

Detailed Final Report

Our field expeditions are conducted from early April to early November 2017. We had five standard **pitfall trap** collecting localities (Golo brdo, Miroč, Poreč Bay, Boljetinska reka Canyon and Liškovac) that we checked every 2-3 weeks during all ten standard field visits. Initially, Golubac also was in that category, but due to damaged trap sites in multiple occasions we did not have complete data for this locality. Everything else, considering field, laboratory conservational or educational work was according to our plans. In other pitfall collecting sites, traps were set occasionally (Boljetinsko brdo, Golubac, Majdanpek, Veliki Štrbac, Tekija, one cave and two pits). In other localities we collected ground beetle samples **by hand** [Donji Milanovac (wharf and meadows sublocalities), Lepenski vir, Dobra Voda and also briefly in localities with pitfall traps). Golubac and Majdanpek were localities in the **border zone** of the National Park, with more significant anthropogenic influence. Considering **cave localities**, we visited Buronov ponor Pit (four times), Faca Šora Pit (two times), and Gradašnica Cave (two times). After the identification of all ground beetle specimens, we found totally **141 species**. Considering ground beetles diversity, this fact means that Đerdap National Park is currently the richest small area in Serbia. About a 1000 beetle specimens is kept in a dry beetle collection, while other insect material is still stored in ethanol.



One of the most common ground beetles in the National Park is *Carabus ullrichii* (left). It has peak activity in late May and it almost completely disappears until the following year (except rare specimens occurring in early autumn). There are several different subspecies in this region of Serbia whose precise taxonomic status is still unclear.



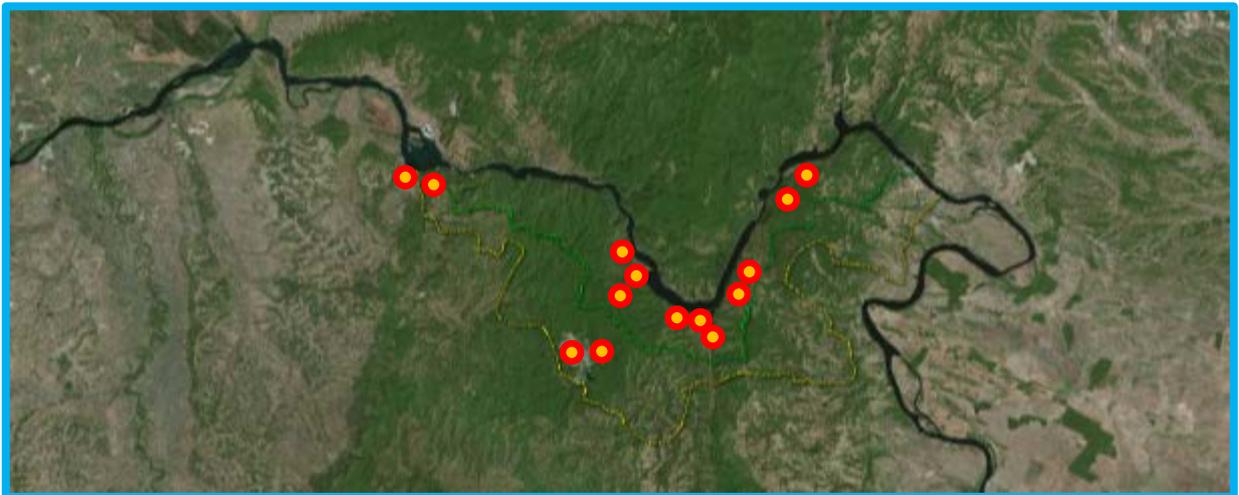
Landscapes of Đerdap NP (April 2017)



Gradašnica Cave (June 2017)



Position of Đerdap National Park in Serbia



Location of collecting sites on Đerdap National Park territory (green line) and border zone (yellow line). Only the main localities are shown.

Check-list of all genera and higher taxa (subfamilies, tribes and subtribes) of Carabidae from Đerdap National Park based on one season research supported by The Rufford Foundation. For now, we are presenting only a number of species by each genera (since the exact list of identified species is still unpublished, the full list will appear in a scientific publication in the near future).

1. Subfamily Brachiniinae (3 species)

- Tribe Brachinini
 - Subtribe Brachinina
 - Brachinus*** (2 species)
 - Subtribe Aptinina
 - Aptinus*** (1 species)

2. Subfamily Carabinae (12 species)

- Tribe Carabini
 - Subtribe Calosomatina
 - Calosoma*** (2 species)
 - Subtribe Carabina
 - Carabus*** (9 species)
- Tribe Cychrini
 - Cychrus*** (1 species)

3. Subfamily Chlaeniinae (8 species)

- Tribe Chlaeniini
 - Subtribe Chlaeniina
 - Chlaeniellus*** (4 species)
 - Chlaenius*** (3 species)
 - Dinodes*** (1 species)

4. Subfamily Cicindelinae (3 species)

- Tribe Cicindelini
 - Subtribe Cicindelina
 - Cicindela*** (3 species)

5. Subfamily Dryptinae (2 species)

- Tribe Dryptini
 - Drypta*** (1 species)
- Tribe Zuphiini
 - Subtribe Zuphiina
 - Polistichus*** (1 species)

6. Subfamily Harpalinae (44 species)

- Tribe Anisodactylini
 - Anisodactylus*** (1 species)
- Tribe Harpalini
 - Subtribe Harpalina
 - Acinopus*** (2 species)
 - Harpalus*** (18 species)
 - Ophonus*** (10 species)
 - Parophonus*** (1 species)
 - Pseudoophonus*** (3 species)
 - Trichotichnus*** (1 species)
 - Subtribe Ditomina
 - Carterus*** (1 species)
 - Ditomus*** (1 species)
- Tribe Stenolophini
 - Acupalpus*** (1 species)
 - Bradycellus*** (1 species)
 - Stenolophus*** (4 species)

7. Subfamily Lebiinae (4 species)

- Tribe Dromiini
 - Microlestes*** (2 species)

Tribe Lebiini
Lamprias (1 species)

Tribe Lionychini
Subtribe Lionychina
Lionychus (1 species)

8. Subfamily Licininae (1 species)

Tribe Licinini
Licinus (1 species)

9. Subfamily Nebriinae (5 species)

Tribe Nebriini
Leistus (3 species)
Nebria (1 species)

Tribe Notiophiliini
Notiophilus (1 species)

10. Subfamily Panagaeinae (1 species)

Tribe Panagaeini
Subtribe Panagaeina
Panagaeus (1 species)

11. Subfamily Platyninae (16 species)

Tribe Platynini
Agonum (6 species)
Anchomenus (1 species)
Limodromus (1 species)
Paranchus (1 species)
Platynus (1 species)

Tribe Sphodrini
Subtribe Atranopsina
Platyderus (1 species)
Subtribe Calathina
Calathus (3 species)
Subtribe Dolichina
Dolichus (1 species)
Subtribe Sphodrina
Laemostenus (1 species)

12. Subfamily Pterostichinae (27 species)

Tribe Pterostichini
Subtribe Molopina
Abax (3 species)
Molops (2 species)
Subtribe Myadina
Myas (1 species)
Subtribe Poecilina
Poecilus (1 species)
Subtribe Pterostichina
Pterostichus (10 species)

Tribe Stomini
Stomis (1 species)

Tribe Zabryini
Amara (9 species)

13. Subfamily Trechinae (15 species)

Tribe Bembidiini

Subtribe Bembidiina
Bembidion (1 species)
Metallina (1 species)
Notaphus (1 species)
Ocydromus (5 species)
Princidium (1 species)
Sinechostictus (1 species)
Trepanes (2 species)

