DATA ON THE DISTRIBUTION OF SELECTED SORICOMORPHA AND RODENTIA SPECIES IN POLAND

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Abstract. We present current data on the occurrence of four Soricomorpha and 15 Rodentia species. The mammals were collected during trapping of common shrews and yellow-necked mice for chromosomal research and the common hamsters for phylogeography and genetic variability research. The maps of species occurrence were created in ArcGIS and each map is accompanied by the list of localities with geographic coordinates and year of capture.

Key words: species distribution, maps of occurrence, lists of localities, GIS

INTRODUCTION

The pattern of distribution is not permanent for a species. Numerous factors affect the distribution and the species have to adjust their ranges to changing environments. It is likely that the Quaternary epoch was the richest in events strongly influencing the abundance and distribution of species (WILLIS and NIKLAS 2004). The Pleistocene climate oscillations have been shown to dramatically change species distributions. On the other hand, climate change over the last 100 years has already caused the shifts in species distribution and abundances (ROOT *et al.* 2003). The biotic factors, as for example invasive species, also have a significant impact on native fauna distribution (MOONEY and CLELAND 2001). Currently, anthropogenic changes, which cause fragmenta-

tion and destruction of habitats, very strongly reduce species ranges. Hence, it is necessary to update knowledge on the distribution of species and record the changes.

In Poland, the distribution of mammal species was compiled in the Atlas of Polish Mammals (PUCEK and RACZYŃSKI 1983). Since that time, the ranges of some species changed considerably, for example that of the common hamster, which has lost 75% of its distribution (ZIOMEK and BANASZEK 2007). Hence, it is of great value, that the Institute of Nature Conservation PAS, Department of Systematic Zoology UAM, and Museum and Institute of Zoology PAS started in 2008 the initiative to bring up to date the Atlas of Polish Mammals and digitize the information on the distribution of the Polish theriofauna (OKARMA 2009).

Our group has worked for several decades on various projects of population genetics of multiple mammal species. Mainly, we were interested in the chromosomal variation of the common shrew (FEDYK 1995), the B chromosome polymorphism in yellow-necked mice (BANASZEK and JADWISZCZAK 2006) and molecular diversity of common hamster populations (BANASZEK *et al.* 2010). All these topics required the capture of animals. Moreover, we took part in several monitoring programmes, for example the state of theriofauna in the Knyszyńska Forest. We usually used live traps in which many other species were captured, not only those necessary for our research. In effect, we collected a large database on incidence of several Soricomorpha and over a dozen Rodentia species. These data do not form full distribution maps, as our research followed mainly the distribution of the common shrew chromosomal hybrid zones.

The aim of this paper is to enlarge our knowledge on the current occurrence of some Soricomorpha and Rodentia species. We decided to create maps with the lists of locations and geographic coordinates, which are ready to use for the purposes of a new Atlas of Polish Mammals.

MATERIAL AND METHODS

The capture of small mammals for cytogenetic study of the common shrew was performed during the years 1980-2008. The large or medium pitfalls (metal cones) were used. Common shrews were sacrificed for cytogenetic preparations, and all the other specimens were released. The identification of a species was done directly at the trapping site on the basis of morphological traits. As the pitfalls may trap many individuals at the same time, the death of some individuals is unavoidable. The dead animals were taken to the lab for more precise species determination, by use of morphometry and dentition features.

The collection of yellow-necked mice was conducted during the years 2000-2005 using Białowieża wooden box-traps. Common hamster research was performed in years 2006-2011. The hamsters were collected in large live traps. Small mammals are rarely able to close the hamster traps and even then, they often get out between the wires, hence, we used only the data of rats captured in hamster

traps. The common hamster itself was excluded from this study as the changes in its distribution have been described previously (ZIOMEK and BANASZEK 2007).

The habitats we collected animals from were chosen for our specific purposes. For example, for shrews we looked for wet habitats, for yellow-necked mice we chose forests with rich undergrowth, and for common hamsters agricultural land used for wheat or sugar beet cultivation with good soil. This means, that even in areas where our research was very intensive, we cannot exclude the presence of species we did not captured.

Our trapping lines were usually named after the closest village or city. All locations were found in the interactive map of Poland (www.mapa.szukacz.pl), which provides the geographic coordinates of places in WGS 84 system. We used ArcGIS 10.0 to plot our localities into UTM 10 x 10 km grids. The squares which contained localities of a species were marked with a point. A point in a square does not represent a single locality, it may cover a few sites of occurrence. Empty squares indicate a lack of data. Each map is accompanied by the list of localities with geographic coordinates and year of capture (Appendix 1). The authors will send on the request the list of localities for particular species in Excel format, which is easy to import into ArcGIS.

RESULT

Soricomorpha – There are four species in our database. The lists of localities are given in Appendix 1.

European mole (*Talpa europaea* Linnaeus, 1758)

Collected incidentally in our research, as it both leads subterranean life and can easily get out of pitfall traps.

Common shrew (*Sorex araneus* Linnaeus, 1758)

The most numerous species in our database, as most of our trapping effort was connected with collecting shrews. The species determination is without doubt as most of our shrews were karyotyped. The distribution of the common shrew is the only case which can be used as an evidence for the lack of other species i.e. the masked shrew, *Sorex caecutiens* Laxmann, 1788. Many of our trapping expeditions were performed in northeastern Poland close to the Białowieża Forest which forms the western distribution edge of *S. caecutiens* in Poland. We were always aware of the possibility of finding a masked shrew locality. However, even dubious for us specimens on the basis of morphometry, always proved to be *S. araneus* on the basis of karyotype.

Eurasian pygmy shrew (*Sorex minutus* Linnaeus, 1766)

The Eurasian pygmy shrews were collected in similar habitats to those of the common shrews, hence they were also numerous in this database. Species determination is reliable on the basis of external traits and external morphometry.

Figure 1. Map of the occurrence of the European mole (*Talpa europaea*).

Figure 2. Map of the occurrence of the common shrew (*Sorex araneus*).

Figure 3. Map of the occurrence of the Eurasian pygmy shrew (*Sorex minutus*).

Eurasian water shrew (*Neomys fodiens* (Pennant, 1771))

The species determination is certain on the basis of external traits and morphometry.

Rodentia – There are fifteen species in our database. The lists of localities are given in Appendix 1.

Bank vole (*Myodes glareolus* Schreber, 1780)

The bank vole was common in our research. The species was determined usually on external morphology, sometimes confirmed using dentition features.

Water vole (*Arvicola terrestris* (Linnaeus, 1758))

Collected by us quite rarely, as large water voles are usually able to jump out of the pitfalls.

European pine vole (*Pitymys subterraneus* (de Selys – Longchamps, 1836))

Collected incidentally in our research because of their subterranean way of life. Species was determined on the external morphological traits and some dead individuals were verified on the basis of teeth characteristics.

Figure 4. Map of the occurrence of the Eurasian water shrew (*Neomys fodiens*).

Figure 5. Map of the occurrence of the bank vole (*Myodes glareolus*).

Figure 6. Map of the occurrence of the water vole (*Arvicola terrestris*).

Figure 7. Map of the occurrence of the European pine vole (*Pitymys subterraneus*).

***Microtus* sp.**

Most of *Microtus* specimens collected during our research were released without species determination, as dependable identification is not possible on external traits alone. Species determination was conducted for dead animals on the basis of dentition features. That is why the localities of *Microtus* sp. are quite scarce in this study, although the voles were numerous in the traps. Three species were recorded in our database: the field vole (*Microtus agrestis* (Linnaeus, 1761)), the common vole (*Microtus arvalis* (Pallas, 1779)) and the root vole (*Microtus oeconomus* (Pallas, 1776)).

House mouse (*Mus musculus* Linnaeus, 1758)

Collected by us sporadically as we rarely tried to collect animals close to human habitation, hence we probably trapped only migrating individuals.

Common rat (*Rattus norvegicus* (Berkenhout, 1769))

The rats were captured in the common hamster traps. The species determination was confirmed by molecular marker – the control region of mtDNA (Banaszek, unpubl. data). A dead animal found in the fields of Pilaszkowice was genotyped and proved to be the common rat by comparison with the sequences in GenBank. Moreover, two rats were collected in large pitfalls in the Knyszyńska Forest.

Figure 8. Map of the occurrence of the field vole (*Microtus agrestis*).

Figure 9. Map of the occurrence of the common vole (*Microtus arvalis*).

Figure 10. Map of the occurrence of the root vole (*Microtus oeconomus*).

Figure 11. Map of the occurrence of the house mouse (*Mus musculus*).

Figure 12. Map of the occurrence of the common rat (*Rattus norvegicus*).

