Notes on the distribution and diet of Blanford's Fox, *Vulpes cana* Blanford, 1877 from the United Arab Emirates

by Peter L. Cunningham and Brigitte Howarth

Abstract. Blanford's Fox, *Vulpes cana*, occurs throughout the mountainous eastern region of the United Arab Emirates. External body measurements are similar to those presented for the species in other areas of their range. The diet consists mainly of invertebrates and fruit. Blanford's Foxes were observed with white as well as black tail tips.

Kurzfassung. Der Blanford-Fuchs, *Vulpes cana*, kommt im Bergland der gesamten östlichen Region der Vereinigten Arabischen Emirate vor. Die Körpermaße stimmen weitgehend mit jenen aus anderen Teilen des Verbreitungsgebietes überein. Die Nahrung besteht hauptsächlich aus Invertebraten und Früchten. Es wurden sowohl Blanford-Füchse mit weißen, wie mit schwarzen Schwanzspitzen beobachtet.

Key words. Distribution, diet, ecology, reproduction, Middle East.

Introduction

The documented distribution of the Blanford's Fox, *Vulpes cana* Blanford 1877, was originally limited to Central Asia, Iran, Afghanistan, Pakistan and India and only recently noted to occur on the Arabian Peninsula (NADER 1990, KINGDON 1990, AL-KHALILI 1993, ROBERTS 1997). The Arabian specimens were recorded from Oman, Israel/Palestine, Saudi Arabia and the Sinai Peninsula (MENDELSSOHN et al. 1987, NADER 1990, HARRISON & BATES 1991, GEFFEN et al. 1992a, AL-KHALILI 1993, GEFFEN et al. 1993). GINSBERG & MACDONALD (1990) suggested that Blanford's Fox probably occurred throughout suitable habitat in Arabia while GEFFEN et al. (1993) suggested that they have a much larger range than was earlier believed. The first Blanford's Fox to be caught in the UAE, however, was during a vertebrate survey of the region conducted between March and May 1995 (STUART & STUART 1995). Since then further evidence of the occurrence of this species in the UAE has been obtained through active capture and dead specimens found (this study) as well as infrared photography (LLEWELLYN-SMITH 2000).

Methods

Foxes were trapped using live-capture box traps, measuring 80x30x33cm, baited with quails and dates. The following body measurements were taken after capture: total length (TL), tail length (T), hind-foot length (Hf), ear length (E) and mass (grams, g). Four foxes were caught during a vertebrate survey conducted for the Arabian Leopard Trust (ALT) during the early part of 1995

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while the senior author similarly trapped a further four (using 2 traps and 20 trapping days) during 1999. Data on four more Foxes (two bred in captivity) were obtained through the Breeding Centre for Endangered Arabian Wildlife, Sharjah Emirate, where there is a captive-breeding programme for this species.

Numerous faeces were analysed in situ in the field throughout the Hajar Mountains while four samples (n = 4), were carefully scrutinised as an introduction to the diet of the species. Remains were sorted according to arthropod, bone, seed, etc. and confirmed with the use of a dissection microscope and reference material. Faeces were identified as Blanford's Fox due to the habitat and/or collected from trapping sites.

