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The diet of the Eurasian eagle-owl (*Bubo bubo*) in various natural environments across Eurasia

Potrava výra skalného (*Bubo bubo*) v rôznych prírodných podmienkach Eurázie

Ján OBUCH

Abstract: The Eurasian eagle-owl (*Bubo bubo*) has adapted to hunt local fauna that are subject to the influence of human agricultural activities. In the sparse forests, marshes and lakes of the mountainous regions of central Norway, the eagle-owl's diet is dominated by small mammals and gallinaceous birds, but the common frog *Rana temporaria* features more frequently in regions near the fjords, with various species of seabirds predominating on some islands. The eagle-owls, breeding in several protected regions of the Czech Republic, hunting in agricultural areas small mammals and game animals in addition to waterbirds nesting by fishponds. In Slovakia, the majority of the eagle-owl population nests on the edges of mountain valleys. In the past, they hunted small mammals and amphibians on pastureland located deep in the mountains, but they have adapted to hunting larger prey in more intensively farmed valleys. Predominantly in the eastern part of Turkey, the diet of Eurasian eagle-owl hunting on natural mountain steppes has been studied, where mammals of the family Cricetidae dominate. In the arid conditions of the southern countries of Syria, Jordan and Israel, mammals of the Gerbillinae sub-family predominated in addition to a higher proportion of birds. In the more variable areas of Iran, eagle-owl diets feature a wide range of indigenous mammals and birds, with different species represented in several territories. Studies from the edges of the Fergana Valley in southern Kyrgyzstan found differences in the diets of eagle-owls living at lower elevations and those living higher in the mountains, while birds were the predominant prey in the Kalek site. Smaller samples of eagle-owl diets were also collected in the Altai Mountains of Mongolia, the Barguzinsky Mountains to the east of Lake Baikal and the Vaida Mountain on Sakhalin Island. The results presented in this study can also contribute to our knowledge about the fauna of the above-mentioned regions.

Abstrakt: Výr skalný (*Bubo bubo*) je adaptovaný na lov miestnej fauny, ktorá je ovplyvnená hospodárskou činnosťou človeka. V horách stredného Nórska s riedkymi lesmi, mokraďami a jazerami, dominujú v jeho potrave drobné cicavce a kurovité vtáky. Pri pobreží fjordov sú viac zastúpené žaby druhu *Rana temporaria*. Na niektorých ostrovoch prevažujú morské druhy vtákov. Výry, hniezdiace v niektorých chránených územiach Českej republiky, lovia v okolitej poľnohospodárskej krajine drobné cicavce, malú poľovnú zver a vodné vtáctvo hniezdiace na rybníkoch. Na Slovensku prevažná populácia výrov hniezdi na okraji horských kotlín. V minulosti lovili aj na pasienkoch hlbšie v horách drobné cicavce a žaby, neskôr sa adaptovali na lov väčšej koristi v intenzívnejšie obhospodarovaných kotlinách. Prevažne vo východnej časti Turecka bola skúmaná potrava výra, loviaceho na prirodzených horských stepiach. Dominujú cicavce z čeľade Cricetidae. V južnejších krajinách Sýria, Izrael a Jordánsko s aridnejšou klímou prevažujú cicavce z podčeľade Gerbilinae a vyššie zastúpenie majú vtáky. Na členitom území Iránu je v potrave výra zastúpená bohatá autochtónna fauna cicavcov a vtákov, diferencovaná pre jednotlivé územné celky. V južnom Kirgizsku bola skúmaná potrava výra na okraji Ferganskej kotliny. Odlišná fauna bola v nižších polohách a vyššie v horách. Na lokalite Kalek dominovali vtáky. Menšie vzorky potravy výra sú z Mongolského Altaja, z Barguzínskeho pohoria na východe od Bajkalu a z hory Vajda na ostrove Sachalín. Výsledky, publikované v tejto práci, sú príspevkom ku znalostiam o faune uvedených území.

Key words: prey species, birds of prey, hunting habits, pellet analysis, Norway, Czech Republic, Slovakia, Middle East, Kyrgyzstan, Mongolia, Russia

Ján Obuch, Slovak Museum of Nature Protection and Speleology, Školská 4. SK-03101 Liptovský Mukuláš, Slovakia, Email: jan.obuch@smopaj.sk

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Introduction

The Eurasian eagle-owl is the largest European owl and is capable of hunting prey from a remarkably wide size range, from small prey such as mammals, birds and invertebrates to larger animals such as foxes and herons (Obuch & Bangjord 2016). Six sub-species have been identified in its Eurasian range on the basis of genetic data, with eagle-owls inhabiting both temperate and arid climate zones (König & Weick 2018). Data on the diets of eagle-owls offers important information on the fauna of specific territories. As the apex predator among owls, it frequently preys on other competing predators in its territory such as other owls, raptors and carnivores (Mikkola 1976, Lourenco et al. 2011). Originally an owl of the steppes, it is capable of hunting over open ground, and is now active in the agrarian steppe that had emerged following the deforestation which had occurred by the middle of the Holocene epoch (Obuch 2021a). The composition of the eagle-owl's prey has thus adapted over time in line with changing agricultural uses of the landscape in its geographical range (Obuch 2021b). The monograph by Penteriani & Delgado (2019) attempted to outline the factors which determine the eagle-owl's diet through a statistical analysis of 346, 813 items of prey from 200 studies covering the entirety of the species' Eurasian range. However, this survey was based on works with varying levels of accuracy in terms of prey species identification; similarly, the study employed a statistical methodology based on the proportional representation of taxa which did not take the relative size of comparative prey samples into account.

The diet of the eagle-owl has been the subject of several comprehensive surveys from Slovakia (Obuch 2021b), Norway (Obuch & Bangjord 2016), Jordan (Obuch 2018), Iran (Obuch 2014), Turkey (Obuch 1994) and Kyrgyzstan (Obuch & Rybin 1993). Partial data from protected areas in the Czech Republic have also been published, namely from Šumava (Červený & Obuch 1999), Podyjí (Reiter et al. 1997), Pálava (Gaisler et al. 1996), Moravský Kras (Zima et al. 1998) and Kokořínsko (Andreska et al. 2021).

In this study, we evaluated a similarly extensive set of materials from ten selected countries, more specifically findings from regions with markedly different natural conditions: from the cold and wet climate of central Norway in northern Europe, the relatively humid climates of Slovakia and the Czech Republic, to the far drier conditions of five countries in the southern limits of the species' range in the Middle East (Turkey, Iran, Syria, Jordan and Israel), but also in the Central Asian Steppes (Kyrgyzstan, Mongolia) and the eastern edge of its range in Zabaikalsky Krai and Sakhalin in Russia with their frozen winters.

The contribution aims to document the remarkable adaptability of eagle-owl diets and the overview which they offer of local fauna as a result of various natural conditions and the long-term impact of human activities.

Materials and methodology

Study areas

In central Norway, samples of eagle-owl diets were collected in the mountainous regions of the former county of Hedmark (now Inlandet) and the county of Trøndelag and the southern part of the county of Nordland. Material was obtained and examined from 96 localities between 2008 and 2023 (Fig. 1). Elements of the analysed data have been discussed in a previously published study (Obuch & Bangjord 2016).

In the Czech Republic, eagle-owl diets were primarily studied in protected areas: Pálava Protected Landscape Area (PLA) (4 localities from 1990 to 2000), Podyjí National Park (NP) (6 localities from 1992 to 1995), Moravský Kras PLA (5 localities in 1998), Třeboňsko PLA (5 localities from 1993 to 2002), Šumava NP and Pošumaví (64 localities from 1978 to 2013), Kokořínsko and České Švícarsko NP (5 localities from 1985 to 2019). Material from the Vysočina county was collected by I. Kunstmüller in 46 localities from 1991 to 2023

(Fig. 1). Elements of the analysed data have appeared in previously published studies (Gaisler et al. 1996, Reiter et al. 1997, Červený & Obuch 1999, Zima et al. 1998, Andreska et al. 2021).

Extensive amounts of material were collected in Slovakia between 1975 and 2023 in 136 localities from eleven regions (Fig. 1): Orava, Liptov, Turiec, Žilinská kotlina Basin, Považie Valley, Ponitrie Valley, Pohronie Valley, Muránska Planina Mts., Spiš, Rimavská Kotlina Basin, and Slovenský Kras Mts. (Obuch 2021b).

In the Middle East, eagle-owl prey remains were collected in 13 localities in Turkey between 1992 and 2005, in four localities in Israel in 1996, in two localities in Syria in 1998 and 2005, in eight localities in Jordan between 2005 and 2015 (Obuch 2018) and in 38 localities in Iran between 1996 and 2002 (Obuch 2014). Smaller samples of prey remnants were collected in the plains of central Anatolia along a travel between Ankara and Syria (Sample no. 1 in Fig 2.). Owl pellets were collected regularly in the localities of Horasan (Sample no. 3 in Fig 2.) and Ishak Pasa Sarayi (Sample no. 5 in Fig 2.) during several expeditions to Iran and at Hattusa during my first travel to Iran in 1996. The localities of Bendimahi and Tatvan (Sample no. 6 in Fig 2.) and Sarikamis (Sample no. 4 in Fig 2.) were surveyed during my first expedition to Turkey in 1992 (Obuch 1994). In Syria, the largest number of eagle-owl pellets were found on desert cliffs 5 km from Palmyra, in the Carmel Mountains and near the Hula reserve in Israel.

In Jordan, pellets were found in the upper regions of the rift above the Jordan Valley, the Dead Sea and Wadi Araba, areas with a more humid Mediterranean climate. During five expeditions to the extensive territory of Iran, eagle-owl prey remains were found in 38 localities, a fact which is reflected in the specific species identified in seven territorial units: the Elborz and Talysh Mountains (Sample Aa in Fig 2.), the northern (Sample Ab in Fig 2.) and central (Samples Ba, Bb in Fig 2.) Zagros Mountains, the southern Zagros in the Fars Province (Sample C in Fig 2.), south-eastern Iran (Sample Da in Fig 2.) and the Koppeh Dagh Mountains in the northeast (Sample Db in Fig 2.) (Obuch 2014).

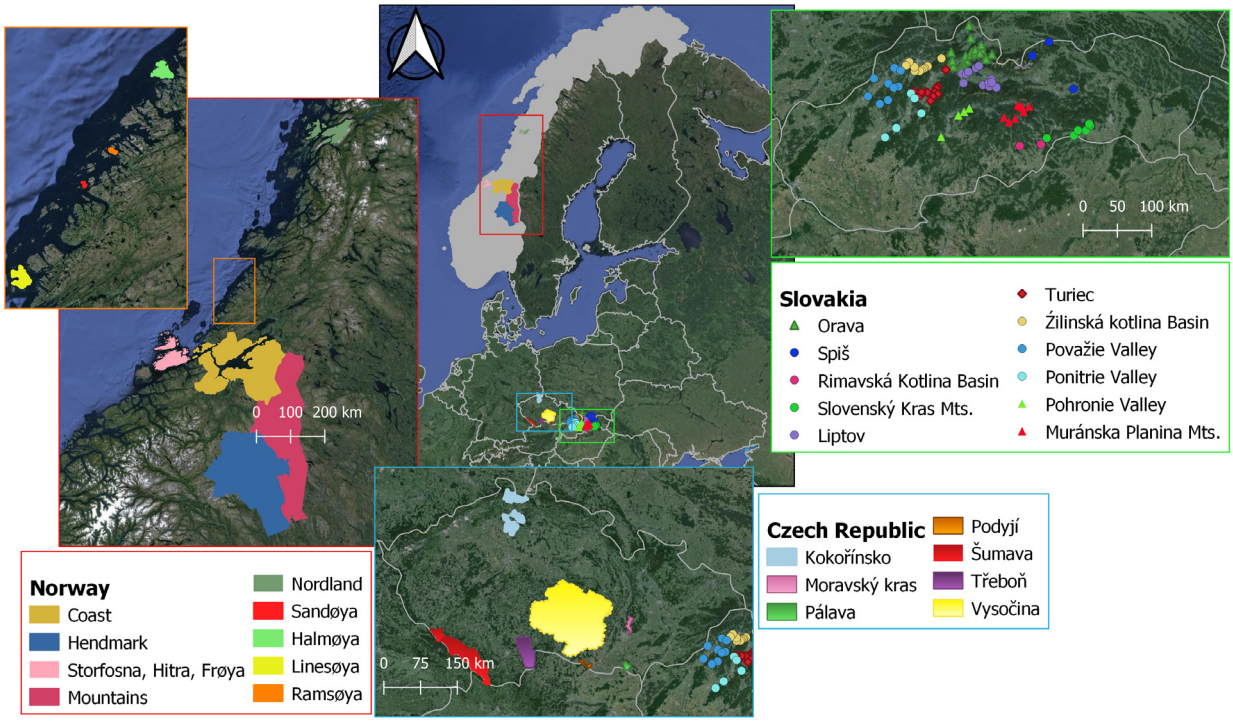


Fig. 1. Comparable regions in central Norway, Czech Republic and study sites of particular regions in Slovakia.
Obr. 1. Porovnávané regióny centrálneho Nórska, Českej republiky a stúdijné lokality jednotlivých regiónov na Slovensku.

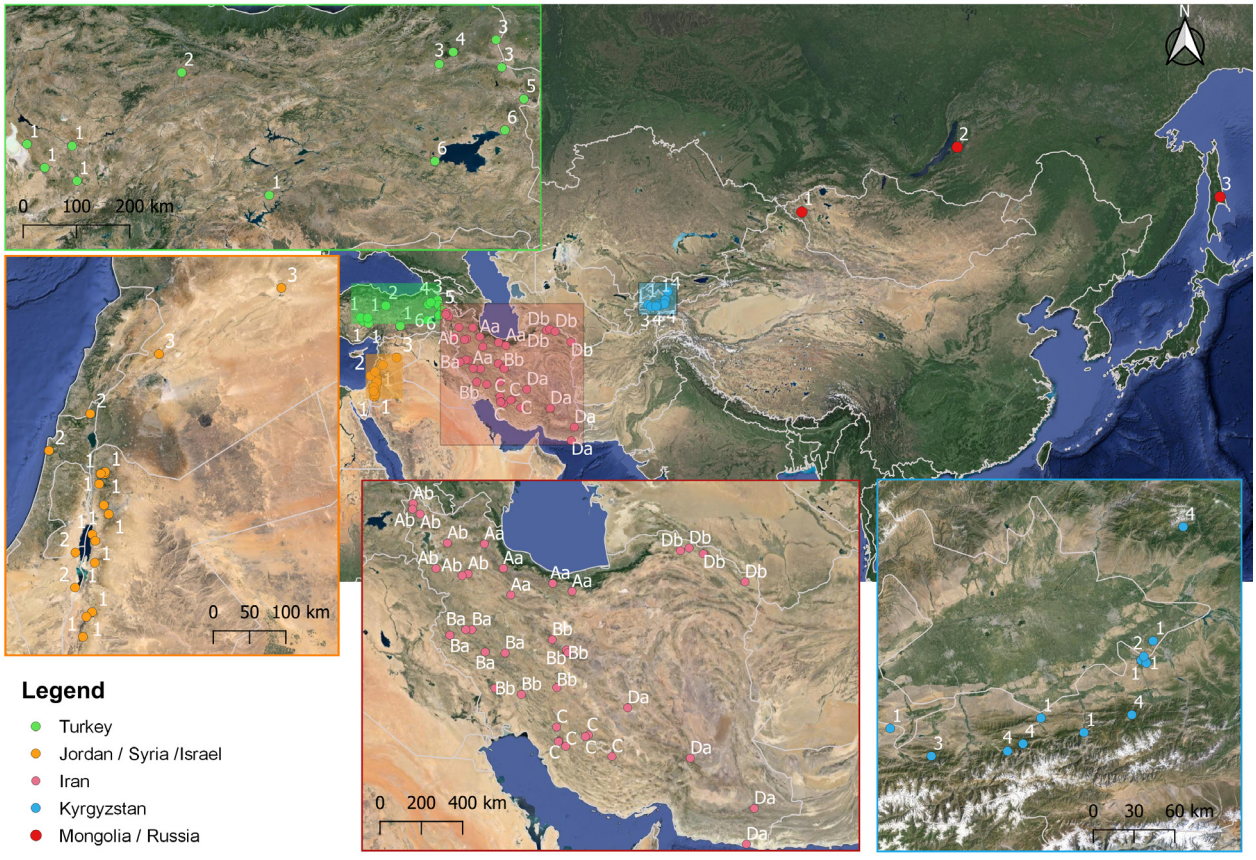


Fig. 2. Study sites of Eurasian eagle-owl in Asian countries.
Obr. 2. Študované lokality výra skalného v Azíjských krajinách.

In Central Asia, eagle-owl diets were studied in 13 localities on the edge of the Fergana Valley in south Kyrgyzstan between 1988 and 1990 in cooperation with S. N. Rybin from the Regional Hygiene Department in Osh (Obuch & Rybin 1993). The majority of localities were found in the mountains to the south of the Fergana Valley featuring steppe or semi-desert vegetation, and in the locality of Arslanbob, an area of humid wild walnut forests in the north. One sample was collected in 1984 from eagle-owl nests on cliffs above Lake Talbo Nur at the edge of the Altai Mountains in Mongolia at an elevation of 2100 m a. s. l., an area in which wormwood steppe was predominant.

In east Russia, a smaller sample of eagle-owl prey remnants was collected in 2013 in the Barguzinsky Mountains on the eastern shore of Lake Baikal above the village of Ulyun. In 2016, a group of Slovak speleologists collected bone samples from Lastochnaya Cave in the Vaida Mount in the central region of Sakhalin which were determined to be from eagle-owl prey. As a result, in the following year, the author participated in the next expedition and collected more bones from an older eagle-owl nest there.

Analyses of diets

Data was obtained from osteological material found in eagle-owl nests and pellets in the vicinity of nest sites which were mostly collected during the spring breeding season. In the material collected from nests, more recent unconsolidated material consisting of un-decomposed fur and bones from the upper layers was distinguished from that found in the lower layers. For example, an eagle-owl nest on the island of Halmøya in Norway was found to consist of four separate layers; the bones from the lowest layer were examined with radiocarbon dating and were found to be 2500 years old; the results of this analysis will be presented in a separate study. In Slovakia, two older samples were dated to be approximately 100 to 150 years

old (Obuch 2021b). In this study, the aggregated data from different regions are presented independent of the age of the samples. Radiocarbon dating of bones found in Lastochnaya Cave on Sakhalin suggests that they date from the 9th century, making them 1170 years old (± 40 years) (Povinec in lit.). Bone samples collected earlier by Russian palaeontologists in the same cave were dated to a similar period (Aleksejeva et al. 2004).

Samples found in nests were prepared for study by being soaked in standing water. Pellets and other organic impurities floated to the surface and were broken down in 5 % NaOH, while the bones which remained at the bottom of the sieve were separated from the soil through mass fraction. After the bones had dried, the material was categorised as follows: mammal jawbones, four types of bird bones (*rostrum*, *humerus*, *metacarpus* and *tarsometatarsus*), frog hip bones (*os ilium*), lizard jawbones, carp cervical vertebrae (*os pharyngeum inferior*) and jawbones of other fish, insect heads and jaws, and the claws of scorpions and crabs.

