



Small mammals near Janowiec nad Wisłą (middle-eastern Poland) on the basis of prey composition of the tawny owl *Strix aluco* and long-eared owl *Asio otus*

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Abstract: At two sites near Janowiec nad Wisłą (middle-eastern Poland) the species composition of a small mammal community in the diet of the tawny owl *Strix aluco* and long-eared owl *Asio otus* has been examined. The bones of 128 mammals have been extracted from *S. aluco* pellets gathered in the years 2014–2015, whereas 401 mammals have been extracted from *A. otus* pellets collected in the years 2023–2024. Dominant species in the diet of *S. aluco* (the site bordering woodland) were *Clethrionomys glareolus* (31.3%), *Apodemus agrarius* (16.4%) and *Apodemus flavicollis* (12.5%), while in the case of *A. otus* (the site bordering open landscape) *Microtus arvalis* (55.1%) appeared most frequent. Altogether 16 species were recorded representing: Soricomorpha (4), Chiroptera (1), Rodentia (10) and Carnivora (1). Two bats caught as prey belonged to the species of *Myotis nattereri*, common in this part of Poland. Most interesting species were *Crocidura leucodon*, whose recorded sites are near its range limit, and *Muscardinus avellanarius* – the species infrequently recorded in central and eastern Poland.

Key words: Mammals, species composition, pellets, diet of owls, mosaic landscape

INTRODUCTION

Small mammal species in middle-eastern Poland have been examined in a rather patchy way. More abundant and detailed data are available for larger wooded areas, especially under protection, such as the Białowieża Forest [Puszcza Białowieska] (Aulak 1970, Jędrzejewski et al. 1994, Gryz et al. 2012), Puszcza Kampinoska (Lesiński et al. 2013), Puszcza Bolimowska (Lesiński et al. 2016a), Chojnowski Park Krajobrazowy [Chojnów Landscape Park] (Romanowski et al. 2014), Mazowiecki Park Krajobrazowy (Lesiński et al. 2016c) or forests near Rogów (Gryz et al. 2011). In the vicinity of Góry Świętokrzyskie [the Holy Cross Mountains] (Ćmak 1968, Sałata-Piłacińska & Rachowiak 1990) and in the Lublin region (Kitowski & Pitucha 2007, Wiącek et al. 2009a, 2009b) the occurrence of small mammals was examined in a mosaic landscape. The species composition of this group was also determined at certain isolated sites on the basis of large collections of owl pellets, particularly of *Tyto alba* (Pucek & Raczyński 1983).

In the middle Vistula valley a range of small mammals' locations have been identified, although most of them date back to the research carried out as long as fifty or more years ago (Pucek & Raczyński 1983). This valley is an important ecological corridor for animals, including mammals (Romanowski et al. 2023). Recently little research has been conducted on small mammals in this part of Poland. This work aims to expand the list of species existing for this area, to confirm their presence today and also to evaluate the structure of their local communities in the mosaic landscape.

MATERIAL AND METHODS

The research was done in the eastern half of Poland. The owl sites were located in two villages: Oblasy (51.34°N, 21.89°E) – *Strix aluco* and Janowiec (51.32°N, 21.90°E) – *Asio otus*. Both sites are situated close to the central reach of the Vistula river valley (Fig. 1). Oblasy is a village inhabited by over 800 people with a densely built-up centre and a lot of houses dispersed among farmland, where the main crops are cereals, maize and rape, and where some scattered orchards occur. Together with Wojszyn it forms an open land enclave surrounded by woodland covering about 34 square kilometres. The largest complex (over 20 square kilometres) grows to the west of the village, in which fresh and dry coniferous stands dominate, with patches of mixed pine, birch, aspen and oak forest. Individuals of *S. aluco* are regularly seen or heard in several sections of the forest/farmland ecotone. Janowiec is a rather compact village where almost 950 people live. It is surrounded by farmland, on the south-west and north-west bordering predominantly pine woodland that stretches for dozens of kilometres from the north to the south. The farmland to the south of the village boasts rich soils, so beside cereals, maize and rape, vegetables are grown. Adjacent to it are meadows and wetlands extending well over one kilometre as far as the complex of ponds in Janowiec. In turn, the fields to the west of the village lie on poor soils, so they are interspersed with fallows. The cemetery, where *A. otus* winters is located at the edge of the woodland and wetland.



