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**NEW DATA ON THE DISTRIBUTION OF LADYBIRD BEETLES  
(COLEOPTERA: COCCINELLIDAE) OF THE EASTERN BESKID MTS.**

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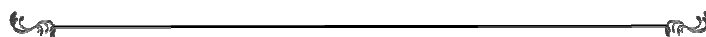
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**ABSTRACT:** The paper presents new data on the distribution of Coccinellidae in the Eastern Beskid Mountains in south-eastern Poland. The material is based on observation obtained between 2010-2014 in ten research localities in the south-west part of the Eastern Beskid Mts. This paper contains a list of 32 species of Coccinellidae, among which 4 are new for that zoogeographical region. The study also confirms the presence of many species which were previously known only from a single or few locations in this region. Some rare species as *Scymnus schmidti*, *Scymnus suffrianioides apetzoides*, and *Ceratomegilla notata* were discussed.

**KEY WORDS:** Coccinellidae, *Scymnus*, *Ceratomegilla*, new data, Low Beskids, SE Poland.



## **Introduction**

Ladybird beetles (Coccinellidae) are a family of beetles (Coleoptera), in which about 6,000 species around the world have been described (Ślipinski et al. 2011). The Polish fauna is represented by 75 species (Burakowski et al. 1986, 2000; Stączek and Pietrykowska 2003; Królik 2006; Przewoźny et al. 2007). After a long break in interest in that group of beetles, the works of Ruta et al. (2009) and Greń et al. (2013) which undoubtedly enriched the knowledge about species distribution in Poland, were recently published. Nevertheless the state of knowledge of Coccinellidae in Poland is still insufficient, and the information of their distribution in various parts of Poland are unequal.

Coccinellidae of Polish mountain areas are relatively well examined. Some regions have been researched in detail, e.g. Bieszczady Mts. (Bielawski 1971) or Pieniny Mts. (Bielawski 1978). The fauna of the Eastern Beskid Mts. includes about 54 species of ladybirds making this region one of the richest in members of this family (Burakowski et al. 1986, 2000). However most information on the occurrence of ladybirds in the Eastern Beskid Mountains are presented in Trella's papers, who has published a series of articles about beetles of Przemyśl and surrounding areas in the years 1923-1939 (e.g. Trella 1923).

The aim of this paper is to present the contemporary information on the occurrence of ladybird beetles in the Eastern Beskid Mts.

## **Study area**

According to the Kondracki's (2013) regionalization of Poland the study area does not comprise the whole Eastern Beskid Mountains, but only its part located within two macroregions: the Central Beskids and the Central Beskid Foothills. The Central Beskid Foothills consists of nine mesoregions, among

which the research was carried out only in the Ciężkowice Foothills and the Jasło Foothills. The macroregion of the Central Beskids on the territory of Poland overlaps totally with the mesoregion of the Low Beskids. The latter, due to its geological structure is carved with many montane passes, arranged along the lines of longitude (Kondracki 2013). Those passes are not very significant for species migration (Mazur 2001), but according to Taszakowski (2012), they could be considered to be a migration routes of true bugs.

In respect of geobotany, the flora of the Low Beskids has features transitional between Eastern and Western Beskid Mts. The montane flora is scant and some thermophilic species from Pannonian Basin occur. Forests belong to the altitudinal zone of foothills and lower level of montane zone but in a few nature reserves the floristic remnants of previous climatic periods have been still preserved (Kondracki 2013).

According to the division accepted in the "Catalogue of Polish Fauna" (Burakowski et al. 1986), and commonly used by Polish entomologists, research plots are located within the range of Eastern Beskid Mountains. The material was collected in ten squares (10 x 10 km) of UTM grid: EA10, EA20, EA21, EA30, EV17, EV18, EV19, EV37, EV38, and EV39, where are such research localities as Bednarka, Blechnarka, Dobrynia, Gładyszów, Krempana, Libusza, Lipinki, Lisów, Nowy Żmigród, Ożenna, Rozdziele, Wola Dębowiecka, Wójtowa, Wysowa-Zdrój, and Załęże (Fig. 1).