The abundance of specific species was determined as the minimum possible number based on the most commonly identified body parts (Minimum Number of Individuals, MNI). Vertebrate bones, in particular bird bones, were identified through comparisons with the author's own collection; mammal bones were also determined using published works: Gromov & Erbajeva (1995), Harrison & Bates (1991), Lay (1967), DeBlase (1980), Kryštufek & Vohralík (2001, 2005, 2009), Aulagnier et al. (2009), Porter et al. (1996). Based on the work by König & Weick (2015), the diets of the following sub-species of Eurasian eagle-owls are examined in this study: *Bubo bubo bubo* (Norway, Slovakia and the Czech Republic); *Bubo bubo interpositus* (the Middle East), *Bubo bubo turcomanus* (Kyrgyzstan), *Bubo bubo yenisseensis* (Mongolia, Baikal) and *Bubo bubo ussuriensis* (Sakhalin).

Statistical analyses

Results were compared using the methodology of marked difference from the mean (MDFM, Obuch 2001a). The results are presented in rearranged tables in which the orders of species are shown in columns forming blocks with positive MDFM values (+1, +2) which are highlighted by grey color. The order of regions is arranged based on similarities in terms of the representation of diagnostic species with positive deviations from the average. The results below the dotted line show the abundance of species without marked deviations and are sorted according to decreasing overall abundance. The bottom row shows the value H', the diversity index calculated according to the method published in the work by Shannon & Weaver (1949). Other less abundant species are listed below the tables. The database program Zber (Šipöcz 2004) was used to summarise the results from different regions and formulate the adapted tables.

The data from the countries with the most extensive samples of eagle-owl diets, namely central Norway, the Czech Republic, Slovakia, Turkey, Iran and south Kyrgyzstan, are presented in comparative tables featuring regions with similar natural conditions (Tables 1, 2, 3, 4, 6 and 7). The data from the less extensive collections of Syria, Israel and Jordan is evaluated as a total sum (Table 5), and the three samples obtained from the Altai Mountains in Mongolia, the Barguzinsky Mountains to the east of Lake Baikal and the Vaida Mount in central Sakhalin are also reported (Table 8).

The majority of the documented material on eagle-owl diets discussed in this study is held in the collection of the Slovak Museum of Nature Protection and Speleology in Liptovský Mikuláš, but the material collected in Norway is archived in the Natural History Museum in Trondheim. Data from older studies has been updated to reflect the currently accepted taxonomy for mammal species; the most up-to-date terminology was based on that found in the following publications: Handbook of the Mammals of the World 6: Lagomorphs and Rodents I (Wilson, Lacher & Mittermeier, eds, 2016); Handbook of the Mammals of the World 7: Rodents II (Wilson, Lacher & Mittermeier, eds, 2017); Handbook of the Mammals of the World 8: Insectivores, Sloths and Colugos (Wilson & Mittermeier, eds, 2018). Bird scientific names are based on the publication by Kovalík et al. (2010).

Results

Central Norway

The results presented here are a continuation of previous research (see Materials and Methodology). The research was expanded southwards to cover the mountainous region of the former county of Hedmark (now Innlandet) and northwards to the county of Nordland.

Mammals (Mammalia, 58.7%, 27 species) were the predominant eagle-owl prey among the 55,599 specimens, in particular *Microtus agrestis* (34.8%), *Arvicola amphibius* (7.3%) and *Lemmus lemmus* (5.4%). A highly diverse range of bird species formed the second most numerous prey type (Aves, 21.2%, at least 168 species), with the following species forming more than 1% of the sample: *Anas crecca* (1.9%), *Lagopus lagopus* (1.8%), *Larus argentatus* (1.5%), *Larus canus* (1.1%) and *Anas platyrhynchos* (1.1%). Among the other vertebrates

(Amphibia, Reptilia, Pisces, 20.0%), the common frog *Rana temporaria* was the dominant species (19.6%), but invertebrates were found to form a minor component of eagle-owl diets (Evertebrata, 0.1%).

In the mountainous regions of the counties of Hadmark and Trøndelag, mammals also formed a significant part of the diet, in particular *A. amphibius*. *L. lemmus*, *Craseomys rufocanus*, *Alexandromys oeconomu*s, *Myodes glareolus*, *Myopus schisticolor*, *Sciurus vulgaris* and *Lepus timidus*. These species are also preyed upon by smaller species of owls and raptors which the eagle-owl eliminates as competitor species, more specifically *Asio flammeus*, *Aegolius funereus*, *Surnia ulula*, *Falco tinnunculus*, *F. columbarius* and *Buteo lagopus* and Carnivora *Mustela erminea* and *M. nivalis*. Galliformes also form an important element of the eagle-owl's diet at the upper edges of the tree line: *Lagopus lagopus*, *L. muta*, *Lyrurus tetrix*, *Tetrao urogalus* and *Tetrastes bonasia*. Over marshlands and lakes, eagle-owls hunt waterfowls, primarily ducks such as *Anas crecca*, *Bucephala clangula* and *Aythya fuligula* and wader species such as *Tringa nebularia*, *T. glareola* and the Eurasian whimbrel *Numenius phaeopus*. Several of these species are also strongly represented in the diets of eagle-owls from the lower localities along the shores of fjords in the county of Trøndelag (Table 1), but this region also saw a pronounced rise in the share of the common frog *R. temporaria*. Frogs also featured heavily in the samples from the northern Norwegian counties of Trøndelag and Nordland together with small mammals such as *M. glareolus*, *C. rufocanus* and the willow ptarmigan *L. lagopus*. The European water vole *A. amphibius* was numerous in the samples from the islands of Halmøya and Sandøya, especially in the past when the islands were deforested and grazed by sheep. Also important in that period was the short-tailed field vole *M. agrestis*, which is still dominant in the islands of Ramsøya and Linesøya, which are located close to the mainland, but this species has not reached the offshore islands of Hitra and Frøya. The common frog *R. temporaria* and the wood mouse *Apodemus sylvaticus* have recently been introduced to the island of Frøya, and eagle-owls have adapted to hunt these species, but on the islands of Storfosna, Hitra and Frøya, however, several species of seabirds and other water birds still form the largest component of the owl's diet (Table 1).

The Czech Republic

From the 14,070 eagle-owl prey items identified in the Czech Republic, mammals were the dominant type (Mammalia, 76.1%, 41 species) followed by a significant share of birds (Aves, 22.7%, at least 102 species). Other vertebrates (Amphibia, Reptilia, Pisces, 1.0%) and invertebrates (Evertebrata, 0.2%) were less well represented. The common vole *Microtus arvalis* was the dominant prey (43.6%), but also common were the species *Arvicola amphibius* (6.9%), *Rattus norvegicus* (6.2%), *Erinaceus* sp. (4.4%) and *Lepus europaeus* (4.3%). In terms of birds, the following species formed more than 1% of the total sample: *Perdix perdix* (2.5%), *Columba livia domestica* (2.4%), *Fulica atra* (1.7%), *Chroicocephalus ridibundus* (1.6%), *Phasianus colchicus* (1.4%), *Turdus merula* (1.3%) and *Asio otus* (1.0%).

Finds from the Pálava PLA featured a high proportion of the black-headed gull *Ch. ridibundus* which eagle-owls had predated from the breeding colony at the Nové Mlýny reservoirs. Game species were hunted more often, however: *L. europaeus, P. perdix*, *P. colchicus* and also hedgehogs *Erinaceus sp.*, with *E. roumanicus* well represented in Moravský Kras Mts. A rich variety of species formed the diet of eagle-owls in Podyjí NP, with this region recording the highest diversity index: H' = 3.16. At the fishponds of Kokořínsko PLA and Třeboňsko PLA and partly in Pošumaví region, eagle-owls also predated multiple species of waterfowl. In Šumava NP, the common frog *R. temporaria* was more abundant and, among the mammals, the short-tailed field vole *M. agrestis*, but the common vole *M. arvalis* remained dominant, as was the case for the Vysočina county (Table 2).

The central European landscape of the Czech Republic is characterised by a higher human population density than in Norway, in addition to a more intensive degree of agricultural activity. The long-standing hunting tradition of rearing game animals and birds is also an important component of the eagle-owl's diet, but this has led to persecution in the past despite efforts to strengthen the protection of the species (Andreska & Andreska 2020).

Slovakia

A total of 106,166 eagle-owl prey specimens were collected over the course of the studied period, with mammals forming the predominant element (Mammalia, 58.3%, 65 species). The common vole *M. arvalis* was the most common identified species (31.1%), with *A. amphibius* (7.2%), *A. sylvaticus* (4.6%), *Apodemus flavicollis* (3.4%) and *R. norvegicus* (3.0%) also featuring heavily. Among other vertebrates (Amphibia, Reptilia, Pisces, 33.2%), the common frog *R. temporaria* (32.1%) was found to form a significant part of the diet of young eagle-owls in the past at higher elevations. Birds formed a lower proportion of eagle-owl diets (Aves, 8.5%, at least 140 species), with

Tab. 1. Eagle-owl diet in various regions of central Norway .
Tab. 1. Potrava výra skalného v rôznych regiónoch stredného Nórska.

Region	Hedmark		Mountains		Coast		Nord.		Halmøya		Sandøya		Lines+		Froya+		Total	%
Species \Region No.	1		2		3		8		7		6		5		4			
Bubo bubo	1+	13		9		7		2		18		3	1-	1		13	66	0.12
Asio flammeus	1+	61		45		43		1	1-	35		4		31	1-	20	240	0.43
Glaucidium passerinum	1+	7															7	0.01
Lagopus muta	3+	199		48	2-	9		5	3-	10		2	2-	6	4-	0	279	0.50
Falco tinnunculus	2+	23		5	1-	3		1	1-	7				6		5	50	0.09
Falco columbarius	1+	16		7		7			1-	3				4		2	39	0.07
Buteo lagopus	1+	11		9		5			1-	1						4	30	0.05
Anas querquedula	1+	8		7		3			1-	3				4		5	30	0.05
Perisoreus infaustus	1+	6		5		4											15	0.03
Lepus timidus	1+	185	1-	95		153		23	6-	2	1-	3	1-	38	2+	316	815	1.47
Asio otus	1+	13		9		15		1	2-	1			1+	24		5	68	0.12
Columba palumbus	1+	20	1-	5	1+	23		1	2-	2			1+	17		17	85	0.15
Sciurus vulgaris	2+	68		33	1+	82			4-	1			3-	0	3-	0	184	0.33
Lyrurus tetrix	1+	55		51	1+	103		11	1-	47		4		40	1-	25	336	0.60
Myodes glareolus	1+	217	1+	385	1+	322	1+	50	2-	86	2-	2	4-	7	1+	256	1325	2.38
Lagopus lagopus	1+	188	1+	271	1-	126	2+	66	2-	84	1-	5	2-	46	1+	229	1015	1.83
Anas crecca	1+	227	1+	344	1-	154	2-	5	2-	80	1-	6	2-	32	1+	226	1074	1.93
Bucephala clangula	1+	37	1+	40	1-	15		2	3-	3			2-	3	1+	40	140	0.25
Arvicola amphibius	1+	531		594	2-	228	1+	146	1+	2060	3+	413	6-	7	4-	51	4030	7.25
Craseomys rufocanus	2+	576	1+	509		225	2+	119	4-	19	3-	1	2-	35	6-	0	1484	2.67
Lemmus lemmus	1+	399	1+	827	1+	827	2-	16	1-	516		55		365	7-	1	3006	5.41
Aegolius funereus	2+	26		15	1+	19		2	2-	3		1	1-	0	1-	1	67	0.12
Tetrastes bonasia	1+	17		12	1+	26		1	2-	0		2	1-	0	2-	0	58	0.10
Tringa nebularia	2+	28	2+	39	1-	3			3-	0			1-	1	2-	0	71	0.13
Tringa glareola	1+	17	1+	19	1-	1			1-	3			1-	1		3	44	0.08
Aythya fuligula	1+	18	2+	43	1-	6			2-	2			2-	0	1-	1	70	0.13
Surnia ulula	1+	13	2+	33		6			2-	0			1-	0	1-	1	53	0.10
Tetrao urogallus	1+	22	1+	27		11			3-	0			1-	1	1-	2	63	0.11
Alexandromys oeconomus	3+	323	2+	304	1-	5	2-	0	6-	0	2-	0	5-	0	5-	0	632	1.14
Myopus schisticolor	2+	38	2+	75	3-	0			3-	0			2-	0	3-	0	113	0.20
Mustela erminea	1+	44	1+	34		24		2		39		4	1-	6	2-	3	156	0.28
Mustela nivalis	1+	29	1+	29		26		1	1-	12		2	1-	2	1-	6	107	0.19
Numenius phaeopus		16	2+	56	1-	11			1-	13		2	1-	3		13	114	0.21
Anas acuta		7	1+	15		7			1-	2			1-	1	1+	13	45	0.08
Philomachus pugnax		9	1+	43		30		1	1-	13		1	1-	5	1+	32	134	0.24
Vulpes vulpes		2		2	1+	10											14	0.03
Chroicocephalus ridibundus		2		1	1+	8				3						1	15	0.03
Rattus norvegicus	4-	0	3-	7	1+	99		10	5-	0	1-	0	4-	1	2+	298	415	0.75
Mus musculus	2-	0	2-	1	1+	35		1	3-	2			2-	2	2+	94	135	0.24
Vanellus vanellus	1-	6	1-	11	1+	61	1-	0	2-	20	1-	0	1-	12	2+	114	224	0.40
Rana temporaria		944		1526	1+	3768	1+	453	1-	1227	4-	9	1-	930	1+	2051	10908	19.62
Aythya marila									1+	12						1	13	0.02
Mergus merganser	1-	2	1-	1	1-	3			1+	38				6	1+	16	66	0.12
Uria aalge	1-	0	1-	0	1-	1			1+	29				4	1+	12	46	0.08
Haematopus ostralegus	3-	0	3-	0		25			1+	63		1		26	1+	62	177	0.32
Limosa lapponica		1		2	1-	2			1+	17		1		1	1+	16	40	0.07
Fratercula arctica	4-	0	4-	0	2-	18		7	1+	191	1+	16	1-	16	1+	114	362	0.65
Somateria mollissima	1-	0	2-	0	1-	2			1+	26	1+	6		4	1+	20	58	0.10
Microtus agrestis	2-	676	1-	2421	1-	2684	2-	158	1+	9104		370	1+	3932	8-	10	19355	34.81
Calidris maritima	1-	0	1-	3	2-	1			1+	40		1	1+	29	1-	3	77	0.14
Uria lomvia			1-	0	1-	0				12	1+	6		2		7	27	0.05
Sorex araneus	1-	10	1-	13	2-	11		8	1-	37		1	2+	131	3-	2	213	0.38
Calidris alpina	1-	0		5	1-	1		3		10			2+	30	1-	1	50	0.09
Turdus iliacus	1-	4	1-	9		23		4	1-	12		1	2+	52		20	125	0.22
Actitis hypoleucos		8		3		9		2	1-	2			1+	11		7	42	0.08

Tab. 1. continuation / pokračovanie.

Region	Hedmark		Mountains		Coast		Nord.		Halmøya		Sandøya		Lines+		Froya+		Total	%
Species \Region No.	**1**		**2**		**3**		**8**		**7**		**6**		**5**		**4**			
Cepphus grylle			1-	0	1-	0				14		2	1+	12		9	37	0.07
Alle alle	3-	0	3-	3	1-	27	1-	0	2-	13		8	1+	47	2+	114	212	0.38
Charadrius hiaticula	1-	0	2-	0	1-	4		2	1-	5			1+	22	1+	20	53	0.10
Turdus pilaris		29		36		62		2	2-	20		4	1+	60	1+	73	286	0.51
Turdus philomelos		10	1-	14		27		5	1-	13			1+	39	1+	39	147	0.26
Larus argentatus	5-	0	5-	1	2-	40	3-	0	4-	19		12		84	3+	684	840	2.57
Larus marinus	3-	0	3-	0	3-	1			3-	3		2	1-	13	3+	165	184	0.33
Larus canus	3-	8	2-	24	1-	58	2-	0	1-	67	1-	4	1-	31	2+	440	632	1.93
Gallinago gallinago	1-	53	1-	42		139	1-	4	2-	61	1-	3		96	2+	309	707	2.17
Scolopax rusticola	1-	11	2-	7		29			2-	13		3		29	2+	100	192	0.35
Anas platyrhynchos		52		102		137	1-	5	3-	23	2-	0	1-	43	2+	278	640	1.96
Anas penelope		14		12	1-	11			1-	13		1	1-	5	2+	51	107	0.19
Mergus serrator	1-	7		16	3-	1			1-	20		7	1-	7	2+	81	139	0.25
Ardea cinerea		1	1-	2	1-	1			2-	0				6	2+	35	45	0.08
Numenius arquata	2-	0	2-	0	1-	4			2-	6				16	2+	60	86	0.15
Pluvialis apricaria		19	1-	27		41	1-	0	1-	35		2		26	2+	99	249	0.45
Turdus merula		7	1-	5		20		1	1-	11		2		18	2+	47	111	0.20
Carduelis flavirostris			1-	0	1-	1			1-	1		1		6	2+	24	33	0.06
Sturnus vulgaris	1-	0	1-	1		8		1		15		1		5	2+	33	64	0.12
Apodemus sylvaticus	3-	1	4-	0	4-	0	1-	0	5-	0	1-	0	4-	0	3+	320	321	0.58
Neomys fodiens	1-	2	2-	0	2-	1			3-	0			2-	0	3+	67	70	0.13
Erinaceus europaeus	3-	0	3-	0		33			4-	0			3-	0	3+	152	185	0.33
Mustela vison		7		5	1-	1		1	2-	0				1	1+	18	33	0.06
Sorex minutus		2		2		1				2				2	1+	8	17	0.03
Corvus cornix	1-	27	2-	20		91	1-	1	1-	85	1-	2		39	2+	152	417	0.75
Corvus corax		6	1-	4		11			1-	11		1		12	1+	25	70	0.13
Pica pica		2		1		10			1-	2		2		3	1+	12	32	0.06
Garrulus glandarius		2		3		6			1-	1				1	1+	10	23	0.04
Melanitta fusca				1		2				8					1+	13	24	0.04
Larus fuscus						6									1+	9	15	0.03
Phasianus colchicus						2									1+	6	8	0.01
Sterna paradisaea	1-	0		4	1-	2				7		2		7	1+	23	45	0.08
Sterna hirundo										1				2	1+	11	14	0.03
Limosa limosa				1										1	1+	13	15	0.03
Lymnocryptes minimus		2		3		8			1-	0		3		2	1+	10	28	0.05
Salmonidae sp.	1-	1		5	1-	5			3-	0		1	1-	0	2+	51	63	0.11
Pisces sp.		12	1-	14	1-	9		1		46		2		20	1+	43	147	0.26
Coleoptera sp.		1		2		8			2-	0				5	1+	17	33	0.06
Decapoda sp.						1				1		1		4	1+	12	19	0.03
Tringa totanus		9		10	1-	3		2	2-	0				10		11	45	0.08
Rissa tridactyla			1-	0		6				9		4		8		10	37	0.07
Fringilla coelebs		5		5	1-	0				4		2		3		4	23	0.04
Turdus torquatus		5		8		1		1	1-	0				3		4	22	0.04
Accipiter gentilis		6		4		7				3							20	0.04
Cuculus canorus		4		4		3				2				4		2	19	0.03
Columba livia dom.		1				4				2				2		5	14	0.03
Anthus pratensis		1		1		7				1				4		1	15	0.03
Accipiter nisus		4				2				3						4	13	0.02
Rallus aquaticus						3				4				1		4	12	0.02
Turdus viscivorus		4		4		1										3	12	0.02
Alca torda				1		3						2				5	11	0.02
"Mammalia, 27 species"		**3113**		**5337**	**1-**	**4771**	**1-**	**536**	**1+**	**11881**	**1+**	**852**		**4530**	**2-**	**1607**	**32627**	**58.68**
"Aves, minim 168 species"	**1+**	**1414**		**1617**	**1-**	**1691**	**1-**	**149**	**1-**	**1444**	**1-**	**135**	**1-**	**1144**	**2+**	**4201**	**11795**	**21.21**
"Amphibia,Reptilia,Pisces"		**958**		**1546**	**1+**	**3784**	**1+**	**454**	**1-**	**1273**	**4-**	**12**	**1-**	**950**	**1+**	**2146**	**11123**	**34.10**
Evertebrata	**1-**	**1**	**1-**	**2**		**9**		**0**	**2-**	**1**		**1**		**10**	**2+**	**30**	**54**	**0.10**
Total		**5486**		**8502**		**10255**		**1139**		**14599**		**1000**		**6634**		**7984**	**55599**	**100**
Diversity Index H'		**3.20**		**2.63**		**2.36**		**2.13**		**1.59**		**1.78**		**1.89**		**3.30**	**2.71**	

