Vereniging voor Zoogdierkunde en Zoogdierbescherming

ZRS

Mammal survey

Rakitovec, Kraški rob

Slovenia

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Uitgave van de Zoogdiervereniging VZZ

Mammal Survey
Rakitovec, Slovenia

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1. Introduction

The summer camp of the Fieldwork Group of the Society for the Study and Conservation of Mammals, which has become a tradition of sorts, was held from 28 July to 7 August 2004 in Rakitovec, a small village on the Croatian border in Slovenia. It was the second time for the VZZ to conduct a survey in Slovenia, the first time being the visit to the forested area east of Kočevje in 1997. Both visits were coordinated in close cooperation with Boris Kryštufek, professor at the University of Primorska (Koper) and Ljubljana. Owing to our contact with him, we had a renovated school building, converted to accommodate groups, at our disposal.

Our activities this year were focused on a landscape park twenty kilometers south-east of Koper. This park is being established as part of the LIFE Nature funding project of the European Union. It appears from the rapid economic development of Slovenia in general and the region around the seaport town of Koper in particular that the establishment of the park has come not a day too soon. The idea behind the application for funding was a landscape park in which the little villages with their small-scale agriculture go together well with the great natural values of this part of the karst area. Tourism would be incorporated on a small and ecological scale. Right from the start, there was a lot of discussion. The inhabitants of the region wanted to get their share of the increasing prosperity, the region was to be opened up more and now there is talk of placing windmills on the hilltops. A remark recorded from a local inhabitant, stating that “you cannot live of butterflies” typifies the atmosphere which often surrounds the talks. The University of Primorska – Science and Research Centre of Koper, established in 2003, mainly concentrates on the natural values of the region. It was the question of how to give shape to the park lead to the cooperation between the university and VZZ.

Our attention focused on gathering data on mammals in the park and it's surroundings. Since the occurrence and distribution of bats is thought to be a reliable indication of the ecological value of an area, a survey of this taxonomical group was a main priority. Several different methods were used to survey bats: searching for flyways, hunting grounds and colonies by use of bat-detectors, trapping by use of mistnets on locations which appeared suitable and scrupulous searches of churches in the surroundings in order to establish colonies. Methods used proved to be highly complimentary.
Longworth and Sherman life-traps were used to survey small mammals. Results were very disappointing, although traps placed high up in trees did yield two Edible Dormice within a short period of time. We were put on to this method by two professional dormouse hunters during the course of our earlier visit to Slovenia, near Kočevje (Van der Linden, 2001). Naturally, many daytime excursions were ran, visiting old houses, churches, barns etcetera in search of mammals or traces of mammals. These excursions also yielded many observations of non-mammals, mainly birds, reptiles, amphibians and insects.
For the first time in Fieldwork Group history, all observations were linked to so-called waypoints in GPS (Global Positioning System) devices and processed digitally during the camp period. This made recording observations considerably simpler and assures a close match between the data presented on the maps in this report and reality.
Unfortunately, Boris could not be present, but his position was taken up by Maja Taucer, who was one of his students. Maja was particularly interested in bats and she was busy all during the camp visiting church attics, searching colonies, counting emerging bats, assisting during mistnet activities and most of all acting as a patient and friendly intermediary between camp participants and local inhabitants.
Nataša Rezek Donev arranged our accommodation from Koper and appeared at the camp regularly to see to it that everything went as planned. Permits, exempting us from Slovenian laws and regulations for the protection of nature and allowing us to trap animals were arranged on beforehand. To facilitate contact within the local population, we were provided letters in Slovenian, stating the purpose of our activities and requesting assis-

tance and access to barns and churches. In practice, these papers proved highly valuable. Bojana Lipej provided us with clear instructions concerning the area, rules of conduct during excursions into the border region, but most of all with lots of information on the landscape park in formation as part of the LIFE Nature funding project.
The success of the camp is largely determined by the participants and this year, as in other years, the atmosphere proved to be excellent in spite of some differences of opinion and our very busy program. Owing to the pleasant atmosphere, lovely weather and wonderful surroundings, this summer camp was yet another valuable experience.

Acknowledgements
We would like to express our gratitude to Boris Kryštufek, Nataša Rezek Donev and Bojana Lipej, who took care of the location, accommodation, permits and contacts with the local population. A special word of thanks is in order for Maja Taucer for her unfailing patience in her role as intermediary between the participants and the local population.
We thank Bostjan Surina for his interesting botanical excursion in the surroundings of Rakitovec.
Parasites of bats were identified by Ruud van Weele, who had quite a job with it. Many thanks for your contribution, Ruud!
Finally, I would like to thank Eric Thomassen for translating the Dutch texts to English. Hats off!

Camp participants:

Chris Achterberg	Rob Koelman	Joost Verbeek
Hans Bekker	Rudy van der Kuil	Rollin Verlinde
Jan Piet Bekker	Peter van der Linden	Eric Thomassen
Jan Boshamer	Kees Mostert	Petra Vlaming
Monique van der Horst	John Mulder	Laurens Vogelaars
Albin Hunia	Lars Soerink	Anke van der Wal
Kees Kapteyn	Maja Taucer	Jeroen Willemsen

2. Description of study area

A previous survey in Slovenia took place in 1997, when the area of Kočevje rog (east of Kočevje) was studied. The survey of 2004 took place in a valley in the southwestern part of Slovenia, where we stayed in the picturesque village Rakitovec (523 m). Rakitovec lies in the Karst Edge area (Kraški rob), almost at the southern most edge. The Karst Edge area covers about 7000 ha. and borders Italy on the north, the municipality of Kozina on the east, and Croatia on the south (map 1). Rakitovec practically borders Croatia, which limited our possibilities of reconnaissance of the area towards the border as we were advised to stay clear of the border. To be able to reach Rakitovec one had to drive through the valley, passing some other small villages, like Zazid and Podpec. Map 2 shows the study area in more detail.

Map 1, Location study area

The Karst Edge area consists of limestone and represents the border between the Karst on the east (study area of 1997) and Istria; the edge divides the karst from the flysch (deposits from erosion). The area is special in more than one way: apart from its scenery and use of land, it is also special in terms of biodiversity (the richness of flora and fauna). In this landscape the semi natural dry grasslands interlace with the rocky limestone slopes, screes and karstic ponds, the peculiarity of karstic cultural and natural heritage.

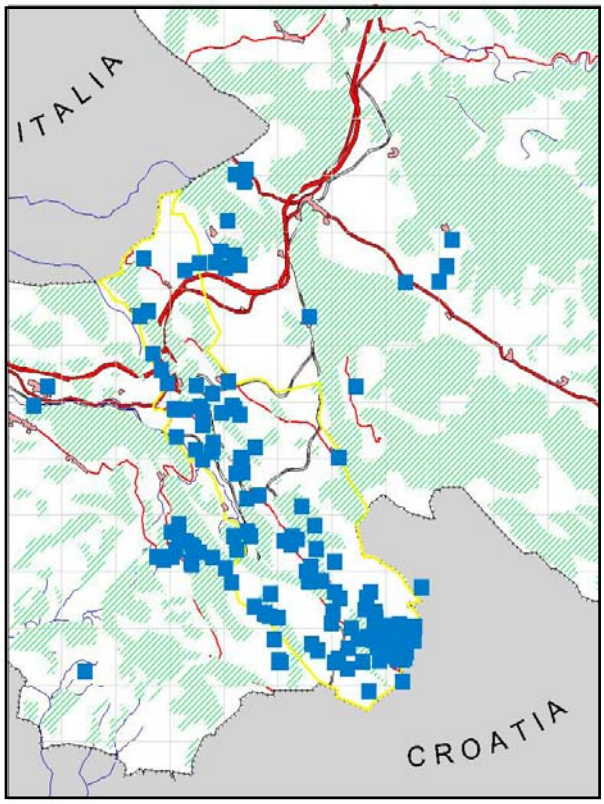
In the lower areas of the valley, in which Rakitovec is situated, the inhabitants of the villages have adjusted the land for agricultural use. The area is sparsely populated, and the tendency is that young people leave the villages to study or to work and live elsewhere. This results in an abandonment of traditional land use, overgrowth and more intensification of agriculture in some places. Characteristic hedges and karstic ponds are neglected or removed. This declining cultural landscape results in the endangerment of typical dry grasslands, screes and ponds and its typical plant and animal species. The global aim of the Karst Edge project is therefore the preservation of the endangered habitats and its species and the cultural landscape. Their aim is also to improve the living conditions for the local populations and to support the development of the Karst Edge area as an area suitable for natural science tourism. In regard to the development of the area, the karstic pond in the village of Rakitovec was chosen for restoration. The preparative works for the restoration started in February 2004 and the pond was successfully restored in March 2004.

In the park lies the medieval village of Hrastovlje, which is surrounded by fertile countryside. In the village lies a church which originates from the 12th-14th century. It is of Roman architecture, except the sacristy which was only built in the 19th century. Inside the church many frescoes can be seen, which were painted at the end of the 15th century by the Istrian painter Janez iz Kastva (Johannes de Castuo). The frescoes are called “biblia pauperum”, which means that the frescoes represent stories from the bible, in such a way that paupers could understand them.

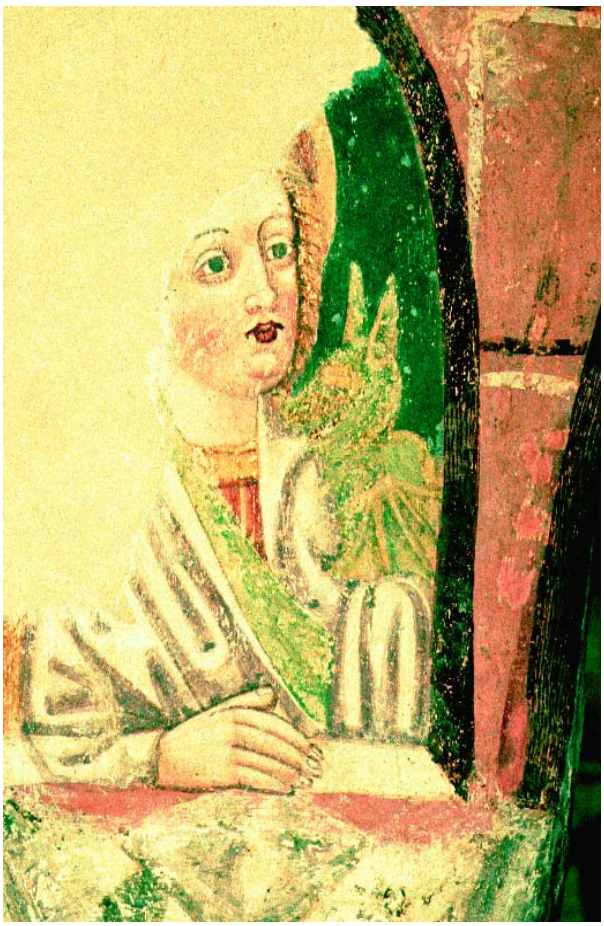
On the slopes deciduous woodland is present, woodland alternating with semi-natural dry grasslands and scrubland on calcareous substrates, chasmophytic vegetation on rocky slopes and calcareous scree. At the top of the gently undulating hills a low vegetation cover is present.

The main characteristic of a karst landscape is the absence of surface water. The water penetrates easily through the calcareous substrates and forms underground channels. Only where the substrate is less permeable (for instance due to a layer of clay) will surface water remain. In the study area there were hardly small waterways. There were however some small channels present, but not in the direct vicinity of Rakitovec. Because the surface water was limited, we had to drive some distances for trapping locations.

Map 2, map of study area & boundary park



In the area there were also some dolines. A doline is a characteristic feature in a karst landscape and is formed when the calcareous substrate is dissolved by water. When there is no subsurface channel a doline only exists of a depression in the landscape; when a doline is formed because the “roof” of a underground channel has collapsed, an extensive network of undergrowth channels can be present. In these caves bats can linger, and this type of landscape offers suitable habitats for bats.



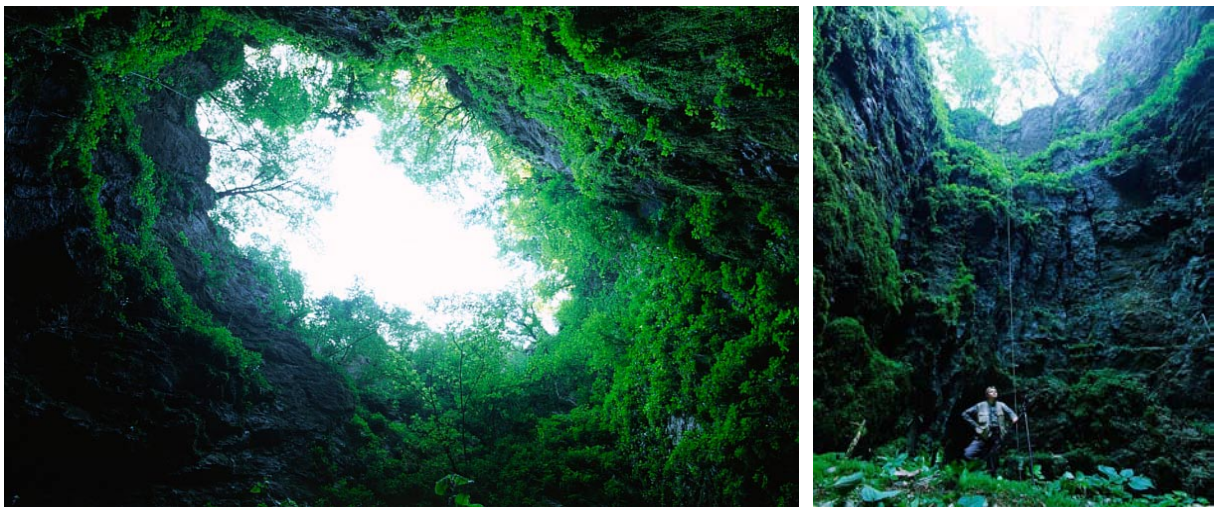
The church of Hrastovlje and a fresco with a bat (detail)

3. Vegetation of the Karst Edge

The Karst Edge is the southern belt of the coastal karst lying alongside the border with Istria, which is also the historical border between the Austro-Hungarian Monarchy and the Venetian Republic. Actually, the Karst edge is a "step" leading from warmer Istria to colder Primorska Kras.

The karst area has traditionally been known as a barren and stony region. The origins of its identity can be traced two thousand years back to a time when Primorska Kras suffered extensive deforestation and severe erosion that intensified further in the Middle Ages and probably reached a climax in the 18th and 19th centuries.

In relation to vegetation, the area can be divided into three units: the limestone rocky chain – the "Karst Edge" as such, the karst plateau, and the southern area of the Cicarija chain. The limestone Karst Edge is the warmest area, occasionally providing a habitat for fragments of Mediterranean macchia (e.g. holm oak *(Quercus ilex),* laurel *(Laurus nobilis),* box tree *(Phillyrea latifolia),* and evergreen rose *(Rosa sempervirens)*). In warm and windless spots some typically Mediterranean herbal species grow, such as the hyssop *(Hyssopus officinalis)*, giant scabious *(Cephalaria leucantha)* and *Convolus cantabrica*. Among rock plants we can most frequently see the chimney bellflower *(Campanula pyramidalis),* while the endemic sandwort *Moehringia tommasiniana* and the *Asplenium lepidum* are rarely seen.
The second unit – the karst plateau – stretches above the Karst Edge and represents the low karst with deciduous thermophylic forest vegetation. The forests mostly consist of a community of the downy oak *(Quercus pubescens),* and hop hornbeam *(Ostrya carpinifolia),* common maple *(Acer campestre),* and Cornelian cherry dogwood *(Cornus mas)* are also found here. The undergrowth consists of wild asparagus *(Asparagus acutifolius)* and butcher's broom roškola *(Ruscus aculeatus),* while peonies *(Paeonia officinalis)* and white dittanies *(Dictamnus albus)* grow in clearings.



A doline in a Karst countryside

In some spots where overgrowing has not yet altered the features of the landscape, the karst plateau is still open and characterized by extensive grassland, as for example the plateau overlooking the village of Rakitovec.

Deeper soil, richer with humus and more humid, is covered by unfertilized meadows that are mowed once or twice a year. Karst meadows are characterized by heaps of rocks lying along the grassland edges: the removal of rocks from grass surfaces has been practiced for centuries and the rocks have been piled up in the form of walls separating meadows or extending along edges of mown land.

Most non-forested surfaces are covered by pastures or rocky grassland with exceptionally diverse flora. In the rock sods the dwarf sedge *(Carex humilis)*, erect brome *(Brome erectus)*, fescues *(Festuca rupicola)* are found, while the colourful image of the landscape is provided by the wood pink *(Dianthus tergestinus),* blood-red pink *(Dianthus sanguineus),* daffodils *(Narcissus radiiflorus),* saffron *(Crocus reticulates), Muscari botryoides* as well as rare and protected species as the fritillary *(Fritillaria tenella).* Some among many interesting species are found in the rocky pastures above the village of Rakitovec, which are the northwesternmost growing sites of the *Crepis blavii*. A beautiful species of the carline thistle (*Carlina acanthifolia* subsp. *Utzka*) – the acanthus leaved thistle, in Slovene named after Mt. Ucka, can be found here.
Beech tree forests can only be found along the north slopes and are rare due to the high proportion of land covered by pastures. Pastures appear homogeneous: in windy areas the grass *Sesleria juncifolia* prevails in sinkholes are mini botanical gardens with irises: the grass-leaved flag *(Iris graminea),* Siberian iris *(Iris sibirica),* German iris *(Iris illyrica),* the Carniolan lily *(Lilium carniolicum),* bulb-bearing lily *(Lilium bulbiferum),* peony *(Paeonia officinalis),* white asphodel *(Asphodelus albus)* and also black hellebore *(Veratrum nigrum),* one of the few plants with entirely black flowers.

The information for this chapter was found at: www.zrs-kp.si/projekti/life/dokumenti/kraski-rob.pdf


The plateau of mount Slavnik above the village of Rakitovec

View of valley of Rakitovec from mount Slavnik

4. Bat records

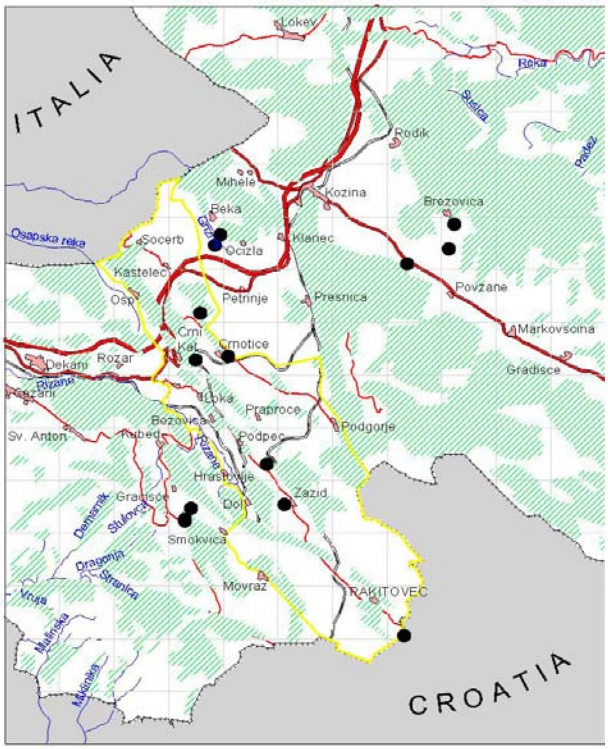
Methods and materials

Fieldwork concerning bats was done by groups of five or more persons. With the aim of collecting data about species, their numbers and roosts, various methods and materials were used: mistnets and bat-detectors during night and daytime inspections of caves, houses and church lofts. Night work started at dusk (approximately 21.30 h) and ended after dawn (approximately 06.00 h).
Fieldwork during nighttime consisted of identifying foraging bats by catching with mist nets. On some occasions bats could be caught while they departed from their roost. Furthermore, echo locating bats were surveyed during the night and identified whenever possible using heterodyne ultrasonic bat-detectors. In most cases either the Petterson D100 or detectors equipped with time expansion Petterson D240 and D960 were used. It was impossible to identify all bat species using detectors; therefore in some locations mist nets were used.
Fieldwork during daytime consisted of inspection of crevices under bridges, abandoned houses, barns and church lofts. As many caves as possible were inspected.

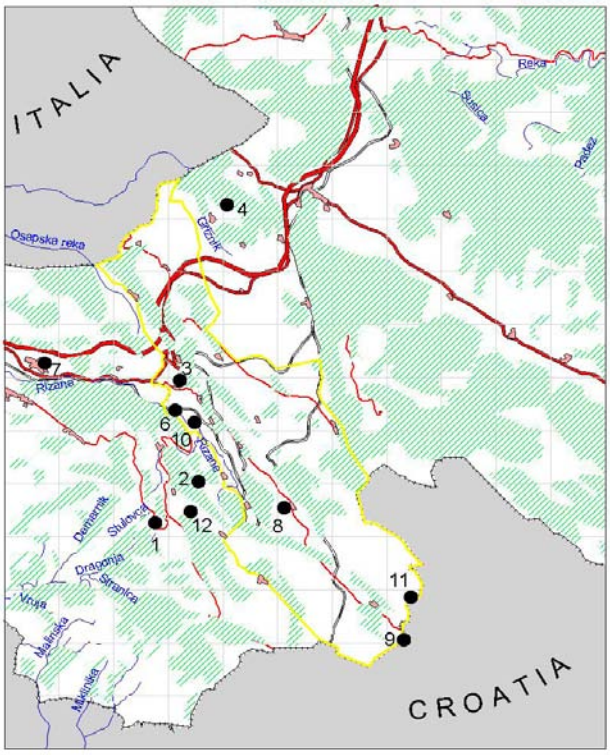
Identifying bats using batdetectors

Mistnetting

We used twelve locations to catch bats with nets. These were usually set up at dusk. Localities were water bodies (rivers, lakes) or in front of cave entrances. Catching foraging bats flying above the water gave more results then mistnetting in front of cave entrances. In total we caught 103 individuals of 13 species: *Myotis bechsteinii*, *Myotis blytii*, *Myotis capaccinii*, *Myotis daubentonii*, *Myotis emarginatus*, *Myotis mystacinus*, *Myotis nattereri*, *Nyctalus leisleri*, *Nyctalus noctula*, *Pipistrellus savii*, *Plecotus auritus*, *Rhinolophus ferrumequinum* and *Rhinolophus hipposideros*. Weight and measurements were taken to aid identifiation and parasites were collected.