Harvest mouse (*Micromys minutus* (Pallas, 1771))

Harvest mice are easy to recognize by external traits. Although we have listed quite a number of localities, the harvest mice were infrequent in our traps, as they usually move above ground level on grass stalks and bush branches.

Apodemus sp.

The yellow-necked mouse (*Apodemus flavicollis* (Melchior, 1834)) and the wood mouse (*Apodemus sylvaticus* (Linnaeus, 1758)) are difficult to discriminate. Colour traits usually allow doubtless identification of adult specimens of the yellow-necked mouse. However, young *A. flavicollis* can be easily mistaken with the smaller wood mouse. Hence, we usually released most *Apodemus* mice without species determination. During research for B chromosomes in *Apodemus*, the species determination was done on the basis of LDH (lactate dehydrogenase) electrophoresis or C-banded karyotypes (ENGEL *et al.*, 1973). Any *A. sylvaticus* determinations and locations in our maps were done during B chromosome research. The striped field mouse (*Apodemus agrarius* (Pallas, 1771)) is distinct from the two former species of *Apodemus* due to the presence of a black dorsal stripe. However, because of this stripe, it can sometimes be mistaken for *Sicista betulina* (Pallas, 1778). As we were aware of this, some cases of young *A. agrarius*/*S. betulina* were excluded.

Figure 13. Map of the occurrence of the harvest mouse (*Micromys minutus*).

Figure 14. Map of the occurrence of the yellow-necked mouse (*Apodemus flavicollis*).

Figure 15. Map of the occurrence of the wood mouse (*Apodemus sylvaticus*).

Apodemus agrarius

Figure 16. Map of the occurrence of the striped field mouse (*Apodemus agrarius*)

Sicista betulina

Figure 17. Map of the occurrence of the northern birch mouse (*Sicista betulina*).

Northern birch mouse (*Sicista betulina* (Pallas, 1778))

Species was determined on the basis of external traits and morphometry, additionally some individuals were karyotyped (FEDYK *et al.*, 2011). Our localities in Masuria in DE square are located a little bit more to the west than in the formerly described distribution of *S. betulina*.

Forest dormouse (*Dryomys nitedula* (Pallas, 1779)) and the common dormouse (*Muscardinus avellanarius* (Linnaeus, 1758))

The dormice were collected very rarely as we never set traps on trees. The dormice move among branches of shrubs, hence the animals collected on the ground were probably looking for underground, winter refuge. For the forest dormouse, we present the localities in the Knyszyńska Forest. No sites of occurrence of *D. nitedula* from the Knyszyńska Forest were shown in the Atlas of Polish Mammals (PUCEK and RACZYŃSKI, 1983), although such localities were reported in FE UTM square (BIAŁAS *et al.*, 1982). Here we report two more sites for the forest dormouse from the Knyszyńska Forest.

Figure 18. Map of the occurrence of the forest dormouse (*Dryomys nitedula*).

Muscardinus avellanarius

Figure 19. Map of the occurrence of the common dormouse (*Muscardinus avellanarius*).

CONCLUSIONS

In this study, we presented data on the occurrence of four Soricomorpha and 15 Rodentia species. Most of the collected species occur over the whole of Poland and our localities are therefore within the formerly described ranges. Although some of our points are new for a particular species, it is only the result of intense research in certain areas, and not changes in distribution or abundance of the species. In two cases, that of the northern birch mouse and the forest dormouse, our points of occurrence are outside the former species range (PUCEK and RACZYŃSKI 1983). However, in both cases the new localities are close to the formerly described distribution areas. As we do not have data to create full distribution maps, we cannot judge if these new points are the result of extended species ranges or just the result of less intense study in some areas of the Knyszyńska Forest and Masuria during preparation of the former Atlas of Polish Mammals.

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APPENDIX 1. LISTS OF LOCALITIES OF SELECTED SORICOMORPHA
AND RODENTIA SPECIES IN POLAND.

Table 1. List of the European mole (*Talpa europaea*) localities.

UTM square		Localities	Geographic coordinates		Year of capture
CE	89	Lubstowo	54.131851	19.19815	1994
DE	16	Kupin	53.844166	19.63652	1993, 1999
	19	Kajmy	54.088612	19.72195	1992
	19	Pasłek	54.066826	19.66181	1992, 1993
	19	Winiary	54.125504	19.71557	1993
	29	Bielica	54.085045	19.81677	1992
	43	Rychnowska Wola	53.601521	20.12411	1991
	44	Guzowy Piec	53.687389	20.21625	1994
	45	Podlejki	53.730518	20.19109	1994
	45	Worliny	53.779686	20.13292	1991
	53	Jemiołowo	53.561832	20.29932	1990
	53	Łutynowo	53.551113	20.34409	1994
	54	Mańki	53.664074	20.25555	1988, 1989
	54	Miodówko	53.645294	20.37587	1991
	54	Mycyny	53.639053	20.267	1994
	72	Natać Wielka	53.511272	20.57244	2001
	72	Zimna Woda	53.45215	20.6002	2002
	09	Łączna	54.079723	19.5825	2001
EC	51	Stężycza	51.582561	21.77271	1997
EE	79	Czerwony Dwór	54.130104	22.18694	1984
FD	49	Jurowce	53.19661	23.15286	1993
	58	Sobolewo	53.111221	23.26858	1996
	68	Żednia	53.090096	23.46989	1983
	69	Surążkowo	53.211678	23.45654	1983
FE	40	Karczmisko	53.299759	23.18604	1983
	49	Żubrówka	54.081299	23.15286	1996
	50	Budzisk	53.243317	23.34981	1983
	51	Wilcza jama	53.354164	23.30861	1983
	52	Trzcianka	53.467007	23.35709	1983
	60	Sokołda	53.247223	23.46676	1983
XU	04	Stobnica	52.707057	16.60989	2003

Table 2. List of the common shrew (*Sorex araneus*) localities.

UTM square	Localities	Geographic coordinates		Year of capture	
CE	69	Dąbrowa	54.092052	18.87601	1994
	89	Lubstowo	54.131851	19.19815	1994
	89	Nogat	54.119534	19.26893	1993
CF	13	Barwik	54.408142	18.2019	1985
	71	Rybina	54.29015	19.117	1994
DD	19	Czarny Bryńsk	53.211521	19.7425	1995
DE	10	Wlecz	53.242672	19.71766	2004
	15	Ostrów Wielki	53.717861	19.72918	1988
	16	Kupin	53.844166	19.63652	1992, 1993, 1995, 1998, 1999
	19	Kajmy	54.088612	19.72195	1987, 1992, 1993
	19	Pasłek	54.066826	19.66181	1992, 1993, 1995, 1999
	19	Winiary	54.125504	19.71557	1993
	29	Bielica	54.085045	19.81677	1987, 1992
	34	Idzbark	53.674194	20.05096	1993, 1994
	35	Nowe Siedlisko	53.707856	20.04797	1994
	35	Szeląg	53.77	19.95222	1994
	35	Zwierzewo	53.707584	20.04746	1994
	39	Bażyń	54.130836	20.04303	1993
	41	Uniszewo	53.420922	20.18269	1993
	43	Rychnowska Wola	53.601521	20.12411	1991
	43	Świątajny	53.59058	20.23297	1986, 1989, 1990
	44	Gugowo	53.641482	20.1364	1990
	44	Guzowy Młyn	53.689999	20.23889	1985, 1986, 1987, 1988, 1994
	44	Guzowy Piec	53.687389	20.21625	1989, 1994, 1995
	44	Ostrowin	53.646824	20.10439	1993
	45	Biesal	53.721687	20.18575	1987, 1988, 1989
	45	Dłużki	53.712532	20.12822	1993, 1994
	45	Łęguty	53.753159	20.16362	1990
	45	Podlejki	53.730518	20.19109	1986, 1989, 1990, 1994, 1995
	45	Śródka	53.701881	20.24254	1986
	45	Stare Jabłonki	53.696808	20.10258	1989, 1993
	45	Worliny	53.777642	20.13291	1991
	46	Pełnik	53.790482	20.14456	1985
	46	Ramoty	53.82188	20.08924	1991, 1994
	44	Elgnówko	53.627206	20.21818	1988, 1990
	53	Jemiołowo	53.561832	20.29932	1990
	53	Królikowo	53.571342	20.25338	1989