Fig. 1. Study area (black circle) marked on a map of Poland with a net of main rivers

The pellets of *S. aluco*, containing 128 mammals, 28 birds and 9 amphibians, were collected in the years 2014–2015 under the roosting trees on a property at the edge of the village bordering woodland. The pellets of *A. otus*, containing 401 mammals and 3 birds, were collected under a thuja tree at the cemetery, where the owls (2–3 individuals) spent the winter months of 2023 and 2024.

After soaking the pellets in water identifiable bone elements were extracted from them. They were mainly skulls, less often other characteristic bones. Species identification was carried out with the help of the key edited by Pucek (1984), in the case of rodents of the genus *Apodemus* – the work by Ruprecht (1979), while in the case of bats – the key to mandible identification (Ruprecht 1987).

RESULTS

Among the *S. aluco* prey 14 small mammals' species were detected (Table 1). This owl species most often caught *Clethrionomys glareolus*, *Apodemus agrarius* and *A. flavicollis* (altogether ca. 60% of mammal prey). Not very numerous were the species representing Soricomorpha (3), which constituted only 4%. In this group two individuals of *Crocidura leucodon* were identified. Remarkable is the presence of *Muscardinus avellanarius*, a rodent caught relatively frequently (over 5% of captured mammals). Two orders Chiroptera and Carnivora had one representative each – *Myotis nattereri* and *Mustela nivalis*, respectively (Table 1).

Table 1. Small mammals in the diet of *Strix aluco* at the site Oblasy in seven collections of pellets in the years 2014–2015.

No.	Species	24 Feb 2014	10 Oct 2014	31 Dec 2014	15 Apr 2015	22 Apr 2015	17 May 2015	30 Dec 2015	Total N (%)
1.	<i>Talpa europaea</i> Linnaeus, 1758							1	1 (0.8)
2.	<i>Sorex araneus</i> Linnaeus, 1758						1	1	2 (1.6)
3.	<i>Crocidura leucodon</i> (Hermann, 1780)							2	2 (1.6)
4.	<i>Myotis nattereri</i> (Kuhl, 1818)		1			1			2 (1.6)
5.	<i>Clethrionomys glareolus</i> (Schreber, 1780)	5	8	5	2	3	12	5	40 (31.3)
6.	<i>Microtus subterraneus</i> (de Selys-Longchamps, 1836)	1							1 (0.8)
7.	<i>Microtus arvalis</i> (Pallas, 1779)		1					3	4 (3.1)
8.	<i>Microtus oeconomus</i> (Pallas, 1766)		2						2 (1.6)
-.	<i>Microtus</i> spp.	1							1 (0.8)
9.	<i>Mus musculus</i> Linnaeus, 1758					1			1 (0.8)
10.	<i>Apodemus agrarius</i> (Pallas, 1771)	5		4		6	4	2	21 (16.4)
11.	<i>Apodemus flavicollis</i> (Melchior, 1834)	5	3	4			2	2	16 (12.5)
-.	<i>Apodemus</i> spp.		9	2			3	1	15 (11.7)
12.	<i>Micromys minutus</i> (Pallas, 1771)	2		1	7	1	1		12 (9.4)
13.	<i>Muscardinus avellanarius</i> (Linnaeus, 1758)		3					4	7 (5.5)
14.	<i>Mustela nivalis</i> Linnaeus, 1766	1							1 (0.8)
	Total	20	27	16	9	12	23	21	128 (100.0)

The diet of *A. otus* consisted of slightly fewer mammal species caught as prey (10) and was dominated by rodents of the genus *Microtus*, among which decisively most numerous was *M. arvalis* (Table 2). Noteworthy is the presence of *Sorex minutus*, which was not recorded in the diet of *S. aluco*. Another species *Apodemus sylvaticus* constituted 5.7% of all mammal prey. Almost every tenth mammal caught by *A. otus* was *Micromys minutus*.