Region: 1 – **Hedmark**, **2 – Mountains**, **3 – Coast**, **8 – Nord:** Nord Trondelag and Nordland, **7 – Halmøya**: the island of Halmøya, **6 – Sandøya**: the island of Sandøya, **5 – Lines+**: the islands of Ramsøya and Linesoya, **4 – Froya+**: the islands of Storfosna, Hitra and Froya.
Other species (**Region**-number): *Castor fiber* (**2**-1), *Apodemus flavicollis* (**1**-3; **6**-1), *Canis familiaris* (**7**-1; **4**-2), *Martes martes* (**3**-1), *Felis catus dom.* (**4**-2), *Capreolus capreolus* (**3**-2), *Ovis ammon aries* (**8**-1; **5**-1; **4**-1), Artiodactyla sp. (**3**-1), *Gavia stellata* (**5**-1), *Gavia* sp. (**3**-2), *Podiceps auritus* (**1**-4; **2**-2; **7**-1; **4**-1), *Tachybaptus ruficollis* (**2**-1; **3**-3; **5**-1), *Fulmarus glacialis* (**7**-1; **4**-2), *Phalacrocorax carbo* (**4**-1), *Phalacrocorax aristotelensis* (**4**-1), *Anser anser* (**4**-2), *Anser fabalis* (**5**-1; **4**-3), *Anas clypeata* (**4**-2), *Anas* sp. (**3**-1), *Melanitta nigra* (**4**-2), *Clangula hyemalis* (**8**-1; **6**-1; **4**-5), *Mergus albeolus* (**2**-1), *Tadorna tadorna* (**5**-1; **4**-1), Anatidae sp. (**1**-4; **2**-6; **3**-5; **7**-19; **5**-4; **4**-16), *Circus cyaneus* (**2**-2), *Falco peregrinus* (**1**-2; **3**-2; **4**-4), *Coturnix coturnix* (**7**-1), *Gallus gallus dom.* (**2**-1; **3**-2; **8**-1; **4**-2), *Porzana porzana* (**4**-1), *Crex crex* (**3**-1; **7**-1; **5**-1; **4**-2), *Gallinula chloropus* (**3**-3; **4**-5), *Fulica atra* (**3**-2; **7**-1; **4**-3), *Charadrius dubius* (**3**-1), *Charadrius morinellus* (**3**-2; **4**-2), *Phalaropus fulicarius* (**4**-1), *Calidris alba* (**2**-3), *Calidris canutus* (**2**-1; **7**-1; **4**-1), *Calidris ferruginea* (**5**-2), *Calidris temmnickii* (**2**-1), *Calidris* sp. (**3**-1), *Arenaria interpres* (**4**-1), *Tringa stagnatilis* (**3**-1), *Tringa ochropus* (**1**-2; **2**-1; **3**-3; **4**-1), *Tringa* sp. (**3**-1), *Gallinago media* (**2**-3; **3**-1; **5**-1; **4**-3), Limicolae sp. (**3**-3; **7**-7; **5**-4; **4**-2), *Stercorarius paraziticus* (**7**-3; **5**-1; **4**-1), *Stercorarius pomarinus* (**4**-1), *Stercorarius skua* (**4**-1), Charadriiformes sp. (**2**-1; **3**-6; **8**-1; **4**-2), *Bubo scandiacus* (**5**-1; **4**-1), *Strix aluco* (**3**-3; **5**-1), *Strix uralensis* (**1**-1), *Strix nebulosa* (**1**-1), *Dryocopus martius* (**1**-2), *Picus canus* (**3**-3; **8**-1; **4**-1), *Dendrocopos major* (**1**-2; **3**-1), *Dendrocopos leucotos* (**1**-1; **3**-1), *Alauda arvensis* (**1**-1; **3**-1), *Hirundo rustica* (**7**-2), *Delichon urbicum* (**3**-1; **7**-2), *Anthus trivialis* (**2**-1), *Anthus petrosus* (**2**-1; **3**-1; **7**-3; **6**-1), *Anthus* sp. (**4**-1), *Motacilla alba* (**1**-2; **7**-4), *Bombycilla garrulus* (**1**-2; **4**-1), *Lanius excubitor* (**2**-1; **4**-2), *Prunella modularis* (**3**-1; **7**-1; **5**-1), *Sylvia communis* (**5**-1), *Sylvia curruca* (**2**-1; **7**-1), *Sylvia atricapilla* (**1**-1), *Phylloscopus trochilus* (**3**-1), *Phylloscopus collybita* (**3**-1; **5**-1), *Muscicapa striata* (**1**-1), *Ficedula hypoleuca* (**2**-1; **3**-1), *Saxicola rubetra* (**7**-1), *Oenanthe oenanthe* (**2**-1; **3**-1; **8**-2; **7**-1; **4**-2), *Phoenicurus phoenicurus* (**3**-1; **4**-1), *Erithacus rubecula* (**1**-3; **3**-2; **7**-2; **5**-2; **4**-1), *Turdus sp.* (**3**-1; **8**-1; **4**-6), *Parus major* (**7**-1), *Periparus ater* (**3**-1), *Cyanistes caeruleus* (**3**-1), *Sitta europaea* (**7**-1), *Troglodytes troglodytes* (**3**-1; **4**-1), *Cinclus cinclus* (**1**-3; **5**-1), *Emberiza citrinella* (**3**-2; **4**-1), *Emberiza schoeniclus* (**1**-1; **3**-3), *Emberiza pusilla* (**2**-1), *Plectrophenax nivalis* (**1**-1; **2**-1; **3**-1; **7**-4; **5**-1; **4**-1), *Calcarius lapponicus* (**3**-1), *Fringilla montifringilla* (**1**-1; **2**-2; **3**-4), *Carduelis spinus* (**3**-2; **4**-3), *Carduelis flammea* (**2**-1; **3**-2; **8**-1; **5**-1), *Carduelis hornemanni* (**2**-1; **3**-1; **7**-7; **4**-1), *Carduelis* sp (**4**-3), *Pyrrhula pyrrhula* (**6**-1), *Pinicola enucleator* (**2**-1; **7**-1; **5**-2), *Loxia curvirostra* (**1**-1; **2**-2; **3**-2; **7**-1; **5**-1; **4**-1), *Loxia pytyopsittacus* (**1**-1; **2**-1; **3**-1), *Passer domesticus* (**4**-1), *Passer montanus* (**3**-1), *Nucifraga caryocatactes* (**3**-1; **4**-1), *Coloeus monedula* (**2**-1; **3**-4; **4**-1), Passeriformes sp. (**1**-2; **2**-3; **3**-1; **8**-1; **7**-1; **5**-2; **4**-2), Passeriformes sp.juv (**4**-2), Aves sp. (**3**-2; **7**-14; **5**-4; **4**-3), Aves sp.juv. (**1**-6; **2**-16; **3**-20; **8**-1; **7**-62; **5**-22; **4**-46), *Bufo bufo* (**1**-1; **3**-2), *Zootoca vivipara* (**4**-1), *Esox lucius* (**2**-1), Gastropoda sp. (**5**-1), Bivalvia sp. (**4**-1)

no single species forming more than 1% of the samples.

Given the large amount of material with a wide range of different species, the majority of the identified prey species are found across several regions, but certain similarities can be identified in the spectrum of species found in the colder basins of regions Orava, Liptov, Turiec, Spiš and Muránska Planina Mts. A specific variant of eagle-owl diet in which the European water vole *A. amphibius* is predominant was identified in the cooler Horehronie region in the northern part of Muránska Planina NP and in Slovenský Raj NP in the southern part of the Spiš region, areas which feature meadows and pasture in their foothills (Obuch 2002). In the milder valleys of Považie, Ponitrie, Pohronie, Rimavská Kotlina Basin and Slovenský Kras Mts. in which livestock farming is more intensive, amphibians formed a below-average share of eagle-owl diets, with owls hunting larger prey (Table 3).

River valleys are characteristic for many regions in Slovakia, and eagle-owls typically nest in the mountains on their edges. A study by Obuch (2021b) categorised results according to three time periods: the pre-socialist period of more than 70 years ago, the socialist period from 30 to 70 years ago, and the post-socialist period of the last thirty years. In the earliest period, eagle-owls nested deep in the mountains in pastureland, with small mammals and amphibians forming the bulk of their diet. During the socialist era, these localities were reforested, and eagle-owls relocated to valleys with intensive agricultural activities. The most recent period has seen a decline in livestock farming and the overgrowth of lower mountain meadows and pastures, a process which is also changing the availability of prey for eagle-owls.

Turkey

In the 6,534 prey remains identified in Turkey, mammals formed the predominant share (Mammalia, 90.1%, 40 species). In the mountain steppes of eastern Turkey, the Brant's hamster *Mesocricetus brandti* (30.2%) and grey hamster *Cricetulus migratorius* (17.4%) were the most common species, but several species of vole were also numerous; *Microtus obscurus* (21.8%), *M. socialis* (4.6%) and *M. mystacinus* (1.2%). *Meriones tristrami* (3.2%) and *Apodemus witherbyi* (2.4%) were the most commonly found prominent members of the Muridae family and *Seratulus williamsi* (1.2%) from the Dipodidae family. Birds (Aves, 6.8%, at least 83 species) were rarer but more diverse in terms of species. The marsh frog *Pelophylax ridibundus* (1.5%) was the most common form of other vertebrate (Amphibia, Reptilia, Pices, 1.9%), and beetles Coleoptera (0.8 %) were the most frequently identified invertebrate (Evertebrata, 1.2%).

The most notable finds were the Setzer's mouse-tailed dormouse *Myomimus setceri* which was identified in three localities in eastern Turkey (Obuch 2001b) and the Afghan pika *Ochotona* cf. *rufescens* from a locality in Ishak Pasa Sarayi (Čermák et al. 2006). The Anatolian blind mole-rat *Nannospalax xanthodon* and the Asia minor ground squirrel *Spermophilus xanthoprimnus* were hunted in the plains of central Anatolia (Sample no. 1 in Table 4). The vole species *M. mystacinus* and *M. socialis* were identified in the Hattutas locality, the Vinogradov's jird *Meriones vinogradovi* was found in samples from the Sarikamis location, and the Transcaucasian mole vole *Ellobius lutescens* at the Bendimahi site (Table 4).

The Near East: Syria, Israel, Jordan

The southern extent of the eagle-owl's range is inhabited by the *Bubo bubo interpositus* sub-species, while the closely related Pharoah eagle-owl *Bubo ascalaphus* is found in the deserts of eastern Jordan (Obuch 2018).

Tab. 2. Eagle-owl diet in various regions of the Czech Republic.
Tab. 2. Potrava výra skalného v rôznych regiónoch Českej republiky.

Region	Pálava		Moravský kras		Podyjí		Kokořínsko		Třeboňsko		Šumava		Vysočina		Total	%
Species \ Region No.	1		3		2		6		4		5		7			
Lepus europaeus	1+	76		40	1-	26		60		5		254		143	604	4.29
Sciurus vulgaris	1+	11		2		13		10		1		35		14	86	0.61
Coloeus monedula	1+	8						2			1-	0		1	11	0.08
Chroicocephalus ridibundus	3+	109	2-	0	3-	3- 0		34	1+	10	1-	68	4-	1	222	1.58
Columba livia dom.	1+	62	1-	4	1+	50		33		2		141	1-	52	344	2.44
Cricetus cricetus	3+	57		7	1+	22		7			2-	9	3-	0	102	0.72
Phasianus colchicus	1+	38	1-	3	1+	32	1-	9				113	3-	3	198	1.41
Perdix perdix	1+	36	1+	26		36	2-	7		2		194	1-	50	351	2.49
Falco tinnunculus	1+	10	1+	8		7		8			1-	19		9	61	0.43
Erinaceus sp.	1+	85	1+	55		58	1-	37		8		247		124	614	4.36
Apodemus sylvaticus	1+	59	1+	45		43	2-	17		11		285		97	557	3.96
Coturnix coturnix		1	2+	12		2					1-	0			15	0.11
Scolopax rusticola		1	1+	6		5		5			1-	8		6	31	0.22
Strix aluco		5	1+	17	2+	53		8		1	1-	22	2-	4	110	0.78
Columba oenas		2		4	2+	15		4			2-	0	1-	0	25	0.18
Streptopelia turtur					2+	12		2			1-	2		1	17	0.12
Asio otus		14		9	1+	22		20				60	1-	19	144	1.20
Turdus merula		9		5	1+	28		23		3		85		30	183	1.30
Corvus cornix+frugilegus		1		7	1+	13		6				29	1-	6	62	0.44
Myodes glareolus		6		5	1+	28		15		1	1-	35	1-	14	104	0.74
Glis glis				3	1+	6					1-	0			9	0.06
Vulpes vulpes				3	1+	11		3			1-	2		3	22	0.16
Lucanus cervus		2			1+	7					1-	0			9	0.06
Anas platyrhynchos		6	1-	0	1+	20	1-	7	2+	13		66	1-	10	122	0.87
Apodemus flavicollis		10		16	1+	54	2+	66		1	2-	31		33	211	1.50
Ondatra zibethicus					1+	10	1+	17				19	1-	4	50	0.36
Turdus philomelos		5		6	1+	18	1+	30		2	1-	42		22	125	0.89
Arvicola amphibius	4-	2	2-	7	1-	54	1+	272	1-	9		524	1-	105	973	6.92
Turdus pilaris		1		2			1+	12				9		7	31	0.22
Sturnus vulgaris						2	2+	23			2-	1		3	29	0.21
Rallus aquaticus						3	2+	19		1	2-	1		2	26	0.18
Porzana porzana							1+	7		1		2			10	0.07
Anas crecca		2					1+	6				3		2	13	0.09
Anas querquedula						1	1+	6		1		3			11	0.08
Gallinula chloropus		3				10	1+	21		4	1-	21	1-	7	66	0.47
Corvus corax							1+	5							5	0.04
Tachybaptus ruficollis	1-	3	1-	0		15	1+	30	1+	12		53	3-	1	114	0.81
Podiceps nigricollis		2				1		4	2+	12	1-	6	1-	0	25	0.18
Coleoptera sp.		1						3	1+	5		2		1	12	0.09
Fulica atra	2-	2	2-	0		17		33	2+	31	1+	152	2-	9	244	1.73
Vanellus vanellus		3				5		3		1	1+	41		8	61	0.43
Aythya fuligula								2		1	1+	20		1	24	0.17
Microtus agrestis	1-	0	1-	0		5		9		2	1+	70	2-	3	89	0.63
Sorex araneus				1		1		1			1+	16			19	0.14
Rana temporaria	1-	0		5		2		18			1+	89		1	115	0.82
Microtus arvalis	1-	189		331	1-	382	1+	487	1-	65		3087	1+	1595	6136	43.61
Rattus norvegicus		55	1-	20		78		95	1-	7	1-	271	1+	342	868	6.17
Buteo buteo	1-	1		1		13		12		2		55	1-	11	95	0.68
Garrulus glandarius		3		4		9		9			1-	15		8	48	0.34
Columba palumbus		1		2		2		3			1-	0		1	9	0.06
Talpa europaea		8		1		10		5		1		32	1-	6	63	0.45

Tab. 2. continuation / pokračovanie.

Region	Pálava	Moravský kras	Podyjí	Kokořínsko	Třeboňsko	Šumava	Vysočina		
Species \ Region No.	**1**	**3**	**2**	**6**	**4**	**5**	**7**	**Total**	**%**
Alauda arvensis	6	2	7	5		23	1- 1	44	0.31
Mustela nivalis	5	6	5	6		37	1- 7	66	0.47
Mustela erminea		4	3	4		14	2	27	0.19
Turdus viscivorus	3		3	3		11	3	23	0.16
Pica pica	2	1		3	1	4	5	16	0.11
Streptopelia decaocto	1	1	3	1		5	5	16	0.11
Apodemus microps	1	3	4			6	1	15	0.11
"Mammalia, 41 species"	**1- 571**	**566**	**822**	**1120**	**1- 111**	**5012**	**2504**	**10706**	**76.09**
"Aves, 102 + species"	**1+ 364**	**133**	**1+ 443**	**1+ 455**	**1+ 108**	**1387**	**1- 309**	**3199**	**22.74**
"Amphibia,Reptilia,Pisces"	**1- 2**	**9**	**12**	**22**	**0**	**1+ 96**	**3- 2**	**143**	**1.01**
Evertebrata	**3**	**0**	**1+ 7**	**3**	**1+ 5**	**1- 3**	**1**	**22**	**0.16**
Total	**940**	**708**	**1284**	**1600**	**224**	**6498**	**2816**	**14070**	**100**
Diversity Index H'	**2.93**	**2.44**	**3.16**	**2.96**	**2.71**	**2.44**	**1.88**	**2.66**	

Region: 1 – **Pálava**: Pálava PLA, **3** – **Moravský kras:** Moravský kras PLA, **2** – **Podyjí**: Podyjí NP, **6** – **Kokořínsko**: Kokořínsko PLA and České Švícarsko NP, **4** – **Třeboňsko**: Třeboňsko PLA, **5** – **Šumava**: Šumava NP, **7** – **Vysočina:** Vysočina county.