53	Łutynowo	53.551113	20.34409	1990, 1994
53	Pawłowo	53.532417	20.27352	1996
53	Skansen	53.596104	20.29738	1989
54	Gębiny	53.66423	20.29576	1989
54	Gromel	53.685913	20.28203	1993
54	Jagielek	53.607777	20.31611	1986, 1987
54	Mańki	53.664074	20.25555	1986, 1987, 1988, 1989, 1990, 1994, 1995
54	Miodówko	53.645294	20.37587	1986, 1991
54	Mycyny	53.639053	20.267	1986, 1987, 1989, 1990, 1991, 1994, 1995, 2001, 2004
54	Tolejny	53.614437	20.2474	1988
55	Nagłady	53.750134	20.27867	1986
55	Naterki	53.72871	20.37098	1994, 1995
55	Peglity	53.717918	20.25763	1986
55	Szelązek	53.770316	20.36565	1994
54	Ameryka	53.607841	20.31665	1988
62	Dębowa Kępa	53.460011	20.52982	1999, 2000
62	Koniuszyn	53.446304	20.5096	1998
62	Łyna	53.439377	20.40929	2000, 2001, 2002, 2003
63	Marózek	53.527405	20.42447	1985
63	Selwa	53.526417	20.44791	1996
63	Swaderki	53.550579	20.41717	1996
64	Herta	53.694504	20.41766	1987
64	Ruś	53.690326	20.49888	2002
65	Bartag	53.716759	20.47015	1986
66	Wadąg	53.818676	20.52251	2003
72	Natać Wielka	53.511272	20.57244	1990, 1998, 1999, 2000, 2001, 2002, 2003, 2007
72	Natać Wielka Stara	53.508717	20.57132	2002
72	Zimna Woda	53.45215	20.6002	2002
73	Bałdy	53.599087	20.60773	2000
73	Czarny Piec	53.547199	20.62372	1990, 1995, 1998, 1999, 2000, 2005, 2007
73	Łysowo	53.574013	20.6329	1999, 2000
73	Zgniłocha	53.563985	20.56234	1999, 2000, 2002, 2003, 2004, 2005, 2007
75	Klebark Mały	53.766956	20.56206	2002
76	Barczewko	53.848541	20.59041	2003, 2004
82	Głębocek	53.472969	20.8146	1990
84	Michałki	53.651475	20.75707	2006
84	Miluki	53.667682	20.76514	2006
84	Tylkowko	53.635724	20.74358	2006

	86	Dobrag	53.827305	20.78125	1987
	91	Omulew	53.421873	20.86719	2001
	92	Sasek Wielki	53.504017	20.90854	1985, 1986
	95	Labuszewo	53.788544	20.97044	1987
	97	Biesowo	53.932095	20.88789	1987
	09	Kalsk	54.073257	19.60739	1987, 1992, 2001
	09	Krosienko	54.0625	19.57805	2001
	09	Krosno	54.064819	19.59855	2002
	09	Łączna	54.079723	19.5825	2001
	09	Rzeczna	54.074011	19.60468	2002
	09	Wężina	54.076942	19.51676	1992
DF	12	Frombork	54.356594	19.68621	1987
	90	Wardomy	54.205116	20.90246	1987
DV	15	Polana Biały Potok	49.277829	19.86588	2007
EC	19	Powłoczki	52.3051	21.2021	1991
	21	Maciejowice	51.579906	21.41357	1993, 1998
	32	Uchacze	51.679489	21.57163	1998
	33	Ruda Tarnowska	51.783846	21.45431	2005
	42	Jabłonowiec	51.671112	21.66956	1997
	42	Oronne	51.701138	21.61761	1998
	42	Paprotnia	51.63176	21.66369	1998
	42	Strych	51.658039	21.61212	1998
	51	Dęblin	51.560036	21.85632	1993
	51	Kępice	51.547241	21.76164	2003
	51	Nadwiślanka	51.583195	21.81706	1994
	51	Rokitnia	51.618454	21.80539	1993, 1994, 1995, 1998, 2000, 2003, 2005,
	51	Stężycza	51.582561	21.77271	1997
	52	Podebłocie	51.639645	21.74342	1994
	61	Kleszczówka	51.565655	21.91176	1993
	61	Strzyżowice	51.570564	22.00612	1993
	81	Blizocin	51.588802	22.21137	1993
	81	Sobieszyn	51.591873	22.16637	1993
	10	Pulwy	52.4209	21.2448	1994
	11	Dręszew	52.519753	21.29355	1987, 1991
	11	Śleżany	52.52845	21.24438	1987
	11	Sokołówek	52.483177	21.18607	2006
	12	Somianka	52.560909	21.29317	1987
	14	Ciołkowo	52.734306	21.23196	1995
	14	Sielc Stary	52.798431	21.27366	1994
	14	Ulaski	52.739464	21.29279	1995
	14	Zambski	52.734566	21.21289	1995

ED	10	Pulwy	52.4209	21.2448	1994
	11	Dręszew	52.519753	21.29355	1987, 1991
	11	Śleżany	52.52845	21.24438	1987
	11	Sokołów	52.483177	21.18607	2006
	12	Somianka	52.560909	21.29317	1987
	14	Ciołkowo	52.734306	21.23196	1995
	14	Sielc Stary	52.798431	21.27366	1994
	14	Ulaski	52.739464	21.29279	1995
	14	Zambski	52.734566	21.21289	1995
	21	Niegów	52.508987	21.39112	1991
	21	Słopsk	52.515728	21.35591	1991
	22	Fiszor	52.531639	21.36896	1991
	22	Sitno	52.59811	21.37628	1994
	24	Cygany	52.741081	21.32888	1994
	25	Chrzczony	52.836082	21.32381	1994
	26	Młynarze	52.949734	21.40746	1986, 1991
	29	Kierzek	53.229378	21.31313	1985
	32	Wyszków	52.591652	21.44795	1986
	53	Brok	52.697723	21.85494	1986
	53	Platkownica	52.678371	21.83731	1986
	01	Serock	52.512646	21.06647	1986
	02	Lacha	52.539757	21.09081	1987
	03	Popławy	52.6989	21.10396	2005
	03	Pułtusk	52.705456	21.07528	1986
	04	Ponikiew I	52.725528	21.12161	2005
EE	13	Długi Borek	53.535007	21.29594	1985
	16	Mrągowo	53.8699	21.2972	1987
	17	Rydwagi	53.965546	21.30008	1987
	21	Myszyniec	53.382069	21.34676	1985
	24	Krutyń	53.687309	21.43006	1999
	33	Karwica	53.559994	21.48768	1986
	36	Zielony Lasek	53.875832	21.5975	1999
	39	Doba	54.074356	21.58592	1988
	43	Anuszewo	53.523956	21.68842	2003
	43	Pogubie Tylne	53.528332	21.74678	1986, 2003
	43	Uściany Stare	53.540794	21.68653	1986
	43	Wiartel	53.601997	21.66701	2003, 2004
	49	Sztynort	54.132263	21.68158	1988
	52	Piskorzewo	53.508083	21.78313	2003
	53	Bogumily	53.551128	21.89425	1985
	55	Lisie Jamy	53.710194	21.82203	1985
	55	Nowe Guty	53.772675	21.85433	1986, 1987
	56	Okartowo	53.808395	21.85335	1986
	61	Kolno	53.407307	21.92954	1985
	79	Czerwony Dwór	54.130104	22.18694	1984
	84	Guty Różyńskie	53.643765	22.28221	1985
	86	Buniaki	53.812218	22.26723	1987
	06	Choszczewo	53.877167	21.0951	1985

	56	Okartowo	53.808395	21.85335	1986
	61	Kolno	53.407307	21.92954	1985
	79	Czerwony Dwór	54.130104	22.18694	1984
	84	Guty Różyńskie	53.643765	22.28221	1985
	86	Buniaki	53.812218	22.26723	1987
	06	Choszczewo	53.877167	21.0951	1985
EF	81	Gołdap	54.311951	22.30562	1984
	00	Satoczn	54.231625	21.09811	1987
FA	29	Smólsko	50.482279	22.78005	2004
	78	Korhynie	50.409545	23.53079	2005, 2006
	88	Żurawiec	50.382592	23.54439	2006
FB	11	Frampol	50.671963	22.66935	2006
	20	Gromada	50.563591	22.70513	2004
	20	Rachanie	50.59413	22.75279	2004, 2005
	21	Kąty	50.65225	22.72103	2004, 2006
	21	Radzięcin	50.678682	22.71413	2006
	22	Radecznica	50.751126	22.83009	2007
	22	Żurawie	50.800797	22.78019	2007
	57	Kulik	51.243298	23.18863	2003, 2004
	80	Jozefówka	50.530033	23.5527	2005
FD	39	Fasty	53.171711	23.04513	2000
	46	Plutycze	52.884762	23.14006	1985
	48	Białystok	53.078011	23.20216	1998
	49	Jurowce	53.19661	23.15286	1986, 1993, 1994, 1995, 1996, 1997, 1999, 2000, 2006
	58	Sobolewo	53.111221	23.26858	1996
FE	11	Mońki	53.406513	22.79693	1987
	20	Knyszyn	53.313957	22.91656	2006
	38	Bryzgiel	53.998371	23.0617	1993
	38	Gawrych Ruda	54.017162	23.00331	1996
	38	Łapa	54.034274	23.13477	1995, 2001
	38	Mulczysko	54.010641	23.09992	1995
	38	Słupia	54.025446	23.05402	1995, 1996
	39	Cimochowizna	54.058956	23.0679	1991, 1992, 1993
	39	Krzywe	54.087288	23.00003	1991, 1993
	39	Remieńkiń	54.124535	23.10871	1996
	39	Wigry	54.069225	23.09378	1994
	46	Balinka	53.773762	23.16492	1985
	48	Czerwony Dwór	54.014153	23.15355	1984
	48	Czerwony Krzyż	54.014301	23.1571	2001
	48	Sernetki	54.004272	23.21789	1996
	48	Suche Bagno	54.0151	23.1572	1996