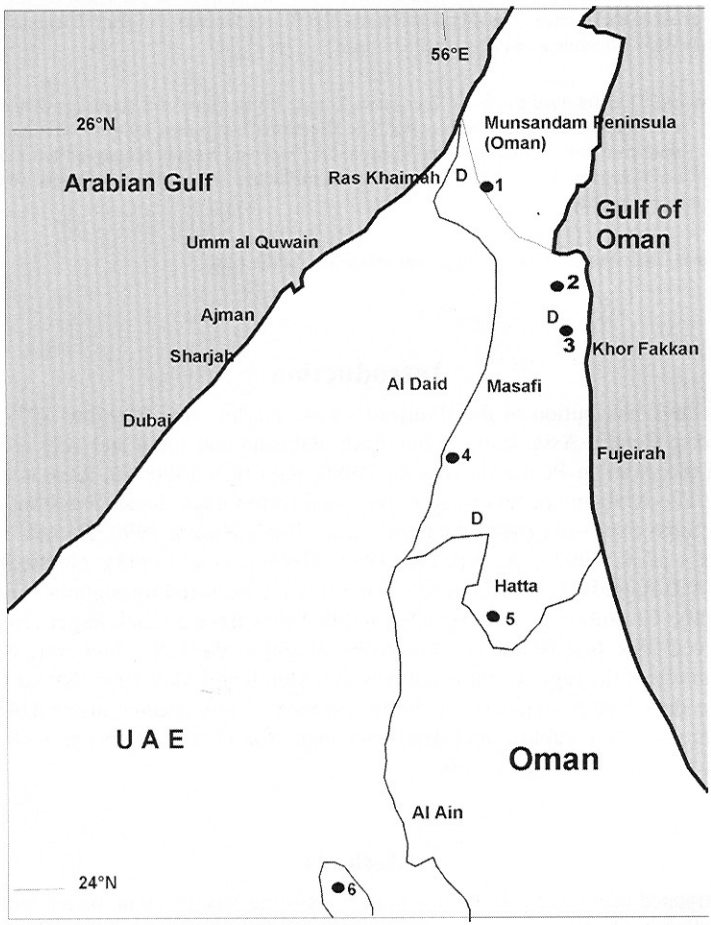

Fig. 1. Map indicating the areas where *Vulpes cana* were observed. 1- Wadi Bih, 2- Wadi Ziqt, 3- Wadi Wurayyah, 4- Wadi Shawkah, 5- Wadi Shuwayhah, 6- Jebal Hafit. D-dead specimens encountered.

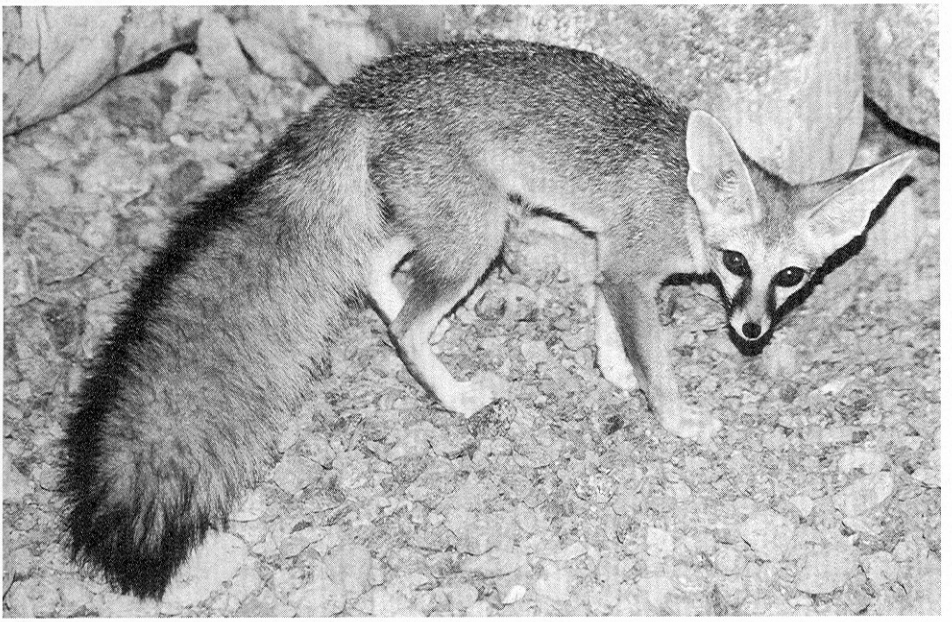

Fig. 2. Blanford's Fox (*Vulpes cana*) with a distinctive white tail tip from the UAE (Photo: K. J. BUDD).

Results

Distribution

Six females and four males were trapped at different locations throughout the UAE. The areas where they were caught are as follows: Wadi Bih (1 ♀), Wadi Shawkah (1 ♂, 1 ♀), Wadi Shuwayhah (1 ♀), Wadi Ziqt (2 ♂, 2 ♀), Wadi Wurayyah (1 ♀) and Jebal Hafit (1 ♂). All the specimens were caught in remote mountainous terrain not often visited by humans (Fig. 1, 3). Five of the foxes caught were transferred to the Breeding Centre for Endangered Arabian Wildlife (Sharjah Emirate) to initiate a captive breeding programme while the rest were released after measurements were taken. Three dead specimens (possibly poisoned) were found in Wadi Wurayyah, one dead specimen (cause of death unknown) was found in Wadi Sham and one dead specimen (roadkill) was found between Hatta and Dhaid. The areas where they are known to occur are indicated in Fig. 1. Body measurements, which include measurements from two foxes bred in captivity, are presented in Tab. 1.

