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The Diet of Pharoah Eagle Owl *Bubo ascalaphus* (Savigny, 1809) From Al Eraiq Reserve – Qatar

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Abstract

Pellets of the Pharoah eagle owl, *Bubo ascalaphus,* were collected from Al Eraiq Reserve on the southwestern coast of Qatar. The remains of seventy-five prey individuals were retrieved representing five species of mammals, unidentified birds, and scorpions. Small rodents (*Gerbillus cheesmani* and *Jacalus loftusi*) were the most retrieved (36%) while *Meriones crassus* was the least represented (8%). *Lepus capensis* was the most represented in terms of mass intake (79.9%). In addition, birds were considerably high in the owl's diet and constituted 17.33%;scorpions 22.67%. These results reflect the opportunistic diet of the Pharoah eagle owl and its high adaptability to available food resources in ecosystems.

Keywords: *Bubo ascalaphus*, Pharoah eagle owl, Al Eraiq Reserve, Qatar

Introduction

The Pharaoh eagle owl *Bubo ascalaphus* is the largest owl species in the region where it inhabits deserts, arid plains, and rocky mountains. The Pharaoh eagle owl has a wide distribution range extending from Northern Africa to the Middle East (Mohedano *et al*. 2014), and it is a widespread resident in the Arabian Peninsula (Cramp, 1985; Jennings, 2010). However, little is known about its diet in Qatar. Mohedano *et al*. (2014) investigated the diet of *B. ascalaphus* in Al-Wakrah Municipality in southern Qatar. They reported that rodents (*Meriones crassus* and *Jaculus jaculus*) and *Lepus capensis* comprised most of this owl's diet, in addition to birds, reptiles, and arthropods. Evans and Bates (1993) studied the diet composition of the eagle owl in the desert ecosystem in Saudi Arabia. Also, the diet of the eagle owl was examined in Jordan (Amr *et al*., 1997; Rifai *et al*., 2000, Shehab and Ciach, 2008, Obuch, 2018), in Iraq (Al-Sheikhly, 2012; Al-Sheikhly and Al-Azawi, 2019), in UAE (Cunningham and Aspinall, 2001; Llanes *et al.* (2008), Saudi Arabia (Abi-Said *et al* 2020), the Palestinian Territories (Amr *et al.*, 2016), Syria (Shehab, 2004), and Egypt (Goodman, 1990; Sándor and Orbán, 2008; Moldovan and Sándor, 2009).

This study reports on the diet composition of the desert Eagle Owl in Al Eraiq Reserve in the southwestern region of Qatar based on a recent pellet collection.

Methods

A total of thirty-seven intact and three broken pellets were collected from two adjacent rocky hills at Al Eraiq Reserve situated in the southwestern region of Qatar (24° 45' 51.0'' N 50° 54' 19.5'' E altitude 25m a.s.l.). Generally, the area is covered with sand dunes whilesome rocky hills are covered with scattered shrubby vegetation.(Figure 1). The pellets were soaked in hot water until softened; hard material including bones, skulls, mandibles, and scales was removed and placed in a separate petri dish for later identification. Animals were identified based on a reference collection at the Lebanese University Natural History Museum, and Osborn and Helmy (1980), Harrison and Bates (1991), and Amr (2012). The total number of mandibles and maxillas found determined the number of individuals, and the weight of rodents was based on Osborn and Helmy (1980), Harrison and Bates (1991),

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Figure 1. Al Eraiq Reserve on the southwestern coast of Qatar

Scott and Dunstone (2000), and Abu Baker and Amr (2003). The diet composition was expressed by the total number of prey items and their percentage in the diet, frequency of their occurrence, and percentage of mass taken.

Results

The pellets of the Pharoah eagle owl were oval in shape with an average length of 46.51 mm ± 12.39 (range 77.38 – 22.75 mm) and an average width of 24.66 ± 4.77 (range 34.83 – 16.44 mm). A total of seventy-five prey individuals were retrieved from the forty pellets including five mammal species (One Lagomorpha; *Lepus capensis* and four Rodentia: Dipodidae, Cricetidae, and Muridae), unidentified bird species, and scorpions (Table 1).

The pellets contained 1–4 prey items with an average of 1.9 ± 0.87 prey items per pellet. Most pellets (40%) contained one prey item and only 2.5% contained four prey items (Figure 2). Out of the forty pellets, twenty-nine contained rodents, out of which ten contained only remains of rodents, and nineteen contained remains of rodents, hares, birds, and scorpions; seven contained hares, out of which five contained only remains of hares; eleven contained birds out of which three contained only remains of birds; and seventeen contained scorpions. Out of the four rodent species extracted from the pellets, *Gerbillus cheesemani* was the most common (45%), followed by *Jaculus loftusi* (26%), *Meriones crassus* (16%), while *Mus musculus* was the least common rodent (13%). Birds and scorpions constitute a high percentage; 17.33 and 22.67% respectively. In terms of body mass intake, *Lepus capensis* contributed the most (79.9%), followed by *J. loftusi* and *Meriones crassus* (7%), while *M. musculus* had the least contribution of 0.86% (Table 1). Even though *G. cheesmani* was the most common rodent retrieved from the owl's pellet, it only contributed to 4.66% of the body mass taken (Table 1).

Discussion

Bubo ascalaphus exhibits an opportunistic feeding behavior, which plays a vital role in determining its diet. The availability and abundance of prey in its environment influence its dietary habits. Rodents were the

Table 1. Food composition of the Pharoah eagle owl in Al Eraiq Reserve on the southwestern coast of Qatar.

