Georgiev, D., Bechev, D. & Yancheva, V. (Eds.)
Fauna of Sarnena Sredna Gora Mts, Part 1
ZooNotes, Supplement 9, 2020

The malacofauna (Mollusca: Gastropoda and Bivalvia) of Sarnena Gora Mts – published data and new records

DILIAN GEORGIEV*, IVAILO DEDOV**, ULRICH SCHNEPPAT

**Department of Ecology and Environmental Conservation, University of Plovdiv, Tzar Assen Str. 24, BG-4000 Plovdiv, Bulgaria, email: diliangeorgiev@abv.bg*
***Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, 2 Gagarin Street, 1113 Sofia, Bulgaria; e-mail: idedov@gmail.com*

Abstract. All literature data was surveyed and critically reviewed. The new materials were collected as sieved soil and detritus samples, or by hand. A total of 109 mollusc species are known to occur in Sarnena Gora Mts. Eight were new records to the area.

Key words: gastropods, mussels, distribution.

Introduction

The malacofauna of Sarnena Sredna Gora Mts was studied for a long period of time.

First data was reported by Damjanov & Liharev (1975). Only tree species were known: *Tandonia kusceri* (Wagner 1931), *Limax macedonicus* Hesse 1928 (= *graecus* species complex) and *Helix figulina* Rossmassler 1839.

In 2002 our colleague Dian Georgiev from the Trakia University published some terrestrial snails as intermediate hosts of protostrongylid nematodes (Georgiev & Georgiev, 2002).

From 2002 to 2017 intense studies on the mollusc species divesity were carried out mainly by the first author (Georgiev 2005, 2006, 2014, 2015, 2016, 2017; Georgiev & Stoycheva 2009, Georgiev *et al.* 2015, Glöer & Georgiev 2009, Irikov & Georgiev 2002, 2008, Irikov *et al.*, 2004).

Four species were found in the region of Stara Zagora during the work on the MSc thesis of Dilian Georgiev but were not published in future papers (Georgiev 2003): *Aegopinella pura* (Alder, 1830), *Bulgarica denticulata* (Olivier, 1801), *Limax conemenosi* Boettger, 1882 and *Pupilla muscorum* (Linnaeus, 1758).

Material and Methods

All literature data was surveyed and critically reviewed. The new materials were collected as sieved soil and detritus samples, or by hand.

Results

A total of 109 mollusc species are known to occur in Sarnena Gora Mts (Tab. 1). Eight were new records to the area:

***Arion subfuscus* (Draparnaud, 1805)**

Material examined: 26.5.2018, S of Shanovo village, broad leaf forest near stream, N42 31 47.7 E25 38 39.8; 450 m a.s.l., 1 live specimen below dead tree trunk, D. Georgiev, leg.

***Boettgerilla pallens* Simroth, 1912**

Material examined: 19.10.2018, Starozagorski Bani Resort, near Birenata Kashta restaurant, N42.453418, E25.497744, 407 m a.s.l., 3 live specimens (Fig. 1), U. Schneppat, R. Cornu, I. Dedov, leg. Second known locality of this species in Bulgaria (Dedov *et al.*, 2015).

***Bulgarica denticulata* (Olivier, 1801)**

Material examined: 2.5.2016, Chirpanski Heights, Partizanin vill., yard og a house, N42 14 56.02 E25 15 2.92, 183 m a.s.l., empty shells, D. Georgiev, leg.

***Truncatellina claustralis* (Gredler, 1856)**

Material examined: 14.2.2018, S of Lyulyak vill., limestone rocks, N42 29 23.3 E25 41 16.3; 331 m a.s.l., empty shells, D. Georgiev, leg.

***Vitrea transsylvanica* (Clessin, 1877)**

Material examined: 14.2.2018, S of Lyulyak vill., limestone rocks, N42 29 23.3 E25 41 16.3; 331 m, empty shells, D. Georgiev, leg.

***Dreissena polymorpha* (Pallas, 1771)**

Material examined: 2018, Kolena Dam, W of Kolena vill., N42 28 46.31 E25 42 10.84, 288 m a.s.l., empty shells, D. Georgiev, leg.

***Pisidium moitessierianum* (Paladilhe, 1866)**

Material examined: 27.12.2003, Stara Zagora city, deposits of Bedechka River, N42 26 12.66 E25 38 28.27, 212 m a.s.l., 1 shell, D. Georgiev, leg.

