

## Conservation Perspectives of Illegal Animal Trade at Markets in Tabuk, Saudi Arabia

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### INTRODUCTION

The region of Tabuk, located in the north-western part of the Kingdom of Saudi Arabia, is divided into five major habitat groups including: (1) mountains; (2) coastal and islands; (3) water bodies; (4) plains and valleys with scattered trees; and (5) agricultural and urban environment (Aloufi, 2007), covering a total area of 116 400 km<sup>2</sup>. To date, 35 mammal species, 37 reptile species and 167 bird species constituting 82 resident, and 85 migratory birds have been recorded from Tabuk region (Balletto *et al.*, 1985; Arnold, 1986; Gasperetti, 1993; NCWCD, 2000). This paper reports on the findings of a recent study undertaken by the authors at local markets in the Tabuk region, which aimed to identify the wildlife species and volumes in trade and to gain an understanding of any potential conservation impacts related to the trade.

### BACKGROUND

The availability of wildlife for sale in the Arabian Peninsula has been recorded in a number of studies over the past decade. The illegal trade in reptiles in the principal animal market in Damascus, Syria (Amr *et al.*, 2007), showed that more than 10 shops specialized in selling live local birds, reptiles and mammals. Soorae *et al.* (2008) provided notes on the implementation of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) in the United Arab Emirates (UAE), focusing on the trade in wildlife as pets; the study showed that birds are the most popular species in the pet trade in the Emirates, followed by reptiles and marine/freshwater species for aquaria. Mammals were not prominent in trade. A study of the illegal wild animal trade in Lebanon in 2009 (Dakdouk, 2009) reported that tens of thousands of animals were being imported, exported or re-exported from Lebanon each year, including Chimpanzees *Pan troglodytes* (CITES Appendix I) and CITES-listed reptiles (the country ratified CITES in May 2013). In Kuwait, a survey undertaken in 2010 into the illegal trade in raptors found 17 species being offered for sale, of which three were listed in the IUCN Red List (Al-Sirhan and Al-Bathali, 2010). Eid *et al.* (2011) identified 23 bird species and one reptile species that are listed in the CITES Appendices on sale at the Friday Public Market in Jordan.

The study reported on below is considered to be the first to investigate the illegal animal trade in the western part of Saudi Arabia, in the region of Tabuk, and to highlight conservation issues of concern associated with the trade.



Fig. 1. Map of Saudi Arabia, showing the Tabuk region.

### METHODS

The current survey was carried out at a number of local animal markets in the Tabuk region (Fig. 1). Between September and December 2011, a group of researchers made 38 visits to four major locations in the region where animals are available for sale: (1) falconry markets (a total of three visits in the cities of Almueleh, Al Wajeh and Umluj); (2) clandestine markets located in private farms (three visits to Haqel and Tabuk cities); (3) the weekly Friday market in Tabuk city (16 visits); and (4) pet shops in Tabuk city (16 visits). On each visit, the outlets were investigated for the presence of wildlife and associated products, and information was collected about species in trade, their numbers and costs. The vendors were asked about prices and specimens available; only those items viewed for sale were recorded. The origin of the items for sale was noted, where possible, and photographs taken, where appropriate.

### LEGISLATION

In order to protect wild species of fauna and flora from hunting for trade purposes, several laws and regulations have been promulgated by the Government of Saudi Arabia. In 1989, a hunting law was established which banned hunting without a licence, defined regulations governing such practices, and identified the consequences of non-compliance through a set of penalties. The Government of Saudi Arabia acceded to CITES in 1996, which regulates international trade in listed species; CITES implementing legislation was introduced in 2001. Despite the presence of laws and regulations controlling wildlife trade in Saudi Arabia, there have been few reports of violations or ensuing prosecutions relating to illegal trade, or of its magnitude or any associated conservation implications. A protected areas law was issued in 1995 to aid conservation activities and the establishment of protected areas in Saudi Arabia.

