

# TAXONOMICAL STRUCTURE AND BIOGEOGRAPHY OF LEAF-BEETLES (COLEOPTERA: CHRYSOMELIDAE S. L.) OF THE LATVIAN FAUNA

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Taxonomical structure and biogeography of the Latvian leaf-beetles and comparison to the adjacent countries (Belarus, Estonia and Lithuania) is presented in the current paper. In Latvia 326 species of Chrysomelidae s. l. belonging to 68 genera are known: Megalopodidae – 5 species, Orsodacnidae – 1 species, and Chrysomelidae – 320 species. The subfamilies Alticinae (125 species), Chrysomelinae (57 species), Cryptocephalinae (incl. Clytrini and Cryptocephalini; 42 species) and Donaciinae (27 species) are predominate on the number of species. In the Latvian fauna, the genera *Longitarsus* (34 species), *Cryptocephalus* (31 species) and *Chrysolina* (21 species) are prevail on the number of species. The Latvian fauna of leaf-beetles is presented by 17 chorotypes. There are Sibero-European (74 or 22.70%) and Asiatic-European (65 or 19.94%) species predominate. The borders of geographic ranges of 44 leaf-beetle species are going through Latvia.

Key words: Coleoptera, Megalopodidae, Orsodacnidae, Chrysomelidae, Bruchinae, Latvia, fauna, biogeography.

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## INTRODUCTION

Leaf-beetles, represented by 30000–50000 species, are one of the largest families of the order Coleoptera worldwide (Bieńkowski 2004, Brovdij 1985, Jolivet 1988, Mohr 1966). The family is abundant and rich in species also in the fauna of Latvia and the Baltic States. They are phytophagous: imagines mostly occur on leaves and flowers, larvae mostly feed on leaves and roots, occasionally larvae are saprophagous or carpophagous. Some species of leaf-beetles are considered to be serious pests of agriculture and forestry (Kryzhanovskij 1974, Lopatin & Nesterova 2005).

The research history of Latvian Chrysomelidae s. l. is more than 220 years old (Bukejs 2008). The first information on leaf-beetles of the Latvian fauna was published in the second half of the 18<sup>th</sup> century in the monograph describing nature of Livland (Fischer 1778) where three species are mentioned. More than 170 works were published in Latvia subsequently.

In the current paper, the leaf-beetles are considered in a wide sense (Chrysomelidae s. l.) according to the taxonomy as applied in Catalogue of Palaearctic Coleoptera Vol. 6 (Löbl & Smetana 2010), i.e. families Megalopodidae Latreille, 1802, Orsodacnidae Thomson, 1859 and

Chrysomelidae Latreille, 1802 (incl. Bruchinae Latreille, 1802). Classification of chorotypes follows as suggested by Taglianti et al. (1999), except Holarctic-Oriental, Palaearctic-Oriental and Circumcaspiian chorotypes.

The aim of this work is to analyse taxonomical and biogeographical structure of leaf-beetle fauna of Latvia.

## TAXONOMICAL STRUCTURE OF LEAF-BEETLES OF THE LATVIAN FAUNA

Latvian fauna of leaf-beetles includes 326 species belonging to 3 families (Megalopodidae, Orsodacnidae and Chrysomelidae) and 13 subfamilies (Zeugophorinae, Orsodacninae, Bruchinae, Donaciinae, Criocerinae, Cassidinae, Chrysomelinae, Galerucinae, Alticinae, Lamprosomatinae, Cryptocephalinae (incl. Clytrini and Cryptocephalini), Eumolpinae, Synetinae). In the Latvian fauna Megalopodidae and Orsodacnidae contain small number of species – 5 and 1 respectively, but Chrysomelidae is one of the largest on the number of species families of Coleoptera and contains 320 species.

The number of known species of Chrysomelidae s. l. in adjacent territories slightly varies: Belarus – 350 species (Alexandrovitch et al. 1996, Barševskis 2001, Lopatin & Nesterova 2005), Estonia – 267 species (Silfverberg 2010, Bukejs 2012), Lithuania – 316 species (Tamutis et al.

2011, Bukejs et al. 2012), Kaliningrad region – 280 (Alekseev 2003, Bukejs & Alekseev 2009, 2012, Alekseev & Bukejs 2010, 2011, Alekseev et al. 2012). The taxonomical structure of leaf-beetles of the Latvian fauna and comparison with the adjacent countries (Belarus, Estonia and Lithuania) is shown in Table 1.

The subfamilies Alticinae (125 species), Chrysomelinae (57 species), Cryptocephalinae (incl. Clytrini and Cryptocephalini; 42 species) and Donaciinae (27 species) are predominate on the number of species. Other subfamilies are presented by small number of species (Fig. 1). Some subfamilies (e. g. Eumolpinae, Galerucinae) are most numerous in tropics or subtropics of both hemispheres. Generally, Orsodacninae and Synetinae are poor on the number of species in all biogeographical regions.

