Diet of the Eagle Owl, *Bubo bubo,* in Syria

by Adwan H. Shehab

Abstract. Pellets regurgitated by the Eagle Owl, *Bubo bubo*, were collected from Al-Karyatien, Central Syria. The analysis yielded 206 food items representing seven mammalian species (five rodents, one insectivore and one lagomorph), unidentified snakes and lizards, three species of birds, five insects, three species of scorpions, and a solifugid. By frequency small mammals constituted 76.2% of the consumed prey items, of which the Long-eared Hedgehog, *Hemiechinus auritus,* constituted 25.3%. Additional distribution ranges for certain small mammals in Syria are discussed.

Kurzfassung. In Al-Karyatien, Zentralsyrien, wurden Gewölle des Uhus, *Bubo bubo*, gesammelt. Die Analyse ergab 206 Nahrungsteile, die sich aus sieben Arten von Säugern (fünf Rodentia, ein Insectivora, ein Lagomorpha), nicht identifizierbare Schlangen und Eidechsen, drei Vogelarten, drei Skorpionarten, fünf Insektenarten, drei Arten von Skorpionen und eine Walzenspinne (Solifuge) zusammensetzen. Kleinsäuger repräsentieren 76,2% aller Nahrungstiere, wobei der Langohrigel, *Hemiechinus auritus,* 25,3% beitrug. Das Verbreitungsmuster einiger Kleinsäuger in Syrien wird diskutiert.

Key words. *Bubo bubo*, Eagle owl, diet, small mammals, desert, Syria, Middle East.

Introduction

Previous studies on the diet of owls in Syria have focused on the Little Owl, *Athene noctua* (SHEHAB et al. 2004) and the Barn Owl, *Tyto alba* (PRADEL 1981, KOCK & NADER 1983, KOCK et al. 1994, KOCK 1998, SHEHAB et al. 1999, SHEHAB et al. 2000, HUTTERER & KOCK 2002). The diet of the Eagle Owl, *Bubo bubo*, is poorly known. OBUCH (2001) studied the dormouse as the prey of owls in the Middle East, and examined a total of 3012 individuals in owl pellets collected from seven locations in Syria; nevertheless none of them belonged to the Eagle Owl.

In neighbouring countries, AMR et al. (1997) concluded that the Eagle Owl is an agile hunter that feeds mainly on *Mus musculus* and *Crocidura suavulens* at Azraq Oasis, Jordan. RIFAI et al. (2000) found that *Meriones crassus* and *Jaculus jaculus* are the main diet consumed by the Eagle Owl in the eastern desert of Jordan. They concluded that the species is an opportunistic hunter that feeds on a wide range of animals.

The present study is the first attempt to analyse the diet of the Eagle Owl in Syria, and also contributes to our knowledge of the distribution of small mammals in Central Syria.

Material and methods

Owl pellets that had accumulated in roosts of the Eagle Owl were collected on 1.8.2001 from an area known as "*Dar Al Boom"* that means in English "The House of Owls", located 15 km south-

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east of Al Karyatein 34°13'N, 37°13'E. The Eagle Owl was observed in this area where it inhabits small to medium-sized caves scattered along the cliffs.

Each pellet was dipped in water for few seconds until saturated. Skulls, mandibles and arthropod remains were removed and kept separately. The material from this study is housed in the collection of the Animal Pests Division, General Commission for Scientific Agricultural Research (GCSAR), Damascus, Syria (Ref.: Al-Karyatien, Eagle Owl *Bubo bubo*, 1.8.2001).

Abbreviations. GtL= Greatest length of skull; CbL= Condylobasal length; ZB= Zygomatic breadth; IC= Interorbital constriction; BB= Brain case breadth; NL= Nasal length; Dia= Diastema; ForI= Foramen incisivum; MXC= Maxillary cheek teeth; MDC= Mandibular cheek teeth; M= Mandible length (incisor included); MB= Mandible body (incisor not included); TB= Tympanic Bulla; Min= Minimum; Max= Maximum; SD= Standard Deviation; N= Number of measured specimens.

Results and discussion

Remains of 206 individual prey items were recovered (Fig. 1): five species of rodents belonging to four families, one hedgehog and one hare, unidentified snakes and lizards, three different species of birds, five insects and three different species of scorpions.

