ANNALES
UNIVERSITATIS MARIAE CURIE-SKŁODOWSKA
LUBLIN – POLONIA
VOL. LXI, 1 SECTIO C 2006

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Weevils (*Curculionoidea*) of the middle part of the Bug River Valley

Ryjkowcowate (*Curculionoidea*) środkowego odcinka doliny Bugu

SUMMARY

The work presents the results of faunistic and ecological studies on weevils (*Curculionoidea*) of the middle part of the Bug River Valley. Between April 1999 and November 2003, altogether 16,793 specimens representing 425 species (480 species taking into account literature records) of weevils were collected. The examined material comprised 46% of all species found in the Polish weevil fauna. Almost 40 of the collected species are regarded as scarcity. Nine weevil species new for the fauna of the Lublin Upland were detected. Twenty-five weevil species were reported from the region of Podlasie for the first time. A total of 14 species collected during the study are included in *The Red List of Threatened Species in Poland*. The zoogeographical analysis of the collected material indicates that there is a connection between latitude of geographic range of distribution of the particular weevil species and its habitat selectivity. The relationships between weevil species and different habitats were analysed. The results did not confirm hitherto used ecological classification of some of weevil species. There was a difference in weevil species composition inhabiting xerothermophilous grasslands localized near Gródek comparing with the previous studies of that area conducted in the 60s. The study confirmed outstanding natural values of the Bug River Valley serving as a migration tract not only in the past, but also at present.

STRESZCZENIE

Praca prezentuje wyniki badań faunistycznych i ekologicznych nad ryjkowcowatymi (*Curculionoidea*), prowadzonymi w latach 1999–2003 na lewobrzeżnym odcinku doliny Bugu (dług.

209 km), pomiędzy miejscowościami Gołębie i Włodawa. W efekcie prowadzonych prac zebrano łącznie 16793 okazy, należące do 425 gatunków *Curculionoidea* (uwzględniając dane literaturowe – 480 gatunków), co stanowi ok. 46% krajowej fauny omawianych chrząszczy. Blisko 40 z odłowionych gatunków można uznać za rzadko spotykane w Polsce. Dziewięć gatunków było po raz pierwszy notowanych z obszaru Wyżyny Lubelskiej, a 25 z obszaru Podlasia. Odnotowano 14 gatunków uwzględnionych na *Czerwonej Liście Zwierząt Ginących i Zagrożonych w Polsce*. Pozwala to uznać dolinę Bugu za obszar unikatowy w skali kraju pod względem bioróżnorodności. Wyniki analizy zoogeograficznej zebranego materiału wskazują na istnienie powiązań pomiędzy szerokością zasięgu geograficznego danego gatunku a jego wybiórczością siedliskową. Elementy o wąskim zasięgu geograficznym charakteryzowały się również większą selektywnością w doborze biotopu. Zebrany materiał przeanalizowano także pod kątem preferencji siedliskowych w celu ustalenia powiązań pomiędzy poszczególnymi gatunkami a badanymi siedliskami. Zebrane informacje nie potwierdzają słuszności dotychczas stosowanych klasyfikacji ekologicznych niektórych gatunków. Analizie poddano skład gatunkowy ryjkowcowatych muraw psammofilnych i zbliżonych do nich pod względem warunków abiotycznych muraw nalessowych. Stwierdzono istnienie odrębnych zespołów gatunków *Curculionoidea* zasiedlających omawiane środowiska. Dokonano również analizy porównawczej zgrupowań ryjkowcowatych muraw kserotermicznych doliny Bugu oraz innych stanowisk położonych we wschodniej części Polski. Zanotowano różnice w składzie gatunkowym omawianych biotopów w porównaniu z badaniami z lat ubiegłych. Sugeruje to potrzebę podjęcia czynnej ochrony badanych stanowisk. Wykazano, że Bug nadal odgrywa aktywną rolę w migracji ryjkowcowatych, w istotny sposób kształtując faunę obszarów przyległych do doliny.

Keywords: faunistic, ecology, Bug River Valley, weevils, *Curculionoidea.*

INTRODUCTION

Superfamily of weevils (*Curculionoidea*) is the most numerous taxa among beetles. More than 50,000 species of these insects have been described all over the world. They are most abundant in the tropic areas of America and Africa. A total of 8,000 species have been hitherto detected in Paleartica. A total of 1,052 weevil species have been reported from Poland (20, 70).

The weevil fauna of the Bug River Valley is still poorly studied. The only one exception is a group of species inhabiting xerothermophilous grasslands localized near Gródek and Czumów (9–11, 28, 60, 61). Incidental investigations of selected habitats were also conducted near Mielnik, Gnojno, Sobibór, Ślipcze and around the mouth of the river (2, 14, 60). Their results can be regarded as contributory and the problem of weevil fauna in this area has not been completely investigated. Moreover, there are no data regarding the remaining part of the Bug Valley both in the literature and in the collected material (69). Therefore, comprehensive studies of *Curculionoidea* inhabiting the left side of the Bug Valley seem to be justified. Since 2000 (the first year of my studies), 252 species have been recorded from the Bug Valley in the literature, and 192 of them were described previously in the surroundings of Gródek by Cmoluch (11). The knowledge of *Curculionoidea* of the Bug Valley is inadequate regarding the significance of this area. The Bug River Valley serves as a migration track (Poleski Migration Tract). Moreover, boundaries of many zoogeographic ranges, for example: pontian, panonian, boreal, Siberian and Atlantic are localized in this area (43, 69). The systematic classification and species nomenclature used for families: *Rhinomaceridae*, *Attelabidae*, *Nanophyidae* and *Apionidae* follow Alonso-Zarazaga and Lyal (1).

Nomenclature of *Curculionidae* follows *Katalog Fauny Polski* (3–7). The families *Scolytidae* and *Platypodidae* were not included in my work, since different collecting methods are necessary in investigation of these families and they are usually discussed separately.

AIM OF THE WORK

The aim of the work was to investigate weevils species composition in the area of the Bug River Valley and to assess representative groups of species for the study area. Moreover, the author compares his results with results of earlier faunistic studies, especially those conducted in xerothermophilous biotopes. Finally, the aim of the study was to assess the significance of the Bug River and its valley in the process of migration of *Curculionoidea*.

STUDY AREA

The Bug River is the biggest river in Poland that is not regulated along its whole length. The valley of Bug has unique biological and geographic values and well preserved natural environment (21). According to IUCN the whole Bug river valley is the area of Pan-European importance as an ecological corridor. In Pan-European Biological and Landscape Diversity Strategy, the area of the study was classified at the 9th place among European natural or semi-natural river systems that play an important role in preserving biodiversity in Europe (47, 71). The Bug River Valley has the status of a core area (Poleski Region) in the National Ecological Network ECONET-PL. Moreover, it has been regarded as ecological corridor of international significance (42). In 2002 the middle part of the Bug River Valley was included in the International Biosphere Reserve "Polesie Zachodnie" (8).

The studied area comprised the left side of the Bug River Valley beginning from Gołębie up to Włodawa. The 208 km long part of the valley was included in the study (Fig. 1). Faunistic material was collected in 32 defined phytosociological localities that were representing the most characteristic of *Curculionoidea* habitats in the examined part of the valley. The studied area was divided into the regions according to Katalog Fauny Polski (3–7).

The list of localities:

***Potamogetea* class**

loc. 1, group *Hydrocharitetum morsus-ranae*, Dubienka (GB05)

***Phragmitetea* class**

loc. 2, group *Eleocharitetum palustris*, Włodawa (FC71)
loc. 3, group *Equisetetum fluviatilis*, Dubienka (GB05)
loc. 4, group *Glycerietum maximae*, Hniszów (FB88)
loc. 5, association *Magnocaricion*, Ślipcze (GB02)
loc. 6, association *Magnocaricion*, Świerże (FB97)
loc. 7, association *Magnocaricion*, Gródek (GB03)
loc. 8, association *Magnocaricion*, Gródek (GB03)

***Molinio-Arrhenatheretea* class**

loc. 9, association *Molinion caeruleae*, Wola Uhruska (FB88)
loc. 10, association *Molinion caeruleae*, Gródek (GB03)
loc. 11, association *Molinion caeruleae*, Skryhiczyn (GB05)
loc. 12, association *Arrhenatherion elatioris*, Hniszów (FB88)
loc. 13, association *Arrhenatherion elatioris*, Stare Stulno (FB89)

loc. 14, association *Arrhenatherion elatioris*, Stare Stulno (FB89)
loc. 15, association *Arrhenatherion elatioris*, Stare Stulno (FB89)
***Festuco-Brometea* class**
loc. 16, association *Cirsio-Brachypodion pinnati*, Czumów (GB03)
loc. 17, group *Origano-Brachypodietum pinnati*, Strzyżów (KS 93)
loc. 18, association *Cirsio-Brachypodion pinnati*, Czumów (GB03)
loc. 19, association *Cirsio-Brachypodion pinnati*, Gródek (GB03)
loc. 20, association *Cirsio-Brachypodion pinnati*, Gródek (GB03)
loc. 21, association *Cirsio-Brachypodion pinnati*, Gródek (GB03)
***Koelerio glaucae-Corynephoretea canescentis* class**
loc. 22, group *Corynephoro-Silenetum tataricae*, Wołczyny (FC80)
loc. 23, association *Corynephorion canascentis*, Włodawa (FC71)
***Artemisietea vulgaris* class**
loc. 24, association *Onopordion acanthii*, Wola Stuleńska (FB89)
***Salicetea purpureae* class**
loc. 25, group *Populetum albae*, Gołębie (KS91)
***Alnetea glutinosae* class**
loc. 26, group *Ribso nigri-Alnetum*, Reserve „Magazyn" near Sobibór (FC80)
***Querco-Fagetea* class**
loc. 27, association *Alno-Padion*, Wołczyny (FC80)
loc. 28, association *Alno-Padion*, Bytyń (FB88)
loc. 29, group *Tilio cordatae-Carpinetum betuli*, Dubienka (GB05)
loc. 30, group *Tilio cordatae-Carpinetum betuli*, Husynne (GB03)
loc. 31, group *Tilio cordatae-Carpinetum betuli*, Świerże (FB97)
***Vaccinio-Piceetea* class**
loc. 32, association *Peucedano-Pinetum*, Reserve "Magazyn" near Sobibór (FC80).

METHODS

The field studies on *Curculionoidea* were carried out during four vegetative seasons, from March to October, between 2000 and 2003. The samples were collected in all of the localities in regular, one month long intervals, during one to three vegetative seasons. The duration and the number of collections were assessed basing on characteristics and the degree of phytosociological diversity of the locality. The collections at the locality were discontinued when there were no new species of *Curculionoidea* in subsequent collections.

The epiphytic weevils were collected with an entomological scoop net from herbaceous plants. The number of scooping was 200 in non-forest communities and 250 ones in the forest undergrowth. The hydrophilic beetles were collected using hydrobiological scoop. The quantitative samples were collected in the 1 m^2 large area in the littoral zone. The epiphytic weevils were collected with entomological umbrella from bushes and trees. The sample was collected from branches consisting of 10 trees or bushes of the same species and similar age. The epigeic weevils were collected using Barber soil traps (ground traps) (plastic container with capacity of 120 cm^2, filled with ethylene glycol to the 1/3 of the total volume, arranged in rows consisting of 10 trees or bushes of the same species, with 4 m-long breaks). The epigeic or spending the winter in soil weevils were gained collected with an entomological sieve. The sample consisted of material obtained from sieving approximately 20 dm^3 of substrate. The quantitative methods were extended with a collection of beetles "by picking out". The insects were looked out for and collected directly from the surface of soil or plants. During the spring season specimens of *Curculionoidea* were sieved from material brought by food tide. The collected material is localized in the author's collection in the Department of Zoology UMCS.

The qualitative similarity factor (J) according to Jaccard (58) was used in the ecological analysis of the collected material. The division proposed by Koch (32) was used to classify species to ecological groups (stenotope, eurytope, ubiquistic). However, the stenotopic character of 143 species of *Curculionoidea* was questioned basing on relevant publications and author's own observation. Thus those species were classified as eurytopes – E*.

RESULTS

During the whole period of the studies a total of 16793 individuals of weevils were collected, including 425 species of *Curculionoidea*. Taking into account the literature data, a total of 480 species of *Curculionoidea* have been reported from the Bug River Valley so far (Tab. 1), which comprises approximately 46% of Polish weevil fauna (70). In the Bug River Valley there was a different number of weevil species comparing with the total Polish species composition and all reported from Poland weevil families, namely: 10 out of 23 species belonging to *Anthribidae*, 2 out of 3 species belonging to *Nemonychidae*, 13 out of 25 species from *Rhynchitidae*, all 3 *Attelabidae* species, 82 out of 119 belonging to *Apionida*e, 3 out of 7 *Nanophyidae* species in the area of the study. Thus, there were 367 species from among the whole number of 872 species of *Curculionidae* reported in Poland.

REVIEW OF SOME OF THE COLLECTED SPECIES

Abbreviations and explanatory signs used in the paper: S – scoop; U – umbrella; H – hydrobiological scoop; Si – sieve; B – Barber traps; P – collected "by picking out"; T – total number of specimens; * – specimens collected during the night collections.

The number of specimens collected in individual months.

0	1–5	6–10	10 <

Perapion connexum (Schilsky, 1902)

This oligophagous species feeds upon sorrel (*Rumex* spp.). The distribution in Poland is unknown. It was reported from the East Siberia, Russia, Kazakhstan, where it is associated with forest and steppe (34, 35). It was also described from: Ukraine, Austria and Moldavia (46).

III	IV	V	VI	VII	VIII	IX	X

S: 1 *ex*.; T: 1 *ex*.
Number of locality: 10.

The specimen was collected near Gródek, in the meadow community from *Molinion caeruleae* association. The species was collected also in: Miodobory – the spring of the Bug River (46), Gródek, Stare Stulno (Wanat – unpublished data). The described localities indicate the migration tract of the species.

Trachyphloeus inermis (Boheman in Schoenherr, 1843)

The species is xerothermical and stenotopic weevil. Its distribution and feeding preferences are poorly known. It was reported from 10 localities in Poland which are localized in the eastern part of the South Polish Uplands Zone (4).

III	IV	V	VI	VII	VIII	IX	X

Si: 15 *exx*.; B: 172 *exx*.; P: 1 *ex*.; T: 188 *exx*.
Number of locality: 16, 18, 19, 20, 21.

Weevil living mostly in the exposed parts of xerothermic grasslands in *Cirsio-Brachypodion pinnati* association. It is characterised by a short activity period. The teneral specimens and the peak of activity period were observed in May. Afterwards the number of specimens was quickly declining. The last specimens were collected in the second half of July. The adult individuals were not found in the end of the vegetation period (October) in sieving material. This fact suggests that the species may spend the winter in the form of one of preimaginal stages.

Trachyphloeus spinimanus (Germar, 1824)

Xerothermic stenotopic species. Its food preferences are poorly known. During the field studies the larvae of *T. spinimanus* were observed under *Cynodon dactylon* L. and under *Calamagrostis* sp. (32, 44). In laboratory conditions adult individuals were feeding on leaves of many herbaceous plants and trees (16). It was reported from numerous localities in Poland that are situated in the South Polish Uplands Zone. It was also described from other locations scattered in different regions of Poland (4, 14, 44, 45).

III	IV	V	VI	VII	VIII	IX	X

S: 3 *exx*.; 1* *ex*.; Si: 31 *exx*.; B: 525 *exx*.; P: 7 *exx*.; T: 567 *exx*.
Number of locality: 17, 19, 20, 21.

Fig. 1. Study area and investigated stations

It was the most numerous species belonging to that genus in the area of the study. Its distribution was connected with xerothermic grasslands from *Festuco-Brometea* class. However, the species was not reported in places with sandy soil (psammophilous grasslands). It preferred highly saliferous habitats with fragments of uncovered ground. The first individuals were observed as early as the second half of March. The peak of activity was noted on the turn of April. The considerable although transitory decline of the number of collected individuals was noted in June. The last imaginal stages were collected from sieving material in the first decade of October. The early spring peak of activity and the presence of adult individuals as early as March indicate that adult specimens rather than preimaginal ones are hibernating.

