Service of "Analysis of the terrestrial fauna component in the area of pilot Action 1 of the BEST project"

THIRD REPORT

Species surveyed in autumn

[Art. 20 lett. b1) of the invitation letter]

- 30 December 2021 -

Summary

Introduction

This periodic report is intended to describe the activities carried out and the results obtained with reference to the monitoring and analysis of the terrestrial faunal component envisaged by the BEST project and to evaluate their effectiveness.

Thanks to the monitoring activities planned and implemented with this service as part of the BEST project, it was possible to expand the knowledge on terrestrial invertebrates (*Araneidae* and *Carabidae* families, nocturnal species of the *Lepidoptera* order) and terrestrial vertebrates belonging to the classes: *Amphibians, Reptiles, Birds (Passeriformes* Order) and *Mammals*, with specific reference to the order of bats, and groups of Micro and Meso mammals in the pilot Action 1 area of the BEST project.

This third faunal analysis report, although relating to the autumn period, can only include all the data collected so far (cumulative data) and the subject of the previous report and retains the same structure, with all the introductory parts in order to facilitate its reading. avoiding annoying references to previously sent reports.

The faunal analyzes conducted in the autumn period (September-December[1]), and presented here together with the precedents of the spring-summer period, allow us to provide preliminary data and updated check-lists of the terrestrial animal species surveyed (invertebrates and vertebrates), including they are the biological and habitat quality indicators, necessary in order to allow the creation of the specific "GIS database on the detailed site" target of the project.

The data, the descriptive statistical elaborations and the check-lists included in this document obviously cannot be considered exhaustive and are to be understood as a work-in-progress, as not all the data collected have already been completely processed (in particular the data on invertebrates/*Arthropods*, for which the check-lists are preliminary and on *Chiroptera*), as some require longer times for the taxonomic determination by individual specialists of the various families/genera (invertebrates/*Arthropods*), for bioacoustic analysis spectrograms (*Chiroptera*) or for the analysis of video camera traps images.

[1] Data collected in December are partial as they are being collected and processed at the time of writing this report.

1. Summary of activities carried out (x protocols / taxa)

The activities carried out in the reference period comply with the sampling plan provided for in the technical offer, with the related protocols described in the first report and in the attached Monitoring Plan.

Below is a brief description with some numerical data.

1.1 Soil macroinvertebrates: Araneids and Carabid Beetles

The investigation of these target taxa was carried out by activating the following protocols:

- INV.1 Carabid and Araneid Beetles (fall traps)
- INV.2 Araneids (mowing with entomological net)

The following table shows some data on the capture sessions performed.

	INV.1	**INV.2**
N° of stations involved	30	30
N° of traps activated / monthly session	93	90
Average monthly catch effort (time)	30gg	15h
Total capture effort (time)	140gg	70h
Total capture sessions performed	276	270

Protocol INV.1 Carabidae and Araneid beetles (fall traps)

Protocol INV.2 Araneids (mowing with entomological net)

1.2 Nocturnal moths

The investigation of this target taxon was carried out by activating the following protocol:

- **INV.3** Nocturnal Lepidoptera (125W mercury vapor light trap)

The following table shows some data on the capture sessions performed.

	INV.3
n° of stations involved	34
n° of traps activated / monthly session	9
Average monthly catch effort (time)	27h
Total capture effort (time)	126h
Total capture sessions performed	42

INV.3 Nocturnal moths (125W mercury vapor light trap)

1.3 Amphibians

The investigation of this target taxon was carried out by activating the following protocol:

- **ANF.1** Amphibians (explorations)

The following table shows some data on the monitoring sessions carried out.

	ANF.1
n° of stations involved	15
n° of traps activated / monthly session	10
Average monthly catch effort (time)	5h
Total capture effort (time)	33h
Total capture sessions performed	66

Protocol ANF.1 Amphibians (explorations)

1.4 Reptiles

The investigation of this target taxon was carried out by activating the following protocol:

- **RET.**1 Reptiles (diurnal itineraries)

The following table shows some data on the monitoring sessions carried out.

	RET.1
n° of stations involved	50
n° of traps activated / monthly session	50
Average monthly catch effort (time)	25h
Total capture effort (time)	100h
Total capture sessions performed	200

Protocol RET.1 Reptiles (daytime routes)

1.5 Birds (passerines)

The investigation of this target taxon was carried out by activating the following protocols:

- **UCC.1** Birds (passerines) [Listening points (MITO)]
- **UCC.2** Birds (passerines) [Listening points]

The following table shows some data on the monitoring sessions carried out.

	UCC.1	UCC.2
n° of stations involved	80	80
n° of traps activated / monthly session	80	80
Average monthly catch effort (time)	20h	20h
Total capture effort (time)	120h	120h
Total capture sessions performed	480	480

Protocols UCC.1/2 Birds (passerines) [Listening points (MITO)]

1.6 Chiroptera

The investigation of this target taxon was carried out by activating the following protocols:

- **CHI.1** Chiroptera (nocturnal bioacoustic paths)
- **CHI.2** Chiroptera (counting at any roost) - Protocol not activated, its activation will be evaluated during the research.

The following table shows some data on the monitoring sessions carried out.

	CHI.1	CHI.2
n° of stations involved	40	-
n° transetti attivati/sessione mensile (media) n° of transects activated / monthly session (average)	3	-
n ° points activated / monthly session (average)	30	-
Average monthly monitoring effort (time)	8h	-
Total monitoring effort (time)	42h	-
Total monitoring sessions performed	160	-

Protocol CHI.1 Chiroptera (nocturnal bioacoustic paths)

1.7 Micro and mesomammals

The investigation of these target groups was carried out by activating the following protocols:

- **MAM.1** Micro and mesomammals: Carnivores (nocturnal routes)
- **MAM.2** Micro and mesomammals: Carnivores (diurnal routes)
- **MAM.3** Micro and mesomammals: Carnivores (video camera trapping)
- **MAM.4** Micromammals: Insectivores / Rodents (Traps / Wads) - Protocol not activated due to the small number of samples collected, its activation will be evaluated during the research.

The following tables show some data on the monitoring sessions carried out.

	MAM.1	MAM.2
n° of stations involved	37	52
n° of transects activated	3	-
Total length of activated transects	154Km	-
n ° transects activated / monthly session (average)	3	52
Average monthly monitoring effort (time)	6h	26h
Total monitoring effort (time)	36h	130h
Total monitoring sessions performed	12	260

	MAM.3	MAM.4
n° of stations involved	30	-
n° of traps activated / monthly session	3-6	-
Average monthly sampling effort (time)	22g	-
Total sampling effort (time)	308gg	-
Total capture sessions performed	14	-

Protocols MAM.1/2 Micro and mesomammals: Carnivores (nocturnal / diurnal routes)

Protocol MAM.3 Micro and meso mammals: Carnivores (video camera trapping)

2. First data on the species surveyed in the spring-summer period

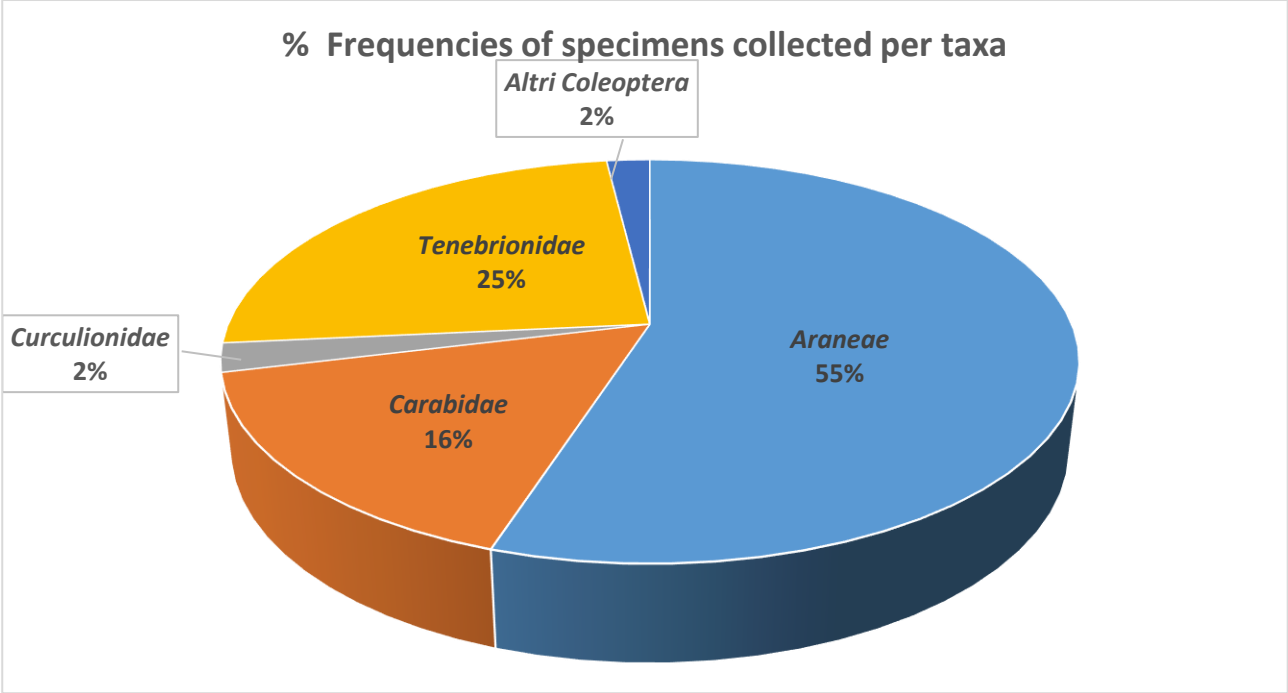
The following pages show the data and check-lists of the taxonomic groups sampled.

2.1 Soil macroinvertebrates: Araneids and Carabid Beetles

The two target groups under investigation are represented by members of the *Carabidae* family (*Coleoptera*) and belonging to the order Araneae. From the beginning of the project the traps related to the protocols "drop traps" (INV.1) and "light trap" (INV.2) were sorted and analyzed and the activities are still in progress. The samples, divided by taxonomic group, are preserved in 70% alcohol and gradually sent to various specialists for taxonomic identification. Most of the finds found belong to the target groups: mainly to the order Araneae, among the latter in one station the presence of the Mediterranean black widow (Latrodectus tredecimguttatus) and the family *Carabidae* have been identified, but other groups of non-beetles have also been identified. targets (including: *Tenebrionidae, Curculionidae, Cerambicidae, Coccinellidae*) and other groups of Invertebrates. Among the *Tenebrionidae* found, some elements with limited distribution are of particular interest, such as *Asida fascicularis* fiorii Leoni, 1909, an endemic Apulian subspecies, and *Pimelia rugulosa apula* Gridelli, 1950, present only in Puglia and southern Molise (Campomarino). Among the non-target groups, there are also representatives of the *Coccinellidae* families, with 8 species found, and *Scarabeidae*, with 6 species found; in the latter group, the presence of *Anisoplia sabatinellii* Baraud, 1991, an element whose distribution is limited to the south of the peninsula, from Puglia to Calabria, should be mentioned.

With other protocols (transects and explorations), three species of *Araneidae* have been identified in the field: *Argiope lobata, Crytophora cyrtophora and Trochosa sp* ..

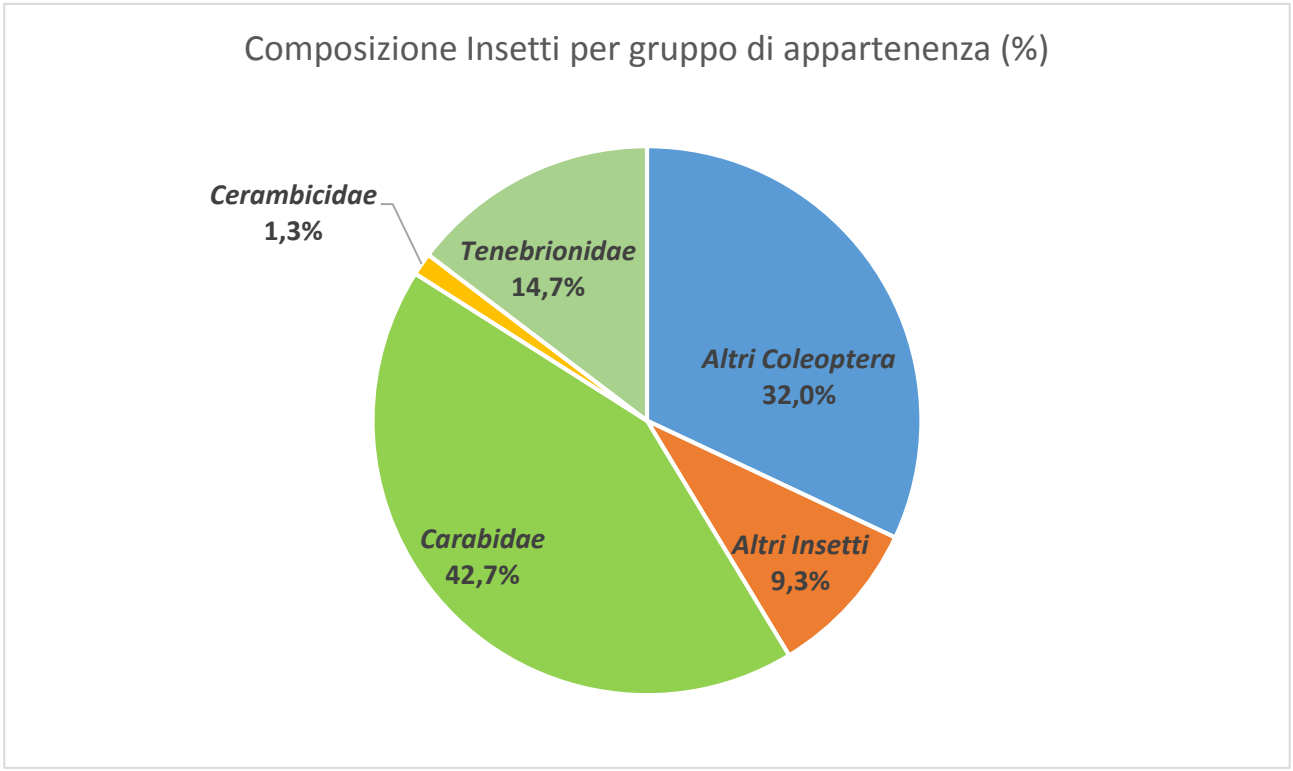
The following graph shows the first determinations (sorting) of the invertebrates collected in the spring-summer period (at the level of systematic groups).