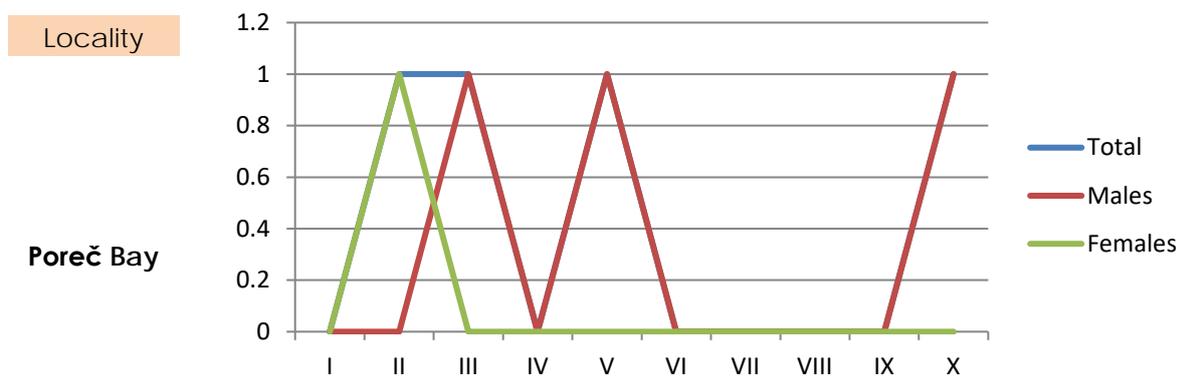
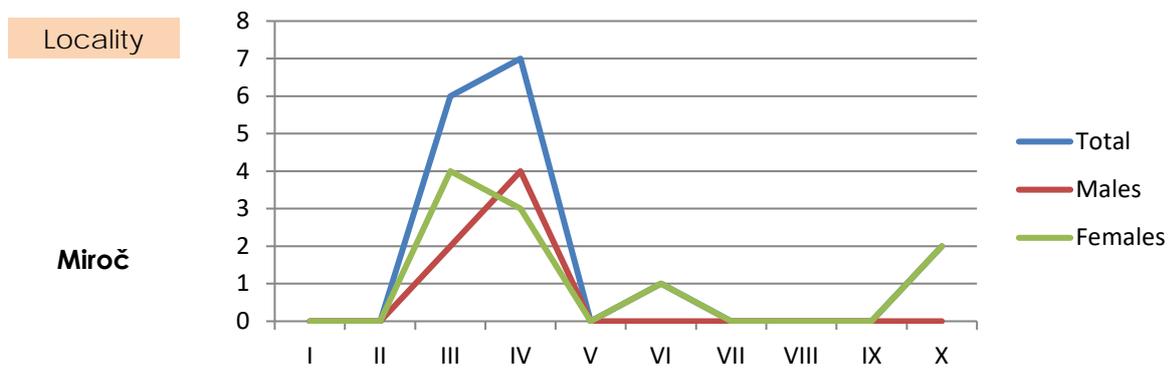
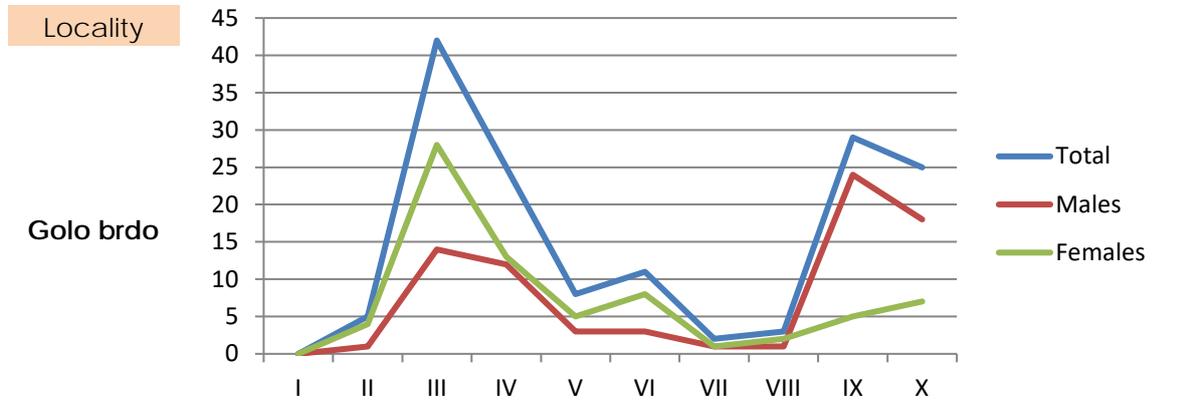
Tribe Trechini
 Subtribe Trechina
Trechoblemus (1 species)
Trechus (2 species)

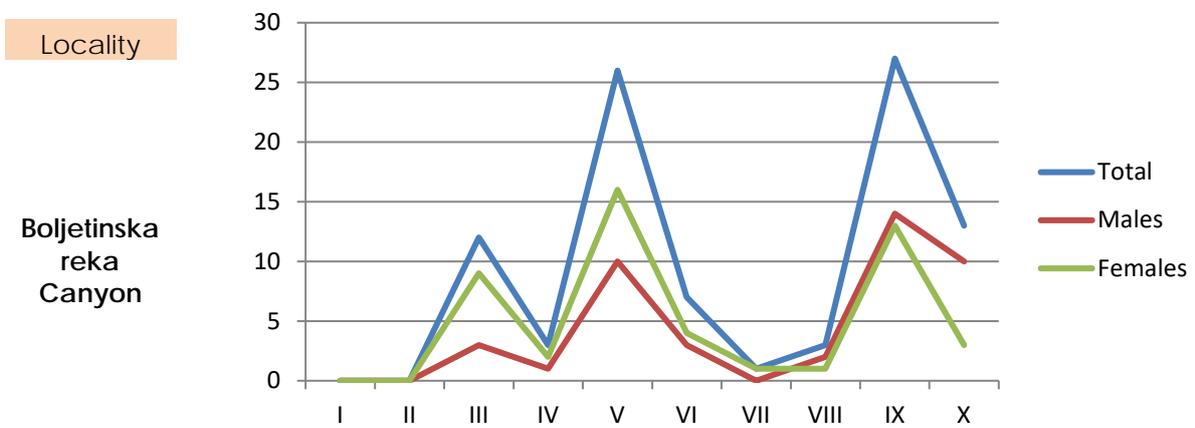
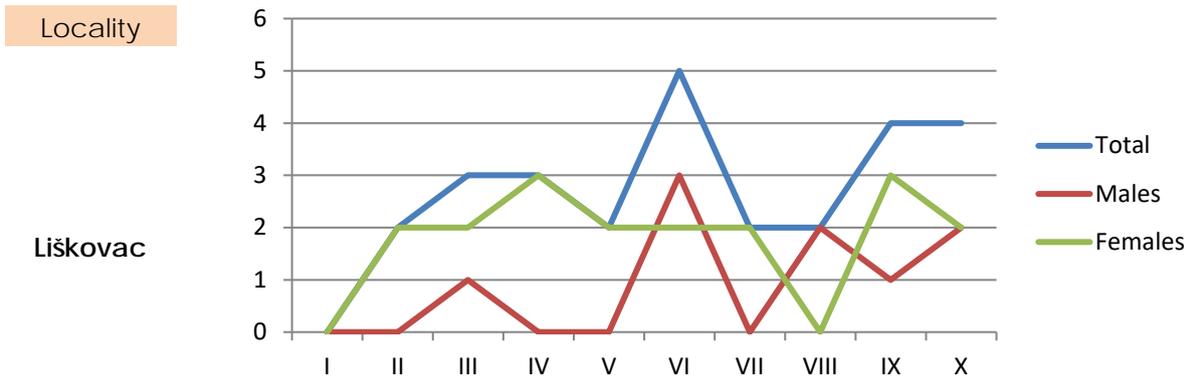
Summary of ground beetles of Đerdap National Park (RSG 2017).

Subfamily	Tribes	Subtribes	Genera	Species
Brachiniinae	1	2	2	3
Carabinae	2	2	3	12
Chlaeniinae	2	1	4	8
Cicindelinae	1	1	1	3
Dryptinae	2	1	2	2
Harpalinae	3	2	12	44
Lebiinae	4	1	9	4
Licininae	1	0	1	1
Nebriinae	2	0	3	5
Panagaeinae	1	1	1	1
Platyninae	2	4	10	16
Pterostichinae	3	4	7	27
Trechinae	2	4	12	15
13	26	23	67	141

As additional data on carabid species biology and ecology, such as species abundance, sex composition, seasonal activity and habitat preference in considered, we provide details for the genus *Carabus* in the Đerdap National Park throughout 2017 (if available). We are providing seasonal activity graphs with number of specimens (vertical axis) of species (and sexes) by field expedition (horizontal axis).

