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# CONTRIBUTION TO THE KNOWLEDGE ON THE LONGHORN BEETLE (COLEOPTERA, CERAMBYCIDAE) FAUNA OF VOZILIĆI, EASTERN ISTRIA, CROATIA

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## *ABSTRACT*

*Between the years 1973 and 1982, a faunistic survey of longhorn beetles (Cerambycidae) fauna was conducted in Vozilići, eastern Istria. Altogether 250 specimens, belonging to 38 species were collected. The first systematic list of cerambycid fauna of Vozilići is given, along with their biogeographical affiliation. Turanic-European and Turanic-European Mediterranean species prevailed. We recorded also* Cerambyx cerdo *Linnaeus, 1758, a vulnerable species at European scale. Most interesting is the finding of* Semanotus russicus *(Fabricius, 1776), which has so far been found only in two places in Croatia.*

**Key words:** Cerambycidae, *Cerambyx cerdo, Semanotus russicus*, Istria, Vozilići

# CONTRIBUTO ALLA CONOSCENZA DI CERAMBICIDI (COLEOPTERA, CERAMBYCIDAE) A VOZILIĆI, ISTRIA ORIENTALE, CROAZIA

*SINTESI*

*Negli anni fra il 1973 ed il 1982 è stata condotta una ricerca faunistica sui Cerambicidi (Cerambycidae) nella località di Vozilići, Istria orientale. Sono stati raccolti 250 esemplari appartenenti a 38 specie. L'articolo riporta la prima lista sistematica dei Cerambicidi di Vozilići, accompagnata dalla loro affiliazione biogeografia. Fra le specie trovate si è riscontrata la prevalenza di quelle turanico-europee e turanico-europee-mediterranee. Gli autori sottolineano pure il ritrovamento di* Cerambyx cerdo *Linnaeus, 1758, specie vulnerabile su scala europea. Molto interessante, inoltre, la segnalazione della presenza di* Semanotus russicus *(Fabricius, 1776), specie precedentemente ritrovata solamente in due località croate.*

**Parole chiave:** Cerambycidae, *Cerambyx cerdo, Semanotus russicus*, Istria, Vozilići

## INTRODUCTION

Longhorn beetles (Cerambycidae) are one of the most numerous beetle (Insecta, Coleoptera) families, with an estimation of 35,000 species worldwide (Lawrence, 1982). Larvae of cerambycids are usually xylophagus and feed on dying or dead trees and thus are ecologically a very important group (Duffy, 1953; Linsley, 1959; Hanks, 1999). However, some species are known to feed on healthy or weakened trees as well (Craighead, 1950; Keen, 1952). Many species declined and became endangered in many parts of Europe (Evans *et al.*, 2004).

The first systematic faunistic overview of Cerambycidae in former Yugoslavia, including Croatia, was prepared by Mikšić (1963) and was later supplemented by Von Demelt & Schurmann (1964), Novak (1964), Mikšić & Georgijević, (1971, 1973), and Mikšić & Korpič (1985). According to Mikšić & Georgijević (1971), the longhorn beetle fauna of Croatia counts at least 225 species. The fauna of longhorn beetles (Cerambycidae) of Istria was never systematically studied, and only sporadic findings were published during the 20th century (Depoli & Goidanich, 1926; Depoli, 1940; Müller, 1953; Mikšić, 1963; Von Demelt & Schurmann, 1964). Recently, only data for the Slovenian part of Istria were reviewed (Brelih *et al.*, 2006).

We are presenting the first list of longhorn beetles of Vozilići in eastern Istria along with the biogeographical, ecological and conservation remarks given.

## MATERIALS AND METHODS

This research was conducted from 1972 to 1982 in the planted mixed forest of *Pinus nigra* Arnold and *Pinus helepensis* Mill, near the village of Vozilići in eastern Istria (Fig 1.) at the elevation of approximately 80 m altitude. The undergrowth of mixed *Pinus* forest was composed mainly of maquis vegetation, as well as young *Carpinus orientalis* and *Quercus pubescens* trees.