Map 4, Visited caves: *Miškotova cave and Beško cave near Ocizla, Kamenšca cave, Ponikve v Odolini cave, Krempljak cave, Caves near Črni Kal in Črnotiče, Cave near Zazid, Cave near Brežec pri Podgorju, Caves near Gračišče, Cave near Croatian border.*



Map 3, Mistnet locations: *1- Cave near Poletiči , 2- Mount Lačna , 3- Cave near Predloka, 4- Cave near Beka , 5- Lake near Babič (out of map), 6- Rižana river, 7- Rižana river near Dekani , 8- Cave near Zazid, 9- Cave near Croatian border, 10- Fish nursery near Rižana, 11- Mount Slavnik ,12- Cave near Gračišče.*

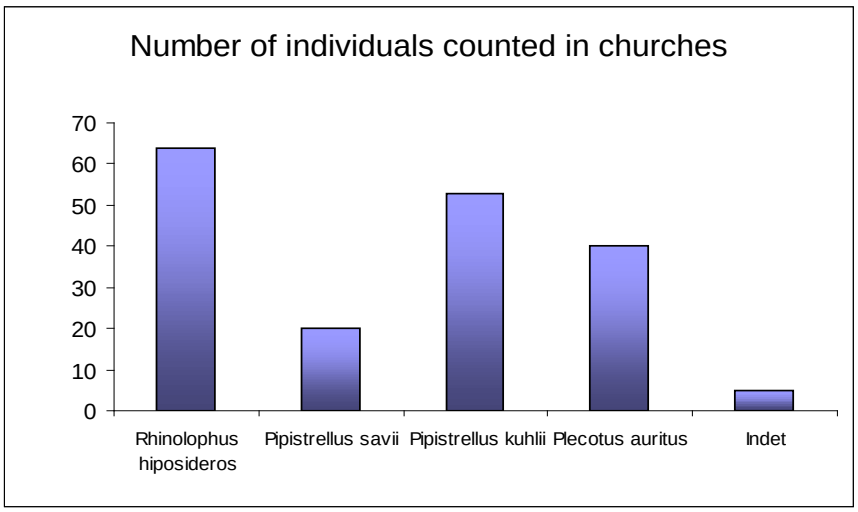
Caves

In total 13 caves were visited (see map 4). Some were fenced off to protect the bats and inaccessible for us during our survey. At the cave-sites, departing bats were counted in the evening, and at some caves we set up some mistnets (see further). Species found in caves are *Myotis blythii*, *Myotis myotis*, *Myotis emarginatus*, *Myotis nattereri*, *Rhinolophus euryale* , *Rhinolophus ferrumequinum* and *Rhinolophus hipposideros*.

Churches

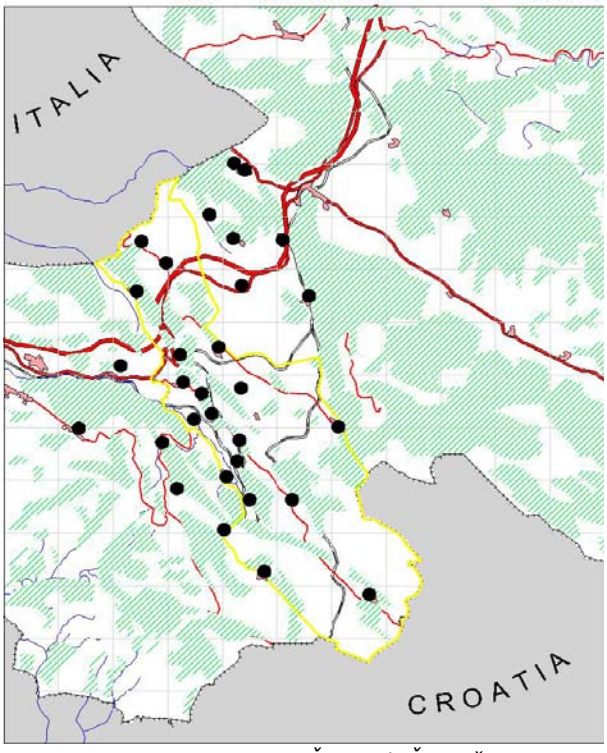
We visited 30 churches. Of these, 24 were accessible, 3 of which were unsuitable for bats. In 8 churches (8.3%), bats were found (Zazid, Podgorje, Smokvica, Movraž, Predloka, Dol, Socerb and Presnica). Five species were found in these churches: *R. ferrumequinum*, *R.hipposideros*, *P. auritus, P. savii, P. kuhlii*. For numbers, see figure 1. Colonies (groups of bats) were found of *R. hipposideros* (10 individuals in Dol, 20 individuals in Movraž, 31 individuals in Smokvica together with few *R. ferrumequinum*), of

Figure 1. Church-visitation tour species



Slovenië - Rakitovec, 2004

Plecotus auritus (35 individuals in Presnica, 5 individuals in Predloka) and of *Pipistrellus kuhli*, also in Predloka (35 individuals) and in Presnica (33 individuals). *Pipistrellus kuhli* was counted when departing the roost. On map 5 the churches are shown.



Map 5, Visited churches: *Črni Kal, Črnotiče, Marija Snežna, Zazid, Rakitovec, Podgorje, Smokvica, Movraž, Predloka, Rozar, Sv.Anton, Kubed, Sv.Marija, Hrastovlje, Zanigrad, Podpeč, Bezovica, Loka, Dol, Gračišče, Osp, Kastelec, Socerb, Petrinje, Presnica, Kastelec, Mihele, Klanec, Beka, Ocizla.*

Species descriptions

Genus Rhinolophus

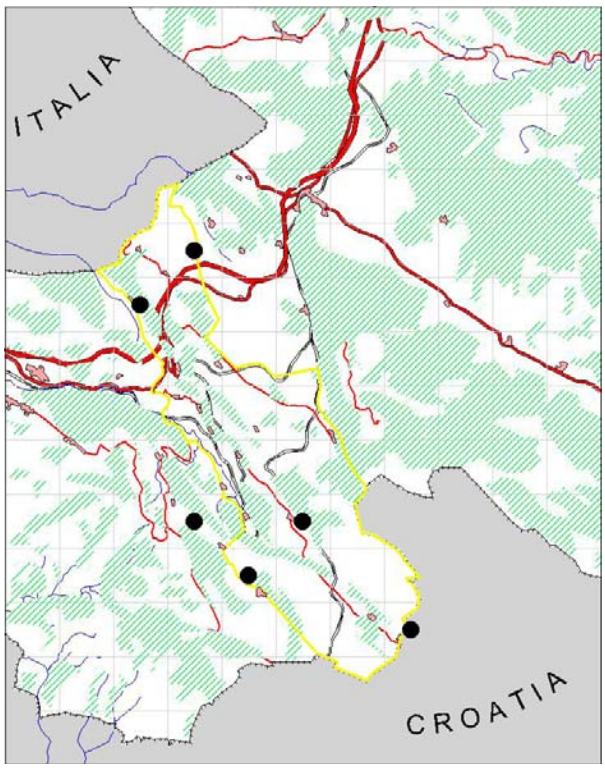
The Greater horseshoe bat (*Rhinolophus ferrumequinum*) is a typical cave dwelling species in Slovenia. Several times they were identified by detector or sighting, also five males were caught in Movraž, Gračišče, and in the entrance of a cave near the Croatian border. According to the data, the Lesser horseshoe bat (*Rhinolophus hipposideros*) is more common in the region than *Rh. ferrumequinum*. Many were seen in barns, on attics of abandoned houses and entrances of caves (Podgorje, Zazid, Smokvica, Movraž). In the church in Smokvica, a big nursing colony of 21 adults and 10 youngsters was found. Two other nursing colonies with about 25 bats, of 18 and of 10 adults were found. Only two juvenile males were caught in Gračišče.
We had also two observations of *Rhinolophus euryale*; the first one was caught in a mistnet and the second was observed in an abandoned house, as identified by its intermediate size and sonar frequency. Locations of the observations of the species are indicated on maps 6–8.

Genus Myotis

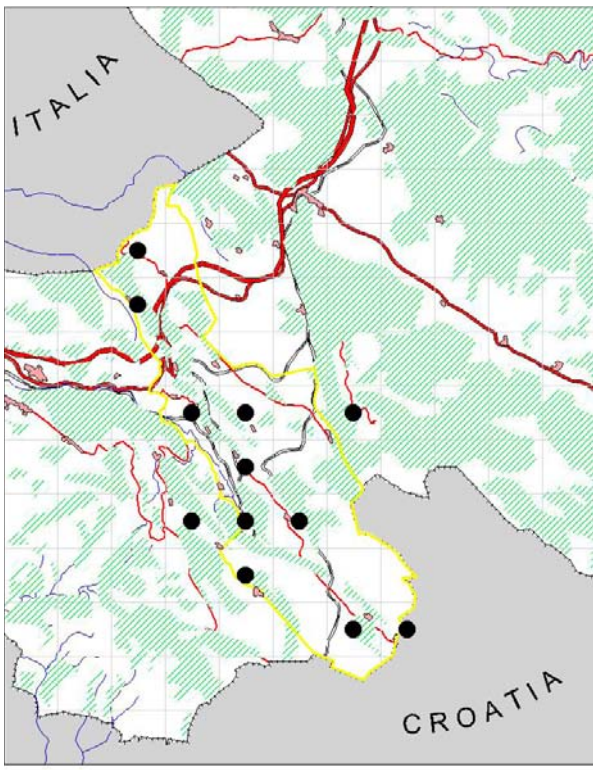
Many *Myotis* species appeared to occur in the area. We proved the occurrence of *Myotis bechsteinii* (1 ind. netted), *Myotis blythii* (23 ind. netted), *Myotis capaccinii* (43 ind. netted), *Myotis daubentonii* (6 ind.netted), *Myotis emarginatus* (1 ind. netted, 5 ind. in cave), *Myotis myotis/blythii* (3 ind.), *Myotis mystacinus* (5 ind. netted) and *Myotis nattereri* (5 ind. netted, 4 ind. in roost).
For locations see maps 9-16. Except *Myotis myotis/blythii* (which was found beyond the future park border), all species were caught in relatively high numbers. In general, males were caught more often than females, among which many juveniles. Of *Myotis blythii*, one male caught on the 4th of August on Mount Slavnik did not survive mistnetting. It was stored in ethanol and transported to the collection in the Slovenian Natural Museum in Ljubljana.

Genus Eptesicus

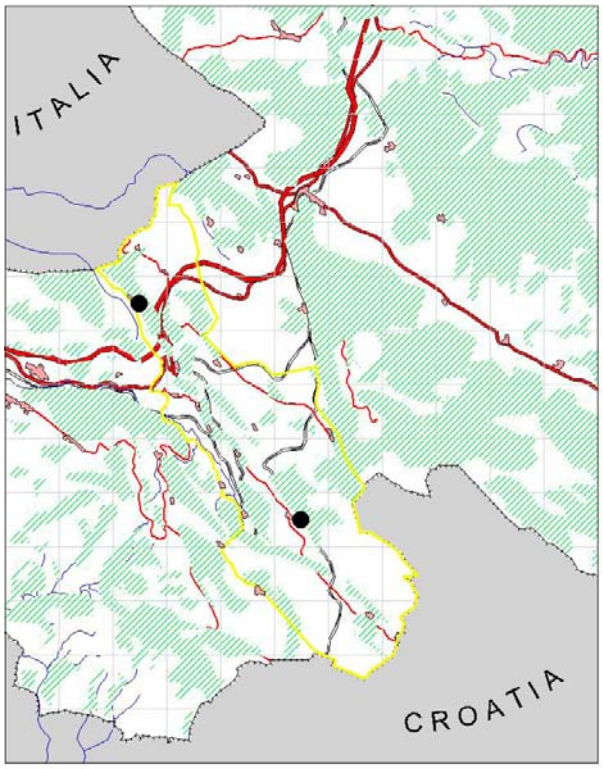
The Serotine bat (*Eptesicus serotinus*) is not very widespread in Slovenia. During the survey it was found mainly in urban areas (Osp, Loka, Podpeč). At 6 localities 12 individuals were observed with a batdetector. See map 18.



