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Small and medium sized predators monitoring along River Dráva

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Abstract: We have been working on the small and medium sized predator species' monitoring since 1999, within the framework of Monitoring River Dráva's nature conservation area. The monitoring is carried out with live trapping. In the first two years of our work the methods were finalized. In our work, given valuable results since 2001 we have caught 86 individuals of seven predator species (red fox, polecat, weasel, stone and pine marten, wild cat, domestic cat) so far, during the 26 848 trap-nights. The average catch effectiveness was 0.317 captures/ 100 trap-nights. We could prove the presence of the ermine and the otter on the research area with additional methods. The wild cat, and the pine marten turned out to be the most frequent predator. Both species have narrow-bearing, and find human disturbance hard to bear. These qualities give the ability to these species to be the indicators of the changes in living places of the territory by follow the changes of their population with attention.

Key words: predator monitoring, live trapping, stone marten, wild cat

Introduction

Hungary is one of the most richest area in natural values in Europe and most of the predator species, that can be found on the Continent appear here too. Only with the exception of those rare, narrow-bearing species, with relatively small spreading area even in Europe, like the brown bear (*Ursus arctos*), the wolverine (*Gulo gulo*), the common genet (*Genetta genetta*), the European mink (*Mustela lutreola*) and the American mink (*Mustela vison*), or the marbled polecat (*Vormela peregusna*). In the second part of the 20th century some native predator species returned and created increasing populations, like the wolf (*Canis lupus*), the lynx (*Felis lynx*) or the golden jackal (*Canis aureus*), which became extinct from the territory of Hungary long before. Besides some invasive species appeared, which are also spreading in Europe, and are considered as non indigenous species, like the raccoon (*Procyon lotor*) and the raccoon dog (*Nyctereutes procionoides*) (HELTAI 2002). Despite of this, the national research of these species is surprisingly trifling compared with other groups, such as song birds, small rodents or amphibians, while internationally is quite scanty. There were quite few publications about the nationwide spreading and the changes in populations of one or other predators in the past decades.

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The lack of information is proved by the facts of BÁLDI et al. (1995), who were considering the given species' status of protection and research as an independent point of view, when working out the appraising system of the national vertebrate species. They estimated -among others- whether there is or not information about the nationwide spreading and the changes in number of individuals, and furthermore the number of publications about the studies on the given specie. In their system the specie about every information is available got 0 points in principle, while about nothing is known got 45. The studied predator species - except the red fox (15 points) - got 28 points or higher rates, but the 40 points of the common polecat and the lynx, or the 38 points in case of the weasel means total lack of information virtually.

This incognizance enforced the working out of monitoring predator species to be completed as part of the National Biodiversity Monitoring System. (TÖRÖK et al. 2001). László Szemethy and Miklós Heltai, the colleagues of St. István University's Department of Wildlife Biology and Management suggested two different types of data collecting methods. On the one part they suggested a continuous data collection based on a nationwide survey with questionnaires, on the other part a survey on fields on appointed monitoring points based upon live trapping. Their suggestions were confirmed with their earlier experiences (SZEMETHY and HELTAI 2002).

The nationwide survey with questionnaires was started in 1987 and they have been continuing it with the support of the Ministry of Agriculture, Wildlife Management Fund ever since. HELTAI (2002) gave a summary of the results found till now in his PhD thesis. The testing of the survey on fields was also started, but because the lack of the nature conservation support first of all it served the following of the populations of the fair games or of those species which are important in game management (SZEMETHY et al. 2000).

The nature protective monitoring of river Dráva, that started in 1999 gave the opportunity to try the monitoring on fields based on trapping that had been worked out for the predator species and make an alteration in it if necessary. So our purpose was dual, on the one hand monitoring of the mammal predators' stock on the indicated research areas on the other hand testing the applied methods.

We carried out our researches on the increased protected soft-wooded grove forests of a floodplain area and on artificially renovated oak forests, bordered by the River Dráva and the Stream Zsdála, situated on the south by the village Bélavár, on the monitoring points that were appointed by the Duna-Dráva National Park.

Methods

Description of the basic status

The predator species which might be found on the area, their present status and their stock alteration were defined upon the bag data of the National Database of Game Management and upon wide extended faunistical works (LANSZKI and PURGER 2002, HELTAI 2002) that can be related to the area.