The area of Vozilići belongs to the submediteranean region of Istria (Šugar, 1984). According to Šegota & Filipčić (2003), the climate of the area is classified as Köppen's Cfb climate, meaning moderate warm and humid climate with warm summers.

Only occasional, non-systematic samplings of beetles were conducted, few times a year between May and July. Longhorn beetles were collected by a combination of standard methods for collecting insects, including net sweeping, light traps, fragrant bait and hand netting on the trees, bushes, grasses and flowers. For the fragrant bait, a mixture of cherry liquor and rotten meat was used (Champlain & Kirk, 1926).

Species determination was done using different identification keys (Mikšić & Georgijević, 1971, 1973; Mikšić & Korpič 1985; Bense, 1995; Chatenet, 2000) and comparative material from museum collections (Novak, Koča) of the Croatian Natural History Museum. Beetles were classified following Fauna Europaea (2010). Biogeographical analysis was done according to Brelih *et al.* (2006). Because the conservation status of longhorn beetles in Croatia has never been accessed due to the lack of suitable data, we compared our data with Brelih *et al.* (2006) for conservation status in Slovenia. All longhorn beetle specimens were preserved in beetle collection of Croatian Natural History Museum (F. Perović), with the label "Cerambycidae Vozilići".


***Fig. 1: Map of Croatia with the position of Istria and Vozilići.***
***Sl. 1: Zemljevid Hrvaške z izsekom Istre in označeno lokacijo Vozilićev.***

## RESULTS AND DISCUSSION

During this research, 250 specimens were collected altogether, from which 38 longhorn beetle species were identified. The systematic list of found species, along with the collecting dates and biogeographical affiliation is given in Table 1. Biogeographical analysis showed the prevalence of Turanic-European species (21%), followed by Turanic-European-Mediterranean (16%), Asian-European (13%), European-Mediterranean (13%), Southern European (8%), European (8%), Siberian-European (5%) and Paleartic (5%). All other zoogeographical affiliations were represented by a single species and consisted only of 3%.

***Tab. 1: List of longhorn beetles (Cerambycidae) collected in Vozilići between 1973 and 1982 along with the dates of finding and biogeographical affiliation.***
***Tab. 1: Seznam kozličkov (Cerambycidae) zbranih v Vozilićih med letoma 1973 in 1982, skupaj z datumi najdb in njihovo biogeografsko pripadnostjo.***

