

Some new data on the distribution, habitats and ecology of the threatened European mustelids *Mustela eversmanii* and *Vormela peregusna* in Bulgaria

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Abstract: Camera trapping proves, after almost half a century, the southernmost area of distribution of the steppe polecat in Europe (the foothills of the southern slopes of Varbisha Stara Planina, Bulgaria). Other new observations from Bulgaria reveal so far undescribed maternal behaviour of marbled polecats. A significant number of juvenile individuals of this species are threatened by and fall victims to road accidents at the end of spring, when together with their mothers they leave the dens.

Key words: *Mustela eversmanii*, *Vormela peregusna*, European mustelids, juveniles protection behaviour

I. Recent observations of *Mustela eversmanii* Lesson in Bulgaria at The Southernmost Periphery of The Species Distribution Area in Europe

The range of *Mustela eversmanii* Lesson, 1827 on the continent ranges from European Russia and Ukraine till Austria and the Czech Republic covering a total of 12 countries (ŠÁLEK et al., 2013). The Southern periphery of the species range in Europe crosses Bulgaria (Spassov, 2007). The steppe polecat is included in Annex II of the Bern Convention as well as in the Habitats Directive 92/43/EEC (II, IV). In the updated Red Data Book of Bulgaria (SPASSOV & SPIRIDONOV, 2011a) the species is listed as Vulnerable.

The species was reported for the first time in Bulgaria in 1951, but a specimen, wrongly determined as *M. putorius* was collected twenty years before that. *M. eversmanii* should be a relic from the Pleistocene in Bulgaria, with an area pulsing in the Holocene for climatic and anthropogenic reasons. It inhabits the Eastern and Central part of Northern Bulgaria on about 20,000 sq. km: mainly in Dobrudzha, to the west reach Chomakovtsi (Cherven Bryag) and Kneja; there have been no proven records of the species presence to the south of Stara Planina mountain (the Balkan mountain range). A rather unsure report

exists for the Sofia region. In the southeast the species reaches the Eastern Balkan range: an “old” mounted specimen was seen in the seventies by Nikolai Boev in the school collection in Beronovo village; in 1983 we have seen a steppe polecat crossing the road to the south of Daskotna (to the north of the Aitos pass).

Its habitats in Europe and especially in Bulgaria are related to the open, steppe territories, also agricultural lands, where it makes shelters in the overgrown field boundaries and the riverside shrubs and forests; meadows and clearings. It uses the river valleys and passes as ecological corridors (SPASSOV, 1982; SPASSOV, 2007; SPASSOV & SPIRIDONOV, 1985; SPASSOV & SPIRIDONOV, 2011a).

Material and methods

In 2011 we have carried out a series of observations to register the presence of carnivores of conservation concern in the region of Southeastern Bulgaria, including Eastern Stara Planina. The observations included placing photo-traps (8 photo-traps were used simultaneously) set to take 15 sec long videos automatically activated by motion and with infrared flash allowing for nocturnal capturing of animals. Photo traps were set in the spring of 2011 in the region of the Varbitsa pass and the southern

foothills of the Varbisha Mountain in the region between the villages of Beronovo and Pchelin; for two weeks at each location (March-May 2011); using food and scent baits. Most often in the videos were recorded some birds (the European robin), murids, from the carnivores – the stone marten, also the badger and the wildcat.

Results and discussion

We managed to register the steppe polecat (nocturnal activity) at two locations (the GPS data are at disposal in the authors' database): 1. An animal was registered at the end of March 2011 between the villages of Vezenkovo and Vladislav – at an elevation of 332 m (biotope: mosaic landscape of fields and pastures divided by hedges and field protection belts and forested areas dominated by oak mostly); 2). An animal was registered at some 6 km east of the Varbishi Pass, at an elevation of 399 m (biotope: mixed old beech-oak forest dominated by beech with a healthy undergrowth and certain sections thinned by old selective cutting, in the direct proximity of a small river and in comparable proximity to a forest meadow; the common wood mouse is abundant; individual oaks are up to 100-150 years old) (Fig. 1). The steppe polecat on the photo could be identified with great certainty by its light colouring in the base of the tail (GEPTNER et al., 1967; ARISTOV & BARYSHNIKOV, 2010). These observations have proven after almost half of century of absence the occurrence of the species in the formerly known southernmost and south-easternmost points of its distribution in Bulgaria and Europe (the region of Beronovo – Veleslav – Varbishi Pass). Obviously the steppe polecat is able to adapt to habitats rather different than the landscapes typical for it. It seems that the felling and the construction of the roads facilitate its penetrating in such habitats and its spreading to the South. After the species migrated South of the Varbishi Pass, it would not be much unexpected that it turns out that the species has advanced further south in Southeastern Bulgaria, where suitable open habitats occur.

II. Observations on The Specific Maternal Behaviour of *Vormela peregusna* Gldenstaedt to protect its offspring. New data on the period of birth and the threats for the species

The range of *V. peregusna* includes Southeastern Europe (reaching Serbia and Bulgaria to the West), the Southern regions of Eastern Europe (in Ukraine and Russia), Asia Minor (reaching Israel, Palestine and Syria to the South) and Central Asia – reaching China to the East (SPASSOV & SPIRIDONOV, 1993). The

European subspecies has been listed in the Red Data List of IUCN as vulnerable (LARIVIÈRE & JENNINGS, 2009). In Bulgaria the marbled polecat is also listed in the same category (SPASSOV & SPIRIDONOV, 2011 b). Nowadays the European subspecies is represented by two isolated local sub-populations: 1. Balkan one occurring in the Romanian Dobruza, Bulgaria, the European part of Turkey, Northern Greece, Macedonia, Serbia, Southern Dalmatia and probably Albania (does not cover the Southern and Western parts of the Peninsula); 2. Northern Black Sea one – which covers the Southern parts of Ukraine (where the range seems to be fragmented in the region of Odessa) and the Caucasus (Russia). It has become extinct in Hungary and probably Moldova (SPASSOV, 2007).