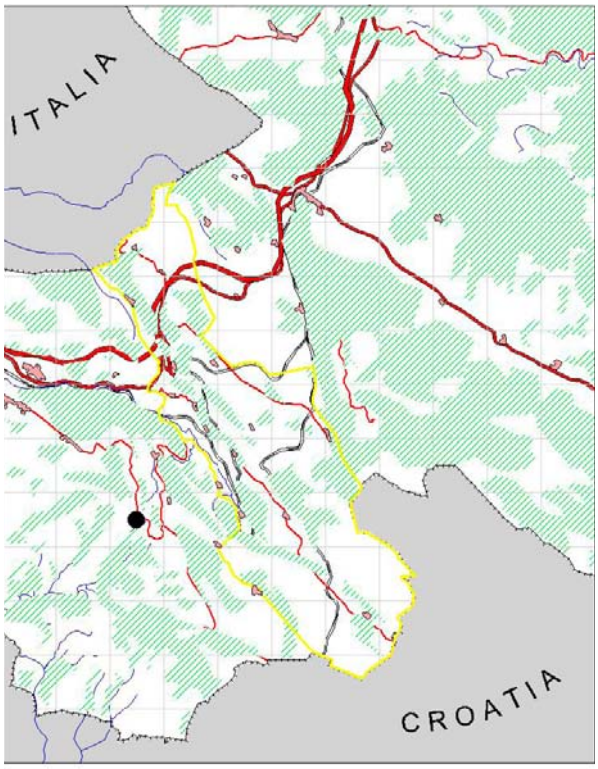
Map 6: R.ferrumequinum



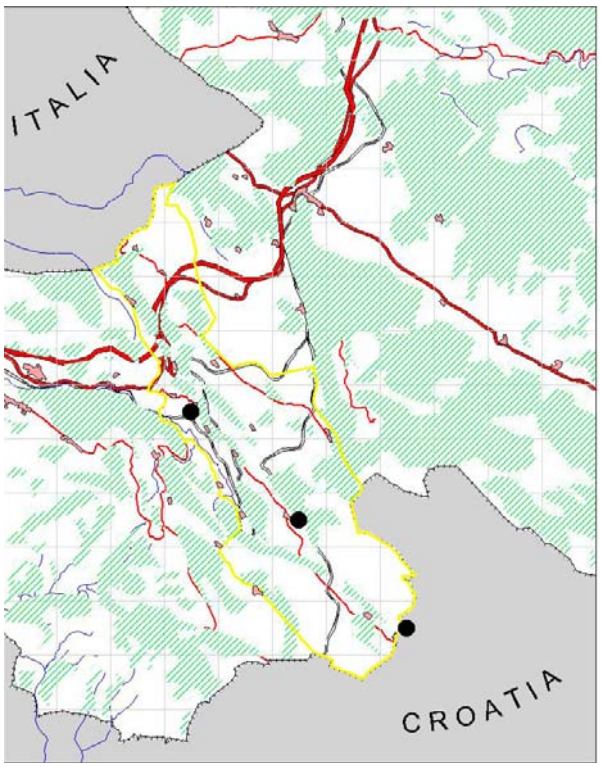
Map 7: R. hipposideros



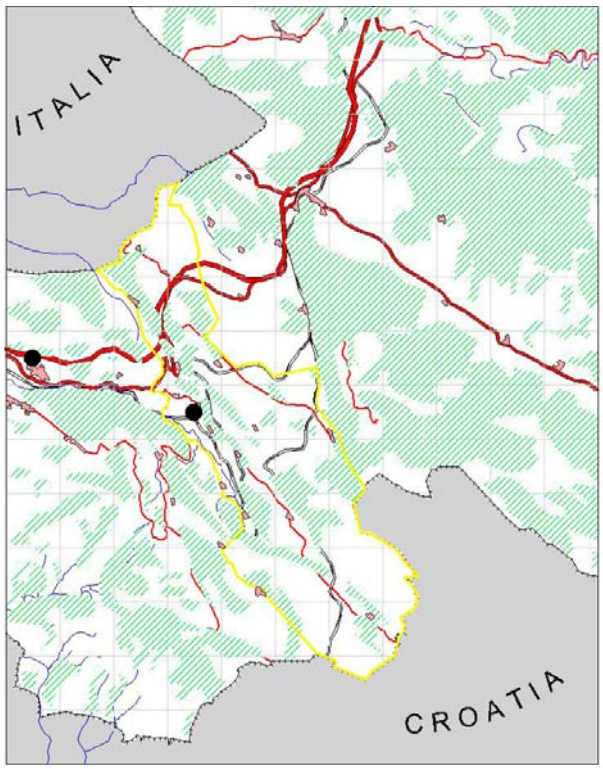
Map 8: R.euryale



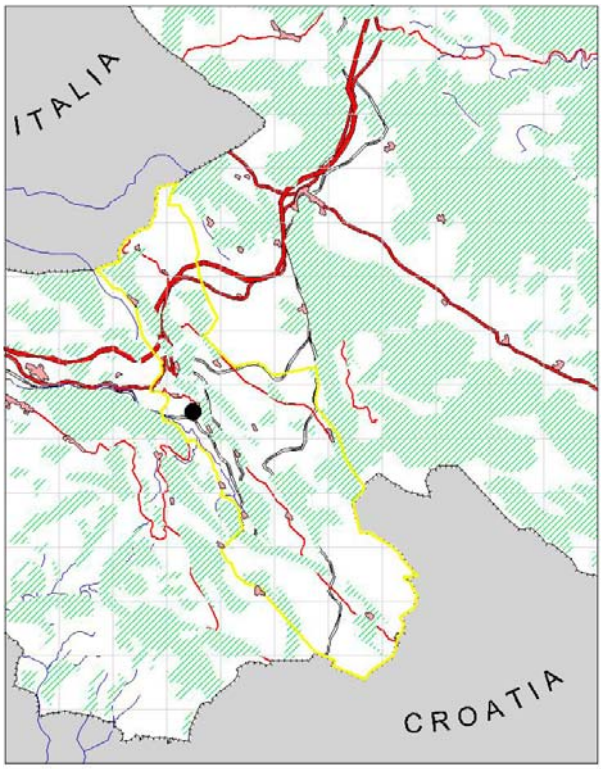
Map 9, M. bechsteinii



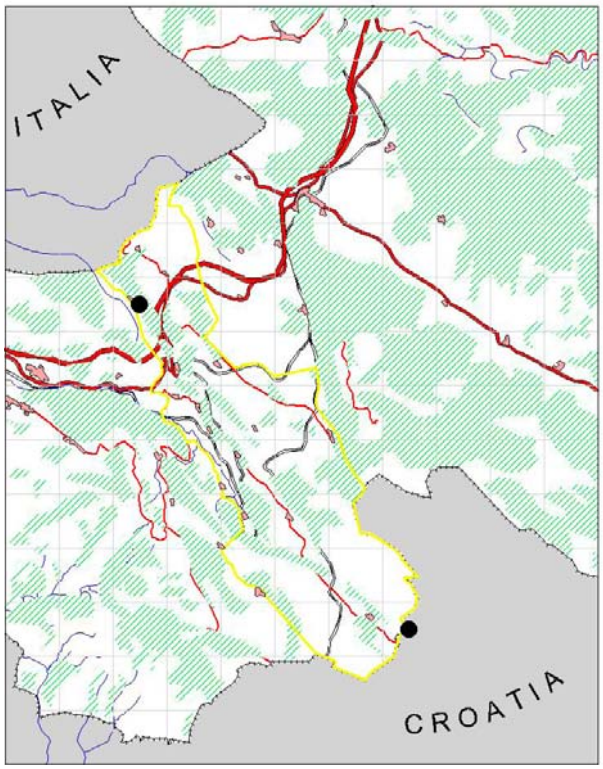
Map 10, M. blythii



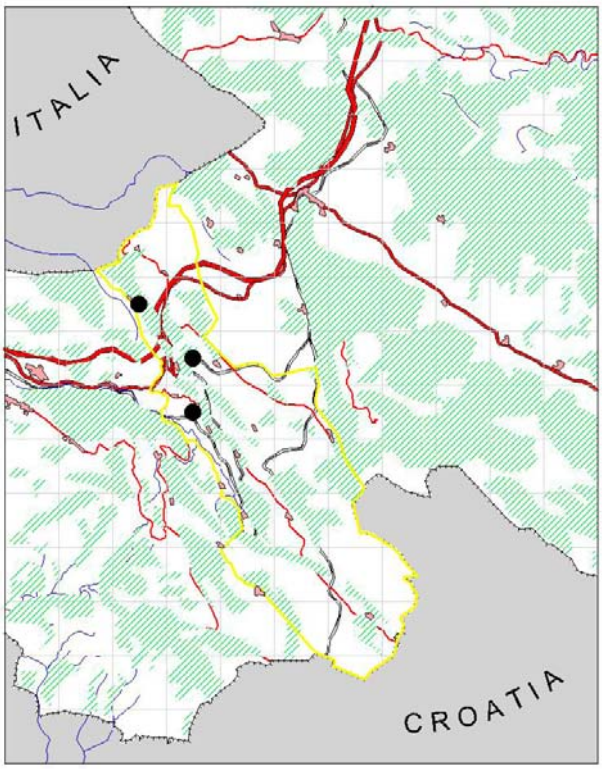
Map 11, M. capaccinii



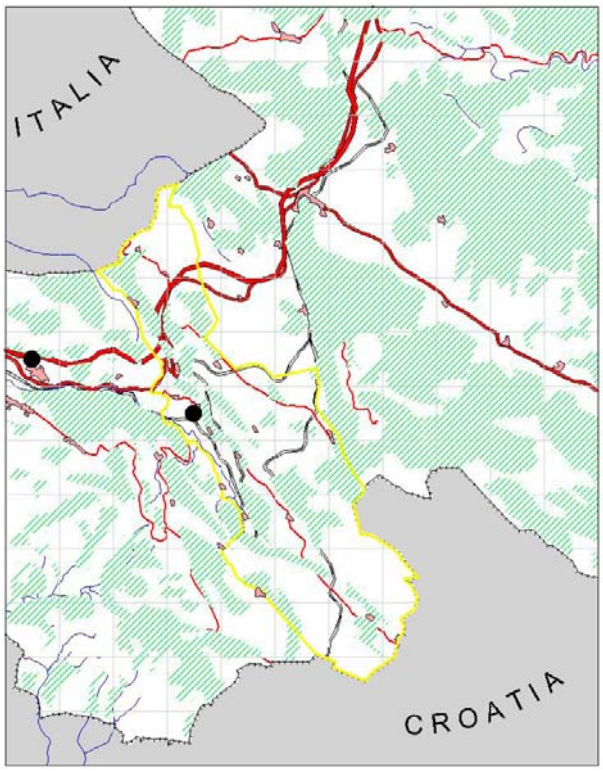
Map12, M. daubentonii



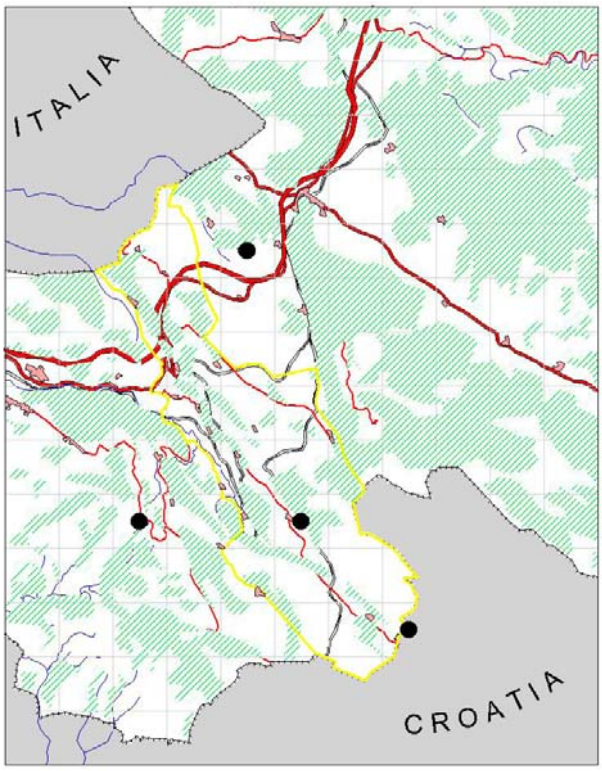
Map 13, M. emarginatus



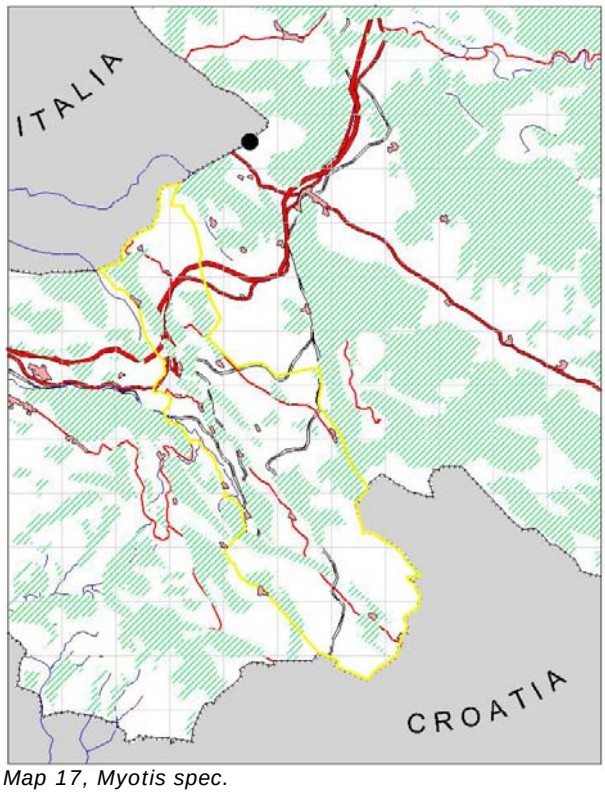
Map 14, M. myotis



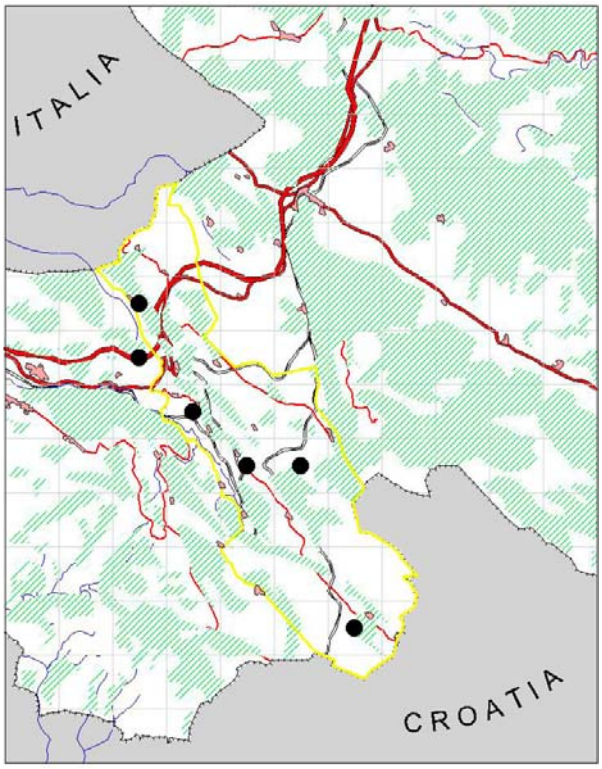
Map 15, M. mystacinus



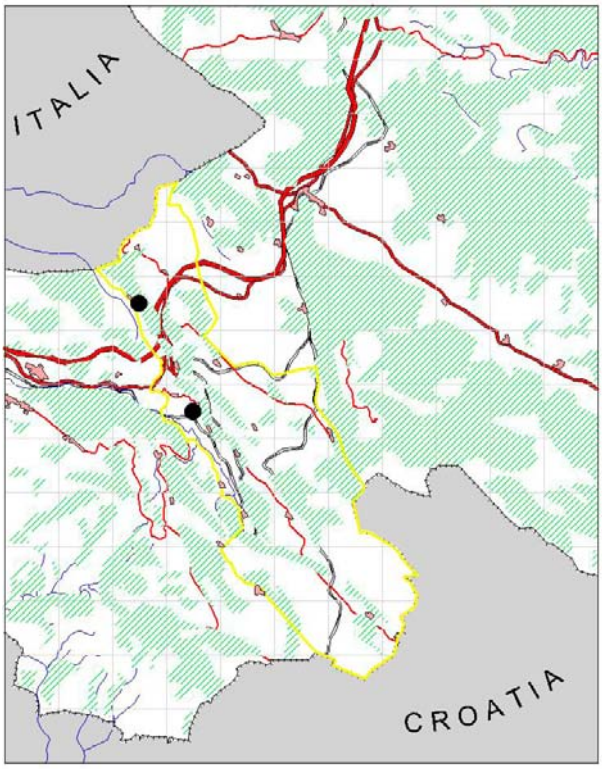
Map 16, M. nattereri



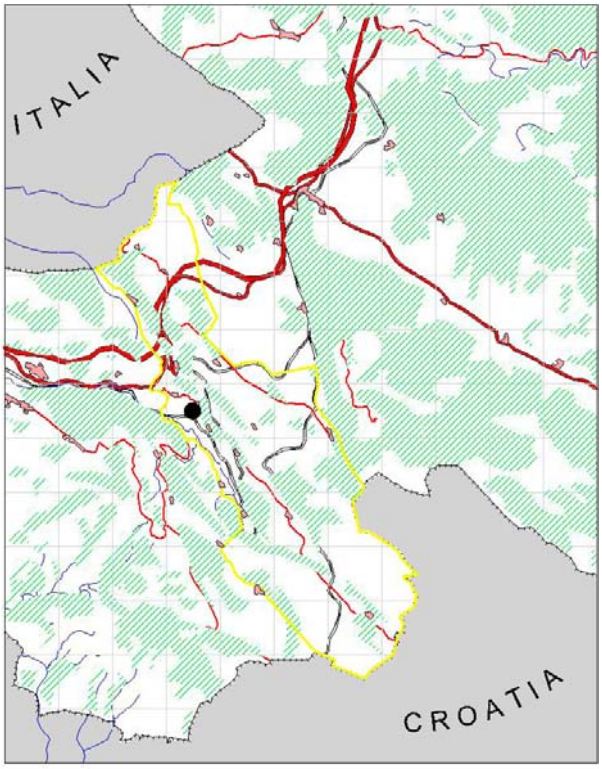
Map 17, Myotis spec.



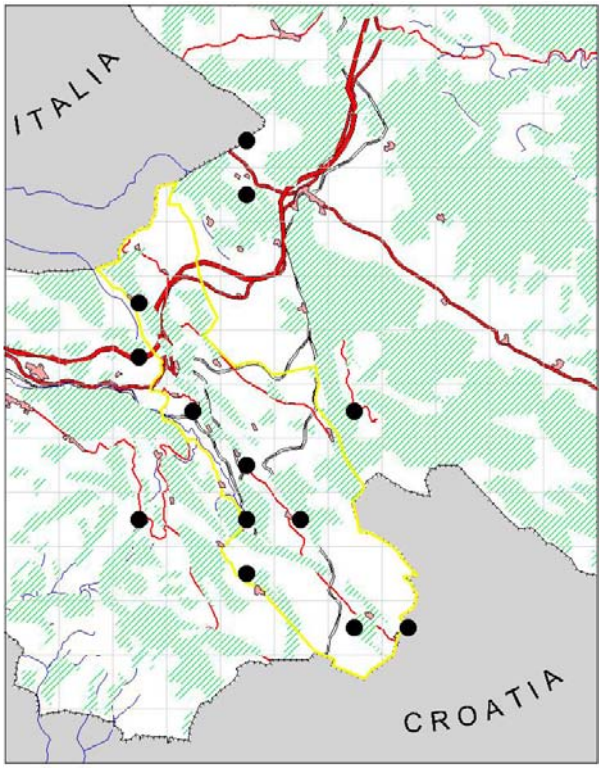
Map 18, E. serotinus



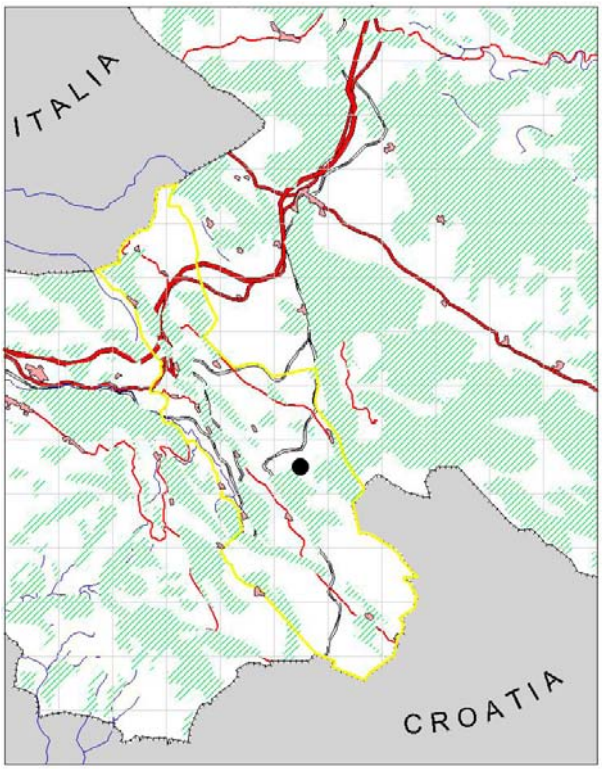
Map 19, N. Leisleri



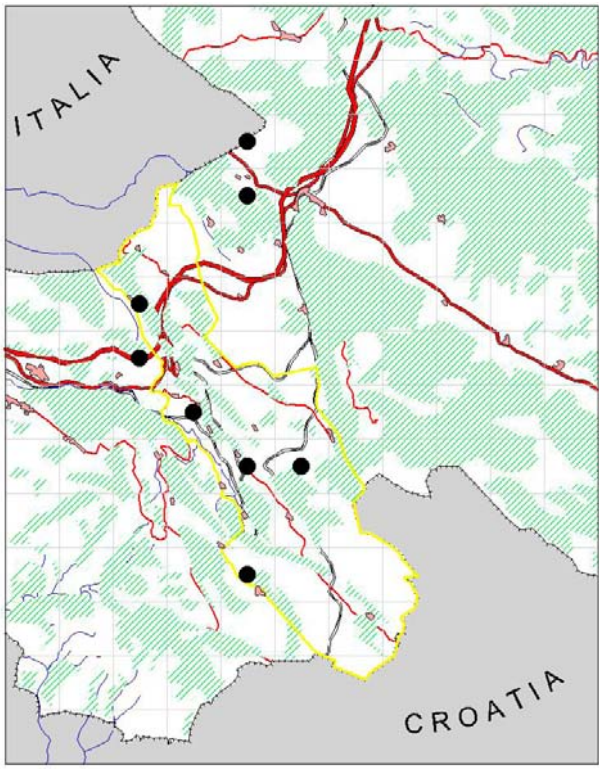
Map 20, N. noctula



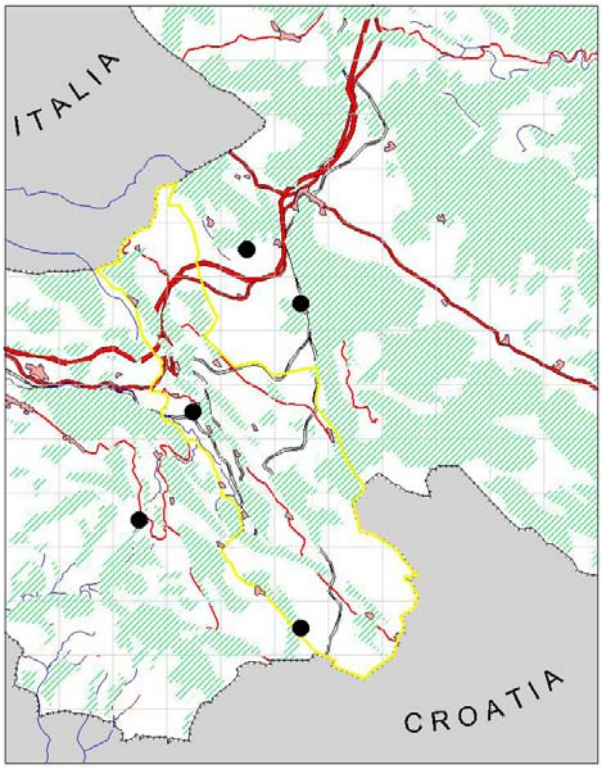
Map 21, P. kuhlii



Map 22, P. pipistrellus



Map 23, P. savii



Map 24, P. auritus

Genus Nyctalus
On 29th of July at the Rižana river one Noctule (*Nyctalus noctula*) and one Leisler's bat (*Nyctalus leisleri*) were caught, both juvenile males. This mistnetting location was exceptional. Three nets were placed near this river. The first net was set up just over the water surface, the second net under the bridge and the third next to the river in the direction of the forest. The forest edge along the stream offered a perfect habitat for many bats and a relatively great variety of species was expected, but to catch a Noctule can be called a success. Both species are not common in Slovenia. Another Leisler's bat was observed with a detector on the same day.

Genus Pipistrellus
With a total of 91 individuals, the Kuhl's pipistrelle (*Pipistrellus kuhlii*) was the most frequently observed bat and probably the most numerous in the region. It was found almost everywhere. During early morning searches, 3 colony roosts were found. At the roost site in Rakitovec several individuals were caught.
Savi's pipistrelle (*Pipistrellus savii*) was the second most common *Pipistrellus* species. It was mostly observed with detectors, and they were caught twice. One juvenile female was caught near Lake Babič and one male at the fish nursery. The Common pipistrelle (*P. pipistrellus*) was observed only once with a batdetector, for location see map 22.

Genus Plecotus
Although both species of *Plecotus* are common in Slovenia, in the area only *Plecotus auritus* was found. The Common long-eared bat was detected on four locations inside the park. In total fourteen localities were revealed. Nine were caught in mist nets (7 juveniles and 2 adults) on Rižana river, two were identified on sight. In the church of Ocizla droppings were found and in the other localities individuals were found in church lofts, i.e. one group of approximately 35 individuals and a group of 5 individuals.

Savi's pipistrelle - Pipistrellus savii

In the following table an overview is given of the encountered species and their numbers.

Species	Observations	Bats
Rhinolophus ferrumequinum	11	47
Rhinolophus hipposideros	21	147
Rhinolophus euryale	2	16
Myotis bechsteinii	1	1
Myotis blythii	21	21
Myotis capaccinii	42	42
Myotis daubentonii	6	6
Myotis emarginatus	3	5
Myotis myotis	3	5
Myotis mystacinus	5	5
Myotis nattereri	5	9
Eptesicus serotinus	6	12
Nyctalus leisleri	2	2
Nyctalus noctula	1	1
Pipistrellus kuhlii	21	91
Pipistrellus pipistrellus	1	1
Pipistrellus savii	13	39
Plecotus auritus	14	32
Total	**178**	**482**

Table 1. Total number of observations and bats

Conclusions

The results of the bat survey are a supplement to the known bat fauna in Slovenia (Kryštufek & Donev, 2005). Though not many data were known from the Sub-Mediter-

Lesser mouse-eared bat - Myotis blythii

ranean region of Rakitovec, no new species are discovered. Surprising is that some species expected to occur in the region (e.g. *Miniopteris schreibersii, Barbastella barbastellus*) were not found. On the other hand, the collected data during our survey contributes as new data to the knowledge of bats of Slovenia. Species that seem to be most abundant in this Sub-Mediterranean region, are *Rhinolophus ferrumequinum, Rh. hipposideros, Myotis blythii, M. capaccinii, Pipstrellus kuhlii* and *P. savii*.

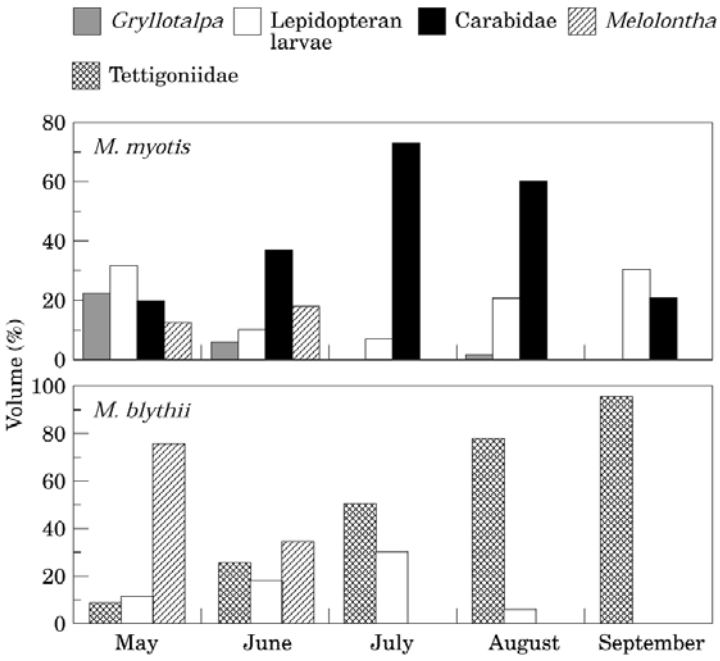


Figure 2, Seasonal variation of the main prey found in the diets of M.myotis and M.blythii

The discovered roosts and numbers of *Pipistrellus* species *(kuhlii and savii)* confirm their expected abundance. According to Kryštufek and Donev (2005) only three colonies of *Pipistrellus kuhlii* were known in the country of Slovenia, and the three roosts add therefore 100% new data. Of *Pipistrellus savii* no roost could be found though there was a concentration of individuals found in Predloka. The species is known to be relatively abundant in the Sub-Mediterranean area, but no nurseries are known at all. It is therefore recommendable to search for nurseries in villages at the appropriate time of year.

Surprising also is that *P. pipistrellus* appears to be rare in the area, it was detected only once, though it is a relatively common species in the western part of the country.

P. pygmaeus, also widespread in Slovenia but less common than *P. Pipistrellus*, was not found at all.

Of all *Myotis* species, *M. capaccinii* was most abundant, as indicated by mistnet captures. It is much more common than *M. daubentoniii* in the area; in other parts of the country it is the reverse (Kryštufek & Donev, 2005). However, no roost could be expected to be found since the attempts to locate roosts concentrated on buildings in villages.

Myotis blythii was caught relatively abundant and *M. myotis* was not found at all. It seems that in this Sub-Mediterranean area *M. blythii* is common and *M. myotis* is absent. The status of *M. blythii* in Slovenia is relatively unknown, no nurseries are known, but it seems most abundant in the southwest of the country, whereas M. myotis is widespread in the country (Kryštufek & Donev, 2005).