	48	Suche Bagno	54.0151	23.1572	1996
	48	Wysoki Most	54.036724	23.20672	1996
	49	Żubrówka	54.081299	23.15286	1991, 1994, 1996, 2001
	49	Maćkowa Ruda	54.051285	23.17604	1995, 1996, 2001
	01	Gugny	53.348408	22.58955	1997, 2000
FF	10	Przerośl	54.250084	22.65299	1986
WV	31	Linowko	53.424858	15.47888	1987
XU	04	Piotrowo	52.72821	16.49582	2005, 2006
	04	Stobnica	52.707057	16.60989	2003, 2005, 2006

Table 3. List of the Eurasian pygmy shrew (*Sorex minutus*) localities.

UTM square		Localities	Geographic coordinates		Year of capture
CE	69	Dąbrowa	54.092052	18.87601	1994
	89	Lubstowo	54.131851	19.19815	1994
	89	Nogat	54.119534	19.26893	1993
CF	71	Rybina	54.29015	19.117	1994
DE	10	Wlecz	53.242672	19.71766	2004
	16	Kupin	53.844166	19.63652	1992, 1993, 1995, 1999
	19	Kajmy	54.088612	19.72195	1992, 1993
	19	Pasłek	54.066826	19.66181	1992, 1993, 1999
	19	Winiary	54.125504	19.71557	1993
	29	Bielica	54.085045	19.81677	1992
	33	Klonowo	53.517141	19.9556	2003
	34	Idzbark	53.674194	20.05096	1993, 1994
	35	Nowe Siedlisko	53.707856	20.04797	1994
	35	Szeląg	53.77	19.95222	1994
	35	Zwierzewo	53.707584	20.04746	1994
	39	Bażyń	54.130836	20.04303	1993
	41	Uniszewo	53.420922	20.18269	1993
	43	Rychnowska Wola	53.601521	20.12411	1991
	43	Świątajny	53.59058	20.23297	1989, 1990
	44	Elgnówko	53.625549	20.22083	1988, 1990
	44	Guzowy Młyn	53.689999	20.23889	1988, 1994
	44	Guzowy Piec	53.687389	20.21625	1989, 1994
	44	Ostrowin	53.646824	20.10439	1993
	45	Biesal	53.721687	20.18575	1989
	45	Dłużki	53.712532	20.12822	1993, 1994
	45	Łęguty	53.753159	20.16362	1990
	45	Podlejki	53.730518	20.19109	1989, 1990, 1994
	45	Stare Jabłonki	53.696808	20.10258	1989, 1993

45	Worliny	53.779686	20.13292	1991
46	Ramoty	53.82188	20.08924	1994
53	Jemiołowo	53.561832	20.29932	1990
53	Królikowo	53.571342	20.25338	1989
53	Łutynowo	53.551113	20.34409	1990, 1994
53	Pawłowo	53.532417	20.27352	1996
54	Ameryka	53.607841	20.31665	1988
54	Gębiny	53.66423	20.29576	1989
54	Gromel	53.685913	20.28203	1993
54	Mańki	53.664074	20.25555	1989, 1990, 1994, 1987, 1988
54	Miodówko	53.645294	20.37587	1991
54	Mycyny	53.639053	20.267	1989, 1990, 1991, 1994, 1995, 2001
54	Tolejny	53.614437	20.2474	1988
55	Naterki	53.72871	20.37098	1994, 1995
63	Selwa	53.526417	20.44791	1996
64	Ruś	53.690326	20.49888	2002
62	Dębowa Kępa	53.460011	20.52982	2000
62	Łyna	53.43927	20.40728	2000, 2001, 2002, 2003
72	Natać Wielka	53.511272	20.57244	1990, 2000, 2001, 2002, 2007
72	Natać Wielka Stara	53.508717	20.57132	2002
72	Zimna Woda	53.45215	20.6002	2002
73	Bałdy	53.599087	20.60773	2000
73	Czarny Piec	53.547199	20.62372	1990, 1995, 2000, 2005, 2007
73	Zgniłocha	53.563985	20.56234	2002, 2003, 2004, 2005, 2007
75	Klebark Mały	53.766956	20.56206	2002
76	Barczewko	53.848541	20.59041	2003, 2004
82	Głębozeczek	53.472969	20.8146	1990
84	Michałki	53.651475	20.75707	2006
84	Miluki	53.667682	20.76514	2006
84	Tylkowko	53.635724	20.74358	2006
86	Dobrag	53.827305	20.78125	1987
91	Omulew	53.421873	20.86719	2001
97	Biesowo	53.932095	20.88789	1987
09	Kalsk	54.073257	19.60739	1992
09	Krosienko	54.0625	19.57805	2001
09	Krosno	54.064819	19.59855	2002
09	Łączna	54.079723	19.5825	2001
09	Rzeczna konie	54.074011	19.60468	2002
09	Wężina	54.076942	19.51676	1992

DV	15	Polana Biały Potok	49.277829	19.86588	2007
EC	19	Powłoczki	52.3051	21.2021	1991
	21	Maciejowice	51.579906	21.41357	1993, 1998
	32	Uchacze	51.679489	21.57163	1998
	33	Ruda Tarnowska	51.783846	21.45431	2005
	42	Jabłonowiec	51.671112	21.66956	1997
	42	Oronne	51.701138	21.61761	1998
	42	Strych	51.658039	21.61212	1998
	51	Dęblin	51.560036	21.85632	1993
	51	Krukówka	51.598503	21.83536	1997
	51	Nadwiśłanka	51.583195	21.81706	1994
	51	Rokitnia	51.618454	21.80539	1993, 1994, 1998, 2003, 2005
	51	Stężycza	51.582561	21.77271	1997
	52	Podębłocie	51.639645	21.74342	1994
	61	Kleszczówka	51.565655	21.91176	1993
	61	Strzyżowice	51.570564	22.00612	1993
	81	Blizocin	51.588802	22.21137	1993
ED	10	Pulwy	52.4209	21.2448	1994
	11	Dręszew	52.519753	21.29355	1991
	11	Sokołówek	52.483307	21.18612	2006
	14	Ciołkowo	52.734306	21.23196	1995
	14	Sielc Stary	52.798431	21.27366	1994
	14	Ulaski	52.739464	21.29279	1995
	14	Zambski	52.734566	21.21289	1995
	21	Niegów	52.508987	21.39112	1991
	21	Słopsk	52.515728	21.35591	1991
	22	Fiszor	52.531639	21.36896	1991
	22	Sitno	52.59811	21.37628	1994
	24	Cygany	52.741081	21.32888	1994
	25	Chrzczony	52.836082	21.32381	1994
	26	Młynarze	52.949734	21.40746	1991
	03	Popławy	52.6989	21.10396	2005
EE	43	Wiertel	53.59362	21.67953	2004
	52	Piskorzewo	53.508083	21.78313	2003
	53	Pogubie	53.558155	21.76566	2003
	79	Czerwony Dwór	54.130104	22.18694	1984
EF	00	Sątoczno	54.231625	21.09811	1987
FA	29	Smólsko	50.482279	22.78005	2004
	78	Korhynie	50.409545	23.53079	2005, 2006
	88	Żurawce	50.382592	23.54439	2005