## **Materials and methods**

Presented entomological studies were carried out in 2010-2014. Ladybirds were collected mostly throughout the growing season, using commonly accepted methods for this group of insects (especially sweep-netting, sighting of

imagines, and attracting to an artificial light source). In autumn insects were also searched in the crevices of bark.

Due to the small size of the populations of most of species no quantitative samples were collected. During the study the following communities were penetrated: forests, isolated tree-stands, wet meadows, subxerothermic plant communities, shrubs, and stream banks. There are two plots with subxerothermic plant communities, which can be described as following: Lipinki – the southwest exposed slope, planted with low xerothermophilic plants, partly also with herbs and shrubs; Dobrynia – the plain land, burned in the spring, whereby site does not overgrow with trees, only with plants more thermophilic than xerophilic, partially ruderal.

Specimens were determined using key by Bielawski (1959) and Fürsch (1967). Moreover, to distinguish the species of the *Scymnus frontalis* group – male genitalia were studied (Fürsch et al. 1967). The taxonomy and nomenclature of Coccinellidae is used after “Catalogue of Palearctic Coleoptera” (Kovář 2007).

In total 203 specimens of ladybird beetles were collected. The material was partly collected during fieldwork of Students’ Scientific Association of Zoologists “Faunatycy” working at the Department of Zoology of the Faculty of Biology and Environmental Protection (University of Silesia).

The specimens are preserved in the collection of the first author and in the collection of the Upper Silesian Museum in Bytom (USMB).

Some rare or interesting species in the following list have been discussed. In the text the following abbreviations are used: AK – Angelina Kubusiak, AT – Artur Tazsakowski, BB – Bartosz Baran, KK – Karolina Krzyżowska, LK – Lech Karpiński, MM –

Miłosz Morawski, MT – Małgorzata Tomecka, WTS – Wojciech T. Szczepański,  
\* – new species for the Eastern Beskid Mts.

## **Results**

### **Coccidulinae Mulsant, 1846**

#### ***Coccidula scutellata* (Herbst, 1783)**

Libusza [EA10], 12 VI 2014, 1 ex., at light, leg. AT.

### **Scymninae Mulsant, 1846**

#### ***Nephus (Nephus) redtenbacheri* Mulsant, 1846**

Bednarka [EA20], 16 V 2013, 1 ex., forest edge, leg. AT.

#### ***Scymnus (Neopullus) haemorrhoidalis* Herbst, 1797**

Wysowa-Zdrój [EV17], 30 IV 2014, 1 ex., wet meadow, leg. BB.

#### ***Scymnus (Pullus) auritus* Thunberg, 1795**

Lipinki [EA20], 28 VII 2014, 1 ex., subxerothermic plant community, leg. AT.

#### ***Scymnus (Pullus) ferrugatus* (Moll, 1784)**

Libusza [EA10], 22 X 2013, 1 ex., under bark, leg. AT; 19 IV 2014, 5 ex., shrubs, leg. AT; 26 XII 2013, 1 ex., under bark of *Populus* sp., leg. AT.

#### ***Scymnus (Pullus) suturalis* Thunberg, 1795**

Wysowa-Zdrój [EV17], 01 V 2014, 1 ex., shaken down from *Pinus sylvestris* L., leg. WTS.

#### ***Scymnus (Scymnus) frontalis* (Fabricius, 1787)**

Dobrynia [EV39], 22 VII 2013, 1♂, subxerothermic plant community, leg. AT; 24 V 2014, 1♂, subxerothermic plant community,

leg. AT; Lipinki [EA20], 24 V 2014, 1♂, subxerothermic plant community, leg. AT.

***Scymnus (Scymnus) rubromaculatus (Goeze, 1777)***

Libusza [EA10], 30 VII 2014, 1 ex., leg. AT; Lisów [EA21], 15 VIII 2014, 1 ex., leg. AT.