Chlorophanus graminicola (Schoenherr in Mènètries, 1832)

Hygrophilous species associated with riverain forest (32). The polyphagous beetle feeds upon many species of herbaceous plants as well as on willows and alders. Its zoogeographical and biological characteristics are poorly known (4). It is one of the most rare species in Poland. It was noted only from few localities scattered in different part of the country. However, most of the reports date back to the 19th century (4, 51).

III	IV	V	VI	VII	VIII	IX	X

P: 17 *exx.*; T: 17 *exx.*
Number of locality: 6

A total number of 17 individuals was observed on the edge of the old river, in partly shadowed places on the 7th of May 2003. One month later approximately the same number of specimens was observed, including 5 couples *in copula.* A total of 12 specimens were also collected on 26th of June 2003. No new individuals were detected starting from the beginning of August. There have been no such numerous records of this species in the literature so far. The observations were made in highly penetrated area, also in previous years. Thus we may suspect that *Ch. graminicola* occurred for the first time in that location in 2003.

Lixus tibialis (Boheman in Schoenherr, 1843)

Its biology and distribution are poorly known. Its activity is probably the biggest in the daytime. It is found in dry and warm habitats, e.g. in steppe grasslands and ruderal communities. It was collected from *Artemisia campestris* L.

near Niemirów and Tczew [Mazur unpublished data]. It has been reported only from two historical localities: Jastków near Lublin and Mielec until lately (55). However, it has been recently reported also from Mielnik and Sobibór (68), Niemirów and Tczew [Mazur unpublished data], surroundings of Lublin (Ciechanki Łęczyńskie, Nasutów), and surroundings of Zamość (Wirkowice) (25) and from the Valley of Biebrza River [Białooki unpublished data]. *L. tibialis* is included in *The Red List...* in the lower risk group (50).

III	IV	V	VI	VII	VIII	IX	X

S: 1 *ex.*; T: 1 *ex.*
Number of locality : 22.

L. tibialis was collected from *Artemisia campestris* L. growing in *Koelerion glaucae* association in Wołczyny. It was collected from regularly penetrated in previous years habitats which indicate intensive expansion of the species. The characteristics of associated plant communities suggests that the species is xerophilous rather then xerothermic.

Phloeophagus turbatus (Schoenherr, 1845)

Mould-eating species with partly described biology (4, 32). The west border of the range of distribution is localized in East Poland. It was reported from Białowieża (63). It was also described from few localities in the Lublin Upland and Podlasie (39, 69).

III	IV	V	VI	VII	VIII	IX	X

Si: 120 *exx.*; T: 120 *exx.*
Number of locality: 25, 31.

It was sieved from the mould of oak-tree, horse-chestnut, lime-tree and maple-tree. In the autumn there were not only adult stages but also undescribed hitherto larval stages (all the stages) in the sieving material. In the early spring there were no alive imaginal stages. These data point to the possibility that the species hibernates as larva or pupa.

Bagous petro (Herbst, 1795)

Stenotopic species inhabiting small water ecosystems (32). It is associated with common bladderwort (*Utricularia vulgaris* L.), as well as with Canadian waterweed (*Elodea canadensis* Rich.), and hornwort (*Ceratophyllum submer-*

sum L.) (5, 16, 26, 27). Its distribution and biology are poorly known. It is quite rare (56). It was described from few localities in Poland, situated only in 5 areas (5).

III	IV	V	VI	VII	VIII	IX	X

H: 2 *exx.*; T: 2 *exx.*
Number of locality: 4.

It was collected from common bladderwort, in dry Old-River ecosystem with dominant *Glycerietum maximae* association. There were no other alternative host plants of *B. petro* in the examined locality.

Bagous friwaldszkyi (Tournier, 1874c)

The development of this hygrophilous species takes place on the parts of reed canarygrass (*Phalaris arundinacea* L.) localized under the water (5, 32). It can be regarded as scarcity in Poland. It has been described in the localities from the West part of Poland until quite lately (5). It has been recently reported also from the Lublin Upland, in the Wieprz River Valley and Bug River Valley (24, 39).

III	IV	V	VI	VII	VIII	IX	X

S: 10 *exx.*; H: 15 *exx.*; Si: 7 *exx.*; T: 32 *exx.*
Number of locality: 5, 26.

B. friwaldszkyi inhabits both cold and shadow ecosystems (undergrowth of *Ribeso nigri-Alnetum* alder forest) and warm and insolated environments (shallow meadow water reservoirs with dominant *Magnocaricion* association). The greatest number of individuals was collected from reed canarygrass inhabiting places localized 20–40 cm under the water. A few individuals were also found in waterside silt (ooze). It appears to be quite numerous at least in East Poland. This finding is in contrast with earlier suggestions of Smerczyński (54).

Bagous nodulosus (Gyllenhal in Schoenherr, 1836)

Hygrophilous, monophagous species, associated with flowering-rush (*Butomus umbellatus* L.) (32). It has been rarely collected in Poland, reported only from 6 lands of the country. In the eastern part of the country it has been described only in two historical localities near Puławy and Lublin (5). It has been recently reported also from the Bug River Valley (24). It is probably the last area in the country where this endangered species is quite numerous (69).

III	IV	V	VI	VII	VIII	IX	X

S: 10 *exx.*; H: 8 *exx.*; Si: 9 *exx.*; T: 27 *exx.*
Number of locality: 5, 8.

It was observed only on *Butomus umbellatus* L. growing in shallow, exposed to the sun meadow water-reservoirs with dominant *Magnocaricion* rushes. The greatest number of individuals of *B. nodulosus* was observed on plants growing 20–40 cm under the water. Together with *Poophagus hopffgarteni B. nodulosus* can be regarded as a species characteristic of the Bug River Valley.

Bagous robustus (H. Brisout, 1863)

The biology and distribution of the species are poorly known (32). It is probably monophagous species associated with water plantain (*Alisma plantago-aquatica* L.). There is only few information connected with *B. robustus* probably because this species is treated as a form (variety) of *B. lutulentus*. However, the separate character of both species is underlined also by different type of habitats preferred by the species and systematically distinct host plants. Although water plantain is quite common in Poland, *B. robustus* is known only from 6 lands of Poland (5, 56).

III	IV	V	VI	VII	VIII	IX	X

H: 1 *ex.*; T: 1 *ex.*
Number of locality: 8.

The specimen was collected from water plantain, in a small water pool localized in meadow with dominant rushes belonging to *Magnocaricion* association.

Tychius sharpi (Tournier, 1873)

Xerothermic and stenotopic species, probably monophagous, connected with Mountain Clover (*Trifolium montanum* L.) (5). In Poland it was found mostly in the area of the Lesser Polish Upland (5, 44). The species seems to be widespread in the Podlasie part of the Bug River Valley. *Tychius sharpi* was collected here from *Trifolium montanum* L. and *T. alpestre* L. (69).

III	IV	V	VI	VII	VIII	IX	X

S: 2 *exx.*; T: 2 *exx.*
Number of locality: 13.

The specimens were collected in the meadow community with *Arrhenatherion elatioris* association. They were probably feeding on Red Clover (*Trifolium pratense* L.).

Baris nesapia (Faust, 1887)

Stenotopic and psammophilous species (32). The process of development takes place on Common Sagewort (*Artemisia campestris* L.). The species' number is regarded as scarce in Poland, since it is known only from few localities in the eastern part of Polish Lowlands (5, 61), in the Bug River Valley (between Włodawa and Wola Uhruska), and in the surroundings of Niemirów and Mielnik. During the studies *B. nesapia* did not appear to be rare (69).

III	IV	V	VI	VII	VIII	IX	X

S: 1 *ex.*; P: 2 *exx.*; T: 3 *exx.*
Number of locality: 9, 24.

It was found in the meadow community with *Molinion caeruleae* association, which was located on the sandy subsoil and in the ruderal plants community from *Artemisietea vulgaris* class. It is difficult to find this species because of its epigeic lifestyle.

Poophagus hopffgarteni (Tournier, 1873b)

This hygrophilous species is found mostly in silted up riversides. It is a monophagous beetle connected with great yellowcress [*Rorippa amphibia* (L.) Bess.] (32). It has been hitherto known only from one historical locality in the surroundings of Zalew Zegrzyński (2). The studies conducted in the Bug and Narew River Valleys provided valuable information which was substantial in the process of development of our knowledge about the distribution of *Poophagus hopffgarteni* (68). Therefore, the species can be regarded as limited to the Bug River Valley. It forms quite numerous populations in the Podlasie part of the Bug Valley (surroundings of Mielnik and Drohiczyn) as well as in the valleys of north tributary rivers of Bug. It has been found always in constantly wet areas. It is probably borne down from drier localities by *Poophagus sisymbrii* (68). *P. hopffgarteni* was included in *The IUCN Red List of Threatened Species* as an endangered species (50).

III	IV	V	VI	VII	VIII	IX	X

S: 4 *exx.*; H: 1 *ex.*; T: 5 *exx.*
Number of locality: 5, 8, 28.

P. hopffgarteni seems to be highly tolerant of environment conditions. It inhabits exposed to the sun, warm meadow water lakes, old rivers with dominant *Magnocaricion* plant association, and shadow, melting floodplain forest undergrowth (*Alno-Ulmion*).

Gymnetron pirazzolii (Stierlin, 1867)

Psammophilous, stenotopes, monophagous species connected with Sand Plantain (*Plantago arenaria* Waldst & Kit.). It is regarded as faunistic scarcity in Poland. It is known from approximately 10 localities from 6 lands in the area of Poland. The described locality was the second place where that beetle was collected in the eastern part of Poland (6, 69).

III	IV	V	VI	VII	VIII	IX	X

S: 1 *ex.*; T: 1 *ex.*
Number of locality: 9.

The specimen was collected from meadow plant community belonging to *Molinion caeruleae* association overgrowing sandy slope.

Gymnetron asellus (Gravenhorst, 1807)

Xerothermic and photophilous, stenotopic species. It inhabits steppe grasslands and synanthropic communities. It is oligophagous species connected with mullein (*Verbascum* L.), namely: orange mullein (*Verbascum phlomoides* L.), common mullein (*V. thapsus* L.), and *V. pulverulentum* Vill. (6, 32). It is rarely found in the area of Poland (6).

III	IV	V	VI	VII	VIII	IX	X

S: 3 *exx.*; 1* *ex.*; P: 94 *exx.*; T: 98 *exx.*
Number of locality: 9, 19, 20, 21, 22, 23, 24.

It was commonly found in xerothermic communities (*Cirsio-Brachypodion pinnati*), in psammophilous grasslands (*Koelerion glaucae*), as well as at roadside and in ruderal places. It was collected from leaf rosettes of orange mullein, common mullein, and denseflower mullein. Only few specimens were found inside of inflorescence. The results of the study confirms suggestions of Smerczyński (55) that *G. asellus* is trophically dependent on more species of mullein than it has been thought so far. It was quite commonly found together with *Cionus olens* and *Cleopus solani*.

Cionus clairvillei (Boheman in Schoenherr, 1838)

Xerothermic and stenotopic species (32). This oligophagous weevil is connected with different species of mullein (*Verbascum* L.). It is regarded as faunistic scarcity in Poland. It was noted only from few lands localized mostly in the area of the Lesser Polish Uplands (6, 52).

III	IV	V	VI	VII	VIII	IX	X

S: 4 *exx.*; Si: 6 *exx.*; P: 83 *exx.*; T: 93 *exx.*
Number of locality: 12, 18, 19, 22, 23, 24.

It was found in xerothermic communities (*Cirsio-Brachypodion pinnati*), in the fallow (*Artemisietea vulgaris*), in dry meadows (*Arrhenatherion elatioris*), and psammophilous grasslands (*Koelerion glaucae*). It was collected from dense flower mullein (*Verbascum densiflorum* Bertol.) and orange mullein (*V. phlomoides* L.). It was the most numerous in the middle part of host plant stem, often together with *Cionus olivieri*.

Cionus olens (Fabricius, 1798)

Xerothermic, stenotopic and oligophagous species connected with mullein (*Verbascum* L.) (6). It is known only from several localities situated mostly in big river valleys, e.g. Vistula, San, and Warta (44, 61). In the Bug River Valley it was observed only on common mullein (69).

III	IV	V	VI	VII	VIII	IX	X

Si: 4 *exx.*; P: 58 *exx.*; T: 62 *exx.*
Number of locality: 9, 19, 23, 24.

In the area of the study it was found in ruderal communities, dry meadows, as well as psammophilous and xerothermic grasslands. It was one of the most characteristic weevils of the Bug River Valley. That species was collected only from the leaves of host plant localized close to the ground.

Cionus olivieri (Rosenschoeld, 1838)

This xerothermic and stenotopic weevil has feeding and environmental requirements similar to *C. olens* (69). It was reported only from 17 localities in Poland that are situated in the area of the Lesser Polish Uplands (44). It was found also on the south border of Białowieża Old Forest (65).

III	IV	V	VI	VII	VIII	IX	X

S: 28 *exx.*; P: 105 *exx.*; T: 133 *exx.*
Number of locality: 9, 18, 19, 22, 23, 24.

In the area of the study *Cionus olivieri* similarly to *C. olens* was not behaving like xerothermic species, rather like xerophilous one. It was found in ruderal communities, dry meadows, xerothermic and psammophilous grasslands. It was collected from common and denseflower mullein. It was the most numerous in the middle part of host plant stem, often together with *C. clairvillei*.

Ramphus subaeneus (Illiger, 1807)

Xerothermic stenotopic species (32). It was collected from hawthorn (*Crataegus* sp.) and common pear (*Pyrus communis* L. em. Gaert.) (44, 69). It is quite rare in the area of Poland. It was noted only from few localities situated in 4 lands (6). It has been lately reported also from Białowieża Forest (65).

III	IV	V	VI	VII	VIII	IX	X

U: 2 *exx.*; T: 2 *exx.*
Number of locality: 12.

R. subaeneus was collected from hawthorn (*Crataegus* sp.), inhabiting the border between dry-ground forest and meadow, in dry place, exposed to the sun.

ECOLOGICAL ANALYSIS

There are three main factors influencing the species composition of *Curculionoidea* in the area of the study. The most important element seems to be the type of plant community. The highest quality of similarity of *Curculionoidea* composition was characteristic for the localities representing the same plant community class. Especially high similarity of the weevils species composition was observed in *Festuco-Brometea* class (loc. 16–21). Moreover, weevil communities inhabiting xerothermic plant association were quite different from weevils of all other types of plant communities in the study area. It was caused by the presence of large number of stenotopic species in xerothermic grasslands (49 species out of 114 species reported by Mazur (44) in the Polish fauna of xerothermic *Curculionoidea*). High similarity of species composition of *Curculionoidea* was noted also among the majority of localities situated in rushes communities (loc. 1–4). It is the result of widespread distribution of host plants of hygrophilous species in the majority of rushes communities (Fig. 2).

The species similarity of weevils was also dependent on the geographical localization. The localities situated in the region of Podlasie e.g. *Molinio-Arrhenatheretea* plant community class (loc. 13 and 14), were characterized by higher species similarity to adjacent localities with *Koelerio glaucae-Corynephoretea canescentis* plant class (loc. 23), than to localities of the same class situated in the area of the Lublin Upland (loc. 9 and 11).

The third factor influencing weevils species composition appeared to be the distance from the river bed. A lot of common species of *Curculionoidea* were recorded in: *Festuco-Brometea* (loc. 19 and 21), *Molinio-Arrhenatheretea* (loc. 13–15), *Koelerio glaucae-Corynephoretea canescentis* (loc. 23) and *Achillea millefolium* (loc. 24), all of which are situated for from the river bed terrace localized above the flooded area. High qualitative similarity between majority of localities belonging to *Potamogetea* and *Phragmitetea* classes (loc. 1–4; 6; 7), and some of localities from *Querco-Fagetea* class (loc. 27 and 28) was a very interesting phenomenon. It was connected with temporary flood of forest undergrowth that were localized in the close proximity of the river. That process favoured the development of adequate environmental conditions for vegetation of some of hygrophilous plant species (e.g. common duckweed and great yellowcress). Development of hygrophilous weevil communities therefore followed hygrophilous plant communities. The presence of hygrophilous weevil species was a unique feature of dry-ground forest localized in the Bug River Valley that makes them different from dry-ground forest situated in different areas of the Lublin Upland and Podlasie, e.g. Krzczonowski NP, Chełm LP or Polesie NP (15, 23, 38).