***Stagnicola montenegrinus* Glöer & Pešić, 2009**

Material examined: 2019, Hrishteni vill., frog pond in yard, accidently introduced with water vegetation from the nearby Tundzha River at Shanovo vill., N42 27 13.41 E25 42 19.06, 232 m a.s.l., many live specimens, D. Georgiev leg.

Fig. 1. *Boettgerilla pallens* Simroth, 1912 from Starozagorski Bani Resort, Sarnena Gora Mts. Photo: Ivailo Dedov.

Table 1. All published and newly recorded mollusc species known to occur in Sarnena Gora Mts in alphabetical order. New records are in gray color. The authors which reported the species firstly are arranged in the second column.

№	Species	Author
	Terrestrial species	
1	*Acanthinula aculeata* (O. F. Müller, 1774)	Irikov & Georgiev (2002)
2	*Aegopinella minor* (Stabile, 1864)	Irikov & Georgiev (2002)
3	*Aegopinella pura* (Alder, 1830)	Georgiev (2003)
4	*Agardhiella parreyssii* (L. Pfeiffer, 1848)	Irikov & Georgiev (2002)
5	*Agardhiella rumelica* (Hesse, 1916)	Irikov & Georgiev (2002)
6	*Alinda* (*Alinda*) *biplicata* (Montagu, 1803)	Irikov & Georgiev (2002)
7	*Arion silvaticus* Lohmander, 1937	Irikov & Georgiev (2002)
8	*Arion subfuscus* (Draparnaud, 1805)	new record
9	*Balea perversa* (Linnaeus, 1758)	Irikov & Georgiev (2002)
10	*Boettgerilla pallens* Simroth, 1912	new record
11	*Bulgarica denticulata* (Olivier, 1801)	new record
12	*Bulgarica fritillaria* (Frivaldsky, 1835)	Georgiev & Georgiev (2002)
13	*Bulgarica* (*Bulgarica*) *varnensis* (L. Pfeiffer, 1848)	Irikov & Georgiev (2002)
14	*Carychium minimum* O. F. Müller, 1774	Irikov & Georgiev (2002)
15	*Caucasotachea vindobonensis* (Férussac, 1821)	Irikov & Georgiev (2002)
16	*Cecilioides acicula* (O. F. Müller, 1774)	Irikov & Georgiev (2002)
17	*Cecilioides spelaeus* (A. J. Wagner, 1914)	Irikov & Georgiev (2002)
18	*Cernuella virgata* (Mendes da Costa, 1778)	Irikov & Georgiev (2002)
19	*Chondrina avenacea* (Bruguière, 1792)	Georgiev & Stoycheva (2009)
20	*Chondrula* (*Chondrula*) *microtragus* (Rossmässler, 1839)	Irikov & Georgiev (2002)
21	*Chondrula* (*Chondrula*) *tridens* (O. F. Müller, 1774)	Irikov & Georgiev (2002)
22	*Cochlicopa lubrica* (O. F. Müller, 1774)	Irikov & Georgiev (2002)
23	*Cochlicopa lubricella* (Porro, 1838)	Irikov & Georgiev (2002)
24	*Cochlodina laminata* (Montagu, 1803)	Irikov & Georgiev (2002)
25	*Daudebardia* (*Daudebardia*) *brevipes* (Draparnaud, 1805)	Irikov & Georgiev (2002)
26	*Daudebardia* (*Daudebardia*) *rufa* (Draparnaud, 1805)	Irikov & Georgiev (2002)
27	*Deroceras* (*Agriolimax*) *reticulatum* (O. F. Müller, 1774)	Irikov & Georgiev (2002)
28	*Deroceras* (*Agriolimax*) *turcicum* (Simroth, 1894)	Irikov & Georgiev (2002)
29	*Deroceras* (*Deroceras*) *laeve* (O. F. Müller, 1774)	Irikov & Georgiev (2002)
30	*Deroceras* (*Deroceras*) *sturanyi* (Simroth, 1894)	Irikov & Georgiev (2002)
31	*Eubrephulus bicallosus* (L. Pfeiffer, 1847)	Irikov & Georgiev (2002)
32	*Euconulus fulvus* (O. F. Müller, 1774)	Irikov & Georgiev (2002)
33	*Euomphalia strigella* (Draparnaud, 1801)	Irikov & Georgiev (2002)
34	*Fruticicola fruticum* (O. F. Müller, 1774)	Irikov & Georgiev (2002)
35	*Helix* (*Helix*) *lucorum* Linnaeus, 1758	Irikov & Georgiev (2002)
36	*Helix* (*Helix*) *pomatia* Linnaeus, 1758	Georgiev (2005)
37	*Helix* (*Pelasga*) *figulina* Rossmässler, 1839	Damyanov & Liharev (1975)
38	*Krynickillus urbanskii* (Wiktor, 1971)	Georgiev (2005)
39	*Laciniaria plicata* (Draparnaud, 1801)	Irikov & Georgiev (2002)