Leaf-beetle fauna of Latvia is presented by 68 genera. The subfamilies Alticinae (18 genera), Chrysomelinae (13 genera) and Galerucinae (10 genera) are prevail on the number of genera (Fig. 2). However in Palaearctic, subfamily Alticinae contains smaller number of genera than Eumolpinae or Galerucinae.

In the Latvian fauna, *Longitarsus* (34 species), *Cryptocephalus* (31 species) and *Chrysolina* (21 species) are predominate on the number of species. Generally these genera belong to widespread taxa and contain large number of species.

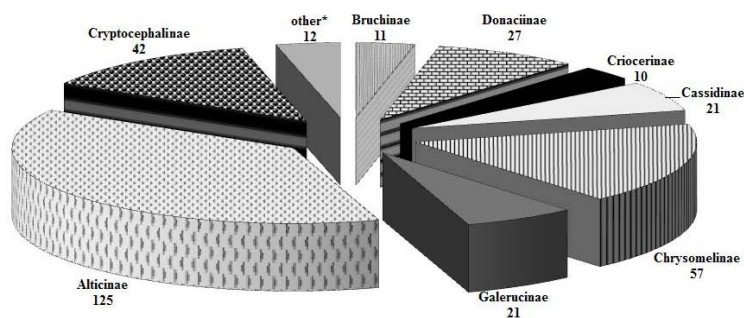


Fig. 1. Number of species in the subfamilies of Latvian Chrysomelidae s. l.

\* - subfamilies which contain not more than 5 species each: Zeugophorinae, Orsodacninae, Lamprosomatinae, Eumolpinae and Synetinae.

Table 1. Taxonomical structure of Chrysomelidae s. l. of Latvia (LV), Lithuania (LT), Estonia (EE) and Belarus (BY)

Taxa	Number of species			
	LV	LT	EE	BY
<b>Megalopodidae</b>				
Zeugophorinae				
<i>Zeugophora</i>	5	4	4	5
<b>Orsodacnidae</b>				
Orsodacninae				
<i>Orsodacne</i>	1	1	1	1
<b>Chrysomelidae</b>				
Bruchinae				
<i>Acanthoscelides</i>	1	1	1	1
<i>Bruchidius</i>	2	3	-	3
<i>Bruchus</i>	6	5	4	6
<i>Callosobruchus</i>	-	-	-	1
<i>Spermophagus</i>	2	1	-	1
Donaciinae				
<i>Donacia</i>	21	21	19	21
<i>Macrolea</i>	2	1	2	2
<i>Plateumaris</i>	4	5	4	5
Criocerinae				
<i>Crioceris</i>	2	2	1	4
<i>Lilioceris</i>	2	2	2	2
<i>Lema</i>	1	1	1	1
<i>Oulema</i>	5	6	4	4
Cassidinae				
<i>Cassida</i>	19	19	14	24
<i>Hispa</i>	-	1	-	1
<i>Hypocassida</i>	1	1	1	1
<i>Pilemostoma</i>	1	-	-	1
Chrysomelinae				
<i>Chrysolina</i>	21	20	17	21
<i>Chrysomela</i>	7	7	7	7
<i>Colaphellus</i>	1	1	-	1
<i>Entomoscelis</i>	-	1	-	1
<i>Gastrophysa</i>	2	2	2	2
<i>Gonioctena</i>	7	7	6	6
<i>Leptinotarsa</i>	1	1	1	1
<i>Oreina</i>	-	-	-	1
<i>Phaedon</i>	3	3	4	3
<i>Phratora</i>	6	5	5	5
<i>Plagioderia</i>	1	1	1	1
<i>Plagiosterna</i>	1	1	1	1
<i>Prasocuris</i> s. l.	5	5	5	5
<i>Timarcha</i>	1	1	-	1
<i>Zygogramma</i>	1	-	-	-
Galerucinae				
<i>Agelastica</i>	1	1	1	1
<i>Calomicrus</i>	1	1	1	1
<i>Exosoma</i>	-	-	-	1
<i>Galeruca</i>	4	5	3	5
<i>Galerucella</i>	6	6	6	6
<i>Lochmaea</i>	3	3	2	3
<i>Luperus</i>	2	3	2	3
<i>Phyllobrotica</i>	1	1	1	1
<i>Pyrrhalta</i>	1	1	1	1
<i>Sermylassa</i>	1	1	-	1
<i>Xanthogaleruca</i>	1	1	-	1
Alticinae				
<i>Altica</i>	14	11	9	9
<i>Aphthona</i>	10	10	7	12
<i>Argopus</i>	2	-	-	2

