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Book of Abstracts

Orthoptera Conservation in Italy: the Zeuneriana marmorata case. (Orthoptera, Ensifera)

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Abstract: Listed as EN (Endangered) by IUCN in the Red List of European Orthoptera, Zeuneriana marmorata (Fieber, 1853) is under conservation project in Italy. Known current populations are in NE Adriatic coast of Italy, inland of Slovenia and one recently discovered in Italian inland.

These sub-populations are assumed to be remnant of a larger metapopulation that was most likely living in the wet habitats of the plains around the North Adriatic Sea and the Po river. Habitat loss and fragmentation due to human activity contributed dramatically to the disappearance of the species in most of its range. Regarding the Italian populations, study (bioacoustic) and conservation (translocation, area management) actions are applied to date and planned for the future.

Orthopteroid insects collections at the Museo Civico di Rovereto (Italy): the Galvagni collection and the Fontana collection

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Abstract: The Museo Civico of Rovereto was founded in 1851 and hosts several art and science collections. Concerning Zoology, the entomology is noteworthy, consisting of the collection Halbherr (Coleoptera), the collection Tamanini (Hemiptera with several types especially among Gerromorpha), plus the recently acquired collections Galvagni (30,000 specimens: Orthoptera, Dermaptera, Blattodea, Mantodea, Phasmatodea) and Fontana (25,000 specimens: Orthoptera, Dermaptera, Blattodea, Mantodea, Phasmatodea).

Within a couple of years the entomological collections of the Civic Museum of Rovereto have been enriched with more than 50,000 identified specimens (2147 species of Orthoptera).

Thanks to the recently acquired entomological collections, the Rovereto Civic Museum becomes a reference point for Orthoptera studies, resulting attractive also for further donations such as the Fontana Orthopteroid collection recently acquired.

A biogeographic and systematic analysis of endemic damselflies in Vanuatu (Vanuatubasis: Ceonagrionidae: Odonata)

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Abstract: In this study we examined the phylogenetics relationships of the damselfly genus Vanuatubasis (Odonata: Zygoptera: Coenagrionidae), an endemic to the island archipelago of Vanuatu. We reconstructed a phylogeny of Vanuatubasis using all three previously described Vanuatubasis species, along with an additional 16 morphospecies representing putative undescribed taxa that were recently collected during extensive field work from 2017-2019. We sequenced the mitochondrial loci CO1 and 12S and the nuclear locus ITS for all taxa. Our molecular data are fairly limited in an effort to minimize missing data when including a larger taxon sampling of closely related taxa from previous studies. By so doing we were able to include 26 species of Nesobasis, the hypothesized closest relative to Vanuatubasis, and an endemic to Fiji. Phylogenetic reconstruction was conducted under both maximum likelihood and Bayesian inference methods and both were highly congruent and exhibited high support across most of our topologies. However, some low support and differences are seen within the Vanuatubasis grouping. Our analyses support Vanuatubasis as monophyletic and being placed within Nesobasis rendering it non-monophyletic. The phylogenetic analyses give more understanding of the relationships between the Vanuatubasis species across Vanuatu. Morphospecies from islands that were closer in distance were more closely related than those from farther islands. Though weather conditions and time of year may have been a factor, we did not observe any Vanuatubasis on islands with large active volcanoes. In the future, we plan to add additional molecular data and taxa to better understand the evolution of the group, particularly taxa from throughout the South Pacific.

Aphid-induced changes in the phloem exudate metabolome of wheat and positive effects on aphid offspring suggest niche construction by Sitobion avenae

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Abstract: Plant phloem sap imposes nutritional challenges on aphids. Previous studies revealed that aphids may change the phloem sap metabolome. However, it is unclear how these changes affect aphid performance. In this study, wheat (Triticum aestivum) leaves or ears were infested with grain aphids (Sitobion avenae) for 10 days or left uninfested. The performance of S. avenae offspring colonies on these differently treated plant parts as well as the preference behaviour of the aphids were assessed. Moreover, phloem exudates were collected and analysed for their amino acid composition and metabolic fingerprints of putative specialised metabolites. In the first days, nymphs showed higher survival on previously aphid-infested leaves than on control leaves, though colonies increased to similar sizes over 12 days. Positive effects of previous aphid infestation were more pronounced on ears, with colonies on previously aphid-infested plants growing substantially larger. In the choice bioassays, S. avenae showed a preference for previously aphid-infested ears, while on leaves no preference was observed. Taken together, our study indicates niche construction by S. avenae, which was transient on wheat leaves and more pronounced and longer lasting on ears. The findings may be partly explained by aphid-induced metabolic differences between the corresponding phloem exudates.