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REINTRODUCTION OF THE EDIBLE DORMOUSE (*Glis glis*) IN SIERAKOWSKI LANDSCAPE PARK (POLAND). PRELIMINARY RESULTS

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ABSTRACT. Edible dormouse (*Glis glis*) is a very rare species in north-western Poland; only three localities are known in this part of the country. One locality is in Sierakowski Landscape Park in an isolated reserve "Buki nad Jeziorem Lutomskim" (~70 ha). The spread of the edible dormice from this reserve to other suitable forests seems to be constrained by substantial barriers such as fields, lakes, urban areas and pine forest. The reintroduction of *G. glis* to Sierakowski Landscape Park has thus been proposed. The programme started in the summer of 1997. Forty-three dormice (among them: wild-caught, kept during a year in captivity and captive-bred) have been released so far. The first group (25 individuals) was released in September 1998 and the second (18 individuals) in September 1999. All edible dormice were acclimated to a new site before release. Six dormice from the group released in September 1998 were found in the next year.

In September 1999 the released dormice were radio-tracked. The distances travelled per night by dormice kept in cages for one year were less than distances travelled by wild-caught dormice. The maximum linear distances dormice were found from the release points, were also less in animals kept for one year in cages.

Key words: Wildlife conservation management, *Glis glis*, radio-tracking.

YEDİUYUR (*Glis glis*)'IN SIERAKOWSKI SEYİR PARKI'NDA (POLONYA) YENİDEN YAŞATILMASI. İLK SONUÇLAR.

ÖZET. Yediuyur Kuzeybatı Polonya'da çok ender rastlanan bir türdür; ülkenin bu bölümünde yalnız üç lokaliteden bilinir. Bu lokalitelerden biri Sierakowski Seyir Parkı içinde bulunan yaklaşık 70 ha'lık izole bir koruma alanı olan "Buki nad Jeziorem Lutomskim" bölgesidir. Yediuyurların bu izole koruma bölgesinden diğer uygun ormanlara doğru yayılma olanağı çevredeki tarlalar, göller, kentsel alanlar ve çam ormanları gibi önemli engellerle ile kısıtlanmış gibidir. Bu nedenle yediuyurların Sierakowski Seyir Parkı içindeki uygun ormanlara salınarak yeniden yetiştirilmesi düşünülmüştür. Programa 1997 yazında başlanmış ve doğadan yeni yakalanmış, kafeste bir yıl tutulmuş ve kafeste doğmuş-büyümüş olmak üzere 3 farklı yediuyur içeren 25 bireylik ilk salıverme Eylül 1998'de, 18 bireylik ikinci salıverme de Eylül 1999'da yapılmıştır. Tüm yediuyurlar alıştırıldıktan sonra yeni yerlerine bırakılmışlardır. Eylül 1998'de salınan yediuyurlardan altı tanesi bir sonraki yıl yakalanmıştır.

Eylül 1999'da bırakılan yediuyurlar radyo vericileri ile izlenmiştir. Kafeste bir yıl tutulmuş yediuyurların bir gecede katettikleri mesafe doğadan yakalanmış olanlarınkinden daha azdır. Bırakılan noktadan doğrusal olarak gidilen en uzun mesafe de yine kafeste bir yıl tutulmuş yediuyurlarda doğadan alınmışlarınkine göre daha azdır.

Anahtar sözcükler: Yabanhayatı koruma, *Glis glis*, radyo vericileri ile izleme

INTRODUCTION

The edible dormouse (*Glis glis*) has nearly become extinct in central and north-western Poland (1,2) which could be due to very extensive deforestation in the past. In Pomerania (north-western region), where 12 localities were recorded at the end of the 19th and in the first half of the 20th century, only two localities have been confirmed after 1990. Jurczyszyn (3) found that the main factor influencing the extinction of *G. glis* in Pomerania was forest management. Arboreal behaviour and the absence of forest close to known localities suggest that edible dormice are unlikely to recolonize many of the sites where they formerly occurred, even if suitable conditions are restored (3).