FB	20	Gromada	50.565827	22.70347	2004
	20	Rachanie	50.59413	22.75279	2005
	20	Rapy Dylańskie	50.59413	22.75279	2004
	21	Kąty	50.65225	22.72103	2004, 2006
	21	Radzięcin	50.678682	22.71413	2006
	22	Radecznica	50.751126	22.83009	2007
	22	Żurawie	50.800797	22.78019	2007
FD	39	Fasty	53.171711	23.04513	2000
	49	Jurowce	53.19661	23.15286	1993, 1996, 1999
	48	Lotnisko	53.078011	23.20216	1998
	58	Sobolewo	53.111221	23.26858	1996
	59	Krasne	53.196367	23.29969	1983
	59	Krasny Las	53.173611	23.3375	1983
	59	Podsupraśl	53.206322	23.33534	1983
	68	Żednia	53.090096	23.46989	1983
	69	Surążkowo	53.211678	23.45654	1983
FE	38	Bryzgiel	53.998371	23.0617	1993
	38	Gawrych Ruda	54.017162	23.00331	1996
	38	Mulczysko	53.992493	23.10014	1995
	39	Cimochowizna	54.058956	23.0679	1991, 1992, 1993
	39	Krzywe	54.087288	23.00003	1993
	39	Remieńkiń	54.124535	23.10871	1996
	39	Wigry	54.069225	23.09378	1994
	40	Karczmisko	53.299759	23.18604	1983
	48	Czerwony Krzyż	54.014301	23.1571	2001
	48	Sernetki	54.004272	23.21789	1996
	48	Suche Bagno	54.0151	23.1572	1996, 2001
	48	Tobołowo	53.967567	23.1464	2001
	48	Wysoki Most	54.036724	23.20672	1996
	48	Zakąty	54.014301	23.1571	1993
	49	Żubrówka	54.081299	23.15286	1991, 1994, 1996, 2001
	49	Łapa	54.049919	23.15199	1995, 2001
	49	Maćkowa Ruda	54.051285	23.17604	1995, 1996, 2001
	50	Budzisk	53.243317	23.34981	1983
	51	Machnacz	53.330753	23.31183	1983
	51	Wilcza Jama	53.354164	23.30861	1983
	52	Trzcianka	53.467007	23.35709	1983
	60	Sokołda	53.247223	23.46676	1983
FF	40	Słupia	54.138	23.211	1995, 1996
XU	04	Piotrowo	52.72821	16.49582	2005, 2006
	04	Stobnica	52.707057	16.60989	2003, 2005, 2006

Table 4. List of the Eurasian water shrew (*Neomys fodiens*) localities.

UTM square		Localities	Geographic coordinates		Year of capture
DE	10	Wlecz	53.242672	19.71766	2004
	16	Kupin	53.844166	19.63652	1992, 1993, 1999
	19	Kajmy	54.088612	19.72195	1992, 1993
	19	Pasłek	54.066826	19.66181	1992, 1993
	19	Winiary	54.125504	19.71557	1993
	29	Bielica	54.085045	19.81677	1992
	33	Klonowo	53.517141	19.9556	2003
	34	Idzbark	53.674194	20.05096	1993
	35	Szeląg	53.77	19.95222	1994
	39	Bażyń	54.130836	20.04303	1993
	43	Świątajny	53.59058	20.23297	1989, 1990
	44	Elgnówko	53.627206	20.21818	1988, 1990
	44	Guzowy Młyn	53.689999	20.23889	1988, 1994
	44	Guzowy Piec	53.687389	20.21625	1989, 1994
	44	Ostrowin	53.646824	20.10439	1993
	45	Biesal	53.721687	20.18575	1989
	45	Łęguty	53.753159	20.16362	1990
	45	Podlejki	53.730518	20.19109	1989, 1990, 1994
	45	Stare Jabłonki	53.696808	20.10258	1989
	46	Ramoty	53.82188	20.08924	1994
	53	Królikowo	53.571342	20.25338	1989
	53	Łutynowo	53.551113	20.34409	1990, 1994
	54	Gębiny	53.66423	20.29576	1989
	54	Gromel	53.685913	20.28203	1993
	54	Mańki	53.664074	20.25555	1987, 1988, 1989, 1990, 1994
	54	Miodówko	53.645294	20.37587	1991
	54	Mycyny	53.639053	20.267	1989, 1990, 1991, 1994, 1995
	55	Naterki	53.72871	20.37098	1994, 1995
	62	Łyna	53.439377	20.40929	2000, 2001, 2002
	64	Ruś	53.690326	20.49888	2002
	72	Natać Wielka Stara	53.508717	20.57132	2002
	72	Zimna Woda	53.45215	20.6002	2002
	73	Czarny Piec	53.547199	20.62372	1990, 1995
	73	Łąki Zgniłocha	53.561932	20.56187	1990
	73	Zgniłocha	53.563985	20.56234	2002, 2004, 2005
	75	Klebark Mały	53.766956	20.56206	2002
	76	Barczewko	53.848541	20.59041	2004
	84	Michałki	53.651475	20.75707	2006
	86	Dobrag	53.827305	20.78125	1987
	09	Krosienko	54.0625	19.57805	2001
	09	Kalsk	54.073257	19.60739	1992
	09	Węzina	54.076942	19.51676	1992

	09	Krosienko	54.0625	19.57805	2001
	09	Kalsk	54.073257	19.60739	1992
	09	Wężina	54.076942	19.51676	1992
EC	21	Maciejowice	51.579906	21.41357	1998
	42	Jabłonowiec	51.671112	21.66956	1997
	42	Oronne	51.701138	21.61761	1998
	51	Nadwiślanka	51.583195	21.81706	1994
	51	Rokitnia	51.618454	21.80539	1994, 1998, 2005
	61	Kleszczówka	51.565655	21.91176	1993
	61	Strzyżowice	51.570564	22.00612	1993
	81	Blizocin	51.588802	22.21137	1993
ED	11	Dręszew	52.519753	21.29355	1991
	14	Sielc Stary	52.798431	21.27366	1994
	14	Zambski	52.734566	21.21289	1995
	21	Słopsk	52.515728	21.35591	1991
	22	Fiszor	52.531639	21.36896	1991
FA	78	Korhynie	50.409545	23.53079	2005
	88	Plebanka	50.404286	23.66052	2005
FB	20	Rachanie	50.59413	22.75279	2005
	21	Kąty	50.65225	22.72103	2004, 2006
	22	Radecznicza	50.751126	22.83009	2007
	22	Żurawie	50.800797	22.78019	2007
FD	39	Fasty	53.171711	23.04513	2000
	49	Jurowce	53.19661	23.15286	1996, 1999, 2000
	59	Krasne	53.196367	23.29969	1983
	59	Krasny Las	53.173611	23.3375	1983
	59	Podsupraśl	53.206322	23.33534	1983
	68	Żednia	53.090096	23.46989	1983
	69	Surążkowo	53.211678	23.45654	1983
FE	38	Mulczysko	53.992493	23.10014	1995
	39	Cimochowizna	54.058956	23.0679	1991, 1992, 1993
	39	Remieńkiń	54.124535	23.10871	1996
	39	Wigry	54.069225	23.09378	1994
	40	Karczmisko	53.299759	23.18604	1983
	48	Wysoki Most	54.036724	23.20672	1996
	49	Maćkowa Ruda	54.051285	23.17604	1996, 2001
	49	Żubrówka	54.081299	23.15286	1991, 1994
	50	Budzisk	53.243317	23.34981	1983
	51	Machnacz	53.330753	23.31183	1983
	51	Wilcza Jama	53.354164	23.30861	1983
	52	Trzcianka	53.467007	23.35709	1983
	60	Sokołda	53.247223	23.46676	1983
FF	40	Słupia	54.138	23.211	1995

Table 5. List of the bank vole (*Myodes glareolus*) localities.