Table 2. Small mammals in the diet of *Asio otus* at the wintering site in Janowiec in pellets collected on two days in the years 2023 and 2024.

No.	Species	15 Dec 2023	2 Feb 2024	Total = N (%)
1.	<i>Sorex minutus</i> Linnaeus, 1766		1	1 (0.2)
2.	<i>Clethrionomys glareolus</i> (Schreber, 1780)	1	4	5 (1.2)
3.	<i>Microtus subterraneus</i> (de Selys-Longchamps, 1836)		1	1 (0.2)
4.	<i>Microtus arvalis</i> (Pallas, 1779)	124	97	221 (55.1)
5.	<i>Microtus oeconomus</i> (Pallas, 1766)	8	14	22 (5.5)
-.	<i>Microtus</i> spp.	1	26	27 (6.7)
6.	<i>Mus musculus</i> Linnaeus, 1758	3	1	4 (1.0)
7.	<i>Apodemus agrarius</i> (Pallas, 1771)	14	12	26 (6.5)
8.	<i>Apodemus sylvaticus</i> (Linnaeus, 1758)	9	14	23 (5.7)
9.	<i>Apodemus flavicollis</i> (Melchior, 1834)		3	3 (0.7)
-.	<i>Apodemus</i> spp.	10	19	29 (7.2)
10.	<i>Micromys minutus</i> (Pallas, 1771)	22	17	39 (9.7)
	Total	192	209	401 (100.0)

DISCUSSION

The examination of the diet of *S. aluco* and *A. otus* allowed us to obtain nearly complete data on terrestrial mammal species in the area investigated. The former species hunts chiefly in forests and at their edges as well as in the proximity of human abodes rich in trees, whereas the latter hunts primarily in open landscape (Mikkola 1983). Therefore together they provide data on the structure of small mammal communities in most ecosystems that form the local landscape. The previous study on the diversity of mammal communities in the middle Vistula valley (Romanowski et al. 2023) showed similar data on small terrestrial species typical of such habitats. As far as bats are concerned, their share in the prey caught by these owls is quite negligible (Kowalski & Lesiński 2002) and very few species of all that occur in a given area are found in their diet. In this part of Poland it is probable that at least 17 species of bats occur (Sachanowicz et al. 2006). The species recorded in *S. aluco*'s diet in Oblasy (*Myotis nattereri*) is common and numerous in and around the middle Vistula valley (Krzanowski 1956, Ruprecht 1983, Kowalski & Drózdź 2002). Additionally, some other species of bats were recorded at the site with the use of different methods, roosts' control and netting (authors' unpubl. data). In a standalone backyard cellar in winter in the years 2016/2017, 2019/2020 and 2023/2024 one individual of *Plecotus auritus* (Linnaeus, 1758) was seen, whereas on 29 July 2015 1 *Eptesicus serotinus* (Schreber, 1774), 1 *Pipistrellus nathusii* (Keyserling et Blasius, 1839) and 4 *Plecotus austriacus* (Fischer, 1829) were caught in a net set in the forest by the edge of the village.

The species composition of mammal prey and the percentage they constitute in the diet of these owls in the neighbourhood of Janowiec are quite typical of the mosaic landscape in this part of the country. For instance, the composition of *S. aluco*'s diet in the suburbs of Warsaw (Romanowski et al. 2020) or the Lublin region was similar (Wiącek et al. 2009a, 2009b). Like in the investigated area, the diet of *A. otus* in the Pilica valley (Stolarz & Lesiński 2015, Stolarz et al. 2017) and near Łowicz (Stolarz et al. 2018) was definitely dominated by *M. arvalis*. It indicates a significant resemblance between small mammal communities in these places.

