predation behaviour on nest survival did not differ with respect to antipredation effect of the nest concealment by surrounding vegetation.

The hypothesis that linear strips of shrubby vegetation and high grass (corridors) are more likely to be exploited by diverse carnivore species than surrounding hayfields is tested in the article "*Corridor versus hayfield matrix use by mammalian predators in an agricultural landscape*" (Šálek et al. *in press*). The experiment confirmed that the probability detection was higher in corridors than in the landscape matrix for all carnivore species. Hence our study suggests that the maintenance of corridors could be an efficient management practice for the preservation of carnivore populations in agricultural landscapes.

Fragmented landscapes generally maintain a higher numbers of predators compared to non-fragmented habitats. This often results in increased nest predation, mainly along edges ("*edge effect*") or within small fragments. In the study "*Testing a mechanistic explanation for mammalian predator responses to habitat edges*" (Svobodová et al. *submitted*) mechanisms underlining mammalian carnivore distributions along habitat edges between forest and hayfields were evaluated. The distribution of mammalian predators, the predators' main prey (small mammals) and predation rates on simulated nests in four types of landscape elements corresponding to an edge gradient was simultaneously measured. We found considerable temporal variation in carnivore habitat preferences between years. Whereas carnivores did not exhibit a significant habitat preference along the forest-grassland edge in the first year of monitoring, they were more likely to be detected along habitat edges in the subsequent year. Our data do not provide straightforward evidence for an association between the habitat-specific quantity of food resources and predator distribution. In addition our data do not suggest that the increased activity of carnivores at habitat edges arises as a consequence of predator overflow from higher quality habitat through the edge into lower quality habitat, but showed that most predator species focus their activity specifically to the edge structure.

Finally in the paper "*Factors determining pochard nest predation along a wetland gradient*" (Albrecht et al. 2006) we focused on analyses of environmental factors affecting the nest success in pochard (*Aythya ferina*). Daily nest survival rates declined from island to overwater and terrestrial nests in this species. Mammalian predation of artificial nests was more likely in terrestrial habitats than in littoral habitats or on islands. By contrast, corvids and marsh harriers (*Circus aeruginosus*) prevailed among predators of overwater and island nests. Our data indicate that artificial islands and wide strips of littoral vegetation may represent secure breeding habitats for waterfowl because those habitats allow nests to be placed in areas that are not accessible to, or that are avoided by, mammalian predators.

Two papers concerning the evolution of extrapair paternities and sexual selection in birds (*The strength of direct selection against female promiscuity is associated with rates of extrapair fertilizations in socially monogamous songbirds*; Albrecht, Kreisinger, Pialek J., 2006 and., *Extrapair paternity and the opportunity for sexual selection in long-distant migratory passerines* Albrecht et al 2007) are included in the appendix of this thesis.