

## MANTIDS (MANTODEA) FROM PELJEŠAC PENINSULA, SOUTHERN CROATIA

**Jerzy Romanowski and Mateusz Romanowski**

Faculty of Biology and Environmental Sciences, Cardinal Stefan Wyszyński University,  
Wóycickiego 1/3, 01-938, Warsaw, Poland  
j.romanowski@uksw.edu.pl

Surveys for mantids were undertaken at 9 sites, located along the northern and southern coasts and in the interior of Pelješac Peninsula, southern Croatia. Sweep nettings and visual observations were carried out from 27 July 2013 till 8 August 2013. Five mantid species from four genera were observed, including *Ameles* cf. *decolor* (Charpentier, 1825), *A. spallanzania* (Rossi, 1792), *Iris oratoria* (Linnaeus, 1758), *Mantis religiosa* Linnaeus, 1758, and *Empusa fasciata* Brullé, 1832. The first exact records of the Mediterranean Mantis, *I. oratoria* in continental Croatia are reported. The need for a detailed study on the sympatric distribution of *A. decolor* and *A. heldreichi* in Croatia is addressed.

**Key words:** Mantodea, *Iris oratoria*, faunistics, new records, Croatia, Balkan Peninsula

J. ROMANOWSKI i M. ROMANOWSKI: Bogomoljke (MANTODEA) na poluotoku Pelješcu (južna Hrvatska). Entomol. Croat. Vol. 18. Num. 1–2: 7–11

Istraživanja bogomoljki provedena su na 9 lokaliteta smještenih duž sjeverne i južne obale te unutrašnjosti poluotoka Pelješca (južna Hrvatska). Tehnikom košnje pomoću entomološke mrežice i vizualnim opažanjima bogomoljke su proučavane od 27. srpnja do 8. kolovoza 2013. godine. Zabilježeno je 5 vrsta koje pripadaju u 4 roda, uključujući vrste *Ameles* cf. *decolor* (Charpentier, 1825), *A. spallanzania* (Rossi, 1792), *Iris oratoria* (Linnaeus, 1758), *Mantis religiosa* Linnaeus, 1758 i *Empusa fasciata* Brullé, 1832. U radu se navodi i prva točna evidencija mediteranske vrste bogomoljke *I. oratoria* u kontinentalnom dijelu Hrvatske. Potrebno je provesti detaljnija istraživanja kako bi se utvrdila simpatrička rasprostranjenost vrsta *A. decolor* i *A. heldreichi* u Hrvatskoj.

**Ključne riječi:** Mantodea, *Iris oratoria*, faunistika, novi nalazi, Hrvatska, Balkanski poluotok

### Introduction

The suborder Mantodea Burmeister, 1838 includes over 2360 described species, out of which 127 species live in the Euro-Mediterranean area (Battiston et al., 2010). The mantid fauna of the Balkan Peninsula includes only 8 species and in this respect is remarkably poor compared with that of the Western Mediterranean (Kment, 2012). Increasing recognition of diversity of mantids in Mediterranean area (Batti-