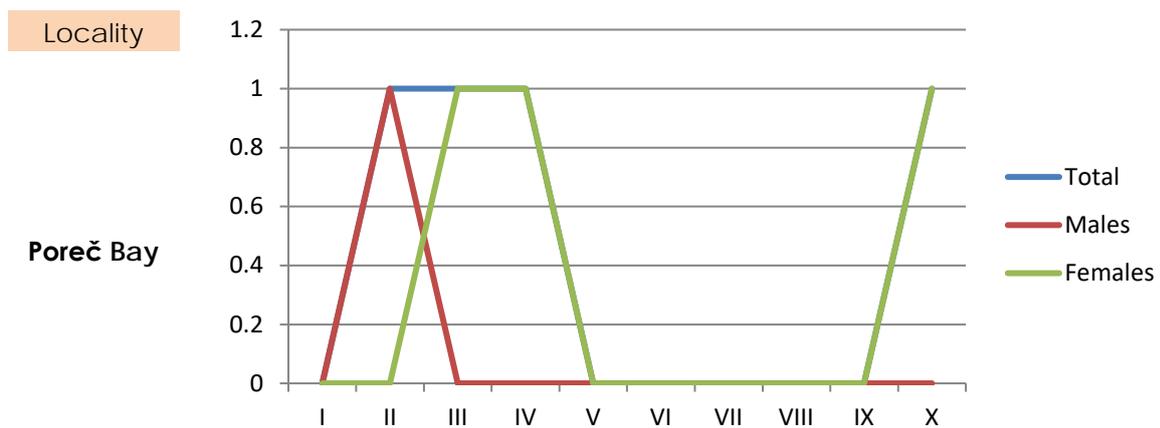
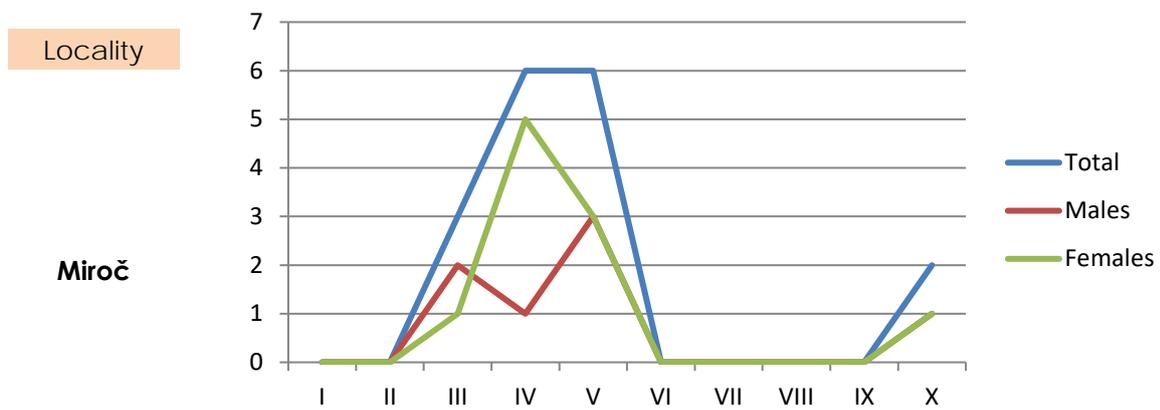
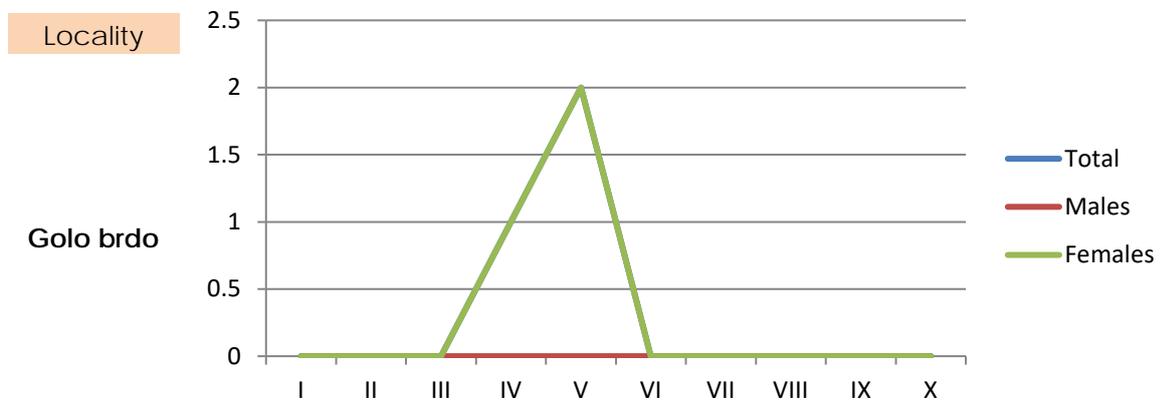
Carabus (Procrustes) coriaceus

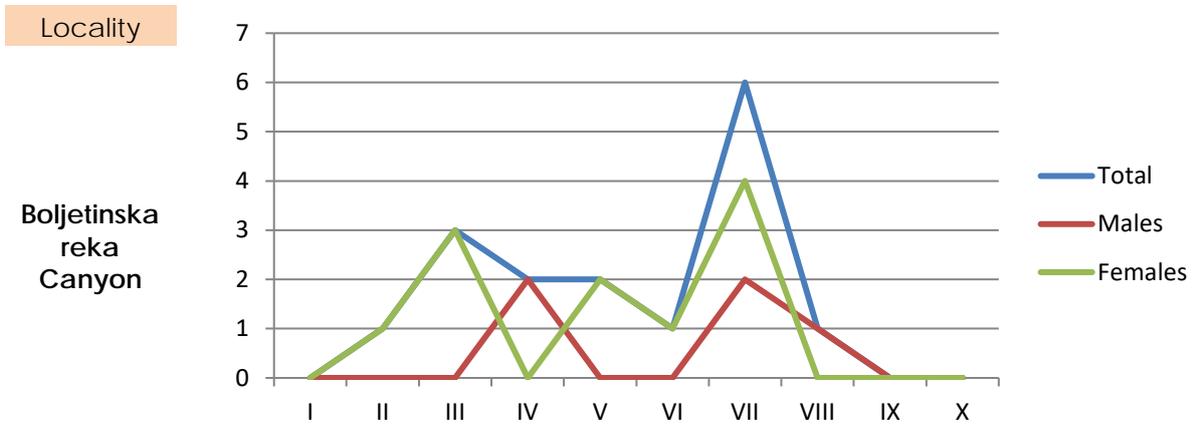
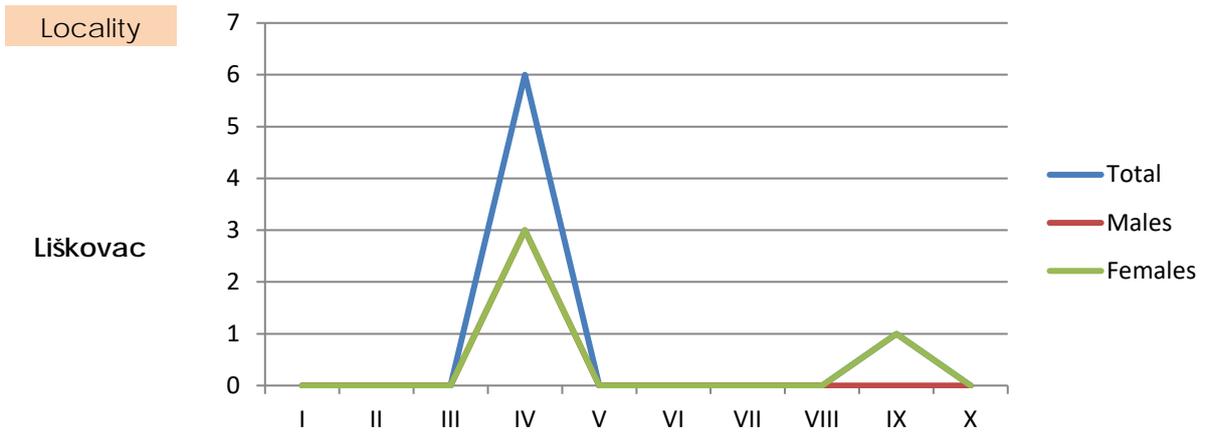