Among the invertebrates collected, those belonging to the target taxa (*Araneae* and *Carabidae*) are the vast majority (71%, n = 5,558), a figure which demonstrates the effectiveness of the trapping techniques adopted for the purposes of monitoring.

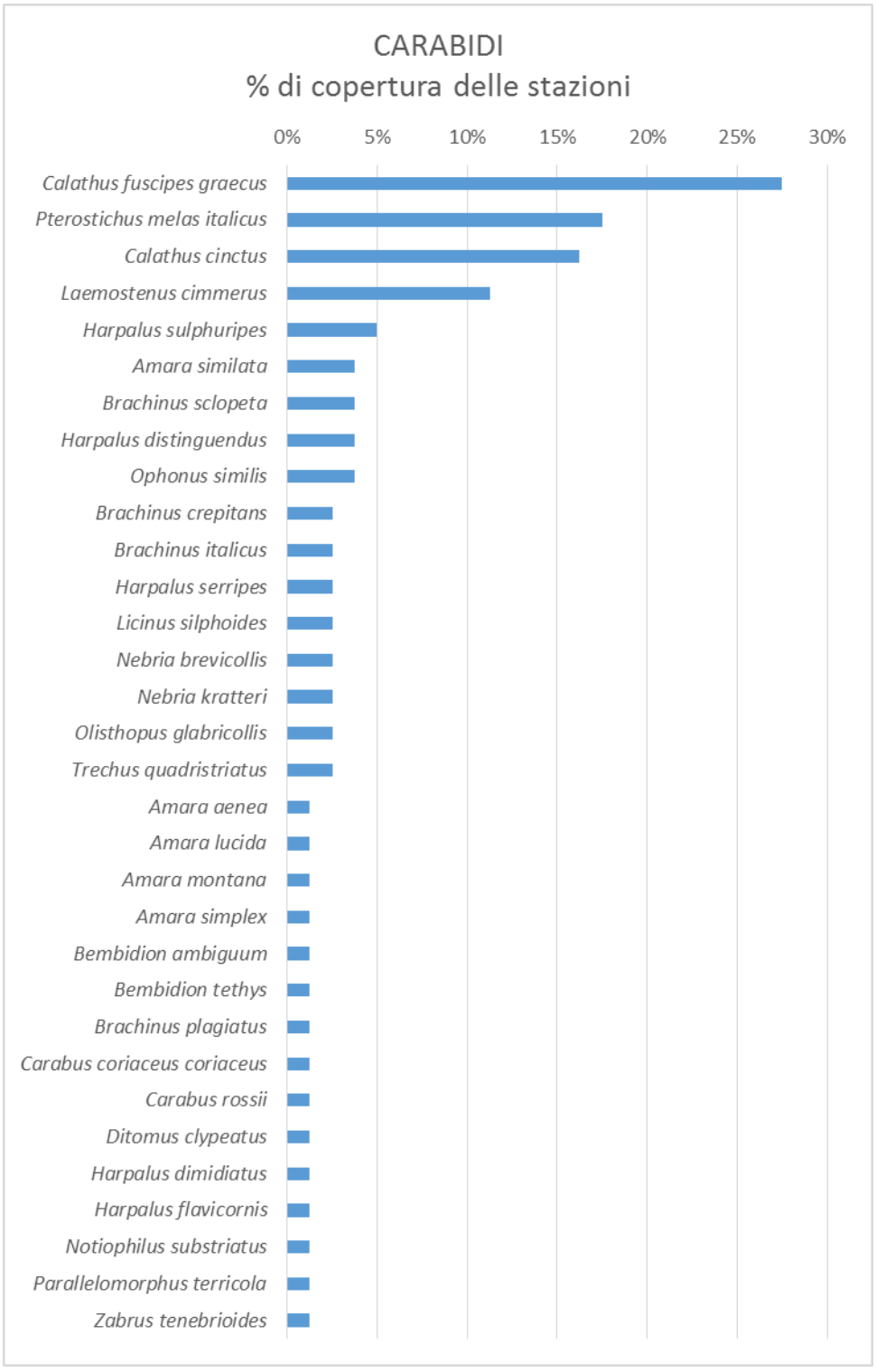
To these were added the specimens captured with the last capture sessions carried out in the first part of October and not yet all sorted.

The following graph, on the other hand, shows the synthetic data concerning the "Insects" component divided by the main groups of belonging, including the target taxa of the *Carabidae*.



Among the insects collected and determined so far, it is observed that those belonging to the target taxa of the *Carabidae* are the majority (42.7%, n = 75), confirming the effectiveness of the trapping techniques adopted for the purposes of monitoring.

The target taxa of the *Carabidae* currently has 32 different determined species, the following graph shows the% of coverage of the 80 stations for the species detected.

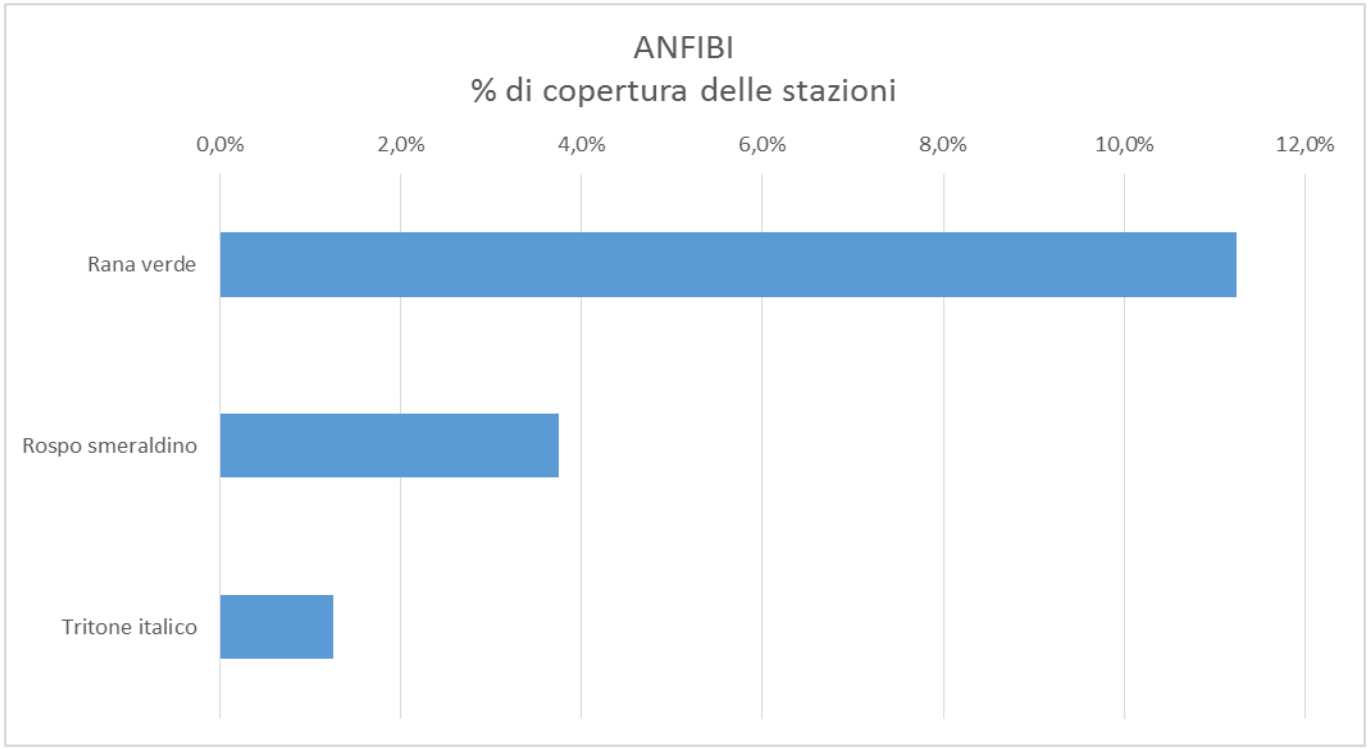

CARABIDI
% di copertura delle stazioni
0%
5%
10%
15%
20%
25%
30%
Calathus fuscipes graecus
Pterostichus melas italicus
Calathus cinctus
Laemostenus cimmerus
Harpalus sulphuripes
Amara similata
Brachinus sclopeta
Harpalus distinguendus
Ophonus similis
Brachinus crepitans
Brachinus italicus
Harpalus serripes
Licinus silphoides
Nebria brevicollis
Nebria kratteri
Olisthopus glabricollis
Trechus quadristriatus
Amara aenea
Amara lucida
Amara montana
Amara simplex
Bembidion ambiguum
Bembidion tethys
Brachinus plagiatus
Carabus coriaceus coriaceus
Carabus rossii
Ditomus clypeatus
Harpalus dimidiatus
Harpalus flavicornis
Notiophilus substriatus
Parallelomorphus terricola
Zabrus tenebrioides

2.2 Nocturnal moths

The use of light traps was the collection method of particular interest for the collection of representatives of the *Noctuidae* family (*Lepidoptera*). The collections began in June and ended in mid-October. The material is still being sorted and sent to specialists. For the time being, among the non-target groups, it should be noted that representatives of families linked to humid or riparian environments and whose members are often collected by light have been found. Among these, it should be mentioned the discovery of members of the subfamily *Pselaphinae (Coleoptera, Staphylinidae) Brachygluta dentiventris* (Saulcy, 1876), *B. furcata* (Motschulsky, 1835) and *B. hipponensis* (Saulcy, 1876) and the discovery of the hemipterus *Gardena insignis* Horvath, 1887 (*Reduviidae*), the latter first report of the species for Puglia and one of the few records in general for Italy.

2.3 Amphibians

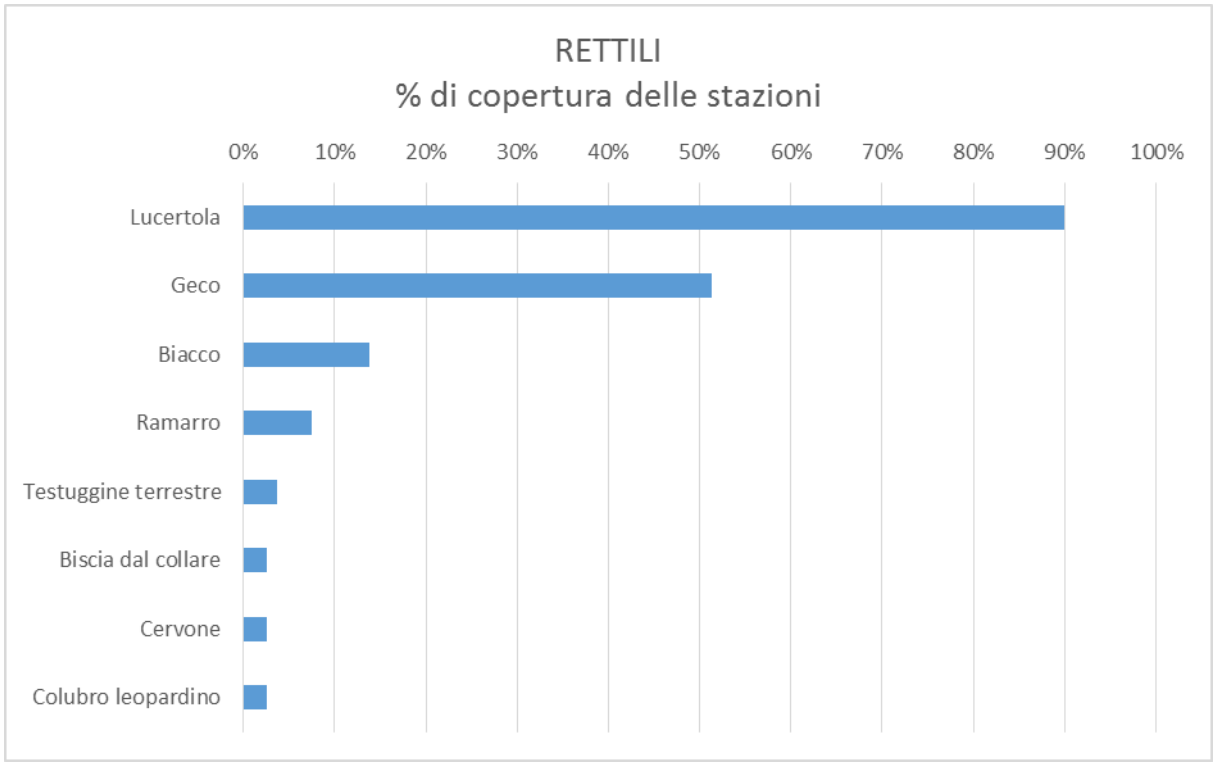
As expected, the Amphibians, with only three species detected (see checklist below), are the systematic group with the fewest observations. This is due both to the general environmental characteristics marked by a Mediterranean climate, especially in the coastal marine area and a reduced availability of suitable habitats, and to the reference period and the considerable anthropic impact exerted on the coastal and inland areas. The following graph presents the% coverage of the 80 stations for the detected Amphibian species.