From the faunistic studies' point of view the presence of *M. avellanarius* is particularly valuable. It is known to occur in Puławy (Pucek 1983b), thus in the close neighbourhood of the investigated area. However, in central and eastern Poland this species is recorded relatively rarely, usually in more sizeable forest complexes such as Puszcza Kampinoska (Lesiński et al. 2013), Puszcza Bolimowska (Lesiński et al. 2016a), Mazowiecki Park Krajobrazowy (Lesiński et al. 2016c) or Puszcza Pilicka (Gryz & Krauze-Gryz 2024). This species is the only representative of Gliridae family near Janowiec. Another member of the same family *Glis glis*

was recorded in Puszcza Koziennicka (Lesiński & Wojtowicz 2021), which is only about 25 kilometres away.

Not far from the investigated area there is a range limit of *C. leucodon*, which is known here from a number of locations (Pucek & Michalak 1983). This limit runs several dozen kilometres away from Janowiec northwards and westwards. This partially synanthropic mammal species finds favourable habitats among the mosaic of open and built-up areas. It is worth noting that the occurrence of another species of the genus *Crocidura* seems likely in the investigated area. The closest site at which *C. suaveolens* (Pallas, 1811) occurs is known in Solec nad Wisłą (Cichocki et al. 2014), ca. 20 kilometres from Janowiec to the south.

As regards the order of Carnivora, the presence of a small species *Mustela nivalis* was proved. It is the most common and numerous representative of the family Mustelidae in Poland (Buchalczyk 1983). It is rather seldom caught as prey by *S. aluco* and if at all, these are just single individuals (Jędrzejewski et al. 1994, Zawadzka & Zawadzki 2007, Lesiński et al. 2013, Lesiński 2016, Lesiński et al. 2016a).

Among the species which could have been expected in the investigated area, but which were not found, it is necessary to mention *Arvicola amphibious* (Linnaeus, 1758) and *Microtus agrestis* (Linnaeus, 1761). The population of the former has probably decreased considerably in central and eastern Poland over the recent decades and its range has been significantly fragmented. This tendency was noticed, for example, in the area within a hundred-kilometre radius of Warsaw (Lesiński et al. 2017). The latter species inhabits, first of all, larger woodlands in this part of Poland (Lesiński et al. 2013, 2016a, Gryz & Krauze-Gryz 2024), which are absent from the study area. In Janowiec and its surroundings one can also expect the presence of *Sicista betulina* (Pallas, 1779), known from Pawłowice (Pucek 1983a), which is located 35 kilometres to the north-west of the investigated area. However, this information dates back to the 1960s and we do not know if this species still occurs there. Also, in the Lublin region at the site Markuszów, approximately 25 kilometres east of Janowiec, the presence of *Apodemus uralensis* (Pallas, 1811) was recorded (Nikodem & Ruprecht 1976). Hence there is a possibility that it occurs in the investigated area, although it was not detected. Neither were *Neomys fodiens* (Pennant, 1771) and *Rattus norvegicus* (Berkenhout, 1769), the species which are quite common in lowland Poland. The former is often caught by *S. aluco*, but in the places comprising water bodies (Lesiński et al. 2013). At the site in Oblasy there are no large water bodies, that is why this species most probably does not occur there. Its presence is possible at the site Janowiec as wetlands and ox-bow lakes lie in close proximity, but in the winter diet of *A. otus* it is not encountered, even where water bodies cover sizeable spaces (Lesiński et al. 2016b). As far as *Rattus norvegicus* is concerned, its presence would have probably been confirmed on condition that the quantity of pellets collected had been considerably bigger. This claim may be justified by the fact that two individuals of the species were observed in Oblasy in July 2008 and September 2023 (authors' unpubl. data).

This work presents up-to-date data on small mammals which occur near Janowiec nad Wisłą. Their community is typical of this part of Poland. Obtained results confirm the important role of areas adjacent to large river valleys in maintaining the diversity of mammals (Romanowski et al. 2023). Further research in the area would allow us to add at least two species to the list of small terrestrial mammals and to record a significantly larger number of bat species.