Carabus coriaceus

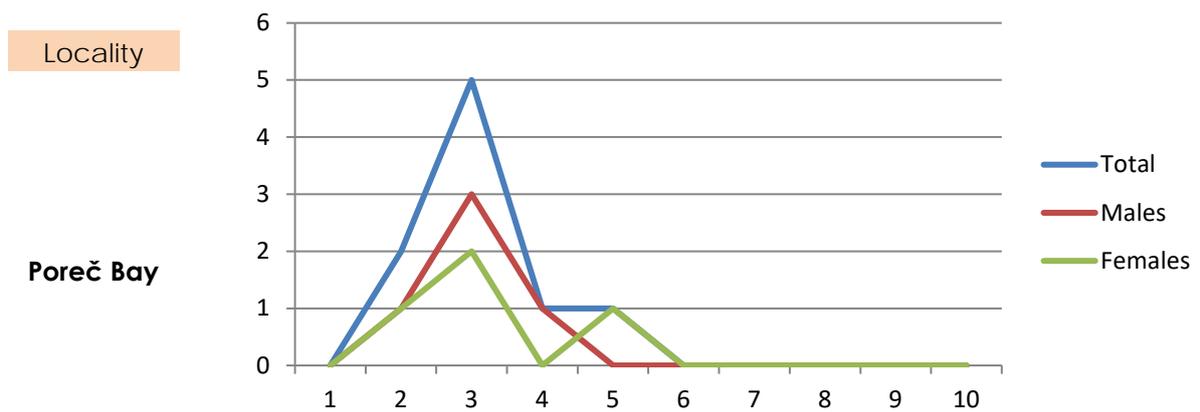
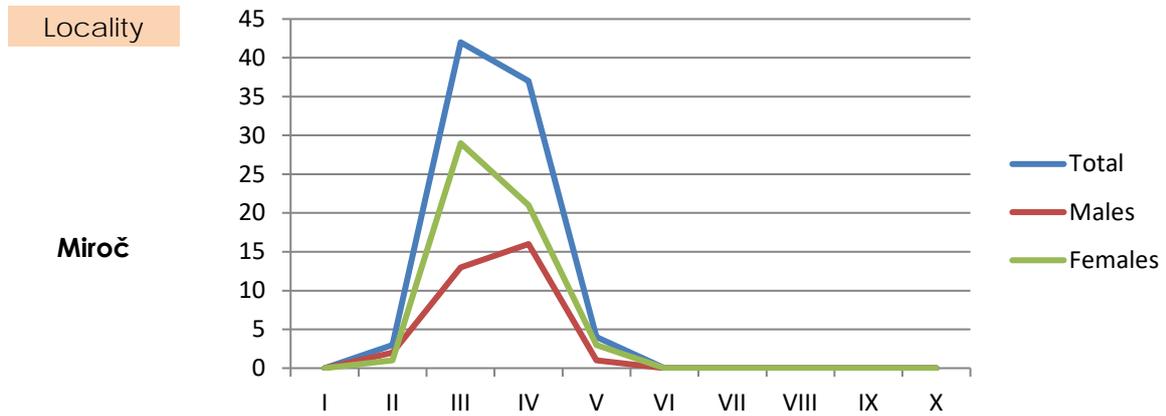
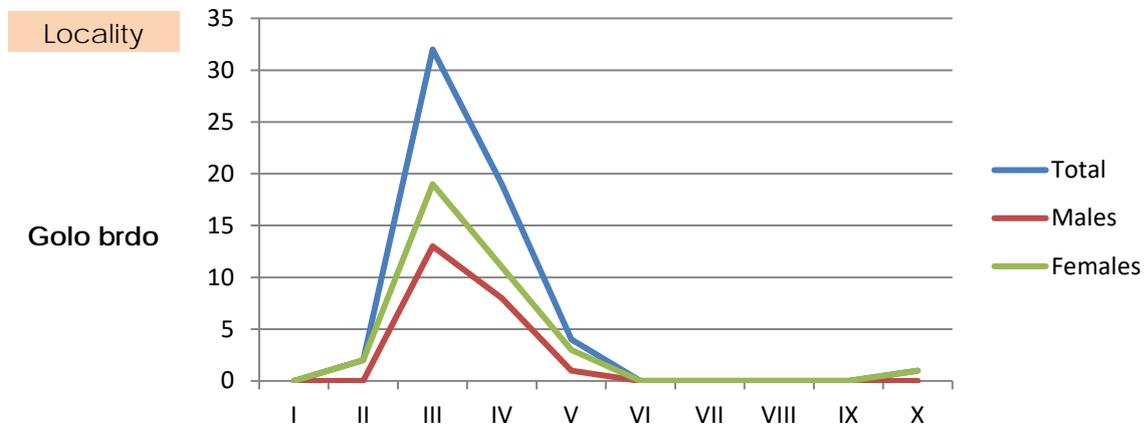
Carabus (Chaetocarabus) intricatus

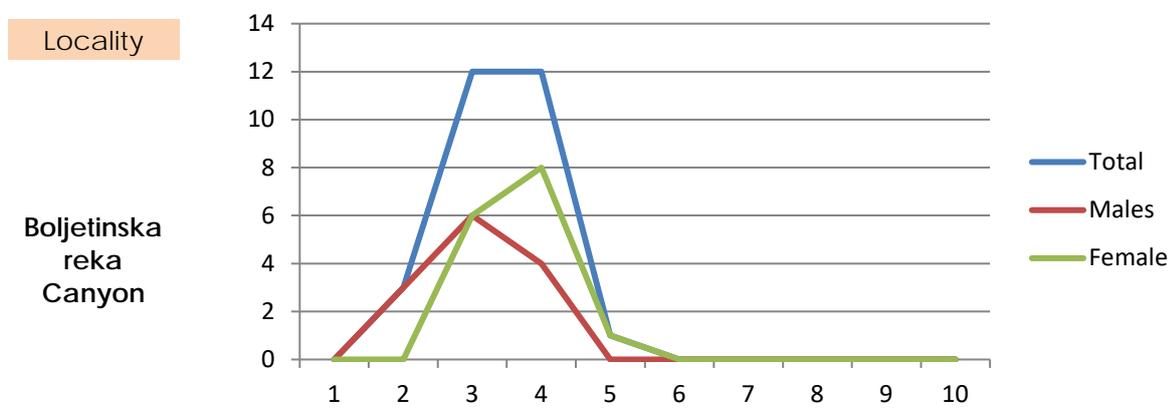
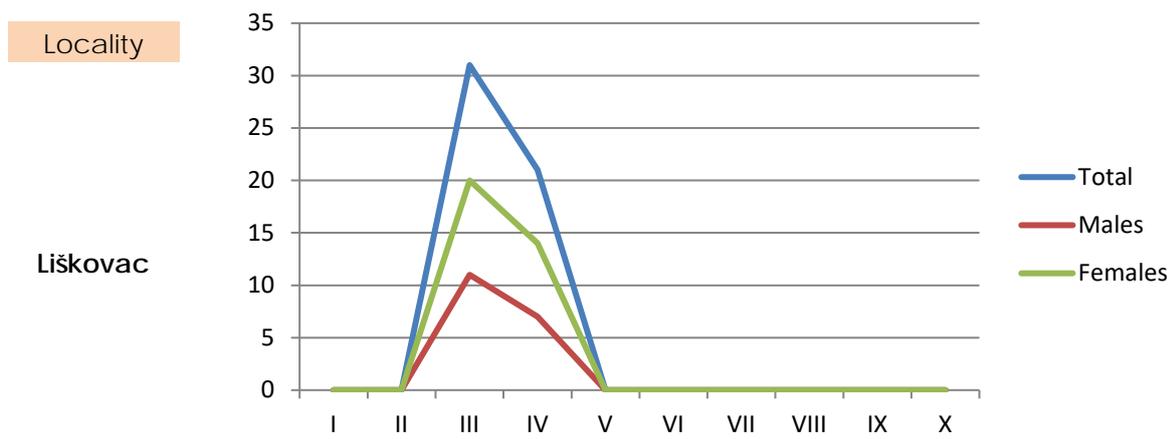