## RESULTS

During the course of this study, birds constituted the majority of traded species (97%) in the Tabuk region, followed by reptiles and mammals (2% and 1%, respectively). Although stuffed animals were seen, the majority of specimens (around 98%) were alive. A total of 22 bird species of 12 families were recorded, with Common Quail *Coturnix coturnix*, which is widespread and easy to capture in Saudi Arabia, the most traded species, comprising more than 65% of the total number of specimens recorded. By contrast, only single specimens were recorded of Turquoise-fronted Amazon *Amazona aestiva*, Yellow-crowned Amazon *A. ochrocephala*, Blue-and-yellow Macaw *Ara ararauna*, Greater Rhea *Rhea americana*, and the native Griffon Vulture *Gyps fulvus* and Osprey *Pandion haliaetus* (Table 1). The Rock Hyrax *Procavia capensis* was the most commonly available mammal species, and the Spur-thighed Tortoise *Testudo graeca*, with 128 specimens recorded, the most commonly available reptilian species (Table 1).

A total of seven species threatened with extinction according to the International Union for Conservation of Nature (IUCN) Red Lists was recorded, including a Critically Endangered reptilian species, an Endangered bird species, five Vulnerable species and two Near Threatened Species. A total of 20 CITES-listed species was recorded, three of which were listed in CITES Appendix I (Table 2).

## PRICES

The value of the birds in trade at the markets surveyed ranged from USD2 for a Common Quail to USD7332 for a Peregrine Falcon *Falco peregrinus*. Mammals also showed a huge variation in cost—from USD27 for a Cape Hare *Lepus capensis* to USD734 and USD800 for a Nubian Ibex *Capra nubiana* and Grey Wolf *Canis lupus*, respectively. Prices for reptiles were the lowest compared to other

animal groups and ranged from USD7 and USD8 for an Egyptian Spiny-tailed Lizard *Uromastix aegyptia* and a Western Caspian Turtle *Mauremys rivulata*, respectively, to USD35 for a Hawksbill Turtle *Eretmochelys imbricata*.

The prices for birds were similar to those reported at animal markets in Jordan and the UAE, with the exception of those for parrots and falcons, which were found to be considerably higher at the markets in the Tabuk region. Eid *et al.* (2011) stated that a single Grey Parrot *Psittacus erithacus* had sold at Amman market in Jordan for USD282; this compares with USD2133 for a specimen in Tabuk, and USD380–490 in the UAE (Soorae *et al.*, 2008). In Tabuk, the price of a Peregrine Falcon, at USD7332, was seven times that for a similar specimen on sale for USD1100 in the UAE, and a single Gyrfalcon *Falco rusticolus* was on sale for USD3067; prices for this species in the UAE ranged from USD1900–2700 (Soorae *et al.*, 2008). The higher prices in Tabuk could reflect the relatively high per capita annual income in Saudi Arabia; it may also point to lack of enforcement and implementation of the law as vendors feel confident in asking high prices with little fear of detection by officials.

## ORIGIN OF THE SPECIES

It was difficult to collect information on the origin of the specimens, but according to the sellers most of the local and migrant birds had been captured during the migration season in Almoeleh, Alwajh and Umloj, in the Tabuk region; some had also been captured in the region's valleys. Mammals such as Cape Hare, Grey Wolf, Sand Cat *Felis margarita*, Rock Hyrax and Nubian Ibex had been trapped or collected from the mountainous and desert areas of the Tabuk region. The origin of the non-native species was not provided, although it is known that the Spur-thighed Tortoises come mostly from Jordan. The critically endangered Hawksbill Turtle had reportedly been collected from Alwajh islands in Saudi Arabia, west of the Tabuk region.

**BIRDS CONSTITUTED THE MAJORITY OF SPECIES FOUND IN TRADE IN THE TABUK REGION. LARGE NUMBERS OF LAUGHING DOVES *SPILOPELIA SENEGALENSIS* WERE ON SALE AT A CLANDESTINE MARKET (BELOW). THIS SPECIES IS HUNTED FOR FOOD AND TO FEED FALCONS.**



EHAB EID

LAUGHING DOVES ON SALE AT A CLANDESTINE MARKET, TABUK REGION.