The data show that tree-dwelling species are not common in the area, old forests with concentrations of big, hollow trees are rare in the harsh climate of the Sub-Mediterranean area. One old forest in the north was visited but both bat-detectors as mistnets did not show the presence of typical tree-dwellers. Tree-dwelling species like *Plecotus auritus* and *P. austriacus,* common in Slovenia, were only found in buildings. And typical tree-dwellers like *M. bechsteiniii, Nyctalus noctula* and *N. leisleri* were caught only once.

Discussion

In the next chapter the live trapping of small mammals is described. Very few mice were caught, and there were a lot of grasshoppers present (see discussion, chapter 5).

It seems that the massive presence of grasshoppers has a relationship with bats (the

two mouse-eared bat species) as well. The Greater mouse-eared bat (*Myotis myotis*) is far more uncommon in the area than the Lesser mouse-eared bat (*M. blythii*). From Swiss research it has become clear that the Greater mouse-eared bat hunts especially in July and August on carabid beetles (*Carabidae*). In the same period the Lesser mouse-eared bat specialises on bush crickets (*Tettigoniidae*), and to a lesser degree on butterfly larvae. In spring the food of the Lesser mouse-eared bat exists especially of cockchafers (*Melolontha*). It seems likely that because the staple food of the Lesser mouse-eared bat is far more available, this also results in higher numbers of the Lesser mouse-eared bat. In the graph the food of both mouse-eared bats is reflected (Arlettaz 1996).

5. Live trappings of small mammals

During the 2004 Fieldwork group summer camp in Rakitovec, Longworth- and Sherman traps as well as pitfalls were placed in several locations in the surroundings of camp location. Halfway through the duration of the camp, the traps were relocated. The traps were checked for captures every day. Due to low trapping rates, the frequency of the checks was limited to twice per day, rather than the three checks which were customary in recent years. After the first night check at 22.30, the next check was at 07.00, during which the traps were set to safe. The safety was taken off again at 16.00. This procedure was repeated daily, preventing possible daytime captures from perishing during the heat of the day. The number of trapping nights is displayed in table 2.

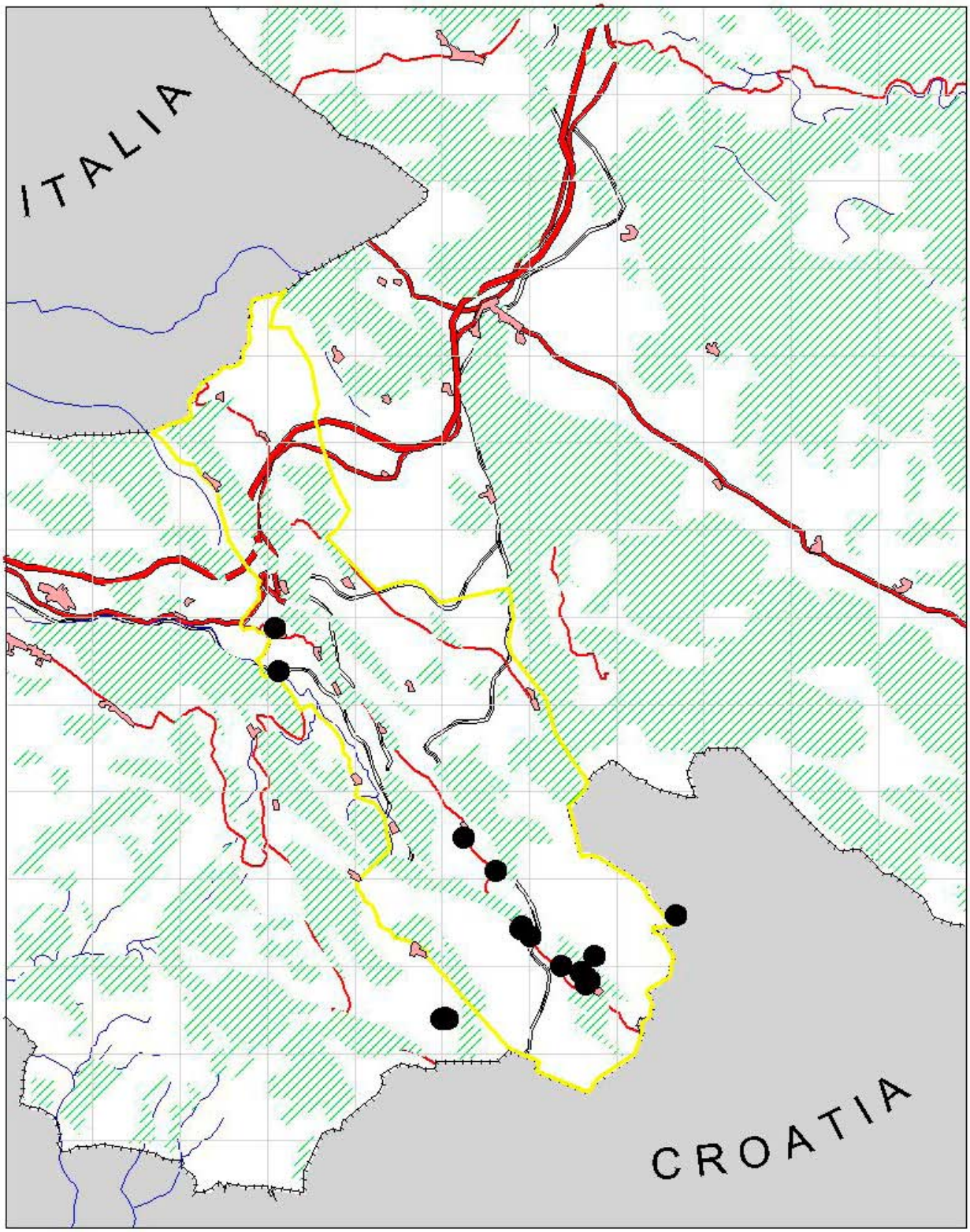
Location	Number of traps	Date of placement	Date of removal	Number of trapping nights
Forest edge A (1)	55	28-jul	1-aug	220
Top (2)	60	28-jul	1-aug	240
Field (3)	60	28-jul	1-aug	240
River (4)	30	28-jul	1-aug	120
Brook (5)	14	28-jul	1-aug	56
Tree (6)	10	1-aug	4-aug	30
Forest edge B(7)	50	1-aug	3-aug	100
Lime forest (8)	50	1-aug	4-aug	150
Mountain (9)	60	1-aug	4-aug	180
Zazid (10)	10	2-aug	4-aug	20
Corral (11)	5	2-aug	4-aug	10
Wall (12)	5	2-aug	4-aug	10
Grass (13)	26	2-aug	4-aug	52
Camp (14)	60	4-aug	6-aug	120
Total				**1548**

Table 2, Overview of the number of traps used and the dates of placement and removal, with calculated number of trapping nights.

Trap locations

Trap locations in the area around Rakitovec were selected in such a way that varied biotopes and landscapes were represented (map 25). As a rule, several rows of traps were placed in each location.

Location Forest edge A (1) consisted of four rows, largely connected to one another. The rows were placed along a forest edge met plenty of scrubs, bordering some small-scale meadowland. Dominant plant species of the tree layer were oak and hawthorn. Furthermore oak and bramble in the scrub layer, and vetch, grasses, clover, bryony, fleabane and field scabious in the herb layer. In all, 30 Longworth traps were placed here: LW 651-660, LW 661-670 and LW 681-700. Besides these, 10 pitfalls were placed, numbers PF 621-625. All traps were placed on 28 July and removed 1 August.



Map 25, traplocations over Boundery Park.

Location Top (2) consisted of three, partly interconnected rows. The first row was placed in dry meadowland with scattered single small trees and shrubs small clumps of trees and shrubs. In the tree layer, the dominant species were pine trees, juniper, oak and hornbeam, while the shrub layer consisted solely of juniper. In the herb layer, grasses, *Allium* species and wild parsnip were dominant. 30 Longworth traps were placed here (LW 761-790), as well as 10 small pitfalls (not numbered), which were placed between the rocks. Traps were placed 28 July and removed 1 August.

Location Field (3) consisted of four separate rows of traps, placed in two connecting longer rows in a valley with small-scale farmlands with maize, alfalfa, corn, chicory and meadowland. The soil was claylike with scattered cracks, caused by shrinking. Dominant plant species around the first two rows were hedge maple and apricot in the tree layer, Blackthorn in the shrub layer and grasses, alfalfa and bedstraw in the herb layer. 30 Longworth traps were placed here: LW 221-250. The third row was placed along an escarpment with a dry-stone wall. In the shrub layer the following plant species occurred: juniper, blackthorn, cornel, hedge maple and oak species. The herb layer was dominated by grasses and chicory. In all, 20 Longworth traps were placed: LW 201-220. The forth row consisted of 10 pitfalls (PF 601-610), dug in in a grassy field with *Dactylus* species and lady's bedstraw. Al traps were placed 28 July and removed 1 August.

Location River (4) consisted of two rows along a riverbank with riverbank vegetation and brushwood along an old field. Prominent features of the surroundings were some small vegetable gardens, a motorway and a railroad. Dominant species in the tree layer were common alder, white willow, red dogwood, hawthorn, robinia, hornbeam, elm and alder. Furthermore traveller's joy and ivy in the shrub layer and orchard grass, couch, oat grass, bindweed, wild carrot and chicory in the herb layer. In all, 30 Longworth traps were placed here: LW 821-840 en LW 841-850. Traps were placed 28 July and removed 1 August.

Location Corral

Location Brook (5) consisted of one single row along a eutrophic, shallow seasonal brook, running through dense brushwood. Dominant species were hazel and hedge maple in the tree layer, privet and blackthorn in the shrub layer and forest grasses, prickly lettuce, broad-leaved dock and hogweed in the herb layer. 14 Longworth traps were placed here (LW 851-864). Traps were placed 28 July and removed 1 August.

Location Forest (6) consisted of one single row in slope forest. Dominant species were oak and lime in the tree layer and bramble in the shrub layer. The herb layer was practically bare. Ten Sherman traps (not numbered) were attached to thin wooden boards with a hole in the front part. Sticking the tip of a long wooden stake through the hole, it was possible – with some effort – to place this reverse 'L'-shaped construction on a branch connecting two branches. These traps were placed with the intention of trapping common dormice. Traps were placed 1 August and removed 4 August.

Location Forest Edge B (7) consisted of two rows. These rows were placed along a forest edge bordering (small-scale) meadowland. Dominant plant species were oak, elm and hazel in the tree layer, bramble in the shrub layer and grasses and various herbs in the herb layer. In the first row, 20 Longworth traps were placed: LW 671-680 en LW 691-700. The second row, placed along a slightly climbing road, consisted of 30 Longworth traps: LW 651-670 en LW 681-690. The traps were placed 1 August and removed 4 August.

Location lime forest (8) consisted of two rows along a slope forest on rather stony soil. Prominent features of the surroundings were a steep rock face, meadowland and an oak forest. Dominant plant species were lime, ash, hazel and maple in the tree layer. The shrub layer was absent and there were few plants in the herb layer. A total of 30 Longworth traps were placed: LW 761-785 right along the rock face and LW 786-790/231-250 something over 10 meters lower down. Traps were placed 2 August and removed 4

August.

Location mountain (9) also consisted of two rows on a stony slope on top of mount Slavnik in an area of dolines. Dominant plants species were some low prunus and a small ash in the tree/shrub layer and in the herb layer grasses and various other herbs, the whole being very variable due to the presence of a doline. A total of 60 Longworth traps were placed here: LW 791-820 and LW 201-230. Traps were placed 2 August and removed 4 August.

Location Zazid (10) consisted of one single row on a former field on the edge of the forest, surrounded by dry-stone walls. Within the walls, vegetation was grassy and rich in herbs with some small trees and shrubs. Dominant plant species were ash, hornbeam and oak in both the shrub and tree layer, furthermore sage, clover, vetch, grasses (orchard grass), green hellebore, bellflower and Cypress spurge in the herb layer. 10 Longworth traps were placed here LW 821-830. Traps were placed 2 August and removed 4 August.

Location corral (11) consisted of one single row along a low dry-stone wall. Dominant plant species were ash, glossy buckthorn, hedge maple, oak and bramble in the shrub and tree layer. The herb layer consisted solely of grass. 5 Longworth traps were placed here: LW 751-755. Traps were placed 2 August and removed 4 August.

Location wall (12) consisted again of one single short row along a dry and high wall with scattered shrubs and pine trees. Dominant plant species were pine, glossy buckthorn, oak and ash in the shrub and tree layers. In the herb layer were grass, composites, spurge and sea holly, together covering 100%. 5 Longworth traps were placed here: LW 756-760. Traps were placed 2 August and removed 4 August.

Striped field mouse - Apodemus agrarius

Location grass (13) consisted of two rows. These rows were placed in a meadow with scrub at a distance of 30 meters. Dominant plant species were juniper, rose and hawthorn in the shrub layer and grasses (nearly 100%), vetch, bedstraw and composites in the herb layer. In the first row, 5 Longworth traps were placed (LW 846-850) and 6 pitfalls (601-606). The second row consisted of 15 Longworth traps: LW 841-845 en LW 831-840. The traps were placed 2 August and removed 4 August.

Location camp (14) consisted of three, partly connected rows in unused corners of land around the camp location, in a rock garden, along a track and just outside a cemetery. Dominant plant species in the tree layer were lime and fruit trees, with bramble in the shrub layer. The herb layer consisted mainly of grasses. The first row meandered around the camp house itself and consisted of 30 Longworth traps: LW 791-820. The second row ran along a ditch by the side of the road and the karstic pond. 15 Longworth traps were placed here: LW 201-215. The last row was placed along a cemetery wall and also consisted of 15 traps: 216-230. Traps were placed 4 August and removed 6 August.

Results

Among the low numbers of small mammals caught, the Striped field mouse *(Apodermus agrarius)* was the most common, followed by Edible dormouse *(Glis glis)* and Yellow-necked mouse *(Apodermus flavicollis)*. Results are presented in table 3.
Besides the mammals and a Western whip snake (*Coluber viridiflavus*) at location Field (3), all other captures were Sickle-bearing bush-crickets and some large ground beetles.

Location	Apodemus agrarius	Apodemus flavicollis	Glis glis	total
Forest edge A (1)	1			**1**
Top (2)		1		**1**
Field (3)	1		1	**2**
River (4)	1			**2**
Brook (5)				**-**
Tree (6)			2	**2**
Forest edge B(7)				**-**
Lime forest (8)				**-**
Mountain (9)				**-**
Zazid (10)				**-**
Corral (11)				**-**
Wall (12)				**-**
Grass (13)	1			**1**
Camp (14)				**-**
Total	**4**	**1**	**3**	**8**

Table 3, Overview of captures per location.

In some rows, captures of Sickle-bearing bush-crickets were extremely numerous. This was partly due to the fact that the traps at locations Zazid (10), Corral (11), Wall (12) and Grass (13) were set particularly sensitive. In some rows, this resulted in a 100% occupation of traps by grasshoppers (e.g. Zazid).

Discussion

Capture rates during the period from 28 July until 5 August were very limited. Based on the total number of trap-nights, capture rates turned out at 0.6%. This is the lowest capture rate achieved so far by

the Fieldwork Group during summer camps. Only captures of Edible dormouse were well above average, possibly due to use of a different method. It's improbable that this low capture rate was caused by the placement of the traps, since this was not significantly different from previous camps. Moreover, sufficiently variable habitats were selected, from dry to moist, from sparsely to lushly overgrown, from high to low elevations and from natural to anthropogenic environments.
Although it is not unusual for capture rates to be rather lower in Mediterranean areas than in temperate areas (perhaps caused by summer induced diapause?), the Mediterranean nature of the Slovenian landscape does not sufficiently explain the low rates during this camp. The high number of grasshoppers present at almost every trap location was noticeable. Possibly, this ample supply of food caused insectivores to have unusually small ranges. This explanation could apply to the true mice of the *Apodemus* group as well, all be it to a lesser extent. The complete absence of *Microtidae* in the traps could be explained entirely by the summer diapause mentioned above. A repetition of this survey in another season, with lower numbers of grasshoppers, might be a solution.
Another explanation could be the tendancy of plants to protect themselves against grazing by herbivores, not only by thorns and nettles, but also by producing secondary substances with effects ranging from bad tast to acute toxicity (Van Genderen et al. 1996). This might have happened in Rakitovec as well as in The Majella national park in the middle of Italy, where Voormolen (2005) suggests many plants producing anti-grazing substances resulting in low number of small rodents. It could be that grasshoppers have a faster reproduction, and are therefore possibly more capable to specialise themselves against toxic plants, that protect themselves against grazing. It is thought that the grasshoppers can take over the niche of the (absent) mice.

6. Owl pellets and other remains

During daily Fieldwork Group camp excursions, the usual intensive searches for owl pellets (mainly Barn owl pellets) and other remains of mammals were organized (map 26). During the survey, it was discovered that many church attics were fitted with wire mesh to exclude pigeons, rendering the attics inaccessible to barn owls as well. Moreover, ruins and abandoned sheds or farms were relatively scarce, while those that were found, were not used by barn owls.
The various caves were always searched for owl pellets as well. This did result in the discovery of some owl pellets and in fact, most owl pellets were found in caves. Furthermore worth mentioning is the discovery of five shrews in a discarded bottle from which they had not been able to escape (see pictures & table 4).

Date	30-7-2004	31-7-2004	2-8-2004	3-8-2004	3-8-2004	04-08-04	5-8-2004
Item	pellet	pellet	dead in bottle	pellet	Pellet	pellet/ dung	pellet
Waypoint	VWG LS034	VWG LS039	AH KRL1	VWG B017	VWG A013	JM 016	VWG A013
	UTM 422260	UTM 413900	UTM 418739	UTM 415606	UTM 413900	UTM 418204	UTM 413900
	5048782	5049305	5036008	5040594	5049305	5034565	5049305
				Zanigrad	Ocizla	Rakitovec	Ocizla
C. leucodon			2				
C. suaveol.			3				
M. arvalis		1					
M. multiplex							1
A. flavicollis	7	1		1			3
A. sylvaticus				1			2
A. agrarius							
A. spec.		1					6
G. glis		4			1		6
M. avellan.							1
Aves							1
Insecta						2	
Total	**7**	**7**	**5**	**2**	**1**	**0**	**19**

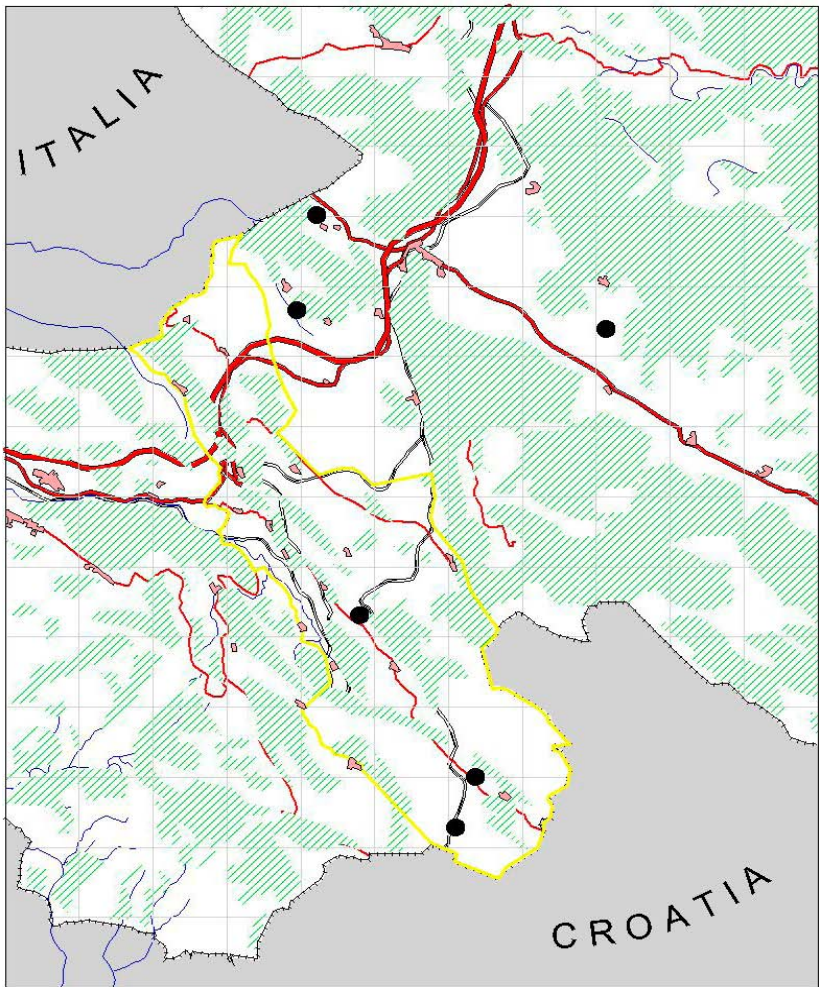
Table 4, Overview of mammal remains found in pellets, dung or otherwise.

Identification of the various species was based on commonly used characteristics and measurements (F. Krapp, 1982, R. Lange e.a., 1986, J. Niethammer, 1978, J. Niethammer, 1982).
In the case of the *Crocidura* found in a bottle 2 August, length measurements of the coronoid were 3.85, 4.20, 4.30 mm (*Crocidura suaveolens*) en 5.20, 5.25 mm (*Crocidura leucodon*).
The *Microtus* remains found in pellets discovered 31 July 2004 and 5 August 2004 turned out to belong to two different species.
The bunch of pellets found on 31 July contained a skull and left and right lower mandibles. Identification of these remains resulted in *Microtus arvalis*.
The *Microtus* remains in the last bunch of pellets consisted of one lower right mandible and an upper mandible. The lower mandible shows an open lozenge shape on both M_1 and M_2, a decisive characteristic identifying it as belonging to the former *Pitimys* ge-

The location where the bottle was found.

nus, as did the interorbital breadth of 3.84 of the upper mandible found in the same pellet. The latter, plus the structure of M^3 with four closed dentine triangles/polygons leads to the identification of the combined remains as belonging to *Microtus multiplex*.