Carabus intricatus

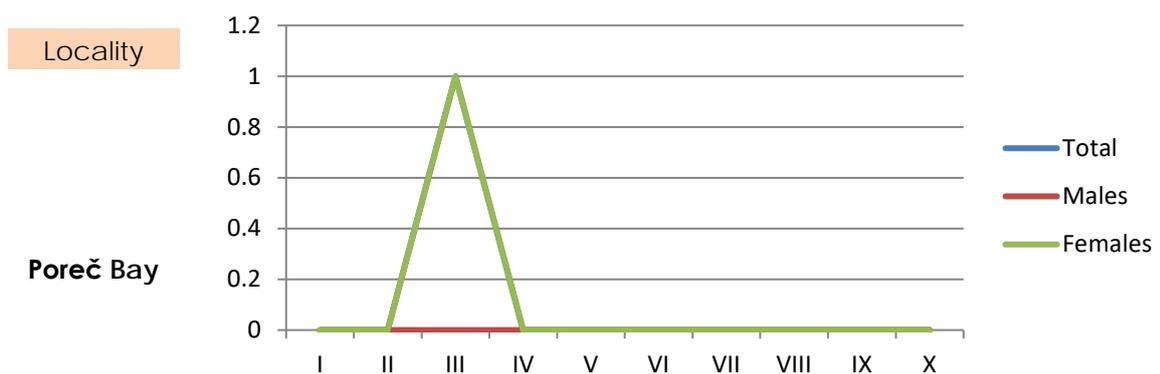
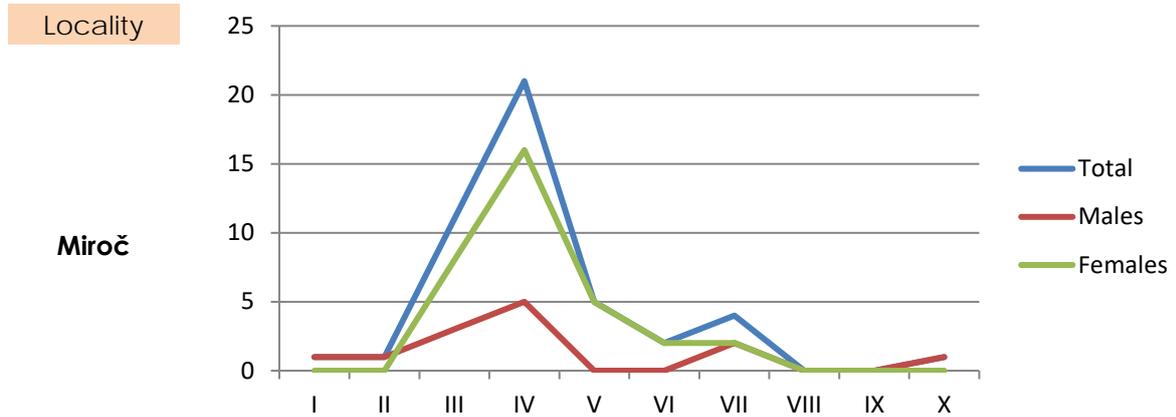
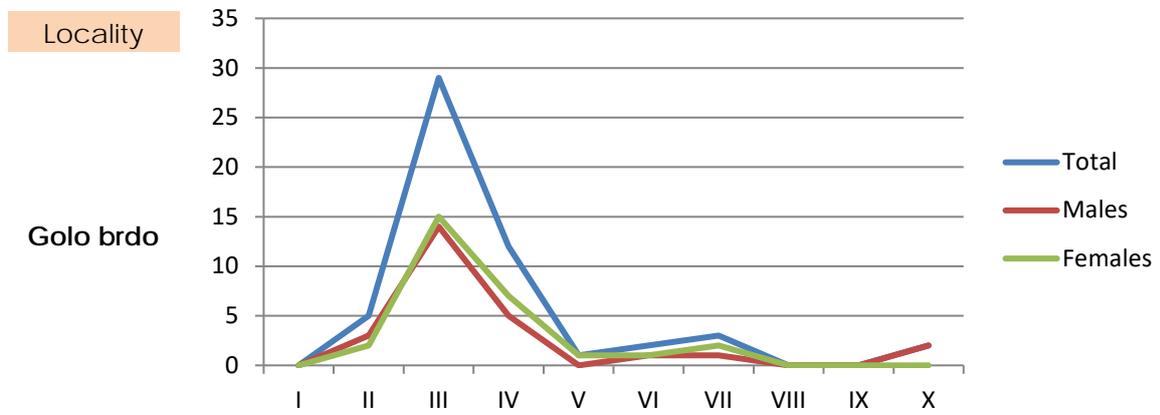
Carabus (ullrichii) ullrichii

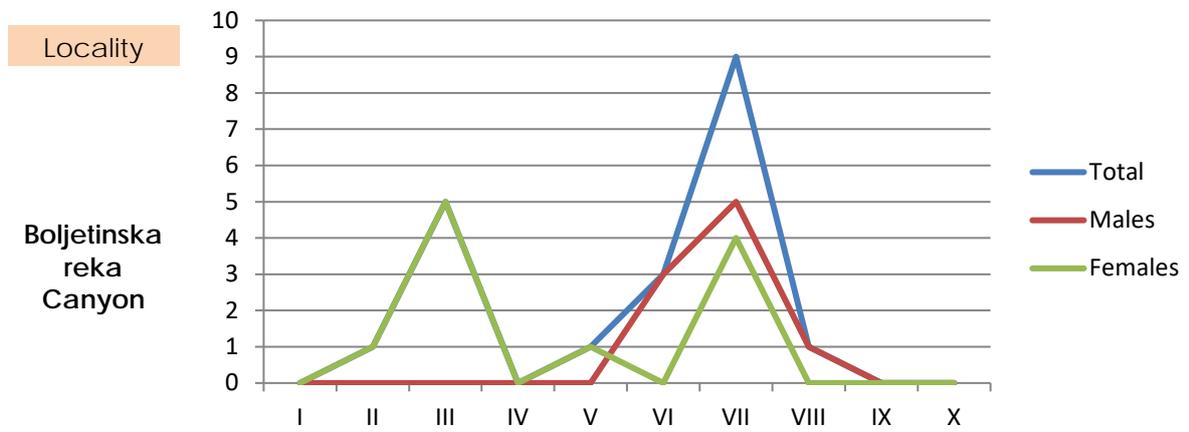
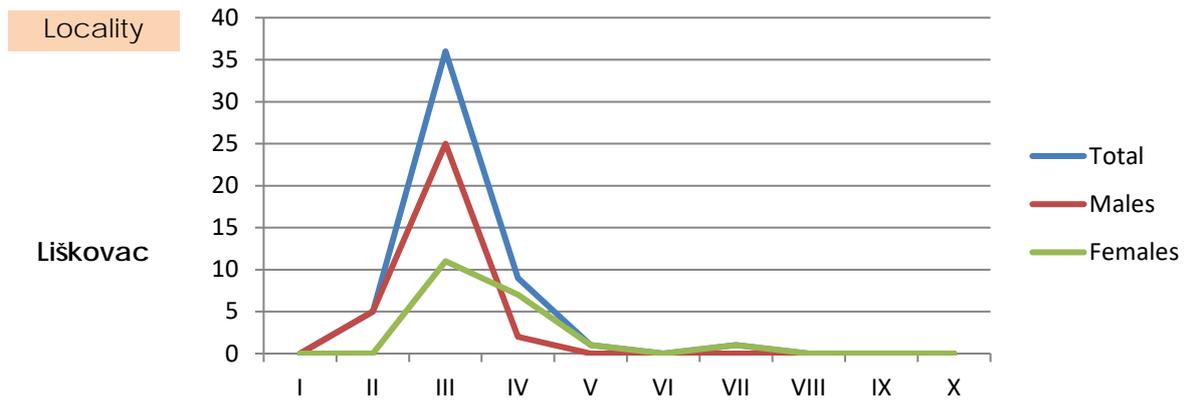