2.4 Reptiles

The Reptiles group turned out to be surprisingly under-represented compared to expectations, not so much for the number of species detected (8, see checklist below), but for the sporadicity of the observations. If the general environmental characteristics, marked by a Mediterranean climate in particular in the reference period, it was expected to favor the presence and a certain abundance of a large part of the representatives of this taxon, a poor representativeness must instead be recorded, perhaps due to the low quality and habitat fragmentation and the sensitivity of predatory species with respect to the significant degree of anthropization and degradation of coastal areas.

The graph below presents the% coverage of the 80 stations for the reptile species detected. A very wide coverage is observed for general species such as the lizard and partly for the common gecko.

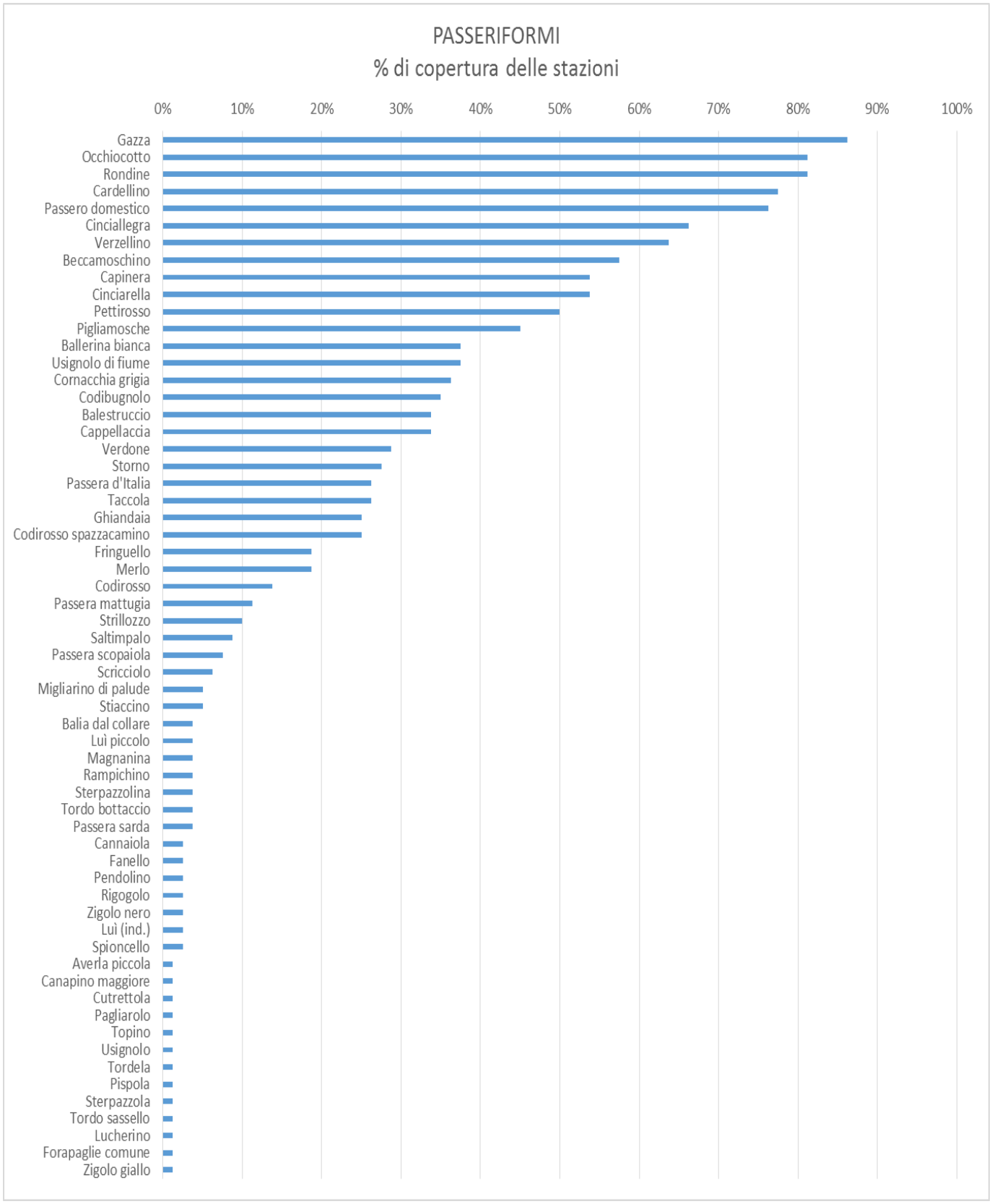


2.5 Birds (passerines)

This is the systematic group that recorded by far the largest number of species (in total 106 species, see checklist below), with **61 target species** (in the spring-summer period there were 45) and **45 non-target species** (in the previous period were 39), and the largest number of observations.

The choice of representative sampling stations of different environmental typologies has determined, as expected, a certain specific diversification which will be better evaluated with the final elaborations of the data collected as a whole.

The graph below presents the % coverage of the 80 stations for the bird species detected. There is a very wide coverage by generalist species such as the Magpie, the Goldfinch and the House Sparrow, which exceed 80% of the first and 70% of the other two in the stations. While the consistent presence of other "common" species such as Occhiocotto and Rondine (which both exceed 80% of the presence in the stations) is linked, especially in the first case, to environmental types strongly characterized by the Mediterranean climate (sclerophyllous scrubs and shrubs) and therefore by the presence of suitable habitats for its presence.

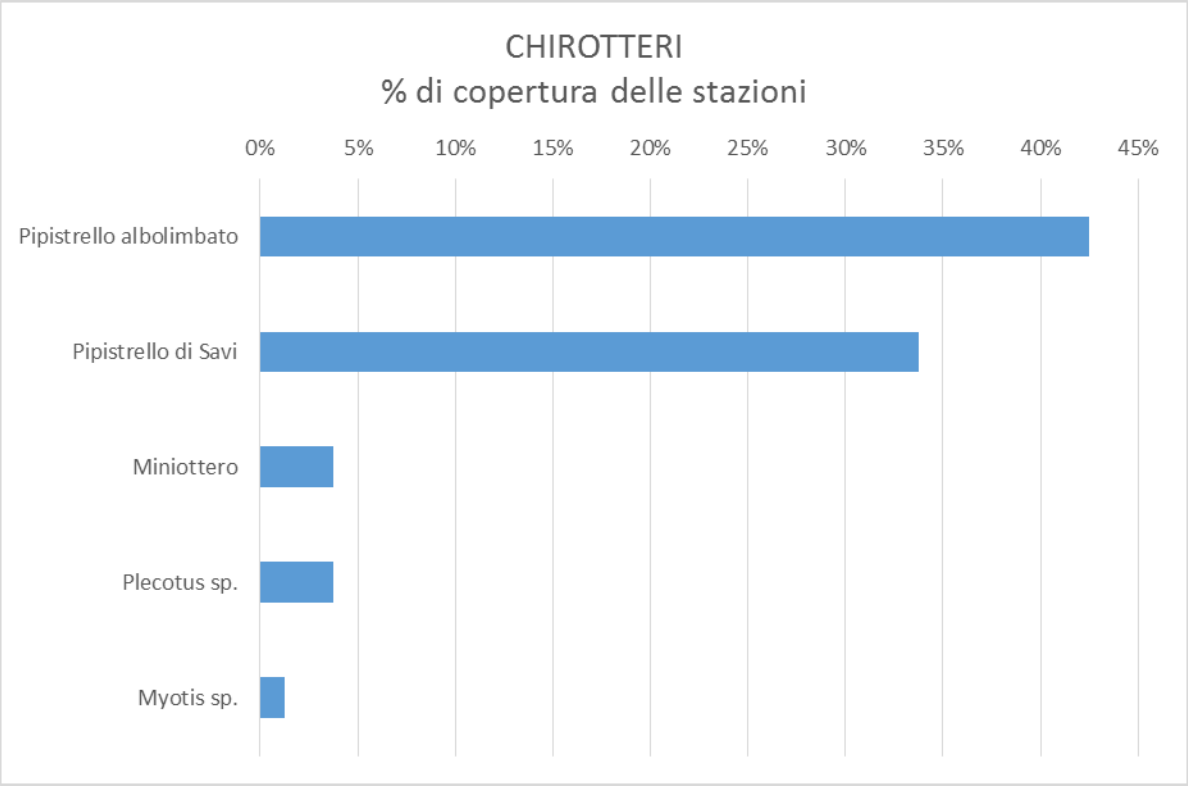

PASSERIFORMI
% di copertura delle stazioni
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Gazza
Occhiocotto
Rondine
Cardellino
Passero domestico
Cinciallegra
Verzellino
Beccamoschino
Capinera
Cinciarella
Pettirosso
Pigliamosche
Ballerina bianca
Usignolo di fiume
Cornacchia grigia
Codibugnolo
Balestruccio
Cappellaccia
Verdone
Storno
Passera d'Italia
Taccola
Ghiandaia
Codirosso spazzacamino
Fringuello
Merlo
Codirosso
Passera mattugia
Strillozzo
Saltimpalo
Passera scopaiola
Scricciolo
Migliarino di palude
Stiaccino
Balia dal collare
Luì piccolo
Magnanina
Rampichino
Sterpazzolina
Tordo bottaccio
Passera sarda
Cannaiola
Fanello
Pendolino
Rigogolo
Zigolo nero
Luì (ind.)
Spioncello
Averla piccola
Canapino maggiore
Cutrettola
Pagliarolo
Topino
Usignolo
Tordela
Pispola
Sterpazzola
Tordo sassello
Lucherino
Forapaglie comune
Zigolo giallo

2.6 Chiroptera

The bioacoustic analyzes of the sonograms detected with the bat detector are still in progress, the first data reveal the presence of at least 5 species (see checklist below), among which, alongside relatively common species, there are also more ecologically more demanding.

The following graph presents the% coverage of the 80 stations for the species of *Chiroptera* detected. Good coverage is observed for more general species such as the Kuhl's pipistrelle bat

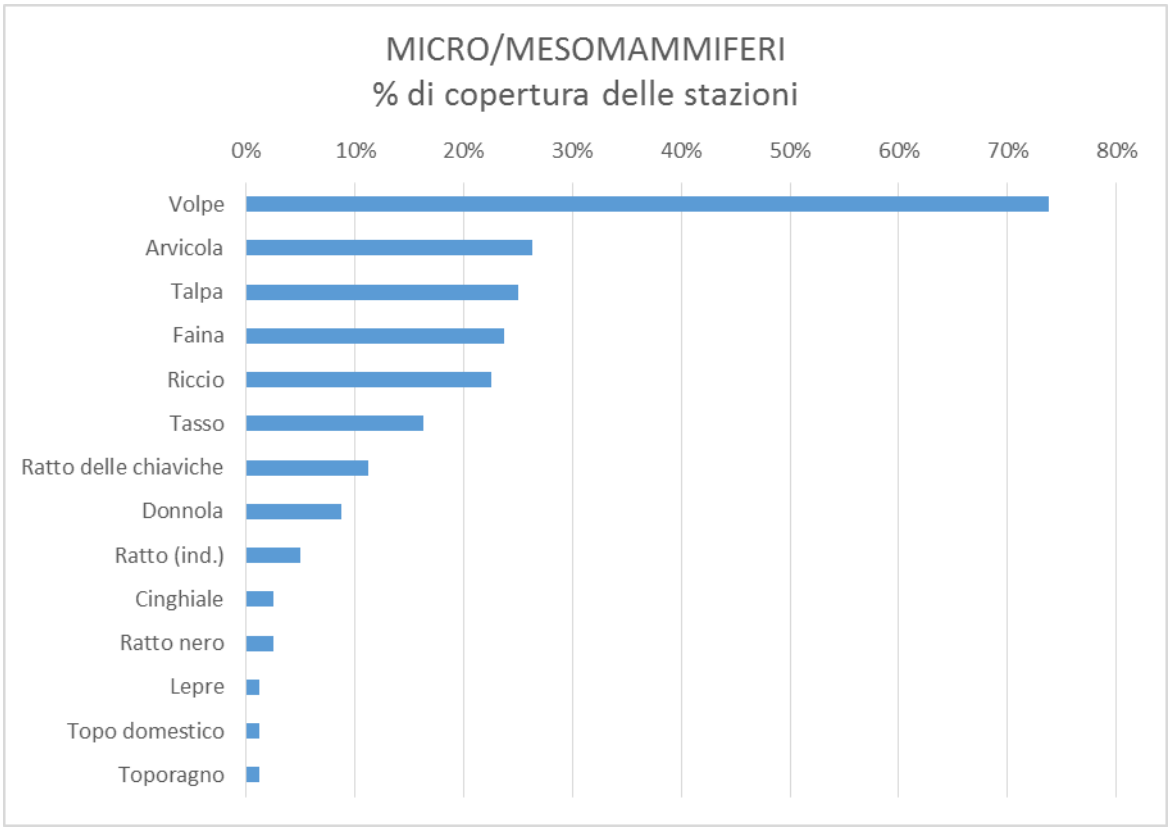
and, in part, for that of Savi's pipistrelle. The presence of the Schreibers's Long-fingered Bat, which characterizes the Mediterranean regions, and of the brown long-eared bat, more linked to forest environments, are interesting. The presence of Vespertyles (not determined) to be further investigated.



