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Anna Mrazova: Interactions between plants, herbivorous insect and predators: mechanisms and ecological importance

The PhD Thesis of Anna Mrazova provides new insights into communication between plants, arthropods and birds and the individual chapters were conducted in two settings: in aviaries where birds were offered various signals and in wild, where attractivity of plants to birds was studied both in temperate as well as tropical forest systems with help of dummy inset prey. At last, but not at least, (or actually at first) I would like to point out a very nice review where current knowledge of the topic is summarized, existing manuscripts compared and the gaps in knowledge identified. The review, together with very well conducted experiments represent a good step towards to understanding of the use of olfactory in insectivorous birds.

Anna Mrazova used several experimental methods and accompanied them with more or less exhaustive chemical analyses which she was learning throughout the PhD and collaborated on them with several institutes. She was inducing plant defences by Methyl jasmonate as well as by real insect larvae. She was studying attractivity of the induced plants to birds in videos in behavioural experiments, as well as from bait marks on dummy insect. She also focused on induced defences of several tree species and investigated how it affects their interactions with higher trophic strata. Her research concludes that plant species differ in induced defences which further develop in time and depended also on the insect species/method used for the induction. This all makes the volatile compounds variable in space and time and affects the attractivity of insectivorous birds. The variability observed might be the reason for only about 50% of the existing studies being able to describe the olfactory in insectivorous birds. Despite the variability, the thesis demonstrates that at least some birds are able to use the olfactory signals to locate insect rich trees, and it is easier to show it in wild than in behavioural tests in aviary.

A. Mrazova developed into exceptionally independent student. This illustrates the fact that she herself conceived ideas for several research projects (there is many more manuscripts to come and several papers which are not included in the thesis) and led all chapters in the field and in analytical phase. Despite the beginning of her research ideas are sometimes crazy, megalomaniac and need to be polished, she is capable to get from "lets survey everything and see what happens" to nicely shaped project with clear hypothesis, which she then leads from the beginning to the end. As a supervisor, I certainly cannot claim the credit myself; after all I soon became ignorant of chemical analyses, and I even do not know several of Anna's collaborators. Also, her writing skills developed over the time to near independence,



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allowing her to write their own grants and papers, and supervise or co-supervise students.

Having currently a unique opportunity to observe ten PhD students in my laboratory, witnessing their failures and successes, A. Mrazova clearly stand out on the positive tail of the crowd. A. Mrazova is surely the only student who neatly reminded me several times that I might be working slowly or ineffectively (and sometimes she was right). Her effectivity illustrates the fact she finished her PhD with just slight delay, despite she became mum of two kids during her PhD. She convinced me that she is ready for independent research career, which is after all the main goal of PhD study.

In summary, it is my opinion that Anna Mrazova has clearly demonstrated the intellectual gravitas, originality, and independence, as well as practical and social skills necessary for high quality research.



Katerina Sam
PhD supervisor