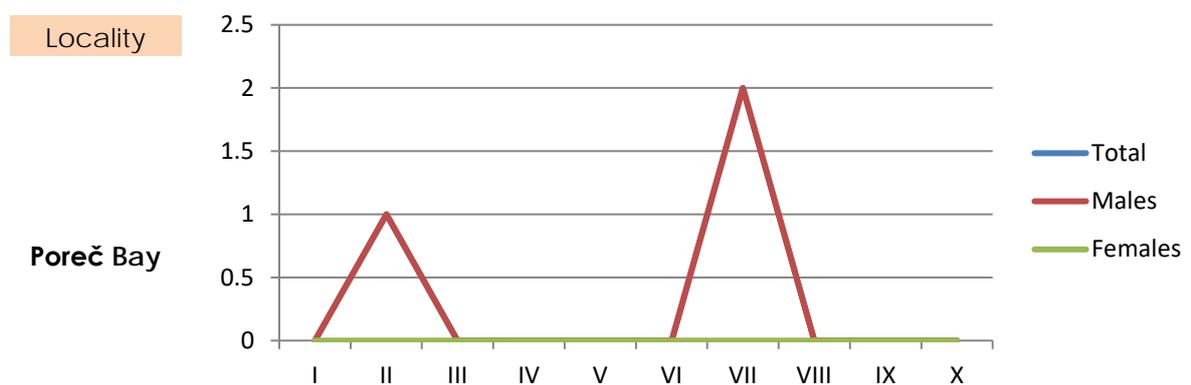
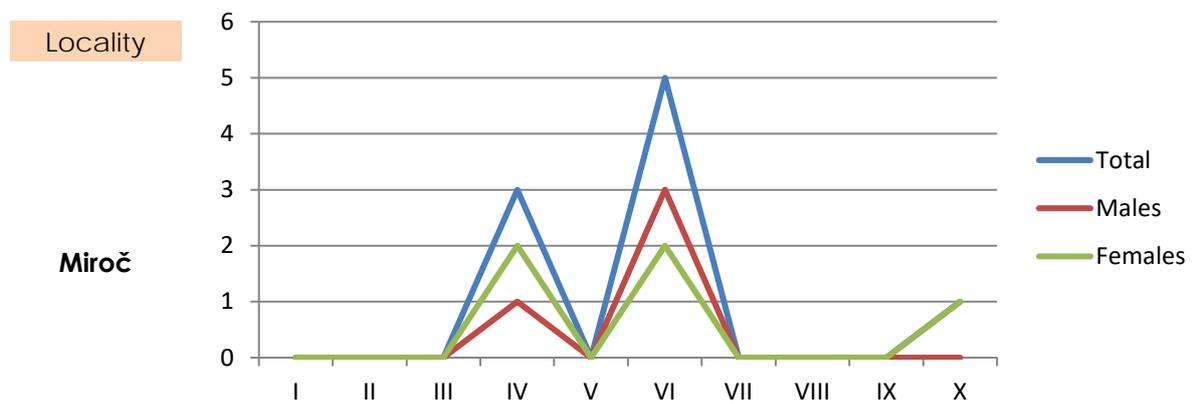
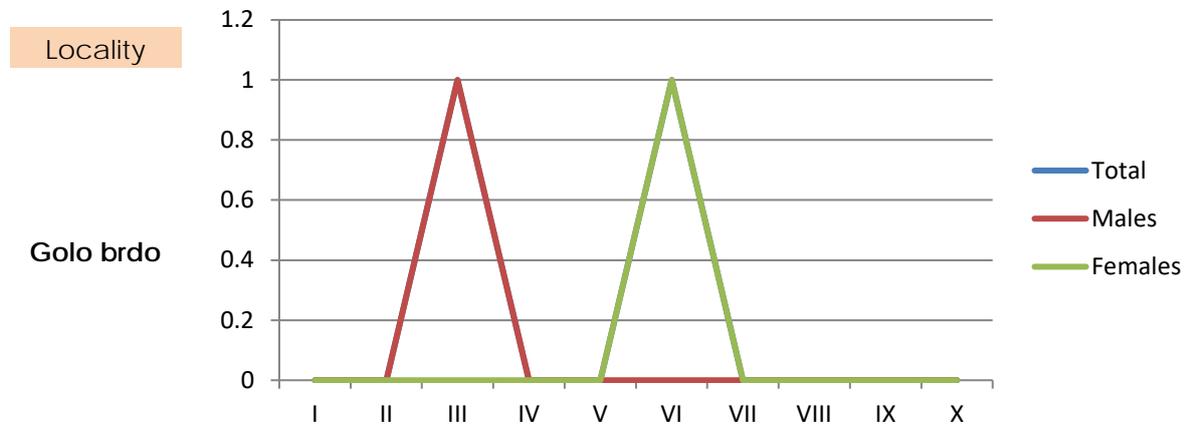
Carabus ullrichii

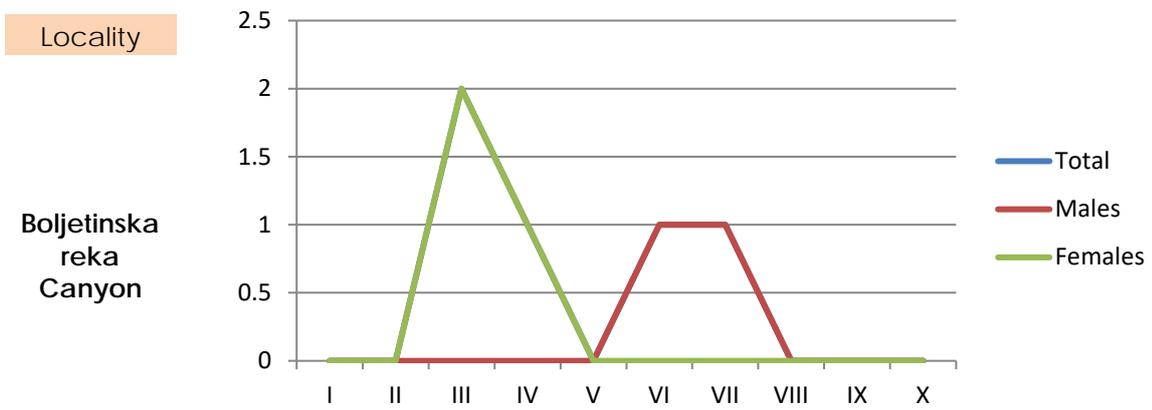
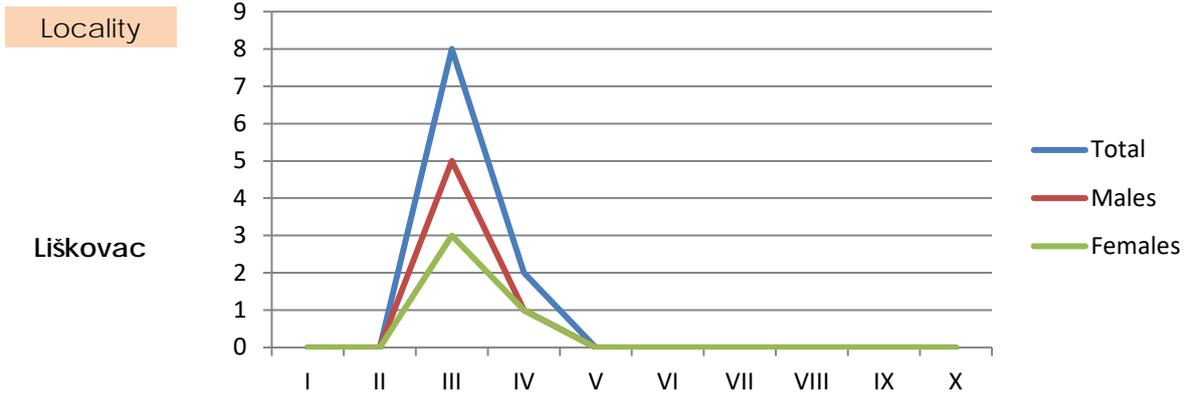
Carabus (Archicarabus) montivagus





Carabus (Tomocarabus) convexus





The rest of the *Carabus* species were found in smaller number of specimens:

- *Carabus (Procerus) gigas* - 1 specimen (Veliki Štrbac)
- *Carabus (Megodontus) violaceus* - 7 specimens (Liškovac, Majdanpek)
- *Carabus (Morphocarabus) versicolor simulator* - 3 specimens (Liškovac)
- *Carabus (Carabus) granulatus* - 13 specimens (Majdanpek)

General diversity of carabids by locality/field expedition during 2017

Standard locality/Sampling	I	II	III	IV	V	VI	VII	VIII	IX	X
Golo brdo (shrubs)	3	9	12	17	10	9	4	4	6	8
Miroč (beech/oak forests)	2	6	11	13	12	8	6	1	2	8
Poreč Bay (riparian zone)	7	17	14	19	7	1	6	3	4	16
Liškovac (mixed deciduous)	1	10	14	16	10	4	5	2	7	6
Boljetinska reka Canyon	6	9	12	17	11	8	11	8	12	11
Donji Milanovac (wharf)	1	19	18	13	29	22	10	6	14	16
Donji Milanovac (meadows)	4	11	3	6	0	0	0	2	/	/
Boljetinsko brdo (grassland)	/	/	/	/	/	9	6	6	11	1
Lepenski vir	/	/	5	5	19	12	6	/	5	/
Maximum number of species by field expedition										

Species count in other localities (RSG 2017)

Locality	Number of species (RSG 2017)
Golubac (undisturbed sands)	7
Golubac (agricultural fields)	3
Majdanpek (undisturbed forest)	14
Majdanpek (forest near copper mines)	4
Veliki Štrbac	3
Dobra voda	9
Faca Šora Pit	3
Buronov ponor Pit	3
Gradašnica Cave	1
Kovilovski potok, Tekija	10

Border zone localities (outside of NP)