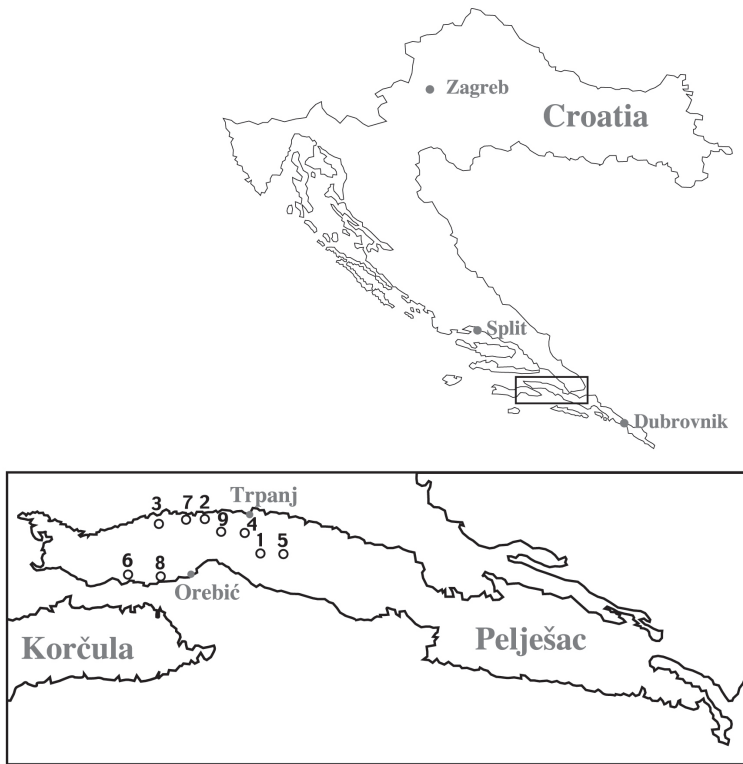


Fig. 1. Distribution of study sites at Pelješac Peninsula in southern Croatia during surveys in 2013. Numbers correspond to numbers of sites in Table 1.

ston et al., 2010) was recently reflected in new records from the Balkan Peninsula (Jaskuła, 2014). However, data on the distribution and ecology of mantids in Croatia are incomplete: publications on the fauna of the former Yugoslavia (Us & Matvejev, 1967) and Europe (Heller & Bohn, 2011) mostly lack details, and reports of recent surveys are rare (see Kment, 2012). In this paper we present results of surveys for mantids that were undertaken in Pelješac Peninsula in Dalmatia, southern Croatia, in summer 2013.

## Materials and Methods

We conducted field surveys from 27 July 2013 till 8 August 2013 at nine sites: (1) Baba Mtn 42° 58' N, 17° 15' E; (2) Divna 43° 01' N, 17° 12' E; (3) Duba Peljaška 43° 01' N, 17° 10' E; (4) Gornja Vručica 42° 60' N, 17° 15' E; (5) Košarni Do 42° 58' N, 17° 18' E; (6) Kučište 42° 59' N, 17° 06' E; (7) Perna Bay 43° 01' N, 17° 11' E; (8) Perna camp 42° 58' N, 17° 09' E; (9) Donja Vručica 43° 00' N, 17° 13' E. Sites were located

along northern (sites 2, 3, 7) and southern (6, 8) coasts and in the interior (1, 4, 5, 9) of Pelješac Peninsula (Fig. 1). At those sites sweep nettings and visual observations were carried out in the following habitats: olive orchards (sites 3, 9), pastures and grasslands (3, 4, 6, 9), coastal vegetation (2, 3, 7, 8), garrigue (1, 2, 4), maquis (mostly the edges along pathways and roads, 2, 3, 5) and developed areas (camps at 2 and 8). At two sites (2, 8) additional censuses for mantids attracted by light were conducted after dusk. All mantids swept were released at the place of catching; the photo documentation is available from authors on email request. Due to the difficulties in field identification of live specimens of *A. decolor* and *A. heldreichi* (Battiston & Fontana, 2005, Obertegger & Agabiti, 2012) we followed Kment (2012) in describing these specimens as *A. cf. decolor*.

## Results and Discussion

Altogether 106 individuals of five mantid species were recorded. The most numerous (48 individuals, including mostly very young nymphs, one adult female and one adult male) was *Ameles spallanzania* (Rossi, 1792). This species was present at 8 out of 9 sites surveyed on the Pelješac Peninsula (Table 1). *A. spallanzania* was characteristic of dry xerothermic grassland and garrigue in the study area. *A. cf. decolor* (Charpentier, 1825) (14 individuals, including one adult female and two adult males) was recorded at 7 sites (Table 1). Most of the specimens were recorded at sites along the coast, often on the grassy edges of stony beaches. In addition 9 unidentified nymphs L1–L2 *Ameles* sp. were swept at three sites (Divna, Duba Peljaška and Vrućica). *Empusa fasciata* Brullé, 1832 (16 specimens, including one adult female) was recorded at 6 sites (Table 1) in all types of habitats surveyed. *Mantis religiosa* Linnaeus, 1758 (15 specimens of ochre, green and reddish coloration, including 3 adult females and one adult male) was recorded at 6 sites (Table 1) in all types of habitats surveyed. The Mediterranean Mantis *Iris oratoria* (Linnaeus, 1758) (Fig. 2) was recorded only at one site (Kucište, Table 1), where 4 specimens of ochre colora-

**Table 1.** Mantodea recorded at 9 sites in Pelješac Peninsula, southern Croatia in 2013

Nr	Site	<i>A. cf. decolor</i>	<i>A. spallanzania</i>	<i>I. oratoria</i>	<i>M. religiosa</i>	<i>E. fasciata</i>
1	Baba Mtn		+		+	
2	Divna	+	+		+	+
3	Duba Peljaška	+	+			+
4	Gorna Vrućica	+	+		+	
5	Košarni Do					+
6	Kucište	+	+	+	+	+
7	Perna Bay	+	+		+	+
8	Perna camp	+	+			
9	Donja Vrućica	+	+		+	+



**Fig. 2.** Mediterranean Mantis *Iris oratoria* from Kucište, Pelješac Peninsula

tion (3 subadult females and 1 subadult male) were swept in tall grasslands along the road between Perna camp and Liberan on 3 August 2013 and 8 August 2013.