Trapping according to the original protocol

According to the original sampling method the work was continued three times a year with 100 small sized "stone marten" traps. The trapping periods were: winter (January-February), summer (June-July), autumn (October-November). One or other trapping campaign stood about a one week long accustoming after outplacement and about an

Fig.1.: Ready for works. Packing down the traps.
Photo: M. Heltai

Fig. 2.: Making friends with the stone marten.
Photo: L. Szabó

Fig. 3.: The most beautiful and valuable predator of research area, the wild cat
Photo: F. Jarovics

Fig. 4.: One of the species that can be hardly trapped, the fox. We caught it.
Photo: J. Jarovics

intensive, continuous trapping for three weeks. The traps were set along appointed transects in every 50 meters, the lure was the same within one transect. We kept changing eggs, fish and cattle-liver as baits.

The applied traps were 70 cm long and had a 15 x 15 cm door-size. It is suitable for catching small sized of a mustelids kind first of all. The trap is classed among the tip over-doored traps, and it's locking device follows one of the most conventional solutions, it's rodded. The door, made of sheet-iron, and counterweighted at the back side turns up inside the trap. The rod that sets out from the tread-pedal situated at the end of the trap and troppling in the middle shores it up here. When the animal steps onto the pedal the rod is pulled out under the door, that falls down and slips through the steel-spring which prevents it of being opened again and is situated at the bottom of the trap. The trap can be handled at it's back side. This side can be opened by removing a screw: on the one hand the lure can be put in here onto the prepared hook, on the other hand in case of a capture the caught animal can be get out here.

After identifying the specie, and the sex of the caught animals and the classification into age-groups is done, we signed them with a fur paint used in the animal-husbandry and we released them at the place where they were captured. The fur paint means minimal disturbance for the animal and provides the recapture controlling during a trapping campaign.

The processing of the trapping's data was based partly on the number of captured individuals' species -that is the measurable diversity among predator species- partly on the trapping effectiveness - that is the frequency of the predator species. We defined the effectiveness by the number of captures relating to a 100 trap-night.

Changes in the trapping protocol

The first two years of the program (1999 and 2000) was about the continuous refinement of the trapping method. The final method was worked out till the end of 2000, so that's why we have been publishing data from the results just from then. The changes were necessary because of the inadequate efficiency of the trapping.

Changes in the trapping periods

The summer trappings were totally unsuccess virtually. The primary reason for this was the extreme swelter of summer's forepart in the past few years. Partly, in the extraordinary warmness the lure went wrong almost immediately and lost all it's attractiveness. The unusual inactiveness of the predator species was also because of the weather. There has been a hybrid-maize seed production with watering for years on the agricultural fields (on meadow Suli) within the indicated area, significantly disturbing the territory and contributing to the unsuccessful. Because of these combined effects we stopped the trappings in the summer, while during the autumnal (October-November) and the end of the winter (February-March) periods we made a 6-6 weeks long continuous trapping after one-one week accustoming, so the yearly whole term of the trapping extended from 9 weeks to 12.

Changes in the outplacement and in the lure

It was proved in the course of the first two years that the uniform trap placing, worked out for small rodents can't be used in the case of the predator species. The reason for this is that the mammal predators show territorial behaviour generally in one or the whole part of the year and the size of the habitats used by them can be considered relatively large. That's why it was necessary to make an alteration in the originally planned outplacing method. We had been trying to find inside the indicated area the most suitable

trapping places since the year 2001. We payed attention all the time to the traps to be located equally on the territory if possible. So it was an opportunity for us to form the trap places not by necessity, just because we passed 50 meters, but we could choose those places where the successful trapping has the highest possibility.

We also gave up the uniform, planned in advance outplacements of the bait. We used the next materials as varied as possible fitting in the given traps and areas according to the disappeared lures outplaced as dragging: liver, fish, chicken-neck, raw and boiled egg, dry dog food, dog salami, table-tennis ball, flavoured bread, pieces of chicken meat, *Valeriana officinalis*, apple, grape.