UTM square	Localities	Geographic coordinates		Year of capture	
CE	69	Dąbrowa	54.09205	18.87601	1994
	89	Lubstowo	54.13185	19.19815	1994
	89	Nogat	54.11953	19.26893	1993
CF	71	Rybina	54.29015	19.117	1994
DE	10	Wlecz	53.24267	19.71766	2004
	16	Kupin	53.84417	19.63652	1992, 1993, 1995, 1999
	19	Kajmy	54.08861	19.72195	1992, 1993
	19	Pasłek	54.06683	19.66181	1992, 1993, 1995, 1999
	19	Winiary	54.1255	19.71557	1993
	29	Bielica	54.08505	19.81677	1992
	33	Klonowo	53.51714	19.9556	2003
	34	Idzbark	53.67419	20.05096	1993, 1994
	35	Nowe Siedlisko	53.70786	20.04797	1994
	35	Zwierzewo	53.70758	20.04746	1994
	39	Bażyń	54.13084	20.04303	1993
	41	Uniszewo	53.42092	20.18269	1993
	44	Elgnówko	53.62721	20.21818	1988
	44	Guzowy Młyn	53.69	20.23889	1994
	44	Guzowy Piec	53.68739	20.21625	1994
	44	Ostrowin	53.64682	20.10439	1993
	45	Dłużki	53.71253	20.12822	1994
	45	Łęguty	53.75316	20.16362	1990
	45	Podlejki	53.73052	20.19108	1994
	45	Stare Jabłonki	53.69681	20.10258	1993
	45	Worliny	53.77969	20.13292	1991
	46	Ramoty	53.82188	20.08924	1994
	53	Jemiołowo	53.56183	20.29932	1990
	53	Łutynowo	53.55111	20.34409	1990, 1994
	53	Pawłowo	53.53242	20.27352	1996
	54	Gromel	53.68591	20.28203	1993
	54	Mańki	53.66407	20.25555	1987, 1990
	54	Mycyny	53.63905	20.267	1990, 1991, 1994, 1995
	54	Tolejny	53.61444	20.2474	1988
	55	Naterki	53.72871	20.37098	1994, 1995
	62	Dębowa Kępa	53.46001	20.52982	2000
	64	Ruś	53.69033	20.49888	2002
	72	Natać Wielka	53.51127	20.57244	2001
	72	Natać Wielka Stara	53.50872	20.57132	2002
	73	Czarny Piec	53.547	20.62437	2005
	73	Zgniłocha	53.56399	20.56234	2002, 2004, 2005
	76	Barczewko	53.84854	20.59041	2003, 2004
	82	Głębozeczek	53.47297	20.8146	1990
	91	Omulew	53.42187	20.86719	2001
	97	Biesowo	53.9321	20.88789	1987

	97	Biesowo	53.9321	20.88789	1987
	09	Rzeczna	54.07401	19.60468	2002
	09	Kalsk	54.07326	19.60739	1992, 2001
	09	Krosno	54.06482	19.59855	2002
	09	Węzina	54.07694	19.51676	1992
DF	90	Wardomy	54.20512	20.90246	1987
EC	19	Powłoczki	52.3051	21.2021	1991
	21	Maciejowice	51.57991	21.41357	1993, 1998
	33	Ruda Tarnowska	51.78385	21.45431	2005
	42	Jabłonowiec	51.67111	21.66956	1997
	42	Strych	51.65804	21.61212	1998
	51	Dęblin	51.56004	21.85632	1993
	51	Kępica	51.54737	21.76181	2003
	51	Krukówka	51.5985	21.83536	1997
	51	Nadwiślanka	51.5832	21.81706	1994
	51	Rokitnia	51.61845	21.80539	1993, 1994, 1998, 2003, 2005
	51	Stężycza	51.58256	21.77271	1997
	52	Podeblocie	51.63965	21.74342	1994
	61	Kleszczówka	51.56566	21.91176	1993
	61	Strzyżowice	51.57056	22.00612	1993
	81	Blizocin	51.5888	22.21137	1993
	81	Sobieszyn	51.59187	22.16637	1993
ED	10	Pulwy	52.4209	21.2448	1994
	11	Dręszew	52.51975	21.29355	1991
	14	Ciołkowo	52.73431	21.23196	1995
	14	Sielc Stary	52.79843	21.27366	1994
	14	Ulaski	52.73946	21.29279	1995
	14	Zambski	52.73457	21.21289	1995
	21	Niegów	52.50899	21.39112	1991
	21	Słopsk	52.51573	21.35591	1991
	22	Fiszor	52.53164	21.36896	1991
	24	Cygany	52.74108	21.32888	1994
	25	Chrzczony	52.83608	21.32381	1994
	03	Popławy	52.6989	21.10396	2005
	04	Ponikiew	52.72553	21.12161	2005
EE	79	Czerwony Dwór	54.1301	22.18694	1984
EF	00	Sątoczno	54.23163	21.09811	1987
FA	29	Smólsko	50.48228	22.78005	2004
	88	Plebanka	50.40429	23.66052	2005
	88	Żurawce	50.38259	23.54439	2005
FB	20	Gromada	50.56583	22.70347	2004
	21	Kąty	50.65225	22.72103	2004
FD	48	Białystok	53.07801	23.20216	1998
	49	Jurowce	53.19661	23.15286	1993, 1996, 2000, 2006
	58	Sobolewo	53.11122	23.26858	1996
	59	Krasne	53.19637	23.29969	1983
	59	Krasny Las	53.17361	23.3375	1983

	59	Podsupraśl	53.20632	23.33534	1983
	68	Żednia	53.0901	23.46989	1983
	69	Surążkowo	53.21168	23.45654	1983
FE	21	Knyszyn	53.32651	22.92031	2006
	38	Bryzgiel	53.99837	23.0617	1993
	38	Gawrych Ruda	54.01716	23.00331	1996
	38	Mulczysko	53.99249	23.10014	1995
	39	Cimochowizna	54.05896	23.0679	1991, 1992, 1993
	39	Krzywe	54.08729	23.00003	1993
	39	Remieńkiń	54.12454	23.10871	1996
	40	Karczmisko	53.29976	23.18604	1983
	48	Czerwony Krzyż	54.0143	23.1571	1993, 2001
	48	Suche Bagno	54.0151	23.1572	1996
	48	Wysoki Most	54.03672	23.20672	1996
	49	Żubrówka	54.0813	23.15286	1991, 1994, 2001
	49	Łapa	54.04992	23.15199	1995, 2001
	49	Maćkowa Ruda	54.05129	23.17604	1995, 1996, 2001
	50	Budzisk	53.24332	23.34981	1983
	51	Machnacz	53.33075	23.31183	1983
	51	Wilcza Jama	53.35416	23.30861	1983
	52	Trzcianka	53.46701	23.35709	1983
	60	Sokołda	53.24722	23.46676	1983
	48	Sernetki	54.00427	23.21789	1996
FF	21	Udziejek	54.26051	22.87174	2001
	21	Wodzilki	54.23839	22.84168	2000
	40	Słupia	54.138	23.211	1995, 1996
XU	04	Piotrowo	52.72821	16.49582	2005
	04	Stobnica	52.70706	16.60989	2003, 2005, 2006

Table 6. List of the water vole (*Arvicola terrestris*) localities.

UTM square	Localities	Geographic coordinates	Year of capture
DE 45	Dłużki	53,71253 20,12822	1993
54	Gębiny	53,66423 20,29576	1989
54	Mańki	53,66604 20,25569	1987, 1988
54	Mycyny	53,63905 20,267	1994
44	Ostrowin	53,64682 20,10439	1993
19	Pasłek	54,06683 19,66181	1993
41	Uniszewo	53,42092 20,18269	1993
FE 49	Żubrówka	54,0813 23,15286	1994

Table 7. List of the European pine vole (*Pitymys subterraneus*) localities.

UTM square	Localities	Geographic coordinates	Year of capture
FD 69	Surążkowo	53.21168 23.45654	1983
FE 51	Machnacz	53.33075 23.31183	1983
52	Trzcianka	53.46701 23.35709	1983

Table 8. List of the field vole (*Microtus agrestis*) localities.

UTM square	Localities	Geographic coordinates		Year of capture	
DE	44	Guzowy Młyn	53.69	20.23889	1994
	44	Guzowy Piec	53.68739	20.21625	1994
	53	Łutynowo	53.55111	20.34409	1994
	53	Pawłowo	53.53242	20.27352	1996
	54	Mycyny	53.63905	20.267	1994
	62	Łyna	53.43938	20.40929	2001
	72	Natać Wielka	53.50724	20.56848	2000
	73	Bałdy	53.59909	20.60773	2000
	73	Zgniłocha	53.56399	20.56234	2004
DV	15	Polana Biały Potok	49.27783	19.86588	2007
EE	79	Czerwony Dwór	54.1301	22.18694	1984
FA	88	Żurawce	50.38259	23.54439	2005
FD	59	Krasne	53.19637	23.29969	1983
	59	Krasny Las	53.17361	23.3375	1983
	68	Żednia	53.0901	23.46989	1983
	69	Surążkowo	53.21168	23.45654	1983
	FE	40	Karczmisko	53.29976	23.18604
50		Budzisk	53.24332	23.34981	1983
51		Machnacz	53.33075	23.31183	1983
51		Wilcza Jama	53.35416	23.30861	1983
52		Trzcianka	53.46701	23.35709	1983
60		Sokołda	53.24722	23.46676	1983

Table 9. List of the common vole (*Microtus arvalis*) localities.