2.7 Micro and mesomammals

(Micro/meso) Mammals are represented by important systematic groups (Rodents, Insectivores, Lagomorphs, Carnivores, Artiodactyls), all these groups have been detected with the ascertained presence of one or more species (see checklist below) for a total of 13 species observed. Much of the camera trap data is being analyzed.

The graph below presents the% coverage of the 80 stations for the detected Micro and Mesomammalian species. There is a very wide coverage by generalist species such as the Fox which exceeds 70% of the presence in the stations. Alongside a consistent presence of other common species such as Vole and Mole (both of which exceed 70% of presence in the stations), consistent presences of Mustelids (in particular Beech and Badger) and insectivores such as the Hedgehog are observed.



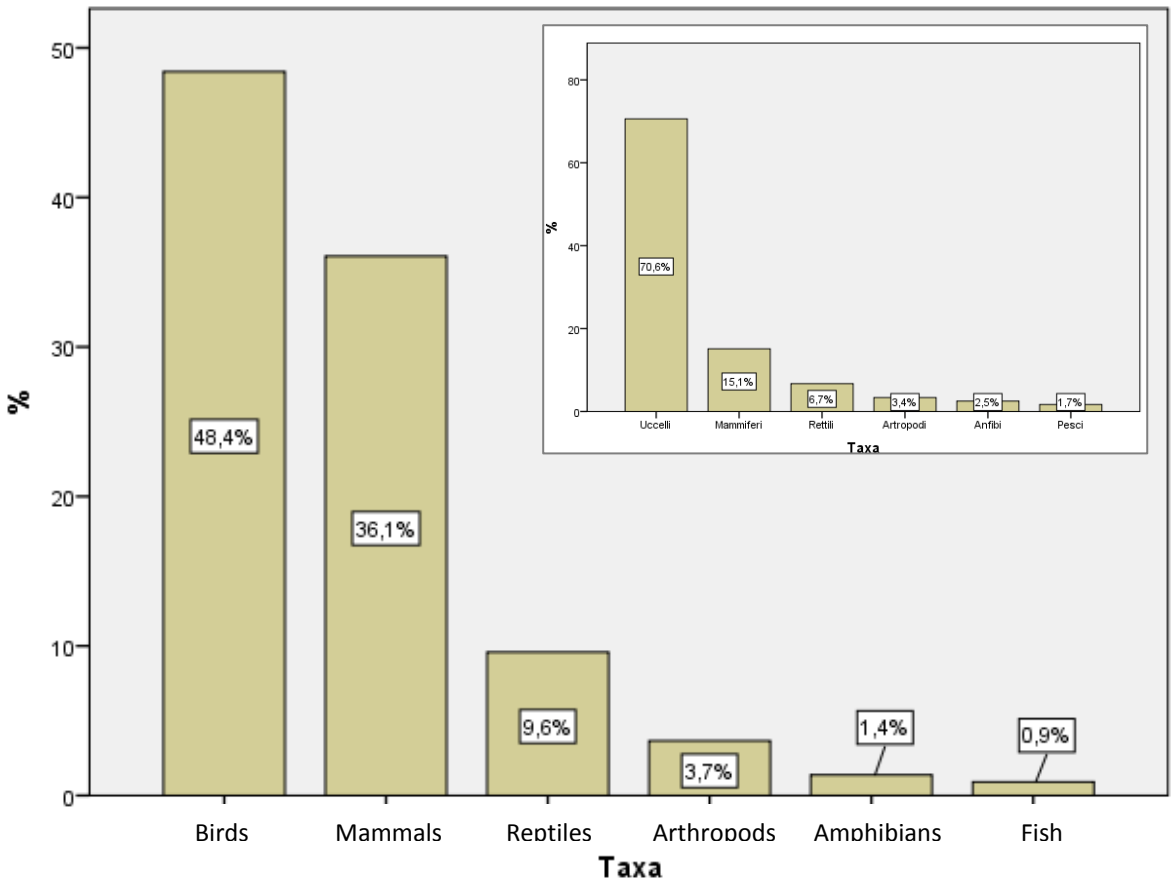
Checklist and descriptive statistics

The following pages show the first data (check-list) and descriptive elaborations concerning the activities of the service (fauna monitoring).

Detected Species

Here are summarized data and the checklist regarding all species detected (target and non-target) in order to illustrate the wildlife communities present in the study area.

The following graph illustrates the composition of the species (target and non-target) detected based on the reference taxa from the start of monitoring. Compared to the previous report (see box in the graph below) we can observe the significant increase of the Arthropod group, due to the first data coming from the specialist determinations of the findings sampled with the traps and still in progress.

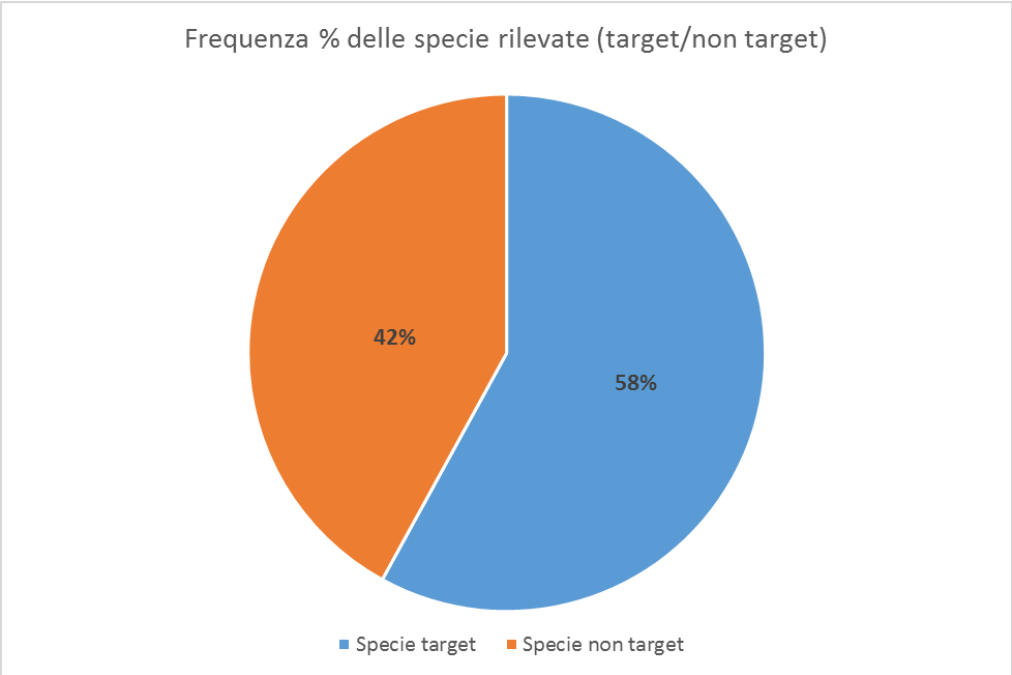


Overall, several thousand faunal observations have so far been carried out in the study area, 2,081 of which have been determined at the species level. The following table describes the distribution of observations of the systematic groups detected and determined at the species level, divided into target **bold/orange**) and non-target (normal) taxa.

Taxa	Frequency	Percentage
Passeriformes	**1064**	**51,1%**
Other birds	392	18,8%
Micro/Meso Mammals	**184**	**8,8%**
Reptiles	**139**	**6,7%**
Carabides	**105**	**5,0%**
Chiroptera	**68**	**3,3%**
Tenebrionides	50	2,4%
Other Beetles	49	2,4%
Amphibians	**13**	**0,6%**
Other Invertebrates	10	0,5%
Araneides	**4**	**0,2%**
Other fauna (Fish)	3	0,1%
Total	**2.081**	**100,0**

Obviously, the relative percentages are strongly influenced by the fact that, for some groups (Arthropods, Chiroptera and, in part, micro and meso Mammals), most of the data collected / finds are being analyzed and determined.

The following graph shows the distribution of target and non-target species observed.



General checklist of the species observed from the start of monitoring (*), the new species presented with this autumn report highlighted in orange:

n°	*Taxa*	TARGET	Species/*Taxon*
1	Amphibians	Amphibians	Green frog
2	Amphibians	Amphibians	Green toad
3	Amphibians	Amphibians	Italian newt
4	Invertebrates	Araneidi	*Argiope lobata*
5	Invertebrates	Araneidi	*Crytophora cyrtophora*
6	Invertebrates	Araneidi	*Latrodectus tredecimguttatus*
7	Invertebrates	Araneidi	*Trochosa sp.*
8	Invertebrates	Carabids	*Amara aenea*
9	Invertebrates	Carabids	*Amara lucida*
10	Invertebrates	Carabids	*Amara montana*
11	Invertebrates	Carabids	*Amara similata*
12	Invertebrates	Carabids	*Amara simplex*
13	Invertebrates	Carabids	*Bembidion ambiguum*
14	Invertebrates	Carabids	*Bembidion tethys*
15	Invertebrates	Carabids	*Brachinus crepitans*
16	Invertebrates	Carabids	*Brachinus italicus*
17	Invertebrates	Carabids	*Brachinus plagiatus*
18	Invertebrates	Carabids	*Brachinus sclopeta*
19	Invertebrates	Carabids	*Calathus cinctus*
20	Invertebrates	Carabids	*Calathus fuscipes graecus*
21	Invertebrates	Carabids	*Carabus coriaceus coriaceus*
22	Invertebrates	Carabids	*Carabus rossii*
23	Invertebrates	Carabids	*Ditomus clypeatus*
24	Invertebrates	Carabids	*Harpalus dimidiatus*
25	Invertebrates	Carabids	*Harpalus distinguendus*
26	Invertebrates	Carabids	*Harpalus flavicornis*
27	Invertebrates	Carabids	*Harpalus serripes*
28	Invertebrates	Carabids	*Harpalus sulphuripes*
29	Invertebrates	Carabids	*Laemostenus cimmerus*
30	Invertebrates	Carabids	*Licinus silphoides*
31	Invertebrates	Carabids	*Nebria brevicollis*
32	Invertebrates	Carabids	*Nebria kratteri*
33	Invertebrates	Carabids	*Notiophilus substriatus*
34	Invertebrates	Carabids	*Olisthopus glabricollis*
35	Invertebrates	Carabids	*Ophonus similis*

n°	*Taxa*	TARGET	Species/*Taxon*
36	Invertebrates	Carabids	*Parallelomorphus terricola*
37	Invertebrates	Carabids	*Pterostichus melas italicus*
38	Invertebrates	Carabids	*Trechus quadristriatus*
39	Invertebrates	Carabids	*Zabrus tenebrioides*
40	Invertebrates	Other Coleoptera	*Brachygluta dentiventris*
41	Invertebrates	Other Coleoptera	*Brachygluta furcata*
42	Invertebrates	Other Coleoptera	*Brachygluta hipponensis*
43	Invertebrates	Other Coleoptera	*Chilocorus bipustulatus*
44	Invertebrates	Other Coleoptera	*Chrysolina bankii*
45	Invertebrates	Other Coleoptera	*Chrysolina oricalcia*
46	Invertebrates	Other Coleoptera	*Chrysolina populi*
47	Invertebrates	Other Coleoptera	*Chrysolina vernalis italica*
48	Invertebrates	Other Coleoptera	*Coccinella septempunctata*
49	Invertebrates	Other Coleoptera	*Colobopterus erraticus*
50	Invertebrates	Other Coleoptera	*Cryptocephalus marginatus*
51	Invertebrates	Other Coleoptera	*Cryptocephalus rugicollis*
52	Invertebrates	Other Coleoptera	*Exochomus nigromaculatus*
53	Invertebrates	Other Coleoptera	*Exosoma lusitanicum*
54	Invertebrates	Other Coleoptera	*Henosepilachna elaterii elaterii*
55	Invertebrates	Other Coleoptera	*Hippodamia variegata*
56	Invertebrates	Other Coleoptera	*Macrolenes dentipes*
57	Invertebrates	Other Coleoptera	*Oxythyrea funesta*
58	Invertebrates	Other Coleoptera	*Pentodon bidens punctatus*
59	Invertebrates	Other Coleoptera	*Propylea quatuordecimpunctata*
60	Invertebrates	Other Coleoptera	*Protaetia (Netocia) morio morio*
61	Invertebrates	Other Coleoptera	*Psyllobora vigintiduopunctata*
62	Invertebrates	Other Coleoptera	*Scymnus apetzi*
63	Invertebrates	Other Coleoptera	*Tropinota (Tropinota) squallida squallida*
64	Invertebrates	Other Invertebrates	*Chrysoperla sp.*
65	Invertebrates	Other Invertebrates	*Gardena insignis*
66	Invertebrates	Other Invertebrates	*Italochrysa italica*
67	Invertebrates	Other Invertebrates	*Macronemurus appendiculatus*
68	Invertebrates	Other Invertebrates	*Mantispa styriaca*
69	Invertebrates	Other Invertebrates	*Pseudomallada sp.*
70	Invertebrates	Other Invertebrates	*Spathius pedestris*
71	Invertebrates	Cerambicidi	*Dorcadion etruscum*
72	Invertebrates	Cerambicidi	*Phytoecia vulneris*
73	Invertebrates	Tenebrionids	*Akis trilineata trilineata*
74	Invertebrates	Tenebrionids	*Asida sp.*
75	Invertebrates	Tenebrionids	*Blaps gibba*
76	Invertebrates	Tenebrionids	*Blaps mucronata*
77	Invertebrates	Tenebrionids	*Catomus consentaneus*