## DISCUSSION

Results from the markets surveyed in the Tabuk region were comparable to those from neighbouring countries such as Jordan and the UAE, where birds constituted the majority of species found in trade (Eid *et al.*, 2011; Soorae *et al.*, 2008). This can mainly be attributed to traditional and cultural aspects, in particular to the use of birds of prey in the practice of falconry, particularly in the Gulf region.

The diversity of bird species recorded in markets in the Tabuk region—represented by 22 species—was generally lower than for those reported from pet shops in Jordan and the UAE, with 54 and 31 species respectively (Eid *et al.*,

Group	Family name	Scientific name	Common name	Total no. of live specimens	Average price/ specimen (USD)	Average total cost (USD)	
Birds	Accipitridae	<i>Gyps fulvus</i>	Griffon Vulture	1	240	240	
	Burhinidae	<i>Burhinus oedicephalus</i>	Eurasian Thick-knee	37	14	518	
	Columbidae	<i>Streptopelia decaocto</i>	Eurasian Collared-dove	13	14	182	
		<i>Spilopelia senegalensis</i>	Laughing Dove	200	3	600	
	Falconidae	<i>Falco cherrug</i>	Saker Falcon	3	2934	8802	
		<i>Falco peregrinus</i>	Peregrine Falcon	8	7332	58656	
		<i>Falco rusticolus</i> *	Gyr Falcon	2	3067	6134	
	Gruidae	<i>Grus grus</i>	Common Crane	20	67	1340	
	Otididae	<i>Chlamydotis</i> sp.	Houbara species	11	534	5874	
	Pandionidae	<i>Pandion haliaetus</i>	Osprey	1	388	388	
	Passeridae	<i>Passer domesticus</i>	House Sparrow	162	6	972	
	Phasianidae	<i>Alectoris chukar</i>	Chukar	232	40	9280	
		<i>Alectoris melanocephala</i>	Arabian Partridge	49	40	1960	
		<i>Ammoperdix heyi</i>	Sand Partridge	534	6	3204	
		<i>Coturnix coturnix</i>	Common Quail	5696	2	11392	
		Psittacidae	<i>Amazona aestiva</i> *	Turquoise-fronted Amazon	1	667	667
			<i>Amazona ochrocephala</i> *	Yellow-crowned Amazon	1	1200	1200
	<i>Ara ararauna</i> *		Blue-and-yellow Macaw	1	1334	1334	
	<i>Psittacula krameri</i>		Rose-ringed Parakeet	54	80	4320	
	<i>Psittacus erithacus</i> *		Grey Parrot	25	2133	53325	
	Pycnonotidae	<i>Pycnonotus leucotis</i>	White-eared Bulbul	158	11	1738	
	Rheidae	<i>Rhea americana</i> *	Greater Rhea	1	187	187	
	Mammals	Bovidae	<i>Capra nubiana</i>	Nubian Ibex	3	734	2202
		Canidae	<i>Canis lupus</i>	Arabian Wolf	5	800	4000
Felidae		<i>Felis margarita</i>	Sand Cat	1	54	54	
Leporidae		<i>Lepus capensis</i>	Brown Hare	4	27	108	
Procaviidae		<i>Procavia capensis</i>	Rock Hyrax	42	80	3360	
Agamidae		<i>Uromastyx aegyptia</i>	Egyptian Spiny-tailed Lizard	7	7	49	
Reptiles		Cheloniidae	<i>Eretmochelys imbricata</i>	Hawksbill Turtle	1	35	35
	Geoemydidae	<i>Mauremys rivulata</i>	Western Caspian Turtle	79	8	632	
	Testudinidae	<i>Testudo graeca</i> *	Spur-thighed Tortoise	128	19	2432	
<b>Total</b>				<b>7480</b>			