UTM square		Localities	Geographic coordinates		Year of capture
DE	16	Kupin	53.844166	19.63652	1999
	44	Guzowy Młyn	53.689999	20.23889	1994
	44	Guzowy Piec	53.687389	20.21625	1994
	46	Ramoty	53.82188	20.08924	1994
	53	Łutynowo	53.551113	20.34409	1994
	53	Pawłowo	53.532417	20.27352	1996
	54	Ameryka	53.607841	20.31665	1988
	54	Mycyny	53.639053	20.267	1994
	73	Zgniłocha	53.563985	20.56234	2004
EC	51	Rokitnia	51.618454	21.80539	1998
EE	79	Czerwony Dwór	54.130104	22.18694	1984
FA	29	Smólsko	50.482279	22.78005	2004
FB	20	Gromada	50.565827	22.70347	2004
	20	Rapy Dylańskie	50.59413	22.75279	2004
	21	Kąty	50.65225	22.72103	2004

FD	49	Jurowce	53.19661	23.15286	1996
	59	Krasny Las	53.173611	23.3375	1983
	68	Żednia	53.090096	23.46989	1983
FE	39	Cimochowizna	54.058956	23.0679	1991, 1992
	40	Karczmisko	53.299759	23.18604	1983
	50	Budzisk	53.243317	23.34981	1983
	51	Machnacz	53.330753	23.31183	1983
	52	Trzcianka	53.467007	23.35709	1983
	60	Sokołda	53.247223	23.46676	1983
	21	Udziejek	54.260513	22.87174	2001

Table 10. List of the root vole (*Microtus oeconomus*) localities.

UTM square		Localities	Geographic coordinates		Year of capture
DE	41	Uniszewo	53.42092	20.18269	1993
	44	Guzowy Młyn	53.69	20.23889	1994
	44	Guzowy Piec	53.68739	20.21625	1994
	45	Dłużki	53.71253	20.12822	1993
	45	Podlejki	53.73052	20.18109	1994
	46	Ramoty	53.82188	20.08924	1994
	53	Łutynowo	53.55111	20.34409	1990, 1994
	53	Pawłowo	53.53242	20.27352	1996
	54	Mańki	53.66604	20.25569	1987
	54	Mycyny	53.63905	20.267	1994, 1995
	62	Łyna	53.43938	20.40929	2000, 2001, 2002
	63	Swaderki	53.55058	20.41717	1996
	72	Natać Wielka	53.51127	20.57244	2001
	73	Baldy	53.59909	20.60773	2000
	09	Kalsk	54.07326	19.60739	1992
EC	42	Jabłonowiec	51.67111	21.66956	1997
	51	Rokitnia	51.61845	21.80539	1998
	81	Blizocin	51.5888	22.21137	1993
EE	79	Czerwony Dwór	54.1301	22.18694	1984
FD	49	Jurowce	53.19661	23.15286	1996
	59	Krasne	53.19637	23.29969	1983
	59	Krasny Las	53.17361	23.3375	1983
	68	Żednia	53.0901	23.46989	1983
	69	Surążkowo	53.21168	23.45654	1983
FE	39	Cimochowizna	54.05896	23.0679	1991, 1992, 1993
	39	Krzywe	54.08729	23.00003	1993
	40	Karczmisko	53.29976	23.18604	1983
	48	Zakąty	54.0143	23.1571	1993

	50	Budzisk	53.24332	23.34981	1983
	51	Machnacz	53.33075	23.31183	1983
	51	Wilcza Jama	53.35416	23.30861	1983
	52	Trzcianka	53.46701	23.35709	1983
	60	Sokołda	53.24722	23.46676	1983
FF	10	Turtul	54.21986	22.80434	2000, 2002
	21	Wodziłki	54.23839	22.84168	2000

Table 11. List of the house mouse (*Mus musculus*) localities.

UTM square	Localities	Geographic coordinates	Year of capture
DE 16	Kupin	53.84417 19.63652	1992, 1993
	Bielica	54.08505 19.81677	1992
EC 21	Maciejowice	51.57991 21.41357	1998
FA 78	Chałupa	50.40955 23.53079	2006
	Jarczów	50.42498 23.58807	2006
	Plebanka	50.40429 23.66052	2005
	Żurawce	50.38259 23.54439	2005
FE 38	Bryzgiel	53.99837 23.0617	1993
	Cimochowizna	54.05896 23.0679	1991
	Wilcza Jama	53.35416 23.30861	1983
	Trzcianka	53.46701 23.35709	1983
	Sokołda	53.24722 23.46676	1983
FF 10	Turtul	54.21986 22.80434	2000
XU 04	Stobnica	52.70706 16.60989	2006

Table 12. List of the common rat (*Rattus norvegicus*) localities.

UTM square	Localities	Geographic coordinates	Year of capture
FB 36	Fajslawice	51.09311 22.96133	2006
	Pilaszkowice	50.98402 22.84069	2006, 2010
FE 51	Wilcza Jama	53.35416 23.30861	1983
	Trzcianka	53.46701 23.35709	1983

Table 13. List of the harvest mouse (*Micromys minutus*) localities.

UTM square	Localities	Geographic coordinates	Year of capture
DE 16	Kupin	53.84417 19.636515	1992
	Kajmy	54.08861 19.721945	1992
	Pasłek	54.06683 19.661812	1992
	Idzbark	53.67419 20.050957	1993
	Gębiny	53.66423 20.295763	1989
	Guzowy Młyn	53.69 20.238888	1994

	44	Guzowy Piec	53.68739	20.216253	1994
	44	Ostrowin	53.64682	20.104393	1993
	45	Biesal	53.72169	20.185753	1989
	45	Łęguty	53.75316	20.163618	1990
	45	Podlejki	53.73052	20.19108	1989, 1994
	46	Ramoty	53.82188	20.089239	1994
	53	Królikowo	53.57134	20.253378	1989
	53	Łutynowo	53.55111	20.344088	1994
	54	Gromel	53.68591	20.282028	1993
	54	Mańki	53.66407	20.25555	1989, 1994
	54	Miodówko	53.64529	20.375872	1991
	54	Mycyny	53.63905	20.266998	1991, 1994, 1995
	55	Naterki	53.72871	20.370975	1994
	62	Łyna	53.43938	20.409292	2001
	72	Natać Wielka	53.51127	20.572437	2001
	73	Zgniłocha	53.56399	20.562341	2004
	76	Barczewko	53.84854	20.59041	2004
	84	Michałki	53.65148	20.757065	2006
	0 9	Kalsk	54.07326	19.607391	1992
	0 9	Węzina	54.07694	19.516756	1992
EC	21	Maciejowice	51.57991	21.413569	1993
	51	Rokitnia	51.61845	21.80539	1994
	81	Blizocin	51.5888	22.21137	1993
	81	Sobieszyn	51.59187	22.166374	1993
ED	11	Dręszew	52.51975	21.293547	1991
	14	Sielc Stary	52.79843	21.273661	1994
	21	Słopsk	52.51573	21.355907	1991
FA	29	Smólsko	50.48228	22.780048	2004
	88	Plebanka	50.40429	23.660519	2005
	88	Żurawce	50.38259	23.54439	2005
FB	20	Gromada	50.56583	22.703472	2004
	20	Krukówka	51.5985	21.835361	1997
	20	Rapy Dylańskie	50.59413	22.752787	2004
	21	Kąty	50.65225	22.721029	2004, 2006
	21	Radzięcin	50.67868	22.714128	2006
	22	Radecznica	50.75113	22.83009	2007
	22	Żurawie	50.8008	22.78019	2007
FD	39	Fasty	53.17171	23.045132	2000
	49	Jurowce	53.19661	23.152861	1996, 1999
FE	38	Mulczysko	53.99249	23.100143	1995
	39	Cimochowizna	54.05896	23.0679	1991, 1992, 1993
	39	Wigry	54.06923	23.093784	1994

40	Karczmisko	53.29976	23.186043	1983
49	Żubrówka	54.0813	23.152861	1994
49	Łapa	54.04992	23.151985	1995
49	Maćkowa Ruda	54.05129	23.176041	1995
51	Wilcza Jama	53.35416	23.308611	1983
52	Trzcianka	53.46701	23.357092	1983

Table 14. List of the yellow-necked mouse (*Apodemus flavicollis*) localities.