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REFERENCES

- AULAK W. 1970. Small mammal communities of the Białowieża National Park. *Acta Theriologica* 15: 465–515.
- BUCHALCZYK T. 1983. *Mustela nivalis* Linnaeus 1766. Pp. 158–160. In: PUCEK Z. & RACZYŃSKI J. (eds), Atlas rozmieszczenia ssaków w Polsce. PWN, Warszawa, 188 pp.
- CICHOCKI J., KOŚCIELSKA A., PIŁACIŃSKA B., KOWALSKI M., WAŻNA A., DOBOSZ R., NOWAKOWSKI K., LESIŃSKI G. & GABRYŚ G. 2014. Occurrence of lesser white-toothed shrew *Crocidura suaveolens* (Pallas, 1811) in Poland. *Acta Biologica* 21: 149–168.
- ĆMAK J. 1968. Ssaki (Mammalia) w biotopach Chełmowej Góry na tle fauny ssaków Świętokrzyskiego Parku Narodowego. *Folia Forestalia Polonica A*, 14: 239–266.
- GRYZ J. & KRAUZE-GRYZ D. 2024. Small mammals of the Pilica Forest based on the analysis of tawny owl *Strix aluco* pellets. *Leśne Prace Badawcze* 84: 1–3. DOI: 10.48538/lpb-2024-0001 [In Polish with English Abstract]
- GRYZ J., KRAUZE-GRYZ D. & LESIŃSKI G. 2011. Mammals in the vicinity of Rogów (central Poland). *Fragmenta Faunistica* 54: 183–197.
- GRYZ J., LESIŃSKI G., KOWALSKI M. & KRAUZE D. 2012. Skład pokarmu puszczyka *Strix aluco* w Puszczy Białowieżskiej. *Chrońmy Przyrodę Ojczystą* 68: 100–108.
- JĘDRZEJEWSKI W., JĘDRZEJEWSKA B., ZUB K., RUPRECHT A. L. & BYSTROWSKI C. 1994. Resource use by Tawny Owls *Strix aluco* in relation to rodent fluctuations in Białowieża National Park, Poland. *Journal of Avian Biology* 25: 308–318.
- KITOWSKI I. & PITUCHA G. 2007. Diet of the Eurasian Tawny Owl in farmland of east Poland. *Berkut* 16: 225–231.
- KOWALSKI M. & DRÓZDZ R. 2002. Zimowy monitoring nietoperzy w sztucznej jaskini w Bochnicy w latach 1987–1999. *Nietoperze* 3: 129–135.
- KOWALSKI M. & LESIŃSKI G. 2002. Nietoperze w diecie sów na Nizinie Mazowieckiej i Podlaskiej. *Nietoperze* 3: 255–261.
- KRZANOWSKI A. 1956. Nietoperze Puław. Wykaz gatunków i uwagi biologiczne. *Acta Theriologica* 1: 87–108.
- LESIŃSKI G. 2016. Drobne ssaki rezerwatu „Dębina I” na wschodnim Mazowszu na podstawie składu pokarmu puszczyków *Strix aluco*. *Kulon* 21: 41–47.
- LESIŃSKI G., JANUS K., NOWAK K. & PRUSZKOWSKA A. 2016a. Drobne ssaki Bolimowskiego Parku Krajobrazowego i okolic na podstawie analizy diety puszczyka *Strix aluco*. *Parki Narodowe i Rezerваты Przyrody* 35, 4: 57–69.
- LESIŃSKI G., KOWALSKI M., STOLARZ P., GRYZ J., KRAUZE-GRYZ D. & ROMANOWSKI J. 2017. Distribution of the European water vole *Arvicola amphibius* (Linnaeus, 1758) in Mazowsze and southern Podlasie. *Fragmenta Faunistica* 60: 129–140.
- LESIŃSKI G., ROMANOWSKI J. & BUDEK S. 2016b. Winter diet of the long-eared owl *Asio otus* in various habitats of central and north-eastern Poland. *Annals of Warsaw University of Life Sciences – SGGW. Animal Science* 55: 81–88.
- LESIŃSKI G., ROMANOWSKI J., GRYZ J., OLSZEWSKI A., KOWALSKI M., KRAUZE-GRYZ D., OLECH B., PEPLÓWSKA-MARCZAK D. & TARŁOWSKI A. 2013. Small mammals of Kampinos National Park and its protection zone, as revealed by analyses of the diet of tawny owls *Strix aluco*. *Fragmenta Faunistica* 56: 65–81.
- LESIŃSKI G., STOLARZ P., DĄBROWSKI R., GRYZ J., KRAUZE-GRYZ D., SKRZYPIEC-NOWAK P. & ŚWIC J. 2016c. Small mammals in the diet of owls in the Masovian Landscape Park and its adjacent areas. *Fragmenta Faunistica* 59: 73–86.
- LESIŃSKI G. & WOJTOWICZ B. 2021. Drobne ssaki w północnej części Puszczy Kozienickiej na podstawie analizy diety puszczyka *Strix aluco*. *Kulon* 26: 69–75.
- MIKKOLA H. 1983. Owls of Europe. T. & A.D. Poyser, Carlton, 397 pp.
- NIKODEM Z. & RUPRECHT A. L. 1976. New records of *Apodemus microps* Kratochvíl et Rosický, 1952 from Poland. *Acta Theriologica* 21: 174–175.
- PUCEK Z. 1983a. *Sicista betulina* (Pallas, 1778). Pp. 132–134. In: PUCEK Z. & RACZYŃSKI J. (eds), Atlas rozmieszczenia ssaków w Polsce. PWN, Warszawa: 188 pp.
- PUCEK Z. 1983b. *Muscardinus avellanarius* (Linnaeus, 1758). Pp. 137–138. In: PUCEK Z. & RACZYŃSKI J. (eds), Atlas rozmieszczenia ssaków w Polsce. PWN, Warszawa: 188 pp.
- PUCEK Z. (ed.) 1984. Klucz do oznaczania ssaków Polski. PWN, Warszawa: 384 pp.
- PUCEK Z. & MICHALAK I. 1983. *Crocidura leucodon* (Hermann, 1780). Pp. 60–61. In: PUCEK Z. & RACZYŃSKI J. (eds), Atlas rozmieszczenia ssaków w Polsce. PWN, Warszawa: 188 pp.
- PUCEK Z. & RACZYŃSKI J. 1983. Atlas rozmieszczenia ssaków Polski. PWN, Warszawa: 188 pp.
- ROMANOWSKI J., DUDEK-GODEAU D. & LESIŃSKI G. 2023. Diversity of small mammals along a large river valley revealed from pellets of Tawny Owl *Strix aluco*. *Biology* 12, 1118. <https://doi.org/10.3390/biology12081118>
- ROMANOWSKI J., LESIŃSKI G. & BARDZIŃSKA M. 2020. Small mammals of the suburban areas of Warsaw in the diet of the tawny owl *Strix aluco*. *Studia Ecologiae et Bioethicae* 18: 349–354.
- ROMANOWSKI J., TARŁOWSKI A., LESIŃSKI G. & OLSZEWSKI A. 2014. Drobne ssaki Chojnowskiego Parku Krajobrazowego w pokarmie puszczyka *Strix aluco*. *Chrońmy Przyrodę Ojczystą* 70, 1: 63–67.
- RUPRECHT A. L. 1979. Kryteria identyfikacji gatunkowej podrodzaju *Sylvaemus* Ognev et Vorobiev, 1923 (Rodentia: Muridae). *Przegląd Zoologiczny* 23: 340–349.
- RUPRECHT A. L. 1983. *Myotis nattereri* (Kuhl, 1818). Pp. 66–67. In: PUCEK Z. & RACZYŃSKI J. (eds), Atlas rozmieszczenia ssaków w Polsce. PWN, Warszawa: 188 pp.
- RUPRECHT A. L. 1987. Klucz do oznaczania żuchw nietoperzy fauny Polski. *Przegląd Zoologiczny* 31: 89–105.

