PRELIMINARY DATA REGARDING INTERSPECIFIC RELATIONSHIPS BEETLE SPECIES COLLECTED FROM DIFFERENT ECOSYSTEMS MET IN DOLJ COUNTY IN 2017. NOTE 1

LILA Gima

Abstract. The research studies on the diversity of interspecific relationships from Dolj County exposed in this paper were achieved between 2016-2017. The beetle biological material (2 specimens) was collected from terrestrial ecosystem - Craiova. The host, from the systematic viewpoint, belong to the order Choleoptera, respectively to family Dynastidae. The interspecific relationship identified is transport or spread, respectively phoresy. The species on which mites were found are *Oryctes nasicornis* Linnaeus 1758. From the systematic viewpoint, the identified mites are belong arachnids - *Hypoaspis* sp. (Mesostigmata: Laelapidae). The species by mites identified at *Oryctes nasicornis* is new for Dolj, Romania.

Keywords: interspecific relationships, beetles, mites, ecosystem.

Rezumat. Date preliminare privind relaţii interspecifice la coleoptere din diferite ecosisteme din judeţul Dolj colectate în 2017. Nota 1. Cercetările privind diversitatea relațiilor interspecifice la coleoptere din judeţul Dolj expuse în lucrarea de faţă au fost realizate între anii 2016-2017. Materialul biologic de coleoptere (3 exemplare, din care 1 exemplar prezintă acarieni) au fost colectate din ecosistemul terestru, orașul Craiova. Gazda, din punct de vedere sistematic, aparţine ordinului Choleoptera încadrându-se în familia Dynastiidae. Specia pe care s-a găsit acarieni este *Oryctes nasicornis* Linnaeus 1758. Relația interspecifică identificată este de transport sau răspândire, respectiv forezie. Acarienii identificați în urma cercetărilor de specialitate, din punct de vedere sistematic, aparțin genului *Hypoaspis* (Mesostigmata: Laelapidae).

Cuvinte cheie: relații interspecifice, coleoptere, acarieni, ecosistem.

INTRODUCTION

The purpose of this paper is to present some contributions to the knowledge of the diversity of mites, analyzing beetle species present in different types of ecosystems in Dolj County.

In recent years, insects have undergone the complex action of ecological factors (climatic, soil and biotic factors) affecting the biological cycles of insects, spread emergence of mass propagation or decrease the number of the specimens of certain species, the emergence of new pests, etc. As a result, the number of beetle specimens found in the studied ecosystems was low.

All the material found on land was identified and analysed; then, the level of infestation was assessed. The beetle biological material (2 specimens) was collected from terrestrial ecosystem – Craiova city. The host, from the systematic viewpoint, belong to the order Choleoptera, respectively to family Dynastidae. The species on which mites were found are *Oryctes nasicornis* Linnaeus in 1758.

From the systematic viewpoint, the identified mites are belong arachnids - *Hypoaspis* sp. (Mesostigmata: Laelapidae).

MATERIALS AND METHODS

The material used in this paper consisted in 2 specimens found in Craiova city, which were identified, analysed and studied, one species having parasites.

The species of beetles are presented in systematic order according with Fauna Europaea.

The material was collected in 2016. Collections were made at different dates, each year in May. And collection date is mentioned. Collection methods were different according to the analysed host species.

1. *Collection methods* for *Oryctes nasicornis*

The insect was sampled from the ground with a pair of tweezers and put in a jar containing filter paper soaked in alcohol 4%. There were taken photos and the material was transported to the Faculty of Biology, biology laboratory, where the specialists took samples from the surface of the insect-body. To analyze the mites, after taking photos, they were placed in a solution of paraffin and sent to the expert for determination.

2. *Collection and research methods for mites*

Using tweezers, mites were collected from *Oryctes nasicornis* females, more precisely from the feet and the ventral side of the abdomen. For identification, the mites were prepared in paraffin. That was stored at room temperature until they were transported and examined carefully under the microscope.

To determine the collected material, there were used the works of PANIN (1957), the determination of the species of beetles being in the entomology laboratory of the Department of Natural Sciences of the Museum of Oltenia Craiova. Some of the photos were taken with DMC-FZ62 Panasonic FullHD digital camera by Lila Gima and another

category was taken by Marinela Boicea - chemist in the laboratory of Restoration - Oltenia Museum Craiova by means of the stereomicroscope OLYMPUS 3D.

The taxonomy and nomenclature of the identified species is made according to Fauna Europea.

RESULTS AND DISCUSSION

The analysed material was represented by 3 specimens of which 1 specimen had mites. The material was collected betwin years 2016-2017 in Craiova city.

Host: *Oryctes nasicornis* Linnaeus 1758 ♀
Parasite: *Hypoaspis* sp.
Collection site: Craiova
Date of collection: May 3, 2016; May 2017

***Oryctes nasicornis* Linnaeus, 1758 - gândacul rinocer**
Choleoptera: Scarabaeidae: Dynastinae: *Oryctes*
Status according to IUCN: low-risk species, endangered.