**Table 1. Species recorded at markets in the Tabuk region, and average prices.** \*non-native species.

Group	Common name	CITES Appendices			**IUCN Red List status
		I	II	III	
<b>BIRDS</b>					
	<i>Amazona aestiva</i>		X		
	<i>Amazona ochrocephala</i>		X		
	<i>Ara ararauna</i>		X		
	<i>Capra nubiana</i>				VU
	<i>Chlamydotis</i> sp.		X		VU
	<i>Falco cherrug</i>		X		EN
	<i>Falco peregrinus</i>	X			
	<i>Falco rusticolus</i>	X			
	<i>Grus grus</i>		X		
	<i>Gyps fulvus</i>		X		
	<i>Pandion haliaetus</i>		X		
	<i>Psittacula krameri</i>		X		
	<i>Psittacus erithacus</i>		X		VU
	<i>Rhea americana</i>		X		NT
	<i>Spilopelia senegalensis</i>		X		
<b>MAMMALS</b>					
	<i>Canis lupus</i>		X		
	<i>Felis margarita</i>		X		NT
<b>REPTILES</b>					
	<i>Eretmochelys imbricata</i>	X			CR
	<i>Testudo graeca</i>		X		VU
	<i>Uromastyx aegyptia</i>		X		VU

**Table 2. CITES-listed species recorded at markets in the Tabuk region.** \*non-native species. CR: Critically Endangered; EN: Endangered; NT: Near Threatened; VU: Vulnerable. \*\*Source: IUCN (2014).

2011; Soorae *et al.*, 2008), although the number of falcons recorded was higher than from those two locations. In addition, the large number of game birds at the market may reflect the fact that they are also caught for their meat, and to feed to falcons. Their high numbers in trade in relation to other animal groups may be attributed to (1) the high demand for falcons for traditional use by Saudi nationals to practice falconry (rather than in the raising of small passerines, for example); (2) lack of enforcement; (3) the remoteness of the Tabuk region from major cities, which attracts hunters; and (4) its close proximity to other Gulf countries.

Large mammalian species found in trade included the Nubian Ibex, classified in the IUCN Red List as Vulnerable. Hunters from the Tabuk region reportedly used to chase this animal over long distances in the belief that the more exhausted the animal became, the more its flesh would provide men with courage. This practice continues, with the animal's flesh sold to specialist customers for this purpose. Wolves are also hunted for their flesh for healing purposes, principally to treat stomach conditions and muscle pain, with adult specimens on sale for USD266, while juvenile wolves, which are believed to confer courage on children if raised as household pets, sold for USD1335. Both species are threatened locally and their populations are decreasing (Cunningham and Wronski, 2010).

The Spur-thighed Tortoise—the most common reptile encountered—is illegally in trade, and smuggling is reportedly commonplace. The low numbers of Egyptian Spiny-tailed Lizards (also known as Dabb Lizard) in the market may be due to a combination of the ready access to specimens of this species in the wild—which are easy to catch—and lack of enforcement, which enables people to hunt Dabb Lizards in large numbers without fear of detection and for whom interest in purchasing specimens is therefore low. However, one commentator cited in a newspaper report in reference to a massive seizure of this species observed that “we used to see them in large numbers, but today we have to look for them painstakingly and we do find them, they are just a few,” [sic] (Anon., 2014). The presence of a single Critically Endangered Hawksbill Turtle certainly highlights the need to enforce legislation and to perform further evaluation in order to understand the level of trade in this species and ensure that it is not causing declines in wild populations of this species.

CITES-listed species found in the market were being offered for sale at higher prices than non-CITES-listed species, which accords with the findings of Courchamp *et al.*, 2006. Moreover, about 62% of species recorded in trade are CITES-listed; while this Convention doesn't apply to listed specimens if sourced in-country, their presence for sale contravenes national legislation and reflects poor enforcement and the need for routine inspections at Tabuk market.

These results show the urgent need to strengthen law enforcement, as well establishing an awareness campaign to conserve threatened species in Saudi Arabia. In order for law enforcement of wildlife trade to be an effective conservation tool, it is crucial that the implementing agencies recognize the scale of national trade in animal

species, especially birds, which constitute the majority of traded specimens in the market. Improving public awareness and law enforcement must be a priority to ensure that the best conservation practices are adopted, with further investigation made into the collection of threatened species in the Kingdom.

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