Taxa	Number of species			
	LV	LT	EE	BY
<i>Batophila</i>	1	1	1	1
<i>Chaetocnema</i>	13	10	8	15
<i>Crepidodera</i>	5	5	4	5
<i>Derocrepis</i>	1	1	1	1
<i>Dibolia</i>	4	3	4	7
<i>Epitrix</i>	1	1	1	1
<i>Hermaeophaga</i>	1	1	1	1
<i>Hippuriphila</i>	1	1	1	1
<i>Longitarsus</i>	34	30	28	36
<i>Lythrarina</i>	1	1	1	1
<i>Mantura</i>	3	2	2	2
<i>Neocrepidodera</i>	6	6	5	6
<i>Ochrosis</i>	-	-	-	1
<i>Phyllotreta</i>	14	13	12	14
<i>Psylliodes</i>	12	13	12	13
<i>Sphaeroderma</i>	2	2	1	2
Lamprosomatinae				
<i>Oomorphus</i>	1	-	-	-
Cryptocephalinae				
<i>Clytra</i>	2	1	2	1
<i>Coptocephala</i>	1	1	1	2
<i>Cryptocephalus</i>	31	39	32	39
<i>Labidostomis</i>	4	4	2	3
<i>Pachybrachis</i>	1	1	1	2
<i>Smaragdina</i>	3	2	3	3
Eumolpinae				
<i>Bromius</i>	1	1	1	1
<i>Chrysochus</i>	1	1	-	1
<i>Pachnephorus</i>	2	2	2	3
Synetinae				
<i>Syneta</i>	1	1	1	1
<b>Total</b>	326	316	267	350

There are no endemics in the Latvian fauna of leaf-beetles.

## BIOGEOGRAPHY OF LATVIAN CHRYSOMELIDAE S. L.

The Latvian fauna of leaf-beetles is presented by 17 chorotypes:

**Cosmopolitan** – 4 species (1.23%): *Zygogramma suturalis* (Fabricius, 1775); *Bruchus rufimanus* Boheman, 1833; *B. pisorum* (Linnaeus, 1758); *Acanthoscelides obtectus* (Say, 1831);

**Holarctic-Oriental** – 1 species (0.31%): *Phyllotreta striolata* (Fabricius, 1803);

**Palaeartic-Oriental** – 2 species (0.61%): *Chrysolina aurichalcea* (Gebler, 1825); *Longitarsus succineus* (Foudras, 1860);

**Holarctic** – 15 species (4.60%): *Oulema melanopus* (Linnaeus, 1758); *Leptinotarsa decemlineata* (Say, 1824); *Chrysolina staphylaea* (Linnaeus, 1758); *Ch. marginata* (Linnaeus, 1758); *Gastrophysa polygoni* (Linnaeus, 1758); *G. viridula* (DeGeer, 1775); *Phaedon armoraciae* (Linnaeus, 1758); *Prasocuris phellandrii* (Linnaeus, 1758); *Plagioderma versicolora* (Laicharting, 1781); *Gonioctena decemnotata* (Marsham, 1802); *Phratora vulgatissima* (Linnaeus, 1758); *Ph. vitellinae* (Linnaeus, 1758); *Hippuriphilla modeeri* (Linnaeus, 1761); *Epitrix pubescens* (Koch, 1803); *Cassida flaveola* Thunberg, 1794;

**Palaeartic** – 45 species (13.80%): *Macrolepta mutica* (Fabricius, 1792); *Donacia impressa* (Paykull, 1799); *D. simplex* Fabricius, 1775; *Lilioceris lili* (Scopoli, 1763); *Oulema duftschmidi* (Redtenbacher, 1874); *Cryptocephalus bipunctatus* (Linnaeus, 1758);

*Pachnephorus tessellatus* (Duftschmid, 1825); *Chrysolina sanguinolenta* (Linnaeus, 1758); *Ch. varians* (Schaller, 1783); *Galerucella lineola* (Fabricius, 1781); *G. calmariensis* (Linnaeus, 1767); *Xanthogaleruca luteola* (Müller, 1766); *Lochmaea crataegi* (Forster, 1771); *Galeruca tanacetii* (Linnaeus, 1758); *Phyllotreta undulata* Kutschera, 1860; *Ph. atra* (Fabricius, 1775); *Aphthona lutescens* (Gyllenhal, 1813); *Longitarsus tabidus* (Fabricius, 1775); *L. lycopi* (Foudras, 1860); *L. melanocephalus* (DeGeer, 1775); *L. kutscheraei* (Rye, 1872); *L. ganglbaueri* Heikertinger, 1912; *L. atricillus* (Linnaeus, 1761); *L. luridus* (Scopoli, 1763); *L. parvulus* (Paykull, 1799); *Neocrepidodera ferruginea* (Scopoli, 1763); *Crepidodera aurata* (Marsham, 1802); *Chaetocnema concinna* (Marsham, 1802); *Ch. picipes* Stephens, 1831; *Ch. aridula* (Gyllenhal, 1827); *Ch. hortensis* (Geoffroy, 1785); *Psylliodes napi* (Fabricius, 1792); *P. hyoscyami* (Linnaeus, 1758); *P. chalcomera* (Illiger, 1807); *Hypocassida subferruginea* (Schrank, 1776); *Cassida viridis* Linnaeus, 1758; *C. rubiginosa* Müller, 1776; *C. stigmatica* Suffrian, 1844; *C. sanguinosa* Suffrian, 1844; *C. sanguinolenta* Müller, 1776; *C. nobilis* Linnaeus, 1758; *C. vittata* Villers, 1789; *Bruchus atomarius* (Linnaeus, 1761); *Spermophagus sericeus* (Geoffroy, 1785); *S. calystegiae* (Lukjanovitsh & Ter-Minassian, 1957);