When identifying Apodemus remains from this area, the occurrence of *A. agrarius*, *A. flavicollis*, *A. mystacinus* and *A. Sylvaticus* needs to be considered. *A. agrarius* skulls have two characteristic supraorbital ridges. The lower mandible differs from other species in this genus in the narrower and more curved processus angularis and a higher, more curved processus coronoidius.
None of the *Apodemus* remains found displays these characteristics.



Map 26, location owlpellets and bottle.

A. mystacinus is larger species, which has a lower mandible of a least 16.5 mm wide and an upper mandible which is distinguished by the anteorbital plate. Again, none of the *Apodemus* remains found displays these characteristics.

The distinction between *A. sylvaticus* and *A. flavicollis* is made on the basis of lower mandible length, *A. flavicollis* having a lower mandible of at least 15 mm long and *A. sylvaticus* one of 14 mm at most. In the upper mandible, an I^1 of more than 1.25 thick means *A. flavicollis*, while thinner than 1.20 mm means *A. sylvaticus*.
Identification of *Glis glis* and *Muscardinus avellanarius* was done on the basis of skull characteristics.

7. Records of other mammals

Methods

In other chapters information is given about trap catches of mice, records about bats, and results from owl pellets. This chapter describes the remaining observed mammals. During excursions on foot or by car the following categories were recorded:

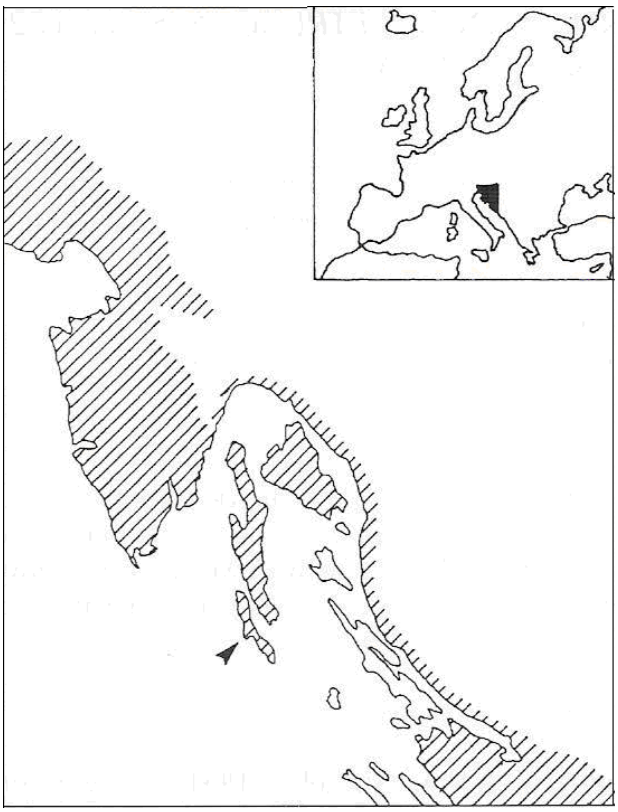
- Sightings of individual animals;
- Dead animals (including skulls or road kills);
- Droppings;
- Signs of foraging or eating;
- Habitation tracks (dens, burrows, molehills).

The greater part of these observations concern records gathered during excursions in and outside the intended national park during car drives (more than 5750 km by 10 cars), on foot and during other activities. Only part of the area was covered in this way.
Local knowledge of caves and some of the observations were passed on by local inhabitants of the villages. Several sacristans were a rich source for information as well.

Records of mammal species were collected in the field. Observations were registered on forms, combined with the location (recorded with GPS devices), date, method of observation, number and observer(s). Maps 27 to 42 show all encountered observations – apart from bats (chapter 4), trapping results (chapter 5) and owl pellets (chapter 6).

A special effort was made to catch the Pygmy white-toothed shrew (*Suncus etruscus*): Longworth traps at several trapping locations were set to very sensitive. Unfortunately no pygmy shrews were caught, but instead many grasshoppers…

Figure 3, distributional range of Suncus etruscus in the northern Adriatic. Arrow/insert shows the position of the study area (from Krystufek & Janzekovic, 2003).



Although the Pygmy white-toothed shrew is widespread in the European Mediterranean, records from its islands are fairly uncommon. As far as the Adriatic islands are concerned, it has been reported only from Cres and Krk. On May 15, 2001, a carcass of a pygmy white-toothed shrew with well-preserved rostrum and both mandibles was found at Nerezine on the island of Losinj. The specimen came from the evergree vegetation of the Orno-Quercetum ilicis type at an altitude of 15 m above sea level and some 150 m away from the seashore (Krystufek & Janzekovic, 2003).

Species

In table 5 the various records are listed by observation method, i.e. sights, tracks, droppings, catches, sound, dead animal, skull or set. In total we encountered (tracks of) sixteen mammal species.

English name	Scientific name	sighting	track	droppings	sound	dead	bottle	den
eastern hedgehog	Erinaceus concolor	x		x		x		
Bi-coloured white-toothed shrew	Crocidura leucodon						x	
Lesser whited-toothed shrew	Crocidura suaveoles						x	
common mole	Talpa europaea		x					
brown hare	Lepus europaeus	x		x				
red squirrel	Sciurus vulgaris	x	x					
snow vole	Chionomys nivalis		x					
striped field mouse	Apodemus agraris							
fat dormouse	Glis glis	x		x	x			
common dormouse	Muscardinus avellanarius	x	x					
red fox	Vulpes vulpes	x		x				
western polecat	Mustela putorius	x		x				
beech marten	Martes fiona	x		x				
badger	Meles meles	x	x	x				x
wild cat	Felis sylvestris	x						
wild boar	Sus scrofa	x	x					
red deer	Cervus elaphus			x				
roe deer	Capreolus capreolus	x	x	x	x			

Table 5, other mammal observations and observation method

Eastern hedgehog (Erinaceus concolor)

Ten animals were traffic victims. Some other records also concern observations from cars, and these individuals were fortunately alive (at least 9 individuals were seen alive). The enormous amount of grasshoppers killed by cars served as a source of food for the hedgehog, however the location of this food source proved often fatal for the hedgehogs. One hedgehog also walked on the grass directly next to the building in Rakitovec where we slept. At one location dung of the hedgehog was found. The Eastern hedgehog resembles "our" Western hedgehog. The Eastern hedgehog is smaller, and has an overall lighter color. An adult specimen weighs less than one kilogram. An other distinct difference is the white patch on its chest.

Eastern hedgehog - Erinaceus concolor

Edible dormouse - Glis glis

Bi-coloured white-toothed shrew (Crocidura leucodon)
While looking for suitable sites to place live traps, an empty glass bottle was found in the fields on the 2nd of August. It contained skulls and mandibles of five mice specimens, of which two were *Crocidura leucodon*. Apparently this bottle had a certain appeal, but proved to be a fatal trap. Research has proven that mice, and especially shrews, frequently get trapped and are killed in bottles (Criel, 1999).

Lesser white-toothed shrew (Crocidura suaveolens)
Of this species three specimens were found in the same bottle, mentioned above.

Common mole (Talpa europaea)
Many heaps of soil were found. A discussion started whether these were made by moles or by other mammals, such as Snow voles. The more flat heaps are still of uncertain origin. Round heaps with earth thrown out from the inside, were typical of moles. In places where moles were found, there were many hills per square meter.

Brown hare (Lepus europaeus)
Hares were seen on eight occasions, and its droppings were also frequently found.

Red squirrel (Sciurus vulgaris)
There were two observations of squirrels and on four occasions tracks (of eating) were found. One nest was found, and in its surroundings also signs of foraging on hazelnuts was observed. Inhabitants of Rakitovec village told us that in autumn, the Red squirrel could be easily observed in the village itself. One of the ladies, who lived near the karstic pond, told us that she fed a squirrel.

Edible dormouse (Glis glis)
Besides the captures in traps (chapter 5), the dormouse was often seen (eighteen times)

in and around caves, in trees and around buildings. At two mist netting locations outside caves, the dormouse was also registered. The farmer/neighbour above the camp house told us he suffered losses in the fruit trees from the Edible dormouse. *Glis glis* was also found in three pellet samples (a total of 11 animals). A remarkable observation of an Edible dormouse is worthwhile writing down: During an effort catching bats from the tower in Movras, a dormouse passed twice via a telephone line. The dormouse walked via the telephone line to a tree and back. They were quick and easy traverses. The details of the telephone cable: Ø 2-3 cm; 6-7 meter long, twined, tight.

Common dormouse (Muscardinus avellanarius)
One Common dormouse was seen. At another location tracks (eating marks on hazelnut) were found, and the remains of one Common dormouse was found in a pellet sample.

Red fox (Vulpes vulpes)
On three occasions a Red fox was observed. Apart from the observations, one skull was found and several droppings were observed at four different locations.

Western polecat (Mustela putorius)
Droppings of Polecat were found at two locations. The animal itself was also seen, no less than four times.

Beech marten (Martes foina)
Droppings of Beech marten were found on twelve occasions. The animal itself was seen twice, crossing the road at night.

Badger (Meles meles)
At three places dens of badgers were discovered. Several prints were found and six times a Badger was seen. During mist netting on the mountain above Rakitovec (mount Slavnik), an animal visited the netting site. It was recorded on video.

Wild cat (Felis silvestris)
During a walk along the valley of the river Malinska the Wild cat was seen.

Wild boar (Sus scrofa)
Root up places were often clear traces for the wild boars around the valley. The inhabitants of Rakitovec told us that they often see Wild boar around the village in wintertime. During our stay only one animal was seen by us.

Red deer (Cervus elaphus)
At one location droppings of red deer were found.

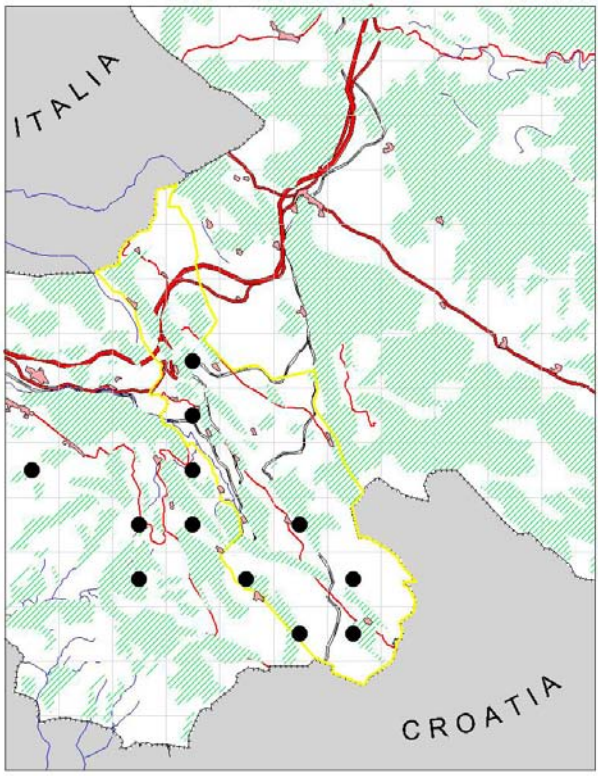
Roe deer (Carpreolus capreolus)
Roe deer were abundant. At least 28 animals were seen and on a few occasions animals were heard. Tracks of roe deer were also found. One animal was found dead, and once a skull was found.

Conclusions

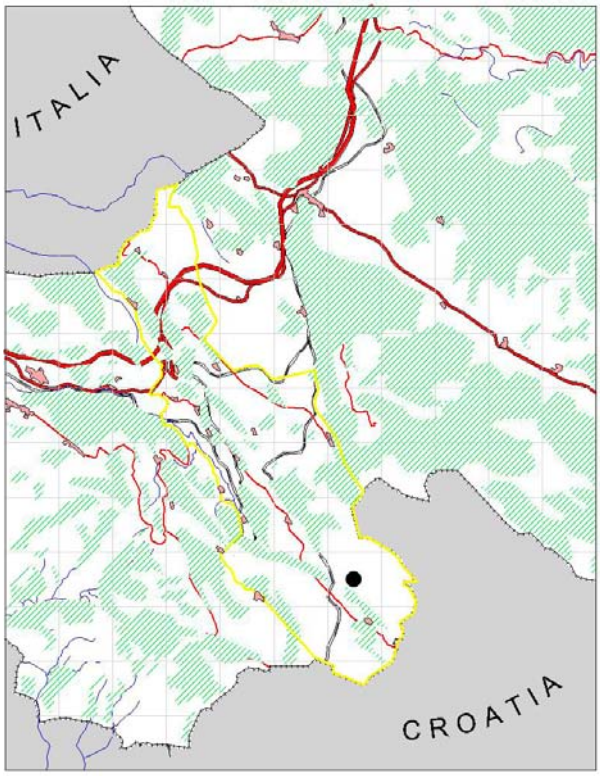
The badger was frequently seen, and so was the edible dormouse. Apart from the badger many of the other bigger marten species were observed. On the other hand, small martens such as weasel and stoat were not observed.

One record concerned finding burrows on top of mount Slavnik on the 30th of July. The observers were inclined to contribute these burrows to Snow vole *(Chionomys nivalis)*. However, we did not dare to definitively interpret the tracks as Snow vole's, as we were not familiar enough with tracks of the species.

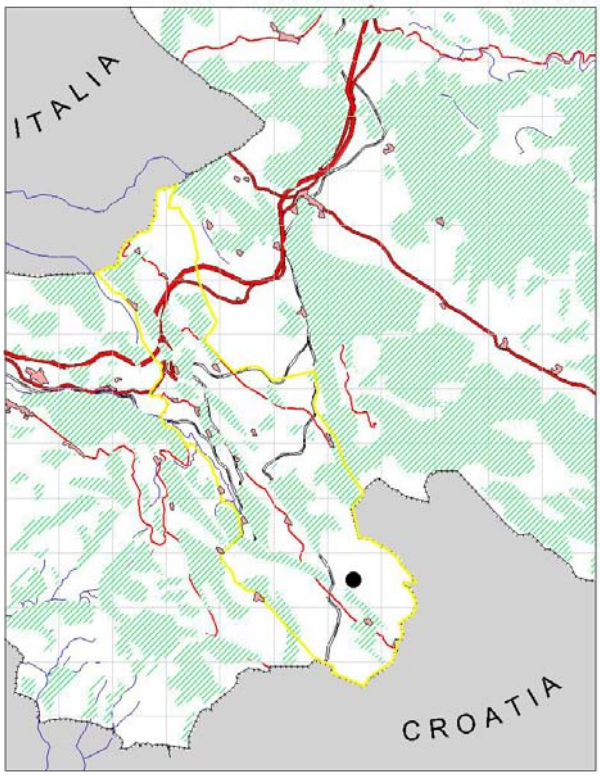
Apart from tracks identified definitely, the origin of some droppings remained uncertain and were therefore omitted from this report.
In the course of our stay in the area we recorded tracks and sightings of sixteen mammal species (Appendix 1), and seventeen when once includes the Snow vole.
When all mammal species are taken into account that were observed and/encountered during the camp period (including bat-excursions, owl pellets, and whilst trapping) a total of 39 mammal species (including Snow vole) were encountered during our stay. A list of all the encountered mammal species during the camp is included in Appendix 2.