n°	*Taxa*	TARGET	Species/*Taxon*
78	Invertebrates	Tenebrionids	*Dendarus dalmatinus*
79	Invertebrates	Tenebrionids	*Gonocephalum granulatum nigrum*
80	Invertebrates	Tenebrionids	*Pedinus meridianus*
81	Invertebrates	Tenebrionids	*Pimelia rugulosa apula*
82	Invertebrates	Tenebrionids	*Podonta italica*
83	Invertebrates	Tenebrionids	*Tentyria italica*
84	Mammals	Chiroptera	Schreibers's Long-fingered Bat
85	Mammals	Chiroptera	Myotis sp.
86	Mammals	Chiroptera	Kuhl's Pipistrelle
87	Mammals	Chiroptera	Savi's pipistrelle
88	Mammals	Chiroptera	Plecotus sp.
89	Mammals	Micro/Meso Mammals	Vole
90	Mammals	Micro/Meso Mammals	Boar
91	Mammals	Micro/Meso Mammals	Weasel
92	Mammals	Micro/Meso Mammals	Beech marten
93	Mammals	Micro/Meso Mammals	Hare
94	Mammals	Micro/Meso Mammals	Brown rat
95	Mammals	Micro/Meso Mammals	Black rat
96	Mammals	Micro/Meso Mammals	European hedgehog
97	Mammals	Micro/Meso Mammals	Mole
98	Mammals	Micro/Meso Mammals	Badger
99	Mammals	Micro/Meso Mammals	House mouse
100	Mammals	Micro/Meso Mammals	Shrew
101	Mammals	Micro/Meso Mammals	Fox
102	Fish	other fauna	Mullet
103	Fish	other fauna	Red fish
104	Reptiles	Reptiles	Green Whip Snake
105	Reptiles	Reptiles	Grass snake
106	Reptiles	Reptiles	Four lined snake
107	Reptiles	Reptiles	Leopard snake
108	Reptiles	Reptiles	Gecko
109	Reptiles	Reptiles	Lizard
110	Reptiles	Reptiles	Green lizard
111	Reptiles	Reptiles	Terrestrial tortoise
112	Birds	Passerines	Red-backed Shrike
113	Birds	Passerines	House Martin
114	Birds	Passerines	Collared Flycatcher
115	Birds	Passerines	White wagtail
116	Birds	Passerines	Streaked Fantail Warbler
117	Birds	Passerines	Icterine Warbler
118	Birds	Passerines	Eurasian Reed Warbler
119	Birds	Passerines	Blackcap

n°	*Taxa*	TARGET	Species/*Taxon*
120	Birds	Passerines	Crested lark
121	Birds	Passerines	Goldfinch
122	Birds	Passerines	Great tit
123	Birds	Passerines	Blue tit
124	Birds	Passerines	Long-tailed tit
125	Birds	Passerines	Redstart
126	Birds	Passerines	Black Redstart
127	Birds	Passerines	Hooded crow
128	Birds	Passerines	Black-headed wagtail
129	Birds	Passerines	Linnet
130	Birds	Passerines	Sedge warbler
131	Birds	Passerines	Finch
132	Birds	Passerines	Magpie
133	Birds	Passerines	Jay
134	Birds	Passerines	Siskin
135	Birds	Passerines	Warbler (ind.)
136	Birds	Passerines	Common chiffchaff
137	Birds	Passerines	Dartford Warbler
138	Birds	Passerines	Blackbird
139	Birds	Passerines	Common Reed Bunting
140	Birds	Passerines	Sardinian warbler's
141	Birds	Passerines	Aquatic Warbler
142	Birds	Passerines	Italian Sparrow
143	Birds	Passerines	Tree sparrow
144	Birds	Passerines	Sardinian sparrow
145	Birds	Passerines	Dunnock
146	Birds	Passerines	House sparrow
147	Birds	Passerines	European penduline tit
148	Birds	Passerines	Robin
149	Birds	Passerines	Flycatcher
150	Birds	Passerines	Meadow Pipit
151	Birds	Passerines	Treecreeper
152	Birds	Passerines	Oriole
153	Birds	Passerines	Swallow
154	Birds	Passerines	European stonechat
155	Birds	Passerines	Wren
156	Birds	Passerines	Water pipit
157	Birds	Passerines	Common whitethroat
158	Birds	Passerines	Subalpine Warbler
159	Birds	Passerines	Whinchat
160	Birds	Passerines	Starling
161	Birds	Passerines	Corn bunting

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n°	*Taxa*	TARGET	Species/*Taxon*
162	Birds	Passerines	Jackdaw
163	Birds	Passerines	Sand martin
164	Birds	Passerines	Mistle thrush
165	Birds	Passerines	Song Thrush
166	Birds	Passerines	Redwing
167	Birds	Passerines	Nightingale
168	Birds	Passerines	River Nightingale
169	Birds	Passerines	Green finch
170	Birds	Passerines	Serin
171	Birds	Passerines	Yellowhammer
172	Birds	Passerines	Blackhammer
173	Birds	Other birds	Great white heron
174	Birds	Other birds	Gray heron
175	Birds	Other birds	Cattle Egret
176	Birds	Other birds	Harrier
177	Birds	Other birds	Scops Owl
178	Birds	Other birds	Barn Owl
179	Birds	Other birds	Sandwich tern
180	Birds	Other birds	Black-winged Stilt
181	Birds	Other birds	White stork
182	Birds	Other birds	Owl
183	Birds	Other birds	Wood pigeon
184	Birds	Other birds	Cormorant
185	Birds	Other birds	Cuckoo
186	Birds	Other birds	Red-footed falcon
187	Birds	Other birds	Marsh harrier
188	Birds	Other birds	Flamingo
189	Birds	Other birds	Coot
190	Birds	Other birds	Kentish Plover
191	Birds	Other birds	Common seagull
192	Birds	Other birds	Herring gull
193	Birds	Other birds	Moorhen
194	Birds	Other birds	Little Egret
195	Birds	Other birds	Mallard
196	Birds	Other birds	Kestrel
197	Birds	Other birds	European roller
198	Birds	Other birds	Lesser kestrel
199	Birds	Other birds	Bee-eater
200	Birds	Other birds	Long-eared owl
201	Birds	Other birds	Kingfisher
202	Birds	Other birds	Monk parakeet
203	Birds	Other birds	Wild pigeon

n°	*Taxa*	TARGET	Species/*Taxon*
204	Birds	Other birds	Wood sandpiper
205	Birds	Other birds	Green sandpiper
206	Birds	Other birds	Buzzard
207	Birds	Other birds	Water rail
208	Birds	Other birds	Swift
209	Birds	Other birds	Greater Swift
210	Birds	Other birds	Sparrowhawk
211	Birds	Other birds	Spoonbill
212	Birds	Other birds	Nightjar
213	Birds	Other birds	Great crested grebe
214	Birds	Other birds	Lesser Grebe
215	Birds	Other birds	Bittern
216	Birds	Other birds	Collared dove
217	Birds	Other birds	Hoopoe

(*)Not all the specimens belonging to the large groups of Invertebrates (*Araneids* and *Carabids*) have been considered as many of them could belong to identical species (currently being determined).

The above general checklist includes a total of 217 species observed from the start of monitoring, while in the spring-summer period 119 in all were detected.

Taxa	**n° species**
Passerines	61
Carabids	32
Micro/Meso Mammals	13
Reptiles	8
Chiroptera	5
Araneids	4
Amphibians	3
Total Target species	***126***
Taxa	**n° specie**
Other Birds	45
Other Coleoptera	24
Tenebrionids	11
Other Invertebrates	7
Other fauna (Fish)	2
Cerambicids	1
Total non Target species	***91***
Overall Total	**217**

Target Groups

Among the target groups, as many as 126 species (or taxonomic entities) have been detected in the study area so far, while in the spring-summer period a total of 72 had been detected. The following table shows the relative check-list with the percentage of coverage of the stations being monitored (n = 80).

Check-list of the target species observed in the reference period (*), the new species presented with this autumn report highlighted in orange:

n°	*Taxa*	TARGET	Species/*Taxon*	% Station Coverage
1	Amphibians	Amphibians	Green frog	11,3%
2	Amphibians	Amphibians	Green toad	3,8%
3	Amphibians	Amphibians	Italian newt	1,3%
4	Invertebrates	Araneids	*Argiope lobata*	1,3%
5	Invertebrates	Araneids	*Crytophora cyrtophora*	1,3%
6	Invertebrates	Araneids	*Latrodectus tredecimguttatus*	1,3%
7	Invertebrates	Araneids	*Trochosa sp.*	1,3%
8	Invertebrates	Carabids	*Amara aenea*	1,3%
9	Invertebrates	Carabids	*Amara lucida*	1,3%
10	Invertebrates	Carabids	*Amara montana*	1,3%
11	Invertebrates	Carabids	*Amara similata*	3,8%
12	Invertebrates	Carabids	*Amara simplex*	1,3%
13	Invertebrates	Carabids	*Bembidion ambiguum*	1,3%
14	Invertebrates	Carabids	*Bembidion tethys*	1,3%
15	Invertebrates	Carabids	*Brachinus crepitans*	2,5%
16	Invertebrates	Carabids	*Brachinus italicus*	2,5%
17	Invertebrates	Carabids	*Brachinus plagiatus*	1,3%
18	Invertebrates	Carabids	*Brachinus sclopeta*	3,8%
19	Invertebrates	Carabids	*Calathus cinctus*	16,3%
20	Invertebrates	Carabids	*Calathus fuscipes graecus*	27,5%
21	Invertebrates	Carabids	*Carabus coriaceus coriaceus*	1,3%
22	Invertebrates	Carabids	*Carabus rossii*	1,3%
23	Invertebrates	Carabids	*Ditomus clypeatus*	1,3%
24	Invertebrates	Carabids	*Harpalus dimidiatus*	1,3%
25	Invertebrates	Carabids	*Harpalus distinguendus*	3,8%
26	Invertebrates	Carabids	*Harpalus flavicornis*	1,3%
27	Invertebrates	Carabids	*Harpalus serripes*	2,5%
28	Invertebrates	Carabids	*Harpalus sulphuripes*	5,0%
29	Invertebrates	Carabids	*Laemostenus cimmerus*	11,3%
30	Invertebrates	Carabids	*Licinus silphoides*	2,5%