**West-Palaearctic** – 11 species (3.37%): *Donacia brevicornis* Ahrens, 1810; *Plateumaris rustica* (Kunze, 1818); *Cryptocephalus pusillus*

(Fabricius, 1777; *Prasocuris glabra* (Herbst, 1783); *Prasocuris junci* (Brahm, 1790); *Aphthona euphorbiae* (Schrank, 1781); *Longitarsus ochroleucus* (Marsham, 1802); *L. gracilis* Kutschera, 1864; *Psylliodes marcida* (Illiger, 1807); *Cassida hemisphaerica* Herbst, 1799; *C. margaritacea* Schaller, 1783;

**Asiatic-European** – 65 species (19.94%): *Zeugophora scutellaris* Suffrian, 1840; *Donacia thalassina* Germar, 1811; *D. vulgaris* Zschach, 1788; *D. clavipes* (Fabricius, 1793); *Plateumaris sericea* (Linnaeus, 1761); *Crioceris duodecimpunctata* (Linnaeus, 1758); *Lema cyanella* (Linnaeus, 1758); *Liliocerus merdigera* (Linnaeus, 1758); *Clytra quadripunctata* (Linnaeus, 1758); *Cryptocephalus coryli* (Linnaeus, 1758); *C. sexpunctatus* (Linnaeus, 1758); *C. nitidulus* Fabricius, 1787; *C. parvulus* Müller, 1776; *C. androgyne* Marseul, 1875; *C. flavipes* Fabricius, 1781; *C. bilineatus* (Linnaeus, 1767); *C. frontalis* Marsham, 1802; *C. exiguus* Schneider, 1792; *C. fulvus* Goeze, 1777; *Bromius obscurus* (Linnaeus, 1758); *Chrysolina graminis* (Linnaeus, 1758); *Ch. polita* (Linnaeus, 1758); *Phaedon cochleariae* (Fabricius, 1792); *Chrysomela cuprea* Fabricius, 1775; *Ch. lapponica* Linnaeus, 1758; *Ch. vigintipunctata* (Scopoli, 1763); *Ch. collaris* Linnaeus, 1758; *Ch. populi* Linnaeus, 1758; *Ch. tremula* Fabricius, 1787; *Ch. saliceti* (Weise, 1884); *Plagiosterna aenea* (Linnaeus, 1758); *Gonioctena viminalis* (Linnaeus, 1758); *Phratora laticollis* (Suffrian, 1851); *Galerucella grisescens* (Joannis, 1865);

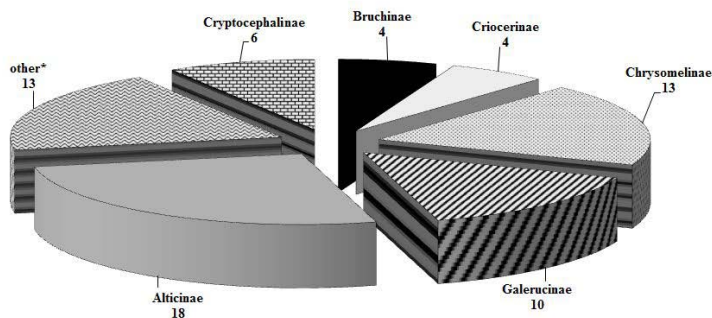


Fig. 2. Range of genera in the subfamilies of Latvian Chrysomelidae s. l.

\* - genera which contain 1-3 genera each: Zeugophorinae, Lamprosomatinae, Synetinae, Orsodacninae, Donaciinae, Cassidinae and Eumolpinae.