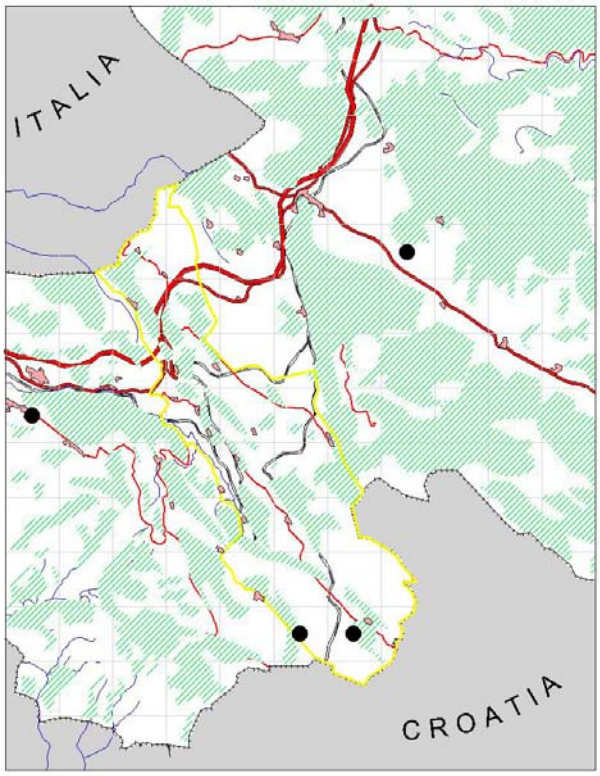
Map 27, E. concolor



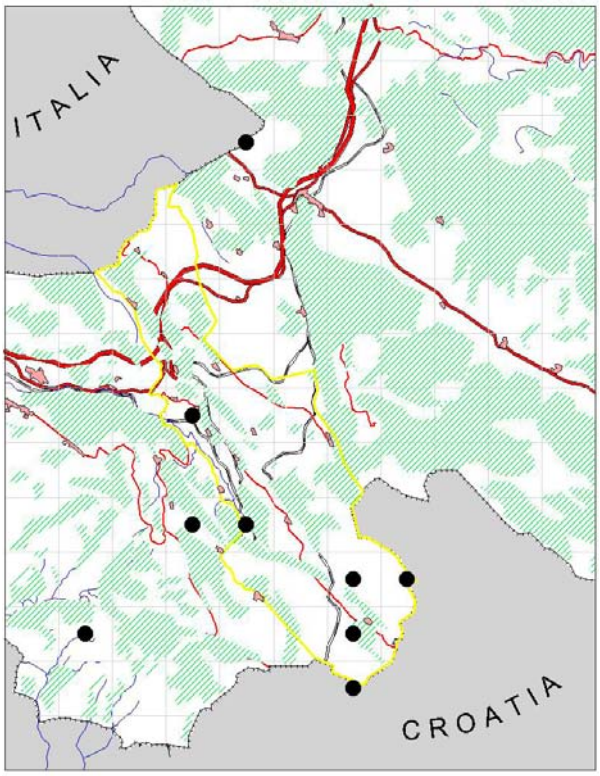
Map 28, C. leucodon



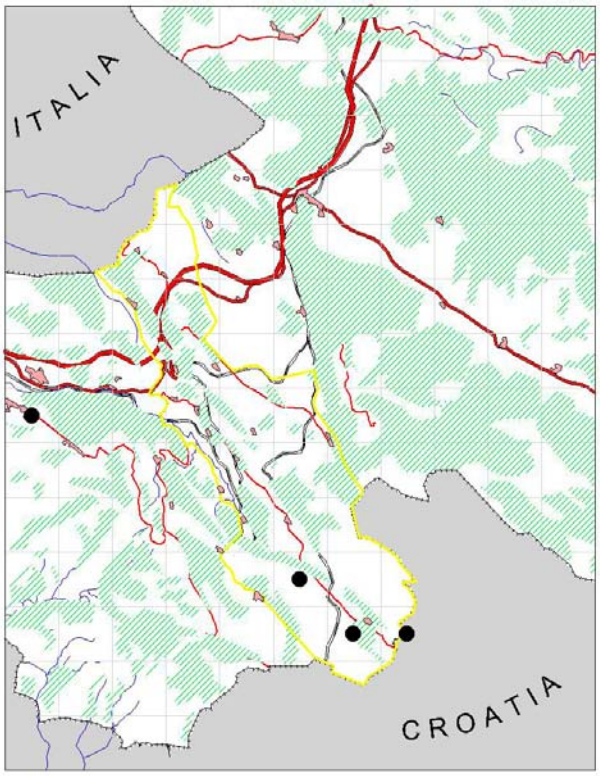
Map 29, C. suaveolens



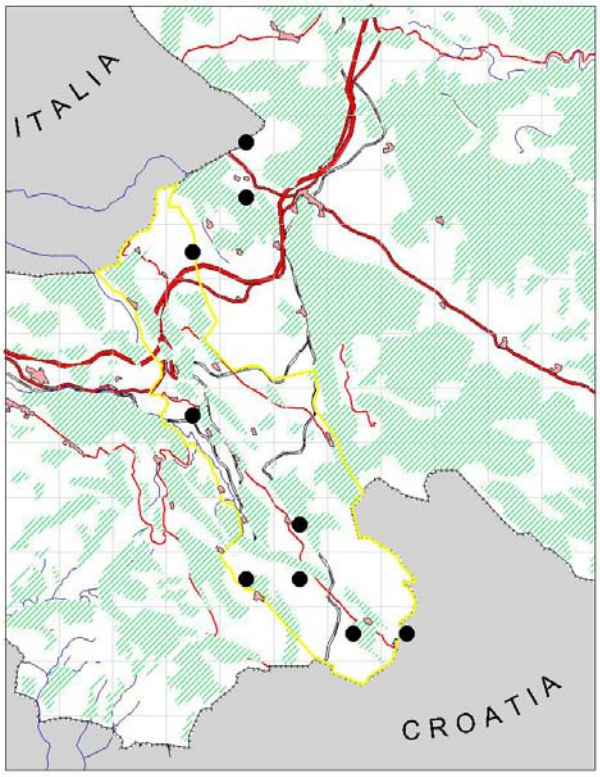
Map 30, T. europaea



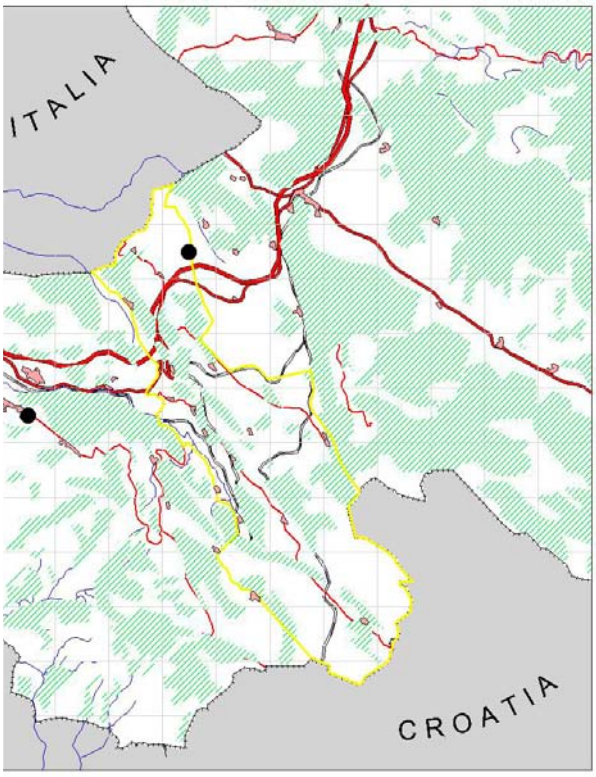
Map 31, L. europaeus



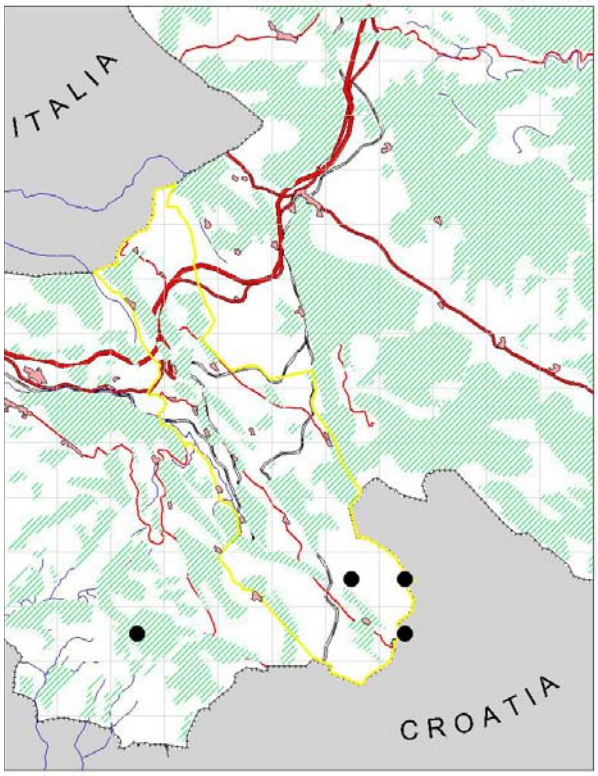
Map 32, S. vulgaris



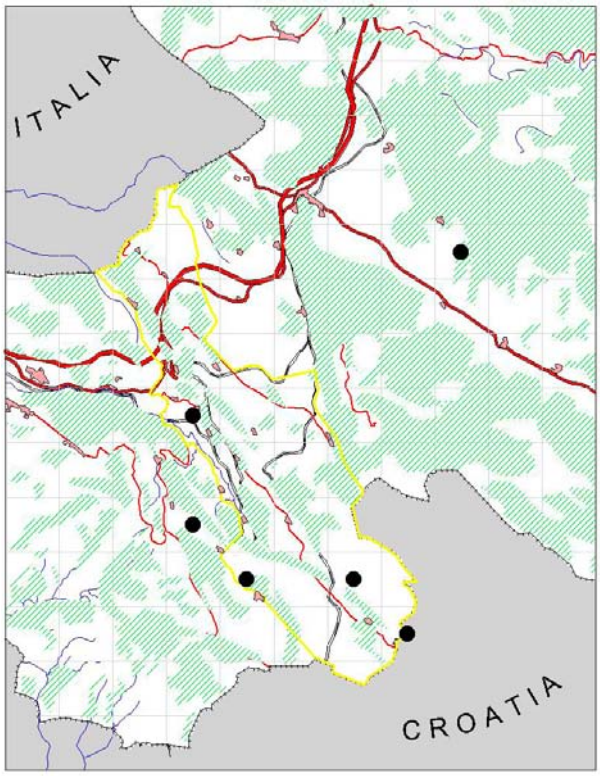
Map 33, G. glis



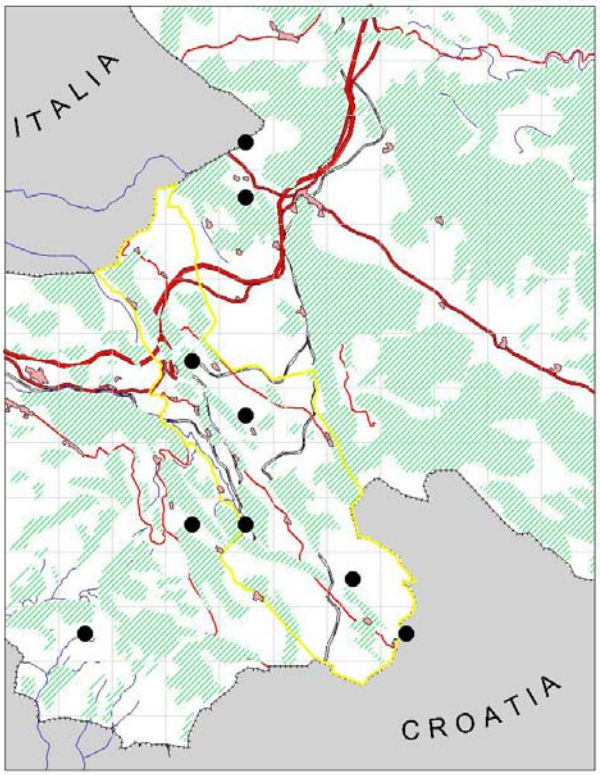
Map 34, M. avellanarius



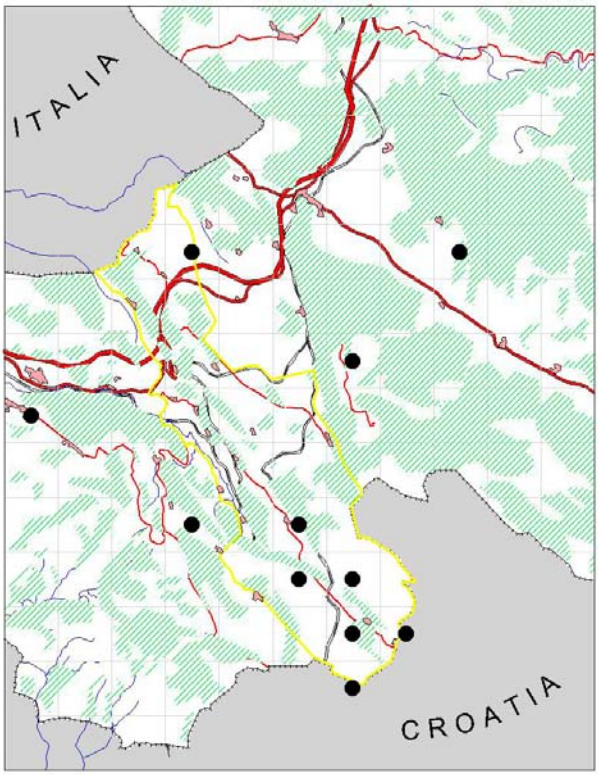
Map 35, V. vulpes



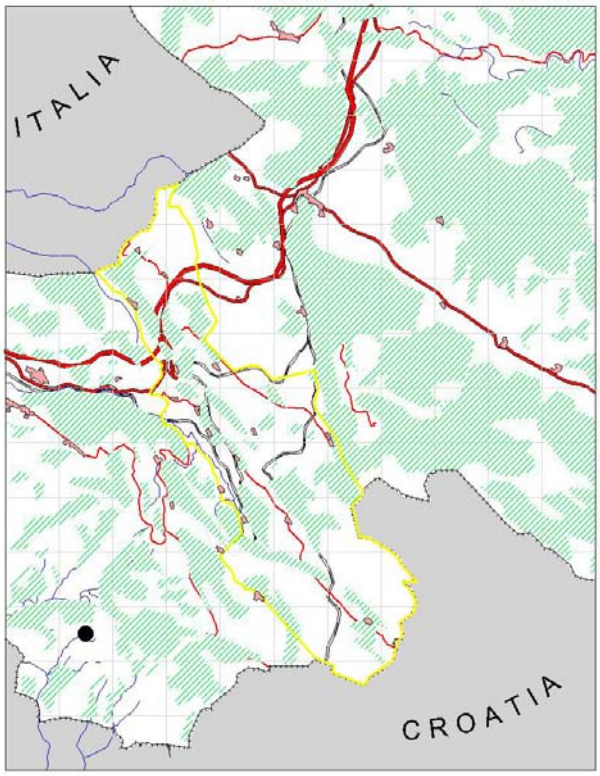
Map 36, M. putorius



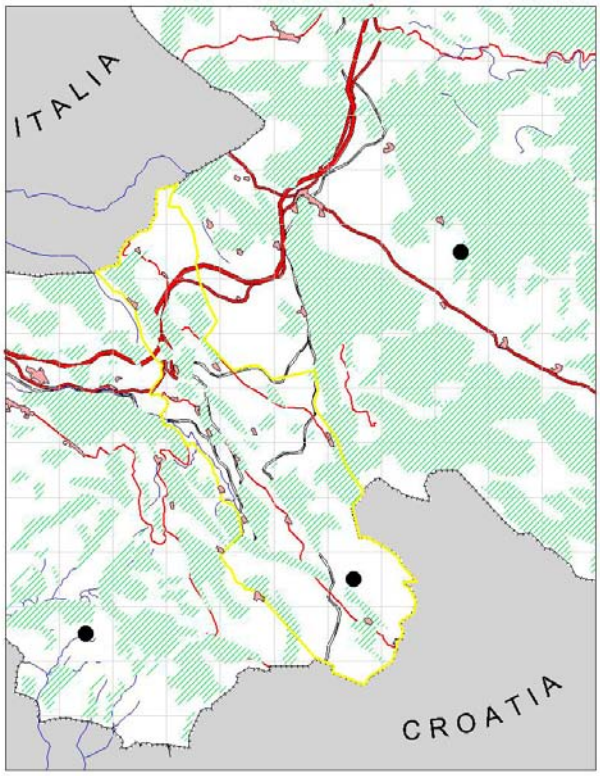
Map 37, M. foina



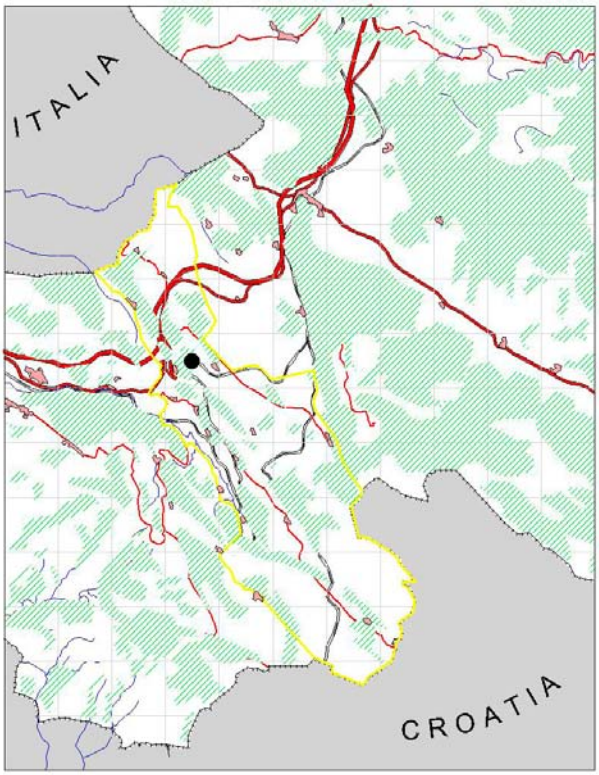
Map 38, M. meles



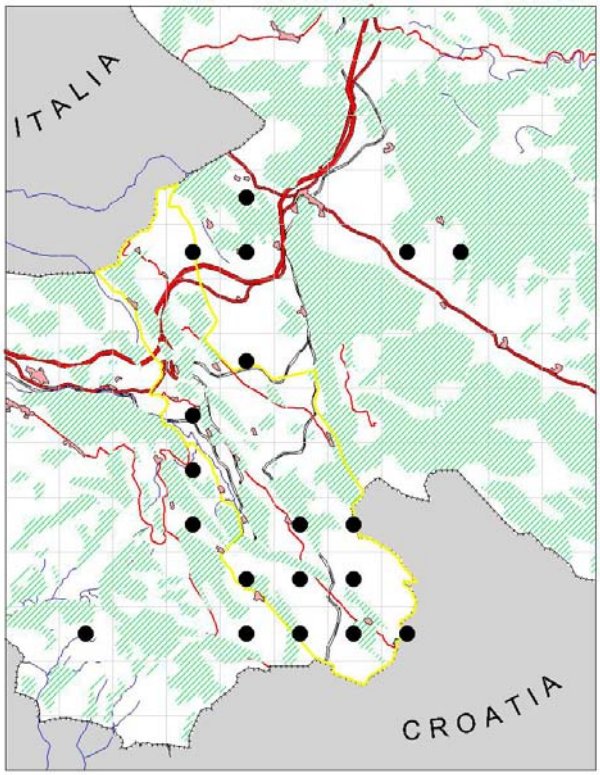
Map 39, F. silvestris



Map 40, S. scrofa



Map 41, C. elaphus



Map 42, C. capreolus

8. Parasites on bats

From bats captured in mist nets during the summer camp in Slovenia, as many parasites as could be found were collected.
The intention was to find out what kinds of parasites are found on bats, which bat species are particularly often parasitized and whether tree-dwelling and cave-dwelling bats carry different parasites. By collecting parasites from bats in Slovenia, a comparison can be made with parasites collected from bats of the same species in The Netherlands.

Method of collection

When a bat is caught, the species is identified and sex and age are determined. After size measurements and weight have been determined, it is examined for the presence of parasites, after which it is released. For each bat a separate Eppendorf tube containing 2 ml of alcohol is used to store the parasites. When a bat is found to carry parasites, these are removed with a pair of fine-tipped tweezers. Ear rims, fur and wing membranes are particularly scrutinized. The tweezers are dipped in alcohol and the parasites dabbed with it. Stunned this way, the parasite releases its hold easier. Even then, it's often a tough job to collect parasites. Fourteen bat species were caught and from nine of these, parasites were collected. The parasites were divided in the following groups: Acari (mites), Argasidae, Ixodidae (ticks) en Nycteribiidae (bat flies).

Results

Cave-dwelling Long-fingered Bats in particular were found to often carry parasites. The large bat flies, scurrying at great speeds through the fur, were striking. It's probable that these large insects bother the bats considerably. The inserted table lists the results of identification (table 6). Bat flies were also found on Lesser Mouse-eared Bat (*Myotis blythii*) and Daubenton's Bat (*Myotis daubentonii*). It's known that these species form large colonies and it can be assumed that the parasites can readily move from one animal to the next.

Acarina
Mites and ticks belong to this group. The mites collected from bats we captured were unidentifiable. All consulted specialists were forced to return the assignment. No more than two ticks were identifiable to the species level: *Argas vespertilionis* (Argasidae, larva) en *Ixodes vespertilionis* (Ixodidae). Of between 35 and 40 species found in Europe, only five are known to occur on bats. *Argas vespertilionis* is a Central-European species, which mainly occurs in caves and rock crevices.

Foto vleermuisvlieg
Penicillidia dufourii (Westwood, 1835) (photo: Ruud van der Weele)

Nycteribiidae (Diptera)
These ectoparasites live on bats and belong to the flies (Diptera). The imagos are wingless and show a strong preference for a particular host type, from which they suck blood. The eyes are underdeveloped of absent. Body and legs are hairy, aiding the animals grip on the fur of its host. The young shed their skin twice inside their mothers body and pupate immediately after birth. We were able to catch four species, namely: *Nycteribia pedicularia* Latreille, *Nycteribia latreillii* (Leach), *Nycteribia schmidlii* Schiner, 1853, and *Penicillidia dufourii* (Westwood, 1835). Strikingly, these large bat flies were mainly found on Long-fingered bats.

Identification
Parasites collected were identified by Herman de Jong of the Zoological Museum Amsterdam and Ruud van der Weele, associated with EIS (European Invertabrate Survey). All collected parasites were deposited in the scientific collections of the Zoological Museum Amsterdam and the National Museum of Natural History in Leiden.

Acknowledgements
In conclusion, a word of thanks to Ben Brugge, Herman de Jong and Ruud van der Weele

date	location	x-rate	y-rate	species	sexe	number	Parasites determinated
7/29/2004	Rizane beek	412248	5042746	M. capaccinii	♀	AG 3	Acari sp. sp.(batmite)
"	"	412248	5042746	M. capaccinii	♂	AG 5	Acari sp.
"	"	412248	5042746	M. capaccinii	♀	AG 6	Family Nycteribiidae, Penicillidia dufourii (Westwood, 1835) 1 male, 1 female sp. 2 spec. (batfly)
"	"	412248	5042746	M. capaccinii	♂	AG 7	Acari sp.
"	"	412248	5042746	N. noctula	♂	AG 8	
"	"	412248	5042746	N. leisleri	♂	AG 9	
"	"	412248	5042746	M. capaccinii	♂	AG 10	Acari sp.
"	"	412248	5042746	M. capaccinii	♂	AG 11	Acari sp.
"	"	412248	5042746	M. capaccinii	♀	AG 12	Acari sp.
"	"	412248	5042746	M. capaccinii	♂	AG13	
"	"	412248	5042746	M. capaccinii	♀	AG 14	
7/30/2004	"	412248	5042746	M.daubentoni	♂	C 1	Family Nycteribiidae, Penicillidia dufourii (Westwood, 1835) fem. 1 spec. . (batfly)
"	"	412248	5042746	M. daubentoni	♂	C 2	Family Nycteribiidae, Nycteribia latreillii (Leach) male, 1 spec. (batfly)
"	"	412248	5042746	M. capaccinii	♂	C 3	Family Nycteribiidae Penicillidia dufourii (Westwood, 1835) 2 males, 1 female. 3 spec. (batfly)
"	"	412248	5042746	M. capaccinii	♀	C 4	Family Nycteribiidae, Nycteribia pedicularia Latreille male, 1 spec. (batfly)
"	"	412248	5042746	M. capaccinii	♂	C 5	Family Nycteribiidae, Nycteribia pedicularia Latreille fem, 1 spec. (batfly) + Acari sp.
"	"	412248	5042746	M. capaccinii	♂	C 6	Acari sp.
7/30/2004	JV 012	407476	5044526	M. mystacinus	♀	D 3	
"	"	407476	5044526	M. capaccinii	♂	D 5	
"	"	407476	5044526	M. capaccinii	♀	D 6	Acari sp.
"	"	407476	5044526	M. capaccinii	♀	D 13	Family Nycteribiidae Penicillidia dufourii (Westwood, 1835) 1m 1 fem. . (batfly)
							Family Nycteribiidae, Nycteribia schmidlii Schiner, 2m 4 fem. (batfly)
7/31/2004	Grot Zazid	416233	5039076	R. euryale	♂	E 6	Acari sp.
8/1/2004	Grot Kroatische grens	420635	5034092	R. ferrumequinum	♂	F 2	Acari sp.
"	"	420635	5034092	M. blythii	♂	F 3	Family Nycteribiidae Penicillidia dufourii (Westwood, 1835) fem sp. 1 spec. . (batfly)
"	"	420635	5034092	M. blythii	♂	F 10	Acari sp., + Ixodes vespertilionis Koch (female) (battick)
8/2/2004	Forellenkwekerij aan Rizane	412961	5042289	M. daubentoni	♂	G 1	
"	"	412961	5042289	M. daubentoni	♀	G 3	Acari sp.
"	"	412961	5042289	M. blythii	♀ lact.	G 4	Acari sp.
"	"	412961	5042289	M. capaccinii	♀	G 6	Family Nycteribiidae, Nycteribia pedicularia Latreille fem, 1 spec. (batfly)
"	"	412961	5042289	M. blythii	♂	G 11	
8/3/2004	Berg Slavnic	420888	5035715	M. blythii	♂	H 1	Acari sp.
"	"	420888	5035715	M. nattereri	♂	H 2	Acari sp.
8/4/2004	Stuwdam Babič	404622	5040931	P. savii	♀ lact.	J 1	Acari sp., + Argas vespertilionis Latreille (larva)
8/6/2004	Grot Grasisce	412829	5038943	R. ferrumequinum	♂	K 1	Acari sp.

Table 6, List of parasites taken of bats during the VZZ Summer camp 2004.

for their identifications and (Ben) for correcting this part of the report. Ruud van der Weele is also acknowledged for providing the photograph of the bat fly. Klaas Kaag is acknowledged for proofreading this text with regard to its content.

Penicillidia dufourii, foto R. van der Weele

9. Records of non-mammal species

Although our activities in Slovenia in the period between 24 July - 7 August 2004 focused on mammals, other forms of wildlife were recorded as well. This chapter contains a description of birds, amphibians, reptiles, butterflies, dragonflies and grasshoppers observed.

Birds

Late summer in a mountainous and forested country in Central Europe is not the best place and time to observe birds. Many birds have finished breeding by this time and behave shy and inconspicuous. Migration has not really started yet, although the first signs of it (e.g. groups of swallows) can already be observed. Nevertheless, 100 birds species were seen during the camp, 20 of which were only observed at the coast near Koper (water birds, waders, gulls and terns).

The open grassy area above the tree line is home to the most interesting bird species. Here, Short-toed eagle, Lesser spotted eagle and a group of four Eurasian griffon-vultures were observed on several occasions. A European roller was also reported here, during a botanical excursion. Perhaps the most interesting observation concerned a Rock partridge. The range of distribution of this species in Central Europe is comparatively small and it's rather rare and difficult to observe. This species was seen when flushed at close range on several occasions in grassy, rocky terrain just above the tree line. Peregrine falcon, groups of Alpine swifts and the occasional Raven were seen regularly over the rock formations.