Changes in the applied traps

In the first two years we kept trying new kinds of traps, which were not in the protocol. According to these tests we decided to use a total of 24 traps too, which are bigger than those we applied earlier. This alteration had three reasons. The most important was that already after the initial researches it was found out, that one of the most valuable predators of the territory is the wild cat. This medium sized predator species can be trapped more successfully with bigger sized traps. The second reason was that during our observations it seemed to be that first of all the pine marten went sooner into the trap, that was larger than the one before. The third reason was in turn that probably the effectiveness could be grown with making the trap-park more various. Therefore the trap-park stood about 76 small sized 1stone marten1 traps, 12 medium sized „stone marten" traps and 12 large sized traps from 2001.

The medium sized 1stone marten1 trap is all the same in it' s material, shape and work as the small sized trap, the only difference is in the size. It's door size is 25x25 cm whilst the length is 100 cm.

The 150 cm long, 35 cm wide and 45 cm tall large sized trap belongs to the slipping-doored traps. The doors run in the rails prepared on the two sides of the trap. The lifted doors are held by the rectangular holding element, which is fixed up to the door keeping axle and turns round on it. The longer arm of the holding element shores up the door, the thin wire-bowden sets out from it's shorter part toward the locking mechanism. The locking mechanism is a dual lever, that can hold the doors together or separately too. So the trap can be used both ways as a mechanism with one or two doors. The tread-pedal can be inlayed into the counter-holder situated at the bottom of the locking mechanism, or we can hang the lure up directly here. By pushing the tread pedal or pulling the lure the locking mechanism is releasing, the bowden get loosen, the door keeper turns out round the axle under the door that falls down. The material of the trap's case part is spot-welded wire netting, which has a 2.5x5 cm mesh. The stiff frame round the doors is formed by flat-irons that are fixed with screws end-to-end. There is a door covered with sheet-iron in the middle of the trap above the tread-pedal, which can be opened after unfastening a screw to make the feeding easier. A small penthouse can be put onto the locking mechanism to protect the lock from the falling twigs or from birds ready for sitting on it. Whilst the sensitiveness of the locking mechanism, namely the scale of the strength needed for the letting off can be regulated practically everything can be captured with the trap, that is willing to go in it and can't get through the mesh. Of course because of it's size it is suitable first of all for capturing major sized predator species like the red fox, the badger or the wild cat.

Results

The predator species which probably appear on the area

According to data on the national mammal predator species' nationwide spreading and stock alteration published in the last decade the following summary can be given in the case of one or other species related to the Hungarian reach of river Dráva so to the research area:

- Red fox (*Vulpes vulpes*): native, has an increasing stock, is a common species that appears everywhere along river Dráva;
- Raccoon dog (*Nyctereutes procyonoides*): settler, non indigenous, has a spreading stock, it's presence along river Dráva can't be precluded;
- Raccoon (*Procyon lotor*): settler, non indigenous, has a spreading stock, it's presence along river Dráva can't be precluded;
- Golden jackal (*Canis aureus*): returned, native, it's listed in the Red Book (RAKONCZAY 1989), has an increasing and spreading stock, it's presence along river Dráva is certain;
- Stone marten (*Martes foina*): native, common, has an increasing stock and spreading territory, but is a species that avoids closed forest areas, it also settled in the villages along the river, it's presence along river Dráva is certain;
- Common polecat (*Mustela putorius*): native, common, has a stable stock, but is a specie that avoids closed forest areas, it's presence along river Dráva is certain;
- Wolf (*Canis lupus*): returned, native, it's listed in the Red Book (RAKONCZAY 1989), the population is changeable, it's presence along river Dráva can be precluded in the past 15 years;
- Lynx (*Lynx lynx*): returned, native, it's listed in the Red Book (RAKONCZAY 1989), the population is changeable, it's presence along river Dráva can be precluded;
- Wild cat (*Felis silvestris*): native, it's listed in the Red Book (RAKONCZAY 1989), has a decreasing stock and spreading territory, it's presence along river Dráva is certain;
- Ermine (*Mustela erminea*): native, has a stable stock, it's presence along river Dráva is possible;
- Steppe polecat (*Mustela eversmanni*): native, probably has an increasing stock, likes the dry, open grass-grown areas, it's presence along river Dráva is not possible;
- Pine marten (*Martes martes*): native, has an increasing stock and spreading territory, it's presence along river Dráva is certain;
- Otter (*Lutra lutra*): native, it's listed in in the Red Book (RAKONCZAY 1989), has a stable stock and spreading area, it's presence along river Dráva is certain;
- Badger (*Meles meles*): native, common, has an increasing stock and spreading area, it's presence along river Dráva is certain;
- Weasel (*Mustela nivalis*): native, common, has a stable stock stabil, avoids closed forests, it's presence along river Dráva is certain.