*Lochnaea caprea* (Linnaeus, 1758); *Agelastica alni* (Linnaeus, 1758); *Phyllotreta vittula* (Redtenbacher, 1849); *Ph. nemorum* (Linnaeus, 1758); *Ph. ochripes* (Curtis, 1837); *Aphthona abdominalis* (Duftschmid, 1825); *Longitarsus lewisii* (Baly, 1874); *L. longiseta* Weise, 1889; *L. suturellus* (Duftschmid, 1825); *L. nasturtii* (Fabricius, 1792); *L. holsaticus* (Linnaeus, 1758); *L. brunneus* (Duftschmid, 1825); *Altica carduorum* Guérin-Méneville, 1858; *A. tamaricis* Schrank, 1785; *A. oleracea* (Linnaeus, 1758); *Lythriaria salicariae* (Paykull, 1800); *Neocrepidodera interpunctata* (Motschulsky, 1859); *N. motschulskii* (Konstantinov, 1991); *Crepidodera aurea* (Geoffroy, 1785); *C. fulvicornis* (Fabricius, 1792); *C. plutus* (Latreille, 1804); *Mantura rustica* (Linnaeus, 1767); *Argopus nigratarsis* (Gebler, 1823); *Psylliodes attenuata* (Koch, 1803); *P. cucullata* (Illiger, 1807); *Pilemostoma fastuosa* (Schaller, 1783); *Cassida murraea* Linnaeus, 1767; *C. nebulosa* Linnaeus, 1758; *C. lineola* Creutzer, 1799; *C. vibex* Linnaeus, 1767; *C. prasina* Illiger, 1798;

**Sibero-European** – 74 species (22.70%): *Zeugophora subspinosa* (Fabricius, 1781); *Z. turneri* Power, 1863; *Z. frontalis* Suffrian, 1840; *Z. flavicollis* (Marsham, 1802); *Orsodacne cerasi* (Linnaeus, 1758); *Macrolepa appendiculata* (Panzer, 1794); *Donacia crassipes* Fabricius, 1775; *D. dentata* Hoppe, 1795; *D. versicolorea* (Brahm, 1790); *D. semicuprea* Panzer, 1796; *D. fennica* Paykull, 1800; *D. sparganii* Ahrens, 1810; *D. aquatica* (Linnaeus, 1758); *D. obscura* Gyllenhal, 1813; *Oulema erichsonii* (Suffrian, 1841); *O. septentrionis* (Weise, 1880); *O. gallaeciana* (Heyden, 1870); *Labidostomis tridentata* (Linnaeus, 1758); *L. longimana* (Linnaeus, 1761); *Smaragdina salicina* (Scopoli, 1763); *Pachybrachis hieroglyphicus* (Laicharting, 1781); *Cryptocephalus cordiger* (Linnaeus, 1758); *C. octopunctatus* (Scopoli, 1763); *C. distinguendus* Schneider, 1792; *C. biguttatus* (Scopoli, 1763); *C. aureolus* Suffrian, 1847; *C. sericeus* (Linnaeus, 1758); *C. solivagus* Leonardi & Sassi, 2001; *C. pini* (Linnaeus, 1758); *C. pallifrons* Gyllenhal, 1813; *C. labiatus* (Linnaeus, 1761); *Syneta betulae* (Fabricius, 1792); *Pachnephorus pilosus*

(Rossi, 1790); *Chrysolina cerealis* (Linnaeus, 1767); *Ch. oricalcia* (Müller, 1776); *Ch. sturmi* (Westhoff, 1882); *Ch. limbata* (Fabricius, 1775); *Ch. fastuosa* (Scopoli, 1763); *Prasocuris marginella* (Linnaeus, 1758); *P. hannoveriana* (Fabricius, 1775); *Gonioctena flavicornis* (Suffrian, 1851); *G. linnaeana* (Schrank, 1781); *G. quinquepunctata* (Fabricius, 1787); *G. pallida* (Linnaeus, 1758); *Phratora atrovirens* (Cornelius, 1857); *Ph. polaris* (Schneider, 1886); *Galerucella nymphaeae* (Linnaeus, 1758); *G. tenella* (Linnaeus, 1760); *Pyrrhalta viburni* (Paykull, 1799); *Galeruca laticollis* R.F.Sahlberg, 1838; *Phyllobrotica quadrimaculata* (Linnaeus, 1758); *Luperus longicornis* (Fabricius, 1781); *L. flavipes* (Linnaeus, 1767); *Phyllotreta armoraciae* (Koch, 1803); *Ph. tetrastigma* (Comolli, 1837); *Ph. dilatata* Thomson, 1866; *Ph. flexuosa* (Illiger, 1794); *Ph. exclamationis* (Thunberg, 1784); *Aphthona erichsoni* (Zetterstedt, 1838); *Longitarsus rubiginosus* (Foudras, 1860); *L. apicalis* (Beck, 1817); *L. nigerrimus* (Gyllenhal, 1827); *Altica engstromi* (Sahlberg, 1894); *A. brevicollis* Foudras, 1860; *A. chamaenerii* (H. Lindberg, 1926); *A. helianthemii* (Allard, 1859); *Derocrepis rufipes* (Linnaeus, 1758); *Crepidodera nitidula* (Linnaeus, 1758); *Chaetocnema semicoerulea* (Koch, 1803); *Ch. mannerheimi* (Gyllenhal, 1827); *Ch. sahlbergi* (Gyllenhal, 1827); *Cassida panzeri* Weise, 1907; *C. denticollis* Suffrian, 1844; *Bruchus loti* Paykull, 1800;