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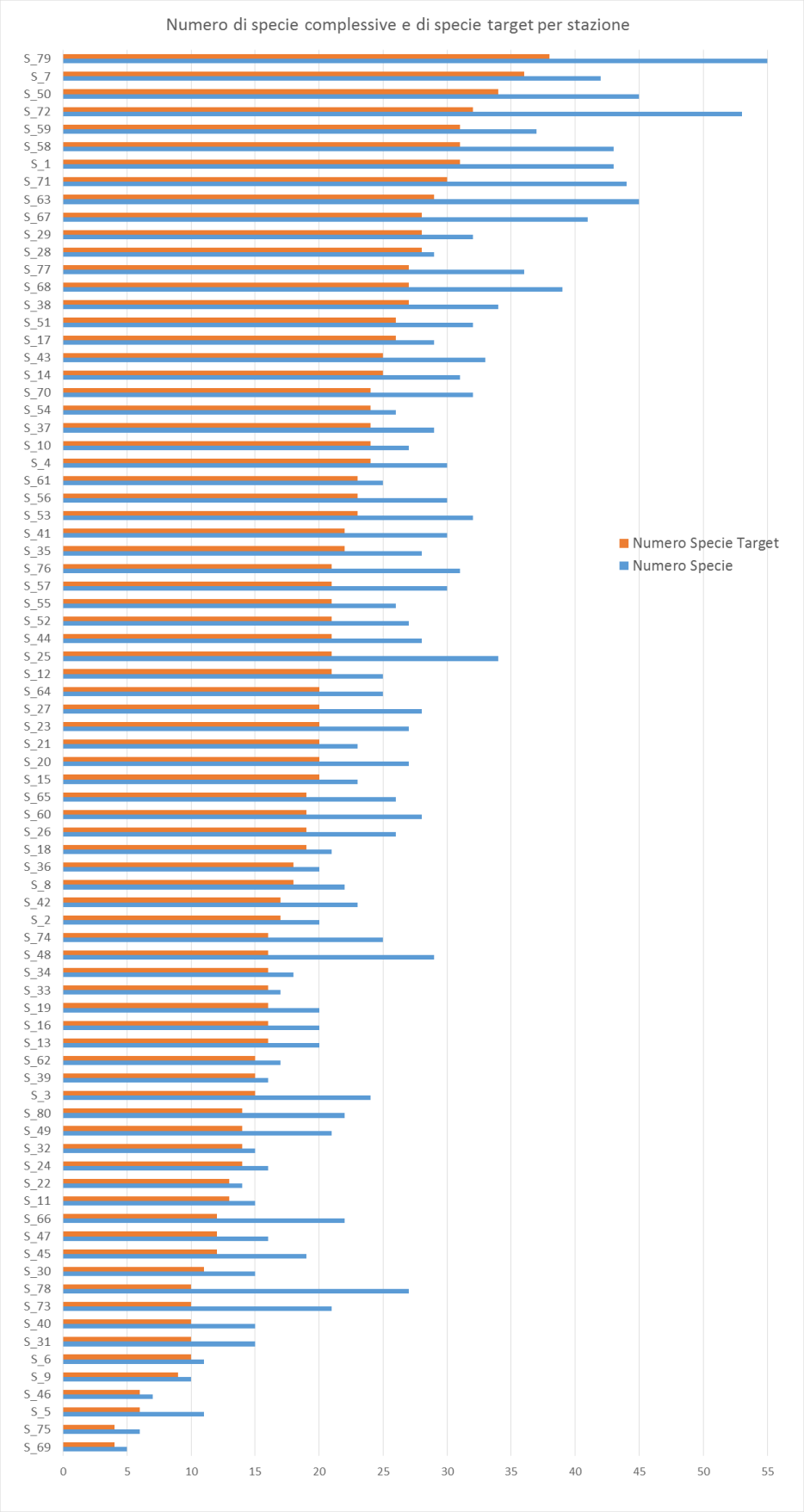
n°	*Taxa*	TARGET	Species/*Taxon*	% Station Coverage
31	Invertebrates	Carabids	*Nebria brevicollis*	2,5%
32	Invertebrates	Carabids	*Nebria kratteri*	2,5%
33	Invertebrates	Carabids	*Notiophilus substriatus*	1,3%
34	Invertebrates	Carabids	*Olisthopus glabricollis*	2,5%
35	Invertebrates	Carabids	*Ophonus similis*	3,8%
36	Invertebrates	Carabids	*Parallelomorphus terricola*	1,3%
37	Invertebrates	Carabids	*Pterostichus melas italicus*	17,5%
38	Invertebrates	Carabids	*Trechus quadristriatus*	2,5%
39	Invertebrates	Carabids	*Zabrus tenebrioides*	1,3%
40	Mammals	Chiroptera	Schreibers's Long-fingered Bat	3,8%
41	Mammals	Chiroptera	Myotis sp.	1,3%
42	Mammals	Chiroptera	Kuhl's pipistrelle	42,5%
43	Mammals	Chiroptera	Savi's Pipistrelle Bat	33,8%
44	Mammals	Chiroptera	Plecotus sp.	3,8%
45	Mammals	Micro/Meso Mammals	Vole	26,3%
46	Mammals	Micro/Meso Mammals	Boar	2,5%
47	Mammals	Micro/Meso Mammals	Weasel	8,8%
48	Mammals	Micro/Meso Mammals	Beech marten	23,8%
49	Mammals	Micro/Meso Mammals	Hare	1,3%
50	Mammals	Micro/Meso Mammals	Brown rat	11,3%
51	Mammals	Micro/Meso Mammals	Black rat	2,5%
52	Mammals	Micro/Meso Mammals	European hedgehog	22,5%
53	Mammals	Micro/Meso Mammals	Mole	25,0%
54	Mammals	Micro/Meso Mammals	Badger	16,3%
55	Mammals	Micro/Meso Mammals	House mouse	1,3%
56	Mammals	Micro/Meso Mammals	Shrew	1,3%
57	Mammals	Micro/Meso Mammals	Fox	73,8%
58	Reptiles	Reptiles	Green Whip Snake	13,8%
59	Reptiles	Reptiles	Grass snake	2,5%
60	Reptiles	Reptiles	Four lined snake	2,5%
61	Reptiles	Reptiles	Leopard snake	2,5%
62	Reptiles	Reptiles	Gecko	51,3%
63	Reptiles	Reptiles	Lizard	90,0%
64	Reptiles	Reptiles	Green lizard	7,5%
65	Reptiles	Reptiles	Terrestrial tortoise	3,8%
66	Birds	Passerines	Red-backed Shrike	1,3%
67	Birds	Passerines	House martin	33,8%
68	Birds	Passerines	Collared Flycatcher	3,8%
69	Birds	Passerines	White wagtail	37,5%
70	Birds	Passerines	Streaked Fantail Warbler	57,5%
71	Birds	Passerines	Icterine Warbler	1,3%

n°	*Taxa*	TARGET	Species/*Taxon*	% Station Coverage
72	Birds	Passerines	Eurasian Reed Warbler	2,5%
73	Birds	Passerines	Blackcap	53,8%
74	Birds	Passerines	Crested lark	33,8%
75	Birds	Passerines	Goldfinch	77,5%
76	Birds	Passerines	Great tit	66,3%
77	Birds	Passerines	Blue tit	53,8%
78	Birds	Passerines	Long-tailed tit	35,0%
79	Birds	Passerines	Redstart	13,8%
80	Birds	Passerines	Black Redstart	25,0%
81	Birds	Passerines	Hooded crow	36,3%
82	Birds	Passerines	Black-headed wagtail	1,3%
83	Birds	Passerines	Linnet	2,5%
84	Birds	Passerines	Sedge warbler	1,3%
85	Birds	Passerines	Finch	18,8%
86	Birds	Passerines	Magpie	86,3%
87	Birds	Passerines	Jay	25,0%
88	Birds	Passerines	Siskin	1,3%
89	Birds	Passerines	Warbler (ind.)	2,5%
90	Birds	Passerines	Common chiffchaff	3,8%
91	Birds	Passerines	Dartford Warbler	3,8%
92	Birds	Passerines	Blackbird	18,8%
93	Birds	Passerines	Common Reed Bunting	5,0%
94	Birds	Passerines	Sardinian warbler's	81,3%
95	Birds	Passerines	Aquatic Warbler	1,3%
96	Birds	Passerines	Italian Sparrow	26,3%
97	Birds	Passerines	Sedge warbler	11,3%
98	Birds	Passerines	Finch	3,8%
99	Birds	Passerines	Dunnock	7,5%
100	Birds	Passerines	House sparrow	76,3%
101	Birds	Passerines	European penduline tit	2,5%
102	Birds	Passerines	Robin	50,0%
103	Birds	Passerines	Flycatcher	45,0%
104	Birds	Passerines	Meadow Pipit	1,3%
105	Birds	Passerines	Treecreeper	3,8%
106	Birds	Passerines	Oriole	2,5%
107	Birds	Passerines	Swallow	81,3%
108	Birds	Passerines	European stonechat	8,8%
109	Birds	Passerines	Wren	6,3%
110	Birds	Passerines	Water pipit	2,5%
111	Birds	Passerines	Common whitethroat	1,3%
112	Birds	Passerines	Subalpine Warbler	3,8%

n°	*Taxa*	TARGET	Species/*Taxon*	% Station Coverage
113	Birds	Passerines	Whinchat	5,0%
114	Birds	Passerines	Starling	27,5%
115	Birds	Passerines	Corn bunting	10,0%
116	Birds	Passerines	Jackdaw	26,3%
117	Birds	Passerines	Sand martin	1,3%
118	Birds	Passerines	Mistle thrush	1,3%
119	Birds	Passerines	Song Thrush	3,8%
120	Birds	Passerines	Redwing	1,3%
121	Birds	Passerines	Nightingale	1,3%
122	Birds	Passerines	River Nightingale	37,5%
123	Birds	Passerines	Green finch	28,8%
124	Birds	Passerines	Serin	63,8%
125	Birds	Passerines	Yellowhammer	1,3%
126	Birds	Passerines	Blackhammer	2,5%

(*) Not all the specimens belonging to the large groups of Invertebrates (Araneids and Carabids) have been considered here as many of them could belong to identical species (currently being determined).

The graph below illustrates, increasing by number of target species, the number of overall species and of target species for each monitoring station. The mean number of total species detected for each station rose to 26 ± 10.1 species (mean ± standard deviation), while in the previous spring-summer data report it was 18.5 ± 7.3; thus also the mean for the target species is equal to 19.6 ± 7.3 species, while in the previous ratio it was 14.2 ± 5.1. The intra-station variability is high as evidenced by the high values of the standard deviations.


Numero di specie complessive e di specie target per stazione
S_79
S_7
S_50
S_72
S_59
S_58
S_1
S_71
S_63
S_67
S_29
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S_8
S_42
S_2
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10
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25
30
35
40
45
50
55
Numero Specie Target
Numero Specie

An in-depth study containing the "*Preliminary data on the arthropod fauna collected within the BEST project*" has been attached, which lists the target and non-target species detected and identified so far, with an indication of the collection locations and distribution areas.

The continuation of the monitoring and above all the results of the determinations of the Arthropod samples and of the bioacoustic analyzes and of the images currently in progress, will make the faunal picture of the study area increasingly clear which, thanks to the considerable number of observations carried out and samples already recorded in the spring, summer and autumn periods, it has a solid statistical basis.

ANNEX

Preliminary data on the arthropod fauna collected within the BEST project

Target groups

Coleoptera Carabidae

M. Villani, F. Di Giovanni

868 specimens belonging to 32 species were found and identified in a period between 18 April and 17 July 2021. Of the species collected, one, *Carabus (Archicarabus) rossii* Dejean, 1826 was already known for the Ostuni area (Canalone il Pilone) (Monzini & Angelini 1997). The majority of the species found are widely distributed elements (50%), present in Italy throughout the peninsula, and often also in Sicily and / or Sardinia. These are followed by elements with a European (22%) or Mediterranean (22%) gravitation. Two species, *Brachinus (Brachinoaptinus) italicus* (Dejean, 1831) and the aforementioned *Carabus (Archicarabus) rossii*, are Apennine endemics.

Amara (Amara) aenea (De Geer, 1774)
1 ex: Taranto, d'Aiedda Creek, 25.iv-16.v.2021.
Olarctic element, widespread throughout the peninsula and islands.

Amara (Amara) lucida (Duftschmid, 1812)
1 ex: Bari, Monopoli, Masseria Capitolo, 18.iv-01.v.2021; 1 ex: same place, 01.v-31.v.2021.
Turanic-European element, present throughout Italy, including the islands.

Amara (Amara) similata (Gyllenhal, 1810)
1 ex: Bari, Monopoli, Masseria Capitolo, 01.v-31.v.2021; 3 ex: same place, 31.v-16.vi.2021; 2 ex: Brindisi, Fasano, Posto di Tavernese, 19.v-05.vi.2021; 1 ex: Taranto, Masseria Natrella, 25.iv-16.v.2021.
Asian-European element, it is a widespread species throughout Italy and the islands.

Amara (Celia) montana Dejean, 1828
5 ex: Taranto, Masseria Natrella, 25.iv-16.v.2021.
Mediterranean element, present throughout Italy, including the islands.

Amara (Paracelia) simplex Dejean, 1828
1 ex: Brindisi, Fasano, Masseria Lamacupa, 18.iv-01.v.2021.
Mediterranean element, present in southern Italy, Sicily and Sardinia.

Bembidion (Neja) ambiguum Dejean, 1831
1 ex: Taranto, Creek d'Aiedda, 02.vi-22.vi.2021.
West-Mediterranean element, present here in southern Italy, Sicily and Sardinia.

Bembidion (Phyla) tethys Netolitzky, 1926
3 ex: Taranto, Zona PIP, 16.v-02.vi.2021.

Mediterranean element, present throughout Italy, including the islands.

Brachinus (Brachinoaptinus) italicus (Dejean, 1831)
2 ex: Taranto, Wetland la Vela, 25.iv-16.v.2021; 2 ex: same place, 16.v-02.vi.2021; 1 ex: Taranto, Pianura Erbarca, 16.v-02.vi.2021; 7 ex: same place, 02.vi-22.vi.2021.
Italian Apennine endemite, present in southern Italy and Sicily.

Brachinus (Brachinus) crepitans (Linnaeus, 1758)
11 ex: Taranto, Wetland la Vela, 25.iv-16.v.2021; 3 ex: same place, 16.v-02.vi.2021; 6 ex: Taranto, Pianura Erbarca, 25.iv-16.v.2021; 7ex: same place, 16.v-02.vi.2021; 1 ex: same place, 02.vi-22.vi.2021.
Palearctic element, widespread throughout Italy, including the islands.

Brachinus (Brachinus) plagiatus Reiche, 1868
1 ex: Brindisi, Fasano, Posto di Tavernese, 19.v-05.vi.2021.
Mediterranean element, present throughout Italy and the islands.