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The only locality of *G. glis* in the Wielkopolska region (central-western part of Poland) is the isolated reserve "Buki nad jeziorem Lutomskim", which is a part of Sierakowski Landscape Park (SLP). The reserve, mainly overgrown by old mixed and deciduous woodland (~70 ha together with an adjoining area of plantation forestry), is isolated by a lake, fields, pine forest and an urban area from other woods suitable for edible dormice. A few areas of several hundred hectares overgrown by old mixed and deciduous forests (mainly beech and oak) occur in the landscape park but no *G. glis* were found there. The spread of the edible dormice from the reserve "Buki nad jeziorem Lutomskim" to other suitable forests seems to be constrained by the barriers mentioned above. The reintroduction of *G. glis* to Sierakowski Landscape Park was therefore proposed. The programme started in the summer of 1997.

The aim of this paper is to present the results of the first stages of the reintroduction of *G. glis* to SLP.

MATERIAL AND METHODS

Edible dormice were released into mixed forest near the village of Chalin (the linear distance to the reserve "Buki nad jeziorem Lutomskim" is about 5 km). The following groups of dormice were released: a) "wild-caught" - caught in traps in reserve "Buki nad jeziorem Lutomskim" and released after 1 week of acclimatization, b) "kept" - wild-caught dormice which were kept for one year in cages, c) "captive-bred" - animals, that had been born in captivity in the year of release. Parents of "captive-bred" dormice were also taken from the reserve "Buki nad jeziorem Lutomskim".

All translocated dormice were acclimated to a new site for one week before release. Animals were put into cages made of wire netting (1cm^2 mesh), about 0.5 x 0.6 x 0.9 m in size, and put on the ground in scrub. Small branches and nest-boxes were placed inside the cages. Food was provided *ad libitum*. No more than 4 "wild-caught" or "kept" dormice were placed together in one cage in 1998 and in groups of two in 1999. In both years "captive-bred" young dormice and their mothers occupied one cage.

The following tree and shrub species were mainly present in the vicinity of Chalin: beech (*Fagus sylvatica*), oak (*Quercus robur*), robinia (*Robinia pseudoacacia*), pine (*Pinus sylvestris*), hazel (*Coryllus avellana*), elder (*Sambucus nigra*), ash (*Fraxinus excelsior*), maple (*Acer platanoides*), hornbeam (*Carpinus betulus*), raspberry bush (*Rubus idaeus*).

Twenty five edible dormice, 3 "kept" females with their "captive-bred" offspring (5, 3 and 1 young), one "kept" adult male (it was kept in captivity for three months), 12 "wild-caught" dormice (3 adults and 3 young of both sexes), were released near Chalin in September 1998. One year later a group of 18 dormice was released: a "kept" female with their 6 captive-bred offspring, 3 "kept" dormice (2 adult males, 1 adult female), 8 adult "wild-caught" dormice (4 males and 4 females).

The following methods were used in the summer of 1999 to investigate how many dormice (released the preceding year) were present in the forest near Chalin: checking of nest-boxes, trapping and listening to audible calls during the night.

Adult dormice, released in 1999, were fitted with radio-transmitters around their necks which amounted to no more than 5% of the animal's body mass. These dormice were radio-tracked throughout whole nights at approximately 1 hour intervals. A grid covering an area of approximately 9 ha was marked out and position fixes were recorded to the nearest 10 m. The distances travelled per night were calculated as the sum of straight line distances between successive radiofixes. Twelve released dormice were fitted with radio-collars but unfortunately some transmitters failed or were lost by dormice after a few days. Only four males and one female carried working radio-transmitters for 6 or more days.

RESULTS

In 1999 there were 6 positive records of individual *G. glis* in the forest near Chalin. Three were caught in traps: a male - caught as an adult animal in 1998 and kept for three months, a female – "captive-bred", released when two months old, a "wild-caught" female - translocated and released at about two months old. The remaining three individuals were not trapped but they were discovered owing to the loud calls they emitted. All these dormice were found at distances of up to 320 m from the place of their release in 1998.

No evidence was found that any female gave birth in 1999. No juvenile dormice were found in traps or in nest-boxes.