- SACHANOWICZ K., CIECHANOWSKI M. & PIKSA K. 2006. Distribution patterns, species richness and status of bats in Poland. *Vespertilio* 9–10: 151–173.
- SALAŃKA-PILACIŃSKA B. & RACHOWIAK P. 1990. Badania nad drobnymi ssakami (Micromammalia) Krainy Świątokrzyskiej. *Fragmenta Faunistica* 33: 307–334.
- STOLARZ P., JANUS K., LESIŃSKI G. & MACIEJEWSKA A. 2018. Zimowy pokarm uszatki *Asio otus* na Równinie Łowickiej. *Kulon* 23: 153–157.
- STOLARZ P. & LESIŃSKI G. 2015. Zimowo-wiosenny pokarm uszatki *Asio otus* w dolinie dolnej Pilicy. *Parki Narodowe i Rezerваты Przyrody* 34, 4: 92–96.
- STOLARZ P., STOLARZ J. & LESIŃSKI G. 2017. Sezonowa zmienność pokarmu uszatki *Asio otus* w dolinie dolnej Pilicy. *Przegląd Przyrodniczy* 28, 1: 101–106.
- WIĄCEK J., NIEDŹWIEDŹ M., KOWALCZUK S. & PISKORSKI M. 2009a. Skład pokarmu puszczyka *Strix aluco* na wybranych stanowiskach Lubelszczyzny. Pp. 115–124. In: WIĄCEK J., POLAK M., KUCHARCZYK M., GRZYWACZEWSKI G. & JERZAK L. (eds), *Ptaki – Środowisko – Zagrożenia – Ochrona. Wybrane aspekty ekologii ptaków*. Lubelskie Towarzystwo Ornitologiczne, Lublin, 422 pp.
- WIĄCEK J., POLAK M. & NIEDŹWIEDŹ M. 2009b. The diet composition of the Tawny Owl *Strix aluco* in the Kozłówka Forest (eastern Poland). *Annales Universitatis Mariae Curie-Skłodowska Lublin – Polonia* 64, 2: 75–81.
- ZAWADZKA D. & ZAWADZKI J. 2007. Feeding ecology of Tawny Owl (*Strix aluco*) in Wigry National Park (north-east Poland). *Acta Zoologica Lituonica* 17: 234–241.