| No. | Species | Label dates on specimens | Biogeography |
|---|---|---|---|
| **Cerambycinae** | | | |
| 1 | *Cerambyx cerdo* Linnaeus, 1758 | 07.07.1975, 12.06.1977 | Turanic-European-Mediterranean |
| 2 | *Poecilium pusillum* (Fabricius, l787) | 16.11.1975 | Turanic-European |
| 3 | *Phymatodes testaceus* (Linnaeus, 1758) | 09.06.1976 | European-Mediterranean |
| 4 | *Poecilium alni* (Linnaeus, 1767) | 03.05.1975 | Turanic-European |
| 5 | *Pyrrhidium sanguineum* (Linnaeus, 1758) | 03.05.1975 | European-Mediterranean |
| 6 | *Ropalopus clavipes* (Fabricius, 1775) | 21.06.1975, 13.06.1977, 30.06.1978 | Asian-European-Mediterranean |
| 7 | *Semanotus russicus* (Fabricius, 1776) | 16.11.1975 | Mediterranean |
| 8 | *Hylotrupes bajulus* (Linnaeus, 1758) | 06.06.1977 | Palaearctic |
| 9 | *Chlorophorus figuratus* (Scopoli, 1763) | 21.06.1982 | European |
| 10 | *Chlorophorus sartor* (Müller, 1766) | 20.07.1982 | Turanic-European-Mediterranean |
| 11 | *Chlorophorus varius* (Müller, 1766) | 10.08.1979 | Turanic-European-Mediterranean |
| 12 | *Clytus rhamni* Germar, 1817 | 29.06.1978, 21.06.1982 | Turanic-European-Mediterranean |
| 13 | *Neoclytus acuminatus* (Fabricius, 1775) | 05.05.1976, 21.06.1982 | Nearctic |
| 14 | *Plagionotus arcuatus* (Linnaeus, 1758) | 18.06.1977, 29.06.1978 | Turanic-European-Mediterranean |
| 15 | *Plagionotus floralis* (Pallas, 1776) | 12.07.1976 | Asian-European |
| 16 | *Purpuricenus budensis* (Goeze, 1783) | 05.06.1975, 19.06.1975, 20.07.1982 | Southern European-Mediterranean |
| 17 | *Purpuricenus kaehleri* (Linnaeus, 1758) | 12.07.1976, 13.06.1977, 06.06.1978, 24.07.1980, 20.07.1982 | Turanic-European |
| 18 | *Stenopterus rufus* Linnaeus, 1767 | 27.06.1974, 27.06.1975, 09.06.1976, 12.06.1977, 30.06.1978 | European-Mediterranean |
| **Lamiinae** | | | |
| 19 | *Pedestredorcadion arenarium* (Scopoli, 1763) | 03.05.1975, 15.05.1975, 31.05.1975, 21.06.1975 | Southern European |
| 20 | *Agapanthia cynarae* (Germar, 1817) | 27.06.1974, 20.06.1975, 06.07.1975, 09.06.1976, 27.06.1977 | Southern European |
| 21 | *Saperda punctata* (Linnaeus, 1767) | 13.06.1977, 30.06.1978 | European-Mediterranean |
| 22 | *Phytoecia virgula* (Charpentier, 1825) | 15.05.1975, 01.06.1975, 20.06.1975, 21.05.1976, 25.05.1977 | Turanic-European-Mediterranean |
| 23 | *Tetrops praeustus* (Linnaeus 1758) | 03.08.1975, 21.05.1976 | Siberian-European-Mediterranean |

| No. | Species | Label dates on specimens | Biogeography |
|---|---|---|---|
| **Spondylidinae** | | | |
| 24 | *Arhopalus ferus* (Mulsant, 1839) | 20.07.1975, 21.08.1976, 20.08.1979 | Asian-European |
| 25 | *Anisarthron barbipes* (Schrank, 1845) | 21.06.1975 | European |
| **Lepturinae** | | | |
| 26 | *Alosterna tabacicolor* (De Geer, 1775) | 26.05.1977, 15.05.1975 | Siberian-European |
| 27 | *Pachytodes erraticus* (Dalman, 1817) | 21.06.1975 | Asian-European |
| 28 | *Paracorymbia fulva* (De Geer, 1775) | 27.06.1974 | European |
| 29 | *Pseudovadonia livida* (Fabricius, 1776) | 27.06.1974, 20.06.1975, 12.06.1977 | Asian-European |
| 30 | *Rutpela maculata* (Poda, 1761) | 12.07.1973, 20.06.1975, 12.06.1977, 30.06.1978 | Turanic-European |
| 31 | *Stenurella bifasciata* (Müller, 1776) | 13.07.1973, 27.06.1974, 21.06.1975, 22.07.1975 | European-Mediterranean |
| 32 | *Stenurella nigra* (Linnaeus, 1758) | 16.05.1975, 21.05.1976, 25.05.1977 | Turanic-European |
| 33 | *Stenurella septempunctata* (Fabricius 1792) | 20.06.1975, 07.07.1977 | Turanic-European |
| 34 | *Stictoleptura rubra* (Linnaeus, 1758) | 27.06.1974, 22.07.1975, 20.07.1979, 21.06.1982, 20.07.1982 | Palaearctic |
| 35 | *Stictoleptura cordigera* (Fuessly, 1775) | 22.07.1975, 24.07.1975, 24.07.1980 | Turanic-European |
| 36 | *Vadonia imitatrix* Daniel, 1891 | 30.06.1978 | Southern-European |
| 37 | *Dinoptera collaris* (Linnaeus, 1758) | 02.05.1975, 21.05.1976 | Asian – European |
| 38 | *Grammoptera ruficornis* (Fabricius, 1781) | 03.05.1975 | Turanic-European |