Prey item	Total No.	%	Average body mass (g)	Total mass taken	% mass
L. capensis	7	9.33	1000	7000	79.9
G. cheesmani	17	22.67	24	408	4.66
J. loftusi	10	13.33	67.8	678	7.74
M. crassuss	6	8.00	100	600	6.85
M. musculus	5	6.67	15	75	0.86
Birds	13	17.33			
Scorpion	17	22.67			
Total	75	100	8761		

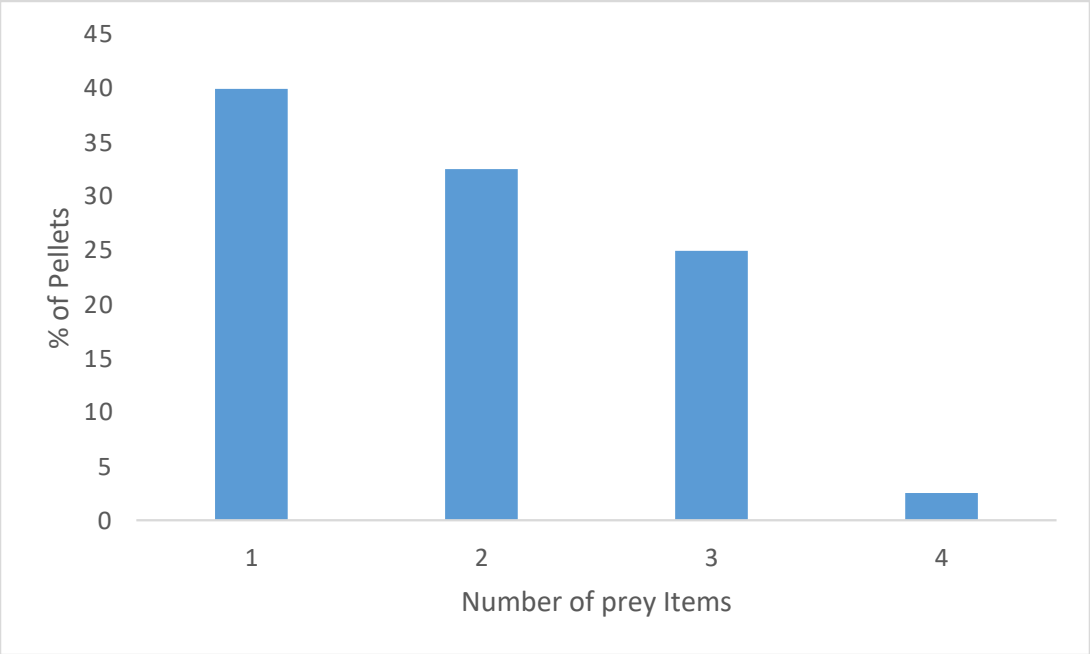

Figure 2. The number of prey items per pellet retrieved from the pellets of the Pharoah eagle owl from Al Eraiq Reserve, southwestern region of Qatar.

main prey item for the Pharoah eagle owl in this study which is consistent with other previous studies on this species' diet (Abi-Said *et al*., 2020; Nouira, 2007, Boukhamza *et al*., 1994, Goodman, 1990, Shehab and Ciach, 2008, Mohedano *et al.,* 2014; Rifai *et al.,* 2000, Sándor and Orbán, 2008; Benamor *et al.*, 2021). Contrary to other studies where large rodents constituted the main prey item for the Pharoah eagle owl (Shehab and Ciach, 2008; Mohedano, 2014; Rifai *et al*., 2000), smaller species of rodents (i.e. *G. Cheesmani* and *J. lofti*) made the highest frequency of the owl's diet in this study. The presence of the high frequency of *G. cheesmani* reflects the owl's nocturnal habit and its opportunistic feeding behavior that was determined by the abundance of its prey within an ecosystem. *Meriones crassus* was the least represented after *Mus musculus* and represented only 6.85% of the body mass consumed, even though many studies reported that *Meriones* sp. was the main prey item of the Pharaoh eagle owl (Boukhamza *et al.,* 1994; Sekour *et al.,* 2010; Abi-Said *et al*., 2020). This low percentage in the diet could be attributed to the low availability of this species in the reserve. Nonetheless, *L. capensis* was represented by 9.33% of the owl's diet but exhibited the highest percentage in terms of body mass intake (79%). This reflects the association of greater biomass to energy needs and energy expenditure. In contrast to Mohendano *et al.* (2014), who reported that Pharaoh eagle owls did not frequently consume birds, in the current study, birds constituted 17.33%

of the owl's diet and were found in 27.5% of the pellets. This reflects the scarcity of resources in the area and the acceptable cost/benefit of prey for the owl to hunt. The importance of scorpions in augmenting the owl diet in this desert ecosystem where the resources are limited was clear in the pellets collected. Arthropods, mainly scorpions, were found in 42.5% of the pellets and constituted 22.67% of the Pharoah owl diet. Owls provide important information on the biodiversity of the ecosystem in which they thrive. Analyzing the remains of prey found in their pellets can provide valuable information on the abundance and presence of small vertebrates and other species upon which they prey on a larger scale (Torre *et al.*, 2004; Heisler *et al*., 2016). Hence, further studies are needed to thoroughly understand the diet of the Pharoah eagle owl and its seasonality. The Pharaoh eagle owl is considered a bad omen in the Arabic culture and has been frequently persecuted by humans (Al-Sheikhly *et al*., 2020). Hence, threats impacting the Pharoah eagle owl will help in formulating an awareness program for effective conservation strategies.

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