Other species (**Region**-number): *Sorex minutus* (**6**-1; **5**-8), *Crocidura leucodon* (**1**-1; **3**-2; **2**-1; **5**-1; **7**-1), *Crocidura suaveolens* (**1**-2; **3**-1), *Myotis bechsteinii* (**6**-1), *Myotis myotis* (**5**-1), *Vespertilio murinus* (**3**-1; **5**-1), *Eptesicus serotinus* (**1**-1; **3**-1), *Nyctalus noctula* (**2**-1; **6**-1), *Nyctalus leisleri* (**5**-1), *Spermophilus citellus* (**1**-2; **2**-3; **6**-1), *Eliomys quercinus* (**3**-2), *Muscardinus avellanarius* (**3**-2; **5**-3; **7**-1), *Mus* cf. *musculus* (**1**-1; **3**-4; **2**-1; **5**-3; **7**-3), *Micromys minutus* (**2**-1; **6**-3; **5**-3; **7**-4), *Apodemus agrarius* (**6**-1), *Terricola subterraneus* (**3**-1; **2**-1; **5**-6; **7**-1), *Martes* sp. (**5**-3), *Mustela putorius* (**3**-1), *Mustela vison* (**5**-2), *Felis catus dom.* (**5**-3), *Capreolus capreolus* (**6**-1; **5**-2), Artiodactyla sp. (**3**-2; **2**-1; **5**-1; **7**-1), *Podiceps cristatus* (**6**-1; **4**-1; **5**-4; **7**-1), *Ardea cinerea* (**5**-1), *Cygnus olor* (**5**-1), *Anser anser dom.* (**5**-2), *Anas strepera* (**2**-1), *Anas penelope* (**7**-1), *Anas acuta* (**6**-2), *Aythya ferina* (**5**-1), *Bucephala clangula* (**6**-4; **5**-6), Anatidae sp. (**4**-1; **5**-6; **7**-1), *Accipiter gentilis* (**2**-5; **6**-2; **5**-5; **7**-1), *Accipiter nisus* (**2**-2; **6**-2), Accipitridae sp. (**2**-1), *Falco peregrinus* (**6**-1), *Falco subbuteo* (**3**-2), *Tetrastes bonasia* (**5**-3), *Lyrurus tetrix* (**5**-1), *Gallus gallus dom.* (**1**-1; **6**-1; **5**-4), *Crex crex* (**6**-2; **7**-2), *Tringa totanus* (**6**-1), *Tringa glareola* (**6**-1), *Tringa ochropus* (**6**-1), *Philomachus pugnax* (**6**-1), *Gallinago gallinago* (**6**-1; **7**-1), *Gallinago* sp. (**5**-1), *Larus* sp. (**7**-1), *Sterna hirundo* (**1**-1), *Cuculus canorus* (**2**-3; **5**-1), *Tyto alba* (**1**-1; **2**-1; **6**-3; **5**-1), *Bubo bubo* (**1**-1; **2**-5; **5**-5; **7**-2), *Asio flammeus* (**6**-1; **7**-2), *Aegolius funereus* (**6**-1; **7**-1), *Athene noctua* (**3**-1; **2**-1; **6**-1; **5**-2), *Apus apus* (**1**-1; **2**-3; **6**-1), *Dryocopus martius* (**3**-1; **2**-2; **6**-1; **4**-1; **5**-4; **7**-1), *Picus canus* (**7**-1), *Picus viridis* (**5**-1), *Dendrocopos major* (**3**-1; **2**-3; **6**-4; **5**-3), *Dendrocopos leucotos* (**6**-1), *Jynx torquilla* (**2**-1), *Lullula arborea* (**3**-1; **6**-1), *Galerida cristata* (**1**-1; **3**-1; **5**-1), *Hirundo rustica* (**5**-1), *Delichon urbicum* (**2**-1; **5**-3), *Anthus pratensis* (**6**-1), *Motacilla alba* (**1**-1; **5**-3), *Bombycilla garrulus* (**6**-1), *Lanius collurio* (**1**-1), *Acrocephalus palustris* (**1**-1), *Sylvia borin* (**3**-1), *Sylvia atricapilla* (**4**-1), *Regulus sp.* (**5**-1), *Phoenicurus ochruros* (**1**-1; **5**-1), *Erithacus rubecula* (**1**-1; **6**-1), *Turdus torquatus* (**7**-1), *Turdus iliacus* (**6**-2; **7**-2), *Parus major* (**3**-1; **6**-1; **5**-2), *Poecile palustris* (**3**-1), *Sitta europaea* (**6**-1), *Emberiza citrinella* (**1**-2; **5**-2), *Emberiza schoeniclus* (**1**-1), *Fringilla coelebs* (**6**-1; **5**-5), *Carduelis chloris* (**6**-1), *Pyrrhula pyrrhula* (**5**-1), *Coccothraustes coccothr.* (**1**-2; **2**-2; **6**-4; **4**-1; **5**-1), *Serinus serinus* (**1**-1), *Passer domesticus* (**1**-3; **2**-1; **5**-2; **7**-1), *Passer montanus* (**7**-1), *Oriolus oriolus* (**1**-1; **6**-1; **5**-1), *Nucifraga caryocatactes* (**2**-1; **5**-2), Passeriformes sp. (**1**-3; **3**-3; **2**-3; **5**-6), *Aves sp.* (**2**-2; **5**-29), Aves sp.juv. (**2**-1; **6**-2; **4**-3; **7**-1), *Pelobates fuscus* (**3**-2; **2**-1; **6**-1), *Pelophylax cf.esculentus* (**1**-2; **2**-2; **6**-1; **5**-1), *Lacerta agilis* (**2**-1), Colubridae sp. (**3**-1), *Salmo trutta* (**2**-2; **5**-1), Salmonidae sp. (**3**-1; **6**-1), Cypriniformes sp. (**2**-3; **7**-1), Pisces sp. (**2**-1; **6**-1; **5**-5), *Unio crassus* (**5**-1)

From the total of 1,813 eagle-owl prey items from the three countries, mammals formed the most numerous category (Mammalia, 58.4%, 36 species), with *M. tristrami* (22.4%), *Hemiechinus auritus* (6.1%), *Rattus norvegicus* (5.6%) and *Erinaceus concolor* (3.8%) being the most numerous species. The proportion of birds in the diets is also noteworthy (Aves, 35.8%, at least 67 species), most commonly *Columba livia* (6.6%), *Garrulus glandarius* (5.3%) and *Coturnix coturnix* (2.6%). Lizards of the Agamidae (0.7%) and Lacertidae (0.5%) families were the most numerous elements of the other vertebrates (Amphbia, Reptilia, Pisces, 2.3%), but also notable was the relatively high proportion of invertebrates in eagle-owl diets (Evertebrata, 3.5%), especially scorpions (Scorpiones, 1.6%).

In Jordan, the species *M. tristrami, R. norvegicus* and *G. glandarius* were the most common prey items; in Israel the Günther's vole *Microtus guentheri*, and in Syria the long-eared hedgehog *H. auritus* (Table 5).

Iran

Mammals were predominant in the 7,862 prey items from Iran (Mammalia, 77.0%, 55 species). Across the entire territory, *Meriones persicus* (17.6%) and *C. migratorius* (11.8%) were recorded most frequently. In terms of birds (Aves, 15.3%, at least 95 species), the most common species were rock doves *C. livia* (1.1%); in the case of other vertebrates (Amphibia, Reptilia, Pisces, 5.0%) the Agamidae family (1.6%) and the marsh frog *Pelophylax ridibundus* (1.5%) predominated, as did beetles (Coleoptera 1.9%) among invertebrates (Evertebrata, 2.7%).

The fauna identified in samples from the northern Zagros mountains was similar to that found in eastern Turkey, with the species *M. brandti*, *S. williamsi, M. obscurus* and *M. setzeri* being characteristic. In the milder areas of the central Zagros range, *M. persicus, C. migratorius* and *E. lutescens* were commonly recorded, while *Meriones libycus, Meriones crasus* and *H. auritus* were more common in the more arid regions. The endemic species *Microtus irani* was found in the southern Zagros mountains; *Tatera indica* and *Nesokia indica* were common in Balochistan and Mesopotamian regions of Iran, and *Ellobius fuscocapillus, Ochotona rufescens, Microtus afghanus* and *Meriones meridianus* in the Koppeh Dagh Mts. (Table 6).

Tab. 3. Eagle-owl diet in various regions of the Slovakia.
Tab. 3. Potrava výra skalného v rôznych regiónoch Slovenska.

Region	Liptov		Orava		Turiec		ŽK		Považie		Ponitrie		Pohr.		MP		Spiš		RK		SK		Total	%
Species \ Region No.	2		1		3		4		5		6		7		8		9		10		11			
Rana temporaria	1+	10690		4283		7094		7354	1-	1280	2-	375	1-	210	1-	1796	1-	1022	5-	11	6-	9	34124	32.1
Bufo bufo	1+	12		3		4		2		3						2		1					27	0.03
Tetrastes bonasia	1+	18		7	1-	2	1-	0								7		5				1	40	0.04
Columba palumbus	1+	46		19	1-	11	1-	11		10		8		2		4	1-	0				1	112	0.11
Delichon urbicum	1+	11		8		2		1		3						2							27	0.03
Salmo trutta	1+	67	1-	16	1+	75	1-	24	1-	5	2-	1		2		13	1+	21			1-	0	224	0.21
Dryomys nitedula	1+	26		15	2-	0	2-	1	1-	1					1+	19		1			1+	8	71	0.07
Microtus agrestis	1+	52		25	1-	14	1-	24	2-	0	2-	0			1+	33	2+	36		1	1-	0	185	0.17
Muscardinus avellanarius	1+	42	1+	33	1-	15	1-	17		15	1-	2		1	1+	18		5				3	151	0.14
Sicista betulina	1+	15	1+	11	1-	2	1-	0		1						6		3					38	0.04
Eliomys quercinus	1+	33	1-	5	1+	40		26		13	1+	13		3	1-	2		3					138	0.13
Turdus pilaris		26	1+	57	1-	23		33	1-	8		10		4		9	1-	2		3		8	183	0.17
Turdus viscivorus		13	1+	21	1-	8	1-	7		4		4		1		9		3		1	1+	7	78	0.07
Turdus philomelos	1-	40	1+	84		99	1-	59		31	1+	35		5		24		13	1+	12		11	413	0.39
Turdus torquatus		8	2+	23	2-	0		3									1+	6					40	0.04
Coloeus monedula		33	1+	46	2-	18		42	2+	64	1-	4		6	2-	4	1+	15			1+	11	243	0.23
Arvicola amphibius		1181	1+	1716	1-	786	2-	561	2-	135	2-	139	1+	131	2+	1944	2+	711	1-	40	1+	296	7640	1.00
Apodemus agrarius		78	1+	122	2-	28	1+	148	1-	27	2-	5	1-	0	3-	4	1-	7	2+	34		15	468	0.44
Buteo buteo		6	1+	21	1+	30		12		11		4		3		4		1		3			95	0.09
Microtus arvalis	1-	3432	1+	5574	1+	8588		6105		2375		1705		390		2637		1345	1-	275	1-	610	33036	31.1
Mustela nivalis	1-	59	1-	30	1+	151		87		37		26		7	1-	20		19		1		12	449	0.42
Galerida cristata	1-	0		2	1+	23		3		6		2				2				1		1	40	0.04
Anas querquedula	1-	0		5	1+	14	1-	0		4				1		3		1		2			30	0.03
Vanellus vanellus		19	1-	9	1+	47	1-	14		11		6	1+	8	1-	4		2	1+	8	1+	15	143	0.13
Mus musculus	1-	94	1-	97	1+	265		220	1+	102	1+	80	2-	1	2-	21	1+	64		6	1-	9	959	0.90
Apodemus flavicollis	2-	203	1-	353	1+	1040		795	1+	458	1+	398	1-	33	1-	177	2-	35		41		99	3632	3.42
Sciurus vulgaris	1-	40		37	1+	88		51		31	1+	22		1		17		12			1-	2	301	0.28
Falco tinnunculus	1-	24		27	1+	65		35	1+	29		9		5		11		7		3		10	225	0.21
Apodemus sylvaticus	1-	464	1-	530		1088	1-	1257	1+	771	1+	518	2-	15	2-	98	2-	52		54	1-	51	4898	4.61
Lepus europaeus	1-	95	1-	86	1-	91	1+	235	1+	133	2+	123		13	1-	32		44	1+	22	1+	43	917	0.86
Myodes glareolus	2-	42	2-	31		189	1+	198	2+	180	1+	68		7	1+	81	2-	7	1-	3	1-	12	818	0.77
Terricola subterraneus		52	1-	21	2-	16	1+	119	1+	46		11		2		29		8				6	310	0.29
Talpa europaea	1-	61		62	1-	74	1+	116	1+	53		20		6	1+	52	1-	7		6		10	467	0.44
Coturnix coturnix	1-	40	1-	33		100	1+	118	1+	48	1+	28		5		28	1-	5		2	1+	17	424	0.40
Pelophylax cf.esculentus	4-	0	3-	2	1-	19	2+	123	2+	68	1+	23		1	2-	2	2-	0		4		7	249	0.23
Athene noctua	1-	1	1-	1	1-	2	1+	16	1+	9	1+	7		1		1		1		2		1	42	0.04
Asio otus	1-	40	1-	64		113	1-	69	1+	102	1+	53	1+	25		37	1+	31	2+	27		18	579	0.55
Strix aluco	1-	24	1-	21	1-	42		62	2+	94		13	1+	11		24	2-	1		3		4	299	0.28
Columba oenas	1-	5	1-	5	1-	7	1-	12	1+	26	1+	14		1	1+	17		2	2+	13	1+	10	112	0.11
Scolopax rusticola	1-	28		30	1-	30		54	1+	35	1+	25	1+	10		24		14		1		6	257	0.24
Perdix perdix	2-	49	1-	85	1-	141		198	2+	240	2+	123	1+	24	1-	34	1-	18		13	2+	63	988	0.93
Phasianus colchicus	2-	3	2-	0	2-	4		25	2+	38	2+	23		3	1-	1	1-	0	2+	13		2	112	0.11
Corvus cornix+frugilegus	1-	88		162		231	1-	158	1+	186	1+	76	1+	31	1-	53		35	1+	20		27	1067	1.10
Turdus merula	1-	16		34		49	1-	26	1+	36	1+	34		7		22	1-	2	2+	23	1+	15	264	0.25
Anas platyrhynchos	1-	8		13		34	1-	13	1+	31		3	1+	9	1-	1		2	1+	6	1+	11	131	0.12
Erinaceus roumanicus	1-	96	1-	104	1-	163		177	2+	241	1+	121	2+	50	1-	54	1-	15	2+	36	1+	41	1098	1.30
Cricetus cricetus	2-	22	4-	0	3-	10	4-	5	2+	134	2+	72	1-	0	4-	0	2+	57	1-	0	3+	125	425	0.40
Pelobates fuscus	4-	0	3-	0		46	3-	4	1+	32	1-	4			2-	0	1-	0		1	4+	110	197	0.19
Cypriniformes sp.	2-	8		18	1-	23	1-	22	2+	63	1-	1	3+	27	1-	3	1-	1		5			171	0.16
Apodemus microps	1-	174	2-	51	1-	155		276	3+	622		75	3-	0	5-	2		53		17	1-	24	1449	1.36
Nyctalus noctula	1-	2	1-	1	1-	3		4	2+	25		3		2		1				1		1	43	0.04
Gallus gallus dom.		2				1		8	1+	11				1				1					24	0.02
Pica pica	1-	18	1-	17		52		41	1+	24		11		3		16		11		5		7	205	0.19
Crocidura suaveolens		5		2		4		6	1+	8	1+	10						1		2		3	41	0.04
Crocidura leucodon	1-	0		1		2		9		5	1+	7		1		1							26	0.02
Sturnus vulgaris	1-	5		11		13		15		5	1+	14		3		6		1		5		5	83	0.08
Lacerta viridis	1-	0			1-	0	1-	0		2	2+	16								3		3	24	0.02

Tab. 3. continuation / pokračovanie.

Region	Liptov		Orava		Turiec		ŽK		Považie		Ponitrie		Pohr.		MP		Spiš		RK		SK		Total	%
Species \ Region No.	2		1		3		4		5		6		7		8		9		10		11			
Lacerta agilis	1-	3		7		10	1-	4		4	1+	14				9		2				3	56	0.05
Lucanus cervus	1-	0	1-	0	1-	0	1-	0			2+	21		2					2+	9		4	36	0.03
Columba livia dom.	1-	49	1-	49		115		108		36	1+	64		11	2-	12	1-	11	1+	21	2+	54	530	0.50
Spermophilus citellus	3-	0	2-	0	3-	0	3-	0	1-	1	1+	16			1+	20	1+	13			3+	44	94	0.09
Rattus norvegicus	1-	267	1-	366	1-	541	1-	363		217	1+	295	2+	172	1+	308		118	3+	225	2+	333	3205	3.20
Alauda arvensis	1-	45		52	1-	52		71		22	1+	27	1+	13	1+	45		11		6		9	353	0.33
Myotis myotis	1-	2		5		13		13		9		1	1+	5		2		5		1		4	60	0.06
Eptesicus serotinus		10		6	1-	4		15		9		4		1	1+	11		4				1	65	0.06
Porzana porzana	1-	1		2		8		2		4		1			1+	9		1				3	31	0.03
Streptopelia turtur	1-	3		5	1-	5		11		7		6		1	1+	18		3				3	62	0.06
Coleoptera sp.	1-	2	1-	1		5		10		5						4		1	1+	8		2	38	0.04
Micromys minutus		11	1-	3		22	1-	8		4		4			1-	0			3+	24		2	78	0.07
Glis glis		30		21		32	1-	18		16	1-	1		4		8		3	1+	12	2+	24	169	0.16
Gallinula chloropus	2-	1	1-	6		17	1-	9		4		2		3		5			1+	10	3+	25	82	0.08
Garrulus glandarius	1-	25		33		40	1-	29		21		13		2		18	1-	1	1+	13	1+	12	207	0.19
Vulpes vulpes		13		16		20		21		8		9		2		4		5			1+	10	108	0.10
Tachybaptus ruficollis		3	1-	1		5		4		2		2		3						3	2+	15	38	0.04
Anas crecca	1-	1		2		12		4		4		1		2		2		1			1+	9	38	0.04
Fulica atra	1-	0		1		6		3		3		1		3		1				2	1+	7	27	0.03
Gallinago gallinago		5		1		5		1										1			1+	7	20	0.02
Streptopelia decaocto	1-	5		9		19		8		4		1		3		2				2	1+	8	61	0.06
Cuculus canorus	1-	2		3		7	1-	2		7		5				6		1			1+	6	39	0.04
Mustela erminea	1-	16		13		38		25		13		6		4		12		9				2	138	0.13
Erithacus rubecula	1-	0		8		8		5		2		2				3				1		1	30	0.03
Passer domesticus	1-	1		6		4		8		6		4				1						2	32	0.03
Accipiter gentilis		12	1-	1		8		6		3		2		1		1		2		2		1	39	0.04
Accipiter nisus		5	1-	0		6		5		4		4		1		3						1	29	0.03
Aegolius funereus		9		5	1-	2		4		2		3				4		5					34	0.03
Fringilla coelebs		9		8	1-	2		12		2				1		6						2	42	0.04
Coccothraustes coccothr.		3		3	1-	3		9		4		2		3		7		1				3	38	0.04
Crex crex		14	1-	7		24	1-	12		10		7		4		8		7		1		6	100	0.09
Sorex araneus		9		13		11		14		8		5				10		2		1		1	74	0.07
Neomys fodiens		18		13		11		16		4		1				7				1		1	72	0.07
Emberiza citrinella		6		11		8		9		7		2				5		2				2	52	0.05
"Mammalia, 65 species"	**1-**	**6690**		**9392**		**13547**		**10970**		**5728**	**1+**	**3778**		**853**	**1+**	**5650**		**2652**	**1+**	**805**	**1+**	**1807**	**61872**	**58.3**
"Aves, 140 + species"	**1-**	**875**		**1122**		**1638**		**1542**	**1+**	**1323**	**1+**	**711**	**1+**	**243**		**574**	**1-**	**258**	**2+**	**239**	**1+**	**475**	**9000**	**8.48**
"Amphibia, Reptilia, Pisces"	**1+**	**10813**		**4339**		**7282**		**7570**	**1-**	**1465**	**2-**	**452**	**1-**	**240**	**1-**	**1834**	**1-**	**1050**	**4-**	**26**	**3-**	**135**	**35206**	**33.2**
Evertebrata	**1-**	**5**	**1-**	**5**	**1-**	**5**		**12**		**6**	**2+**	**21**		**2**		**7**		**1**	**2+**	**18**		**6**	**88**	**0.08**
Total		**18383**		**14858**		**22472**		**20094**		**8522**		**4962**		**1338**		**8065**		**3961**		**1088**		**2423**	**106166**	**100**
Diversity Index H'		**1.74**		**2.10**		**2.90**		**2.22**		**2.90**		**2.79**		**2.69**		**2.14**		**2.16**		**2.94**		**3.60**	**2.35**	

Localities: 2 – **Liptov**, **1** – **Orava**, **3** - **Turiec**, **4** – **ŽK**: Žilinská kotlina Basin, **5** – **Považie**: Považské Podolie, Valley **6** – **Ponitrie**: Hornonitrianska Kotlina Basin, **7** – **Pohr.**: Pohronie Valley, **8** – **MP**: Muránska Planina Mts., **9** – **Spiš**, **10** – **RK**: Rimavská Kotlina Basin, **11** – **SK**: Slovenský Kras Mts.