Part of the ground beetle collection from Đerdap



Dolichus helensis



Licinus cassideus



Cychrus semigranosus



Pterostichus niger



Pterostichus melanarius



Pterostichus cylindricus



Chlaenius spoliatus



Laemostenus punctatus



Pseudoophonus rufipes



Anisodactylus binotatus



Pterostichus melas



Poecilus cupreus



Aptinus bombardarda



Nebria brevicollis



Carabus granulatus



Cicindela campestris



Abax carinatus



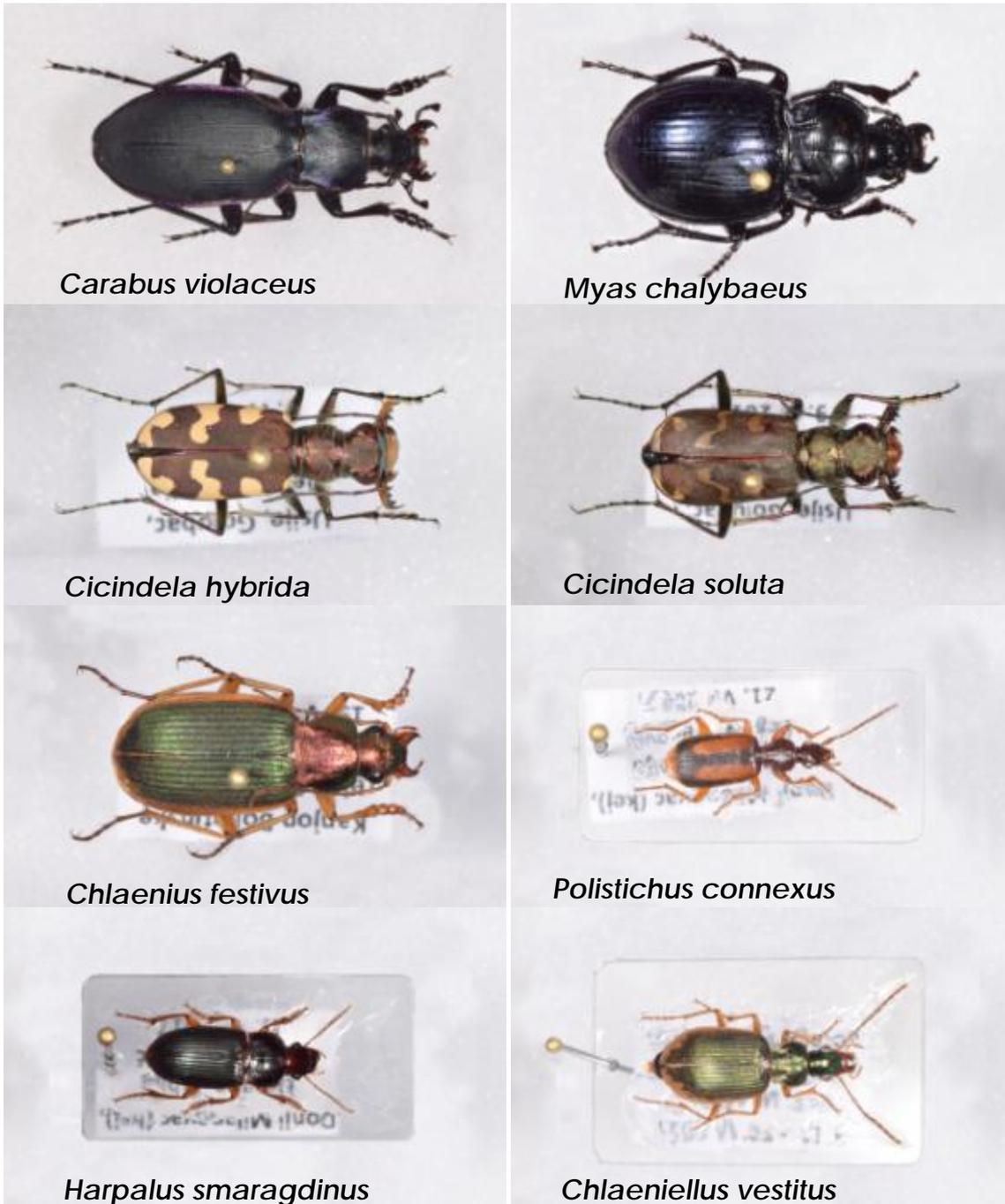
Harpalus honestus



Calosoma inquisitor



Calosoma sycophanta

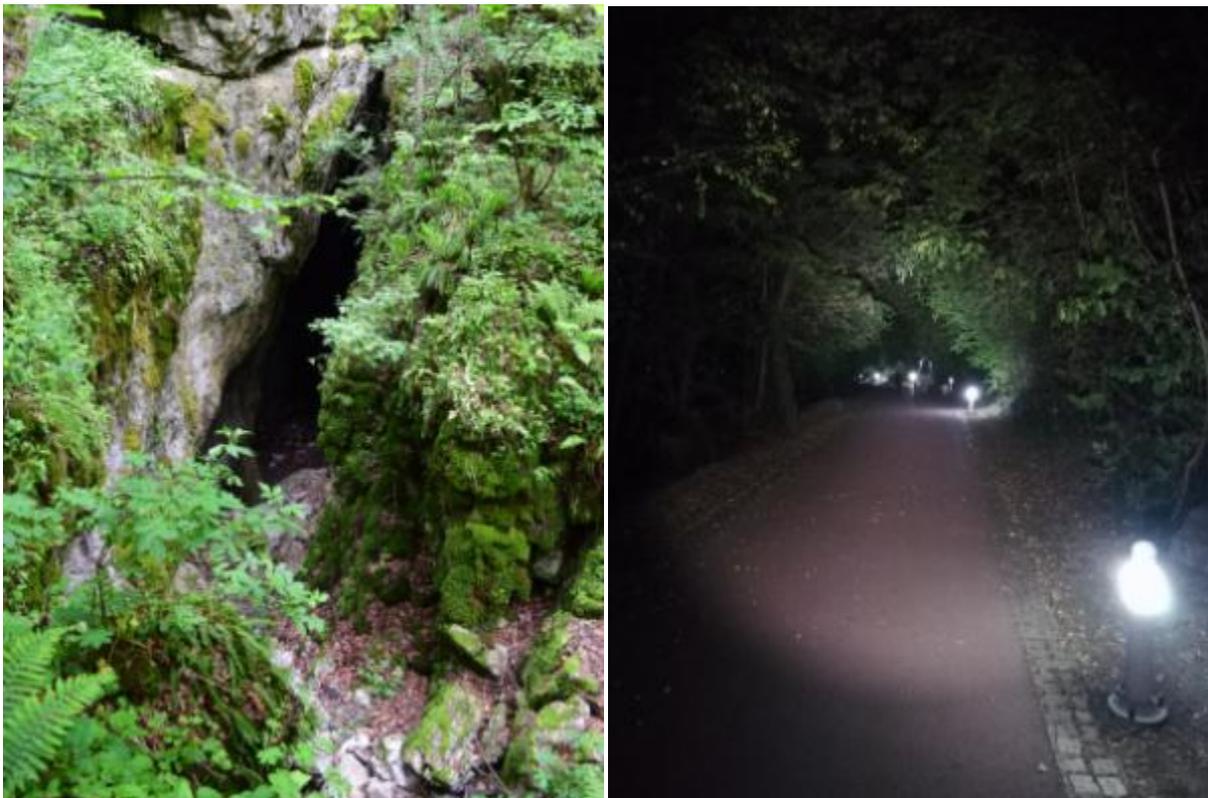


All specimens are prepared, identified and photographed by Nikola Vesović.

The most dominant subfamilies (by number of specimens) were Carabinae, Brachininae, Pterostichinae, Hapalinae, Trechinae and Platyninae, while most dominant genera (by number of specimens) were *Carabus*, *Aptinus*, *Pterostichus*, *Harpalus*, *Abax* and *Trechus* respectively. We recorded highest number of both specimens and species in Donji Milanovac (Danube wharf) followed by Poreč Bay area. The reason for this is constant day and night monitoring of the area during all field visits (many species collected manually are absent in pitfall traps), and also presence of public lights along Danube which attracts insects during the night (wharf). Therefore, we did not register

general diversity loss in areas with human settlements (towns and villages), contrary to intensively exploited areas (agricultural fields in Golubac and heavy industry in Majdanpek (copper mines), both outside of NP, but still within protected zone with considerably smaller diversity).