**Centralasiatic-European-Mediterranean** – 23 species (7.06%): *Donacia marginata* Hoppe, 1795; *Crioceris asparagi* (Linnaeus, 1758); *Chrysolina gypsophilae* (Küster, 1845); *Ch. hyperici* (Forster, 1771); *Galeruca interrupta* (Illiger, 1802); *Phyllotreta cruciferae* (Goeze, 1777); *Ph. nigripes* (Fabricius, 1775); *Longitarsus pellucidus* (Foudras, 1860); *L. jacobaeae* (Waterhouse, 1858); *L. nigrofasciatus* (Goeze, 1777); *L. curtus* (Allard, 1860); *L. exsoletus* (Linnaeus, 1758); *L. pratensis* (Panzer, 1794); *L. ballotae* (Marsham, 1802); *L. aeneicollis* (Faldermann, 1837); *Altica palustris* (Weise, 1888); *Chaetocnema tibialis* (Illiger, 1807); *Ch. obesa* (Boieldieu, 1859); *Psylliodes affinis* (Paykull, 1799); *P. chrysocephala* (Linnaeus,

1758); *P. cuprea* (Koch, 1803); *Cassida ferruginea* Goeze, 1777; *Bruchus affinis* Frölich, 1799;

**Centralasiatic-European** – 17 species (5.21%): *Donacia bicolora* Zschach, 1788; *D. tomentosa* (Ahrens, 1810); *D. cinerea* (Herbst, 1784); *Clytra laeviuscula* (Ratzeburg, 1837); *Coptocephala unifasciata* (Scopoli, 1763); *Chrysolina coeruleans* (Scriba, 1791); *Ch. haemoptera* (Linnaeus, 1758); *Colaphellus sophiae* (Schaller, 1783); *Galerucella pusilla* (Duftschmid, 1825); *Galeruca pomonae* (Scopoli, 1763); *Sermylassa halensis* (Linnaeus, 1767); *Longitarsus absynthii* Kutschera, 1862; *L. anchusae* (Paykull, 1799); *Altica carinthiacea* (Weise, 1888); *Dibolia depressiuscula* Letzner, 1846; *Psylliodes dulcamarae* (Koch, 1803); *Bruchus laticollis* Boheman, 1833;

**Turano-European-Mediterranean** – 3 species (0.92%): *Altica impressicollis* (Reiche, 1862); *Dibolia occultans* (Koch, 1803); *Psylliodes luteola* (Müller, 1776);

**Turano-European** – 13 species (3.99%): *Plateumaris braccata* (Scopoli, 1772); *Cryptocephalus punctiger* Paykull, 1799; *C. ocellatus* Drapiez, 1819; *Chrysochus asclepiadeus* (Pallas, 1776); *Chrysolina carnifex* (Fabricius, 1792); *Phratora tibialis* (Suffrian, 1851); *Phyllotreta astrachanica* Lopatin, 1977; *Aphthona nonstriata* (Goeze, 1777); *Neocrepidodera transversa* (Marsham, 1802); *Chaetocnema arosa* (Letzner, 1846); *Ch. confusa* (Boheman, 1851); *Dibolia cryptocephala* (Koch, 1803); *Psylliodes picina* (Marsham, 1802);

**European-Mediterranean** – 9 species (2.76%): *Chrysolina americana* (Linnaeus, 1758); *Ch. analis* (Linnaeus, 1767); *Aphthona pygmaea* (Kutschera, 1861); *A. atrocaerulea* (Stephens, 1831); *Longitarsus ferrugineus* (Foudras, 1860); *Mantura chrysanthemi* (Koch, 1803); *Chaetocnema arida* Foudras, 1860; *Sphaeroderma rubidum* (Graëlls, 1858); *Cassida seladonia* Gyllenhal, 1827;