Other species (**Region-**number): *Sorex minutus* (**2**-3; **1**-2; **3**-2; **4**-2; **5**-2; **6**-3), *Sorex alpinus* (**2**-1), *Neomys anomalus* (**2**-2; **1**-2; **3**-4; **4**-7; **5**-2; **6**-3; **8**-1; **9**-1; **11**-1), *Rhinolophus ferrumequinum* (**3**-1), *Rhinolophus hipposideros* (**3**-1; **4**-1; **6**-1), *Myotis mystacinus* (**2**-2; **3**-1; **5**-1; **7**-1; **8**-2; **9**-2; **11**-2), *Myotis brandtii* (**2**-1; **8**-1), *Myotis emarginatus* (**6**-1), *Myotis nattereri* (**1**-1; **8**-1), *Myotis bechsteinii* (**2**-2; **3**-3; **8**-3; **9**-1), *Myotis blythii* (**1**-1; **5**-1; **6**-1), *Vespertilio murinus* (**2**-5; **1**-2; **3**-9; **4**-4; **5**-3; **6**-2; **7**-1; **8**-1), *Eptesicus nilssonii* (**3**-1), *Pipistrellus pipistrellus* (**2**-3; **1**-1; **3**-5; **4**-5; **5**-5; **11**-1), *Barbastella barbastellus* (**2**-4; **3**-4; **4**-8; **5**-2; **6**-2; **8**-4), *Plecotus auritus* (**2**-2; **1**-3; **4**-1; **5**-3; **8**-1), *Plecotus austriacus* (**11**-1), *Rattus rattus* (**2**-1; **3**-1; **4**-1), *Dicrostonyx gulielmi* (**6**-1), *Ondatra zibethicus* (**2**-1; **1**-5; **3**-6; **4**-3; **5**-2; **9**-1; **10**-2; **11**-3), *Terricola tatricus* (**1**-3; **4**-2; **8**-2; **9**-1; **11**-2), *Lasiopodomys gregalis* (**6**-1), *Alexandromys oeconomus* (**6**-1; **11**-1), *Chionomys nivalis* (**2**-6; **1**-3; **9**-2), *Canis familiaris* (**2**-1; **4**-1), *Martes foina* (**1**-1; **4**-1), *Martes* sp. (**2**-1; **3**-1; **4**-1; **8**-1), *Mustela putorius* (**2**-5; **1**-3; **4**-1; **5**-1; **6**-1; **11**-2), *Mustela eversmanni* (**5**-1; **11**-2), *Mustela vison* (**3**-1), *Felis catus dom.* (**2**-2; **1**-1; **3**-2; **4**-1; **5**-2; **6**-1; **8**-2), *Sus scrofa* (**2**-2; **3**-1), *Cervus elaphus* (**1**-1; **8**-1), *Capreolus capreolus* (**2**-1), *Capra ibex hircus* (**4**-1), *Ovis ammon aries* (**2**-1; **5**-1), *Podiceps cristatus* (**4**-1), *Podiceps grisegena* (**8**-1), *Podiceps nigricollis* (**4**-1; **11**-3), *Ixobrychus minutus* (**1**-1; **11**-1), *Nycticorax nycticorax* (**5**-1), *Anser anser dom.* (**7**-1), *Anser fabalis* (**4**-1), *Anas penelope* (**5**-1), *Anas acuta* (**3**-1; **7**-2), *Aythya fuligula* (**1**-2; **8**-1; **11**-1), *Bucephala clangula* (**5**-1), Anatidae sp. (**2**-1; **1**-1; **3**-4; **4**-3; **5**-10; **6**-2; **7**-6; **8**-1; **11**-4), *Pernis apivorus* (**2**-1; **7**-1), *Aquila pomarina* (**2**-1), *Aquila* sp. (**3**-1), *Circus aeruginosus* (**11**-2), *Circus* sp. (**4**-1; **8**-2), Accipitridae sp. (**3**-1; **8**-2; **10**-1), *Falco peregrinus* (**2**-2; **4**-4; **5**-1; **11**-2), *Falco subbuteo* (**1**-2), *Falco columbarius* (**2**-1), *Falco* sp. (**3**-3; **4**-2; **5**-1), *Lyrurus tetrix* (**2**-4; **1**-1; **5**-4; **9**-3), *Tetrao urogallus* (**2**-3; **1**-2; **9**-1), *Meleagris gallopavo dom.* (**4**-1), Galliformes sp. (**1**-2; **8**-1), *Rallus aquaticus* (**2**-2; **1**-3; **3**-9; **4**-1; **5**-3; **6**-3; **7**-1; **8**-1; **10**-1; **11**-1), *Porzana parva* (**3**-1; **4**-1; **6**-1; **11**-1), Rallidae sp. (**3**-1; **5**-2; **10**-1), *Charadrius dubius* (**2**-1; **1**-2; **4**-5; **5**-1; **6**-4), *Pluvialis apricaria* (**4**-1; **11**-1), *Tringa glareola* (**2**-1; **3**-3), *Tringa ochropus* (**5**-1), *Tringa* sp. (**3**-2; **8**-2; **9**-2), *Actitis hypoleucos* (**2**-7; **1**-6; **3**-5; **4**-10; **5**-2; **6**-4; **7**-2; **8**-1), *Philomachus pugnax* (**1**-2; **3**-2; **4**-1; **5**-1; **8**-1), *Limosa limosa* (**5**-1), *Gallinago* sp. (**7**-1), *Lymnocryptes*

minimus (**11**-1), Limicolae sp. (**1**-1; **5**-3), *Chroicocephalus ridibundus* (**3**-3; **4**-2; **8**-1), *Sterna hirundo* (**3**-1; **4**-1; **5**-2), *Chlidonias niger* (**2**-1; **3**-1; **4**-2), *Columba* sp. (**3**-1; **4**-41; **5**-11), *Tyto alba* (**1**-2; **4**-2; **5**-2; **10**-2; **11**-1), *Bubo bubo* (**2**-4; **1**-5; **3**-5; **4**-8; **5**-4; **6**-1; **8**-6; **9**-1; **10**-3; **11**-5), *Asio flammeus* (**2**-2; **3**-1; **4**-2; **5**-1; **6**-1), *Otus scops* (**6**-2), *Strix uralensis* (**2**-3; **4**-1; **5**-1; **9**-1; **11**-1), *Caprimulgus europaeus* (**2**-3; **1**-2; **3**-3; **4**-6; **5**-1; **6**-1; **8**-4; **11**-4), *Apus apus* (**4**-2; **5**-1; **7**-1), *Coracias garrulus* (**6**-1; **8**-2), *Upupa epops* (**8**-1), *Dryocopus martius* (**2**-2; **1**-2; **3**-2; **4**-2; **8**-1; **9**-1), *Picus canus* (**5**-2), *Picus viridis* (**4**-2; **5**-1; **9**-1), *Dendrocopos major* (**2**-2; **4**-1; **5**-1), *Dendrocopos syriacus* (**5**-1; **9**-1), *Dendrocopos medius* (**2**-1), *Dendrocopos leucotos* (**4**-1), *Jynx torquilla* (**2**-1; **1**-1; **5**-2; **8**-1), *Lullula arborea* (**2**-3; **1**-4; **3**-3; **4**-10; **5**-3; **6**-2; **8**-4; **9**-2; **11**-1), *Hirundo rustica* (**2**-3; **1**-1; **3**-1; **5**-1; **11**-1), *Riparia riparia* (**1**-2), *Anthus trivialis* (**2**-2; **1**-6; **7**-1; **8**-2; **9**-1), *Anthus pratensis* (**4**-1), *Anthus spinoletta* (**2**-1; **4**-2), *Motacilla alba* (**2**-2; **3**-2; **4**-5; **5**-1; **8**-2; **11**-2), *Motacilla cinerea* (**5**-1; **8**-1; **11**-1), *Bombycilla garrulus* (**1**-1), *Lanius excubitor* (**3**-1; **4**-1; **6**-2), *Lanius minor* (**2**-1; **3**-2; **4**-7; **6**-2; **8**-1), *Lanius collurio* (**2**-7; **1**-10; **3**-1; **4**-10; **5**-1; **6**-3; **8**-3; **9**-2; **11**-2), *Acrocephalus palustris* (**2**-1; **8**-1), *Hippolais icterina* (**3**-2), *Sylvia atricapilla* (**2**-1; **1**-1; **3**-2; **6**-2; **8**-1), *Phylloscopus sibilatrix* (**2**-1; **4**-1), *Regulus sp.* (**1**-1), Sylviidae sp. (**2**-2; **4**-5; **7**-1), *Muscicapa striata* (**1**-1; **4**-1), *Saxicola rubetra* (**3**-1), *Oenanthe oenanthe* (**4**-1; **6**-2), *Phoenicurus ochruros* (**3**-4; **5**-1; **8**-1), *Turdus iliacus* (**2**-1; **1**-2; **3**-1; **4**-1; **9**-1), *Turdus* sp. (**3**-2), *Parus major* (**2**-1; **1**-1; **3**-1; **4**-2; **6**-1; **8**-2), *Periparus ater* (**8**-1), *Cyanistes caeruleus* (**1**-2; **6**-1), *Lophophanes cristatus* (**8**-1; **9**-1), *Poecile palustris* (**4**-2), *Parus* sp. (**4**-1), *Sitta europaea* (**3**-1; **8**-1), *Troglodytes troglodytes* (**8**-2), *Cinclus cinclus* (**2**-1; **3**-1; **5**-1), *Emberiza calandra* (**2**-1; **1**-1; **3**-1; **5**-2; **8**-1), *Emberiza schoeniclus* (**7**-1; **8**-2), *Emberiza* sp. (**2**-1), *Carduelis carduelis* (**2**-2; **1**-5; **3**-4; **5**-1; **11**-1), *Carduelis spinus* (**4**-1), *Carduelis cannabina* (**2**-1; **1**-1; **3**-1; **5**-1; **11**-2), *Carduelis chloris* (**2**-1; **1**-1; **4**-1; **6**-1; **9**-1; **10**-1; **11**-1), *Pyrrhula pyrrhula* (**2**-1; **1**-1), *Serinus serinus* (**1**-1; **3**-1), *Loxia curvirostra* (**2**-4; **1**-2; **9**-1), Fringillidae sp. (**1**-1; **8**-1), *Passer montanus* (**2**-1; **4**-3; **5**-1; **11**-1), *Oriolus oriolus* (**6**-2), *Nucifraga caryocatactes* (**2**-3; **1**-6; **3**-4; **4**-2; **5**-1; **8**-1; **9**-2), *Corvus corax* (**2**-4; **3**-2; **4**-5; **5**-1; **9**-1; **10**-1; **11**-2), Passeriformes sp. (**2**-11; **1**-11; **3**-27; **4**-10; **5**-18; **6**-15; **7**-1; **8**-10; **9**-7; **10**-2; **11**-5), Aves sp. (**2**-5; **1**-2; **3**-2; **4**-7; **5**-6; **6**-1; **7**-3; **9**-1; **11**-1), Aves sp.juv. (**1**-3; **3**-4; **6**-2; **7**-1; **8**-4; **9**-1), *Bombina variegata* (**2**-2), *Bombina sp.* (**1**-1), *Bufotes viridis* (**2**-2; **3**-2; **4**-2; **5**-1), Bufonidae sp. (**2**-2; **9**-1), *Hyla arborea* (**2**-2; **3**-2; **4**-1), *Rana dalmatina* (**6**-3), *Rana arvalis* (**5**-1), *Pelophylax ridibundus* (**3**-1; **6**-5; **11**-2), *Anguis fragilis* (**4**-1), *Lacerta muralis* (**3**-3; **4**-1; **5**-2; **6**-1; **10**-1), *Lacerta* sp. (**1**-3; **4**-2; **8**-2; **9**-1), *Zootoca vivipara* (**2**-1; **3**-2; **4**-1; **8**-3), *Natrix natrix* (**3**-1; **4**-2; **8**-1), Colubridae sp. (**2**-2; **1**-1; **4**-1; **6**-2; **10**-1), Serpentes sp. (**5**-2; **8**-1; **11**-1), Pisces sp. (**2**-22; **1**-5; **4**-26; **5**-2; **6**-7; **8**-2; **9**-1), Hymenoptera sp. (**4**-1), *Astacus* sp. (**5**-1), Limacidae sp. (**2**-3; **1**-4; **4**-1; **8**-3; **10**-1)

Southern Kyrgyzstan

Mammals were the predominant prey type among the 4,805 eagle-owl prey items (Mammalia, 81.0%, 30 species). In more arid regions, the midday jird *Meriones meridianus* was the dominant species (27.4%), while the vole species *Microtus juldaschi* (14.9%) and *Ellobius tancrei* (14.1%) were more common in mountainous regions. In terms of birds (Aves, 16.5%, at least 65 species), game species were hunted most frequently: *Alectori chukar* (3.3%), *Coturnix coturnix* (1.0%) and *Perdix dauurica* (0.7%). Other vertebrates (Amphibia, Reptilia, Pisces, 0.9%) formed a less significant component of the eagle-owl diet in this material, with invertebrates being recorded in greater numbers (Evertebrata, 1.6%), especially Coleoptera (1.2%) and Scorpiones (0.4%) (Table 7).

The findings from localities at lower elevations with more arid climates (Sample no. 1 in Table 7) and at higher elevations with more humid conditions (Sample no. 4 in Table 7) are summarised. Sample no. 2 (in Table 7) was collected in Dvachan Ungur cave where eagle-owls have adapted to hunt bats from colonies of *Myotis blythii*. In the valley of Kalek was the eagle-owls specialise in hunting of birds.

Mongolia

Mammals were the predominant prey in the 430 identified prey remains (Mammalia, 87.2%, 12 species). The most common species was the Alpine pika *Ochotona alpina* (42.8%), but other represented mammals included *Lepus tolai, Orietallactaga sibirica, Phodopus campbelli, Alticola strelzowi, A. barakshin* and *Ellobius tancrei* (Table 8).

Larger samples of eagle-owl pellets were collected at sixteen sites in central and western Mongolia by German researchers over the course of several expeditions (Stubbe et al. 2016). A higher proportion of species from the Dipodidae and Gerbillidae families were recorded in the more arid regions than in the Altai mountains.

Baikal

Seven species of mammal were identified in the 72 prey remains (Mammalia, 59.7%). *Alexandromys fortis* (37.5%) and *Urocitellus undulatus* (11.1%) were the most common species, but there was also a relatively high number of birds (Aves, 21.2%, 12 species) and other vertebrates (Amphibia, Reptilia, Pisces, 11.1%) (Table 8).

A larger sample from eagle-owl pellets collected in the western part of the Pribaikalie region was examined by Rjabcev & Rezin (2009). The predominant species were found to be the rodent species *Cricetulus barabensis*, *Lasiopodomys gregalis* and *Arvicola amphibius*.

Sakhalin

Mammals were the predominant component of the 1,491 eagle-owl prey remains (Mammalia, 88.4%, 19 species), with the following species being most common: *Craseomys rufocanus*, *Myodes rutilus, Ochotona hyperborea* and *Pteromys volans*. Among the birds (Aves, 9.4%, 24 species), the hazel grouse *Tetrastes bonasia*, one of the more common taiga species, was remarkably well-represented (6.2%) (Table 8). Only small settlements of fewer than fifty inhabitants are found within a 100 km radius; the surrounding conifer forests are prone to natural forest fires, and the resulting stands of new growth prove to be suitable territories for hunting by eagle-owls during their initial stages.

It can be assumed that the same conditions have prevailed for at least 1200 years. Remains of the brown rat *Rattus norvegicus* were also identified in the sample, which indicates that this rodent had been present on the territory even prior to the worldwide expansion of the species' range through its position as a synanthrope. Brown rats still survive in the locality, and one specimen was captured by the author in a local stream during a sample-collecting expedition to the site.

Tab. 4. Diet of eagle-owl diet in Turkey.
Tab. 4. Potravy výra skalného v Turecku.