There are several very rare local populations of carabids on the territory of Đerdap National Park. Such are for example *Carabus (Morphocarabus) versicolor simulator* Kraatz, 1876 (endemic for Serbia) on Mt. Liškovac, or violet *Carabus (Eucarabus) fastuosus* Palliardi, 1825 from the village of Tekija (we found only two specimens during May from Golo brdo).



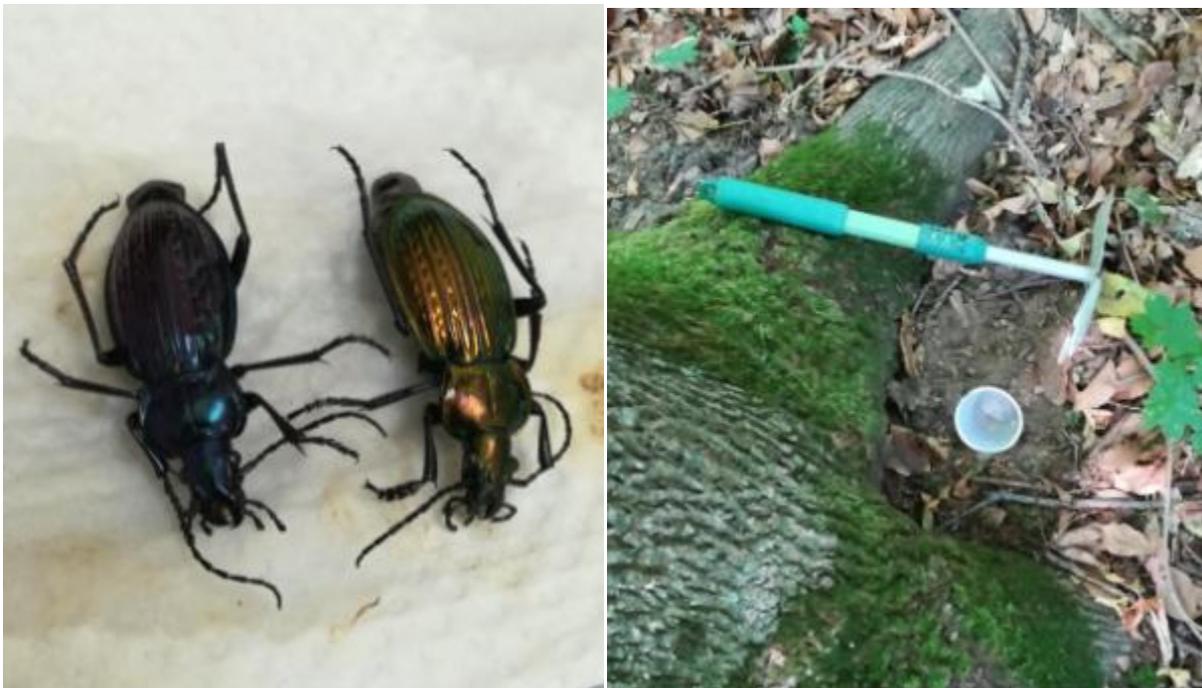
Buronov ponor Pit, side entrance (left), night search for beetles in Lepenski vir (right).



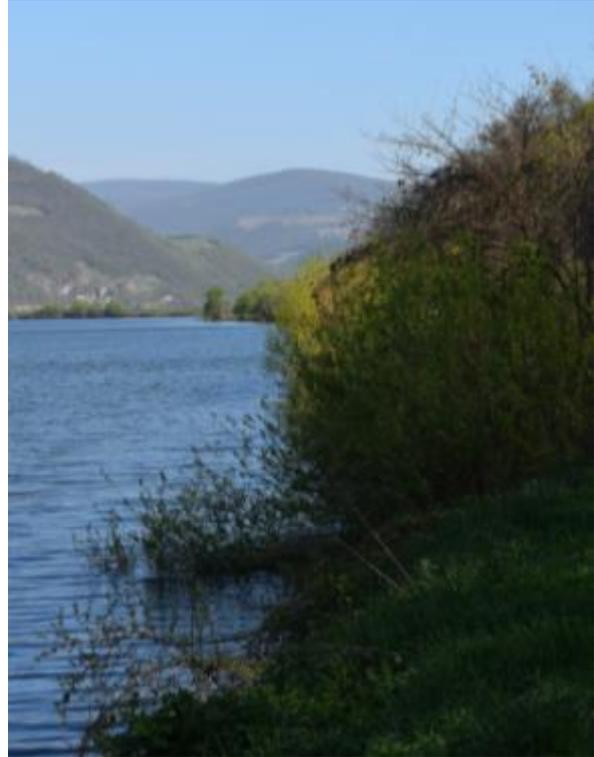
Summer aspects of Boljetinska reka Canyon (left) and Boljetinsko brdo(right).



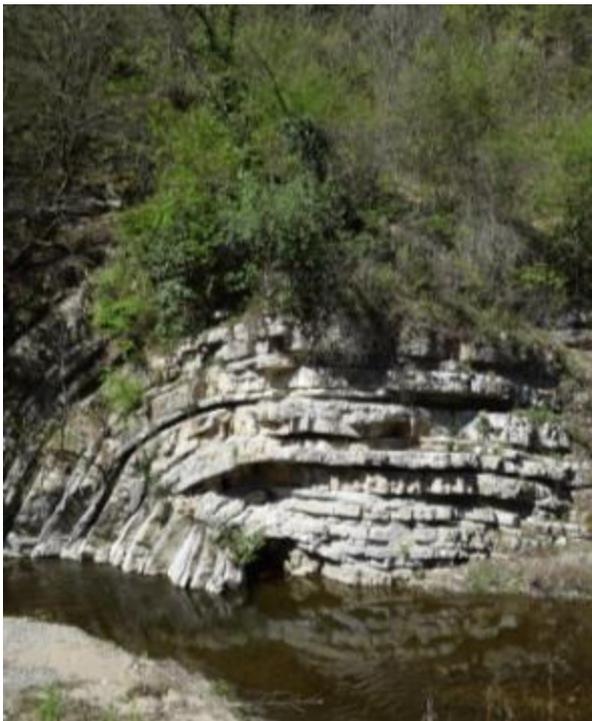
Mixed deciduous forest on Mt. Liškovac, one of our main localities



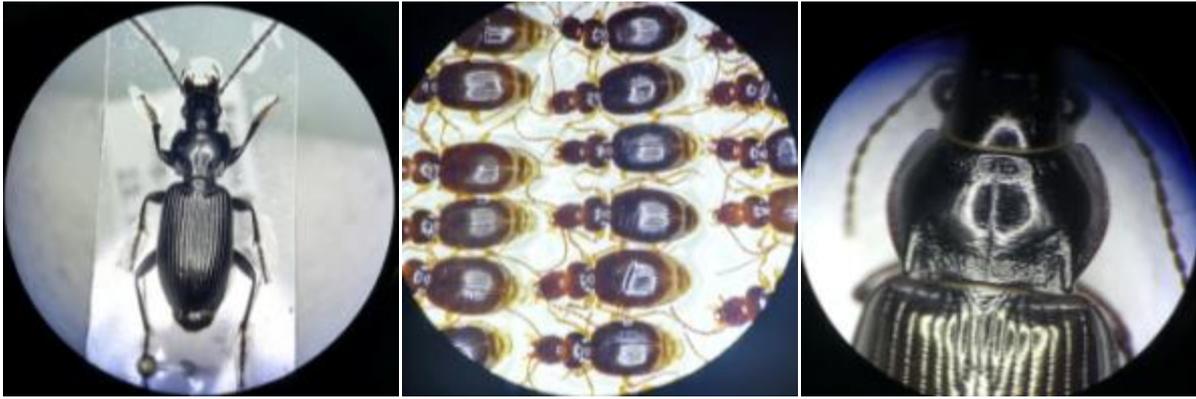
Specimens of *Carabus ullrichii* from Golo brdo (left), pitfall trap in oak forest on Mt. Miroč (right).



Meadows near Donji Milanovac (left), Poreč Bay in the village of Mosna (right)



Boljetinska reka Canyon (left) and Golubac (right).



Some of the pictures taken on stereomicroscope during specimen identification in the laboratory of Institute of Zoology, Faculty of Biology (University of Belgrade): *Pterostichus nigrita* (left), *Trechus austriacus* (middle) and *Amara aulica* (right)



Biodiversity-rich riparian zone preserved in the village of Mosna. We found several species of ground beetles of the National Park solely on this locality.



Team members Saša Nestorović (left) and Nikola Vesović (right) on 355 m high viewpoint Ploče, during tenth field expedition in October 2017