The partial species similarity even between phytosociological different communities was connected with the process of beetle's migration from neighbouring plant communities. That phenomenon was pronounced in the locality number 12 (meadow community surrounded by the forest) and localities with dominating dry-ground forest (loc. 29, 30, and 31). The reason of partial faunistic similarity between locality number 27 (association with dominating willow shrubs) and neighbouring locality number 19 (xerothermic slope) was probably the same. Quite high similarity of *Curculionoidea* composition was observed between forest communities representing different phytosociological classes (loc. 31; 25; 28–30). That phenomenon was probably underlined by the presence of the same tree species such as: oak-trees, alders, poplars, and pine-trees as the host-plants of weevils. The similarity of weevil communities accompanying forest associations was caused also by vast feeding preferences of the beetles. The majority of the weevils are low specialized polyphagous species, e.g. belonging to genus *Phyllobius*, *Polydrusus* or saprophagous species from *Anthribidae*. These weevils are characterized also by broad range of environmental tolerance. And finally, the reason of observed similarity may be connected with the lack of weevil species characteristic only of the certain type of forest community, e.g. some beetles belonging to *Tropiphorus* or *Otiorhynchus* genders that are collected mostly from dry-ground forests. The localities with dominant dry-ground forest communities (*Tilio-Carpinetum*) (loc. 27–31) distinctly differed from each other in respect of species biodiversity and relative number of *Curculionoidea*. That difference was not observed in the dominant species group composed of the same species in almost all localities. However, it was connected with weevils belonging to less numerous groups. The greatest number of species was collected from localities comprising the area of old, neglected, post-manorial parks (e.g. in Dubienka – locality number 29 or in Świerże – locality number 31). On the contrary, the locality comprising the area under supervision of The State Forest National Forest Holding (Polskie Lasy Państwowe) (Husynne loc. 30) was characterized by much smaller number of weevils species and much lower biodiversity of fauna. That observation was made both for forest undergrowth and the level of trees and bushes. This phenomenon was observed also in other regions of the country (59). The weevils poverty, in the areas where the forest husbandry was carried out, was connected probably with the lack of old trees, systematic removal of forest drought and necrotic trees that formed the suitable microenvironment, e.g. xylophagous, cariophagous and other saprophagous species (e.g. belonging to genus of *Phloeophagus*, *Acalles*, and some of *Anthribidae*). It is noteworthy that in the communities belonging to *Querco-Fagetea* class localized in the Bug River Valley there were only few species quite common in other dry-ground forest localities situated in the Lublin Upland and Podlasie, such as *Otiorhynchus multipunctatus*, *Barypeithes pellucidus*, *Orobitis cyaneus* or *Anoplus roboris* (15, 23, 38).

The next factor influencing weevils species composition was the type of subsoil in the plant community. A good example of this relation is the presence of many common species of *Curculionoidea* in plant communities overgrowing sandy subsoil such as meadow communities (loc. 10), psammophilous grasslands (loc. 22 and 23), and ruderal community (loc. 24) (Fig. 2).

On the other hand, pronounced differences in species composition of weevils were noted between localities belonging to xerothermic grasslands (loc. 16–21) and psammophilous grasslands (loc. 22 and 23). The results of the study indicate that those seemingly similar plant communities are inhabited by quite different weevil communities. Regarding the fact that many plants can be found in both xerothermic and psammophilous grasslands, the reason of observed differences in phytophagous species composition is probably connected with abiotic factors such as dissimilar thermic condition. The lack or insufficient

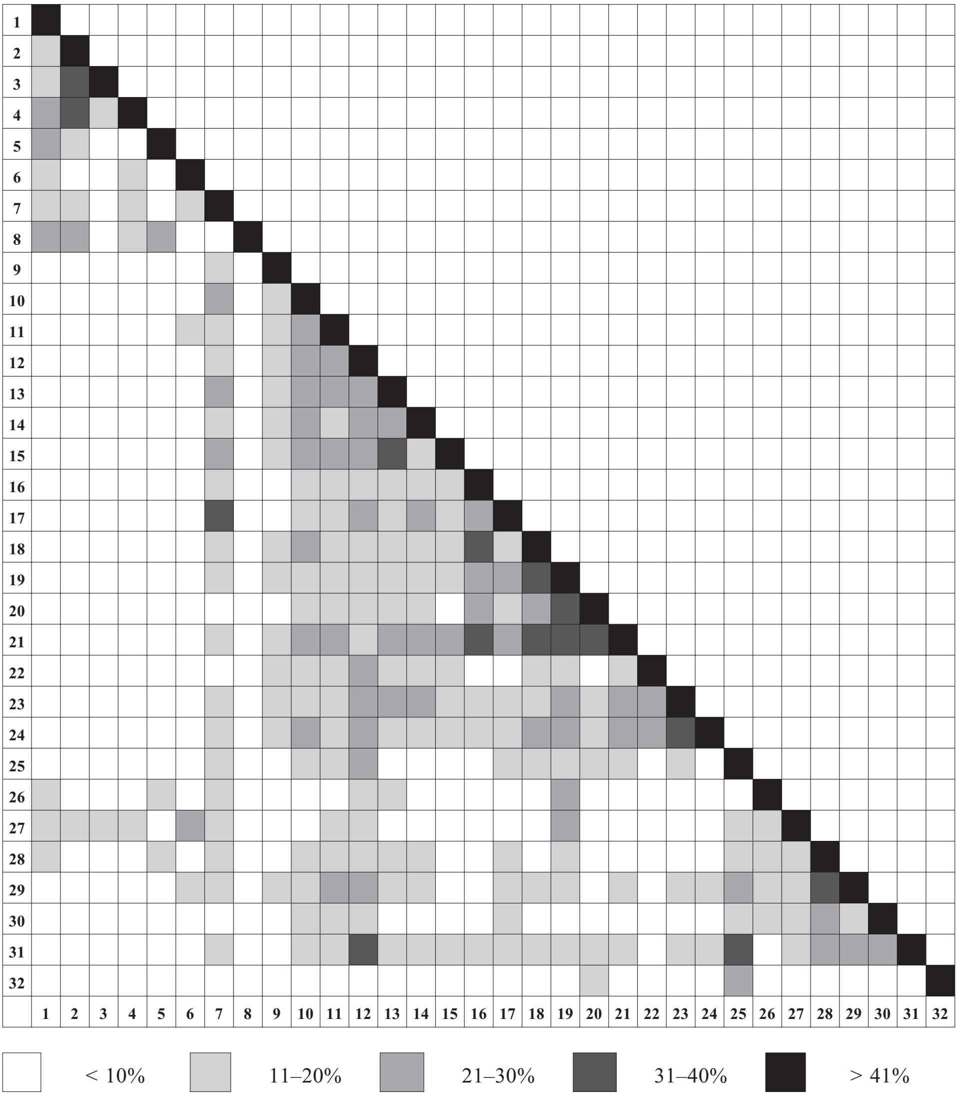

Fig. 2. The comparison of *Curculionoidea* species composition between different localities in the study area: *Potamogetea*: 1 – Dubienka. *Phragmitetea*: 2 – Włodawa; 3 – Dubienka; 4 – Hniszów; 5 – Ślipcze; 6 – Świerże; 7 – Gródek; 8 – Gródek. *Molinio-Arrhenatheretea*: 9 – Wola Uhruska; 10 – Gródek; 11 – Skryhiczyn; 12 – Hniszów; 13 – Stare Stulno; 14 – Stare Stulno; 15 – Stare Stulno. *Festuco-Brometea*: 16 – Czumów; 17 – Strzyżów; 18 – Czumów; 19 – Gródek; 20 – Gródek; 21 – Gródek. *Koelerio glaucae-Corynephoretea canescentis*: 22 – Wołczyny; 23 – Włodawa. *Artemisietea vulgaris*: 24 – Wola Stuleńska. *Salicetea purpureae*: 25 – Gołębie. *Alnetea glutinosae*: 26 – Reserve „Magazyn" near Sobibór. *Querco-Fagetea*: 27 – Wołczyny; 28 – Bytyń; 29 – Dubienka; 30 – Husynne; 31 – Świerże. *Vaccinio-Piceetea*: 32 – Reserve "Magazyn" near Sobibór

amount of carbohydrates in the subsoil of psammophilous grasslands causes very quick cooling at night, and thus considerable day and night changes of temperature (Mazur 2001). The differences in cohesion, compaction, and granulation (the size of soil particles) of different types of soil originating from sand or loess can be also the reason. Those differences are probably very important for epigeic species. The process of interspecies competition (between species inhabiting the same plant) might also influence the differences in the weevil species composition. It might cause bearing down of some of the species from xerothermic grasslands to less suitable habitats. Moreover, the analysis of the number of weevils connected with plant species found in different habitats supports the significance of soil in the process of the development of *Curculionoidea* population. The results of conducted analysis revealed the presence of significant differences in the size of weevil population belonging to genders *Sibinia*, *Gymnetron* and *Cionus* inhabiting the same plant species (mulleins and catchflies) that grow in a different type of soil: sand or loess. However, further investigations are necessary to explicate the psammophilous weevil species composition and to explain the interactions between *Curculionoidea* of psammophilous and xerothermic communities.

ZOOGEOGRAPHICAL ANALYSIS

The zoogeographical analysis of the material collected in the field studies was based on species classification proposed by: Cmoluch (14), Knutelski (30), Pawłowski (48), Petryszak (51) and the data from *Katalog Fauny Polski* (3–7). The main criterion used in the classification was the geographical range of the given species. The classification of certain species was given in Table 1.

The following zoogeographical elements were distinguished:

• Holarctic;

• Palearctic;

• Eurosiberian – species with geographical range extending from most of Europe (excluding north and south boundary regions) through Siberia to the northern borders of Mongolia. Some of them might be occasionally noted also from the region of Asia Minor. The distribution of these species is connected mostly with coniferous and mixed forest and foreststeppe zones. The borders of Eurosiberian range are situated in the north Arctic area and south Mediterranean and steppe zone;

• Eurocaucasian – species inhabiting most of Europe, Caucasus and some of the regions of Minor Asia;

Table 1. List of weevils (*Curculionoidea*) given from the Bug River Valley. E – eurytope, E*– eurytope given by Koch (32) like stenotops; S – stenotops; U – ubiquistic; F – forest; K – xerophilous; KT – xerothermic, M – meadow; A – aquatic; W – hygrophilous; T – termophilous; Ps – psammophilous; H – Holarctic, P – Palearctic; Es – Eurosiberian; Ek – Eurocaucasian; Eu – European; Pd – Southeuropean; B – boreal; G – mountain. Species given by: I – Cmoluch (11); II – Szymczakowski (60); III – Cmoluch (14); IV – Mazur (43); V – Szypuła & Wanat (61); VI – Mazur (44); VII – Gosik et. al (24); VIII – Wanat & Gosik (69); IX – Wanat (66); X – Wanat & Colonnelli (67)

No.	Species	Number of localities /Number of papers	Phytosociological class										Number of specimens	Ecological elements	Habitat selection	Zoogeographical elements
			Potamogetea	*Phragmitetea*	*Molinio-Arrhenatheretea*	*Festuco-Brometea*	*Koelerio glaucae-Corynephoretea canescentis*	*Artemisietea vulgaris*	*Salicetea purpureae*	*Alnetea glutinosae*	*Querco-Fagetea*	*Vaccinio-Piceetea*				
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**
	Anthribidae															
1	*Bruchela rufipes* (Oliv.)	VIII														Pd
2	*Platyrhinus resinosus* (Scop.)	25							1				1	E*	F	P
3	*Tropideres albirostris* (Herbst)	25							1				1	E*	F	Es
4	*Allandrus undulatus* (Panz.)	12			1								1	E*	F	Eu
5	*Phaeochrotes cinctus* (Payk.)	32										1	1	E*	F	Es
6	*Rhaphitropis marchicus* (Herbst)	29, 31, 32									6	1	7	E*	F	Es
7	*Dissoleucas niveirostris* (Fabr.)	12, 25			1				1				2	E*	F	P
8	*Anthribus albinus* (L.)	25							3				3	E*	F	Es
9	*Brachytarsus nebulosus* (Forst.)	18, 29, 31				1					19		20	E	F	Es
10	*Choragus sheppardi* Kirby	VIII														Eu

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	Nemonychidae															
11	*Nemonyx lepturoides* F.	I, II, VI, VIII														Ek
12	*Cimberis attelaboides* Fabr.	32										2	2	E*	F	P
	Rhynchitidae															
13	*Auletobius sanguisorbae* (Schrank)	11, 16			3	2							5	S	W	Es
14	*Temnocerus nanus* (Payk.)	24						1					1	E	F	Es
15	*Temnocerus tomentosus* (Gyll.)	23					1						1	E	F	Es
16	*Neocoenorrhinus aequatus* (L.)	17, 21				7							7	E	K	Ek
17	*Neocoenorrhinus germanicus* (Herbst)	10–12, 17–21, 23–25, 28, 29, 31			9	47	3	8	4		13		84	E	K	P
18	*Neocoenorrhinus pauxillus* (Germ.)	10, 18–20, 31			1	3							4	S	K	Ek
19	*Rhynchites bacchus* (L.)	18				1							1	E	KT	P
20	*Involvulus cupreus* (L.)	17, 18, 20, 31				9					1		10	E	K	P
21	*Haplorhynchites pubescens* (Fabr.)	18, 19				4							4	E*	T	Ek
22	*Byctiscus betulae* (L.)	12			4								4	E	F	P
23	*Byctiscus populi* (L.)	11–14, 17, 22, 23, 31			15	3	10				1		29	E	F	P
24	*Deporaus betulae* (L.)	9, 12–14, 22, 26, 31			13		12			51	19		95	E	F	P
25	*Deporaus mannerheimii* (Hummel)	VIII														Es
	Attelabidae															
26	*Attelabus nitens* (Scop.)	11, 26			1					2			3	E*	F	Ek

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
27	*Apoderus coryli* (L.)	11, 12, 29			6						2		8	E	F	P
28	*Apoderus erythropterus* (Gmel.)	26								2			2	S	W	P
	Apionidae															
29	*Aspidapion aeneum* (Fabr.)	IV														P
30	*Aspidapion radiolus* (Marsh.)	17, 21, 23, 25				2	1		2				5	E	K	P
31	*Pseudapion rufirostre* (Fabr.)	21				1							1	E*	K	Pd
32	*Taeniapion urticarium* (Herbst)	10–12, 19, 28, 29, 31			6	1					16		23	E	K	P
33	*Melanapion minimum* (Herbst)	15, 31			1						2		3	E	F	P
34	*Squamapion elongatum* (Germ.)	15, 17, 19, 21			6	23							29	S	KT	Ek
35	*Squamapion flavimanum* (Gyll.)	17, 19				18							18	S	KT	Ek
36	*Squamapion vicinum* (Kirby)	11			1								1	E	W	P
37	*Squamapion atomarium* (Kirby)	16, 18, 20				44							44	E	K	P
38	*Squamapion oblivium* (Schilsky)	15			1								1	S	KT	Pd
39	*Squamapion hoffmanni* (Wagn.)	15, 20			2	1							3	S	KT	Eu
40	*Squamapion cineraceum* (Wenck.)	IV														Ek
41	*Diplapion confluens* (Kirby)	18, 22				2	1						3	E	K	Ek
42	*Diplapion stolidum* (Germ.)	15, 19, 23, 24			1	2	1	1					5	E*	K	P
43	*Diplapion detritum* (Muls et Rey.)	10, 21			1	1							2	E*	KT	Ek
44	*Ceratapion onopordi* (Kirby)	10, 12, 17, 19–21, 23, 25			2	20	2		4				28	U	–	P
45	*Ceratapion penetrans* (Germ.)	10, 16, 19, 20, 24			1	6		1					8	E*	K	Ek
46	*Ceratapion basicorne* (Illig.)	19, 20, 22, 24				12	1	1					14	E	M	P