**\**Scymnus (Scymnus) schmidti Fürsch, 1958***  
Bednarka [EA20], 23 V 2014, 1♂, oak-hornbeam forest, leg. AT; Wysowa-Zdrój [EV17], 21 V 2014, 1♂, shrubs, leg. AT.

This species was recently separated from *Scymnus (S.) rufipes* (Fabr.), thereby its distribution requires verification. In Poland species is recorded from a dozen or so localities in various part of the country. This species is mainly connected with xerothermic environment, but during the spring is also observed on shrubs and deciduous trees (Burakowski et al. 1986), which is confirmed by authors' observations.

**\**Scymnus (Scymnus) suffrianioides apetzoides J. R. Sahlberg, 1913***

Dobrynia [EV39], 22 VII 2013, 2♂, subxerothermic plant community, leg. AT; 29 VII 2014, 1♂, leg. AT; Lisów [EA21], 15 VIII 2014, 1♂, meadow, leg. AT.

Species very similar to *S. frontalis* and *S. schmidti*, whereby a species identification is possible after examination of male genitalia (Fig. 2). According to authors' own observations *S. suffrianioides apetzoides* individuals are slightly larger and more convex, and their legs are usually darker than individuals of *S. frontalis* and *S. schmidti*. In Dobrynia site (Fig. 3), together with two males, eight females probably belonging to this species were also caught.

Its distribution in Poland is poorly examined, only single sites in 5 zoogeographical regions are known so far (Burakowski et al. 1986; Jadwiszczak 1989,

2001; Stączek and Pietrykowska 2002; Ruta et al. 2009). It is the first finding of this species in the Eastern Beskid Mts., as well as in southern Poland (Fig. 4).

**Chilocorinae Mulsant, 1846**

***Chilocorus bipustulatus (Linnaeus, 1758)***

Libusza [EA10], 22 X 2013, 1 ex., under bark, leg. AT.

***Chilocorus renipustulatus (Scriba, 1790)***

Libusza [EA10], 22 X 2013, 1 ex., under bark, leg. AT; 21 III 2014, 1 ex., meadow, leg. AT.

***Exochomus quadripustulatus (Linnaeus, 1758)***

Libusza [EA10], 07-21 VIII 2009, 4 exx., leg. AT; 22 X 2013, 2 exx., under bark, leg. AT; 19 IV 2014, 1 ex., shrubs, leg. AT.

***Platynaspis luteorubra (Goeze, 1777)***

Dobrynia [EV39], 22 VII 2013, 2 exx., subxerothermic plant community, leg. AT; Libusza [EA10], 10 VII 2012, 1 ex., shrubs, leg. AT; 29 IV 2013, 1 ex., meadow, leg. AT.

**Coccinellinae Latreille, 1807**

***Halyzia sedecimguttata (Linnaeus, 1758)***

Dobrynia [EV39], 13 VI 2013, 1 ex., subxerothermic plant community, leg. AT; 29 VII 2014, 1 ex., subxerothermic plant community, leg. AT.

***Psyllobora (Thea) vigintiduopunctata (Linnaeus, 1758)***

Bednarka [EA20], 16 V 2013, 1 ex., forest edge, leg. AT; 13 VI 2014, 1 ex., leg. AT; Gładyszów [EV18], 10 VI 2013, 1 ex., scrubs, leg. AT; Libusza [EA10], 06-21 VI 2009, 3 exx., leg. AT; 28 VII 2014, 1 ex., meadow, leg. AT; 30 VII 2014, 1 ex., leg. AT; Lipinki [EA20], 21 IV 2014, 1 ex., subxerothermic

plant community, leg. AT; Lisów [EA21], 15 VIII 2014, 1 ex., meadow, leg. AT; Ożenna [EV37], 18 VIII 2014, 1 ex., shrubs, leg. AT; Wola Dębowiecka [EA30], 18 V 2013, 2 exx., isolated tree-stands, leg. AT; Wysowa-Zdrój [EV17], 27 VII 2010, 1 ex., wet meadow, leg. AT; 30 IV 2014, 1 ex., wet meadow, leg. LK; 02 V 2014, 1 ex., meadow, leg. AT; 04 V 2014, 1 ex., subxerothermic plant community, leg. AK; Załęże [EV39], 07 VIII 2009, 1 ex., leg. AT.