The distances travelled per night by introduced "wild-caught" males and one female, during four and six days after leaving the cages, were greater than distances travelled by "kept" dormice and free living animals ("wild") in SLP (Table 1).

Maximum linear distances that the edible dormice were found from the release points were measured after 1, 4 and 6 days (Table 2). "Wild-caught" animals generally moved further than "kept" dormice. One of the "wild-caught" females even moved to the neighbouring forest, separated by a field about 300 m wide, from the forest in which it was released. This female travelled along a row of apple-trees. It had to travel a considerable part of the way on the ground because most of the crowns of neighbouring apple-trees were more than 3-5 metres apart. One of "wild-caught" males started to move in the same direction as this female but, unfortunately, in the first apple-trees of the row the male lost his transmitter and it is not known whether it continued travelling to the neighbouring forest.

Neither in 1998 nor in 1999 the dormice were not observed to take supplementary food (laid out in cages and nearby) for several days following their release.

Table 1. The distances travelled per night (in metres) by radio-tracked edible dormice; number of individuals written in brackets; "wild-caught" - animals translocated and released after 1 week of acclimatization; "kept" - wild-caught dormice kept for one year in cages and released after 1 week of acclimatization; "wild" - free living dormice studied in SLP

Number of nights of tracking	Males			Females		
	„wild-caught"	„kept"	„wild"	„wild-caught"	„kept"	„wild"
1	260 (4)	45 (2)	320 (2)	30 (1)	150 (2)	210 (2)
4	370 (3)	153 (2)	230 (2)	300 (1)	230 (1)	205 (2)
6	320 (3)	80 (1)	260 (2)	320 (1)	-	255 (2)

Table 2. The maximum linear distances (in metres) edible dormice were found from release points after 1, 4 and 6 days; number of individuals written in brackets

Distance after	Males		Females	
	„wild-caught"	„kept"	„wild-caught"	„kept"
1 day	80 (4)	15 (2)	10 (1)	50 (2)
4 days	170 (3)	120 (2)	400 (1)	110 (1)
6 days	210 (3)	100 (1)	430 (1)	-

DISCUSSION

The fact that only 6 dormice were found active in the forest near Chalin does not necessarily mean that no other animals have survived from the individuals released there. It is quite possible that some of the dormice travelled such a long distance from Chalin that they were simply not found. As Müller- Stiess (4) showed, edible dormice can travel long distances, over an area of even 50 ha during late spring after the hibernation period.

Reproductive failure in 1999 was observed not only in edible dormice which were translocated a year before to the forest near Chalin. Almost a total lack of reproduction was found in the reserve "Buki nad jeziorem Lutomskim". In 1999 nearly all beeches and many oaks had no mast in the autumn. Bieber (5,6) found that reproductive failure coincides with a lack of food resources in autumn. In the reserve "Buki nad jeziorem Lutomskim" juvenile dormice were caught in 1999 in only one place, overgrown densely by hazel.

In Sierakowski Landscape Park "wild" males as well as translocated male dormice travelled much smaller distances per night than *G. glis* studied in Britain (7). The British "wild" male travelled 523 m per night and female 111 m per night. In SLP after six days of tracking we found that "wild-caught", "wild"

and "kept" males travelled 320 m, 260 and 80 m per night, respectively. In contrast, females from SLP travelled greater distances, 320 m, 255 m and 230 m (after 4 nights) per night respectively, than the female studied in Britain.

Preliminary results obtained during studies in SLP suggest that wild-caught dormice which had been living in captivity during a period of months, exhibit lower tendency to disperse than "wild-caught" ones released after one week of acclimatisation. Two facts are relevant: 1) the distances travelled per night and maximum linear distances from release points were less in "kept" edible dormice than in "wild-caught" ones, 2) the only dormice, from the adults released in the preceding year, caught in 1999 in the vicinity of Chalin, was a male kept in a cage for three months before being released. In the light of these results one can put the hypotheses, that animals (wild-caught) kept at least a few months in captivity are better for translocations than wild-caught animals released soon after capture. This hypotheses could be verified during the years following release.

The next stages of reintroduction of the edible dormouse in SLP are planned for 2000 - 2002.

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