Small mammals proved to be the main food items of the Eagle Owl, constituting 76.2% of the total number of prey items (Rodentia 49.5%, Insectivora 25.2% and Lagomorpha 1.5%). Three skulls representing three different species of small birds were found. Also the remains of 3 individuals of unidentified snakes (1.5%) and 6 individuals of unidentified lizards (2.9%) were recovered

Pellets of the Eagle Owl are relatively cylindrical in shape, on average 78–107 mm (x=91.7±11 mm) long and 30–36 mm (x=32.9±2 mm) wide.

Order Insectivora

Family Erinaceidae

Hemiechinus auritus (Gmelin, 1770)

Remains of 52 individuals of the Long-eared Hedgehog were recovered. The dental and cranial measurements (Tab. 1) are in agreement with those given by HARRISON & BATES (1991). This species was very abundant in the study area, and many subadults were observed during night trips. In August 2001, a pregnant female gave birth to four young.

The Eagle Owl fed on the skull and the internal organs from the ventral side. The spiny dorsal part was not consumed, since many were found scattered around the roosts. In Jordan, BATES & HARRISON (1989) and AMR et al. (1997) recovered remains of *H. auritus* and *Paraechinus aethiopicus* consumed by *B. bubo*.

Order Rodentia

Family Muridae

Mus musculus Linnaeus, 1758

Remains of two individuals of the House Mouse were recovered. The teeth structure and measurements (Tab. 2) were very close to those mentioned by HARRISON & BATES (1991) for *Mus musculus*. The House Mouse is usually abundant in owl pellets collected from agricultural areas (SHEHAB et al. 2000).

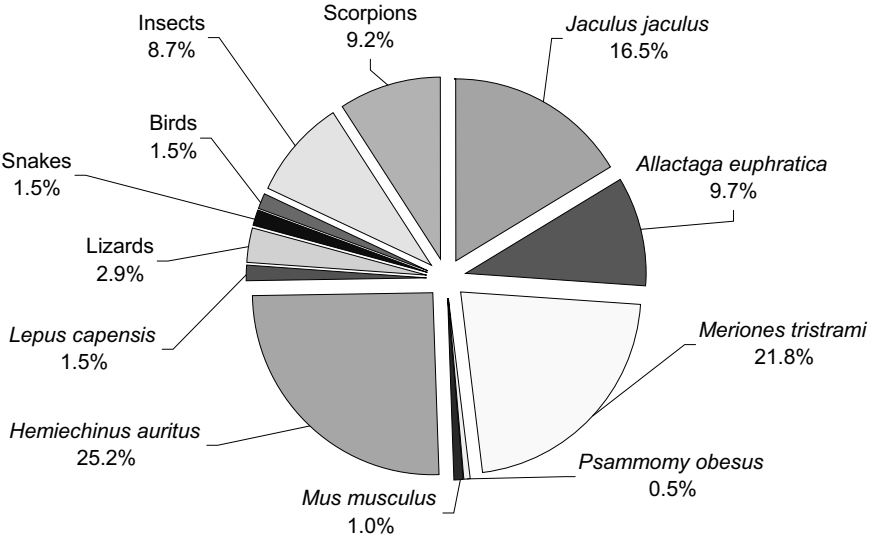

Fig. 1. Frequency of species and taxa recovered from the pellets of the Eagle Owl in Syria.

Family Cricetidae

Psammomys obesus Cretzschmar, 1828

Only one large sized premaxilla with incisors smooth anteriorly as in *P. obesus*, was recovered. This unique feature distinguishes this species from other Arabian jirds (HARRISON & BATES 1991). Active burrows of the Fat Sand Jird were observed in the study area. The low frequency (0.5%) of this colonial rodent is attributed to its diurnal activity whereas the Eagle Owl is mainly nocturnal. AHARONI (1932) recorded this species from the same locality.

Meriones tristrami Thomas, 1892

A total of 45 skulls of *Meriones tristrami* were recovered. Only three skulls were intact, while the posterior part of most of the skulls was broken. This species has been recorded previously from various localities extending along the eastern to coastal regions of Syria (HARRISON & BATES 1991, KOCK 1998).