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
47	*Ceratapion gibbirostre* (Gyll.)	10, 14, 18			2	2							4	E	M	P
48	*Ceratapion austriacum* (Wagner)	17				10							10	S	KT	Pd
49	*Ceratapion carduorum* (Kirby)	VIII														Eu
50	*Omphalapion laevigatulum* (Payk.)	22, 24					1	1					2	E*	K	Ek
51	*Omphalapion dispar* (Germ.)	10, 12, 14, 16, 18, 21, 22, 24, 31			11	13	1	1			1		27	E*	K	P
52	*Omphalapion hookerorum* (Kirby)	19, 21, 23, 25				2	4		1				7	E	K	P
53	*Apion frumentarium* (L.)	14, 25			1				11				12	E	K	Ek
54	*Apion haematodes* Kirby	23, 24					1	1					2	E*	W	Ek
55	*Apion cruentatum* Walt.	7, 12, 14, 22–24		2	4		8	3					17	E*	W	Ek
56	*Apion rubiginosum* Grill	9, 14, 17, 25			2	1			1				4	E*	M	P
57	*Apion rubens* Steph.	10			1								1	S	K	P
58	*Pseudostenapion simum* (Germ.)	18, 20				2							2	E*	K	P
59	*Pseudoperapion brevirostre* (Herbst)	12–15, 17, 19, 22–24			10	3	14	21					48	E	K	P
60	*Perapion violaceum* (Kirby)	7, 9–15, 18–21, 23, 24, 29, 31		2	20	4	11	7			2		46	E	M	P
61	*Perapion marchicum* (Herbst)	10, 12–14, 22, 23			10		9						19	E	K	P
62	*Perapion affine* (Kirby)	27									1		1	E	K	P
63	*Perapion curtirostre* (Germ.)	7, 9–15, 17–24, 28, 31		7	82	10	30	25			4		158	U	–	P
64	*Perapion connexum* (Schilsky)	10			1								1	E	K	Es
65	*Aizobius sedi* (Germ.)	19				2							2	E	KT	P

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
66	*Exapion formaneki* (Wagn.)	17				2							2	S	K	Eu
67	*Exapion difficile* (Herbst)	17				12							12	S	K	Eu
68	*Exapion corniculatum* (Germ.)	17				43							43	S	KT	Pd
69	*Exapion elongatulum* (Desbr.)	14, 17, 20			127	45							172	S	K	Eu
70	*Exapion fuscirostre* (Fabr.)	17				1							1	S	K	P
71	*Catapion seniculus* (Kirby)	9, 12, 13, 15, 16, 18, 20, 23			17	10	2						29	E	K	P
72	*Catapion jaffense* (Desbr.)	15			4								4	E*	K	P
73	*Catapion pubescens* (Kirby)	9, 10, 12, 13, 15, 17, 22, 24			6	1	1	1					9	E*	K	P
74	*Betulapion simile* (Kirby)	12, 13, 15, 16, 19, 25, 26, 29			5	4			3	4	2		18	E	F	H
75	*Synapion ebeninum* (Kirby)	I														Ek
76	*Ischnopterapion loti* (Kirby)	10–15, 17, 19, 21			17	7							24	E	M	P
77	*Ischnopterapion virens* (Herbst)	12, 15, 18, 19, 21–23, 25			3	25	7		2				37	E	M	P
78	*Stenopterapion meliloti* (Kirby)	11, 18–21, 24			1	18		4					23	E	K	P
79	*Stenopterapion intermedium* (Epp.)	19				2							2	S	KT	Pd
80	*Stenopterapion tenue* (Kirby)	17–20, 23, 24				17	1	7					25	E	K	P
81	*Oxystoma subulatum* (Kirby)	11, 12, 15, 28, 29, 31			12						20		32	E	M	P
82	*Oxystoma craccae* (L.)	12, 13, 15, 18, 26, 31			6	3				4	3		16	E	M	P
83	*Oxystoma cerdo* (Gerst.)	10–13, 17, 19, 24, 26, 29–31			17	2		5		2	11		37	E	M	P
84	*Oxystoma pomonae* (Fabr.)	9, 17, 24, 25, 31			3	7		1	2		4		17	E	M	P

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
85	*Cyanapion gyllenhalii* (Kirby)	7, 10, 12–14, 17, 19–21, 23, 24, 29–31		1	15	17	1	10			14		58	E	M	Ek
86	*Cyanapion columbinum* (Germ.)	18–20				55							55	S	K	P
87	*Cyanapion spencii* (Kirby)	19, 31				1					1		2	E	W	P
88	*Mesotrichapion punctirostre* (Gyll.)	9, 19, 22			1	1	1						3	S	KT	Es
89	*Hemitrichapion reflexum* (Gyll.)	18				1							1	S	KT	Es
90	*Hemitrichapion pavidum* (Germ.)	15, 17–19, 21, 24, 31			2	49		27			1		79	E*	K	P
91	*Holotrichapion ononis* (Kirby)	13, 17, 18, 24			2	3		1					6	E*	K	P
92	*Holotrichapion pisi* (Fabr.)	21				1							1	E	K	P
93	*Holotrichapion pullum* (Gyll.)	20				1							1	E	K	P
94	*Holotrichapion aethiops* (Herbst)	21, 24				1		1					2	E	M	P
95	*Eutrichapion vorax* (Herbst)	10, 11, 18, 20, 21, 25			3	4			1				8	E	M	P
96	*Eutrichapion viciae* (Payk.)	7, 9–19, 21, 25, 28, 31		1	96	55			12		6		170	E	M	P
97	*Eutrichapion ervi* (Kirby)	19				1							1	E	M	P
98	*Eutrichapion melancholicum* (Wenck.)	VIII														Ek
99	*Pseudoprotapion astragali* (Payk.)	12, 31			26						1		27	E*	K	P
100	*Pseudoprotapion ergenense* (Beck.)	16–21				549							549	S	KT	P
101	*Protapion fulvipes* (Fourc.)	7, 10, 12–16, 21–23, 26		2	25	7	4		21	4	2		65	U	–	P

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
102	*Protapion nigritarse* (Kirby)	7, 10–16, 19, 21, 23–25, 27, 29, 32		1	13	8	7	1	43		9	3	85	E	K	P
103	*Protapion filirostre* (Kirby)	17–19, 21				14							14	E	K	P
104	*Protapion trifolii* (L.)	7, 10, 13, 14, 16–18, 21, 23, 28		1	11	15	1				1		29	E	K	P
105	*Protapion apricans* (Herbst)	5, 10, 12–21, 23, 25–31		5	50	19	4		10	2	13		103	E	M	P
106	*Protapion varipes* (Germ.)	19				2							2	E	M	P
107	*Protapion assimile* (Kirby)	13, 15, 17			2	2							4	U	–	H
108	*Protapion ononidis* (Gyll.)	10, 14, 17–19			2	8							10	E*	K	P
109	*Protapion gracilipes* (Dietr.)	VIII														Eu
110	*Protapion dissimile* (Germ.)	18, 19				10							10	E*	K	P
	Nanophyidae															
111	*Nanophyes globulus* (Germ.)	VIII														Eu
112	*Nanophyes marmoratus* (Goeze)	1–15, 22, 23, 27, 28	27	116	40		8				47		238	E*	W	P
113	*Microon sahlbergi* (Shalb.)	VIII														Eu
	Curculionidae															
114	*Otiorhynchus conspersus* (Herbst)	19–21				15							15	S	KT	Es
115	*Otiorhynchus ligustici* (L.)	16, 18–20, 24				36		3					39	E	K	Ek
116	*Otiorhynchus tristis* (Scop.)	12, 16–21, 31			5	8	12	9			7		41	S	K	Es
117	*Otiorhynchus velutinus* Germ.	16–21				126							126	S	KT	Es
118	*Otiorhynchus laevigatus* (Fabr.)	19, 21				7							7	E	K	Eu

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
119	*Otiorhynchus raucus* (Fabr.)	11–14, 16, 18–21, 23, 24, 28–31			16	49	6	2			73		146	E	–	Es
120	*Otiorhynchus repletus* Boh.	26								1			1	E	F	Eu
121	*Otiorhynchus fullo* (Schrank)	17				42							42	S	KT	Es
122	*Otiorhynchus ovatus* (L.)	9, 14, 17, 19–21, 23, 24, 29			65	64	19	4			1		153	E	K	H
123	*Otiorhynchus rotundatus* Sieb.	12, 16–18, 21, 31			11	56					20		87	S	K	Ek
124	*Otiorhynchus smreczynskii* Cmol.	21				1							1	E*	K	Eu
125	*Peritelus leucogrammus* Germ.	18, 21				42							42	E	KT	Es
126	*Phyllobius sinuatus* (Fabr.)	25							1				1	E*	F	Eu
127	*Phyllobius brevis* Gyll.	11, 16, 18–21			1	381							382	S	KT	Es
128	*Phyllobius virideaeris* (Laich.)	3, 9, 16–21, 24, 31		1	21	107		19			2		150	E	M	P
129	*Phyllobius oblongus* (L.)	12, 17, 25, 28–31			9	14			16		56		95	E	F	P
130	*Phyllobius arborator* (Herbst)	11, 12, 17, 24, 25, 27–31			38	6		3	30		111		188	E	F	Eu
131	*Phyllobius glaucus* (Scop.)	25, 28, 29, 31							19		50		69	E	F	H
132	*Phyllobius maculicornis* Germ.	10, 12, 14, 18, 23, 28, 29, 31			36	1	3				50		90	E	F	Es
133	*Phyllobius urticae* (Deg.)	10, 11, 17, 21, 25, 28–31			235	18			28		134		415	E	M	Es
134	*Phyllobius argentatus* (L.)	12, 17, 20, 28–31			33	4					54		91	E	F	P
135	*Phyllobius betulinus* (Bech. et Scharf.)	11, 12, 31			6						1		7	E	F	Ek
136	*Phyllobius pyri* (L.)	7, 10, 12, 14, 16–19, 21, 24		65	28	33		21					147	E	M	Es

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
137	*Phyllobius scutellaris* L. Redt.	7, 10, 18, 25		8	1	3			14				26	S	M	Eu
138	*Phyllobius vespertinus* (Fabr.)	IV														Es
139	*Omias rotundatus* (Fabr.)	16, 18–21, 31				18					1		19	E	KT	Ek
140	*Trachyphloeus alternaus* Gyll.	16, 18–21				18							18	S	KT	Ek
141	*Trachyphloeus aristatus* (Gyll.)	14, 16, 19–21, 23			34	40	5						79	E	K	Ek
142	*Trachyphloeus bifoveolatus* (Beck)	14, 20, 21, 23, 24			17	2	24	6					49	E	K	H
143	*Trachyphloeus inermis* Boh.	16, 18–21				188							188	S	KT	Ek
144	*Trachyphloeus parallelus* Seidel.	19–21				198							198	S	KT	Pd
145	*Trachyphloeus scabriculus* (L.)	14			1								1	E	K	Eu
146	*Trachyphloeus spinimanus* Germ.	17, 19–21				567							567	S	KT	P
147	*Polydrusus impar* (Des Gozis)	17, 19				6							6	E	F	G
148	*Polydrusus pallidus* (Gyll.)	24						1					1	E	F	P
149	*Polydrusus corruscus* Germ.	10, 11, 18, 20, 21, 25, 27, 29			9	5			30		5		49	S	F	Ek
150	*Polydrusus pterygomalis* (Boh.)	25, 29							2		9		11	E	F	Es
151	*Polydrusus cerevinus* (L.)	7, 12, 20, 25, 31		1	2	1			3		6		13	U	–	Es
152	*Polydrusus confluens* Steph.	18				3							3	S	K	Eu
153	*Polydrusus inustus* Germ.	15–21			1	104							105	S	KT	Ek
154	*Polydrusus pilosus* (Gredl.)	21				1							1	E	F	Eu
155	*Polydrusus fulvicornis* (Fabr.)	17, 20, 29				5					53		58	S	F	B
156	*Polydrusus picus* (Fabr.)	12, 17, 18, 29			3	20					10		33	S	F	Es
157	*Polydrusus tereticollis* (Deg.)	11, 29			2						5		7	E	F	Es

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
158	*Polydrusus mollis* (Ström)	30									1		1	E	F	Es
159	*Liophloeus tessulatus* (O. F. Műll.)	10, 11, 18, 21, 25, 30, 31			4	6			4		4		18	E	W	Eu
160	*Eusomus ovulum* Germ.	16–21				198							198	E	KT	Ek
161	*Sciaphilus asperatus* (Bonsd.)	6, 11, 12, 14, 17, 21, 25, 27, 29–31		2	26	8			13		38		87	E	F	H
162	*Brachysomus echinatus* (Bonsd.)	12, 14, 25, 28–31			19			3			77		99	E	F	Es
163	*Brachysomus setiger* (Gyll.)	16, 18–21				90							90	S	KT	Eu
164	*Brachysomus strawinskii* Cmol.	16, 18, 19, 21				508							508	S	KT	Pd
165	*Foucartia squamulata* (Herbst)	14, 16–21			1	752							753	S	KT	Ek
166	*Brachyderes incanus* (L.)	32										5	5	S	F	H
167	*Strophosoma capitatum* (Deg.)	12, 14, 17, 23, 25–32			48	13	6		17	11	217	61	373	E	F	Eu
168	*Strophosoma faber* (Herbst)	9			1								1	S	K	Eu
169	*Barynotus obscurus* (Fabr.)	16, 17, 20				3							3	E	K	H
170	*Sitona gressorius* (Fabr.)	14, 17, 18			1	6							7	E	K	Pd
171	*Sitona griseus* (Fabr.)	14, 20			2	1							3	E*	K	P
172	*Sitona ambiguus* Gyll.	9–11, 13–15			73								73	S	W	P
173	*Sitona callosus* Gyll.	I														P
174	*Sitona crinitus* (Herbst)	9–11, 13, 14, 16–23, 32			42	63	8					3	116	E	K	H
175	*Sitona cylindricollis* (Fahr.)	10, 16–19, 21			3	12							15	E*	K	H
176	*Sitona hispidulus* (Fabr.)	7, 10, 14, 16, 18, 19, 23, 24		2	6	8	1	2					19	E	M	H
177	*Sitona humeralis* Steph.	14, 16, 18–21, 23			1	29	1						31	E	M	H

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
178	*Sitona inops* Schoenh.	16–18, 20, 21				31							31	S	KT	Es
179	*Sitona languidus* Gyll.	12, 18, 19, 21			1	5							6	S	KT	Ek
180	*Sitona lepidus* Gyll.	16, 17, 22				3	1						4	E	M	H
181	*Sitona longulus* Gyll.	I, II, VI														Ek
182	*Sitona lineatus* (L.)	6, 7, 10, 11, 14, 16–24, 28, 29		5	32	101	5	1			5		149	E	M	P
183	*Sitona puncticollis* Steph.	7, 10, 12, 16, 18–21, 24, 25		1	12	15		1	1				30	E*	M	P
184	*Sitona sulcifrons* (Thunb.)	7, 10, 13–17, 20, 21, 23		6	24	34	9						73	E	M	P
185	*Sitona suturalis* Steph.	6, 7, 10–23		5	88	65	8						166	E	M	P
186	*Sitona tibialis* (Herbst)	17–22				147	2						149	E	K	H
187	*Sitona waterhousei* Walt.	10, 14, 19, 22, 24			2	4	1	1					8	E*	K	P
188	*Cycloderes pilosulus* (Herbst)	16, 18–21				146							146	S	KT	P
189	*Tanymecus palliatus* (Fabr.)	6, 7, 10, 11, 13, 15–21, 24, 28		7	28	85		4			6		130	E	M	P
190	*Chlorophanus graminicola* Schoenh.	6		17									17	S	W	Eu
191	*Chlorophanus viridis* (L.)	6, 7, 9, 10, 13, 20, 25, 29–31		24	23	3			1		19		70	E	W	Es
192	*Lixus paraplecticus* (L.)	1, 5, 7	3	8									11	S	W	P
193	*Lixus iridis* Oliv.	6, 10–12		2	5								7	E	W	P
194	*Lixus angustus* (Herbst)	19				1							1	S	K	P
195	*Lixus myagri* Oliv.	VIII														Ek
196	*Lixus tibialis* Boh.	22					1						1	E	KT	Eu