***Fig. 2: Rare longhorn beetle, Semanotus russicus (Fabricius, 1776) found in Juniperus stumps.***
***Sl. 2: Redka vrsta kozlička Semanotus russicus (Fabricius, 1776), najdena med debli brina.***

Eight recorded species can be found in the whole Mediterranean region of Croatia: *Clytus rhamni* Germar, 1817, *Neoclytus acuminatus* (Fabricius, 1775), *Purpuricenus budensis* (Goeze, 1783), *Pedestredorcadion arenarium* (Scopoli, 1763), *Agapanthia cynarae* (Germar, 1817), *Arhopalus ferus* (Mulsant, 1839), *Vadonia imitatrix* Daniel, 1891 and *Grammoptera ruficornis* (Fabricius, 1781). Three species are present in the whole Croatia except the Mediterranean region: *Plagionotus arcuatus* (Linnaeus, 1758), *Saperda punctata* (Linnaeus, 1767) and *Stictoleptura rubra* (Linnaeus, 1758). One species, *Semanotus russicus* (Fabricius, 1776) (Fig. 2) has been so far found only in southern Istria (Vozilići), Lošinj and Dalmatia (Mikšić & Georgijević, 1973). This was the only species recorded in Vozilići, which was not recorded in the Slovenian part of Istria (Brelih *et al.*, 2006). Five adult specimens of this species were collected from the chopped *Juniperus oxycedrus* L. stump in November 1975. Later, no other specimen of *S. russicus* was found in the area.

For three recorded species a decline has been observed in Slovenia, namely *Ropalopus clavipes* (Fabricius, 1775), *Chlorophorus sartor* (Müller, 1766) and *Anisarthron barbipes* (Schrank, 1845), while two species are considered rare, namely *Poecilium pusillum* (Fabricius, l787) and *Clytus rhamni* Germar, 1817. Those species were also quite rare in the surveyed area.

We also recorded an endangered species at European scale, *Cerambyx cerdo* Linnaeus, 1758. This species is listed in IUCN Red List (2010) as vulnerable due to its known and possible future population reduction because of the decline in the area of occupancy. It is also listed in the Habitat directive Annexes II and IV (Anonymus, 1992). According to Brelih *et al.* (2006) *C. cerdo* is quite rare in the majority of Slovene regions, but more common in Istria. Its status in Croatia is unknown.

Despite our research, it is clear that the list of species is far from complete. This can be assigned to the selective field methods used to collect beetles, as well as the lack of research in other parts of the year (*e.g.* early spring). Because this research was done 40 years ago, the results are somehow outdated, but can be used in further studies of longhorn beetles in the area, especially for the comparison with the recent state of longhorn beetles fauna.

# PRISPEVEK K POZNAVANJU FAVNE KOZLIČKOV (COLEOPTERA, CERAMBYCIDAE) V VOZILIĆIH, VZHODNA ISTRA, HRVAŠKA

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*POVZETEK*

*Med letoma 1973 in 1982 je bila opravljena raziskava hroščev kozličkov (Coleoptera: Cerambycidae) v kraju Vozlići, Istra, Hrvaška. Zbranih je bilo 250 primerkov 38 različnih vrst iz družine Cerambycidae. Podan je prvi sistematični pregled kozličkov skupaj z njihovo biogeografsko pripadnostjo. Prevladujejo turansko-evropske in turansko-evpropsko-sredozemske vrste. Ena od vrst,* Cerambyx cerdo *Linnaeus, 1758, ima občutljiv status v Evropi. Zanimiva je tudi ugotovljena prisotnost redkega hrošča vrste* Semanotus russicus *(Fabricius, 1776), ki so ga poprej našli le na dveh nahajališčih na Hrvaškem.*

**Ključne besede:** Cerambycidae, *Cerambyx cerdo, Semanotus russicus*, Istra, Vozilići

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