STRESZCZENIE

[Małe ssaki w okolicy Janowca nad Wisłą (środkowo-wschodnia Polska) na podstawie składu pokarmu puszczyka *Strix aluco* i uszatki *Asio otus*]

Badania prowadzono na dwóch stanowiskach w okolicy Janowca (środkowo-wschodnia Polska). Na podstawie pokarmu puszczyka *Strix aluco* i uszatki *Asio otus* określono skład gatunkowy zgrupowania małych ssaków. Z wypluwek *S. aluco* zebranych w latach 2014–2015 wypreparowano 128 ssaków, a z wypluwek *A. otus* zebranych w latach 2023–2024 wypreparowano 401 ssaków. W pokarmie *S. aluco* (stanowisko na skraju wsi i lasu) stwierdzono 14 gatunków, wśród których dominowały: *Clethrionomys glareolus* (31,3%), *Apodemus agrarius* (16,4%) i *Apodemus flavicollis* (12,5%) (Tab. 1). W pokarmie *A. otus* (stanowisko na skraju wsi i terenów otwartych) stwierdzono 10 gatunków, wśród których zdecydowanie dominował *Microtus arvalis* (55,1%) (Tab. 2). Prawie co dziesiątą ofiarę, zarówno *S. aluco*, jak i *A. otus*, stanowił *Micromys minutus* (Tab. 1 i 2). Łącznie w analizowanym materiale odnaleziono 16 gatunków reprezentujących: Soricomorpha (4), Chiroptera (1), Rodentia (10) i Carnivora (1). Nietoperze były reprezentowane przez jeden gatunek – *Myotis nattereri*, pospolity i stosunkowo liczny w tej części Polski. Z rzędu drapieżnych stwierdzono mały gatunek, pospolity w kraju – *Mustela nivalis*. Do cennych gatunków należy zaliczyć *Crocidura leucodon*, którego stwierdzone stanowiska znajdują się w pobliżu granicy zasięgu, a także *Muscardinus avellanarius* – gatunek nieczęsto notowany w środkowej i wschodniej Polsce. Dalsze badania mogą pozwolić na wykazanie jeszcze przynajmniej dwóch gatunków małych ssaków związanych z podłożem i do kilkunastu gatunków nietoperzy.

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