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
197	*Lixus albomarginatus* Boh.	I														Ek
198	*Lixus bardanae* (Fabr.)	1, 4, 6, 7, 9–11, 15, 27	9	61	10						14		94	E*	W	Ek
199	*Lixus elongatus* (Goeze)	10			1								1	S	K	P
200	*Larinus brevis* (Herbst)	VIII														Es
201	*Larinus planus* (Fabr.)	10			1								1	E*	T	P
202	*Larinus turbinatus* Gyll.	7, 10, 11, 19, 20		3	11	6							20	E*	T	P
203	*Larinus obtusus* Gyll.	22					4						4	S	T	Pd
204	*Rhinocyllus conicus* (Frol.)	10, 11			4								4	E*	T	P
205	*Coniocleonus hollbergii* (Fahr.)	13–15			183								183	E*	K	Eu
206	*Chromoderus fasciatus* (O. F. Müll.)	14			1								1	E*	K	Es
207	*Cyphocleonus dealbatus* (Gmel.)	12, 20, 24			3	1		4					8	S	KT	Ek
208	*Cleonis pigra* (Scop.)	13, 23			1		1						2	E*	K	P
209	*Cossonus cylindricus* C. R. Sahlb.	25							2				2	E*	F	Es
210	*Cossonus linearis* (Fabr.)	25							1				1	E	F	Ek
211	*Cossonus parallelepipedus* (Herbst)	25, 31							3		14		17	S	F	Ek
212	*Rhyncolus chloropus* (L.)	32										2	2	E	F	Es
213	*Rhyncolus elongatus* (Gyll.)	32										2	2	E*	F	P
214	*Rhyncolus sculpturatus* Walt.	32										1	1	E*	F	Ek
215	*Phloeophagus lignarius* (Marsh.)	VIII														Eu
216	*Phloeophagus turbatus* Schoenh.	25, 31							89		31		120	E	F	Es

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
217	*Brachytemnus porcatus* (Germ.)	32										5	5	E	F	P
218	*Stereocorynes truncorum* (Germ.)	12			1								1	E	F	Ek
219	*Bagous petro* (Herbst)	4		2									2	S	A	Eu
220	*Bagous angustus* Silfv.	5, 8		2									2	S	W	Eu
221	*Bagous friwaldszkyi* Tourn.	5, 26		17						15			32	S	W	Eu
222	*Bagous binodulus* (Herbst)	1	2										2	S	A	Eu
223	*Bagous collignensis* (Herbst)	VIII														Eu
224	*Bagous limosus* (Gyll.)	5		3									3	S	W	P
225	*Bagous longitarsis* Thoms.	5		2									2	S	A	Eu
226	*Bagous nodulosus* Gyll.	5, 8		27									27	S	A	Es
227	*Bagous subcarinatus* Gyll.	7		30									30	S	A	P
228	*Bagous tempestivus* (Herbst)	8		3									3	E	W	Es
229	*Bagous glabrirostris* (Herbst)	1, 26	3							5			8	E	W	P
230	*Bagous lutulentus* (Gyll.)	3		32									32	E*	W	Es
231	*Bagous puncticollis* Boh.	26								11			11	E	A	Eu
232	*Bagous robustus* H. Bris.	8		1									1	S	W	P
233	*Hydronomus alismatis* (Marsh.)	1, 2, 6–8	19	53									72	E*	W	P
234	*Tanysphyrus ater* Blatchl.	4, 7		5									5	S	W	Eu
235	*Tanysphyrus lemnae* (Payk.)	1, 4, 5, 7, 8, 25–29	200	709					4	268	123		1304	E*	W	H
236	*Dorytomus longimanus* (Forst.)	12, 25, 31			1				5		3		9	E	F	P
237	*Dorytomus schoenherii* Faust	12, 25, 31			1				5		9		15	E*	F	Ek
238	*Dorytomus tortrix* (L.)	25							1				1	E*	F	Eu
239	*Dorytomus tremulae* (Fabr.)	12, 20, 25, 31			3	1			1		6		11	E*	F	Es

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
240	*Dorytomus ictor* (Herbst)	25, 27, 31							35		153		188	E*	F	P
241	*Dorytomus dejeani* Faust	12, 27			1						2		3	E*	F	P
242	*Dorytomus reussi* Form.	I														Eu
243	*Dorytomus taeniatus* (Fabr.)	6, 12, 20, 25, 27, 31		3	1	2			1		10		17	E	F	P
244	*Dorytomus hirtipennis* Bed.	25							1				1	E*	F	Es
245	*Dorytomus salicis* Walt.	6		1									1	S	F	Eu
246	*Dorytomus melanophtalamus* (Payk.)	7		1									1	E	F	P
247	*Dorytomus rufatus* (Bed.)	6, 7		4									4	E	F	Eu
248	*Notaris acridulus* (L.)	1, 2, 4, 7, 9–11, 13–15, 21, 28, 29	5	15	19	1					3		43	E	W	P
249	*Notaris scirpi* (Fabr.)	9			1								1	E*	W	Es
250	*Thryogenes festuceae* (Herbst)	1, 8	17	4									21	S	W	Es
251	*Thryogenes nereis* (Payk.)	2		18									18	S	W	Es
252	*Thryogenes scirrhosus* (Gyll.)	2		1									1	S	W	Eu
253	*Grypus brunnirostris* (F.)	IV														H
254	*Grypus equiseti* (F.)	IV														H
255	*Pseudostyphlus pillumus* (Gyll.)	12			1								1	S	K	Eu
256	*Acalyptus carpini* (Fabr.)	6, 27		4							2		6	E*	F	H
257	*Acalyptus sericeus* Gyll.	11			1								1	E*	F	Es
258	*Ellescus bipunctatus* (L.)	11			1								1	E*	F	H
259	*Ellescus infirmus* (Herbst)	6		1									1	E*	F	Es
260	*Ellescus scanicus* (Payk.)	20, 25				1			2				3	E*	F	H

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
261	*Lignyodes enucleator* (Panz.)	12			3								3	E*	F	H
262	*Lignyodes bischoffi* (Blatch.)	12, 29, 31			2						9		11	E*	F	H
263	*Tychius aureolus* Kiesenw.	18–21				26							26	S	KT	P
264	*Tychius breviusculus* Desbr.	I														P
265	*Tychius crassirostris* Kirsch	17, 20				4							4	S	K	Es
266	*Tychius junceus* (Reich)	23, 24					1	1					2	E	K	P
267	*Tychius lineatulus* Steph.	3, 25		1					2				3	E*	K	P
268	*Tychius medicaginis* Ch. Bris.	12, 13, 15–19, 21			8	74							82	S	KT	Ek
269	*Tychius meliloti* Steph.	22–24					2	2					4	E*	K	P
270	*Tychius picirostris* (Fabr.)	7, 9–12, 15, 16, 18		2	24	7							33	E	M	H
271	*Tychius pumilus* Ch. Bris	23, 24					1	1					2	S	K	Eu
272	*Tychius quinquepunctatus* (L.)	13, 15, 16, 18–21, 23			19	29	1						49	E	K	P
273	*Tychius schneideri* (Herbst)	14			5								5	S	KT	Pd
274	*Tychius sharpi* Tourn.	13			2								2	S	KT	Pd
275	*Sibinia pellucens* (Scop.)	12, 13, 16, 20–24			13	13	30	27					83	E*	K	P
276	*Sibinia phalerata* (Gyll.)	I														Ek
277	*Sibinia primita* (Herbst)	17				1							1	S	K	Pd
278	*Sibinia pyrrhodactyla* (Marsh.)	24						2					2	E*	K	Eu
279	*Sibinia subelliptica* (Desbr.)	14, 22			6		4						10	S	KT	Pd
280	*Sibinia tibialis* (Gyll.)	23					5						5	S	KT	Ek
281	*Sibinia viscariae* (L.)	14, 21–23			14	1	31						46	S	K	P
282	*Sibinia vittata* Germ.	II														Pd

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
283	*Anthonomus bituberculatus* Thoms.	VIII														Ek
284	*Anthonomus conspersus* Desbr.	VIII														Eu
285	*Anthonomus humeralis* (Panz.)	22					1						1	E*	F	Es
286	*Anthonomus piri* Kollar	25							1				1	E*	F	Eu
287	*Anthonomus pomorum* (L.)	17, 18, 31				8					2		10	E*	F	H
288	*Anthonomus rubi* (Herbst)	10–13, 15, 17, 19, 22, 23, 25, 28, 31			16	7	9		1		14		47	U	–	P
289	*Anthonomus phyllocola* (Herbst)	32										2	2	E*	F	P
290	*Furcipus rectirostris* (L.)	17, 25, 28, 31				10			26		30		66	E*	F	P
291	*Brachonyx pineti* (Payk.)	32										6	6	E*	F	Es
292	*Bradybatus kellneri* Bach	31									8		8	E*	F	Eu
293	*Curculio glandium* Marsh.	12, 14, 17, 29			3	1					3		7	E	F	P
294	*Curculio nucum* L.	11			1								1	E*	F	P
295	*Curculio venosus* Gray.	I, IV														Ek
296	*Curculio crux* Fabr.	6, 20		4		5							9	E	F	P
297	*Curculio pyrrhoceras* Marsh.	17, 20, 31, 32				8					1	6	15	E	F	P
298	*Curculio salicivorus* Payk.	6, 26		9						11			20	E	F	P
299	*Pissodes castaneus* (De Geer.)	14, 17			1	1							2	E*	F	P
300	*Pissodes pini* (L.)	14, 17, 32			1	1						4	6	E*	F	Es
301	*Pissodes piniphilus* (Herbst)	32										1	1	E*	F	Es
302	*Magdalis ruficornis* (L.)	31									1		1	E	F	Es
303	*Magdalis cerasi* (L.)	29									1		1	E	F	Es

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
304	*Magdalis armigera* (Geoffr.)	31									3		3	E*	F	Es
305	*Magdalis duplicata* Germ.	11			1								1	E*	F	Es
306	*Magdalis frontalis* (Gyll.)	14			1								1	E*	F	Es
307	*Magdalis linearis* (Gyll.)	17				2							2	S	F	Eu
308	*Magdalis violacea* (L.)	14, 31			3						1		4	E*	F	Es
309	*Trachodes hispidus* (L.)	29									1		1	E	F	Eu
310	*Lepyrus capucinus* (Schall.)	19				3							3	E*	K	H
311	*Lepyrus palustris* (Scop.)	6, 7, 11, 14, 20, 27, 29		14	4	3					8		29	E*	F	H
312	*Hylobius abietis* (L.)	14, 32			3							33	36	E*	F	P
313	*Hylobius pinastri* (Gyll.)	17				1							1	E*	F	H
314	*Hylobius transversovittatus* (Goeze)	11, 14			3								3	E*	W	Es
315	*Minyops carinatus* (L.)	I														Ek
316	*Alophus triguttatus* (Fabr.)	7, 21		2		1							3	E	W	Eu
317	*Hypera adspersa* (Fabr.)	2–4, 7, 9, 10, 12, 25, 30, 31		9	8				1		5		23	E*	W	P
318	*Hypera arator* (L.)	22, 23					8						8	E	M	P
319	*Hypera contaminata* (Herbst)	19, 20				8							8	S	M	Eu
320	*Hypera diversipunctata* (Schrank)	10			2								2	E*	W	H
321	*Hypera fornicata* (Pen.)	VIII														Pd
322	*Hypera fuscocinerea* (Marsh.)	I														H
323	*Hypera meles* (Fabr.)	22					1						1	S	K	H
324	*Hypera nigrirostris* (Fabr.)	9, 11, 16, 18			3	2							5	E	M	H

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
325	*Hypera plantaginis* (De Geer)	19, 21				7							7	E*	W	P
326	*Hypera postica* (Gyll.)	18, 21, 24				21		14					35	E	M	H
327	*Hypera rumicis* (L.)	2, 5–7, 10–14, 20, 23, 25–29, 31		126	59	1	1		1	3	23		214	E	W	H
328	*Hypera suspiciosa* (Herbst)	10, 11, 13, 18, 20, 21, 24			45	10		1					56	E	M	P
329	*Hypera viciae* (Gyll.)	7, 11, 14, 15, 18, 19, 21, 32		2	25	12						1	40	S	K	H
330	*Hypera zoilus* (Scop.)	10, 16, 18			1	3							4	S	M	H
331	*Limobius borealis* (Payk.)	III														Eu
332	*Gronops inequalis* Boh.	19				1							1	S	K	Es
333	*Sphenophorus striatopunctatus* (Goeze)	IX														Eu
334	*Cryptorhynchus lapathi* (L.)	6, 20, 27, 29		3		3					6		12	E*	F	H
335	*Acalles echinatus* (Germ.)	31									3		3	E*	F	Ek
336	*Baris artemisiae* (Herbst)	14, 16, 20–22, 24			1	16	5	32					54	E*	K	Es
337	*Baris coerulescens* (Scop.)	10			1								1	E	M	Ek
338	*Baris lepidii* Germ.	10			1								1	E	M	Ek
339	*Baris nesapia* Faust	9, 24			2			1					3	S	Ps	Pd
340	*Baris picicornis* (Marsh.)	VIII														Eu
341	*Limnobaris dolorosa* (Goeze)	1, 3, 11, 27	5	2	3						3		13	E*	W	P
342	*Limnobaris t-album* (L.)	1, 3, 11, 27	3	5	2						2		12	E*	W	Eu
343	*Poecilma capucina* (Beck)	19, 20, 23, 25				2	1		1				4	E	K	P

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
344	*Mononychus punctumalbum* (Herbst)	4, 6, 7, 11, 13, 15, 27, 29		136	55						34		225	S	W	P
345	*Phytobius canaliculatus* (Fahr.)	1	1										1	S	W	P
346	*Pelenomus comari* (Herbst)	26, 28								2	1		3	S	W	Eu
347	*Pelenomus quadricorniger* (Colonn.)	27									1		1	S	W	P
348	*Pelenomus quadrituberculatus* (Fabr.)	1, 3, 7, 9, 26, 27	1	2	1					1	2		7	S	W	P
349	*Pelenomus velaris* (Gyll.)	5, 9		1	1								2	S	W	P
350	*Pelenomus waltoni* (Boh.)	1, 5, 7, 9, 25, 28, 29	1	2	1				2		2		8	E*	W	P
351	*Rhinoncus bosnicus* Schultze	IV														Ek
352	*Rhinoncus bruchoides* (Herbst)	10–17, 19, 21, 23, 24			18	7	1	2					28	E*	K	P
353	*Rhinoncus castor* (Fabr.)	9–11, 13–15, 18, 20–26			41	4	21	9	3	1			79	E*	K	P
354	*Rhinoncus inconspectus* (Herbst)	1, 5, 6, 29	2	6							1		9	S	W	Es
355	*Rhinoncus pericarpius* (L.)	11, 12, 14, 22, 24, 26			5		1	1		7			14	E	M	H
356	*Rhinoncus perpendicularis* (Reich)	10–12, 14, 17, 21, 22			6	2	1						9	E	M	P
357	*Marmaropus besseri* Gyll.	9, 22–24			4		5	3					12	S	Ps	Eu
358	*Homorosoma validirostre (Gyll.)*	VIII														P
359	*Auleutes epilobii* (Payk.)	I														H
360	*Amalus scortillum* (Herbst)	14, 19			1	2							3	E*	K	H
361	*Amalorrhynchus melanarius* (Steph.)	5, 10, 24		11	1			1					13	E*	W	Eu
362	*Poophagus hopffgarteni* (Tourn.)	5, 8, 28		3							2		5	S	W	Eu