40	*Limacus flavus* Linnaeus, 1758	Irikov & Georgiev (2002)
41	*Limax* (*Limax*) *conemenosi* Boettger, 1882	Georgiev (2003)
42	*Limax* (*Limax*) *graecus* (Simroth, 1889) - complex	Damyanov & Liharev (1975)
43	*Limax* (*Limax*) *maximus* Linnaeus, 1758 - complex	Georgiev (2005)
44	*Lindholmiola girva* (Frivaldsky, 1835)	Irikov & Georgiev (2002)
45	*Macedonica marginata* (Rossmässler, 1835)	Irikov & Georgiev (2002)
46	*Mastus rossmaessleri* (L. Pfeiffer, 1846)	Georgiev (2005)
47	*Merdigera obscura* (O. F. Müller, 1774)	Irikov & Georgiev (2002)
48	*Monacha* (*Monacha*) *carascaloides* (Bourguignat, 1855)	Irikov & Georgiev (2002)
49	*Monacha* (*Monacha*) *cartusiana* (O. F. Müller, 1774)	Irikov & Georgiev (2002)
50	*Monacha* (*Monacha*) *claustralis* (Menke, 1828)	Georgiev (2016)
51	*Monacha* (*Monacha*) *oshanovae* I. Pintér et L. Pintér, 1970	Georgiev (2016)
52	*Monachoides incarnatus* (O. F. Müller, 1774)	Irikov & Georgiev (2002)
53	*Oxychilus camelinus tracicus* (Hesse, 1913)	Georgiev (2014)
54	*Oxychilus* (*Mediterranea*) *hydatinus* (Rossmässler, 1838)	Irikov & Georgiev (2002)
55	*Oxychilus* (*Morlina*) *glaber striarius* (Westerlund, 1881)	Irikov & Georgiev (2002)
56	*Oxychilus* (*Riedelius*) *inopinatus* (Ulièny, 1887)	Irikov & Georgiev (2002)
57	*Oxychilus translucidus* (Mortillet, 1853)	Irikov & Georgiev (2002)
58	*Oxyloma elegans* (Risso, 1826)	Irikov & Georgiev (2002)
59	*Pomatias elegans* (O. F. Müller, 1774)	Irikov & Georgiev (2002)
60	*Pseudochondrula seductilis* (Rossmässler, 1846)	Irikov & Georgiev (2002)
61	*Pseudotrichia rubiginosa* (Schmidt, 1853)	Irikov & Georgiev (2002)
62	*Punctum pygmaeum* (Draparnaud, 1801)	Irikov & Georgiev (2002)
63	*Pupilla muscorum* (Linnaeus, 1758)	Georgiev (2003)
64	*Sphyradium doliolum* (Bruguière, 1792)	Irikov & Georgiev (2002)
65	*Succinea oblonga* Draparnaud, 1801	Irikov & Georgiev (2002)
66	*Tandonia budapestensis* (Hazay, 1881)	Irikov & Georgiev (2002)
67	*Tandonia cristata* (Kaleniczenko, 1851)	Irikov & Georgiev (2002)
68	*Tandonia kusceri* (H. Wagner, 1931)	Damyanov & Liharev (1975)
69	*Truncatellina claustralis* (Gredler, 1856)	new record
70	*Truncatellina cylindrica* (Férussac, 1807)	Irikov & Georgiev (2002)
71	*Vallonia costata* (O. F. Müller, 1774)	Irikov & Georgiev (2002)
72	*Vallonia enniensis* (Gredler, 1856)	Irikov & Georgiev (2002)
73	*Vallonia excentrica* Sterki, 1892	Irikov & Georgiev (2002)
74	*Vallonia pulchella* (O. F. Müller, 1774)	Irikov & Georgiev (2002)
75	*Vertigo* (*Vertigo*) *antivertigo* (Draparnaud, 1801)	Georgiev & Stoycheva (2009)
76	*Vitrea contracta* (Westerlund, 1871)	Irikov & Georgiev (2002)
77	*Vitrea neglecta* Damjanov & Pinter 1969	Georgiev (2005)
78	*Vitrea pygmaea* (Boettger, 1880)	Georgiev (2005)
79	*Vitrea transsylvanica* (Clessin, 1877)	new record
80	*Vitrea vereae* Irikov, Georgiev et Riedel, 2004	Irikov *et al.* (2004)
81	*Vitrina pellucida* (O. F. Müller, 1774)	Irikov & Georgiev (2002)
82	*Xerolenta obvia* (Menke, 1828)	Irikov & Georgiev (2002)
83	*Zebrina detrita* (O. F. Müller, 1774)	Irikov & Georgiev (2002)
84	*Zonitoides nitidus* (O. F. Müller, 1774)	Irikov & Georgiev (2002)