UTM square	Localities	Geographic coordinates		Year of capture	
DE	44	Elgnówko	53.627206	20.218182	1988
	44	Guzowy Młyn	53.689999	20.238888	1994
	44	Guzowy Piec	53.687389	20.216253	1994
	46	Ramoty	53.82188	20.089239	1994
	53	Łutynowo	53.551113	20.344088	1994
	53	Pawłowo	53.532417	20.27352	1996
	54	Mycyny	53.639053	20.266998	1994
	64	Ruś	53.690326	20.498875	2002
DV	15	Polana Biały Potok	49.277829	19.865878	2007
EE	79	Czerwony Dwór	54.130104	22.186937	1984
FA	78	Korhynie	50.40955	23.53079	2006
	88	Żurawce	50.382592	23.54439	2005
FD	48	Lotnisko Białystok	53.078011	23.202156	2002
	59	Krasne	53.196367	23.299685	1983
	59	Krasny Las	53.173611	23.3375	1983
	59	Podsupraśl	53.206322	23.335337	1983
	68	Żednia	53.090096	23.469893	1997
	69	Surążkowo	53.211678	23.456541	1983
FE	38	Bryzgiel	53.998371	23.061699	1993
	39	Cimochowizna	54.058956	23.0679	1991,1992
	39	Krzywe	54.087288	23.000028	1993
	40	Karczmisko	53.299759	23.186043	1983
	41	Przewalanka	53.325001	23.123055	1997
	48	Zakąty	54.014301	23.157095	1993
	50	Budzisk	53.243317	23.34981	1983
	51	Machnacz	53.330753	23.311829	1983
	51	Wilcza Jama	53.354164	23.308611	1983
	52	Trzcianka	53.467007	23.357092	1983
FF	10	Turtul	54.21986	22.804338	2000
	21	Udziejek	54.260513	22.871738	2000
	21	Wodziłki	54.238392	22.841677	2000
XU	04	Stobnica	52.707057	16.609894	2003, 2006

Table 15. List of the wood mouse (*Apodemus sylvaticus*) localities.

UTM square	Localities	Geographic coordinates	Year of capture
FD 48	Lotnisko Białystok	53.07801 23.20216	2002
FF 21	Udziejek	54.26051 22.87174	2000
21	Wodziłki	54.23839 22.84168	2000
10	Turtul	54.21986 22.80434	2000

Table 16. List of the striped field mouse (*Apodemus agrarius*) localities.

UTM square	Localities	Geographic coordinates	Year of capture
DE 16	Kupin	53.84417 19.63652	1992
19	Pasłek	54.06683 19.66181	1992, 1993
44	Elgnówko	53.62721 20.21818	1988
44	Guzowy Młyn	53.69 20.23889	1994
44	Guzowy Piec	53.68739 20.21625	1994
45	Podlejki	53.73052 20.191075	1989, 1994
46	Ramoty	53.82188 20.08924	1994
54	Mycyny	53.63905 20.267	1995
62	Łyna	53.43927 20.40728	2003
64	Ruś	53.69033 20.49888	2002
72	Natać Wielka Stara	53.50872 20.57132	2002
75	Klebark Mały	53.76696 20.56206	2002
76	Barczewko	53.84854 20.59041	2004
DV 15	Polana Biały Potok	49.27783 19.86588	2007
EC 21	Maciejowice	51.57991 21.41357	1993
33	Ruda Tarnowska	51.78385 21.45431	2005
51	Kępica	51.54737 21.76181	2003
51	Krukówka	51.5985 21.83536	1997
51	Rokitnia	51.61212 21.79405	2005
61	Kleszczówka	51.56566 21.91176	1993
61	Strzyżowice	51.57056 22.00612	1993
81	Blizocin	51.5888 22.21137	1993
ED 11	Sokołówek	52.48331 21.18612	2006
FA 29	Smólsko	50.48228 22.78005	2004
78	Korhynie	50.40955 23.53079	2006
88	Żurawce	50.38259 23.54439	2005
FB 20	Gromada	50.56583 22.70347	2004
21	Kąty	50.65225 22.72103	2004
22	Żurawie	50.8008 22.78019	2007
FD 49	Jurowce	53.1929 23.15499	2006
59	Krasne	53.19637 23.29969	1983
59	Krasny Las	53.17361 23.3375	1983

FE	69	Surażkowo	53.21168	23.45654	1983
	21	Knyszyn	53.32651	22.92031	2006
	39	Cimochowizna	54.05896	23.0679	1991
	49	Żubrówka	54.0813	23.15286	1991
	51	Machnacz	53.33075	23.31183	1983
	51	Wilcza Jama	53.35416	23.30861	1983
XU	52	Trzcianka	53.46701	23.35709	1983
	04	Stobnica	52.70706	16.60989	2003

Table 17. List of the northern birch mouse (*Sicista betulina*) localities.

UTM square		Localities	Geographic coordinates		Year of capture
DE	16	Kupin	53.84417	19.63652	1992, 1993, 1995, 1999
	19	Kajmy	54.08861	19.72195	1992, 1993
	19	Pasłek	54.06683	19.66181	1995, 1999
	19	Winiary	54.1255	19.71557	1993
	44	Elgnówko	53.62721	20.21818	1988
	45	Łęguty	53.75316	20.16362	1990
	62	Łyna	53.43927	20.40728	2000, 2001, 2002, 2003
	72	Natać Wielka	53.51127	20.57244	2000, 2001, 2002, 2007
	72	Natać Wielka Nowa	53.51115	20.57941	2002
	72	Natać Wielka Stara	53.50872	20.57132	2003
	72	Zimna Woda	53.45215	20.6002	2002
	73	Bałdy	53.59909	20.60773	2000
	73	Czarny Piec	53.5472	20.62372	2000, 2005, 2007
	73	Zgniłocha	53.56399	20.56234	2003, 2004, 2005, 2007
	76	Barczewko	53.84854	20.59041	2003, 2004
	84	Michałki	53.65148	20.75707	2006
	84	Miluki	53.66768	20.76514	2006
	84	Tylkowko	53.63572	20.74358	2006
	91	Omulew	53.42187	20.86719	2001
DF	90	Wardomy	54.20512	20.90246	1987
DV	15	Polana Biały Potok	49.27783	19.86588	2007
EC	51	Rokitnia	51.61845	21.80539	1998
	51	Stężyca	51.58256	21.77271	1997
EE	43	Anuszewo	53.52396	21.68842	2003
	43	Wiartel	53.59362	21.67953	2004
	53	Pogubie	53.55816	21.76566	2003
	79	Czerwony Dwór	54.1301	22.18694	1984
FB	22	Radecznica	50.75113	22.83009	2007
FD	39	Fasty	53.17171	23.04513	2000
	49	Jurowce	53.19661	23.15286	1993, 1996, 1999, 2000
	59	Krasne	53.19637	23.29969	1983
	59	Krasny Las	53.17361	23.3375	1983

FD	39	Fasty	53.17171	23.04513	2000
	49	Jurowce	53.19661	23.15286	1993, 1996, 1999, 2000
	59	Krasne	53.19637	23.29969	1983
	59	Krasny Las	53.17361	23.3375	1983
	59	Podsupraśl	53.20632	23.33534	1983
	68	Żednia	53.0901	23.46989	1983
	69	Surążkowo	53.21168	23.45654	1983
	40	Karczmisko	53.29976	23.18604	1983
FE	48	Czerwony Krzyż	54.0143	23.1571	2001
	49	Maćkowa Ruda	54.05129	23.17604	1995, 1996, 2001
	50	Budzisk	53.24332	23.34981	1983
	51	Machnacz	53.33075	23.31183	1983
	51	Wilcza Jama	53.35416	23.30861	1983
	52	Trzcianka	53.46701	23.35709	1983
	60	Sokołda	53.24722	23.46676	1983

Table 18. List of the forest dormouse (*Dryomys nitedula*) localities.

UTM square		Localities	Geographic coordinates		Year of capture
FE	61	Rezerwat Stara Dębina	53.315071	23.527018	1993
	40	Karczmisko	53.29976	23.18604	1983

Table 19. List of the common dormouse (*Muscardinus avellanarius*) localities.

UTM square		Localities	Geographic coordinates		Year of capture
DE	19	Kajmy	54.08861	19.72195	1992
DV	15	Polana Biały Potok	49.27783	19.86588	2007
FA	88	Plebanka	50.40429	23.66052	2005
FE	53	Romanówka	53.536633	23.324072	1983

DANE O ROZMIESZCZENIU WYBRANYCH GATUNKÓW
SORICOMORPHA I RODENTIA W POLSCE

STRESZCZENIE

W niniejszej pracy przedstawiliśmy dane dotyczące występowania czterech gatunków Soricomorpha i piętnastu gatunków Rodentia. Dane o występowaniu zostały zgromadzone podczas odłowów ryjówek aksamitnych i myszy leśnych wielkookich w celu analiz zmienności chromosomowej, oraz chomika europejskiego w celu analiz filogeograficznych i zmienności genetycznej. Mapy występowania poszczególnych gatunków zostały wykonane w ArcGIS. Każdej mapie towarzyszą listy lokalizacji wraz ze współrzędnymi geograficznymi i rokiem odłowu.

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