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
363	*Poophagus sisymbri*i (Fabr.)	1, 5–8, 26, 28	12	50						26	6		94	E*	W	Eu
364	*Tapinotus sellatus* (Fabr.)	1, 26–28	9							16	13		38	E*	W	P
365	*Coeliodes erythroleucos (Gmel.*)	I														Eu
366	*Thamiocolus signatus* (Gyll.)	I, VI														Pd
367	*Thamiocolus viduatus* (Gyll.)	6		1									1	E*	W	Eu
368	*Zacladus geranii* (Payk.)	11, 21, 24			9	6		1					16	E*	M	P
369	*Phrydiuchus topiarius* (Germ.)	IV, VI														Ek
370	*Ceutorhynchus angustus* Dieck. et. Smr.	17				1							1	S	K	Pd
371	*Ceutorhynchus assimilis* (Payk.)	10, 12, 14, 16, 17, 19, 20, 23–25, 31			12	5	3	2	3		1		26	U	–	H
372	*Ceutorhynchus barbareae* Suffr.	VIII														Ek
373	*Ceutorhynchus chalybaeus* Germ.	31									1		1	E	M	P
374	*Ceutorhynchus cochleariae* (Gyll.)	7, 10, 28		2	1						28		31	S	W	Eu
375	*Ceutorhynchus constrictus* (Marsh.)	18, 19, 24, 25, 27, 29–31				2		2	9		38		51	S	F	Eu
376	*Ceutorhynchus contractus* (Marsh.)	12, 20			4	1							5	U	–	P
377	*Ceutorhynchus dubius* Ch. Bris.	23					1						1	S	M	Ek
378	*Ceutorhynchus erysimi* (Fabr.)	7, 10, 12, 22, 24, 25, 31		1	3	6	1	2	1		1		15	U	–	H
379	*Ceutorhynchus floralis* (Payk.)	7, 9–12, 14, 16–19, 21, 24, 25, 28–31		17	46	35		9	19		28		154	U	–	H

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
380	*Ceutorhynchus gallorhenanus* (Solari)	18, 19, 21				3							3	E	K	Eu
381	*Ceutorhynchus griseus* Ch. Bris.	24						1					1	S	K	Ek
382	*Ceutorhynchus hampei* Ch. Bris.	9, 16, 18, 21, 23, 24			12	7	7	21					47	E*	K	Ek
383	*Ceutorhynchus hirtulus* Germ.	23, 25					1		4				5	S	K	P
384	*Ceutorhynchus ignitus* Germ.	19, 20, 24, 28				5		2			7		14	E*	K	Es
385	*Ceutorhynchus inaffectatus* Gyll.	IV														Eu
386	*Ceutorhynchus napi* (Gyll.)	19				1							1	E*	K	Eu
387	*Ceutorhynchus obstrictus* (Marsh.)	13, 19–21			1	3							4	E*	M	H
388	*Ceutorhynchus pallidactylus* (Marsh.)	16, 17, 25, 31				21			25		1		47	U	–	H
389	*Ceutorhynchus pervicax* (Weise)	28									4		4	E*	F	Es
390	*Ceutorhynchus picitarsis* Gyll.	VIII														Eu
391	*Ceutorhynchus pulvinatus* (Gyll.)	18, 29, 32				1					1	2	4	E*	K	Es
392	*Ceutorhynchus puncticollis* (Boh.)	9, 10			6								6	S	K	Eu
393	*Ceutorhynchus pyrrhorhynchus* (Marsh.)	17, 21				3							3	E*	K	P
394	*Ceutorhynchus rapae* (Gyll.)	19, 25, 31				1			1		4		6	E	M	H
395	*Ceutorhynchus sisymbrii* (Dieckm.)	V, VIII														Ek
396	*Ceutorhynchus scapularis* (Gyll.)	V														Es
397	*Ceutorhynchus sulcicollis* (Payk.)	11, 25, 27			1				7		1		9	E	W	P
398	*Ceutorhynchus syrites* Germ.	25							2				2	E	W	Ek

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
399	*Ceutorhynchus varius* Rey	X														Eu
400	*Ranunuculiphilus faeculentus* (Gyll.)	I, VIII														P
401	*Oprohinus suturalis* (Fabr.)	14			1								1	S	K	Ek
402	*Ethelcus denticulatus* (Schrank.)	22					1						1	S	KT	Ek
403	*Parethelcus pollinarius* (Forst.)	7		1									1	E*	W	Eu
404	*Glocianus distinctus* (Ch. Bris.)	12, 18			1	2							3	E*	M	Ek
405	*Glocianus fennicus* (Faust)	10			1								1	E*	M	B
406	*Glocianus moelleri* (Thoms.)	10			1								1	E*	W	Eu
407	*Glocianus punctiger* (Gyll.)	16, 19–21, 31				6					1		7	E*	W	H
408	*Datonychus angulosus* (Boh.)	6, 27		1							3		4	S	W	Es
409	*Datonychus arquatus* (Herbst)	9			1								1	E*	W	P
410	*Datonychus derennei* (Guill.)	17				1							1	S	KT	Pd
411	*Datonychus melanosticus* (Marsh.)	27									2		2	E*	W	P
412	*Microplontus campestris* (Gyll.)	17				1							1	E*	K	Eu
413	*Microplontus edentulus* (Schultze)	23					2						2	E*	K	Eu
414	*Microplontus triangulum* Boh.	9, 12, 16, 18–21			3	6							9	E*	K	Es
415	*Mogulones abbreviatulus* (Fabr.)	5		2									2	S	W	Eu
416	*Mogulones albosignatus* (Gyll.)	20				1							1	E*	K	Pd
417	*Mogulones asperifoliarum* (Gyll.)	19, 23, 24				2	1	3					6	U	–	Ek
418	*Mogulones austriacus* (Ch. Bris.)	16, 19				11							11	S	KT	Pd
419	*Mogulones cynoglossi* (Frauenf.)	IV, VI														Eu

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
420	*Mogulones dimidiatus* (I. Friv.)	17, 19				14							14	S	KT	Pd
421	*Mogulones geographicus* (Goeze)	9, 24			1			27					28	S	K	Pd
422	*Mogulones raphani* (Fabr.)	1, 4, 6, 7, 9, 15	9	40	5								54	S	W	Eu
423	*Mogulones venedicus* (Weise)	VIII														Eu
424	*Sirocalodes depressicollis* (Gyll.)	I														Ek
425	*Sirocalodes quercicola* (Payk.)	I														Ek
426	*Calosirus terminatus* (Herbst)	19, 24				2		1					3	E	M	P
427	*Trichosirocalus barnevillei* (Gren.)	19, 20, 22, 23				5	2						7	E*	K	Ek
428	*Trichosirocalus horridus* (Panz.)	IV, VIII														Pd
429	*Trichosirocalus troglodytes* (Fabr.)	10, 11, 13, 15, 18, 20–22, 24			20	3	1	4					28	E*	K	P
430	*Stenocarus cardui* (Herbst)	16				2							2	S	KT	Ek
431	*Stenocarus ruficornis* (Steph.)	17, 18, 20				3							3	E*	K	P
432	*Nedyus quadrimaculatus* (L.)	7, 10–12, 17, 19, 25–31		12	69	23			9	5	377		496	U	–	Es
433	*Coeliastes lamii* (Fabr.)	28									1		1	E	M	Eu
434	*Mecinus collaris* Germ.	21				4							4	S	M	P
435	*Mecinus heydenii* Wenck.	19, 21				2							2	S	K	Eu
436	*Mecinus pyraster* (Herbst)	15, 25, 29–31			1				3		7		11	E*	K	P
437	*Gymnetron beccabungae* (L.)	10			3								3	S	W	Eu
438	*Gymnetron ictericum* Gyll.	VIII														Pd
439	*Gymnetron labile* (Herbst)	9, 11, 14, 18, 19, 21, 23			10	5	3						18	E*	K	Ek

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
440	*Gymnetron melanarium* (Germ.)	19, 31				1					1		2	E*	M	Eu
441	*Gymnetron pascuorum* (Gyll.)	7, 9, 10, 12–15, 21–24		8	25	2	8	2					45	E*	K	P
442	*Gymnetron pirazzolli* Stierl.	9			1								1	S	K	Pd
443	*Gymnetron veronicae* (Germ.)	10, 14, 21			6	1							7	E*	W	Eu
444	*Gymnetron villosulum* Gyll.	11, 13, 15, 18–21			4	5							9	S	W	Ek
445	*Gymnetron antirrhini* (Payk.)	7		2									2	E	K	H
446	*Gymnetron asellus* (Grav.)	9, 19–24			27	17	39	15					98	S	K	Ek
447	*Gymnetron linariae* (Panz.)	10, 19, 20, 22, 24			1	7	1	1					10	E*	K	Eu
448	*Gymnetron melas* (Boh.)	20				1							1	S	K	Eu
449	*Gymnetron netum* (Germ.)	15, 19, 24			1	2		5					8	S	K	P
450	*Gymnetron tetrum* (Fabr.)	9, 19, 22			5	6	4						15	E*	K	H
451	*Miarus distinctus* (Boh.)	17				4							4	S	K	P
452	*Miarus graminis* (Gyll.)	11			12								12	E*	K	P
453	*Miarus micros* (Germ.)	14, 22			1		2						3	S	K	Pd
454	*Miarus ajugae* (Herbst)	19, 22				1	1						2	E*	K	P
455	*Miarus monticola* Petro	19				1							1	S	K	G
456	*Cionus alauda* (Herbst)	23					2						2	E*	M	Pd
457	*Cionus clairvillei* Boh.	12, 18, 19, 22–24			1	19	33	40					93	S	K	Pd
458	*Cionus gebleri* Gyll.	12, 15, 22			6		11						17	S	KT	Es
459	*Cionus hortulanus* (Geoffr.)	9, 11–15, 18, 19, 21–25, 29			210	34	127	15	1		11		398	E	K	P
460	*Cionus olens* (Fabr.)	9, 19, 23, 24			2	31	12	17					62	S	KT	Pd

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
461	*Cionus olivieri* Rosensch.	9, 18, 19, 22–24			4	3	103	23					133	S	KT	P
462	*Cionus scrophulariae* (L.)	9, 11, 29			4						1		5	E*	W	H
463	*Cionus thapsus* (Fabr.)	9, 12, 14, 17, 19, 22–24			17	6	6	4					33	E*	M	Pd
464	*Cionus tuberculosus* (Scop.)	11, 21, 25, 28, 29			2	1			2		7		12	E*	M	Ek
465	*Cleopus pulchellus* (Herbst)	IV														Pd
466	*Cleopus solani* (Fabr.)	9, 19, 20, 23			65	38	26						129	S	K	Pd
467	*Rhynchaenus jota* (Fabr.)	11			1								1	E*	W	Es
468	*Rynchaenus rufus* (Schrank)	29									2		2	E*	F	Eu
469	*Rhynchaenus rusci* (Herbst)	26								1			1	E*	F	P
470	*Pseudorchetes ermischi* (Dieckm.)	17, 18, 20				14							14	S	KT	Pd
471	*Pseudorchetes pratensis* (Germ.)	13, 18, 22			1	1	1						3	E*	W	Eu
472	*Pseudorchetes smreczynskii* (Dieckm.)	18, 19				3							3	S	K	Pd
473	*Tachyerges decoratus* (Germ.)	11, 27			1						4		5	E*	F	Eu
474	*Tachyerges salicis* (L.)	6, 7, 20, 26		17		4				4			25	E	F	H
475	*Tachyerges stigma* (Germ.)	7, 11, 26		2	2						1		5	E	F	P
476	*Isochnus foliorum* (O. F. Müll.)	6, 7, 11, 14, 25, 27		37	3				12		43		95	E*	F	Es
477	*Isochnus populicola* (Silfv.)	6, 7, 20, 27		187		19					12		218	E	F	Es
478	*Ramphus oxyacanthae* (Marsh.)	12, 19			1	1							2	E*	K	Pd
479	*Ramphus pulicarius* (Herbst)	7, 20, 25		1		1			11				13	E	F	P
480	*Ramphus subaeneus* (Illig.)	12			2								2	S	KT	Eu
			328	2015	3025	6542	794	507	599	459	2383	141	16 793			

• European – species inhabiting almost the whole area of Europe or slightly crossing the borders of Europe;

• Southeuropean – the centre of distribution is localized at the Black Sea or/and Mediterranean Sea. South-European elements include also all species described as pontic, subpontic, submediterranean, subponticmediterranean, because of inconsistent literature data;

• Boreal – species connected mostly with tundra. Their distribution range extends from North Europe through the area of Siberia (in Southern Europe boreal elements can be found also in the mountain areas);

• Mountain – species connected mostly with mountain massifs, they are also found in the area of taiga and tundra.

The species of *Curculionoidea* that were characterized by widespread zoogeographical distribution were the most abundant in the study area. The greatest number of species belonged to Palearctic element (160). The great part of weevils fauna was formed by Eurosiberian element (72 species) and Holarctic one (50 species). In the intermediate range of distribution class the greatest number of species (88) belonged to European type of distribution. The smaller number of species was weevils of Eurocaucasian distribution (69 species). The limited range of distribution class was represented by Southeuropean species (37). Only 2 species belonged to boreal as well as to mountain group.

Among collected *Curculionoidea* species the most numerous were Palearctic (a total of 6,140 specimens) and Eurosiberian (a total of 2,954 specimens) ones. High number of specimens was noted also for Holarctic (a total of 2,762 individuals) and Eurocaucasian (a total of 2,154 individuals) weevils. Less numerous were European species (a total of 1,524). Among the weevils of the limited range of distribution, Southeuropean element was the most numerous (1,193 individuals). The lowest number of weevils belonged to boreal and mountain group (59 and 7 specimens respectively).

The weevils with Holarctic distribution were eurytopic species in the majority of cases. Among them the most numerous were oligophagous species. Not seldom they were the pests of cultivated plants, probably spreading with them together. The Holarctic species were collected from all types of plant communities: xerothermic grasslands (*Festuco-Brometea*) (34 species), meadow communities (*Molinio-Arrhenatheretea*) (27 species) and dry-ground forests *Querco-Fagetea*) (18 species). The lowest number of species belonging to this class was found in rushes communities (*Potametea*), psammophilous grasslands and coniferous forest communities (*Vaccinio-Piceetea*). The greatest number of specimens of holarctic distribution was collected from rushes communities (*Phragmitetea*) (901 individuals). That phenomenon was caused by great number of *Tanysphyrus lemnae* specimens. Large number of specimens representing Holarctic element was collected also from: xerothermic grasslands (499 individuals), meadow communities (*Molinio-Arrhenatheretea*) (368 individuals) and dry-ground forests (301 individuals).

The Palearctic species were characterized by diverse habitat preferences. Both eurytopic and stenotopic weevils were found in that group. They were connected with forest areas or open communities with different level of subsoil humidity. The species characterized by Palearctic type of distribution were collected from: xerothermic (94 species), meadow (91 species) and forest (mostly dry-ground forests – 51 species) communities. The plant communities preferences of that group of *Curculionoidea* were quite similar to those observed in Holarctic species. The greatest number of specimens belonging to Palearctic element was collected from xerothermic grasslands (2,429 individuals) and meadow communities (*Molinio-Arrhenatheretea*) (1,461 individuals). Large populations of Palearctic weevils were not found in the forest communities (apart from dry-ground forests), in spite of quite high species diversity observed in these communities.

Curculionoidea belonging to Eurosiberian element were connected with meadow communities (*Molinio-Arrhenatheretea*) (29 species), xerothermic grasslands (28 species), and dry-ground forests (27 species). Moreover, the greatest number of weevil specimens was collected from the given above types of plant communities: 473, 852 and 907 specimens respectively.

The greatest number of Eurocaucasian species (31) as well as specimens (1,622) was found in xerothermic grasslands. The weevils characterized by that type of distribution were also quite numerous in meadow communities (*Molinio-Arrhenatheretea*) (29 species, 175 individuals), psammophilous grasslands (14 species, 76 individuals), and dry-ground forests (10 species, 88 individuals). However, Eurocaucasian species were only occasionally collected from humid communities (e.g. rushes) or other than dry-ground type of forests (alder, marshy, coniferous). The Eurocaucasian species were characterized by higher habitat selectivity in comparison with vastly distributed elements. The most numerous among them were stenotopic species inhabiting dry, open areas.