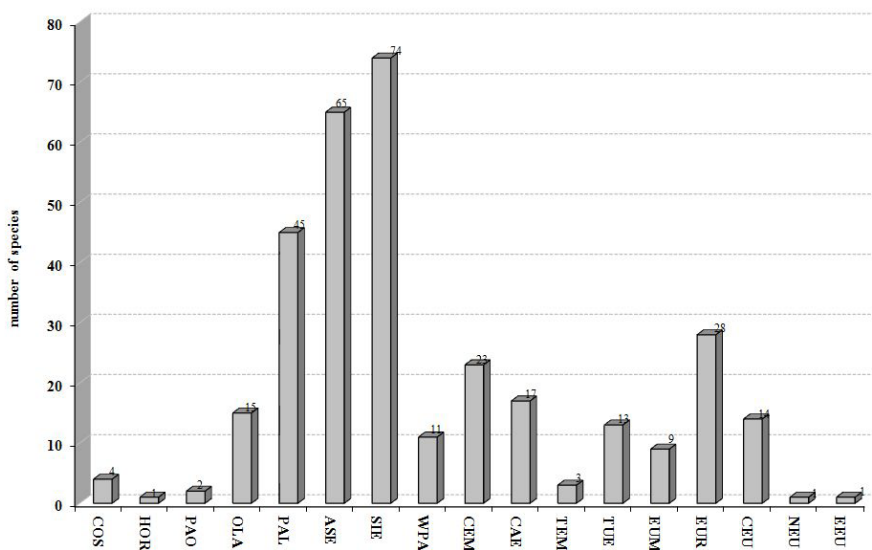


Fig. 3. Biogeographical structure of Latvian Chrysomelidae s. l.: COS – Cosmopolitan, HOR – Holarctic-Oriental, PAO – Palaearctic-Oriental, OLA – Holarctic, PAL – Palaearctic, ASE – Asiatic-European, SIE – Sibero-European, WPA – West-Palaearctic, CEM – Centralasiatic-European-Mediterranean, CAE – Centralasiatic-European, TEM – Turano-European-Mediterranean, TUE – Turano-European, EUM – European-Mediterranean, EUR – European, CEU – Centraleuropean, NEU – North-European, EEU – East-European.

Table 2. Chorotypes of Chrysomelidae s. l. of Latvia, Lithuania, Estonia and Belarus

Chorotype	Number of species			
	Latvia	Lithuania	Estonia	Belarus
Cosmopolitan	4	3	3	4
Holarctic-Oriental	1	1	1	1
Palaeartic-Oriental	2	2	1	2
Holarctic	15	15	15	15
Palaeartic	45	43	37	44
Asiatic-European	65	64	55	70
Sibero-European	74	74	73	71
West-Palaeartic	11	10	9	9
Centralasiatic-European-Mediterranean	23	21	16	23
Centralasiatic-European	17	22	12	22
Turano-European-Mediterranean	3	2	2	3
Turano-European	13	12	9	21
Circumcaspiian	-	-	-	1
Europeo-Mediterranean	9	9	4	13
European	28	25	22	25
Centraleuropean	14	11	6	20
North-European	1	1	2	1
East-European	1	1	-	3
South-European	-	-	-	1
unclear chorotype	-	-	-	1
<b>Total</b>	<b>326</b>	<b>316</b>	<b>267</b>	<b>350</b>

**European** – 28 species (8.59%): *Plateumaris discolor* (Panzer, 1795); *Labidostomis humeralis* (Schneider, 1792); *Smaragdina flavicollis* Charpentier, 1825; *S. affinis* (Illiger, 1794); *Cryptocephalus hypochoeridis* (Linnaeus, 1758); *C. nitidus* (Linnaeus, 1758); *C. decemmaculatus* (Linnaeus, 1758); *C. moraei* (Linnaeus, 1758); *C. quadripustulatus* Gyllenhal, 1813; *C. vittatus* Fabricius, 1775; *Chrysolina geminata* (Paykull, 1799); *Gonioctena intermedia* (Helliesen, 1913); *Lochmaea suturalis* (Thomson, 1866); *Calomicrus pinicola* (Duftschmid, 1825); *Aphthona pallida* (Bach, 1856); *A. violacea* (Koch, 1803); *A. venustula* (Kutschera, 1861); *Longitarsus fulgens* (Foudras, 1860); *L. niger* (Koch, 1803); *Altica aenescens* (Weise, 1888); *A. lythri* Aubé, 1843; *A. quercetorum saliceti* Weise, 1888; *Hermaeophaga mercurialis* (Fabricius, 1792); *Batophila rubi* (Paykull, 1799); *Neocrepidodera nigrigula* (Gyllenhal, 1813); *Mantura pallidicornis* (Waltl, 1839); *Chaetocnema subcoerulea* (Kutschera, 1864); *Sphaeroderma testaceum* (Fabricius, 1775);

**Centraleuropean** – 14 species (4.29%): *Donacia springeri* Müller, 1916; *D. brevitarsis* Thomson, 1884; *Cryptocephalus querceti* Suffrian, 1848;

*Oomorphus concolor* (Sturm, 1807); *Chrysolina kuesteri* (Helliesen, 1912); *Phaedon laevigatus* (Duftschmid, 1825); *Timarcha goettingensis* (Linnaeus, 1758); *Longitarsus noricus* Leonardi, 1976; *Altica longicollis* (Allard, 1860); *Neocrepidodera brevicollis* (Daniel, 1904); *Dibolia cynoglossi* (Koch, 1803); *Argopus ahrensii* (Germar, 1817); *Bruchidius marginalis* (Fabricius, 1777); *B. villosus* (Fabricius, 1792);