***Coccinula quatuordecimpustulata* (Linnaeus, 1758)**

Bednarka [EA20], 16 V 2013, 1 ex., oak-hornbeam forest, leg. AT; Libusza [EA10], 30 VIII 2009, 1 ex., leg. AT; 30 VII 2014, 1 ex., leg. AT.

***Tytthaspis sedecimpunctata* (Linnaeus, 1761)**

Ożenna [EV37], 18 VIII 2014, 1 ex., shrubs, leg. AT.

***Adalia (Adalia) decempunctata* (Linnaeus, 1758)**

Blechnarka [EV17], 21 V 2014, 1 ex., shrubs, leg. AT; Libusza [EA10], 10 VI 2002, 1 ex., leg. AT; 19 IV 2014, 5 exx., forest edge, leg. AT; Lipinki [EA20], 24 V 2014, 1 ex., subxerothermic plant community, leg. AT; Wola Dębowiecka [EA30], 18 V 2013, 1 ex., isolated tree-stands, leg. AT; Wysowa-Zdrój [EV17], 01 V 2014, 1 ex., shrubs, leg. KK.

***Anatis ocellata* (Linnaeus, 1758)**

Libusza [EA10], 10 VI 2002, 1 ex., leg. AT; 04 VI 2010, 1 ex., leg. AT.

***Aphidecta obliterated* (Linnaeus, 1758)**

Bednarka [EA20], 01 III 2014, 1 ex., under bark of *Acer pseudoplatanus* L., leg. AT; Libusza [EA10], 22 X 2013, 1 ex., under bark, leg. AT; Wójtowa [EA20], 28 II 2014, 1 ex., under bark of dead *Abies alba* Mill., leg. AT;

Wysowa-Zdrój [EV17], 11 VIII 2011, 1 ex., shrubs, leg. AT.

***Calvia decemguttata* (Linnaeus, 1767)**

Libusza [EA10], 19 IV 2014, 2 exx., forest edge of oak-hornbeam forest, leg. AT; Lipinki [EA20], 21 IV 2014, 1 ex., shrubs, leg. AT; Wysowa-Zdrój [EV17], 20 VIII 2010, 1 ex., meadow, leg. AT.

***Calvia quatuordecimguttata* (Linnaeus, 1758)**

Libusza [EA10], 30 IV 2013, 1 ex., shrubs, leg. AT; 15 V 2013, 1 ex., forest edge, leg. AT; 22 III 2014, 1 ex., sieve analysis, leg. AT; 19 IV 2014, 5 exx., forest edge, leg. AT; Wysowa-Zdrój [EV17], 17 V 2013, 1 ex., shrubs, leg. AT.

**\**Ceratomegilla (Ceratomegilla) notata* (Laicharting, 1781)**

Wysowa-Zdrój [EV17], 05 VIII 2010, 2 exx., stream bank, leg. AT.

The species prefer shady and moist environment, frequently observed on common nettles (Bielawski 1978). Besides a number of localities in the southern – mountainous part of the country, species is also known from north-eastern Poland.

***Coccinella quinquepunctata* Linnaeus, 1758**

Libusza [EA10], 17 VIII 2012, 1 ex., shrubs, leg. AT.

***Coccinella septempunctata* Linnaeus, 1758**

Libusza [EA10], 15 V 2013, 1 ex., meadow, leg. AT; 29 IV 2013, 2 exx., stream bank, leg. AT; 22 III 2014, 1 ex., sieve analysis, leg. AT; Nowy Żmigród [EV39], 19 V 2013, 1 ex., forest edge, leg. AT; Lisów [EA21], 15 VIII 2014, 2 exx., leg. AT; Wysowa-Zdrój [EV17], 02 V 2014, 1 ex., meadow, leg. MT.