The species appears in forests, forest steppes, as well as in steppes.

The Choleopteran was collected in the street. This year, several specimens of rhinoceros beetle females were found near a small park located in the vicinity of the museum.

Sexual dimorphism in this species is very pronounced.

The female collected and identified has the frontal part of the head convex, with a conical, sharp horn; the harsh punctuated pronotum, which is thick at the anterior part, and with a simple punctuation at the posterior part, has an anterior impression, bordered posteriorly by a wave; the body length is 23-43 mm (Fig. 1).

Figure 1. *Orictes nasicornis*, female (original).

The reproductive cycle lasts 4 years. The larvae grow in plant composts and decomposing vegetable matter, often in the rotten wood of different deciduous species. Adults are active during April-August period and survive only one year. The species was also reported flying near light sources (PANIN, 1957).

The species is widespread in Europe (Austria, Belgium, Denmark, Germany, the Netherlands, Poland, Romania, Russia, Hungary, the Baltic countries, etc.), Crimea, the North Caucasus, Middle Asia, North Kazakhstan, Syria, Iran, Western Siberia, North Africa.

Protection and conservation measures. Protecting old trees in deciduous forests; prohibiting the collection of the species by amateur collectors.

The species is included in the annexes of the Berne Convention as a rare and threatened with extinction species.

***Hypoaspis* sp.**
Arthropoda: Arachnida: Acari: Mesostigmata: Laelapidae: *Hypoaspis* G. Canestrini, 1884

The Laelapidae family includes about 800 species of mites, including obligate and facultative parasites of vertebrates, paraphagous insects and free-living predators that inhabit the soil litter habitats, as well as nests of vertebrates and arthropods (EVANS until 1966, FARAJI and HALLIDAY, 2009; et al., 2009; JOHARCHI et al., 2011; JOHARCHI et al., 2012a, b - in JOHARCHI & SHAHEDI, 2016).

At present, the family is classified in approximately 144 genera, including *Hypoaspis* with 36 species. In recent years, specialty studies on the presence of mites of the genus *Hypoaspis* sp. have been carried out especially by researchers in Iran (MOHAMMAD KHANJANI et al., 2013; JOHARCHI & SHAHEDI, 2016). Almost all species of *Hypoaspis* sp. (Fig. 2) which appear in Iran are associated with Cholеoptera, especially with the species of the Scarabaeidae family, while few were collected in the soil (JOHARCHI & SHAHEDI, 2016).

Fifteen species considered as belonging to *Hypoaspis* sp. have been reported from Iran so far, including new species (JOHARCHI & SHAHEDI, 2016).

On the other hand, it is difficult to draw firm conclusions about the specificity of the host because the studies performed on them are brief.

Figure 2. Deuteronymph of *Hypoaspis* sp. on the ventral side of *O. nasicornis*, female (original).

CONCLUSIONS

The work joins the efforts of specialists who contribute to the knowledge of entomofauna diversity.

Craiova city represent new collection site for species *Orictes nasicornis* of Cholеoptera.

This study only signals the presence of the mite *Hypoaspis* sp. at the cholеoptera. The mite identified in the studied beetle are specie reported by foreign authors, but there are no mentions of them in the Romanian specialized literature.

The present paper, for the time being, signals the presence of the mite in this species of coleopter. We will continue to collect beetles and make observations.

REFERENCES

JOHARCHI & SHAHEDI. 2016. A new species of *Hypoaspis* Canestrini (Acari, Mesostigmata, Laelapidae) associated with *Oryctes* sp. (Cholеoptera, Scarabaeidae) in Iran. ZooKeys **574**: 105–107. (2016) doi: 10.3897/zookeys.574.7767http://zookeys.pen soft.net (Accessed 2016).

MOHAMMAD KHANJANI, BEHNAZ GHAEDI, EDWARD. A. UECKERMANN. 2013. *New species of Hypoaspis Canestrini and Coleolaelaps Berlese (Mesostigmata: Laelapidae) associated with Polyphylla olivieri Castelnau (Cholеoptera: Scarabaeidae) in Iran.* Zootaxa. http://dx.doi.org/10.11646/zootaxa.3745. 4.4.http://zoobank.org/urn:lsid:zoobank.org:pub:B0019B59-DADB-4B87-BBD49206F4A38ADF.3745 (**4**): 469–470 (Accessed 2017).

PANIN S. 1957. *Insecta. Cholеoptera – Familia Scarabaidae II.* Edit. Academiei R. P. R. **10**(4). 315 pp., 36 plş.

Lila Gima
The Oltenia Museum, Craiova
Str. Popa Şapcă, no. 8, Craiova – 200 422, Romania.
E-mail: lilagima@yahoo.com

Received: March 27, 2018
Accepted: June 13, 2018