During the evenings, Eurasian scops-owls, Little owls and European nightjars could be heard everywhere. The latter species was seen nearly every evening, resting on roads and tracks around the village. The forests generally yielded few signs of bird life. In the rural, small-scale landscape species like Eurasian hoopoe, Red-backed shrike, Golden oriole, Hawfinch, European serin, and Cirl bunting were observed.

At the coast south of Koper are some salt marshes. Here, groups numbering hundreds of Mediterranean gulls were present. Furthermore, low numbers of migrating waders were to be seen. Other common species here are Little egret, Black-winged stilt and Little tern. A full list of observed birds is included in Appendix 3.

Amphibians and Reptiles.

Besides mammals, the many camp participants also reported amphibians and reptiles. In this area, which is known for it's abundance with many species reaching the northern border of their distribution here, relatively few observations of amphibians and reptiles were reported. Partly due to the occurrence of traffic victims and shed skins, all in all an impressive list of species was found nevertheless. Seven species of amphibians and ten species of reptiles were observed.

The Nose-horned Viper (*Vipera ammodytes*) is common in the region. The observation of a Western Whip Snake (*Coluber viridiflavus*) is very plausible. Its occurring in the region is a sub-species, the animals turn darker and usually end up a shiny black as they grow larger. The Viviparous Lizard (*Lacerta vivipara*) does occur in the region, and is generally found only at high altitudes.

A hilarious and perhaps for the people involved (Jan Piet Bekker and Jan Boshamer) rather frightening event occurred when a living snake escaped from a mouse trap when is

Vipera ammodytes

was checked. The species could not be identified.
One snake was found along a stream at the salt extraction area on the border with Croatia. It was said to be a Dice snake, after much discussion. The nearest coordinates are UTM-419392 / 5035649. This individual was a road casualty.

Concerning observations of Agile Frogs (*Rana dalmatina*), there is some uncertainty. It is known that both species occur in the region. Agile Frogs were identified using leg length only. However, the subspecies of the Moor Frog occurring in this region (ssp. w*olterstorffi*) also has very long hind legs, thereby making it completely different from the ones in Western Europe, where hind leg length does lead to a reliable identification. A more reliable distinguishing feature is the diameter of the tympanic membrane compared to that of the eye and to the distance between the tympanic membrane and the eye.
The list of observed species is included in Appendix 4.

Butterflies

The fact that Slovenia has a lot to offer in terms of insect diversity becomes apparent when the long list of diurnal butterflies is considered. Without to much effort, almost seventy species were identified.

At the two pools in our village, drinking Scarce swallowtails could be seen all through the day. The thicket just outside the village was teeming with Large skippers, Ilex hairstreaks, Blue spot hairstreaks, Graylings, Woodland graylings en Great banded graylings. Fenton's wood white and an occasional Chequered blue were also observed.
Halfway up the mountains was a zone full of flowers where swarms of butterflies were fluttering about. Dark green fritillary, Niobe fritillary, Cardinal, Silver washed fritillary, Marbled white, Great sooty satyr, Great banded grayling, False grayling, Grayling and Woodland grayling were particularly noticeable here. Hummingbird hawk-moth and owlflies were also flying about here.

Anguis fragilis

Bombina variegata

The flowery meadows around the village of Rakitovec were full of fritillaries and blues. In the villages, a old fig tree bearing much ripe fruit could be found now and then. Dozens of Great banded graylings and Red admirals could be found here. Both Comma and Southern comma were also found here.

Streams running dry were also suitable places for butterflies, especially when sunny, rocky parts with muddy patches were present. Southern white admiral, Dingy skipper, Lang's short-tailed blue, Duke and Lesser purple emperor were seen here regularly. Hungarian glider and White admiral were also present occasionally.

The almost or complete absence of some common species like Small skipper, European skipper, Large white, Small tortoiseshell, Painted lady and Red admiral was remarkable. The European peacock was only found resting in small caves. Hardly any erebias were observed either.
A list of observed species is included in Appendix 5.

Dragonflies

During camp, 20 dragonfly species were observed. Most species were found along streams. White-legged damselfly and Beautiful demoiselle were locally particularly abundant. In sunny patches, Green-eyed club-tail, Southern skimmer and Scarlet darter were flying about.
In shady spots where small pools remained along streams running dry, small populations of Southern brilliant emerald were locally present. At small reservoirs, Black-tailed skimmer, Emperor dragonfly and occasionally Southern hawker could be found. The most interesting waters were isolated small ponds with clear water and well developed aquatic vegetation. Among others, Dainty damselfly, Scarce blue-tailed damselfly and Marshland darter were found here.
A full list of observed dragonflies and damselflies is included in Appendix 6.

Grasshoppers

In the study area extremely many grasshoppers were seen. A list of identified species is included in Appendix 7.

Young angry chairman

10. Protected Area

Slovenia is a member of the European Union since May 2004. The consequence is that all European Directives are committed to the national Slovenian law. The protection of nature is ruled by the Habitat Directive and the Birds Directive. The Convention of Bonn, Bern and Ramsar are committed when they are signed by the Government.
Both the Directives as the Conventions have two methods to protect nature: protection by species and protection by areas.

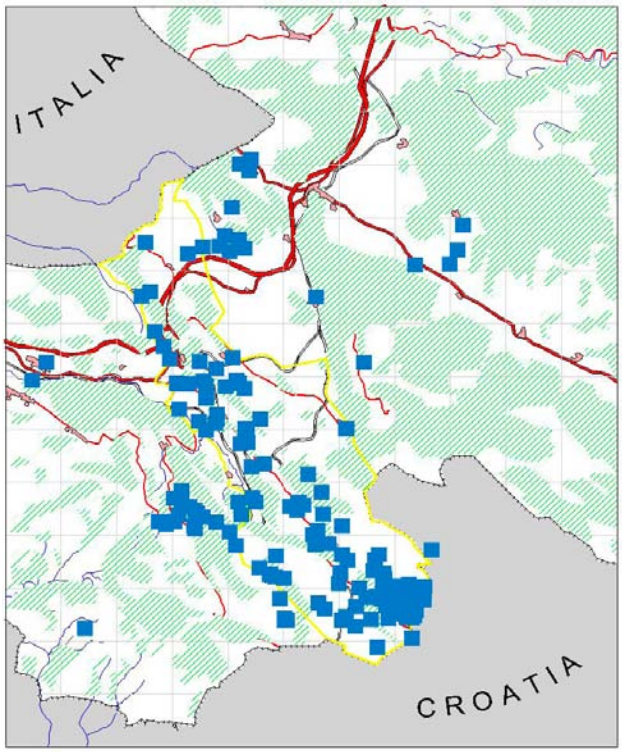
Protection by species

The protection of species is by individuals and by populations. The Habitat Directive and the Birds Directive are willing to keep durable populations of the rare or threatened plant and animals. Therefore is corresponded a regulation of trade, possession and hunting. Thus must weigh of it for example at building houses or wind turbines is, examined or protected plants or animals damage to experience. This damage must be compensated then or the plan development must be struck or moves.

Protection by areas

In the Bird Directive it has been stipulated that areas, where during a period in the year a substantial part of Western European stays must be protected at law. The Habitat Directive make this protection construction with a vaster list types to protect and with a list habitat to protect. In Annexes II of the Habitat Directive a limitative enumeration of types stands for which the national governments must designate so-called special protection areas. A number of the types has been commented as priority. That meant that which types with primacy protection areas must be designated.

Map 43, protected species



Species in Slovenia

The research in Rakitovec has itself mainly targeted on the inventory of mammals. The remaining animals have been only noted as perception and therefore far from complete; certainly what concerns the distribution picture. Especially a more intensive study into the Great capricorn beetle and the Stag beetle can give a sharper look of the special protection area. The two other priority types, Yellow-bellied toad and Ophiogomphus cecilia, have been bound too much to water in the surroundings of Rakitovec to stand an important and durable develop population. Locally these animals can occur moreover, however.

Near Rakitovec no less than eight priority mammals have been observed (table 7). The distribution of these strictly protected animals agree to the research distribution. In other words everywhere where it has been examined at least one priority type occurs. In sum twelve types for which with primacy protection area must be designated according to the

habitat directive (appendix 8). Beside, have been found the types for which special protection areas must become are a special designated a large number strictly protected types to have been observed. At interventions in the landscape or the habitat always must be examined or prevention can become that these types in the prevention are threatened by the planned measure.

Scientific name	English name	
Myotis bechsteinii	Bechstein's bat	bat
Rhinolophus ferrumequinum	Greater horseshoe bat	bat
Myotis myotis	Greater mouse-eared bat	bat
Rhinolophus hipposideros	Lesser horseshoe bat	bat
Myotis blythii	Lesser mouse-eared bat	bat
Myotis capaccinii	Long-fingered bat	bat
Myotis emarginatus	Geoffroy's bat	bat
Rhinolophus euryale	Mediterranean horseshoe bat	bat
Lucanus cervus	Stag Beetle	beetle
Cerambyx cerdo	Great Capricorn Beetle	beetle
Bombina variegata	Yellow-bellied Toad	amphibia
Ophiogomphus cecilia		dragonfly

Table 7. Priority species.

National Park

With the project "conservation of endangered habitats/species in the Future Karst Park" the first steps to protect the area conform the Habitat Directive are made. Karst is one of the richest area in Slovenia in terms of biodiversity. This area has been a subject of many national and EU – supported actions focusing on safeguarding its natural heritage. At the national level, the area is considered as future Karts Regional Park and has already been designated as Important Bird Area (IBA). Within this area, the Kraski Rob - Pilot Area 1 (approx 7.500 ha) is considered as the most important area in terms of biodiversity values.
The project aims to ensure effective protection of endangered habitats and species, which require particular management measures as their legal protection in Slovenia is based on habitat management.

Targeted habitats include:
1. Semi-natural dry grasslands and scrubland on calcareous substrates;
2. Medio-European calcareous scree;
3. Chasmophytic vegetation on rocky slopes;
4. Mediterranean temporary ponds.

The official project nominated 'one plant, and one butterfly species' for listed as priority on the Annexes I and II to the Habitats Directive. After our research that can be completed with eight bats, two beetles, an amphibian and a dragonfly.
There is therefore all reason persevere the indication with strength of arguments.

Summary

The summer camp of the Fieldwork Group of the Society for the Study and Conservation of Mammals, which has become a tradition of sorts, was held from 28 July to 7 August in the National Park in formation around the small village of Rakitovec in western Slovenia, just north of the Croatian border.
The landscape park was called into life with funds from the European Union as part of the LIFE-Nature program. Foundation of the park is a first step towards adequate protection of the unique biodiversity in one of Slovenia's ecologically most valuable regions.
Activities during summer camp were aimed predominantly at an inventory of mammals occurring in the area. Eight prioritized mammal species of the Habitat Directive, most of them bats, were actually observed (see chapter Protected Area). Amphibians and insects were also studied. The enormous abundance and species diversity of grasshoppers was quite baffling.
Small mammals were surveyed by use of a large number of live traps. No more than three species of small mammals were actually trapped. The absence of any shrews and voles in the traps was particularly noticeable. In spite of all efforts exercised on top of mountain Slavnik (above Rakitovec), the occurrence of the Snow vole could not be established for certain. Besides the trapping survey, information on small mammals was collected through analysis of Barn owl pellets. An unusual event occurred when the remains of two different species of shrew (*C. leucodon* en *C. suaveolens*) were discovered in a discarded wine bottle.
Much time was spent surveying bats. Various caves were searched and several were found to be suitable hibernacula. Shortage of running waters, like streams and rivers, formed a restricting factor during the mistnetting survey. Over the Rizane stream, dozens of bats were caught in the course of a few nights. Here and at several caves, a total of 13 species were netted.
During the many and long nocturnal ramblings, Eastern hedgehog, Western polecat, Red squirrel, Badger, Wildcat, Wild boar and Roe deer were observed.
We hope that the data, brought together in this report, will contribute to the knowledge of the area. If this knowledge can counterbalance plans for the construction of a windmill park and expansion of several villages and is used to compensate damage sustained from interventions in environmental planning, then this summer camp was absolutely successful.

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Appendices

Appendix 1. Mammals

English name	***Scientific name***	***Dutch name***	***Slovenian name***
Eastern hedgehog	*Erinaceus concolor*	*Oostelijke egel*	*Beloprsi jež*
Bi-coloured white-toothed shrew	*Crocidura leucodon*	*Veldspitsmuis*	*Poljska rovka*
Lesser white-toothed shrew	*Crocidura suaveolens*	*Tuinspitsmuis*	*Vrtna rovka*
Common mole	*Talpa europea*	*Mol*	*Navadni krt*
Brown hare	*Lepus europeus*	*Haas*	*Poljski zajec*
Red squirrel	*Sciurus vulgaris*	*Eekhoorn*	*Navadna veverica*
Snow vole (possibly)	*Chionomys nivalis*	*Sneeuwmuis*	*Snežna volharica*
Edible dormouse	*Glis glis*	*Relmuis*	*Navadni polh*
Common dormouse	*Muscardinus avellanarius*	*Hazelmuis*	*Podlesek*
Red fox	*Vulpes vulpes*	*Vos*	*Lisica*
Western polecat	*Mustela putorius*	*Bunzing*	*Navadni dihur*
Beech marten	*Martes foina*	*Steenmarter*	*Kuna belica*
Badger	*Meles meles*	*Das*	*Jazbec*
Wild cat	*Felis silvestris*	*Wilde kat*	*Divja mačka*
Wild boar	*Sus scrofa*	*Wild zwijn*	*Divji prašič*
Red deer	*Cervus elaphus*	*Edelhert*	*Navadni jelen*
Roe deer	*Capreolus capreolus*	*Ree*	*Srna*

Appendix 2. observations

English name	Scientific name	Dutch name	Slovenian name	remarks
Eastern hedgehog	Erinaceus concolor	Oostelijke egel	Beloprsi jež	several seen
Bi-coloured white-toothed shrew	Crocidura leucodon	Veldspitsmuis	Poljska rovka	only in bottle
Lesser white-toothed shrew	Crocidura suaveolens	Tuinspitsmuis	Vrtna rovka	only in bottle
Common mole	Talpa europea	Mol	Navadni krt	many tracks
Mediterranean horseshoe bat	Rhinolophus euryale	Paarse hoefijzerneus	Južni podkovnjak	1 mistnet capture
Greater horseshoe bat	Rhinolophus ferrumequinum	Grote hoefijzerneus	Veliki podkovnjak	1 mistnet capture
Lesser horseshoe bat	Rhinolophus hipposideros	Kleine hoefijzerneus	Mali podkovnjak	12 colonies
Bechstein's bat	Myotis bechsteinii	Bechsteins vleermuis	Veliki navadni netopir	1 capture
Greater mouse-eared bat	Myotis myotis	Vale vleermuis	Navadni netopir	heard
Lesser mouse-eared bat	Myotis blythii	Kleine vale vleermuis	Ostrouhi netopir	20 captures
Long-fingered Bat	Myotis cappaccinii	Cappaccini's vleermuis	Dolgonogi netopir	25 captures
Daubenton's bat	Myotis daubentoni	Watervleermuis	Obvodni netopir	4 captures
Geoffroy's bat	Myotis emarginatus	Ingekorven vleermuis	Vejicati netopir	1 captures
Whiskered bat	Myotis mystacinus	Baardvleermuis	Brkati netopir	2 captures
Natterer's bat	Myotis nattereri	Franjestaart	Resasti netopir	4 captures
Kuhl's pipistrelle	Pipistrellus kuhlii	Kuhls dwergvleermuis	Belorobi netopir	7 captures; 4 colonies
Common pipistrelle	Pipistrellus pipistrellus	Dwergvleermuis	Mali netopir	1 colony
Savi's pipistrelle	Pipistrellus savii	Savi's dwergvleermuis	Savijev netopir	1 captures; 1 colony
Leisler's bat	Nyctalus leisleri	Bosvleermuis	Gozdni mračnik	1 capture
Noctule	Nyctalus noctula	Rosse vleermuis	Navadni mračnik	1 capture
Serotine bat	Eptesicus serotinus	Laatvlieger	Pozni netopir	observation
Brown long-eared bat	Plecotus auritus	Gewone grootoorvleer-muis	Rjavi uhati netopir	9 captures
Brown hare	Lepus europeus	Haas	Poljski zajec	seen several times
Red squirrel	Sciurus vulgaris	Eekhoorn	Navadna veverica	seen 3 times
Common vole	Microtus arvalis	Veldmuis	Poljska voluharica	in pellet
Alpine pine vole	Microtus multiplex	Fatio's woelmuis	Ilirska kratkouha volu-harica	in pellet
Snow vole (possibly)	Chionomys nivalis	Sneeuwmuis	Snežna volharica	burrows?
Striped field mouse	Apodemus agrarius	Brandmuis	Dimasta miš	in pellet & trapcat-ches
Yellow-necked mouse	Apodemus flavicollis	Grote bosmuis	Rumenogrla miš	in pellet & trapcat-ches
Edible dormouse	Glis glis	Relmuis	Navadni polh	in pellets, trapcat-ches, seen & tracks
Common dormouse	Muscardinus avellanarius	Hazelmuis	Podlesek	once seen & in pellet
Red fox	Vulpes vulpes	Vos	Lisica	seen & droppings
Western polecat	Mustela putorius	Bunzing	Navadni dihur	seen & droppings
Beech marten	Martes foina	Steenmarter	Kuna belica	seen & tracks
Badger	Meles meles	Das	Jazbec	seen & tracks
Wild cat	Felis silvestris	Wilde kat	Divja mačka	once seen
Wild boar	Sus scrofa	Wild zwijn	Divji prašič	may tracks & seen
Red deer	Cervus elaphus	Edelhert	Navadni jelen	droppings
Roe deer	Capreolus capreolus	Ree	Srna	seen many times

Appendix 3. birds

English name	scientific name	Dutch name	Slovenian name
Eurasian griffon-vulture	Gyps fulvus	Vale gier	Beloglavi jastreb
Short-toed Eagle	Circaetus gallicus	Slangenarend	Kačar
Lesser spotted Eagle	Aquila pomarina	Schreeuwarend	Mali klinkač
Common buzzard	Buteo buteo	Buizerd	Kanja
Honey buzzard	Pernis apivrous	Wespendief	Sršenar
Northern goshawk	Accipter gentilis	Havik	Kragulj
Eurasian sparrow-hawk	Acciptter nisus	Sperwer	Skobec
Common kestrel	Falco tinnunculus	Torenvalk	Postovka
Eurasian hobby	Falco subbuteo	Boomvalk	Škrjančar
Peregrine falcon	Falco peregrinus	Slechtvalk	Sokol
Common pheasant	Phasianus colchicus	Fazant	Fazan
Rock partridge.	Alectoris graeca	Europese steenpatrijs	Kotorna
Little ringed Plover	Charadrius dubius	Kleine plevier	Mali deževnik
Wood pigeon	Columba oenas	Houtduif	Golob duplar
Eurasian collared dove	Streptopelia decaocto	Turkse tortel	Turška grlica
European turtle dove	Streptopelia turtur	Zomertortel	Divja grlica
Eurasian scops-owl	Otus scops	Dwergooruil	Veliki skovik
Little owl	Athene noctula	Steenuil	Čuk
Tawny owl	Strix aluco	Bosuil	Lesna sova
European nightjar	Caprimulgus europaeus	Nachtzwaluw	Podhujka
Common kingfisher	Alcedo atthis	IJsvogel	Vodomec
European bee-eater	Merops apiaster	Bijeneter	Čebelar
Eurasian hoopoe	Upupa epops	Hop	Smrdokavra
European roller	Coracias garrulus	Scharrelaar	Zlatovranka
European green woodpecker	Picus viridis	Groene specht	Zelena Žolna
Great spotted woodpecker	Dendrocopos major	Grote bonte specht	Veliki detel
Black woodpecker	Dryocopus martius	Zwarte specht	Črna žolna
Eurisian wryneck	Jynx torquilla	Draaihals	Vijeglavka
Alpine swift	Apus melba	Alpengierzwaluw	Planinski hudournik
Common swift	Apus apus	Gierzwaluw	Črni hudournik
Sky lark	Alauda arvensis	Veldleeuwerik	Poljski škrjanec
Tree pipit	Anthus trivalis	Boompieper	Drevesna cipa
White wagtail	Motacilla alba	Witte kwikstaart	Bela pastirica
Grey wagtail	Motacilla cinera	Grote gele kwikstaart	Siva pastirica
Eurasian swallow	Hirundo rustica	Boerenzwaluw	Kmečka lastovka
House martin	Delichon urbica	Huiszwaluw	Mestna lastovka
Red-backed shrike	Lanius collurio	Grauwe klauwier	Rjavi srakoper
Melodius warbler	Hippolais polyglotta	Orpheusspotvogel	Kratkoperuti vrtnik
Blackcap	Sylvia atricapilla	Zwartkop	Črnoglavka
Common chiffchaf	Phylloscopus collybita	Tjiftjaf	Vrbja listnica
Goldcrest	Regulus regulus	Goudhaantje	Rumenoglavi kraljiček
Spotted flycatcher	Muscicapa striata	Grauwe vliegenvanger	Sivi muhar
Northern wheatear	Oenanthe oenanthe	Tapuit	Kupčar
Common nightingale	Luscinia megarhynos	Nachtegaal	Mali slavec
Common blackbird	Turdus merula	Merel	Kos
Song thrush	Turdus philomelos	Zanglijster	Cikovt
Mistle thrush	Turdus viscivorus	Grote lijster	Carar
Golden oriole	Oriolus oriolus	Wielewaal	Kobilar
Starling	Sturnus vulgaris	Spreeuw	Škorec
Jay	Garrulus glandarius	Vlaamse gaai	Šoja
Eurasian jackdaw	Corvus monedula	Kauw	Kavka
Magpie	Pica pica	Ekster	Sraka