**\**Harmonia axyridis* (Pallas, 1773)**

Libusza [EA10], 05 VIII 2010, 1 ex., leg. AT; 30 IV 2013, 1 ex., shrubs, leg. AT; 19 IV 2014; 1 ex., forest edge, leg. AT; 30 VII 2014, 1 ex., at light, leg. AT; Lipinki [EA20], 21 IV 2014, 1 ex., shrubs, leg. AT; Ożenna [EV37], 18 VIII 2014, 1 ex., shrubs, leg. AT.

The invasive species, recently discovered in Poland (Przewoźny et al. 2007). One of the most frequently observed ladybird during the research, however in the literature from the Eastern Beskid Mts. has not been recorded so far.

***Harmonia quadripunctata* (Pontoppidan, 1763)**

Libusza [EA10], 12 VI 2014, 1 ex., shrubs, leg. AT; Wysowa-Zdrój [EV17], 04 V 2014, 1 ex., shrubs, leg. MM.

***Hippodamia (Hemisphaerica)***

***tredecimpunctata* (Linnaeus, 1758)**

Libusza [EA10], 10 VII 2012, 2 exx., shrubs, leg. AT; 17 VIII 2012, 1 ex., shrubs, leg. AT.

***Hippodamia (Hippodamia) variegata* (Goeze, 1777)**

Libusza [EA10], 23 VI 2012, 1 ex., shrubs, leg. AT; 17 VIII 2012, 1 ex., shrubs, leg. AT; 16 VI 2013, 1 ex., oak-hornbeam forest, leg. AT; 21 IV 2014, 1 ex., subxerothermic plant community, leg. AT; 20 V 2014, 1 ex., shrubs, leg. AT; 12 VI 2014, 1 ex., meadow, leg. AT; 28 VII 2014, 1 ex., meadow, leg. AT; 30 VII 2014, 1 ex., meadow, leg. AT; 12 VIII 2014, 2 exx., leg. AT; Krempana [EV38], 10 VIII 2014, 5 exx., leg. AT; Lipinki [EA20], 26 VIII 2013, 1 ex., shrubs, leg. AT; 28 VII 2014, 1 ex., subxerothermic plant community, leg. AT; Lisów [EA21], 15 VIII 2014, 7 exx., meadow, leg. AT; Ożenna [EV37], 18 VIII 2014, 7 exx., shrubs, leg. AT; Wysowa-Zdrój [EV17], 11 VIII 2011, 1 ex., shrubs, leg. AT.

***Propylea quatuordecimpunctata* (Linnaeus, 1758)**

Bednarka [EA20], 16 V 2013, 1 ex., oak-hornbeam forest, leg. AT; Dobrynia [EV39], 13 VI 2013, 1 ex., subxerothermic plant community, leg. AT; Libusza [EA10], 03-06 VIII 2009, 2 exx., leg. AT; 03 VI 2010, 1 ex., leg. AT; 10 VII 2012, 1 ex., shrubs, leg. AT; 29 IV 2013, 3 exx., stream bank, leg. AT; 30 IV 2013, shrubs, leg. AT; 15 V 2013, 5 exx., shrubs, leg. AT; 10 VI 2013, 2 exx., shrubs, leg. AT; 19 IV 2014, 6 exx., forest edge, leg. AT; 28 VII 2014, 1 ex., meadow, leg. AT; 30 VII 2014, 2 exx., leg. AT; 12 VIII 2014, 1 ex., leg. AT; Lipinki [EA20], 30 IV 2013, 1 ex., shrubs, leg. AT; Lisów [EA21], 15 VIII 2014, 2 exx., meadow, leg. AT; Nowy Żmigród [EV39], 19 V 2013, 1 ex., meadow, leg. AT; Wysowa-Zdrój [EV17], 17 V 2013, 1 ex., shrubs, leg. AT; Rozdziele [EV19], 01 V 2013, 3 exx., shrubs, leg. AT.