Brachinus (Brachynidius) sclopeta (Fabricius, 1792)
1 ex: Bari, Monopoli, Masseria Paretano Grande, 18.iv-01.v.2021; 1 ex: Taranto, Masseria Natrella, 25.iv-16.v.2021; 1 ex: same place, 16.v-02.vi.2021; 1 ex: Taranto, Creek d'Aiedda, 16.v-02.vi.2021.
Elemento a gravitazione europea-mediterranea, presente in tutta la penisola, Sicilia e Sardegna.

Calathus (Calathus) fuscipes graecus Dejean, 1831
19 ex: Bari, Polignano a Mare, Cala Fetente, 01.v-31.v.2021; 22 ex: same place, 31.v-16.vi.2021; 10 ex: Bari, Polignano a Mare, Costa Ripagnola, 01.v-19.v.2021; 13 ex: same place, 19.v-05.vi.2021; 1 ex: same place, 05.vi-20.vi.2021; 20 ex: Bari, Polignano a Mare, Lama presso Masseria Bagiolaro, 24.iv-08.v.2021; 41 ex: same place, 08.v-29.v.2021; 13 ex: same place, 09.vi-23.vi.2021; 1 ex: same place, 12.vii.2021; 1 ex: Bari, Polignano a Mare, Masseria Macchialunga, 01.v-31.v.2021; 2 ex: Bari, Polignano a Mare, Creek Santa Caterina, 24.iv-08.v.2021; 1 ex: same place, 08.v-29.v.2021; 4 ex: Bari, Monopoli, ponds of Capitolo, 18.iv-01.v.2021; 4 ex: same place, 01.v-19.v.2021; 1 ex: same place, 19.v-05.vi.2021; 2 ex: same place, 05.vi-20.vi.2021; 4 ex: same place, 20.vi-04.vii.2021; 4 ex: Bari, Monopoli, Lama Don Angelo, 18.iv-01.v.2021; 8 ex: same place, 01.v-19.v.2021; 2 ex: same place, 19.v-05.vi.2021; 1 ex: same place, 05.vi-20.vi.2021; 4 ex: Bari, Monopoli, Lama presso Santo Stefano, 18.iv-01.v.2021; 26 ex: same place, 01.v-19.v.2021; 87 ex: same place, 19.v-05.vi.2021; 4 ex: same place, 05.vi-20.vi.2021; 9 ex: same place, 20.vi-04.vii.2021; 16 ex: Bari, Monopoli, Masseria Paretano Grande, 01.v-31.v.2021; 12 ex: same place, 31.v-16.vi.2021; 1 ex: Brindisi, Fasano, Lama Pecora, 18.iv-01.v.2021; 9 ex: Brindisi, Fasano, Masseria Lamacupa, 18.iv-01.v.2021; 4 ex: same place, 31.v-16.vi.2021; 3 ex: Brindisi, Fasano, Posto di Tavernese, 19.v-05.vi.2021; 1 ex: same place, 20.vi-04.vii.2021; 1 ex: Brindisi, Ostuni, the river, 01.v-19.v.2021; 4 ex: same place, 19.v-05.vi.2021; 1 ex: same place, 05.vi-20.vi.2021; 1 ex: Brindisi, Ostuni, pineta di Lama Santa, 08.v-29.v.2021; 14 ex: same place, 29.v-09.vi.2021; 11 ex: same place, 09.vi-23.vi.2021; 1 ex: same place, 12.vii.2021; 1 ex: Brindisi, Ostuni, Torre Mangiamuso, 08.v-29.v.2021; 5 ex: Brindisi, Ostuni, Creek Sant'Andrea, 09.vi-23.vi.2021; 1 ex: same place, 12.vii.2021; 53 ex: Taranto, Masseria Natrella, 25.iv-16.v.2021; 98 ex: same place, 16.v-02.vi.2021; 4 ex: same place, 02.vi-22.vi.2021; 2 ex: Taranto, Pianura Erbarca, 16.v-02.vi.2021; 1 ex: Taranto, Santa Barbara, 16.v-02.vi.2021; 1 ex: Taranto, Creek d'Aiedda, 25.iv-16.v.2021; 4 ex: same place, 16.v-02.vi.2021; 1 ex: Taranto, Zona PIP, 16.v-02.vi.2021.
European-Mediterranean element, present in peninsular Italy and Sicily. The presence of this species in Sardinia is doubtful.

Calathus (Neocalathus) cinctus Motschulsky, 1850
1 ex: Bari, Polignano a Mare, Lama presso Masseria Bagiolaro, 08.v-29.v.2021; 1 ex: Bari, Polignano a Mare, Lama presso San Vito, 17.vii.2021; 3 ex: Bari, Polignano a Mare, Masseria Macchialunga, 01.v-31.v.2021; 1 ex: Bari, Polignano a Mare,

San Vito, 01.v-31.v.2021; 1 ex: Bari, Monopoli, ponds of Capitolo, 18.iv-01.v.2021; 1 ex: same place, 20.vi-04.vii.2021; 6 ex: Bari, Monopoli, Lama presso Santo Stefano, 19.v-05.vi.2021; 1 ex: Bari, Monopoli, Masseria Capitolo, 31.v-16.vi.2021; 6 ex: Brindisi, Fasano, Posto di Tavernese, 01.v-19.v.2021; 27 ex: same place, 19.v-05.vi.2021; 15 ex: same place, 05.vi-20.vi.2021; 2 ex: same place, 20.vi-04.vii.2021; 1 ex: Brindisi, Ostuni, the river, 19.v-05.vi.2021; 7 ex: Brindisi, Ostuni, pineta di Lama Santa, 08.v-29.v.2021; 4 ex: same place, 29.v-09.vi.2021; 1 ex: same place, 09.vi-23.vi.2021; 2 ex: Brindisi, Ostuni, Torre Mangiamuso, 08.v-29.v.2021; 3 ex: Taranto, Masseria Natrella, 16.v-02.vi.2021; 1 ex: Taranto, Santa Barbara, 25.iv-16.v.2021; 1 ex: same place, 16.v-02.vi.2021.
West-Palearctic element, present throughout Italy, including the islands.

Carabus (Archicarabus) rossii Dejean, 1826
1 ex: Taranto, Wetland la Vela, 16.v-02.vi.2021.
Endemic Apennine species, widespread in northern and southern Italy, and Sicily. The presence of the species in Sardinia is doubtful.

Carabus (Procrustes) coriaceus coriaceus Linnaeus, 1758
1 ex: Taranto, Pianura Erbarca, 16.v-02.vi.2021; 6 ex: same place, 02.vi-22.vi.2021.
European element, present throughout Italy, Sicily and Sardinia.

Ditomus clypeatus (Rossi, 1790)
1 ex: Brindisi, Ostuni, the river, 19.v-05.vi.2021.
West-Mediterranean element, present throughout Italy, Sicily and Sardinia.

Harpalus (Harpalus) dimidiatus (Rossi, 1790)
2 ex: Bari, Polignano a Mare, Creek Santa Caterina, 24.iv-08.v.2021.
European element, present throughout Italy, including the islands.

Harpalus (Harpalus) distinguendus distinguendus (Duftschmid, 1812)
1 ex: Bari, Polignano a Mare, Creek Santa Caterina, 24.iv-08.v.2021; 1 ex: Bari, Monopoli, ponds of Capitolo, 19.v-05.vi.2021; 2 ex: Brindisi, Fasano, Lama Pecora, 18.iv-01.v.2021.
Palearctic element, widespread throughout Italy, Sicily and Sardinia.

Harpalus (Harpalus) flavicornis flavicornis Dejean, 1829
1 ex: Bari, Monopoli, Masseria Capitolo, 18.iv-01.v.2021.
Southern European element, present in peninsular Italy both in the north and in the south.

Harpalus (Harpalus) serripes serripes (Quensel in Schonherr, 1806)
3 ex: Bari, Monopoli, Masseria Capitolo, 01.v-31.v.2021; 1 ex: Bari, Monopoli, Masseria Paretano Grande, 01.v-31.v.2021.
Palearctic element, present throughout Italy and Sicily. The presence of the species in Sardinia is doubtful.

Harpalus (Harpalus) sulphuripes Germar, 1824
1 ex: Bari, Polignano a Mare, Creek Santa Caterina, 24.iv-08.v.2021; 2 ex: Bari, Monopoli, Lama Belvedere, 18.iv-01.v.2021; 1 ex: Bari, Monopoli, Lama Don Angelo, 01.v-19.v.2021; 1 ex: Brindisi, Ostuni, Torre Mangiamuso, 24.iv-08.v.2021.
European-Mediterranean element, widespread throughout Italy, Sicily and Sardinia.

Laemostenus (Pristonychus) cimmerius cimmerius (Fischer von Waldheim, 1823)
1 ex: Bari, Polignano a Mare, Cala Fetente, 01.v-31.v.2021; 1 ex: same place, 31.v-16.vi.2021; 5 ex: Bari, Polignano a Mare, Costa Ripagnola, 01.v-19.v.2021; 4 ex: same place, 19.v-05.vi.2021; 4 ex: same place, 05.vi-20.vi.2021; 1 ex: Bari, Polignano a Mare, Lama presso Masseria Bagiolaro, 09.vi-23.vi.2021; 4 ex: Bari, Polignano a Mare, Creek Santa Caterina, 24.iv-08.v.2021; 1 ex: same place, 29.v-09.vi.2021; 1 ex: same place, 09.vi-23.vi.2021; 1 ex: Bari, Monopoli, Lama Don Angelo, 18.iv-01.v.2021; 3 ex: Bari, Monopoli, Lama presso Santo Stefano, 20.vi-04.vii.2021; 6 ex: Brindisi, Ostuni, pineta di Lama Santa, 24.iv-08.v.2021; 3 ex: same place, 08.v-29.v.2021; 3 ex: same place, 29.v-09.vi.2021; 2 ex: same place, 09.vi-23.vi.2021; 1 ex: Brindisi, Ostuni, Torre Mangiamuso, 08.v-29.v.2021; 2 ex: same place, 29.v-09.vi.2021; 5 ex: same place, 09.vi-23.vi.2021; 1 ex: Taranto, Creek d'Aiedda, 25.iv-16.v.2021; 1 ex: same place, 16.v-02.vi.2021.
Eastern Mediterranean element, Apennine-Dinaric, widespread in southern Italy.

Licinus (Licinus) silphoides (Rossi, 1790)
1 ex: Bari, Polignano a Mare, Creek Santa Caterina, 24.iv-08.v.2021; 1 ex: Taranto, Pianura Erbarca, 25.iv-16.v.2021.
Southern European element, present in peninsular Italy and Sicily.

Nebria (Nebira) brevicollis (Fabricius, 1792)
1 ex: Bari, Polignano a Mare, Creek Santa Caterina, 24.iv-08.v.2021; 3 ex: Bari, Monopoli, Masseria Capitolo, 01.v-31.v.2021.
Turanic-European element, widespread throughout Italy and the islands.

Nebria (Nebria) kratteri Dejean & Boisduval, 1830
1 ex: Bari, Polignano a Mare, Lama presso Masseria Bagiolaro, 24.iv-08.v.2021; 1 ex: Bari, Monopoli, ponds of Capitolo, 18.iv-01.v.2021.
Southern European, Dinaric-Apennine element, widespread in the south of the peninsula. The presence of the species in Sicily is doubtful.

Notiophilus substriatus Waterhouse, 1833
1 ex: Bari, Monopoli, Masseria Capitolo, 01.v-31.v.2021.
European element, widespread throughout Italy, Sicily and Sardinia.

Olisthopus glabricollis (Germar, 1817)
1 ex: Bari, Monopoli, Casino San Vito, 01.v-31.v.2021; 1 ex: Brindisi, Fasano, Posto di Tavernese, 19.v-05.vi.2021.
European-Mediterranean element, present throughout Italy, including the islands.

Ophonus (Hesperophonus) similis (Dejean, 1829)
1 ex: Bari, Monopoli, Lama Belvedere, 01.v-19.v.2021; 1 ex: Bari, Monopoli, Lama presso Santo Stefano, 20.vi-04.vii.2021; 1 ex: Bari, Monopoli, Masseria Capitolo, 01.v-31.v.2021.
Turanic-European element, present throughout the peninsula and Sicily.

Parallelomorphus terricola terricola (Bonelli, 1813)
1 ex: Brindisi, Fasano, Posto di Tavernese, 01.v-19.v.2021.
Palearctic and East African element, widespread throughout Italy, Sicily and Sardinia.