Results, discussion, conclusions

We (V. I.) have observed a female marbled polecat with three cubs on June 6th 2014. The animals got out on a dust road crossing two wheat fields, separated from the road by a strip of ruderal grass vegetation (Fig. 2). The observation was made in the vicinity of the village of Slakovtsy, Breznik region (GPS coordinates – N 42°42'08"; E 22°53'47.2", at an elevation of 755 m). Noticing danger the female makes low guttural sounds – probably a sign of danger. (Warning low growl and sharp and unexpectedly loud bark imitating larger steppe predators like the canids has been described as specific 'vocal mimicry' – characteristic of aggressive defensive behaviour of *V. peregusna*; when threatening does not help, the ani-



Fig. 1. Camera trap registration (23.04.2011) of the presence of *Mustela eversmannii* in the area of Varbishi Pass, southern slopes of Eastern Stara Planina. The animal rubs in the food and scent bait (tergor reaction) placed to attract small carnivores



Fig. 2. Biotope of the marbled polecat in area of Breznik, western Bulgaria

mals pretend to be dead: see SPASSOV & SPIRIDONOV, 1993). After the signal of the female the cubs turn back and lined up one behind the other without losing full body contact and lowered to the ground (behaviour typical to the juveniles of other mammals) go back to the grass followed by the mother. During a second attempt to cross the road the mother let the cubs ahead while she hid in the high grass. Facing the danger the mother drops like 'dead' on the road without trying to hide. When humans approached she started crawling on her belly (Fig. 3) imitating she is wounded and unable to escape in an attempt to draw the attacker away – in a direction opposite to the cubs. Similar imitation of the movement of wounded animal aimed at withdrawing the attention from the juveniles is well known from steppe birds, yet we are not aware of cases of similar behaviour registered among carnivorous mammals and especially of marbled polecat. It seems that the steppe conditions predetermine such behaviour not just among birds but also among some small carnivorous mammals.

A hole dug in the ground with a diameter of some 5 cm the grass around which has been stamped was discovered in direct proximity to the site where the animals were spotted (Fig. 4): birth or temporary den, probably inhabited by the polecats till recently.

The data we have collected in the last years include a number of cases of marbled polecats killed in road accidents. In most cases these were proven juvenile (very young) individuals. Two of the cases are from the same time period (2013) from the far Western part of Bulgaria, where it is believed that the species has especially high population density (see: SPASSOV et al., 2002), namely:

1. From the region of Dragomirovo on the road to Kuystendil, close to meadows surrounded by forest patches. On June 15th a juvenile marbled polecat



Fig. 3. Maternal behaviour of offspring protection: the mother crawls on her belly imitating the movements of wounded / handicapped animal

hit by car was discovered (body length 250-260 mm, for comparison most often the sizes of the adults of the European population vary within the limits of 290-35 mm: SPASSOV & SPIRIDONOV, 1993).

2. From the region in the vicinity of Erma hut not far away from the Erma River gorge (region of Tran). The GPS point location is: N 42°50'39.2"; E 22°39'02", 719 m of elevation. Both sites on the road are overgrown by oak forest on both sides on a very steep rocky terrain, however quite close to the slope (less than hundred meters) there are bare and severely thinned forest parts.

Similar accidents related again to the end of spring have been registered several times during the last years for a limited section of the road close to Sliven (Girgina Daskalova, Petar Shurulinkov, pers. comm.).

It is considered that the juveniles of the European population (incl. the Caucasus region) are usually born from the end of February till the



Fig. 4. A den of *V. peregusna* near Slakovtsi village, Breznik area, western Bulgaria

beginning of May, while leaving the birth den usually occurs after 61-68 days (SPASSOV & SPIRIDONOV, 1993; GORSUCH & LARIVIÈRE, 2005). A mother with grown up juveniles peeping out of the den have been spotted by P. Popdimitrov at the very end of May –

beginning of June during the nineties. Discovering a female with juveniles and juveniles hit by cars in the beginning of June shows that in our latitudes June is usually the month when the juveniles start getting independence. This statement is supported by the observation of 4 (5) young marbled polecats together (10.06.2007) and four juveniles with a female (18.5.2012) in the region of Sliven (Petar Petrov, Gergina Daskalova, pers. comm.).

It should be underlined that the car accidents at this time of the year accounting for killing a number of the juvenile marbled polecats born short before that add to the main threats for the species connected with the intensified human pressure.

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Нови данни за разпространението, местообитанията и екологията на застрашени европейски порове (*Mustela eversmanii* и *Vormela peregusna*) в България

Васил ИВАНОВ, Николай СПАСОВ

(Резюме)

Регистриране с фотокапани потвърждава след почти половин век най-южната точка на разпространение на степния пор в Европа: полите на южните склонове на Върбишка планина (Източна Стара планина, България). Други нови наблюдения от Западна България разкриват неописано до момента защитно майчинско поведение при пъстрия пор. Значителен брой млади индивиди от този вид са изложени на опасност и загиват от пътни инциденти в края на пролетта, когато заедно с майка си напускат родилната бърлога.