**North-European** – 1 species (0.31%): *Donacia antiqua* Kunze, 1818;

**East-European** – 1 species (0.31%): *Labidostomis lepida* Lefèvre, 1872.

Analysis of the distribution of Latvian species of Chrysomelidae s. l. reveals that the range of chorotypes is rather wide. There are Sibero-European (74 or 22.70%) and Asiatic-European (65 or 19.94%) species predominate. The Cosmopolitan, Holarctic-Oriental, Palaeartic-Oriental, Turano-European-Mediterranean, Europeo-Mediterranean, Centraleuropean, North-European and East-European species are less numerous (Fig. 3).



The biogeographical structure of the Latvian leaf-beetle fauna and comparison with the adjacent countries (Belarus, Estonia and Lithuania) is shown in Table 2.

Three genera are most widely presented on diversity of chorotypes: *Chrysolina* (Holarctic – 2 species, Palaearctic-Oriental – 1 species, Palaearctic – 2 species, Asiatic-European – 2 species, Sibero-European – 5 species, Centralasiatic-European-Mediterranean – 2 species, Centralasiatic-European – 2 species, Turano-European – 1 species, Europeo-Mediterranean – 2 species, European – 1 species, Centraleuropean – 1 species), *Longitarsus* (Palaearctic-Oriental – 1 species, Palaearctic – 8 species, West-Palaearctic – 2 species, Asiatic-European – 6 species, Sibero-European – 3 species, Centralasiatic-European-Mediterranean – 8 species, Centralasiatic-European – 2 species, Europeo-Mediterranean – 1 species, European – 2 species, Centraleuropean – 1 species) and *Cryptocephalus* (Palaearctic – 1 species, West-Palaearctic – 1 species, Asiatic-European – 10 species, Sibero-European – 10 species, Turano-European – 2 species, European – 6 species, Centraleuropean – 1 species).

The borders of geographic ranges of 44 leaf-beetle species are going through Latvia: Latvia is north border for *Crioceris asparagi* (Linnaeus, 1758), *Oulema duftschmidi* (Redtenbacher, 1874), *Labidostomis lepida* Lefèvre, 1872, *Oomorphus concolor* (Sturm, 1807), *Chrysochus asclepiadeus* (Pallas, 1776), *Chrysolina oricalcia* (Müller, 1776), *Ch. kuesteri* (Heliessen, 1911), *Ch. americana* (Linnaeus, 1758), *Colaphus sophiae* (Schaller, 1783), *Timarcha gottgensis* (Linnaeus, 1758), *Xanthogaleruca luteola* (Müller, 1766), *Lochmaea crataegi* (Forster, 1771), *Galeruca interrupta* Illiger, 1802, *Sermylassa halensis* (Linnaeus, 1767), *Phyllotreta astrachanica* Lopatin, 1977, *Aphthona abdominalis* (Duftschmid, 1825), *A. pallida* Bach, 1856, *Longitarsus nigrofasciatus* (Goeze, 1777), *L. ballotae* (Marsham, 1802), *L. fulgens* (Foudras, 1860), *L. absynthii* Kutschera, 1862, *Altica carduorum* Guérin-Ménéville, 1858, *A. impressicollis* (Reiche, 1862), *Crepidodera plutus*

(Latreille, 1804), *Chaetocnema tibialis* (Illiger, 1807), *Ch. obesa* (Boieldieu, 1859), *Ch. confusa* (Boheman, 1851), *Ch. arida* Foudras, 1860, *Sphaeroderma rubidum* (Graells, 1858), *Argopus ahrensi* (Germar, 1817), *Pilemostoma fastuosa* (Schaller, 1783), *Cassida lineola* Creutzer, 1799, *C. seladonia* Gyllenhal, 1827, *Bruchus laticollis* Boheman, 1833, *B. affinis* Frölich, 1799, *Bruchidius marginalis* (Fabricius, 1777), *B. villosus* (Fabricius, 1792), *Spermophagus sericeus* (Geoffroy, 1785), *S. calystegiae* (Lukjanovitch et Ter-Minassian, 1957) – these species are not recorded in Estonia, Karelia and Leningrad region; south border for *Syneta betulae* (Fabricius, 1792), *Phratora polaris* (Sparre Schneider, 1886) – they are not recorded in Belarus or known only from north part of country; east border for *Cryptocephalus hypochoeridis* (Linnaeus, 1758) – this species is not recorded in Russia; west border for *Donacia fennica* Paykull, 1800, *Labidostomis lepida* Lefèvre, 1872, *Cryptocephalus solivagus* Leonardi & Sassi, 2001, *Syneta betulae* (Fabricius, 1792) – they are not recorded in Kaliningrad region and Poland.

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