Pterostichus (Feronidius) melas italicus (Dejean, 1828)

1 ex: Bari, Polignano a Mare, Cala Fetente, 01.v-31.v.2021; 1 ex: Bari, Polignano a Mare, Costa Ripagnola, 01.v-19.v.2021; 5 ex: same place, 05.vi-20.vi.2021; 1 ex: same place, 20.vi-04.vii.2021; 1 ex: Bari, Polignano a Mare, San Vito, 31.v-16.vi.2021; 2 ex: Bari, Polignano a Mare, Creek Santa Caterina, 24.iv-08.v.2021; 2 ex: Bari, Monopoli, ponds of Capitolo, 18.iv-01.v.2021; 4 ex: same place, 01.v-19.v.2021; 2 ex: same place, 19.v-05.vi.2021; 2 ex: same place, 05.vi-20.vi.2021; 1 ex: same place, 20.vi-04.vii.2021; 1 ex: Bari, Monopoli, Lama Belvedere, 01.v-19.v.2021; 1 ex: same place, 19.v-05.vi.2021; 2 ex: Bari, Monopoli, Lama presso Santo Stefano, 18.iv-01.v.2021; 6 ex: same place, 19.v-05.vi.2021; 2 ex: same place, 05.vi-20.vi.2021; 2 ex: same place, 20.vi-04.vii.2021; 2 ex: Brindisi, Fasano, Lama Pecora, 18.iv-01.v.2021; 1 ex: Brindisi, Fasano, Posto di Tavernese, 19.v-05.vi.2021; 1 ex: Brindisi, Ostuni, Torre Mangiamuso, 08.v-29.v.2021; 3 ex: same place, 29.v-09.vi.2021; 5 ex: same place, 09.vi-23.vi.2021; 1 ex: same place, 12.vii.2021; 4 ex: Taranto, Masseria Natrella, 16.v-02.vi.2021; 1 ex: Taranto, Wetland la Vela, 25.iv-16.v.2021; 4 ex: same place, 16.v-02.vi.2021; 1 ex: Taranto, Pianura Erbarca, 16.v-02.vi.2021; 1 ex: same place, 02.vi-22.vi.2021; 2 ex: Taranto, Creek d'Aiedda, 25.iv-16.v.2021; 4 ex: same place, 16.v-02.vi.2021; 1 ex: same place, 02.vi-22.vi.2021.
European element, present in peninsular Italy and Sicily.

Trechus (Trechus) quadristriatus (Schrank, 1781)
1 ex: Bari, Monopoli, Masseria Capitolo, 31.v-16.vi.2021; 1 ex: Taranto, Wetland la Vela, 16.v-02.vi.2021.
Turanic-European-Mediterranean element, present throughout Italy, including the islands.

Zabrus (Zabrus) tenebrioides (Goeze, 1777)
1 ex: Taranto, Creek d'Aiedda, 25.iv-16.v.2021.
Turanic-European element, present in peninsular Italy and Sicily.

Other (non-target) arthropod groups

Coleoptera Coccinellidae
R. Canovai, F. Di Giovanni

Chilocorus bipustulatus (Linnaeus, 1758)
1 ex: Bari, Polignano a Mare, Masseria Macchialunga, 31.v-16.vi.2021.
Widely diffused species in Europe, in Italy present throughout the peninsula and major islands.

Coccinella (Coccinella) septempunctata Linnaeus, 1758
1 ex: Bari, Polignano a Mare, Creek Santa Caterina, 08.v-29.v.2021; 1 ex: Brindisi, Fasano, Posto di Tavernese, 18.iv-01.v.2021; 1 ex: same place, 19.v-05.vi.2021; 1 ex: Brindisi, Ostuni, the river, 18.iv-01.v.2021; 1 ex: same place, 05.vi-20.vi.2021; 1 ex: Taranto, Creek Galeso, 16.v-02.vi.2021; 2 ex: Taranto, Masseria Natrella, 25.iv-16.v.2021.
Species widespread throughout Europe, and present throughout the Palearctic region up to Japan; it is also widespread in northern India, south-east Asia and Australia; in Italy it is the most common species of coccinellid, and it is possible to find it throughout the peninsula, Sicily and Sardinia.

Exochomus (Parexochomus) nigromaculatus Goeze, 1777
1 ex: Taranto, Mare Piccolo Saltpan, 16.v-02.vi.2021.
Species widespread in most of Europe and present in Italy throughout the peninsula and in Sicily.

Henosepilachna elaterii elaterii (Rossi, 1794)
1 ex: Brindisi, Fasano, Lama Pecora, 19.v-05.vi.2021.

Species present in western and Mediterranean Europe, and widespread in Italy throughout the peninsula and major islands.

Hippodamia (Hippodamia) variegata Goeze, 1777
1 ex: Bari, Polignano a Mare, Costa Ripagnola, 20.vi-04.vii.2021.
Palearctic species, also reached in the Neartic and Eastern regions and present throughout Italy, including the islands.

Propylea quatuordecimpunctata (Linnaeus, 1758)
1 ex: Taranto, Creek Galeso, 16.v-02.vi.2021.
Widely diffused species throughout Europe and present throughout Italy, including the islands.

Psyllobora vigintiduopunctata (Linnaeus, 1758)
1 ex: Bari, Monopoli, Lama presso Santo Stefano, 18.iv-01.v.2021; 1 ex: Brindisi, Ostuni, the river, 18.iv-01.v.2021; 1 ex: Taranto, Pianura Erbarca, 25.iv-16.v.2021; 1 ex: same place, 16.v-02.vi.2021.
Species widespread throughout Europe and present in Italy throughout the peninsula, Sicily and Sardinia.

Scymnus (Scymnus) apetzi Mulsant, 1846
1 ex: Brindisi, Ostuni, pineta di Lama Santa, 12.vii.2021.
Species present in central and southern Europe, in Italy present throughout the peninsula, Sicily and Sardinia.

Coleoptera Chrysomelidae
V. Zeni, F. Di Giovanni

Cryptocephalus (Cryptocephalus) marginatus Fabricius, 1781
3 ex: Bari, Monopoli, Masseria Capitolo, 17.vii.2021.
Widely diffused species in Europe, present in peninsular Italy.

Cryptocephalus (Cryptocephalus) rugicollis Olivier, 1791
1 ex: Bari, Polignano a Mare, San Vito, 18.iv-01.v.2021.
Western Mediterranean gravitational element, present in Spain, Portugal, France and Dodecanese, in Italy spread throughout the peninsula, Sicily and Sardinia.

Chrysolina (Chrysolina) bankii (Fabricius, 1775)
1 ex: Bari, Polignano a Mare, Costa Ripagnola, 18.iv-01.v.2021; 1 ex: Bari, Monopoli, Lama presso Santo Stefano, 18.iv-01.v.2021.
Element present in Western Europe up to Greece, in Italy spread throughout the peninsula, Sicily and Sardinia.

Chrysolina (Ovosoma) vernalis italica (Weise, 1882)
1 ex: Bari, Monopoli, Masseria Paretano Grande, 31.v-16.vi.2021.
Polytypic element, widespread in southern Europe, in Italy the ssp. italica, present in southern Italy and Sicily.

Chrysolina (Sulcicollis) oricalcia (Müller, 1776)
1 ex: Bari, Monopoli, Lama presso Santo Stefano, 18.iv-01.v.2021.
Species present in most of Europe, from France to western Russia, in Italy present in the peninsula and in Sicily.

Exosoma lusitanicum (Linnaeus, 1767)
1 ex: Bari, Polignano a Mare, Lama presso San Vito, 18.iv-01.v.2021; 2 ex: Bari, Polignano a Mare, Lama presso Masseria Bagiolaro, 24.iv-08.v.2021.
Widespread element in Western Europe, found in Portugal, Spain, France, Switzerland, and present throughout Italy, Sicily and Sardinia.

Macrolenes dentipes (Olivier, 1808)
2 ex: Bari, Monopoli, Masseria Paretano Grande, 18.iv-01.v.2021; 2 ex: Taranto, Zona PIP, 16.v-02.vi.2021.
Widespread element in southern Europe, from Spain to European Turkey, in Italy present throughout the peninsula and in Sicily.

Coleoptera Scarabeidae
F. Di Giovanni

Calobopterus erraticus (Linnaeus, 1758)
1 ex: Brindisi, Fasano, Posto di Tavernese, 01.v-19.v.2021.
Asian-European species, present throughout Europe with the exception of the far north, North Africa, the Caucasus, Central Asia, China, Mongolia, Siberia and India; in Italy it is found throughout the peninsula, Sicily and Sardinia

Oxythyrea funesta (Poda, 1761)
1 ex: Bari, Polignano a Mare, Cala Fetente, 18.iv-01.v.2021; 1 ex: Taranto, Masseria Natrella, 25.iv-16.v.2021; 1 ex: Taranto, Mare Piccolo Saltpan, 25.iv-16.v.2021; 1 ex: Taranto, Zona PIP, 16.v-02.vi.2021.
Central Asian-European-Mediterranean element, present throughout Europe with the exception of the far north, and in the east as far as the Caucasus, Iran and Transcaucasia; in Italy it is widespread throughout the peninsula and islands.

Pentodon bidens punctatus (Villers, 1789)
1 ex: Taranto, Wetland la Vela, 25.iv-16.v.2021; 1 ex: same place, 16.v-02.vi.2021; 1 ex: Taranto, Pianura Erbarca, 02.vi-22.vi.2021.
The species is present in Europe and Central Asia up to India; the ssp. punctatus is widespread in the Mediterranean and present throughout Italy, including the islands.

Protaetia (Netocia) morio morio (Fabricius, 1781)
3 ex: Bari, Monopoli, Lama presso Santo Stefano, 05.vi-20.vi.2021; 19 ex: Brindisi, Ostuni, river, 19.v-05.vi.2021; 2 ex: same place, 05.vi-20.vi.2021; 1 ex: 2 ex: Brindisi, Ostuni, Creek Sant'Andrea, 29.v-09.vi.2021; 2 ex: same place, 09.vi-23.vi.2021; 1 ex: Brindisi, Ostuni, pineta di Lama Santa, 29.v-09.vi.2021; 1 ex: same place, 09.vi-23.vi.2021; 1 ex: same place, 12.vii.2021; 1 ex: Taranto, Salina di Mare Piccolo, 16.v-02.vi.2021; 1 ex: Taranto, Zona PIP, 16.v-02.vi.2021; 1 ex:

same place, 29.v-09.vi.2021; 1 ex: Taranto, Wetland la Vela, 16.v-02.vi.2021; 1 ex: Taranto, Pianura Erbarca, 25.iv-16.v.2021; 2 ex: Taranto, Creek d'Aiedda, 16.v-02.vi.2021; 13 ex: same place, 02.vi-22.vi.2021.
Element of the western Mediterranean, in Italy it is present throughout the peninsula, Sicily and Sardinia.

Tropinota (Tropinota) squallida squallida (Scopoli, 1763)
5 ex: Taranto, Masseria Natrella, 25.iv-16.v.2021.
European-Mediterranean element, widespread throughout Italy, Sicily and Sardinia.

Coleoptera Staphylinidae Pselaphinae
L. Colacurcio, F. Di Giovanni

Brachygluta dentiventris (Saulcy, 1876)
1 ex: Taranto, Wetland la Vela, 08.vii.2021; 1 ex: Taranto, Zona PIP, 07.vii.2021.
Western Mediterranean element, present in Portugal, France (including Corsica), and North Africa; in Italy it is present throughout the peninsula, Sicily and Sardinia.

Brachygluta hipponensis (Saulcy, 1876)
1 ex: Taranto, Wetland la Vela, 08.vii.2021.
Widespread species in southern Italy, Sicily and Sardinia, in Greece and North Africa.

Brachygluta furcata (Motschulsky, 1835)
2 ex: Taranto, Wetland la Vela, 08.vii.2021.
Species present in Eastern Europe, Greece, Macedonia, Albania, the Near East, southern Russia and Ukraine; in Italy it is present in the peninsula from north to south.

Hemiptera, Reduviidae
P. Dioli, F. Di Giovanni

Gardena insignis Horvath, 1887
1 ex: Brindisi, Ostuni, Fosso Montanaro, 28.vii.2021.
Species present in Spain, peninsular Italy, Slovenia and Croatia.

Hymenoptera, Braconidae
A. Loni, F. Di Giovanni

Spathius pedestris Wesmael, 1838
1 ex: Taranto, Santa Barbara, 02.vi-22.vi.2021.
Widely diffused species in western and eastern Europe, in Italy found up to now in Liguria and Sicily.

Neuroptera Chrysopidae
A. Letardi, F. Di Giovanni

***Chrysoperla* sp.**

1 ex: Brindisi, Fasano, Torre Bianca, 19.vi.2021; 1 ex: Brindisi, Ostuni, pineta di Lama Santa, 16.viii.2021.

Italochrysa italica (Rossi, 1790)
1 ex: Bari, Monopoli, Masseria Capitolo, 17.vii.2021; 1 ex: Brindisi, Ostuni, Creek Sant'Andrea, 30.vii.2021.
Species widespread in the western Mediterranean and in eastern Europe, in Italy present throughout the peninsula, Sicily and Sardinia.

***Pseudomallada* sp.**
2 ex: Bari, Polignano a Mare, Pozzovivo, 13.vii.2021.

Neuroptera Mantispidae
A. Letardi, F. Di Giovanni

Mantispa styriaca (Poda, 1761)
2 ex: Taranto, Wetland la Vela, 30.vi.2021.
European element, present in the central, western and eastern regions, and absent in the northernmost areas; in Italy it is widespread throughout the peninsula and major islands.

Neuroptera Myrmeleontidae
A. Letardi, F. Di Giovanni

Macronemurus appendiculatus (Latreille, 1807)
1 ex: Brindisi, Ostuni, Masseria Gorgognolo, 08.viii.2021; 1 ex: Taranto, Fattizzo, 28.vi.2021.
Western Mediterranean gravitational element, present throughout Italy, including the islands.