The European element comprised mostly species connected with open areas: xerothermic grasslands (26 species), meadow communities (24 species), and rushes (20 species). Many species belonging to that group were collected also from dry-ground forests (15 species). The greatest number of specimens belonging to the European element was found in the meadow from *Molinio-Arrhenatheretea* class (441 individuals) and dry-ground communities (426 individuals). On the other hand, much smaller number of individuals was collected from psammophilous and xerothermic grasslands. It is possible that species characterized by the European range of distribution were quite similar to the Eurosiberian element in the study area regarding habitat preferences.

In the area of the study Southeuropean element was the most homogenous group of *Curculionoidea* in the terms of habitat preferences. The Southeuropean element comprised mostly xerophilous and xerothermophilous weevils. They were found in xerothermic grasslands (20 species) and in some types of meadow communities from *Molinio-Arrhenatheretea* class (14 species). They were less numerous in psammophilous grasslands (8 species) and ruderal communities (5 species). The Southeuropean species were not found in humid, open habitats such as rushes and marsh communities, wet meadows and forests. The greatest number of Southeuropean specimens was collected from xerothermic grasslands (909 individuals) and meadow communities (106 individuals). On the contrary, a small number of specimens belonging to that element was found in psammophilous grasslands and ruderal communities (89 individuals in each type of the community) that had humidity similar to that of xerothermic grasslands. It is noteworthy that the number of Southeuropean species and specimens was greater in localities with *Molinio-Arrhenatheretea* class (7 species, 26 individuals) situated in Podlasie part of the Bug River Valley (loc. 13–15), than in plant communities belonging to the same class situated in the Lublin Upland (loc. 9–12) (2 species, 2 individuals). That phenomenon indicates that Southeuropean weevils occupy meadow communities as substitute habitat, when there are no typical of them habitats – xerothermic grasslands. Moreover, it might indicate also relatively low interest of Southeuropean weevils in psammophilous grasslands. The results of conducted analysis suggest that there is high similarity of habitat preferences between species belonging to Southeuropean and Eurocaucasian element.

The species representing boreal element were the most numerous in dry-ground forest community (*Querco-Fagetea*) (53 individuals) in the area of the study. The small group (1 species, 5 individuals) was found also in untypical for them environment – in xerothermic grasslands.

The mountain element is very rare in the middle part of the Bug River Valley (2 species, 7 individuals). They were collected only from xerothermic grasslands situated near Gródek and Strzyżów (Tab. 2, 3).

The results of the studies, therefore, indicate that elements of widespread distribution were characterized also by vast habitat preferences in the experimental area. However, the relative common participation of Holarctic and Palearctic elements in humid habitats (rushes and marsh communities, as well as some types of meadows) was not caused by their large number, but by lack of species forming other zoogeographical elements. The Holarctic and Palearctic elements were even more numerous in xerothermic grasslands than in humid biotopes. Nevertheless, Holarctic and Palearctic weevils are outnumbered by numerous Southeuropean and Eurocaucasian elements.

Tab. 2. The percentage of species representing different zoogeographical elements found in the examined phytosociological classes

ZOOGEOGRAPHICAL ELEMENTS	PHYTOSOCIOLOGICAL CLASS									
	I	II	III	IV	V	VI	VII	VIII	IX	X
Holarctic	2.0	26.0	54.0	68.0	26.0	16.0	22.0	10.0	36.0	6.0
Palearctic	6.25	22.5	56.9	58.9	27.5	21.9	19.4	7.5	31.9	4.4
Eurosiberian	2.8	19.5	40.3	38.9	11.2	9.7	16.7	1.4	37.5	9.7
Eurocaucasian	1.4	4.4	42.0	44.9	20.3	15.9	10.1	1.4	14.5	1.4
European	4.6	22.7	27.3	29.5	7.9	7.9	9.1	6.8	17.0	1.2
Southeuropean	0	0	37.9	54.0	21.6	13.5	0	0	0	0
Boreal	0	0	0	100	0	0	0	0	0	0
Mountain	0	0	50	100	0	0	0	0	50	0

< 20%	21–40%	41–60%	> 61%

Tab. 3. The percentage of specimens representing different zoogeographical elements found in the examined phytosociological classes. I. *Potamogetea*, II. *Phragmitetea*, III. *Molinio-Arrhenatheretea*, IV. *Festuco-Brometea*, V. *Koelerio glaucae-Corynephoretea canescentis*, VI. *Artemisietea vulgaris*, VII. *Salicetea purpureae*, VIII. *Alnetea glutinosae*, IX. *Querco-Fagetea*, X. *Vaccinio-Piceetea*

ZOOGEOGRAPHICAL ELEMENTS	PHYTOSOCIOLOGICAL CLASS									
	I	II	III	IV	V	VI	VII	VIII	IX	X
Holarctic	7.2	32.6	13.3	18.1	2.4	1.5	3.3	10.3	10.9	0.3
Palearctic	1.2	7.4	23.8	39.5	8.3	3.8	3.7	1.6	9.9	0.9
Eurosiberian	0.6	14.2	16.0	28.8	1.3	2.4	5.1	0.1	30.8	0.6
Eurocaucasian	0.4	2.9	8.1	75.3	3.5	2.9	2.5	0.1	4.1	0.1
European	1.7	11.6	28.9	14.5	1.2	0.8	5.0	4.4	27.9	4.0
Southeuropean	0	0	8.9	76.2	7.5	7.5	0	0	0	0
Boreal	0	0	1.7	8.5	0	0	0	0	89.9	0
Mountain	0	0	0	100	0	0	0	0	0	0

<20%	21–40%	41–60%	>61%

The elements representing limited range of distribution were characterized by closer affinity for certain types of communities, e.g. European species for meadow and dry-ground forest communities. That tendency was more evident in

Eurocaucasian and Southeuropean species that were connected with xerothermic grasslands (Tab. 2, 3). Boreal and mountain species were characterized by narrow habitat preferences in the experimental area. The significant number of specimens of *Polydrusus fulvicornis* (54 individuals) collected in the community from *Querco-Fagetea* class indicates that dry-ground forests might compose suitable environmental conditions also for boreal species. The specimens of *Polydrusus fulvicornis* and *Glocianus fennicus* were collected in untypical for them environment of xerothermic grasslands, which can be explained probably by the process of beetle migration. It is noteworthy that no boreal species were found in typical for them environment of marshy alder forest (loc. 26).

The species representing mountain element, e.g. *Polydrusus impar* and *Miarus monticola* were collected only from xerothermic grasslands. That association seemed to be incidental at least in the case of *P. impar*. That species was regularly collected in similar environmental conditions also in the Wieprz River Valley (Ciechanki Łańcuchowskie) (unpublished author's data). However, in the case of *Miarus monticola* a small number of specimens makes the results inconclusive (Tab. 2, 3).

DISCUSSION

Among *Curculionoidea* collected from the middle part of the Bug River Valley the species representing widespread zoogeographical elements (Palearctic and Eurosiberian) were the most numerous, similarly to the whole area of Poland. Moreover, proportional representation of European species was quite similar to that observed in *Curculionoidea* communities in other regions of Poland (4–7). However, it was noteworthy that there was very high proportion of Southeuropean and Eurocaucasian element in the examined material, which comprised a total of 21.7% of all specimens of weevils collected in the study area. Their presence in this area might be connected with location of xerothermic grasslands in the area of the Lublin Upland and meadow communities or psammophilous grasslands in the area of Podlasie. The big share of these zoographic groups is caused not only by the presence of suitable habitats, but also by localization of the Bug River Valley in the migration tract of South element (44). Close proximity of Podole, which is the centre of geographic distribution of xerothermic fauna (11), might be also the reason. In the collected material there was only a small proportion of mountain element of *Curculionoidea*. Their share in the examined area was much smaller than averagely noted from Poland, 0.4% and 9.4% respectively (64). Lack of mountain species was probably connected with the fact that the source of Bug is not localized in the mountains and it is a lowland river in its whole length. No weevils species typical of the mountain fauna were noted in the Bug River Valley, such as: *Otiorhynchus inflatus*, *O. fuscipes* or *Liophloeus lentus*, which migrated through the Wisła River Valley up to the Kazimierz Dolny (37). It was interesting that *Polydrusus impar*, which was classified as mountain species and which was noted from mountains forests (29, 48, 51), preferred xerothermic grasslands in the area of the study. Whereas *Miarus monticola* inhabiting mountain meadows (31, 51), found suitable habitat in xerothermic slopes.

The small representation of boreal element was probably caused by the poverty of suitable biotopes, namely *Sphagnum* peat bogs (62), in the examined area. The analysis of habitat preferences of *Polydrusus fulvicornis* (representing the boreal element), seems to indicate that dry-ground forests and alder forests become substitute for that weevil (51).

Another point highlighted by his survey was the presence of species from *The Red List of Threatened Species in Poland* (50) in the area of the study, namely: *Rhynchites bacchus*, *Pseudoprotapion ergenense*, *Otiorhynchus conspersus*, *O. repletus*, *Brachysomus strawinskii*, *Lixus angustus*, *L. tibialis*, *L. elongatus*, *Larinus obtusus*, *Poophagus hopffgarteni*, *Microplontus edentulus*, *Mogulones dimidiatus*, *Cionus gebleri* and *Pseudorchestes smreczynskii*.

The analysis of the number and habitat preferences indicates that the status of threatened species is a debatable problem in the case of some of the species. There are no doubts about, for example, some rare species – *Pseudoprotapion ergenense* and *Brachysomus strawinskii*. Although they are one of the most numerous representatives of *Curculionoidea*, in the study area, they are almost missing in the other part of Poland (3–6). Moreover, narrow environmental tolerance makes they above mentioned species more susceptible to the influences of changes of the external environment. One of the weevils deserving protection is *Mogulones dimidiatus*. A small number of known localities of this weevil probably results not from its covert lifestyle, but rather feeding and habitat preferences of the beetle. The special attention should be paid to *Rhynchites bacchus*, which has been regarded as a pest so far (14). However, it has been found more and more rarely in the latest years. On the other hand, a small number of the faunistic data about *Lixus angustus* is probably the result of low traceability rather than rare distribution. Information connected with weevil species such as: *Lixus tibialis*, *Larinus obtusus*, *Poophagus hopffgarteni* and *Cionus gebleri* indicates insufficient knowledge of their distribution or the existing, pronounced expansion of these beetle species (53, 65, 68, 69). In both cases the status of endangered species should be reconsidered basing on the systematic investigation. Notwithstanding, it is hard to explain why species such as *Chlorophanus* *graminicola*, *Bagous petro* and *B. nodulosus* are not included in *The Red List of Threatened Species in Poland*.

There are noticeable changes in the species composition and domination structure of weevils in xerothermic grasslands comparing with the studies conducted in 1963 by Cmoluch in the surroundings of Gródek. Generally, 45 years after the studies of Cmoluch there were more species of *Curculionoidea* (1963 – 192 species; 2003 – 210 species) detected. Although the number of xerothermic weevils was constant (36 species in 1963, 37 in the actual studies), however, some species detected by Cmoluch were not found in the level of herbaceous plants (e.g. *Nemonyx lepturoides*, *Exapion corniculatum*, *Squamapion oblivium*, *Sitona callosus*, *S. longulus*, *Sibinia phalerata*, *S. tibialis*, *Thamiocolus signatus*, *Ranunculiphilus faeculentus*, *Cionus gebleri*). Greater number of common meadow and xerophilous species of weevils was found on xerothermic slopes in the surroundings of Gródek comparing with the previous studies. Their occurrence is probably caused by the absence of grasslands management like mowing, which in consequence leads to expansion of grass plants (19). Cmoluch (11) did not find, either, epigeic weevil species such as *Trachyphloeus aristatus*, *T. inermis*, *T. parallelus* or *Brachysomus setiger.* This fact was probably caused by using the inappropriate method of collection (ground traps).

In the conclusion, Cmoluch (11) stated that xerothermophilous weevils are not the most numerous in the xerothermic grasslands, but they are outnumbered by xerophilous and ubiquistic species. However, our data, confirm that hypothesis only partly, in the case of beetles connected with the level of herbaceous plants where ubiquistic weevils are very numerous. In the samples collected from the ground I observed evident domination of xerothermic species.

The weevils of xerothermic grasslands localized near Gródek had the highest qualitative similarity to *Curculionoidea* in the ecological land "Biała Góra". The localities with plant communities from *Festuco-Brometea* class, although smaller than in Gródek (e.g. Surroundings of Rudnik near Lublin), were characterized by lower biodiversity and poverty of fauna (12). The lowest qualitative similarity of weevils from Gródek was noted for *Curculionoidea* found in xerothermic grasslands in the Wisła River Valley in Męćmierz, Bochotnica and Okale (11–13, 36, 22).

In xerothermic communities of East Poland, e.g. Gródek, Biała Góra, Kąty, Łabunie, a generally larger number of xerothermic species was noted than in xerothermic communities localized in other regions of Poland, e.g. in the Vistula River Valley. This phenomenon is probably caused by different distance from Podole, which is the centre of distribution for the majority of xerothermic species (11, 12).

According to Mazur (44) xerothermic species should not be collected from habitats other than xerothermic more often than one in four cases. Among 49 species of xerothermic weevils collected in the area of the study the criterion proposed by Mazur was fulfilled by 34 species, namely: *Rhynchites bacchus*, *Squamapion elongatum*, *S. flavimanum*, *Ceratapion austriacum*, *Aizobius sedi*, *Exapion corniculatum*, *Stenopterapion intermedium*, *Hemitrichapion reflexum*, *Pseudoprotapion ergenense*, *Otiorhynchus conspersus*, *O. velutinus*, *O. fullo*, *Peritelus leucogrammus*, *Phyllobius brevis*, *Omias rotundatus*, *Trachyphloeus alternaus*, *T. inermis*, *T. parallelus*, *T. spinimanus*, *Polydrusus inustus*, *Eusomus ovulum*, *Brachysomus strawinskii*, *Foucartia squamulata*, *Sitona inops*, *S. languidus*, *Cycloderes pilosulus*, *Tychius aureolus*, *T. medicaginis*, *Datonychus derennei*, *Mogulones albosignatus*, *M. austriacus*, *M. dimidiatus*, *Stenocarus cardui* and *Pseudorchestes ermischi*.

In the group of weevils classified by Mazur (44) as xerothermic some species did not fulfil the criterion proposed by his author. However, seven of them, namely: *Squamapion oblivium*, *S. hoffmanni*, *Diplapion detritum*, *Mesotrichapion punctirostre*, *Tychius sharpi*, *Ethelcus denticulatus* and *Ramphus subaeneus*, were collected rarely, up to 3 specimens in the field studies. Therefore, we can assume that their occurrence apart from xerothermic habitats was accidental. Nevertheless, some species were collected more often from psammophilous grasslands than xerothermic ones. That phenomenon was observed in respect to species from the genera: *Sibinia*, *Cionus* and *Cleopus*. The species such as *Cionus olivieri*, *C. gebleri* and *C. olens* seemed to be connected rather with habitats localized on sandy soil than on loess one. The species *Sibinia subelliptica* and *S. tibialis* similarly preferred psammophilous habitats in the area of the study, despite the presence of communities from *Festuco-Brometea* class (Tab. 4). That fact was probably caused by lack of obligatory interaction of host plants of species from genera *Cionus* and *Sibinia* with xerothermic habitats. We must also consider the possibility that in impecunious and less suitable for xerothermic species environment, namely psammophilous grasslands, these beetles are under lower pressure of potential predator and competition of other phytophagous animals.

A total of 18 species representing the group of uncertain xerothermic status according to Mazur (44) were collected in the Bug River Valley. Seven of them fulfilled the criterion proposed by Mazur (44), namely: *Rhynchites pubescens*, *Polydrusus confluens*, *Brachysomus setiger*, *Sitona cylindricollis*, *Lixus angustus*, *Tychius crassirostris* and *Miarus distinctus*. The association of *Brachysomus setiger* and *Tychius crassirostris* with xerothermic grasslands seemed to be very strong. The other species from that group were collected more often from other than xerothermic habitats, such as psammophilous grasslands or some of meadow communities. *Sibinia viscariae*, *Cionus clairvillei* and *C. thapsus* seemed to prefer psammophilous grassland stronger than xerothermic grasslands. Also *Trichosirocalus barnevillei* and *Gymnetron asellus* classified by Mazur (44) as weevils potentially xerothermic had wider habitat preferences in the study area.