Species \Sample No	1		2		3		5		4		6		Total	%
Nannospalax xanthodon	1+	6		5		12	1-	0		4		9	36	0.55
Spermophilus xanthoprymnus	1+	5				2		3					10	0.15
Meriones tristrami	2+	44		25	1+	137	3-	1	4-	0	4-	0	207	3.17
Microtus mystacinus	1+	10	3+	71	3-	0	2-	0	2-	0	3-	0	81	1.24
Mus sp.	1+	13	2+	59		29	2-	0		23	3-	2	126	1.93
Pelobates syriacus			1+	9									9	0.14
Coleoptera sp.		1	2+	43	2-	2	1-	1	1-	3	1-	4	54	0.83
Pelophylax ridibundus		5	1+	18	2-	6	1+	34	1-	9		24	96	1.47
Scratulus williamsi		5	1+	17	1-	13	1+	24	1-	8	1-	9	76	1.16
Microtus socialis	1-	3	1+	60	1-	60	1+	88	1+	91	5-	0	302	4.62
Coturnix coturnix				3	1+	19				3	1-	2	27	0.41
Orthoptera sp.					1+	13							13	0.20
Mesocricetus brandti		90		195	1+	744	1+	341		396	1-	204	1970	30.15
Myomimus setzeri							1+	6		3		4	13	0.20
Chionomys nivalis			1-	1		16	1+	20		13		10	60	0.92
Falco tinnunculus		2		1			1+	6		2		2	13	0.20
Petronia petronia				3		13	1+	12	1-	2		9	39	0.60
Agamidae sp.		1					1+	6					7	0.11
Apodemus witherbyi	1-	2		16		42	1-	6	1+	59		33	158	2.42
Cricetulus migratorius	1-	21		122		404	3-	19	1+	507	2-	65	1138	17.42
Meriones vinogradovi			1-	0	3-	0	1-	0	2+	64	2-	0	64	0.98
Microtus obscurus	4-	0	6-	0	1-	285	1-	82	7-	0	2+	1056	1423	21.78
Ellobius lutescens					1-	0		5	1-	0	1+	17	22	0.34
Carduelis carduelis									1+	1	1+	8	9	0.14
Passer domesticus		1		1		6		1	1+	1	1+	10	20	0.31
Crocidura suaveolens		2		4		14		1	1-	0		10	31	0.47
Alectoris chukar		3		4		15		4	1-	0		7	33	0.51
Perdix perdix		1				7		4		9		4	25	0.38
Columba livia		4		2		6		3		1		7	23	0.35
Sturnus vulgaris		1		4		4				1		7	17	0.26
Erinaceus concolor		4		3		3				5			15	0.23
Alauda arvensis		1		2		3		4				4	14	0.21
Mustela nivalis						3		3		1		3	10	0.15
Columba oenas						6		4					10	0.15
Corvus cornix+frugilegus		1				1		4		3		1	10	0.15
Galerida cristata						3		2				3	8	0.12
"Mammalia, 39 species"		**223**		**592**		**1809**		**612**		**1195**		**1456**	**5887**	**90.10**
"Aves, 83 + species"	**1+**	**34**		**41**		**145**	**1+**	**78**	**1-**	**35**		**111**	**444**	**1.80**
"Amphibia,Reptilia,Pisces"		**7**	**1+**	**28**	**2-**	**6**	**2+**	**47**	**1-**	**10**		**25**	**123**	**1.88**
Evertebrata		**3**	**2+**	**44**		**22**	**1-**	**3**	**2-**	**3**	**1-**	**5**	**80**	**1.22**
Total		**267**		**705**		**1982**		**740**		**1243**		**1597**	**6534**	**100**
Diversity Index H'		**2.62**		**2.49**		**2.20**		**2.26**		**1.78**		**1.56**	**2.46**	

Sample No: 1: Aksaray, 12.4.2001, Demir Kazikoyl, 10.6.1992, Pozanti, 5.5.2001, Tuz Golu, 14.6.1998, Yapraghisar, 11.6.1992, 6.10.2005, Karadut, 7.6.1992; **2**: Hattutas, 22.4.1996; **3**: Horasan, 14.5.1996, 21.5.1997, 21.10.1998, 27.4.200, 23.10.2002, Ani, 20.5.1997, Tuzluca, 20.5.1997; **5**: Ishak Passa Sarayi, 24.4.1996, 30.4.1997, 30.9.1998, 1.10.2002; **4**: Sarikamis, 4.6.1992; **6**: Bendimahi, 5.6.1992, Tatvan, 6.6.1992.

Other species (**Sample-**number): *Sorex volnuchini* (**3**-1; **4**-1), *Neomys teres* (**4**-1; **6**-3), *Myotis nattereri* (**6**-1), *Myotis blythii* (**3**-1; **5**-1), *Eptesicus serotinus* (**1**-1; **2**-1), *Pipistrellus pipistrellus* (**3**-1), *Lepus europaeus* (**1**-1; **2**-2; **3**-1; **5**-3; **4**-1), *Ochotona* cf. *rufescens* (**5**-1), *Dryomys nitedula* (**2**-3; **5**-1), *Dryomys laniger* (**3**-3), *Apodemus uralensis* (**3**-7), *Apodemus mystacinus* (**1**-3; **2**-4), *Meriones persicus* (**5**-2), *Terricola majori* (**4**-3; **6**-1), *Microtus guentheri* (**4**-1), *Vulpes vulpes* (**2**-1; **5**-1), *Mustela putorius* (**6**-1), *Felis* sp. (**4**-1), *Anas platyrhynchos* (**2**-1; **3**-1; **6**-1), *Anas strepera* (**1**-1), *Anas crecca* (**1**-1; **5**-1), *Anas querquedula* (**5**-1; **6**-1), *Accipiter nisus* (**4**-1), *Buteo* sp. (**5**-1; **6**-1), *Aquila* sp. (**2**-1), *Neophron percnopterus* (**5**-1), Accipitridae sp. (**3**-2), *Falco subbuteo* (**3**-1), *Falco naumanni* (**4**-1; **6**-1), *Falco* sp. (**1**-1; **3**-2), *Tetraogallus caspius* (**2**-1), *Ammoperdix griseogularis* (**1**-1), *Phasianus colchicus* (**2**-1), *Gallus gallus dom.* (**1**-1), *Rallus aquaticus* (**1**-2), *Porzana porzana* (**2**-1; **3**-2; **5**-2; **6**-1), *Porzana parva* (**6**-1), *Crex crex* (**1**-1; **3**-1; **5**-1; **6**-1), *Gallinula chloropus* (**5**-1; **6**-1), *Fulica atra* (**1**-3; **5**-1), *Vanellus vanellus* (**3**-3), *Tringa glareola* (**1**-1), *Tringa* sp. (**6**-1), *Scolopax rusticola* (**3**-1), *Gallinago* sp. (**2**-1; **6**-1), Pteroclidae sp. (**6**-1), *Streptopelia decaocto* (**1**-1), *Streptopelia turtur* (**2**-2; **3**-2; **6**-1), *Streptopelia senegalensis* (**4**-1), *Cuculus canorus* (**3**-1), *Asio otus* (**2**-1; **4**-1), *Otus scops* (**2**-2; **3**-2; **6**-1), *Athene noctua* (**2**-1; **3**-4; **6**-1), *Strix aluco* (**1**-1), *Caprimulgus europaeus* (**3**-2), *Apus apus* (**3**-1; **5**-3), *Apus melba* (**1**-2; **3**-2; **5**-2), *Merops apiaster* (**5**-1; **6**-3), *Coracias garrulus* (**6**-1), *Upupa epops* (**2**-1; **4**-1; **6**-1), *Melanocorypha calandra* (**3**-1; **5**-1), Alaudidae sp. (**2**-1; **3**-1; **5**-1), *Delichon urbicum* (**3**-1; **5**-1; **6**-1), *Riparia riparia* (**2**-1), *Ptyonoprogne rupestris* (**5**-1), *Anthus* sp. (**6**-2), *Lanius minor* (**3**-1; **6**-1), *Lanius collurio* (**3**-1; **6**-1), *Acrocephalus* sp. (**3**-1), *Sylvia communis* (**3**-2), Sylviidae sp. (**3**-1), *Muscicapa striata* (**4**-1), *Saxicola torquata* (**6**-2), *Monticola saxatilis* (**3**-1), *Oenanthe sp.* (**3**-2; **5**-1), *Phoenicurus* sp. (**1**-1), *Luscinia* sp. (**3**-1), *Turdus merula* (**3**-1; **6**-3), *Turdus torquatus* (**3**-2), *Turdus philomelos* (**3**-1), *Turdus viscivorus* (**5**-2; **4**-1), *Turdus* sp. (**4**-1), *Sitta neumayer* (**2**-1; **3**-1; **5**-1), *Emberiza citrinella* (**4**-1; **6**-3), *Emberiza calandra* (**6**-1), *Emberiza* sp. (**3**-1; **5**-4), *Carduelis cannabina* (**1**-1), Fringillidae sp. (**5**-1), *Oriolus*

oriolus (**3**-1), *Garrulus glandarius* (**1**-1; **6**-3), *Pica pica* (**2**-1; **3**-1), *Pyrrhocorax pyrrhocorax* (**5**-4), *Coloeus monedula* (**2**-2), Passeriformes sp. (**1**-1; **2**-2; **3**-14; **5**-2; **4**-3; **6**-4), *Bufotes viridis* (**5**-1), *Pelophylax* cf.*esculentus* (**5**-4), *Testudo* sp. (**6**-1), Lacertidae sp. (**5**-2), Sauria sp. (**2**-1; **4**-1), Cypriniformes sp. (**1**-1), Decapoda sp. (**1**-1; **2**-1; **6**-1), Solifugae sp. (**3**-4), Scorpiones sp. (**1**-1; **3**-3; **5**-2)

Tab. 5. Diet of Eagle-owl in the Middle East: Jordan, Israel, Syria.
Tab. 5. Potrava výra skalného na Blízkom východe: Jordánsko, Izrael, Sýria.

Country	Jordan		Israel		Syria		Total	%
Druhy \ Country No.	1		2		3			
Meriones tristrami	1+	395	1-	11	4-	0	406	22.32
Rattus norvegicus	1+	100	1-	1	2-	0	101	5.55
Garrulus glandarius	1+	96	1-	0	2-	0	96	5.28
Sylviidae sp.	1+	58		1	2-	0	59	3.24
Microtus guentheri	1-	4	2+	13			17	0.93
Columba livia		102	1+	18	1-	5	125	6.87
Coturnix coturnix		29	1+	12		6	47	2.58
Mus sp.	1-	7	1+	10			17	0.93
Lepus capensis		11	1+	7		2	20	1.10
Rattus rattus		3	1+	6			9	0.49
Procavia capensis	1-	1	1+	7			8	0.44
Hemiechinus auritus	2-	17	1-	2	2+	89	108	5.94
Meriones libycus	4-	0		1	2+	50	51	2.80
Psammomys obesus	3-	0			2+	26	26	1.43
Jaculus jaculus	3-	0			2+	24	24	1.32
Scratulus euphraticus	2-	0			2+	17	17	0.93
Paraechinus aethiopicus	1-	2			1+	7	9	0.49
Columba oenas		5		1	1+	7	13	0.71
Erinaceus concolor		59		9	2-	0	68	3.74
Nannospalax ehrenbergi		47		1	1-	0	48	2.64
Acomys sp.		20		6	1-	0	26	1.43
Scorpiones sp.		28				1	29	1.59
Gerbillus dasyurus		27				1	28	1.54
Alectoris chukar		20		3		2	25	1.37
Cricetulus migratorius		24					24	1.32
Luscinia sp.		23					23	1.26
Crex crex		17		2		1	20	1.10
Streptopelia senegalensis		15		4			19	1.40
Athene noctua		11		2		3	16	0.88
Falco tinnunculus		11				4	15	0.82
Turdus merula		13		1			14	0.77
Apodemus mystacinus		13					13	0.71
Agamidae sp.		10				3	13	0.71
Eliomys melanurus		12					12	0.66
Bufotes variabilis		12					12	0.66
Passer domesticus		11					11	0.60
Orthoptera sp.		10					10	0.55
Decapoda sp.		10					10	0.55
Ammoperdix heyi		8		1			9	0.49
Petronia petronia		7				2	9	0.49
Pica pica		9					9	0.49
Lacertidae sp.		4		1		4	9	0.49
Solifugae sp.		7				1	8	0.44
"Mammalia, 36 species"		751		86	1+	222	1059	58.22
"Aves, 67 + species"		541		63	1-	51	655	36.01
"Amphibia,Reptilia,Pisces"		32		1		8	41	2.25
Evertebrata		60	1-	0	1-	4	64	3.52
Total		1384		150		285	1819	100
Diversity Index H'		3.19		3.29		2.52	3.53	

Country: **1 – Jordan, 2 – Israel, 3 – Syria.**
Other species (**Country**-number): *Crocidura suaveolens* (**1**-1; **2**-1; **3**-1), *Rousettus aegyptiacus* (**2**-1), *Aselia tridens* (**3**-2), *Rhinolophus mehelyi* (**3**-1), *Plecotus christii* (**1**-2), *Otonycteris hemprichi* (**1**-1), *Jaculus orientalis* (**2**-1), *Apodemus flavicollis* (**2**-1), *Nesokia indica* (**2**-1), *Gerbillus cheesmani* (**3**-2), *Gerbillus nanus* (**2**-4), *Meriones crassus* (**2**-1), *Canis familiaris* (**1**-1), *Vulpes vulpes* (**1**-1; **2**-2), *Martes foina* (**1**-1), *Felis silvestris* (**1**-2), *Anas platyrhynchos* (**1**-1), *Anas crecca* (**2**-1), Anatidae sp. (**2**-1; **3**-1), *Accipiter nisus* (**1**-2), *Pernis apivorus* (**1**-1), *Falco naumanni* (**1**-1), *Falco* sp. (**1**-1), *Gallus gallus dom.* (**1**-4), *Porzana porzana* (**1**-1; **2**-2), *Gallinula chloropus* (**1**-1), Rallidae sp. (**2**-1), *Hoplopterus spinosus* (**1**-2), *Tringa* sp. (**1**-1; **3**-2), *Scolopax rusticola* (**1**-1; **2**-2), *Gallinago media* (**1**-2), Limicolae sp. (**1**-1), Pteroclidae sp. (**3**-2), *Columba palumbus* (**1**-1), *Streptopelia decaocto* (**1**-5; **2**-1; **3**-1), *Streptopelia turtur* (**1**-1), *Cuculus canorus* (**1**-1), *Tyto alba* (**1**-1), *Asio otus* (**1**-1), *Otus scops* (**1**-5; **2**-1), *Apus pallidus* (**2**-2), *Apus melba* (**3**-1), *Merops apiaster* (**1**-5), *Coracias garrulus* (**1**-2), *Upupa epops* (**1**-2; **3**-2), *Dendrocopos syriacus* (**1**-2), *Jynx torquilla* (**1**-1), *Galerida cristata* (**1**-3; **2**-1), *Melanocorypha calandra* (**1**-1), Alaudidae sp. (**3**-4), *Delichon urbicum* (**1**-2), *Riparia riparia* (**1**-2), *Ptyonoprogne rupestris* (**1**-1), *Pycnonotus xanthopygos* (**1**-2), *Lanius collurio* (**2**-1), *Lanius* sp. (**1**-3), *Ficedula sp.* (**1**-3), *Saxicola torquata* (**1**-1), *Oenanthe* sp. (**1**-3; **2**-1), *Phoenicurus ochruros* (**1**-1), *Turdus philomelos* (**1**-7), *Parus major* (**1**-1), *Sitta neumayer* (**3**-1), *Emberiza calandra* (**1**-1), *Emberiza sp.* (**1**-3; **3**-1), *Fringilla coelebs* (**1**-6), *Carduelis chloris* (**1**-2), Fringillidae sp. (**1**-1), *Passer hispaniolensis* (**2**-1), *Sturnus vulgaris* (**1**-1; **3**-1), *Onychognathus tristrami* (**1**-1), *Corvus cornix* (**1**-1; **2**-2), *Corvus ruficollis* (**1**-1; **3**-1), *Corvus rhipidurus* (**1**-1), *Coloeus monedula* (**1**-4), Passeriformes sp. (**1**-8; **3**-4), Aves sp.juv. (**2**-1), *Pelophylax* cf. *bedriagae* (**1**-5), Sauria sp. (**3**-1), Cypriniformes sp. (**1**-1), Hymenoptera sp. (**1**-1), Coleoptera sp. (**1**-3; **3**-2), Gastropoda sp. (**1**-1)

Discussion

This study presents findings from individual countries with a wide range of sample sizes of examined material, ranging from hundreds of samples from Slovakia and Norway to individual finds from Mongolia or Russia. Each original sample presents a spectrum of species and is therefore a significant record of the state of fauna in time and space within the context of a specific predator and can therefore be compared to a phytocenological record which offers information on the state of vegetation. If we were to combine the samples based on some specific criteria, we run the risk of systematically stripping them of their uniqueness, and this is also the case when the results are summarised in terms of the abundance of individual species according to larger taxonomical groups as was used in the study by Penteriani & Delgado (2019), as each prey species has its own habitat requirements and thus its own diagnostic significance. Therefore, in preparing the results in this work, care was taken to incorporate these criteria and to categorise individual eagle-owl prey samples on the basis of the range of species which they contain. In Norway, for example, some of the samples from the county of Hedmark are combined but the original findings from the island of Sandøya are evaluated independently. In the case of the large sample from the island of Halmøya, a summary is provided of the finds from the four nest layers which date back 2,500 years, a period in which the island saw varying levels of human occupation. Currently, the island has no permanent human population and is overgrown with scrubland. The data from Slovakia presented in the study combines findings from three different periods, and the distributions of the diagnostic species in the regions are therefore more widely scattered

Tab. 6. Deit of Eagle-owl in Iran..
Tab. 6. Potrava výra skalného v Iráne.

