Abstract

The PhD thesis deals mainly with the coloration (and also scalation) of selected reptile species and explores evolutionary or ecological contexts indicated by these traits. The main topics can be roughly divided into two groups: ‘antipredation signals’ and ‘effects of parthenogenesis’. The dominant method used in most studies is visual modelling. The work consists of the following case studies.

1) Blue-tongue skinks use their conspicuous blue tongues to threaten potential predators. We found that the tongue has a relatively high UV reflectance, a typical feature of intraspecific communication in lizards. Using visual models, we investigated how the blue tongue is perceived by the conspecifics and predators (birds of prey). In both visual models, the UV-blue tongue appears more conspicuous against the natural background than a pink tongue. In addition, in the conspecifics model, its hue partially overlaps with hues of UV-blue spots, which are sexually selected traits in various species of lizards. Thus, the UV-blue tongue seems to contribute to the effectiveness of the deimatic display and its possible role in intraspecific communication cannot be ruled out either.

2) We detected UV reflectance in non-pigmented areas of the skin in the Leopard gecko (*Eublepharis macularius*). These form white patches on the tail, which the geckos use in both antipredation and courting contexts. This can be important especially for the juveniles, who expose their black-and-white striped tail and vocalize when threatened. Since reptiles see the UV spectrum, the presence of a UV component can increase the conspicuousness of this signal. We did not detect any significant sex differences in the intensity or extent of the UV patches.

3) Warning coloration has a relatively limited palette (red, yellow, black, white) which, however, occurs throughout the animal kingdom. So the question is - to what extent is this signal universal and what role do its particular components play? Eye-tracking test compared with visual models revealed that attention is drawn mainly by chromatic contrast. In the trichomatic vision of humans and tetrachromatic vision of birds, it is especially the combinations of red-black (on snakes) and red-green (snake x background). In dichromats (most mammals), high chromatic contrasts contained yellow. Aposematic patterns, therefore, seem to be universal, achieving maximum chromatic contrasts in different visual systems.

4) Parthenogenetic reproduction may be disadvantageous in the long term because genetically uniform clones lack variability and the ability to get rid of harmful mutations. In order to find out whether their quality is poorer, we compared the developmental stability of parthenogenetic and bisexual species in lizards of the genus *Darevskia*. We have focused on anomalies in the symmetry of their scalation. Parthenogenetic species did not show signs of greater developmental instability than bisexual species. In general, however, due to the hybrid origin of parthenogens, it is difficult to distinguish between the effect of clonal reproduction and outbreeding depression, especially when interpreting anomalies. In this case, we incline to the second option.

5) The absence of males, and hence absence of sexual selection, could theoretically lead to loss of conspicuous traits in parthenogenetic species, provided they are able to respond to natural selection for greater crypsis. We compared the extent and intensity of UV-blue spots in parthenogenetic and bisexual lizards of the genus *Darevskia*. The values of parthenogens correspond to those of bisexual females. Certain differences between the individual parthenogens are obviously due to the unique combination of parental genomes in each clonal species. Thus, the assumption of fading ornaments was not confirmed.