The species described by Cmoluch (11, 12) as xerothermophilus species had a very high level of association with xerothermic grasslands from *Festuco-Brometea* class (Tab. 4). Most probably, it was caused by the fact that criterions of classification to xerothermophilus species were established by Cmoluch basing on observations from the Middle East Poland (e.g. near Gródek). The exception was *Catapion jaffense* and *Rhinocyllus conicus* as well as *Sibinia tibialis* and *Cionus gebleri*. The highest number of the first two species was collected in meadow communities belonging to *Molinio-Arrhenatheretea* class and the former in psammophilous grasslands from *Koelerio glaucae-Corynephoretea canescentis* class. Also *Cyphocleonus dealbatus* was found more often in meadow and ruderal communities than in xerothermophilous grasslands (Tab. 4).

Table 4. The percentage and number of specimens of xerothermic species collected in different phytosociological classes. M – xerothermic species given by Mazur (44); C – xerothermic species given by Cmoluch (11); I – *Molinio-Arrhenatheretea*; II – *Festuco-Brometea*, III – *Koelerio glaucae-Corynephoretea canescentis*, IV – *Artemisietea vulgaris*, V – *Querco-Fagetea*

	Species	I	II	III	IV	V
C	*Rhynchites pubescens* (Fabr.)		4			
M, C	*Squamapion elongatum* (Germ.)	6	23			
M	*Squamapion oblivium* (Schilsky)	1				
M C	*Squamapion hoffmanni* (Wagn.)	2	1			
M	*Diplapion detritum* (Muls et Rey.)	1	1			
M, C	*Ceratapion austriacum* (Wagner)		10			
M, C	*Exapion corniculatum* (Germ.)		43			
C	*Catapion jaffense* (Desbr.)	4				
M	*Mesotrichapion punctirostre* (Gyll.)	1	1	1		
M, C	*Pseudoprotapion ergenense* (Beck.)		549			
M, C	*Otiorhynchus conspersus* (Herbst)		15			
M, C	*Otiorhynchus velutinus* Germ.		126			
C	*Otiorhynchus laevigatus* (Fabr.)		7			
M, C	*Otiorhynchus fullo* (Schrank)		42			
M, C	*Peritelus leucogrammus* Germ.		42			
M, C	*Phyllobius brevis* Gyll.	1	381			

M, C	*Omias rotundatus* (Fabr.)		18			1
M, C	*Trachyphloeus alternaus* Gyll.		18			
M, C	*Trachyphloeus inermis* Boh.		188			
M, C	*Trachyphloeus parallelus* Seidel.		198			
M, C	*Trachyphloeus spinimanus* Germ.		567			
M, C	*Polydrusus inustus* Germ.	1	104			
M, C	*Eusomus ovulum* Germ.		198			
C	*Brachysomus setiger* (Gyll.)		90			
M, C	*Brachysomus strawinskii* Cmol.		508			
M, C	*Foucartia squamulata* (Herbst)	1	750			2
M, C	*Sitona inops* Schoenh.		31			
M, C	*Sitona languidus* Gyll.	1	5			
M, C	*Cycloderes pilosulus* (Herbst)		146			
C	*Rhinocyllus conicus* (Frol.)	4				
M, C	*Cyphocleonus dealbatus* (Gmel.)	3	1		4	
M, C	*Tychius aureolus* Kiesenw.		26			
M, C	*Tychius medicaginis* Ch. Bris.	8	74			
M	*Tychius schneideri* (Herbst)	5				
M	*Tychius sharpi* Tourn.	2				
M	*Sibinia subelliptica* (Desbr.)	6		4		
M, C	*Sibinia tibialis* (Gyll.)			5		
M, C	*Mogulones austriacus* (Ch. Bris.)		11			
M	*Ethelcus denticulatus* (Schrank)			1		
C	*Trichosirocalus barnevillei* (Gren.)		5	2		
C	*Miarus distinctus* (Boh.)		4			
M, C	*Cionus gebleri* Gyll.	6		11		
M	*Cionus olens* (Fabr.)	2	31	12	17	
M	*Cionus olivieri* Rosensch.	4	3	95	23	
M	*Cleopus solani* (Fabr.)	65	38	26		
M, C	*Pseudorchestes ermischi* (Dieckm.)		14			
M	*Ramphus subaeneus* (Illig.)	2				

< 25%	25.1–50%	50.1–75%	> 75%

It is difficult to agree with Cmoluch's (11) hypothesis that we can not talk about xerothermic weevil communities, but rather about species associated with xerothermic plants. We observed that some of them, e.g. *Polydrusus inustus*, *Eu-*

somus ovulum and *Foucartia squamulata* could migrate together with host plants to other than xerothermophilous habitats. However, the associations of other weevil species like *Pseudoprotapion ergenense* and *Otiorhynchus conspersus* with abiotic factors characteristic of xerothermic habitats seemed to be more important than their feeding preferences. Also xerothermic species from genera *Trachyphloeus* and *Brachysomus* wide feeding preferences are not followed by widespread distribution. These findings suggest specific physico-chemical conditions of xerothermic habitats biotopes.

The role of the Bug River Valley as an insects migration tract has two possible aspects – direct and indirect. The former is connected with formation of suitable localities, e.g. restoration of xerothermic slopes, formation of sandbanks or bends seas or spreading of plants (33, 62). Then, new biotopes and plant communities are inhabited by actively migrating insects. This migration can be directed both upstream and downstream the river. The furthermost in North and South localities of weevils in the Bug River Valley could be formed as the consequence of that process (69). The direct role of Bug Valley in migration is connected with transportation of insects (also secondary non-flying) that were engulfed by the river when the level of water was high. That process was confirmed by sieving number of weevils from flood inflow (636 specimens, 85 species) and finding single specimens of non-flying species in non-typical of them habitats (e.g. xerothermic weevils from rushes).

The function of the Bug River Valley as an ecological corridor seems to be obvious in the case of hydro- and hygrophilous species (e.g. *Bagous friwaldszkyi*, *B. nodulosus*, *Poophagus hopffgarteni*); therefore it will not be discussed. There is a small possibility that the Bug River Valley takes part in the process of migration of mountain species, since it is localized in lowlands all it length. However, the potential role of the Bug River Valley in the process of migration of xerothermic beetles with limited, South European or Eurocaucasian distribution is very interesting and complicated. The origin of that group of weevils in Polish fauna is not completely explained. It is hard to make conclusions because of lack of sufficient amount of fossil material. There are many hypotheses trying to explain that phenomenon basing on indirect evidences. One of them, broadly discussed by Mazur (44) assumes that the beginning of the colonisation process by xerothermic fauna in the area of Poland dates back to Pleistocene. According to that hypothesis, xerothermic species inhabited our country gradually during successive interglacial periods together with the development of steppe-tundra formation. Most of the species were dying in the period of glacier expansion; however, some of them might have survived in the places free from ice. In the periods of interglacial warming new migration tides of both previously existing and new species were attaining that area. Most probably, that could explain certain morphological differences in populations of contemporary species in the area of Poland. The climate warming in Holocene was followed by development of tree plants that successively covered 90% of Poland's area. The expansion of species connected with open areas was naturally stopped. The xerothermic fauna already existed in the area of so-called "relic islands" localized in a different part of the country. Most probably, relic islands were refugee from which xerothermic species spread to other region of the country following the process of development of xerothermic grasslands connected with human impact (44). According to that hypothesis, therefore, xerothermic grasslands hale mixed origin, both natural and anthropogenic. That statement is fundamentally important. If xerothermic grasslands had only anthropogenic origin, xerothermic species could not have begun their expansion earlier than in neolith. Although anthropogenic origin of some of xerothermic grasslands (unfrosted hillsides, secondary uncultivated lands) is unquestioned, however there is evidence on the relic origin of some of xerothermic grasslands (57). Those relic xerothermic grasslands could, therefore, play the role of refugee for xerothermic fauna. That hypothesis seems to be supported by scientific studies (40, 41, 49). However, the theory that discusses migration tracts of xerothermic grasslands does not explain when that process has begun (44). According to that theory, at present, the process of migration does not play an important role in the distribution of xerothermic species.

However, we can suspect that inhabiting the area of Poland by xerothermic species of south origin is much younger process, taking into account that most of xerothermic grasslands have definitely anthropogenic origin and their beginnings date back not longer than to the Middle Ages and that their existence depends on constant human activity (19). Nonetheless, only analysis of the role of river valleys as ecological corridors could bring the absolute proof.

In the area of the studies, the Bug River Valley crosses the border of the compact range of distribution of most of the discussed species that are localized in the South Polish Upland Zone (44). Since Bug has meridian localization, it seems to be the most probable tract of beetles migration in the North direction. Thus, it is essential to explain interactions between localities near Hrubieszów (within the compact range of distribution of xerothermic species – yellow colour in the figure) and the relic island localized near Mielnik (44).

There were 49 out of 114 of all xerothermic weevils reported from Poland (44) in the area of the study. sixteen species of widespread Palearctic or Eurosiberian type of distribution were excluded from that group. The collected data were completed with the literature data (11, 44, 69). The literature data were connected with some of xerothermic species that were not collected during present studies, e.g. *Nemonyx lepturoides* and *Ranunuculiphilus faeculentus*. The distribution of localities of some of the weevils species indicated that they used the

Bug River Valley as the migration tract. These species were divided into four groups:

• Group I (in Fig. 3, in bold italic)

Non-flying species. Their localities near Bug are localized behind the border of the compact range situated in the South Polish Upland Zone. *Trachyphloeus parallelus*, *Polydrusus inustus*, *Eusomus ovulum*, *Foucartia squamulata*, *Cyphocleonus dealbatus* represent group I. The direct transport with the river stream seems to be the most probable way of migration in that group. Finding the species from that group in initial or ephemerical localities is the evidence of the evocative, contemporary existing process of migration. The alternative (and the most probable) way of migration in the case of *Polydrusus inustus* could be taking care of them by human with the cuttings of fruit trees.

• Group II (in Fig. 3, in italic)

The actively flying weevils. Their localities in the Bug River Valley are behind the compact range of distribution. Group II is represented by *Nemonyx lepturoides*, *Haplorhynchites pubescens*, *Squamapion elongatum*, *S. flavimanum*, *S. hoffmanni*, *Tychius schneideri*, *T. sharpi*, *Sibinia subelliptica*, *S. tibialis*, *Ranunculiphilus faeculentus* and *Pseudorchestes ermischi*. The river could play indirect role in migration of that species, forming suitable habitats. However, we cannot exclude that Northern localities of these weevils developed through direct transport of specimens with the river stream.

• Group III

The weevils known from few localities spread along the Bug River that are localized within the compact range of distribution of that species. Therefore, we can assume that the Bug River plays the role only in migration within the range of distribution of these beetles. We cannot exclude, however, colonization of those localities without the participation of the river from the area of the Lublin Upland or Podlasie. Group II is represented by *Omias rotundatus*, *Tychius medicaginis*, *Ethelcus denticulatus*, *Cionus olens* and *Cleopus solani*.

• Group IV

The weevils widely distributed in the whole Poland. They are known from the Bug River Valley from single localities or several adjacent localities. It is hard to clarify the role of the Bug River Valley as the migration tract in that group of weevils. Group IV includes: *Curculionoidea*: *Squamapion oblivium*, *Diplapion detritum*, *Ceratapion austriacum*, *Exapion corniculatum*, *Stenopterapion intermedium*, *Hemitrichapion reflexum*, *Trachyphloeus alternaus*, *T. inermis*, *Brachysomus strawinskii*, *Sitona languidus*, *Datonychus derennei*, *Mogulones albosignatus*, *M. austriacus*, *M. dimidiatus*, *Stenocarus cardui*.

In a total of 36 xerothermic species of south origin the migration effect along the Bug River Valley was observed in 16 species (Group I and II), and in

Fig. 3. The distribution of localities of some of xerothermic species in the Bug River Valley

the next 5 species that process was possible (group III). The collected data were insufficient to unambiguously explain the function of the Bug Valley in the distribution of 15 species (Group IV).

The main obstacle in the migration process along the Bug River Valley is almost absolute lack of typical xerothermic grasslands in the section from Dorohusk to Mielnik. However, according to Mazur observations (2001), many xerothermic weevils migrate from segetal and ruderal communities to adjacent grasslands from *Festuco-Brometea* class. The weevil species could, therefore, use other than xerothermic biotopes as substitute habitats. We should also remember that the large number of xerothermic weevils is polyphagous species and their feeding preferences are not completely explained. Thus, there is a possibility that they utilize non-xerothermic plants (at least temporary) as nutrient material. The laboratory experiments showed that many weevils kept without typical of them host plants could effectively feed on other plant species (16–18). This fact supports the possibility of surviving specimens that are aside from typical of them habitats. Moreover, the process of parthogenesis described in many xerothermic weevils (e.g., *Otiorhynchus*, *Trachyphloeus*, *Peritelus*, *Eusomus*), might at least theoretically begin the local population even from the single migrating specimen. Therefore, the migration process (active and passive) of xerothermic weevils along the Poleski Migration Tract was confirmed by the field studies. Thus the still active influence of the Bug River Valley on weevils fauna composition of the surrounding area. Nonetheless, the effects of insects migration depend on several factors, effective attaining the suitable habitat first of all. We can, therefore assume that migration along the Bug River Valley played an important role in the process of the development of xerothermic fauna inhabiting the surroundings of Mielnik. The final conclusion, however, will be possible after complete recognition of *Curculionoidea* species composition in the area of Podlasie. Moreover, the genetic analysis could explain the degree of relation between local populations of xerothermic species inhibiting within the compact range of distribution and disjunctive population in relic islands.

CONCLUSIONS

1. The weevils inhabiting the Bug River Valley in the area of the studies had relatively high biodiversity of species composition and ecological heterogeneity. More than 40 species of *Curculionoidea* regarded as scarcity in Poland or/and included in *The Red List of Threatened Species in Poland* were detected in the study area, which indicates big natural values of that area.

2. The weevil communities of the middle part of the Bug River Valley are characterized by high proportion of South European and Euro-Caucasian element comparing with other examined areas of Poland.

3. A group of 13 species of *Curculionoidea* characteristic of the area were determined during the study, namely: *Pseudoprotapion ergenense*, *Trachyphloeus inermis*, *T. spinimanus*, *Brachysomus strawinskii*, *Phloeophagus turbatus*, *Bagous friwaldszkyi*, *B. nodulosus*, *Poophagus hopffgarteni*, *Mogulones dimidiatus*, *Cionus gebleri*, *C. olens*, *Pseudorchetes smreczynskii* and *Ramphus subaeneus*. It indicates distinct faunistic separation of the middle part of the Bug River Valley from other regions of Poland.

4. The examined biotopes had very numerous weevil fauna. Moreover, the biggest number of representative species (often stenotopic) characteristic of particular plant communities were found in those ecosystems. We can assume, therefore, that plant communities in the Bug River Valley are relatively well preserved.

5. The weevils representing a limited range of distribution were highly selective in respect to preferred habitats in the area of the studies.

6. The results of ecological and zoogeographical analysis indicate big differences in the weevil species composition between seemingly similar (at least at the structural level) grasslands: xerothermic and psammophilous.

7. In the area of Podlasie (north) part of the Bug River Valley some meadow communities rather than psammophilous grasslands act as substitute habitats for xerothermic weevils attaining here with the river valley.

8. In the study area some of the weevils species (e.g., *Sibinia tibialis*, *Cionus gebleri*, *C. olens* and *C. clairvillei*) are not fulfilling the criterion of xerothermic species proposed by Mazur (44).

9. There were significant differences in respect to the structure of xerothermic grasslands weevils between contemporary studies and the results of previous studies conducted by Cmoluch (11).

10. The quality structure of *Curculionoidea* communities inhabiting dry-ground forest communities was characterized by very high biodiversity, which indicates their variable genesis and management.

11. The results of conducted studies are the evidence of a significant function of the Bug River Valley as still active, ecological corridor that plays an important role in the migration of at least some of weevils species in the East Poland area.

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