Region	Aa		Ab		Ba		C		Bb		Da		Db		Total	%
Species \ Region No	1		2		3		5		4		6		7			
Chionomys nivalis	2+	17		20	1-	2						1			40	0.51
Apodemus witherbyi	2+	16	1-	20	1+	48		3	1-	3				4	94	1.20
Microtus obscurus	2+	64	1+	199	1-	33	3-	0	3-	0	2-	0	3-	0	296	3.76
Mesocricetus brandti	2-	8	1+	813	6-	0	4-	0	5-	0	3-	0	5-	0	821	10.44
Scartulus williamsi		10	1+	278	4-	1	3-	0		37	2-	0	3-	0	326	4.15
Myomimus setzeri			1+	49	2-	0			1-	0					49	0.62
Sturnus vulgaris			1+	25		6		1		1				2	35	0.45
Delichon urbicum			1+	10											10	0.13
Riparia riparia			1+	11		1									12	0.15
Coleoptera sp.	1-	0	1+	87		26	2-	0		11	1-	0	1+	22	146	1.86
Pelophylax ridibundus		1	1+	74	1-	12	1+	25	5-	5			1-	1	118	1.50
Meriones tristrami		3		76	1+	71	1-	3	2-	1	1-	0	2-	0	154	1.96
Meriones persicus	1-	25		766	1+	430	1-	42	2-	23		52	1-	43	1381	17.57
Ellobius lutescens	1-	11		259	1+	260	3-	1	2-	7	3-	0	4-	0	538	1.84
Columba oenas			1-	1	1+	12		3		1				1	18	0.23
Garrulus glandarius			1-	0	1+	12		3							15	0.19
Cricetulus migratorius		41	1-	314	1+	336	1-	54	3-	8		35	1+	143	931	11.84
Lepus europaeus		5	1-	25	1+	45		3		8	1+	9		5	100	1.27
Ammoperdix griseogularis		1	3-	0	1+	22		6	1+	14		2		6	51	0.65
Alectoris chukar		7	2-	21	1+	95	1+	24	1-	9	2+	35	2-	2	193	2.45
Columba livia		2	2-	9	1+	29	1+	16	2-	21		2		4	83	1.60
Agamidae sp.	1-	0	2-	9	1+	66	1+	15	1+	27		2	1-	4	123	1.56
Microtus socialis		6		147	1-	40	2+	85		1	2-	0		31	310	3.84
Rattus rattus			2-	0	1-	0	2+	19		6					25	0.32
Myotis blythii		1	2-	3	1-	3	2+	20		5		4			36	0.46
Miniopterus schreibersii		1					1+	6							7	0.09
Rhinolophus euryale							1+	5		1					6	0.08
Rattus norvegicus			1-	0		4	1+	5							9	0.11
Apus melba		1		1		1	1+	5						1	9	0.11
Sitta tephronata		1	1-	3		8	1+	10		4				1	27	0.34
Mus sp.		4	2-	34	1-	37	2+	83	1+	49	1-	2	1-	4	213	2.71
Meriones libycus			4-	0	3-	0	1+	12	3+	61		1		7	81	1.30
Lacertidae sp.			2-	6	2-	1			3+	44					51	0.65
Meriones crassus			3-	0		6		1	2+	27		4			38	0.48
Hemiechinus auritus		2	1-	7	2-	0		5	2+	24				4	42	0.53
Columba palumbus			2-	0	1-	0			2+	19					19	0.24
Crex crex				1		2			1+	5				1	9	0.11
Coturnix coturnix				8		4		2	1+	7				2	23	0.29
Passer domesticus			1-	17		10		8	1+	17		4	1-	0	56	0.71
Bufotes viridis			1-	5		5		5	1+	11					26	0.33
Tatera indica			3-	0	2-	0		1	2+	27	1+	7			35	0.45
Galerida cristata		2	1-	10	1-	4		8	2+	27	1+	9		8	68	0.86
Nesokia indica			2-	0	1-	0			1+	11	1+	9		6	26	0.33
Calomyscus bailwardi			2-	2		13		6	1+	9	1+	9		2	41	0.52
Larus sp.				1							1+	5			6	0.08
Ellobius fuscocapillus			3-	0	2-	0			1-	0	1+	7	3+	42	49	0.62
Ochotona rufescens		4	3-	2	3-	0	1-	0		7		2	3+	63	78	0.99
Microtus afghanus			3-	0	2-	0							3+	37	37	0.47
Meriones meridianus			2-	0	1-	0							3+	27	27	0.34
Scarturus elater				17	2-	0				6		1	2+	23	47	0.60
Paraechinus hypomelas			1-	0		1							1+	10	11	0.14
Myomimus personatus													1+	6	6	0.08
Otonycteris hemprichi			1-	0		1				3			1+	9	13	0.17
Petronia petronia		1		14	2-	0		3		6			1+	14	38	0.48
Solifugae sp.				16	1-	0		1		1			1+	14	32	0.41

Tab. 6. continuation / pokračovanie

Region	Aa	Ab	Ba	C	Bb	Da	Db	Total	%
Species \ Region No	1	2	3	5	4	6	7		
Falco tinnunculus	2	1- 3	5	3	3		3	19	0.24
Streptopelia senegalensis		1- 1	7	4	1	1	2	16	0.20
Athene noctua	1	1- 5	10	2	4	2	4	28	0.36
Otus scops		1- 0	4	5	2	1		12	0.15
Arvicola amphibius	7	46	23	2	1- 1		1- 0	79	1.00
Cypriniformes sp.		38	15	1- 0	11	4	1- 0	68	0.86
Crocidura suaveolens	4	15	4		2		2	27	0.34
Melanocorypha calandra		13	1	1	1		4	20	0.25
Corvus cornix+frugilegus	2	7	5	3	1		2	20	0.25
Oenanthe sp.	1	13	1		1	1	3	20	0.25
Alauda arvensis		10	2	4	2			18	0.23
Erinaceus concolor	1	4	2	3	3	2	2	17	0.22
Perdix perdix		7	1	1	2		2	13	0.17
Merops apiaster		2	3	1	1	1	2	10	0.13
Pyrrhocorax pyrrhocorax	1	1- 0	1	2	2	4		10	0.13
Scorpiones sp.	1	6			2		1	10	0.13
Gryllotalpa sp.		8			1			9	0.11
Ptyonoprogne rupestris		5	1	1	2			9	0.11
Streptopelia turtur			2	2	4			8	0.10
Pteroclidae sp.		3		1	2	1	1	8	0.10
Decapoda sp.		4		2	1		1	8	0.10
"Mammalia, 55 species"	**231**	**3117**	**1370**	**1- 369**	**1- 340**	**1- 152**	**476**	**6055**	**77.02**
"Aves, 95 + species"	**33**	**1- 283**	**300**	**1+ 161**	**1+ 245**	**1+ 86**	**95**	**1203**	**15.30**
"Amphibia,Reptilia,Pisces"	**2- 1**	**1- 134**	**104**	**1+ 46**	**2+ 99**	**1- 6**	**2- 5**	**395**	**45327**
Evertebrata	**1- 1**	**1+ 121**	**1- 26**	**1- 5**	**16**	**1- 0**	**1+ 40**	**209**	**2.66**
Total	**266**	**3655**	**1800**	**581**	**700**	**244**	**616**	**7862**	**100**
Diversity Index H'	**2.82**	**2.78**	**2.79**	**3.37**	**3.87**	**2.97**	**3.10**	**3.48**	

Region: 1- Aa: Alborz and Talysh Mountains; **2 - Ab:** northern Zagros; **3 - Ba**: more humid western part of the central Zagros; **4 - Bb**: drier eastern parts of central Zagros; **5 - C**: southern part of Zagros in Fars Province; **6 - Da**: south-eastern Iran, south of Dasht-e Kavir; **7 - Db**: - Koppeh Dagh Mountans.

Other species (**Region**-number): *Suncus etruscus* (**3**-5), *Rousettus aegyptiacus* (**5**-2), *Rhinolophus ferrumequinum* (**2**-4; **5**-2; **4**-1), *Rhinopoma microphyllum* (**4**-2), *Myotis emarginatus* (**7**-1), *Myotis capaccinii* (**5**-1), *Eptesicus bottae* (**6**-1), *Pipistrellus pipistrellus* (**5**-3), *Taphozous nudiventris* (**2**-1; **3**-1), *Dryomys nitedula* (**5**-1; **6**-1), *Myomimus* sp. (**3**-1), *Jaculus jaculus* (**4**-3), *Gerbillus nanus* (**4**-4; **6**-1), *Meriones vinogradovi* (**2**-7), *Rhombomys opimus* (**7**-3), *Ellobius talpinus* (**7**-1), *Microtus kermanensis* (**6**-3), *Vulpes vulpes* (**2**-2; **3**-2; **5**-1), *Mustela nivalis* (**2**-4; **7**-1), *Meles meles* (**1**-1; **3**-1), Artiodactyla sp. (**2**-3; **6**-1), *Tachybaptus ruficollis* (**2**-1; **4**-1), *Ixobrychus minutus* (**2**-1), Ardeidae sp. (**4**-1), *Anas crecca* (**2**-1; **3**-1; **5**-1; **4**-3; **7**-1), *Anas querquedula* (**3**-1), Anatidae sp. (**4**-3), *Accipiter gentilis* (**2**-1), *Accipiter nisus* (**2**-3), *Buteo* sp. (**2**-1), *Falco subbuteo* (**2**-1), *Falco naumanni* (**2**-1; **5**-2), *Falco* sp. (**2**-2; **3**-1; **5**-2), *Tetraogallus caspius* (**2**-2; **4**-2), *Gallus gallus dom.* (**2**-1; **3**-1; **4**-1), *Rallus aquaticus* (**2**-2), *Porzana porzana* (**2**-3; **3**-1; **4**-3), *Porzana parva* (**1**-1; **2**-1; **4**-1), *Porzana pusilla* (**2**-2; **4**-2), *Gallinula chloropus* (**1**-2; **2**-1; **5**-1; **4**-1; **7**-1), *Fulica atra* (**1**-2; **3**-3; **5**-1; **4**-1), *Vanellus vanellus* (**2**-1; **3**-1; **4**-4), *Hoplopterus spinosus* (**4**-1), *Calidris minuta* (**2**-1), *Tringa* sp. (**2**-2; **5**-1; **4**-5; **6**-1; **7**-3), *Actitis hypoleucos* (**2**-1), *Scolopax rusticola* (**2**-1; **3**-1; **4**-1), *Gallinago* sp. (**7**-1), Limicolae sp. (**2**-2; **5**-1; **4**-1), *Sterna* sp. (**6**-1), *Columba eversmanni* (**6**-3), *Cuculus canorus* (**2**-2; **3**-3), *Bubo bubo* (**2**-1; **3**-2), *Asio otus* (**2**-2; **3**-2), *Caprimulgus europaeus* (**5**-1; **4**-1; **6**-1; **7**-1), *Apus apus* (**2**-2; **3**-2; **5**-1), *Apus affinis* (**5**-4), *Coracias garrulus* (**2**-2; **3**-1), *Upupa epops* (**2**-1; **3**-1; **5**-1; **4**-1; **6**-1), *Dendrocopos syriacus* (**3**-1; **6**-1), *Jynx torquilla* (**3**-1), *Alaudidae sp.* (**1**-1; **2**-3; **5**-1; **4**-4; **6**-1; **7**-8), *Hirundo rustica* (**1**-1; **2**-1; **7**-1), *Ptyonoprogne obsoleta* (**4**-1), *Anthus* sp. (**2**-1), *Hypocolius ampelinus* (**4**-1), *Lanius excubitor* (**4**-4), *Lanius minor* (**5**-1; **4**-2), *Lanius senator* (**3**-1), *Lanius collurio* (**4**-1), *Lanius* sp. (**2**-7; **3**-2; **6**-1), Sylviidae sp. (**4**-2), *Monticola* sp. (**2**-3; **4**-4), *Phoenicurus sp.* (**4**-1), *Turdus pilaris* (**1**-1), *Turdus philomelos* (**5**-1), *Turdus* sp. (**6**-1), *Parus major* (**3**-2; **5**-1; **4**-2), *Parus* sp. (**4**-1), *Sitta neumayer* (**2**-4; **3**-3), *Emberiza calandra* (**2**-1; **3**-2; **4**-4), *Emberiza* sp. (**2**-3; **3**-2; **5**-7; **4**-5; **7**-2), *Carduelis carduelis* (**3**-1; **5**-1; **4**-1), *Carduelis cannabina* (**2**-2), *Rhodospiza obsoleta* (**7**-1), Fringillidae sp. (**4**-4), *Passer montanus* (**7**-3), *Petronia xanthocollis* (**3**-2; **5**-3), *Petronia brachydactyla* (**2**-2; **6**-1), *Petronia* sp. (**3**-1), *Pica pica* (**2**-1; **3**-2; **5**-1; **4**-1), *Corvus corax* (**2**-2), *Corvus ruficollis* (**4**-1; **6**-1), *Coloeus monedula* (**2**-1; **5**-1), Passeriformes sp. (**1**-2; **2**-9; **3**-8; **5**-9; **4**-11; **6**-2; **7**-6), Aves sp. (**1**-1; **4**-3; **6**-2), Aves sp.juv. (**3**-2; **6**-1; **7**-2), *Testudo* sp. (**3**-1), Gekkonidae sp. (**2**-1; **4**-1), Serpentes sp. (**3**-1; **5**-1), Sauria sp. (**2**-1; **3**-1), Salmonidae sp. (**3**-1), Pisces sp. (**3**-1), Mantodea sp. (**5**-1), Orthoptera sp. (**5**-1; **7**-2).

than if the results from each period had been compared individually (Obuch 2021b).

Each species of owl has its own unique hunting strategy, and therefore the comparison of findings for different owls sharing the same territory using the MDFM methodology reveals diagnostic prey species for each individual species; for example, a study conducted in Slovakia by Obuch (2011) compared the range of prey for eight species of owls, while another work by the same author (Obuch 2018) examined the diets of seven species in Jordan. This is also true for comparisons of results obtained using trapping. For example, S. N. Rybin used this technique to identify fourteen species of mammals over the course of twenty years in locations in south Kyrgyzstan, whereas this author identified thirty species in just two expeditions to the same locations based on findings from collected eagle-owl pellets (Obuch & Rybin 1993). Similarly, intensive trapping studies in Turkey found just a single example of the Brant's hamster *Mesocricetus brandti* but finds from eagle-owl prey remains collected in eastern Turkey and the northern Zagros Mountains in Iran suggest that this species is more abundant, comprising around 30% of the eagle-owl's diet (Kryštufek et al. 2009). Trapping studies in

Tab. 7. Diet of Eagle-owl in diferent eleavtion of the southern Kyrgyzstan.
Tab. 7. Potrava výra skalného v rôznych nadmorských výškach južného Kirgizska.

Altitude a.s.l. (m)	900 - 1400		900		2000		1800 - 2500		Total	%
Species \ Sample No.	**1**		**2**		**3**		**4**			
Meriones meridianus	1+	1233	1-	5	1-	62	5-	15	1315	27.37
Mus sp.	1+	194		1	3-	1	3-	5	201	4.18
Scarturus elater	1+	34				1	2-	0	35	0.73
Coleoptera sp.	1+	54			1-	0	2-	2	56	1.17
Scorpiones sp.	1+	19					1-	0	19	0.40
Myotis blythii	2-	5	4+	45		2	1-	2	54	1.12
Hemiechinus auritus		7	2+	13			1-	2	22	0.46
Alectoris chukar	1-	31			2+	91	1-	38	160	3.33
Perdix dauurica	2-	3			2+	25	1-	6	34	0.71
Coturnix coturnix	1-	8			2+	39	3-	0	47	0.98
Turdus atrogularis	2-	2			2+	27	2-	1	30	0.62
Columba livia		35		1	1+	15	1-	11	62	1.29
Columba rupestris	1-	0			1+	10			10	0.21
Pteroclidae sp.		11			1+	11	2-	0	22	0.46
Aythya fuligula					1+	5			5	0.10
Galerida cristata		14			1+	7	1-	0	21	0.44
Pyrrhocorax graculus	1-	2			1+	6		6	14	0.29
Microtus juldaschi	6-	4	2-	0	1-	33	2+	680	717	14.92
Ellobius tancrei	1-	162	2-	0	1-	46	1+	468	676	14.60
Alticola argentatus	2-	15		1		15	1+	114	145	3.20
Apodemus pallipes	1-	36			1-	6	1+	89	131	2.73
Ochotona rutila	3-	3				6	1+	66	75	1.56
Acridotheres tristis	1-	0					1+	10	10	0.21
Pica pica	1-	4				2	1+	14	20	0.42
Cricetulus migratorius		219	1-	0	2-	10		135	364	6.58
Lepus tolai		25			1-	1		26	52	1.80
Eptesicus serotinus		13		2			1-	1	16	0.33
Crocidura suaveolens		12				1		7	20	0.42
Dryomys nitedula		14				1		5	20	0.42
Streptopelia orientalis		5				2		13	20	0.42
Cypriniformes sp.		9						7	16	0.33
Rattus pictoris		7				4		3	14	0.29
Coloeus monedula		4				5		2	11	0.23
Corvus corone		2				1		7	10	0.21
Falco tinnunculus		3				4		3	10	0.21
Apus melba		9		1					10	0.21
Microtus ileus		6						3	9	0.19
Petronia petronia		9							9	0.19
Passer domesticus		5				1		2	8	0.17
Pyrrhocorax pyrrhocorax						4		4	8	0.17
Asio otus		1				2		5	8	0.17
Tadarida teniotis		7		1					8	0.17
"Mammalia, 30 species"		**2006**		**69**	**1-**	**194**		**1625**	**3894**	**81.04**
"Aves, 65 + species"	**1-**	**274**	**1-**	**4**	**2+**	**342**	**1-**	**173**	**793**	**16.50**
"Amphibia, Reptilia, Pisces"		**26**		**0**		**8**	**1-**	**7**	**41**	**0.85**
Evertebrata	**1+**	**75**		**0**	**2-**	**0**	**3-**	**2**	**77**	**1.60**
Total		**2381**		**73**		**544**		**1807**	**4805**	**100**
Diversity Index H'		**2.20**		**1.34**		**3.24**		**2.10**	**2.80**	

Samples: **1**: Osh, 1.6.1990; Krystalnaya, 25.6.1988, 29.5.1990; 5 km from Krystalnaya: 29.5.1988; Dangi Canyon, 13.7.1988, 28.5.1990; Tamasha, 25.5.1990; Kyzyl Kiyak, 6.7.1988; Kanigut, 17.5.1990. **2**: Dvachan Ungur cave, 11.7.1988. **3**: Kalek valley, 6.7.1988, 21.5.1990. **4**: Arslanbob, 10.7.1988; Archa Mazar, 27.5.1990; Sheveli, 24.5.1990; Goujan 29.6.1988, 22.5.1990.

Other species (**Sample**-number): *Paraechinus hypomelas* (**1**-1), *Rhinolophus boucharicus* (**2**-1), *Vespertilio murinus* (**1**-1), *Eptesicus bottae* (**1**-1), *Nyctalus noctula* (**1**-3), *Pipistrellus pipistrellus* (**1**-1), *Hypsugo savii* (**1**-1), *Barbastella leucomelas* (**4**-1), *Marmota caudata* (**3**-1; **4**-2), *Vulpes vulpes* (**3**-1; **4**-1), *Mustela erminea* (**1**-2), *Mustela nivalis* (**3**-2), Artiodactyla sp. (**3**-1), *Podiceps nigricollis* (**3**-1), *Anas platyrhynchos* (**3**-2), *Anas strepera* (**3**-4), *Anas crecca* (**1**-2; **3**-2), *Anas querquedula* (**3**-2), *Accipiter gentilis* (**4**-1), *Falco naumanni* (**1**-2; **3**-2; **4**-2), *Tetraogallus himalayensis* (**1**-1; **3**-2; **4**-1), *Porzana pusilla* (**1**-2), *Crex crex* (**3**-3), *Gallinula chloropus* (**1**-1; **3**-1; **4**-2), *Fulica atra* (**1**-1; **3**-1; **4**-1), Rallidae sp. (**1**-1; **3**-3), *Vanellus vanellus* (**3**-1), *Scolopax rusticola* (**1**-1; **3**-1), Charadriiformes sp. (**1**-6; **3**-2), *Streptopelia senegalensis* (**1**-4), *Bubo bubo* (**4**-3), *Otus scops* (**1**-4; **3**-2; **4**-1), *Athene noctua* (**1**-3; **3**-1), *Strix aluco* (**3**-1), *Caprimulgus aegyptius* (**1**-4; **4**-2), *Merops* sp. (**1**-1), *Coracias garrulus* (**1**-1), *Upupa epops* (**1**-3), *Jynx torquilla* (**1**-2), *Alauda arvensis* (**1**-7), Alaudidae sp. (**1**-1; **3**-1; **4**-4), *Hirundo rustica* (**1**-4), *Delichon urbicum* (**3**-1), *Ptyonoprogne rupestris* (**1**-1; **4**-1), *Lanius minor* (**1**-1), *Lanius* sp. (**1**-1), *Acrocephalus stentoreus* (**1**-2), Sylviidae sp. (**1**-5; **3**-5; **4**-1), *Oenanthe pleshanka* (**1**-2), *Luscinia megarhynchos* (**1**-3), *Turdus* sp. (**1**-12; **3**-21; **4**-11), *Sitta tephronata* (**1**-4; **3**-2), *Cinclus pallasii* (**1**-2), *Emberiza* sp. (**1**-7), *Mycerobas carnipes* (**1**-1), Fringillidae sp. (**1**-1; **4**-2), *Sturnus vulgaris* (**1**-1), *Sturnus* sp. (**1**-1; **3**-5; **4**-2), *Corvus corax* (**4**-1), Corvidae sp.juv. (**3**-1; **4**-12), Passeriformes sp. (**1**-27; **2**-2; **3**-14; **4**-3), Aves sp. (**1**-3; **3**-4), Aves sp.juv. (**1**-1; **4**-1), *Pseudepidalea pewzowi* (**3**-4), Lacertidae sp. (**1**-4), Serpentes sp. (**1**-9), Sauria sp. (**1**-4; **3**-4), Limacidae sp. (**1**-2)

Iranian Kurdistan identified a new species unknown to science in the form of four Setzer's mouse-tailed dormice *Myomimus setzeri*, but this author's studies of eagle-owl diets revealed that this species is abundant in the northern Zagros Mountains and eastern Turkey at elevations of more than 1800 m a. s. l. (Obuch 2001b, 2014). The Afghan pika *Ochotona* cf. *rufescens* was also identified as a new species for Turkey based on remains found during studies of eagle-owl diets (Čermák et al. 2006).