Crow	*Corvus corone*	*Zwarte kraai*	*Vrana*
Carrion crow	*Corvus cornix*	*Bonte kraai*	*Siva vrana*
Common raven	*Corvus corax*	*Raaf*	*Krokar*
Wren	*Troglodytes troglydytes*	*Winterkoning*	*Stržek*
European robin	*Erithacus rubecula*	*Roodborst*	*Taščica*
Blue rock-thrush	*Monticola soliatarius*	*Blauwe rotslijster*	*Puščavec*
Marsh tit	*Parus palustris*	*Glanskop*	*Močvirska sinica*
Willow tit	*Parus montanus*	*Matkop*	*Gorska sinica*
Coal tit	*Parus ater*	*Zwarte mees*	*Menišček*
Crested tit	*Parus cristatus*	*Kuifmees*	*Čopasta sinica*
Blue tit	*Parus caeruleus*	*Pimpelmees*	*Plavček*
Great tit	*Parus major*	*Koolmees*	*Velika sinica*
Long-tailed tit	*Aegithalos caudatus*	*Staartmees*	*Dolgorepka*
Sombre tit	*Parus lugubris*	*Rouwmees*	*Žalobna sinica*
European nuthatch	*Sitta europaea*	*Boomklever*	*Brglez*
Eurasian tree-creeper	*Certhia familiaris*	*Boomkruiper*	*Dolgoprsti plezalček*
House sparrow	*Passer domesticus*	*Huismus*	*Domači vrabec*
Chaffinch	*Fringilla coelebs*	*Vink*	*Ščinkavec*
Hawfinch	*Coccothraustes coccothraustes*	*Appelvink*	*Dlesk*
European serin	*Serinus serinus*	*Europese kanarie*	*Grilček*
Eurasian greenfinch	*Carduelis chloris*	*Groenling*	*Zelenec*
European goldfinch	*Carduelis carduelis*	*Putter*	*Lišček*
Eurasian twite	*Carduelis flavirostris*	*Kneu*	*Severni repnik*
Common crossbill	*Loxia curvirostra*	*Kruisbek*	*Mali krivokljun*
Cirl bunting	*Emberiza cirlus*	*Cirlgors*	*Plotni strnad*
Yellow hammer	*Emberiza citrinella*	*Geelgors*	*Rumeni strnad*
Rock bunting	*Emberiza cia*	*Grijze gors*	*Skalni strnad*
Corn bunting	*Emberiza calandra*	*Grauwe gors*	*Miliaria calandra = Veliki strnad*
Birds species seen at the coast near Koper			
Great crested grebe	*Podiceps cristatus*	*Fuut*	*Čopasti ponirek*
Little egret	*Egretta garzetta*	*Kleine zilverreiger*	*Mala bela čaplja*
Grey heron	*Adrea cinerea*	*Blauwe reiger*	*Siva čaplja*
Great cormarant	*Phalacrocorax carbo*	*Aalscholver*	*Veliki kormoran*
Mallard	*Anas platychynchos*	*Wilde eend*	*Mlakarica*
Common coot	*Fulica atra*	*Meerkoet*	*Liska*
Northern lapwing	*Vanellus vanellus*	*Kievit*	*Priba*
Kentisch plover	*Charadrius alexandrius*	*Strandplevier*	*Beločeli deževnik*
Common greenshank	*Tringa ochropus*	*Groenpootruiter*	*Pikasti martinec*
Wood sandpiper	*Tringa glareola*	*Bosruiter*	*Močvirski martinec*
Green sandpiper	*Tringa nebularia*	*Witgatje*	*Zelenonogi martinec*
Common sandpiper	*Actitis hypoleucos*	*Oeverloper*	*Mali martinec*
Whimbrel	*Numenius phaeopus*	*Regenwulp*	*Mali škurh*
Black-winged stilt	*Himantopus himantopus*	*Steltkluut*	*Polojnik*
Curlew sandpiper	*Calidris ferruginea*	*Krombekstrandloper*	*Srpokljuni prodnik*
Little stint	*Calidris minuta*	*Kleine strandloper*	*Mali prodnik*
Yellow-legged gull	*Larus michahellis*	*Geelpootmeeuw*	*Rumenonogi galeb*
Mediterranean gull	*Larus melanocephalus*	*Zwartkopmeeuw*	*Črnoglavi galeb*
Little tern	*Sterna albifrons*	*Dwergstern*	*Mala čigra*
Fan-tailed warbler	*Cisticola juncidis*	*Graszanger*	*Brškinka*

Appendix 4. amphibians and reptiles

English name	***scientific name***	***Dutch name***	***Slovenian name***
Amphibians			
Alpine warty newt	*Triturus carniflex*	*Italiaanse kamsalamander*	*Alpski veliki pupek*
Fire salamander	*Salamandra salamandra*	*Vuursalamander*	*Navadni močerad*
Common toad	*Bufo bufo*	*Gewone pad*	*Navadna krastača*
Common tree frog	*Hyla arborea*	*Boomkikker*	*Zelena rega*
Agile frog	*Rana dalmatina*	*Springkikker*	*Rosnica*
Moor frog	*Rana arvalis*	*Heikikker*	*Plavček*
Yellow-bellied toad	*Bombina variegata*	*Geelbuikpad*	*Hribski urh*
Reptiles			
Slow worm	*Anguis fragilis*	*Hazelworm*	*Slepec*
Common wall lizard	*Podarcis muralis*	*Muurhagedis*	*Pozidna kuščarica*
Viviparous lizard	*Lacerta vivipara*	*Levendbarende hagedis*	*Živorodna kuščarica*
Dalmatian wall lizard	*Podarcis melisellensis*	*Karsthagedis*	*Kraška kuščarica*
Italian wall lizard	*Lacerta sicula*	*Ruïnehagedis*	*Podarcis sicula = Primorska kuščarica*
Green lizard	*Lacerta viridis*	*Smaragdhagedis*	*Zelenec*
Dice snake	*Natrix tessellata*	*Dobbelsteenslang*	*Kobranka*
Grass snake	*Natrix natrix*	*Ringslang*	*Belouška*
Western whip snake	*Coluber viridiflavus*	*Geelgroene toornslang*	*Črnica*
Nose-horned viper	*Vipera ammodytes*	*Zandadder*	*Modras*

Appendix 5. butterflies

English name	scientific name	Dutch name	Slovenian name
Swallowtail	Papilio machaon	Koninginnepage	Lastovičar
Scarce swallowtail	Iphiclides podalirius	Koningspage	Jadralec
Small white	Pieris rapae	Klein koolwitje	Repin belin
Green-veined white	Pieris napi	Klein geaderd witje	Repičin belin
Mountain Small White	Pieris ergane	Wedewitje	mali belin
Eastern bath white	Pontia edusa	Oostelijk resedawitje	vzhodni selec ?
Berger's clouded yellow	Colias alfacariensis	Zuidelijke luzernevlinder	rumeni senožetnik
Clouded yellow	Colias croceus	Oranje luzernevlinder	navadni senožetnik
Wood white	Leptidea sinapis	Boswitje	navadni frfotavček
Easthern wood white	Leptidea morsei	Oostelijk boswitje	mali frfotavček
Ilex hairstreak	Satyrium ilicis	Bruine eikenpage	Hrastov repkar
blue-spot hairstreak	Satyrium spini	Wegedoornpage	trnov repkar
Small copper	Lycaena phlaeas	Kleine vuurvlinder	mali cekinček
Scooty copper	Lycaena tityrus	Bruine vuurvlinder	temni cekinček
Lang's short-tailed blue	Leptotes pirithous	Klein tijgerblauwtje	modri marogavček
Holly blue	Celastrina argiolus	Boomblauwtje	svetli krhlikar
Small blue	Cupido mininus	Dwergblauwtje	mali kupid
Southern little blue	Cupido osiris	Zuidelijk dwergblauwtje	modri kupid
Silver-studded blue	Cupido argus	Heideblauwtje	širokorobi preprostež
Reverdin's blue french	Plebejus argyrognomon	Kroonkruidblauwtje	srebrni preprostež
Chapman's blue	Polyommatus thersites	Esparcetteblauwtje	deteljin modrin
Turquoise blue	Polyommatus dorylas	Turkoois blauwtje	turkizni modrin
Chalk hill blue	Polyommatus coridon	Bleek blauwtje	?
Adonis blue	Polyommatus bellargus	Adonisblauwtje	lepi modrin
Common blue	Polym. Icarus	Icarusblauwtje	navadni modrin
Chequered blue	Scolitantides orion	Vetkruidblauwtje	humuljični krivček
Duke	Hamearis lucina	Sleutelbloemvlinder	rjavi šekavček
Lesser purple emperor	Apatura ilia	Kleine weerschijnvlinder	mali spreminjavček
Southern white admiral	Limenitis reducta	Blauwe ijsvogelvlinder	modri trepetlikar
White admiral	Limenitis camilla	Kleine ijsvogelvlinder	mali trepetlikar
Hungarian glider	Neptis rivularis	Spireazwever	veliki kresničar
Red admiral	Vanessa atalanta	Atalanta	Admiral
Painted lady	Vanessa cardui	Distelvinder	osatnik
Small tortoiseshell	Aglais urticae	Kleine vos	koprivar
Comma	Polygonia c-album	Gehakkelde aurelia	beli C
Southern comma	Polygonia egea	Zuidelijke aurelia	beli L
Cardinal	Argynnis pandora	Kardinaalsmantel	razkošni bisernik
Silver-washed fritillary	Argynnis paphia	Keizersmantel	Gospica
Dark green fritillary	Argynnis aglaja	Grote parelmoervlinder	bleščeči bisernik
High brown fritillary	Argynnis adippe	Adippevlinder	pisani bisernik
Niobe fritillary	Argynnis niobe	Duinparelmoervlinder	
Queen of Spain fritillary	Isaria lathonia	Kleine parelmoervlinder	bleščeči biserček
Marbled fritillary	Brenthis daphne	Braamparelmoervlinder	robidov livadar
Lesser marbled fritillary	Brenthis ino	Purperstreepparelmoervlinder	močvirski livadar
Weaver's fritillary	Bolaria dia	Akkerparelmoervlinder	mali tratar
Glanville fritillary	Melitaea cinxia	Veldparelmoervlinder	pikasti pisanček
Spotted fritillary	Melitaea didyma	Tweekleurige parelmoervlinder	rdeči pisanček
Knapweed fritillary	Melitaea phoebe	Knoopkruidparelmoervlinder	veliki pisanček
Heath fritillary	Melitaea athalia	Bosparelmoervlinder	navadni pisanček
Marbled white	Melanargia galathea	Dambordje	navadni šahar
Woodland grayling	Hipparchia fagi	Grote boswachter	veliki gozdnik

Grayling	*Hipparchia semele*	*Heivlinder*	*rjasti gozdnik*
Great banded grayling	*Brintesia circe*	*Witbandzandoog*	*veliki travnar*
Great Sooty Satyr.	*Arethusana arethusa*	*Oranje steppevlinder*	*okrasti košeničar*
Great Sooty Satyr.	*Satyrus ferula*	*Grote saterzandoog*	*skalni okar*
Arran brown	*Erebia ligea*	*Boserebia*	*belolisi rjavček*
Meadow brown	*Maniola jurtina*	*Bruine zandoog*	*navadni lešnikar*
Dusky meadow brown	*Hyponephele lupinus*	*Grauwe zandoog*	*temni lešnikar?*
Gatekeeper (Hedge brown)Pyronia tithonus	*Pyronia cecelia*	*Oranje zandoog*	*svetli lešnikar?*
Small heath	*Coenonympha pampilus*	*Hooibeestje*	*mali okarček*
Pearly heath	*Coenonympha arcania*	*Tweekleurig hooibeestje*	*Grmiščni okarček*
Chestnut heath	*Coenonympha glycerion*	*Roodstreephooibeestje*	*belolisi okarček*
Speckled wood	*Pararge aegeria*	*Bont zandoogje*	*gozdni lisar*
Wall brown	*Lasiommata megera*	*Argusvlinder*	*okrasti skalnik*
Grizzled skipper	*Pyrgus malvae*	*Aardbeivlinder*	*navadni slezovček*
Marbled skipper	*Carcharodus lavatherae*	*Andoorndikkopje*	*čišljakov kosmičar*
Dingy skipper	*Erynnis tages*	*Bruin dikkopje*	*temni puščičar*
Large skipper	*Ochlodes venatus*	*Groot dikkopje*	*rjasti klatež*
Small skipper	*Thymelicus sylvestris*	*Geelsprietdikkopje*	*dolgočrti debeloglavček*

Appendix 6. damselflies and dragonflies

English name	***scientific name***	***Dutch name***	***Slovenian name***
Beautiful demoiselle	*Calopteryx virgo*	*Bosbeekjuffer*	*Modri bleščavec*
Banded demoiselle	*Calopteryx splendens*	*Weidebeekjuffer*	*Pasasti bleščavec*
Willow emerald damselfly	*Lestes viridis*	*Houtpantserjuffer*	*?*
White-legged damselfly	*Platycnemis pennipes*	*Blauwe Breedscheenjuffer*	*Sinji presličar*
Small white-eyed damselfy	*Erythromma viridulum*	*Kleine roodoogjuffer*	*Mali rdečeokec*
Dainty damselfly	*Coenagrion scitulum*	*Gaffelwaterjuffer*	*Povodni škratec*
Azure damselfly	*Coenagrion puella*	*Azuurwaterjuffer*	*Travniški škratec*
Scarce blue-tailed damselfly	*Ischnura pumilio*	*Tengere grasjuffer*	*Bledi kresničar*
Blue-tailed damselfy	*Ischnura elegans*	*Lantaarntje*	*Modri kresničar*
Migrant hawker	*Aeshna mixta*	*Paardenbijter*	*Bleda deva*
Southern hawker	*Aeshna cyanea*	*Blauwe glazenmaker*	*Zelenomodra deva*
Emperor dragonfly	*Anax imperator*	*Grote keizerlibel*	*Veliki spremljevalec*
Green-eyed club-tail	*Onychogomphus forcipatus*	*Kleine tanglibel*	*Bledi peščenec*
Broad-bodied chaser	*Libellula depressa*	*Platbuik*	*Modri ploščec*
Black-tailed skimmer	*Orthetrum cancellatum*	*Gewone oeverlibel*	*Prodni modrač*
Southern skimmer	*Orthetrum brunneum*	*Zuidelijke oeverlibel*	*Sinji modrač*
Southern brilliant emerald	*Somatochlora meridionalis*	*Zuidelijke glanslibel*	*Sredozemski lesketnik*
Scarlet darter	*Crocothemis erythraea*	*Vuurlibel*	*Opoldanski škrlatec*
Marshland darter	*Sympetrum depressiusculum*	*Kempense heidelibel*	*Stasiti kamenjak*
S. golden-ringed dragonfly	*Cordulegaster bidentata*	*Zuidelijke bronlibel*	*Povirni studenčar*

Appendix 7. grasshoppers and crickets

English name	***scientific name***	***Dutch name***	***Slovenian name***
Grasshoppers and Crickets			
Sickle-bearing bushcricket	*Phaneroptera falcata*	*sikkelsprinkhaan*	*Phaneroptera falcata*
Oak bushcricket	*Meconema thalassinum*	*boomsprinkhaan*	*Meconema thalassinum*
Short-winged cone-head	*Conocephalus dorsalis*	*gewoon spitskopje*	*Conocephalus dorsalis*
Long-winged cone-head	*Conocephalus discolor*	*zuidelijk spitskopje*	*Conocephalus discolor*
Great green bushcricket	*Tettigonia viridissima*	*grote groene sabelsprinkhaan*	*Drevesna zelenka*
Lesser green bushcricket	*Tettigonia cantans*	*kleine groene sabelsprinkhaan*	*Travniška zelenka*
Two-coloured bushcricket	*Metrioptera bicolor*	*lichtgroene sabelsprinkhaan*	*Metrioptera bicolor*
Wart-biter	*Decticus verrucivorus*	*wrattenbijter*	*travniška plenilka, bradavičarka*
Grey bushcricket	*Platycleis albopunctata*	*duinsabelsprinkhaan*	*Platycleis albopunctata*
Roesel's bushcricket	*Metrioptera roeselii*	*greppelsprinkhaan*	*Metrioptera roeselii*
Dark bushcricket	*Pholidoptera griseoaptera*	*bramensprinkhaan*	*Pholidoptera griseoaptera*
European bushcricket	*Ephippiger ephippiger*	*zadelsprinkhaan*	*Zelena sedlarka*
Eastern speckled bushcricket	*Leptophyes albovittata*	*oost. struiksprinkhaan*	*Leptophyes albovittata*
Field-cricket	*Gryllus campestris*	*veldkrekel*	*Poljski muren*
House-cricket	*Acheta domestica*	*huiskrekel*	*Hišni muren*
Rattle grasshopper	*Psophus stridulus*	*klappersprinkhaan*	*Psophus stridulus*
Migratory locust	*Locusta migratoria*	*europese treksprinkhaan*	*Kobilica selka*
Blue-winged grasshopper	*Oedipoda caerulescens*	*blauwvleugelsprinkhaan*	*Modra peščenka*
Red-winged grasshopper	*Oedipoda germanica*	*roodvleugelsprinkhaan'*	*Oedipoda germanica*
Large gold grasshopper	*Chrysochraon dispar*	*gouden sprinkhaan*	*Chrysochraon dispar*
Small gold grasshopper	*Euthystira brachyptera*	*kleine gouden sprinkhaan*	*Euthystira brachyptera*
Upland field grasshopper	*Chorthippus apricarius*	*locomotiefje*	*Chorthippus apricarius*
Heath grasshopper	*Chorthippus vagans*	*steppesprinkhaan*	*Chorthippus vagans*
Bow-winged grasshopper	*Chorthippus biguttulus*	*ratelaar*	*Beloproga ščebetulja*
Steppe grasshopper	*Chorthippus dorsatus*	*weidesprinkhaan*	*Chorthippus dorsatus*
Meadow grasshopper	*Chorthippus parallelus*	*krasser*	*Kratkokrila ščebetulja*
Mottled grasshopper	*Myrmeleotettix maculatus*	*knopsprinkhaan*	*Myrmeleotettix maculatus*
Saw-tailed bushcricket	*Barbitistes serricauda*	*zaagsprinkhaan*	*Barbitistes serricauda*
Bushcricket spec.	*Polysarcus denticauda*	*dikbuiksprinkhaan*	*Polysarcus denticauda*
Blue-winged Locust	*Sphingonotus caerulans*	*kiezelsprinkhaan*	*Sphingonotus caerulans*
Other insects			
European stag beetle	*Lucanus cervus*	*vliegend hert*	*Lucanus arvus*
Small Stag Beetle	*Dorcus parallelopipedus*	*klein vliegend hert*	*Dorcus parallelopipedus*
Great capricorn beetle	*Icerambyx cerdon*	*heldenboktor*	*Icerambyx cerdon*

Appendix 8. Mammals and their status

Scientific name	*English name*	*H/V*	*Conv. Bonn*	*Conv. Bern*
Apodemus agrarius	*Striped field mouse*			
Apodemus flavicollis	*Yellow-necked mouse*			
Apodemus sylvaticus	*Wood mouse*			
Capreolus capreolus	*Roe deer*			*3*
Cervus elaphus	*Red deer*			*3*
Chionomys nivalis	*Snow vole*			
Crocidura leucodon	*Bi-coloured white-toothed shrew*			*3*
Crocidura suaveolens	*Lesser white-toothed shrew*			
Eptesicus serotinus	*Serotine*	*4*	*2*	*2*
Erinaceus concolor	*Eastern hedgehog*			
Felis silvestris	*Wildcat*	*4*		*2*
Glis glis	*Fat dormouse*			
Lepus europaeus	*Brown hare*			*3*
Martes foina	*Beech marten*			*3*
Meles meles	*Badger*			*3*
Microtus multiplex	*Alpine pine vole*			
Muscardinus avellanarius	*Common dormouse*	*4*		*3*
Mustela putorius	*Western polecat*			*3*
Mustela vison	*American mink*			
Myotis bechsteinii	*Bechstein's bat*	*2p*	*2*	*2*
Myotis blythii	*Lesser mouse-eared bat*	*2p*	*2*	*2*
Myotis capaccinii	*Long-fingered bat*	*2p*	*2*	*2*
Myotis daubentonii	*Daubenton's bat*	*4*	*2*	*2*
Myotis emarginatus	*Geoffroy's bat*	*2p*	*2*	*2*
Myotis myotis	*Greater mouse-eared bat*	*2p*	*2*	*2*
Myotis mystacinus	*Whiskered bat*	*4*	*2*	*2*
Myotis nattereri	*Natterer's bat*	*4*	*2*	*2*
Nyctalus leisleri	*Leisler's bat*	*4*	*2*	*2*
Nyctalus noctula	*Noctule*	*4*	*2*	*2*
Pipistrellus kuhlii	*Kuhls pipistrelle*	*4*	*2*	*2*
Pipistrellus pipistrellus	*Common pipistrelle*	*4*	*2*	
Pipistrellus savii	*Savi's pipistrelle*	*4*	*2*	*2*
Plecotus auritus	*Brown long-eared bat*	*4*	*2*	*2*
Rhinolophus euryale	*Mediterranean horseshoe bat*	*2p*	*2*	*2*
Rhinolophus ferrumequinum	*Greater horseshoe bat*	*2p*	*2*	*2*
Rhinolophus hipposideros	*Lesser horseshoe bat*	*2p*	*2*	*2*
Sciurus vulgaris	*Red squirrel*			*3*
Sus scrofa	*Wild boar*			
Talpa europaea	*Common mole*			
Vulpes vulpes	*Red fox*			