

Araneofauna of the Mediterranean island of Vis (Croatia)

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Abstract

Spiders (Araneae) are a poorly explored order in Croatia. Considering that there is no complete list of spider species, there is a need for making one. Systematic listing started in protected areas (national and nature parks), and in time extended to other areas, like possible centers of endemism. Vis is the island most remote from the Croatian mainland in the Adriatic sea. The research of the araneofauna of the Vis island was conducted from the 30th of September until 10th of October 2005, covering the whole area of the island. The samples were collected in different habitats by the use of classic methods like sweeping net, pooter or exhauster, aerial, ground, and pitfall traps. The collecting and determination of the material were carried out by the biology students of the Department of Biology, Faculty of Science, in Zagreb. The research project unveiled an overall number of 31 species in the island. The weather conditions promoted some sampling methods over others and this may have biased the species composition recorded (Heimer & Nentwig 1991, Roberts 1995). Crab-spiders, family Thomisidae, were the most numerous specimens sampled. This research represents the first systematic investigation into the island araneofauna in Croatia, and so represents a significant contribution to the checklist of Croatian spiders (Nikolić & Polenec 1981).

INTRODUCTION

The araneofauna of Croatia is still largely unknown. A group of students of biology, members of “BIUS” association of students of Biology at The University of Zagreb, is approaching this problem fully and thoroughly in a research project. Our main task is to make a valid check-list of spider species in Croatia, as well as studying topics of interest in spider biology. We started inventarisation of the araneofauna in protected areas (national and nature parks), and in time extended it to other areas, like possible centers of endemism.

Vis was one of the areas of interest to us, as it is the most remote inhabited Croatian island. So far, only systematic research of flora, but not the fauna has been carried out

on this island. This research represents the first systematic research of the island’s araneofauna. The samples were collected in various environments, thus resulting in a broad diversity of species.

METHODS

Vis is a croatian island in the Adriatic sea, total area of 90.3 km² with Mediterranean climate. Typical vegetation types include maquis shrubland, Holm Oak and European Black Pine woods. Besides those habitats, many karst habitats, including subterranean ones, are present. The methods we used to collect samples of spider specimens: pooter, catcher, aerial, ground and pitfall traps. After trapping, the samples were conserved in 70% ethanol; data on location site, vege-

Species (Family)	No. individuals	Males	Females
<i>Agalenatea redii</i> (Araneidae)	3	0	3
<i>Araneus angulatus</i> (Araneidae)	4	0	4
<i>Araneus diadematus</i> (Araneidae)	8	0	8
<i>Araneus triguttatus</i> (Araneidae)	2	0	2
<i>Argiope bruennichi</i> (Araneidae)	2	0	2
<i>Argiope lobata</i> (Araneidae)	1	0	1
<i>Cyclosa conica</i> (Araneidae)	2	0	2
<i>Cyrtophora citricola</i> * (Araneidae)	4	0	4
<i>Geolycosa vultuosa</i> (Lycosidae)	3	0	3
<i>Heliophanus cupreus</i> (Salticidae)	4	0	4
<i>Heriades hirtus</i> (Thomisidae)	1	0	1
<i>Hyptiotes paradoxus</i> (Uloboridae)	1	1	
<i>Kochiura aulica</i> * (Theridiidae)	3	3	
<i>Linyphia triangularis</i> (Linyphidae)	1	0	1
<i>Mangora acalypha</i> (Araneidae)	1	0	1
<i>Micrommata virescens</i> (Sparassidae)	1	1	
<i>Oxyopes nigripalpis</i> * (Oxyopidae)	1	0	1
<i>Oxyopes ramosus</i> (Oxyopidae)	1	0	1
<i>Ozyptila praticola</i> (Thomisidae)	1	0	1
<i>Pholcus phalangioides</i> (Pholcidae)	1	1	
<i>Pisaura mirabilis</i> (Pisauridae)	1	0	1
<i>Runcinia grammica</i> (Thomisidae)	1	0	1
<i>Segestria florentina</i> (Segestriidae)	2	2	
<i>Synaema globosum</i> (Thomisidae)	1	0	1
<i>Tetragnatha extensa</i> (Tetragnathidae)	1	0	1
<i>Tetragnatha pinicola</i> * (Tetragnathidae)	4	0	4
<i>Theridiosoma gemmosum</i> (Theridiosomatidae)	1	0	1
<i>Thomisus onostus</i> (Thomisidae)	1	1	
<i>Xysticus bufo</i> * (Thomisidae)	1	1	
<i>Xysticus luctuosus</i> (Thomisidae)	3	2	1
<i>Zygiella x-notata</i> (Araneidae)	6	0	6
Σ 31 species	67	12	55

Table 1. Species list with sex ratio of all the specimen found.

* new recorded species in Croatia.

tation type, weather conditions and sampling method were collated. Sampling was undertaken over a ten days period, from 30th September–10th October 2005, covering the whole area of the island.

RESULTS

Of a total of 234 specimens in the samples, 221 have been determined to genus or species level. Of those, Thomisidae were the most numerous. 31 species were found on the island (Table 1), five of which were new to the existing check-list of Croatian species, which now contains 672 species (<http://www.faunaeur.org>; Nikolić & Polenec 1981).

DISCUSSION AND CONCLUSION

More species, and more new records for Croatia were expected, especially for an island as remote as Vis. Due to the percentage of juvenile and sub-adult individuals in the samples, the overall number of only 31 species is not surprising. The weather conditions promoted some sampling methods over others and this may have biased the species composition recorded. For example, the crab-spiders, family Thomisidae, were most numerous probably because of the selectivity of the collecting method in the vegetation. The web-building families were not so numerous because of the rain, which caused them to abandon their webs when we were in the field and reside low in the vegetation where they were difficult to detect. Large numbers of juveniles were found possibly because of the annual cycle of the species present (Roberts 1995). Of the adults trapped and identified to species level, females were more numerous (Table 1), due to a strong autumn-bias.

Apart from only one sampling in the field conducted in September, we hardly collected any spiders from pitfall-traps thus we did not have many ground-living species in the samples. Gnaphosidae, being such wanderers (Nentwig et al. 2003, Roberts 1995) are among the most numerous in the Mediterranean, but our samples revealed no species from this family. Additional collections from winter to spring to early summer will add many more species to the island's species list.

Due to a lack of literature, especially for the Mediterranean spider species, as well as a paucity of Croatian arachnologists, the results are only preliminary. However, we hope this work will allow us to update the Croatian check-list of spider species in the near future.

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REFERENCES

- Heimer, S. & Nentwig, W. 1991: *Spinnen Mitteleuropas*. Parey, Berlin.
- Nentwig, W., Haenggi, A., Kropf, C. & Blick, T. 2003: *Central European Spiders – Determination Key*. <http://www.araneae.unibe.ch>
<http://www.faunaeur.org>
- Nikolić, F. & Polenc, A. 1981: *Catalogus faunae Jugoslaviae*. SAZU, Ljubljana.
- Roberts, M.J. 1995: *Spiders of Britain & Northern Europe* Harper Collins Publishers, London.