In several cases, the findings of studies into eagle-owl diets have also revealed the presence of sizable populations of rodent species which spend the majority of their lives underground and which seldom appear on the surface; for example, mole rats from the *Nannopalax* family, two species of which were found in Turkey (*N. xanthodon*, 2.2% in Anatolia), Jordan (*N. ehrenbergi*, 3.4%) and Israel, mole voles from the *Ellobius* family, four species of which were found in Turkey (*E. lutescens*, 1.1% in Bendimahi), Iran (*E. lutescens*, 14.4% in the central Zagros Mountains and *E. fuscocapillus*, 6.8% in the Koppeh Dagh Mts.), Kyrgyzstan (*E. tancrei*, 25.9% in mountain areas) and Mongolia (*E. tancrei*, 4.4%).

Similarly, the European water vole *Arvicola amphibius* is a species which is difficult to study using trapping techniques, but research by Bichsel (2012) revealed that the species makes up 96% of the diet of eagle-owls in northern Norway. In contrast, our findings from the southern parts of Norway suggest that this species forms approximately 30% of the diet, but it was hunted more extensively in the past on land which had been grazed more intensively by sheep. Water voles were found to form a similar share of eagle-owl diets in the Horehronie region of Slovakia, a landscape typified by non-arable water meadows and pastures. The species was also found in the diet of eagle-owls in Iran, in particular the wetlands in the northern and central parts

Tab. 8. Diet of Eagle-owl in Mongolia, Baikal and Sakhalin
Tab. 8. Potrava výra skalného v Mongolsku, na Bajkale a Sachaline

Region	Mongolia		Baikal		Sakhalin		Total	%
Species \ Region No	1		2		3			
Ochotona alpina	2+	184	1-	0	6-	0	184	9.13
Lepus tolai	2+	22			3-	0	22	1.10
Orientallactaga sibirica	2+	22			3-	0	22	1.10
Phodopus campbelli	2+	58			4-	0	58	2.91
Alticola strelzowi	2+	35			3-	0	35	1.76
Alticola barakshin	2+	29			3-	0	29	1.46
Ellobius tancrei	2+	19			2-	0	19	0.95
Alexandromys fortis	1-	0	3+	27	3-	0	27	1.35
Urocitellus undulatus		2	1+	8	1-	0	10	0.50
Rana arvalis			1+	8	1-	0	8	0.40
Craseomys rufocanus	6-	0	3-	1	1+	775	776	38.94
Myodes rutilus	4-	0	1-	3	1+	238	241	12.90
Pteromys volans	3-	0		1	1+	85	86	4.32
Ochotona hyperborea	3-	0	1-	0	1+	121	121	6.60
Tetrastes bonasia	3-	0			1+	92	92	4.62
Sorex daphaenodon	1-	0				29	29	1.46
Myopus schisticolor	1-	0				23	23	1.15
Rana amurensis	1-	0				28	28	1.40
Tamias sibiricus						13	13	0.65
Apodemus peninsulae						8	8	0.40
Mammalia		**375**	**1-**	**43**		**1318**	**1736**	**87.10**
Aves		**52**	**1+**	**21**		**140**	**213**	**10.69**
"Amphibia, Reptilia,Pisces"	**1-**	**3**	**1+**	**8**		**33**	**44**	**2.21**
Total		**430**		**72**		**1491**	**1993**	**100**
Diversity Index H'		**2.19**		**2.33**		**2.80**	**2.55**	

Region: **Mongolia**, Altai Mountains, Talbo Nur Lake, 13.7. & 30.7.1984; **Baikal**: Barguzinsky Krai, Ulyun, 16.6.2013; **Sakhalin**: NE, Vaida Mt, Lastochnaya Cave, 8.9.2016 and 3.10.2017.
Other species (**Region**-number): *Sorex caecutiens* (**3**-4), *Neomys fodiens* (**3**-1), *Pipistrellus abramus* (**3**-1), *Lepus timidus* (**3**-4), *Sciurus vulgaris* (**3**-5), *Marmota sibirica* (**1**-1), *Sicista caudata* (**3**-1), *Micromys minutus* (**2**-2), *Rattus norvegicus* (**3**-1), *Cricetulus migratorius* (**1**-1), *Meriones meridianus* (**1**-1), *Ondatra zibethicus* (**2**-1), *Vulpes vulpes* (**3**-4), *Martes zibellina* (**3**-2), *Mustela erminea* (**1**-1), *Mustela nivalis* (**3**-2), *Moschus moschiferus* (**3**-1), *Podiceps cristatus* (**1**-1), *Tachybaptus ruficollis* (**2**-1), *Anas penelope* (**1**-2), *Anas crecca* (**1**-1; **2**-1), *Anas querquedula* (**1**-2), *Anas acuta* (**3**-1), *Anas clypeata* (**3**-1), *Aythya ferina* (**1**-1), *Melanita* sp. (**1**-1), *Bucephala clangula* (**2**-4), *Histrionicus histrionicus* (**3**-2), *Buteo buteo* (**2**-1), *Falco tinnunculus* (**1**-1), *Lagopus lagopus* (**3**-5), *Falcipennis falcipennis* (**3**-1), *Tetraonidae sp.* (**1**-6), *Perdix dauurica* (**1**-2; **2**-1), *Ammoperdix griseogularis* (**1**-2), *Crex crex* (**1**-1), *Fulica atra* (**2**-1), *Vanellus vanellus* (**2**-1), *Calidris minuta* (**1**-3), *Actitis hypoleucos* (**1**-1), *Limosa lapponica* (**3**-1), *Scolopax rusticola* (**1**-1), *Gallinago media* (**1**-1), *Rissa tridactyla* (**3**-1), *Sterna hirundo* (**1**-2), *Fratercula cirrhata* (**3**-1), *Brachyramphus perdix* (**3**-2), *Synthliboramphus antiquus* (**3**-1), *Columba oenas* (**2**-1), *Streptopelia orientalis* (**1**-2), *Surnia ulula* (**3**-1), *Aegolius funereus* (**3**-2), *Apus apus* (**1**-1), *Dendrocopos leucotos* (**3**-1), *Picoides tridactylus* (**3**-2), Alaudidae sp. (**1**-9; **2**-1), *Delichon urbicum* (**3**-2), *Riparia riparia* (**1**-1; **3**-1), *Motacilla alba* (**1**-2), *Bombycilla garrulus* (**3**-1), *Turdus* sp. (**3**-3), *Parus minor* (**3**-1), *Sitta europaea* (**3**-1), *Sitta tephronata* (**1**-1), *Emberiza sp.* (**3**-2), *Carduelis spinus* (**3**-1), *Carduelis flammea* (**3**-1), *Pinicola enucleator* (**3**-1), *Loxia curvirostra* (**3**-2), Fringillidae sp. (**1**-2), *Passer montanus* (**3**-1), *Garrulus glandarius* (**3**-1), *Perisoreus infaustus* (**3**-3), *Nucifraga caryocatactes* (**3**-4), *Cyanopica cyanus* (**2**-3), *Pyrrhocorax pyrrhocorax* (**1**-3), *Corvus corax* (**2**-1), *Corvus orientalis* (**2**-3), *Corvus dauuricus* (**2**-2), Passeriformes sp. (**1**-3; **3**-1), *Zootoca vivipara* (**3**-1), Salmonidae sp. (**3**-1), Cypriniformes sp. (**1**-3), Pisces sp. (**3**-3)

of the Zagros Mountains (Obuch 2014).

Our study indicates that European eagle-owls show considerable adaptability to changes in the availability of prey species. The results from Slovakia show significant differences in the range of available prey over the course of the last hundred years as a result of changes in agricultural practices (Obuch 2021b). On the Norwegian island of Frøya, we recorded the rapid adaptation of eagle-owls to new prey species following their introduction, firstly the common frog *Rana temporaria* and, in the last five years, the wood mouse *Apodemus sylvaticus*.

The overwhelming majority of the material evaluated in this study was collected from eagle-owl nests during the spring breeding period, a time in which eagle-owls attempt to find sufficient prey from various sources in order to feed their young. Our findings from central Norway show a lower proportion of mammals (58.7%) but a higher share of birds (21.2%) and amphibians (20.0%), with a diversity value of H' = 2.71. In the Czech Republic, the proportions of mammals (76.1%) and birds (22.7%) is relatively high, but amphibians (1.0%) formed a markedly lower proportion of the overall diet, resulting in a diversity index similar to that of Norway: H' = 2.66. The findings from Slovakia show a similar reliance on mammals as in Norway (58.3%) but a lower share of birds, with the rearing of young being supplemented by amphibians (33.2%); this results in a lower diversity index of H' = 2.35. On the steppes of central and eastern Turkey, mammals form the bulk of the diet (90.1%) with birds featuring less frequently (6.8%), giving a diversity index of H' = 2.46. The arid conditions of the southern range of Jordan, Syria and Israel support a lower density of mammals (54.4%), but the presence of a greater numbers of wintering and migrating birds at the end of winter results in a higher share of this prey in the diets of juvenile eagle-owls (35.8%). Invertebrates also form a somewhat important share of the diet (3.5%), and the overall diversity index is relatively high at H' = 3.52.

The vast and rugged territory of Iran is characterised by a marked diversity of mammals (55 species), with this prey forming the dominant share of eagle-owl diet (77.0%). This preponderance also has a pronounced effect on the overall diversity of prey in this region: H' = 3.48. A similar preponderance of mammals is found in southern Kyrgyzstan (80.1%) but the diversity of species is lower (30 species) and therefor the diversity index is also lower: H' = 2.80. The diversity of eagle-owl diets based on the samples from the Altai Mountains in Mongolia is even lower, with mammals forming 87.2% of the overall diet, giving a diversity value of H' = 2.19.

This study also confirms that conventional direct methods of research or observation are unable to provide such detailed information about the vertebrate fauna of specific localities and their changes over time as that offered by studies of the dietary ecology of eagle-owls or of owls in general (Obuch 2021a, 2023).

References

Alekseeva ZV, Rakov VA & Gorbunov SV 2004: Katalog archeologičeskich pamjatnikov Sachalina s rakovinnymi kučami i ostatkami fauny [Sakhalincatalogue of archeological monuments: fauna remains of shells and bones]. Timovskoje. [In Russian].

Andreska D & Andreska J 2020: Changes in the Eurasian Eagle-owl (*Bubo bubo*) population in Czechia and their association with legal protection. Raptor Journal 14: 29–44.

Andreska J, Obuch J & Kurka P 2021: Potrava výra velkého (*Bubo bubo*) na Českolipsku ve třech periodách v období 1939-2018. [Diet of the Eurasian Eagle-owl (*Bubo bubo*) in the Česká Lípa region (northern Bohemia, Czech Rpublic) in three periods during 1939 – 2019]. Sylvia 57: 39–51. [In Czech with English abstract].

Aulagnier S, Haffner P, Mitchell-Jones AJ, Moutou F. & Zima J 2009: Mammals of Europe, North Africa and the Middle East. A&C Black Publishers Ltd., London.

Bichsel M 2012: Diet of an avian top-predator. Analysis eagle owl pelletsfrom neston a north-Norwegian archipelago. Bachelor thesis. Wädenswiland Evenstad, Norway. Zurich University of Applied Sciences & Hedmark University College.

Čermák S, Obuch J & Benda P 2006: Notes on the genus Ochotona in the Middle East (Lagomorpha: Ochotonidae). Lynx (Praha), n.s., 37: 51–66.

Červený J & Obuch J 1999: Rozbor potravy výra velkého (*Bubo bubo*) v jihozápadních Čechách se zvláštním zaměřením na savce (Mammalia) [The diet of the eagle owl (*Bubo bubo*) in southwestwrn Bohemia (Czech Republic) in relation to mammals]. Lynx (Praha), n. s. 30: 35–60. [In Czech with English abstract].

DeBlase AF 1980: The bats of Iran: systematics, distribution, ecology. Fieldiana: Zool. (N. S.), 4, 1–424.

Gaisler J, Zukal J, Nesvadbová J, Chytil J & Obuch J 1996: Species diversity and relative abundance of small mammals (Insectivora, Chiroptera, Rodentia) in the Pálava Biosphere Reserve of UNESCO. Acta Soc. Zool. Bohem. 60: 13–23.

Gromov IM & Erbajeva M, A 1995: The Mammals of Russia and adjacent territories, Lagomorphs and Rodents. St. Peterburg. [In Russian].

Kovalík P, Pačenovský S, Čapek M & Topercer J 2010: Slovenské mená vtákov sveta [Slovak Names for the Birds of the World]. SOS/Birdlife Slovensko, Bratislava. [In Slovak with English Summary].

Kryštufek B & Vohralík V 2001: Mammals of Turkey and Cyprus, Introduction, Checklist, Insectivora. Annales Majora, Koper.

Kryštufek B & Vohralík V 2005: Mammals of Turkey and Cyprus, Rodentia I: Sciuridae, Dipodidae, Gliridae, Arvicolinae. Založba Annales, Koper.

Kryštufek B & Vohralík V 2009 Mammals of Turkey and Cyprus, Rodentia II: Cricetinae, Muridae, Spalacidae, Calomyscidae, Capromyidae, Histricidae, Castoridae. Založba Annales, Koper.

Kryštufek B, Vohralík V & Obuch J 2009: Endemism, vulnerability and conservation issuses for small terrestrial mammals from the Balkans and Anatolia. Folia Zoologica, 58(3), 291–302.

König C & Weick F 2015: Owls of the World, Second Edition. Yale University Press, New Haven and London.

Lay DM 1967: A Study of the mammals of Iran resulting from the Street Expedition of 1962-63. Fieldiana: Zoology, 54, 1–282.

Lourenco R, Tavares PC, Delgado MM, Rabaca JE & Penteriani V 2011: Superpredation increases mercury levels in generalist top predator, the eagle owl. Ecotoxicology 20: 635–642.

Mikkola H 1976: Owls killing and killed by other owls and raptors in Europe. British Birds 69: 144–154.

Obuch J 1994: K potrave výra skalného (*Bubo bubo*) a sovy obyčajnej (*Strix aluco*) vo východnej časti Turecka. [On the food Eagle-owl (*Bubo bubo*) and Tawny Owl (*Strix aluco*) in the eastern part of Turkey] Tichodroma, Bratislava, 7: 7–16. In Slovak with English summary].

Obuch J 2001a: Using marked differences from the mean (MDFM) method for evaluation of contingency tables. Buteo, 12: 37–46.

Obuch J 2001b: Dormice in the diet of owls in the Middle East. Trakya Univ. Journ. of Sc. Res. Ser. B, 2, 2: 145–150.

Obuch J 2002: Podhorský typ potravy výra skalného (*Bubo bubo*) na Horehroní [Submotane type of eagle owl's food (Bubo bubo) in the Horehronie region]: 163-169. In: Uhrin M (ed.): Výskum a ochrana prírody Muránskej planiny 3, Správa Národného parku Muránska planina, Revúca. [In Slovak with English abstract].

Obuch J 2011: Spatial and temporal diversity of the diet of tawny owl (*Strix aluco*). Slovak Raptor Journal, 5: 1–120.

Obuch J 2014: Spatial Diversity in the Diet of the Eurasian Eagle Owl *Bubo bubo* in Iran. Podoces 9, 1: 7–21.

Obuch J 2018: On the diet of owls (Strigiformes) in Jordan. Slovak Raptor Journal 12: 9–40.

Obuch J 2021a: Temporal changes in proportion of small

mammals in the diet of the mammalian and avian predators in Slovakia. Lynx, n.s. (Praha) 52: 89–106.
Obuch J 2021b: Spatial and temporal changes in the diet composition of the Eurasian eagle-owl (*Bubo bubo*) in Slovakia comparing three historical periods. Raptor Journal 15: 17–55.
Obuch J 2023: Príklady hromadenia kostí na skalách a v jaskyniach Slovenska [Examples of accumulation of bones in the rocks and caves]. Slovenské múzeum ochrany prírody a jaskyniarstva, Liptovský Mikuláš. [In Slovak with English abstract].
Obuch J & Bangjord G 2016: The Eurasian eagle-owl (*Bubo bubo*) diet in the Trondelag region (Central Norway). Slovak Raptor Journal 10: 51–64.
Obuch J & Rybin SN 1993: Food of the eagle owl (*Bubo bubo Zaissanensis* Chachlov) in southern Kirghizia (Osh District). Folia Zool., 42: 19–31.
Penteriani V & Delgado MM 2019: The Eagle Owl. T&AD Poiser, London, Oxford, New York, New Delhi, Sydney.
Porter RF, Christensen S & Schiermacker-Hansen P 1996: Field guide to the Birds of the Middle East. T&A.D. Poyser, London.
Rjabcev VV & Rezin VS 2009: K ekologii sov v zapadnom Pribajkalje [Ecology of the owls in the western Pribajkalye]: 231-245. In: Volkov SV, Sharikov AV & Morozov VV (eds): Owls in the Northern Eurasia: Ecology, Spatial and Habitat distribution. Moskva, 311 pp. [In Russian with English abstract].
Shannon CE & Weaver W 1949: The mathematical theory of communication. Univ. Illinois Press, Urbana.
Stubbe M, Batsajchan N, Lindecke O, Camjaa R & Stubbe A 2016: New data on feeding ecology of *Bubo bubo* and *Asio otus* (Aves: Strigidae) in Mongolia. Erforsch. Biol. Ress. Mongolei (Halle/Saale) 13: 301–311.
Wilson DE, Lacher TE, Jr & Mittermeier RA 2016: Handbook of the Mammals of the World, Wol. 6. Lagomorphs and Rodents I. Lynx Editions, Barcelona.
Wilson DE, Lacher TE, Jr. & Mittermeier RA 2017: Handbook of the Mammals of the World, Wol. 7. Rodents II. Lynx Editions, Barcelona.
Wilson DE & Mittermeier RA 2018: Handbook of the Mammals of the World, Wol.8. Insectivores, Sloths and Colugos. Lynx Editions, Barcelona.
Zima J, Obuch J, Kopcová-Klodová G, Kovařík M & Gaisler J 1998: Hmyzožravci a hlodavci Moravského krasu a přilehlých oblastí Drahanské vrchoviny [Insectivores and Rodents of Moravský kras Mts. and neighbour Dranská vrchovina Mts.]. Lynx (Praha), n.s., 29: 77–94. [In Czech with English abstract].

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