Four among the mantid species observed during this field study at Pelješac Peninsula (*A. decolor*, *A. spallanzania*, *M. religiosa* and *E. fasciata*) were earlier recorded in many parts of Croatia (Kaltenbach, 1963; Agabiti et al., 2010). We are aware that some *A. cf. decolor* individuals following the check on the genitalia could be possibly identified as *A. heldreichi*. In fact macro photographs of two sub-adult males swept in coastal vegetation in Perna camp (03 August 2013) and Divna (05 August 2013) showed an apical tubercle on the eyes, characteristic for *A. heldreichi* rather than *A. decolor* (R. Battiston, personal communication). The issue of the sympatric distribution of these two species in Croatia needs further studies.

Our observations of the Mediterranean Mantis represent the first exact records of this species in continental Croatia. The other exact records of *I. oratoria* come from the Croatian islands Brač and Korčula (Kment, 2012). It is interesting to note that in this study *I. oratoria* were observed only at one locality, closest to Korčula Island (approx. 1.5 km across Pelješac Channel). These three exact locations lie on the nor-

thern distributional limit of the species (Kment, 2012). The present finding supports the data on the establishment of local populations of *I. oratoria* in Dalmatia, southern Croatia.

## Acknowledgements

We are grateful to Dr Piotr Ceryngier for his help during preparations for the field study and remarks on the manuscript, to Mr Leszek Strebecki for his help in the field work, and to Marzenna Romanowska for drawing the map of study sites. Dr Roberto Battiston provided us with the most valuable comments on the genus *Ameles*.

## References

- AGABITI, B., IPPOLITO, S. & LOMBARDO, F. 2010. The Mediterranean species of the genus *Ameles* Burmeister, 1838 (Insecta, Mantodea: Amelinae): with a biogeographic and phylogenetic evaluation. *Boletín de la SEA*, 47: 1–20.
- BATTISTON R., PICCIAU L., FONTANA P. & MARSHALL J. 2010. Mantids of the Euro-Mediterranean Area. World Biodiversity Associations. Verona: 232 pp.
- BATTISTON R. & FONTANA P. 2005. A contribution to the knowledge of the genus *Ameles* Burmeister, 1838, with the description of new species from Jordan (Insecta, Mantodea). *Atti della Accademia Roveretana degli Agiati, Serie 8, B, Classe di Scienze Matematiche Fisiche e Naturali*, 5B: 173–197.
- HELLER K.G. & BOHN H. 2013. Mantodea. *Fauna Europea*. [www.faunaeur.org/full\\_results.php?id=11918](http://www.faunaeur.org/full_results.php?id=11918).
- JASKUŁA R. 2014. First record of *Geomantis larvoides* Pantel, 1896 (Mantidae) from Albania with an updated checklist of Albanian Mantodea. *Acta zoologica Bulgarica*, 66: (in print).
- KALTENBACH A. 1963. Kritische Untersuchungen zur Systematik, Biologie und Verbreitung der europäischen Fangheuschrecken (Dictyoptera – Mantidae). *Zoologische Jahrbücher, Abteilung Systematik, Ökologie und Geographie der Tiere*, 90: 521–598.
- KMENT P. 2012. First exact records of Mediterranean Mantis, *Iris oratoria* (Dictyoptera: Mantodea: Tarachodidae) from Croatia. *Časopis Slezskeho Zemskeho Muzea Opava, serie A*, 61: 43–48.
- OBERTEGGER, U. & AGABITI, B. 2012. On the usefulness of ratios for the identification of some Mediterranean species of the genus *Ameles* Burmeister, 1838 (Insecta, Mantodea). *Zootaxa*, 3259: 34–50
- US P. & MATVEJEV S. 1967. *Catalogus Faunae Jugoslaviae*. III/6. Orthopteroidea. *Academia Scientiarum et Artium Slovenica, Ljubljana* 43 pp.