The results of the trapping

There were 26 848 trap nights altogether between 2001 and 2004, during this period we captured 86 individuals of seven predator species (red fox, weasel, marten, beech marten, common polecat, wild cat, cat). The average capture effectiveness counted for the whole period was 0.32 (n=4, SD=0.0819). The obvious presence of other two species the ermine and the otter was proved by footprints and excrements with observations apart from the trapping.

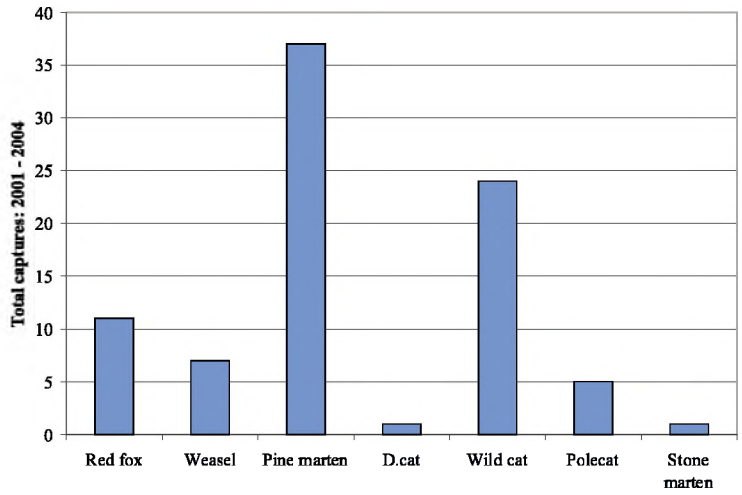

Fig. 5.: The captured species and number of captures

According to the results of the trapping the most frequent predators of the area are the pine marten and the wild cat. From the wild cat's presence point of view the area seems to be especially important, because during the elapsed period we never caught any hybrid cats, and we only captured one domestic cat, in the first year. The presence of the weasel on the territory is waving probably it depends on the availability of the small mammals - as a potential food source- very much. It can be regarded as a surprise that we couldn't capture the badger till now on the research area, which is otherwise spreading nationwide and can be trapped relatively well (Fig. 5).

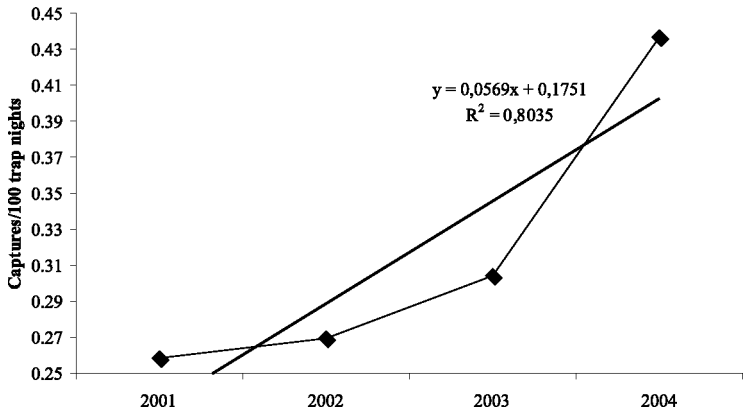

Fig. 6.: Alteration of the capture effectiveness (NS)

The effectiveness of the trapping has been increasing continually since 2001. While in the first whole year we captured a mammal predator about every fourth day (0.2586 captures/ 100 trap nights), till then every second day in 2004 (0.4366 captures/ 100 trap nights). Whereas the increasing of the effectiveness at the present not obviously shows the increasing of the predator species' density, but probably improving the knowledge about trapping and getting to know more about the territory corrected our results (Fig. 6).

Conclusions

The river Dráva region's rich predator fauna significantly contributes to the territory's extraordinary values. In addition to the three species, which are in the Red Book (RAKONCZAY 1989) -wild cat, otter, golden jackal- most of our protected and fair game predators have breeding populations on the river region.