Family Dipodidae

Allactaga euphratica Thomas, 1881

Remains of 20 skulls of the Euphrates Jerboa were recovered. The posterior part of most of the skulls was broken. MISONNE (1957) found it in northern Syria around Tell Abiad and Ain Aarous; it is also known from El Qaryatien and Palmyra (ATALLAH & HARRISON 1968), Tell Abu Heurera, Qala ar-Rahba and Jabal Bil'as (KOCK & NADER 1983) and from Barn Owl pellets collected around several sites along the Euphrates (SHEHAB et al. 2000).

Tab. 1. Available cranial and dental measurements of the Long-eared Hedgehog, *Hemiechinus auritus,* recovered from pellets of the Eagle Owl, *Bubo bubo*, in Syria.

	CIL	CBL	ZB	IB	I^1-M^3	P^4-M^3	ML	I_1-M_3	P_4-M_3
N	2	13	9	18	2	25	9	9	2
Average	46.9	43.02	25.54	11.42	22.55	11.21	32.09	20.01	11.4
SD	1.13	1.53	1.43	0.43	0.64	0.31	1.74	0.68	0.28
Min.	46.1	40.8	23	10.8	22.1	10.6	29.6	18.8	11.2
Max.	47.7	46	27.2	12.4	23	11.8	34.3	21.1	11.6

Tab. 2. Cranial and dental measurements (mm) for rodents recovered from pellets of the Eagle Owl, *Bubo bubo,* in Syria. The table gives averages, standard deviation and the number of measurements.

	A. euphratica	***J. jaculus***	***M. musculus***	***M. tristrami***	***Ps. obesus***
N	20	34	2	45	1
CTL	-	32.46 (1)	-	38.1±2.7.(3)	-
CBL	-	32.57±0.95 (2)	-	39.9±3.9.(2)	-
ZB	-	-	-	21.87±0.3.(3)	-
IC	8.18±0.15 (4)	10.92±0.39 (6)	-	7.12±0.47.(11)	-
NL	11.53±0..31 (3)	-	-	15.98±1.39.(4)	-
BB	-	-	-	17.2(1)	-
TB	-	13.87±1.21 (3)	-	15.99±0.45.(4)	-
Dia	8.58±0.34 (5)	8.36±0.48 (11)	-	10.09±0.98.(16)	11.6
Fori	5.82±0.19 (5)	4.17±0.35 (12)	-	7.07±0.73.(16)	6.2
MXC	6.69±0.37 (8)	4.57±0.18 (12)	3.6 (1)	5.29±0.45.(15)	6.30
MDC	6.93±0.29 (19)	4.75±0.16 (19)	3.2±0.14 (2)	5.26±0.51.(18)	-
M	20.82±1.42 (10)	19.01±0.74 (16)	12.55±1.34 (2)	22.65±2.11.(20)	-
MB	18.10±0.92 (14)	16.99±0.66 (21)	11.65±1.49 (2)	20.89±1.84.(21)	-

Jaculus jaculus Thomas, 1921
Remains of 34 skulls of the Lesser Jerboa were recovered. RIFAI et al. (2000) reported a similar percentage of abundance (17%) in the diet of the Desert Eagle Owl in the Eastern desert of Jordan. This is a common species of the Syrian Desert.

Order Lagomorpha

Family Leporidae
Lepus capensis (Linnaeus, 1758)
Remains of 3 broken skulls were recovered. Dental measurements (MXC = 9 [n=1], MDC = 10.07±0.12 [n=3]) indicates that the recovered materials were subadults. The Arabian Hare is abundant in the Syrian Desert with a range extending deep into the eastern borders.

Arthropods

Remains of 19 individuals representing at least three species of scorpions were recovered. Two specie were identified: the Yellow Scorpion, *Leiurus quinquestriatus* Hemprich & Ehrenberg, 1829 and *Scorpio maurus fuscus* (Hemprich & Ehrenberg, 1829). Scorpions constituted 9.22% of the prey items. KABAKIBI et al. (1999) reported both species in the vicinity of the study area.

Remains of 18 unidentified insects belonging to four species of coleopterans and a solifugid, constituting 8.74% of the diet, were also recovered.

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