**Epilachninae Mulsant, 1846**

***Subcoccinella vigintiquatuorpuncta* (Linnaeus, 1758)**

Bednarka [EA20], 16 V 2013, 1 ex., oak-hornbeam forest, leg. AT; 13 VI 2014, 1 ex., oak-hornbeam forest, leg. AT; 23 VII 2013, 1 ex., meadow, leg. AT; Blechnarka [EV17], 21 V 2014, 2 exx., shrubs, leg. AT; Dobrynia [EV39], 13 VI 2013, 1 ex., subxerothermic plant community, leg. AT; Gładyszów [EV18], 10 VI 2013, 1 ex., shrubs, leg. AT; Lipinki [EA20], 24 V 2014, 2 exx., leg. AT; Nowy Żmigród [EV39], 19 V 2013, 4 exx., forest edge, leg. AT; Wysowa-Zdrój [EV17], 20 VIII 2010, 2 exx., meadow, leg. AT; 13 VI 2011, 2 exx., wet meadow, leg. AT.

## Conclusion

In the study plots in total 32 species of Coccinellidae were collected, which represent about 42% of the Polish fauna. A large part of the recorded species is common in Poland, but data on their occurrence in the Eastern Beskid Mts. are not specific and in most of the cases come from the first half of the last century (Trella 1923, 1930a, 1930b, 1932, 1936). In Catalogue of Polish Fauna from Eastern Beskid Mts. 54 species were recorded (Burakowski et al. 1986, 2000). Recently only one new species – *Calvia decemguttata* was shown by Ruta et al. (2009). Thus, together with four new species presented in the study, the number of species of ladybirds of the Eastern Beskid Mts. increased to 59.

Noteworthy is the large number of ladybirds collected on a subxerothermic environments (10 species), among which most interesting are *Platynaspis luteorubra*, *Scymnus frontalis*, and *Scymnus suffrianioides apetzoides*. Due to the relatively high number of sun-exposed slopes and grasslands, the conditions in this area are very good for many thermophilic species, also from another group of insects.

A potential future detailed studies conducted within the entire region (due to a large diversity of habitats) are likely to expand the list of species.

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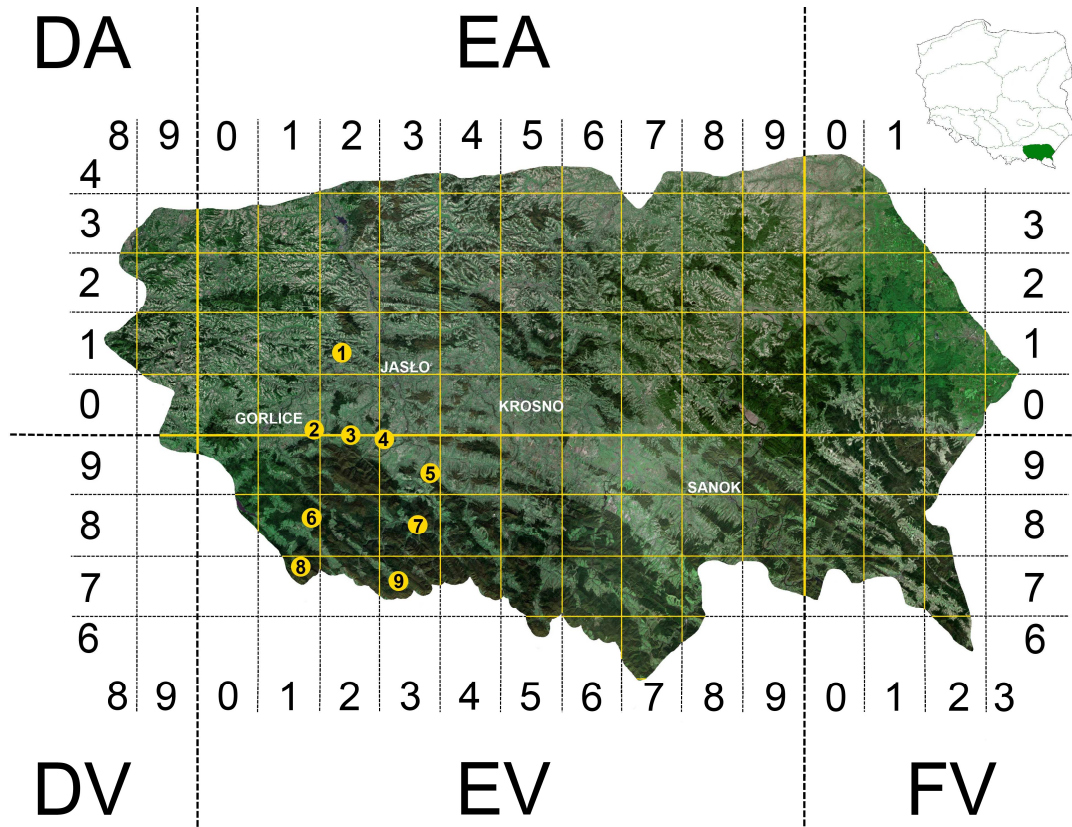