	Freshwater species	
	Gastropoda & Bivalvia	
1	*Acroloxus lacustris* (Linnaeus, 1758)	Georgiev (2005)
2	*Ancylus fluviatilis* O. F. Müller, 1774	Georgiev (2005)
3	*Anodonta anatina* (Linnaeus, 1758)	Georgiev & Stoycheva (2009)
4	*Anodonta cygnea* (Linnaeus, 1758)	Georgiev (2005)
5	*Dreissena polymorpha* (Pallas, 1771)	new record
6	*Galba truncatula* (O. F. Müller, 1774)	Georgiev (2005)
7	*Grossuana falniowskii* Georgiev & Glöer, 2015	Georgiev *et al.*(2015)
8	*Gyraulus albus* (O. F. Müller, 1774)	Georgiev (2005)
9	*Gyraulus crista* (Linnaeus, 1758)	Georgiev (2012)
10	*Musculium lacustre* (O. F. Müller, 1774)	Georgiev (2005)
11	*Physella acuta* (Draparnaud, 1805)	Georgiev (2005)
12	*Pisidium casertanum* (Poli, 1791)	Georgiev (2005)
13	*Pisidium moitessierianum* (Paladilhe, 1866)	new record
14	*Pisidium nitidum* Jenyns, 1832	Georgiev (2017)
15	*Pisidium personatum* Malm, 1855	Georgiev (2012)
16	*Pisidium pseudosphaerium* Schlesch, 1947	Georgiev (2017)
17	*Pisidium tenuilineatum* Stelfox, 1918	Georgiev (2015)
18	*Planorbarius corneus* (Linnaeus, 1758)	Georgiev (2005)
19	*Planorbis planorbis* (Linnaeus, 1758)	Georgiev (2012)
20	*Pontobelgrandiella zagoraensis* (Glöer & Georgiev, 2009)	Glöer & Georgiev (2009)
21	*Radix auricularia* (Linnaeus, 1758)	Georgiev (2005)
22	*Radomaniola bulgarica* Glöer & Georgiev, 2009	Glöer & Georgiev (2009)
23	*Stagnicola montenegrinus* Glöer & Pešić, 2009	new record
24	*Unio pictorum* (Linnaeus, 1758)	Georgiev (2005)
25	*Valvata piscinalis* (O. F. Müller, 1774)	Georgiev (2005)

Species which could be expected to occur in the mountains.

Zebrina kindermanni (L. Pfeiffer, 1853), *Multidentula ovularis* (Olivier, 1801), *Monacha ovularis* (Bourguignat, 1855), Monacha solidior (Mousson, 1863), *Radix labiata* (Rossmässler, 1835) and *Segmentina nitida* (O. F.Müller, 1774) were reported for the very closely situated Svetiiliiski Heights (Georgiev, 2006), and can be expected at the low, eastern parts of Sarnena Gora. In the same paper the species *Xeropicta krynickii* (Krynickii, 1833) was reported for Nova Zagora town, which is even closer to these mountains.

