

Abstract

Inter-specific and intra-specific variation in reactions towards novel and aposematic prey was found in several species of tits (Paridae). This Ph.D. thesis is focusing on various factors influencing reactions towards novel and aposematic prey in three European species of tits. We tested differences in exploration behaviour, neophobia, dietary conservatism, personality, age and experience as well as ability of avoidance learning and generalisation. We found no difference in exploration behaviour and in reaction towards novel prey in two different populations of great tits (*Parus major*). But the birds from the Finnish population were more neophobic than Czech birds, but they attacked aposematic firebug (*Pyrrhocoris apterus*) more often and faster than Czech birds. The difference can be explained by a different experience with local aposematic prey communities. Then we studied initial wariness in naive juveniles of great tits (*P. major*), coal tits (*Periparus ater*) and blue tits (*Cyanistes caeruleus*), and we tested how the initial wariness towards novel and aposematic prey can be deactivated by experience with palatable prey. Great tits and coal tits from experienced groups significantly decreased their neophobia towards both types of prey while blue tits did not change their strongly neophobic reactions. We also discussed factors constraining rapid neophobia deactivation in blue tits. In next part of this Ph.D. thesis we asked whether the personality differences in reaction towards aposematic prey in great tits artificially selected for two distinct personality lines (fast and slow explorers) are consistent across time and how the age of the birds can affect their reactions. We found differences in reaction towards aposematic firebug in two age categories of naive great tits. Adult great tits showed stronger initial wariness towards aposematic prey than juveniles, which might be caused by the laboratory conditions with unlimited food supply and restricted variety of food types. But the individual differences in reaction of great tits towards aposematic firebug were shown to be consistent across time. And finally we tested whether the iridescent coloration of Australian bug *Tectocoris diophthalmus* affects avoidance learning and generalisation of adults and juveniles of great tits. Both age categories of tested birds learned to avoid iridescent bugs and they also generalized the experience to different type of iridescent coloured bug. These results suggest iridescent coloration and patterning can be an effective aposematic signal. The outputs of this Ph.D. thesis contribute to understanding of predator psychology, its inter- and intra-specific variability in reactions towards novel and aposematic prey as well as to understanding of origin and evolution of the aposematic signal.