Fig. 1. The research plots within the Eastern Beskid Mountains: 1 – Lisów, 2 – Libusza, Lipinki, Rozdziele, Wójtowa, 3 – Bednarka, 4 – Dobrynia, Wola Dębowiecka, Załęże, 5 – Nowy Żmigród, 6 – Gładyszów, 7 – Krempna, 8 – Blechanka, Wysowa-Zdrój, 9 – Ożenna. (the map of Poland created on the basis of gis.biomap.pl)



Fig. 2. Male genitalia of *Scymnus frontalis* (1), *S. schmidti* (2) and *S. suffrianioides apetzoides* (3) (photos by A. Larysz and W.T. Szczepański).





Fig. 3. Dobrynia – habitat of *S. suffrianioides apetzoides* (photo by A. Tazsakowski).

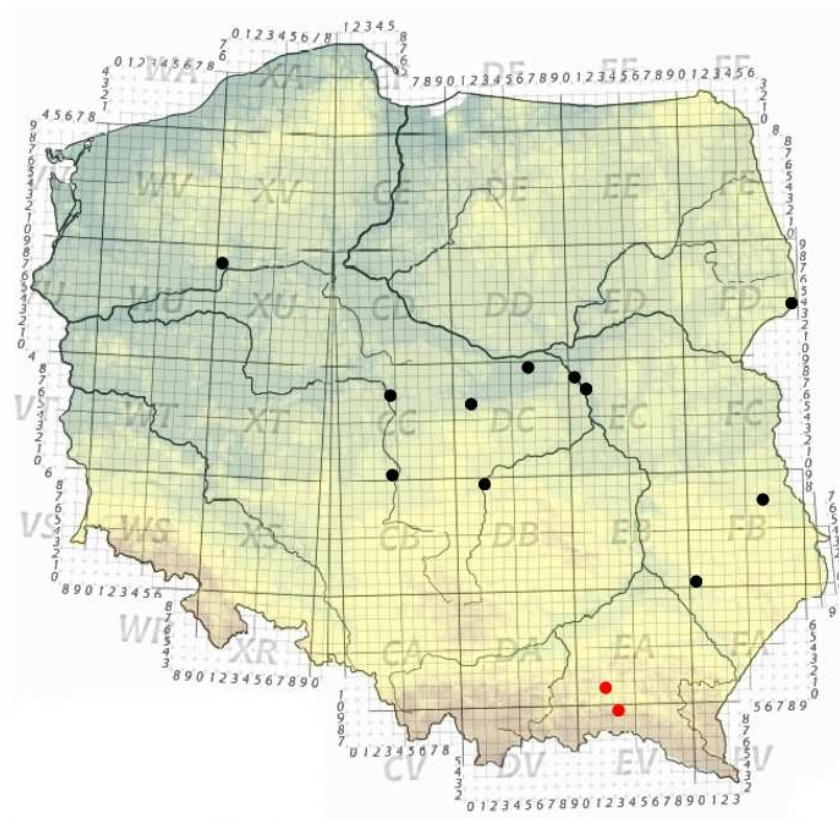


Fig. 4. Distribution of localities of *Scymnus suffrianioides apetzoides* in Poland (● – literature data, ● – new records).