During 2018 *Eobania vermiculata* (Müller, 1774) was found by Dilian Georgiev as newly introduced in the lowland areas of Stara Zagora city (south part in the industrial zone at one big market). This species is invasive and could easily spread in the other city parts at the foothills of Sarnena Gora.

References

Damyanov, S. & Liharev, I. (1975) *Suhozemni ohlyuvi (Gastropoda terrestria) (Terrestrial snails (Gastropoda terrestria))*. Fauna Bulgarica, 5., Marin Drinov Publ., Sofia, 425 pp. (in Bulgarian).

Dedov, I., Schneppat, U., Knechtle, F. & Georgiev, D. (2015) Boettgerillidae van Goethem 1972: *Boettgerilla pallens* Simroth 1912 (Mollusca: Gastropoda) – a new family, genus and species for the Bulgarian fauna. *Ecologica Montenegrina*, 3: 64-65.

Georgiev, D. (2003) *Terrestrial malacofauna of Stara Zagora Town and its surrounding areas*. MSc Thesis, University of Plovdiv, Faculty of Biology, Department of Ecology and Environmental Conservation, 110 pp. (In Bulgarian)

Georgiev, D. (2005) Species diversity and habitat distribution of the malacofauna (Mollusca: Bivalvia, Gastropoda) of Surnena Sredna Gora Mountain (Southern Bulgaria). *In: Gruev B., Nikolova M., Donev M. (Eds.), Proceedings of the Balkan Scientific Conference of Biology in Plovdiv (Bulgaria) from 19th till 21st of May 2005*: 428-435.

Georgiev, D. (2006) A Contribution to the Knowledge of the Malacofauna of Sveti Iliiski Heights (South-Eastern Bulgaria). *Scientific Studies of the University of Plovdiv, Biology, Animalia*, 42: 13-20.

Georgiev, D. (2014) On the occurrence of *Oxychilus camelinus* (Bourguignat, 1852) in Bulgaria (Gastropoda: Zonitidae). *Malacologica Bohemoslovaca*, 13: 106-109.

Georgiev, D. (2015) First record of *Pisidium tenuilineatum* Stelfox, 1918 from Bulgaria. Ecologica Montenegrina, 2(4): 342-343.

Georgiev, D. (2016) The 46 years overlooked species *Monacha oshanovae* Pintér & Pintér, 1970. *Ecologica Montenegrina*, 6: 46-55.

Georgiev, D. (2017) *The Freshwater Clams from the Family Sphaeriidae (Mollusca: Bivalvia) in Bulgaria*. ZooNotes, Supplement 4, 63 pp.

Georgiev, D. & Georgiev, B., (2002) Terrestrial gastropods as intermediate hosts of protostrongylid nematodes in pastures for sheep and goats in the region of Stara Zagora, Bulgaria. *Acta zoologica bulgarica*, 54(3): 47-54.

Georgiev, D. & Stoycheva, S. (2009) The molluscs and their habitats in Sashtinska Sredna Gora Mts. (Southern Bulgaria). *Malacologica Bohemoslovaca*, 8: 1-8.

Georgiev, D. & Glöer, P., Dedov, I. & Irikov A. (2015) Review of the Genus *Grossuana* Radoman, 1973 (Gastropoda: Truncatelloidea) from Bulgaria, with a description of a New Species. *Acta Zoologica Bulgarica*, 67(2): 159-166.

Glöer, P. & Georgiev D. (2009) New Rissooidea from Bulgaria (Gastropoda: Rissooidea). *Mollusca*, 27(2): 123-136.

Irikov, A. & Georgiev, D. (2002) Species composition, habitat distribution, zoogeographical structure and origin of the malacofauna in town Stara Zagora (Bulgaria). *Scientific Studies of University of Plovdiv*, *Biology*, *Animalia*, 38(6): 5-16. (in Bulgarian, English summary).

Irikov, A. & Georgiev, D. & Riedel, A. (2004) A new species of the genus *Vitrea* Fitzinger, 1833 from Bulgaria (Gastropoda: Pulmonata: Zonitidae). *Folia Malacologica*, 12(2): 79-81.

Irikov, A. & Georgiev, D. (2008) A review of the *Agardhiella* species (Gastropoda: Pulmonata: Argnidae) in Bulgaria. *Acta Zoologica Bulgarica*, 60(2): 135-141.