Diet

The diet of *V. cana* from the UAE was approached as an introduction only and warrants more research to incorporate aspects such as seasonal and spatial variation, which could affect diet. The majority of the items identified were arthropod and/or fruit and plant material with the orders Coleoptera and Hymenoptera dominating the arthropod remains. Tab. 2 indicates what was found in the faeces.

Tab. 1. Body measurements of twelve *Vulpes cana* specimens from the United Arab Emirates. Mass in gram, other measurements in mm. Captive bred 1, was measured at 5 months of age. Captive bred 2, was measured at 1 year of age.

Sex	Area	TL	T	Hf	E	Mass
♂	Wadi Ziqt	747	307	91	87	-
♂	Wadi Ziqt	800	345	100	91	-
♀	Wadi Ziqt	657	317	88	89	-
♀	Wadi Ziqt	735	300	100	85	1442
♀	Wadi Shuwayhah	705	320	90	85	955
♂	Wadi Shawkah	736	326	98	82	1248
♀	Wadi Shawkah	762	332	100	84	1245
♂	Jebal Hafit	750	350	105	80	1242
♀	Wadi Wurayyah	710	315	85	87	-
♀	Wadi Bih	722	315	99	91	1200
*♂	Captive Bred 1	695	330	100	80	1040
*♂	Captive Bred 2	785	335	105	91	1550
	Mean: Males	752	332	100	85	1270
	Mean: Females	715	317	94	87	1211
	Mean: Total	734±2	324±5	97±1	86±1	1240±73

Discussion

The areas where *V. cana* were caught indicate the wide range of this species in the UAE. They probably occur throughout the Hajar Mountain range, which dominates the eastern part of the UAE. This mountain range extends from the Munsandam Peninsula in the north, southwards into Oman (Fig. 1). Due to the shy nature and nocturnal foraging, *V. cana* is not readily observed. It is suggested that *V. cana* is more abundant than previously believed. It is possible that *V. cana* even form part of the diet of the Arabian Leopard, *Panthera pardus nimr* (GEFFEN et al. 1992b). YOSEF (1998), who states that *P. p. nimr* are known to prey on foxes, supports this. SPALTON (pers. comm.), who researched leopards in the Jebal Samhan area in the Dhofar region of Oman, however, states that although Blanford's Fox were common in the study area, no evidence of their inclusion in the diet of leopards was observed. More data on the distribution of *V. cana* as well as thorough research on faecal analysis of *P. p. nimr* and Caracal, *Caracal caracal schmitzi*, scats are needed to confirm *V. cana* as prey for larger predators.

According to the data available (n = 12), it would seem that sexual dimorphism is not evident. The body measurements as indicated in Tab. 1 are similar to those as supplied by HARRISON & BATES (1991). The exception being the mass. The mean mass of 1240 g (n = 8) for the UAE specimens is more than the mean mass of 873.7g (n = 3) and 710g to 956g as indicated in HARRISON & BATES (1991) and ROBERTS (1997), respectively. Body weights as presented by GEFFEN et al. (1992c, 1992d) in Israel, vary between 0.9 kg and 1.4 kg, and are similar to our findings.

The status of *V. cana* in the UAE is uncertain. According to ROBERTS (1997) they are rare in Iran, Afghanistan, the Central Asian Republics and northern Pakistan, but more plentiful in south-west Balochistan (Pakistan). GEFFEN et al. (1993) states that although *V. cana*'s distribution is restricted to a specific habitat type, it is a locally common desert carnivore in

Tab. 2. Items identified in analysed faeces (n = 4) for *Vulpes cana*, from the United Arab Emirates. * Due to the small sample size no attempt at quantifying the remains was made.