Bearing the nationwide tendency and the adaptation ability of the predator species in mind the decreasing of the narrow-bearing, more sensible species' population while the increasing of the multitudinous species' population can be prognosticated in constant habitat conditions.

This means the following in case of the single species. The density of the small sized Mustelids (weasel, ermine, common polecat) depends on the available amount of food sources first of all. Namely if intensive agricultural works don't affect the territory, then their number will range in the next few years particularly together with the rising of the small rodents. We don't expect a changing in the spreading of the generalist and opportunist predators present in large numbers (stone marten, badger, red fox), their stock density conceivably increases onwards. The same could be probable in the case of the golden jackal, although what is happening with it's population's European spreading centre in the Balkans acts as an important and unknown factor. Within constant habitats the stock of the marten and the otter could stay stable, while the wild cat populations can remain expectedly in the most undisturbed areas also free from cats with their characteristic populations nowadays. The sedentation of our large sized predators (wolf, lynx) on the plain Dráva is not probable nor in the next few years, can the permanent appearing of the fauna-strange raccoon dog however be expected.

The case is different when significant changes happen in the habitats or in the management along our one of the most beautiful river. Neither the otter, nor the pine marten and especially the wild cat tolerate the disturbance deriving from the human activity, or the changes in habitats as a result of that. In case of the ermine's habitat cessation or decreasing its stock would decrease too, because due to its special habitat needs and to its typical territory usage it might not be able to settle down on new areas. Whereas the further decreasing of the multitudinous species' populations won't significantly depend on the incidental changes. This means, that the predators that get into worse habitat circumstances even have to fight with the competition caused by the species with increasing stock, squarely they will be the losers of it.

These last consequences give the value of the predator stock on the strictly protected area situated south from Bélavár and the importance of the monitoring point formed here. The most common predators of the area bordered by the railway from north, by the stream Zsdála from west, by the river Dráva from south, whilst by the abandoned pebble-mine lakes from east are the weasel and the wild cat and the otter has a significant stock too. All these three species belong to those predators, which are narrow-bearing, can hardly tolerate the human proximity or not at all, are hard hit by the changes made

upon the tranquility and structure of habitats. This means that in case of any intervention - river control, building of reservoir and/or power plant - their stock and probably also their spreading territory will decrease on the area. Two of these three species - the pine marten and the wild cat - can be well and efficiently monitored with the method based upon trapping that was formerly worked out and altered during the programme.

In the case of wild cats the particular research area has a specific importance. The wild cat stock in our country is decreasing and the remained major populations are mostly endangered by hybridisation with domestic cats. The Bélavár area has not just a significant and stable wild cat population, but it seems that is not endangered with hybridisation at the moment, which would be outstandingly suitable for the first national wild cat reserve.

On the whole it is ascertainable that the predator fauna along the river is extremely rich at the moment and the stock of each species is significant. This status quo could be maintained only if the relative un-perturbance of the territory is provided furthermore. As nature conservation handling we can speak about massive sparsing of large numbered species and preventing the fauna-strange predators from settling down.

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Kis- és közepesméretű ragadozó emlősök monitoringja a Dráva mentén

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1999-óta végezzük a Dráva folyó természetvédelmi monitorozásának keretében a kis és közepes testű ragadozó fajok állományainak monitorozását élve fogó csapdázással. A munka első két évében a módszertan véglegesítése történt meg. A 2001-óta értékelhető eredményeket adó munkában eddig összesen 26 848 csapda-éjszakát teljesítve hét ragadozó faj (róka, közönséges görény, menyét, nyest, nyuszt, vadmacska, házimacska) 86 egyedét fogtuk meg. Az átlagos fogási hatékonyság 0,317 fogás/100 csapda éjszaka volt. Kiegészítő módszerekkel bizonyítani tudtuk a hermelin és a vidra jelenlétét a vizsgálati területen. A leggyakoribb ragadozónak a vadmacska és a nyuszt bizonyult. Mindkét faj szűktűrésű, az emberi zavarást nehezen tűrő. E tulajdonságaik alkalmassá teszi e fajokat arra, hogy állományváltozásaik nyomon követésével a terület élőhelyi változásainak indikátor fajai legyenek.