Order Mantodea	Unidentified mantis remains
Order Orthoptera	Migratory locust (*Locusta migratoria*)
Order Coleoptera	Unidentified beetle remains
Order Diptera	Hover-fly (Syrphidae leg) and unidentified fly pupae remains
Order Hymenoptera	Unidentified ant remains and unidentified ant eggs
Order Araneae	Unidentified spider remains
Fruit & Plant material	Capparis cartilaginea seeds
	Ficus salicifolia fruit
	Grewia sp. fruit
	Olea europea fruit
	Prunus arabica fruit
	Ziziphus spina-christi fruit
	Grass seeds – *Cymbopogon* sp.; Grass stems & leaves
Birds	Unidentified feather
Mammals	Gerbil incisor – Possibly *G. dasyurus*
	Unidentified bone remains – possibly Goat
	Fur – Goat & Gerbil
Reptiles	Unidentified pelvis
Snails	*Gibbulinopsis signata*
	Granaria persica
	Pupoides coenopictus
Miscellaneous	Plastic, pebbles & sand

Israel. However, they are classified as vulnerable ("not critically endangered or endangered but facing a high risk of extinction in the wild in the medium-term future") in the UAE by HORNBY (1996). In the neighbouring Sultanate of Oman, also reflected by the official IUCN status listing, they fall within the "data deficient" category (FISHER 1999). According to SPALTON & WILLIS (1999), "inquisitive" Blanford's Foxes were often responsible for triggering cameras set to photo-trap leopards in the Dhofar region, Oman. ROBERTS (1997) voices his concern for the survival of the species due to the continuous persecution for its fur. Numerous traditional stone fox traps (smaller than the traditional wolf, caracal and leopard traps – now in disuse) lie scattered throughout the Hajar Mountains (pers. obs.) indicating that they could have been used to trap *V. cana* for fur in the past although this could not be accurately determined. GINSBERG & MACDONALD (1990) state that the trade in fur of *V. cana* is minimal compared to other foxes. Recent trapping, tracks and scat observations indicate that they are relatively abundant in remote mountainous terrain in the UAE. More research is needed to confirm the status in the UAE.

Very little is known about the diet of this species although ROBERTS (1997) states that the structure of the muzzle and dentition "implies a more specialised diet than other foxes and is consistent with insect eating". *V. cana* are mainly described as being insectivorous and frugivorous (KINGDON 1990, GEFFEN et al. 1992a). Our data suggests that they have a diverse diet of invertebrates and fruit with a large variety of items found in the analysed faeces (see Tab. 2). According to GEFFEN et al. (1992a), invertebrates account for more than 90% of

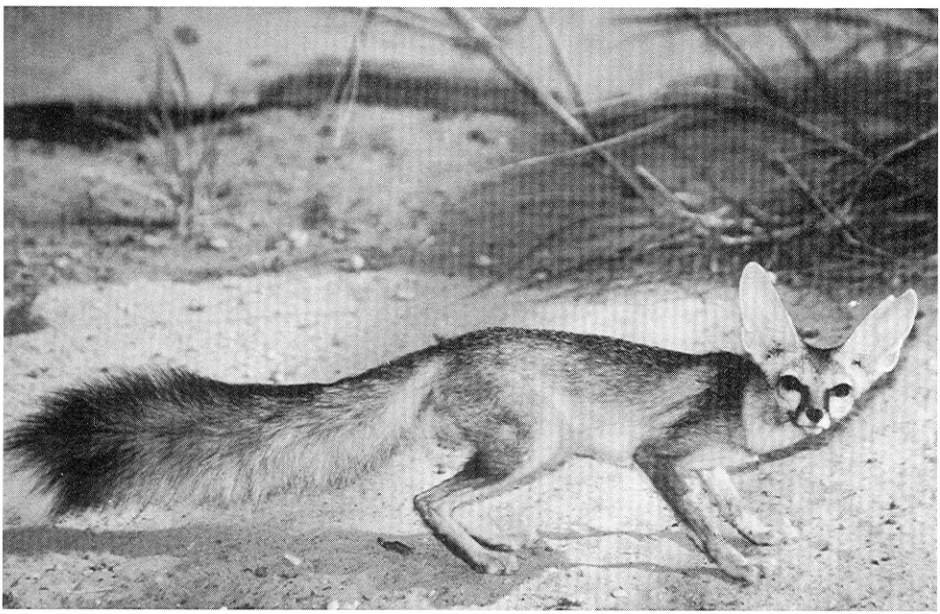

Fig. 3. Blanford's Fox (*Vulpes cana*) with a distinctive black tail tip from the UAE (Photo: K. J. BUDD).

all faecal samples analysed in Israel. Other references to insects included in their diet are few with locusts and dung beetle being mentioned (ILANI cited after AL-KHALILI 1993, HARRISON & BATES 1991, ROBERTS 1997).

Fruit remains of *Capparis cartilaginea*, *Ficus salicifolia*, *Grewia* sp., *Olea europea*, *Prunus arabica* and *Ziziphus spina-christi* was recovered from the analysed faeces during this study. Other references to fruit eaten by *V. cana* include melons, grapes and Russian Olives, *Eleagnus hortensis*, from Pakistan (ROBERTS 1997) while it is estimated that *Ziziphus spina-christi* fruit (when available) make up 90% of their diet in the UAE (ANONYMOUS 1997). GEFFEN et al. (1992a) state that the frequency of occurrence of plant material in their faeces in Israel ranged between 60-70% with the Caper bush *Capparis cartilaginea*, a favoured source of food.

Although they are also known to feed on reptiles, birds and small mammals (KINGDON 1990, HARRISON & BATES 1991, ROBERTS 1997, ANONYMOUS 1997) only one item of each (unidentified reptile pelvis, Gerbil incisors and unidentified feather) was collected from the analysed faeces during this study. In Israel, 12% of their diet consisted of vertebrate remains (GEFFEN et al. 1992a). It is accepted that the small sample size of analysed faeces during this study could contribute to the lack of vertebrate remains found.

Another issue that warrants discussion is the colour of the markings on the tip of the tail. According to ROBERTS (1997) the tip of the tail is generally black, but may be white in some specimens. Of the ten Blanford's Foxes caught in the UAE, seven had black tail tips and two white tips (Figs. 2–3). One is unknown, as it was not noted at capture (STUART & STUART 1995). Two Blanford's Foxes, which were bred in captivity, had a black and white tail tip,

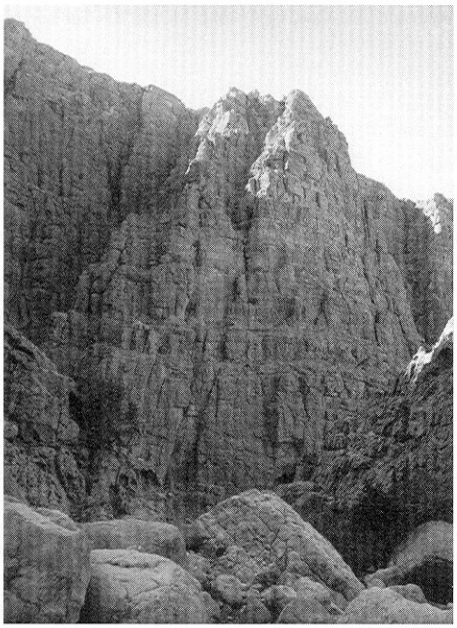

Fig. 4. Blanford's Fox (*Vulpes cana*) habitat in the UAE. Note the inaccessibility of the terrain (Photo: P. CUNNINGHAM).

respectively. Of the twelve (ten caught and two bred in captivity) foxes observed in the UAE, three males had white tail tips and three had black, while five females had black tail tips (one female unknown). According to LLEWELLYN-SMITH (2000) four of the five infrared photographed individuals had black tail tips in the Ru'us al Jibal, east and south east of Ras al Khaimah, UAE. All five dead specimens encountered during this study had black tail tips. Red Fox, *Vulpes vulpes arabica*, have only been observed with white tips. Using tail tip colouration as an identification characteristic between *V. v. arabica* and *V. cana*, however unlikely, would therefore not be sufficient.

It is now certain that Blanford's Fox occur throughout the mountainous regions of the United Arab Emirates and although classified as vulnerable they may be more abundant than first suspected. The use of poisons to eradicate "problem animals" such as caracal, that prey on domestic stock, should be addressed as Blanford's Fox inadvertently fall victim when scavenging, as evident on a few occasions. Further baseline surveys and thorough research on the distribution, ecology and reproduction are needed for a better understanding of this Fox. We would like to emulate GEFFEN et al. (1993) in urging those responsible for the planning of protected areas in the UAE to consider *V.cana* in selecting mountainous desert areas for conservation.

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