

# Morocco and Western Sahara, July 9-19, 2018

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Notes: I will summarily refer to both countries as “Morocco” in the introduction, but it doesn’t mean that I recognize Moroccan sovereignty over Western Sahara. See Addendums 1-2 for identification guides to shrews and gerbils of the area. I got very few photos; some of those are in Addendum 3.

Morocco is popular among mammalwatchers, and for good reasons. Many of its ~100 species of land mammals are endemic, near-endemic, or easier to find than elsewhere. I managed to see 72 of them (plus two dolphins) in 11 days; a larger team can probably see 80+ in two weeks. The country is reasonably safe (as long as you don’t use roads), beautiful (few other places have so successfully resisted the plague of junk architecture), and friendly (sometimes excessively). There are great trip reports from Morocco, including the pioneering reports by Richard Webb and the excellent recent report by Bebbi Babler team. I’ll try to avoid too much repetition. Even with so much coverage, some of the best sites, such as the amazing Kef Azigza, are not yet on mammalwatchers’ radar; I’ll describe those sites in more detail.

Summer is not the best time to visit Morocco. Daytime temperatures in the desert can reach 51°C, so rocks and tussocks don’t cool until morning, making thermal imagers almost useless. Everything except the highest elevations is very dry. The only advantage is that high mountains are snow-free, but there are no high-elevation endemics among Moroccan mammals. Go in spring, better around new moon (during my trip new moon was on July 13). And one more advice: don’t go alone. You need a team of three people for effective spotlighting from the car; driving is slow and tiring (except on the few existing freeways) and there’s a lot of ground to cover. I tried to sleep as little as I could, drank unhealthy amounts of coffee, and still had to spend more than 20 hours sleeping; I wish I had a second driver. Besides, European GPS navigators don’t cover Morocco, and Google Maps don’t work there in Drive mode as of the moment of writing, so it’s much better to have someone else navigate while you drive, especially in cities.

All shrews, hedgehogs, rodents, carnivores, and flying bats were seen at night unless mentioned otherwise. Flying bats are mentioned only if identified by bat detector, shrews and rodents – only if identified visually (not just seen through thermal imager).

## 1. Northern Morocco and the High Atlas

Northern Morocco, an area of dry Mediterranean climate, has most of the country’s forests and national parks, but is largely neglected by both mammal- and birdwatchers, in part because it has few endemic or African species. It does, however, have endemic subspecies of a few “European” mammals.

Sidi Bougaba Nature Reserve (34.252449N 6.666931W) near Kenitra, known among birders as “the marsh owl site”, was particularly good for spotlighting. Dense shrubs east of the road circling the lake were full of **West Mediterranean mice** (it is possible that some of them were **house mice**, but the few I could see well were brownish with shiny white bellies and short tails); I also saw two **North African hedgehogs** and two **wild boars**.

Immediately to the east is the large forest called Foret de la Maamora, where it took me just one hour to find a beautiful **Maghreb dormouse** and a local endemic **greater short-tailed gerbil** (both near 34.124965N 6.620417W). **Whitaker’s shrew** is said to be common, but I missed it despite much effort.

Strait of Gibraltar has cetaceans such as **striped dolphin**, **killer whale**, and **sperm whale**. They are mostly in Moroccan waters, but whalewatching tours run from the Spanish side (see my 2014 Spain & France trip report).

Tasselmtane National Park in Rif Mountains is very scenic; it has Morocco’s only fir forests and **Eurasian otters**. I was there in daytime and saw no mammals except **Barbary macaques** (at 35.115385N 5.134236W).

El Hoceima National Park is on the Mediterranean coast; it has forests of sandarac (a near-endemic conifer) and was the only place in Morocco where I saw **European rabbits** (native). I also found a **common barbastelle** and a few **meridional serotines** flying around, a **greater white-toothed shrew** (with gray belly), a **crested porcupine**, a few **wood mice**, a **greater jird**, and a **Maghreb dormouse** in four hours of walking around 35.219953N 3.934088W. There is a large fenced area with reintroduced **Atlas red deer**.

Cedar forests of Ifrane National Park above Azrou are the easiest place to see **Barbary macaques**; some troops live along the road and feed on scraps, but others stay in the woods and behave naturally. You can walk with them through the forest; they don’t mind. The only mammals I found there at night were **whiskered** and **emarginated myotis** flying over clearings, a **red fox**, a **North African gerbil** (33.420179N 5.171769W) and rather vicious feral dogs, but there were also **wild boar** digs and **crested porcupine** quills.

Better cedar forests can be seen in large Tazekka National Park east of Fez (I didn't have time to visit it) and south of Col du Zad where I flipped a shrew (at 32.986991N 5.071400W) that was probably a **Whitaker's shrew** because greater white-toothed is unlikely at high elevations.

The Atlas Mountains are mostly covered by montane steppes and cypress forests; higher up are a narrow belt of alpine meadows and lots of barren rock. Amazingly, above the tree line there are no rodents at all; except for an occasional **red fox**, the only wild mammals you can see there are **Barbary sheep**. I saw the sheep in Toubkal National Park (at 31.182362N 7.813584W, accessible from Oukaïmeden) and in a huge enclosure near Tizi'n Test Pass (scan the highest peak visible from 30.896208N 8.336606W). There were numerous **wild boar** digs just inside the enclosure fence. The only mammals around the pass at night were **common pipistrelles**, but at dawn I saw a **common genet** at 30.863215N 8.378974E, and later spotted two distant **Cuvier's gazelles** from 30.813393N 8.397772W on the way to Tafingoult turnoff (note that molecular studies show this gazelle to be conspecific with some lowland forms from Africa and Arabia).

All roads crossing the High Atlas are very slow, and some have heavy traffic day and night, particularly the one from Marrakesh to Ouarzazate. The only quick way to cross is the Marrakesh-Agadir freeway. It skirts the small area (with Agassil at its center) where the isolated Moroccan population of **striped ground squirrel** occurs. I saw one squirrel from the freeway at approximately 30.670115N 9.245120W (near Tussaderaat) in early afternoon. Watch out for more common **Barbary ground squirrels**.

I really wanted to check out Western High Atlas and Eastern High Atlas National Parks, but didn't have time. The latter is reportedly better for mammals, as it has **Cuvier's gazelle**, **Barbary sheep**, and **common gundi**.

## 2. Western Morocco and the Anti-Atlas

The city of Essaouira is surrounded by coastal dunes where the very localized endemic **western gerbil** occurs; I found one at 31.47949N 9.771426W near Diabat.

The western coast south of Cap Rhir (where I saw **bottlenose dolphins** offshore of 30.628142N 9.887525W and other people have seen **Barbary sheep**) is a transition zone from Mediterranean climate to fog desert. For mysterious reasons, this part of Morocco has isolated populations of many African mammals; in addition to the abovementioned **striped ground squirrel** there are **serval**, a bat (recently split), two mice and a shrew.

Souss-Massa National Park south of Agadir has an enclosure (closed on weekends) with dorcas gazelle, addax and scimitar-horned oryx; neither species is likely to be native to the area. In the southern part of the park there is an old drainage pipe with a mixed colony of **Cape big-eared bats** and the recently split **North African roundleaf bats**, but the only published coordinates I could find for it were too imprecise (30.07N 9.6E), and I couldn't find the pipe. That area, however, proved excellent for small mammals: in three hours of walking around those coordinates I found a **Mauritanian shrew** (seen very well), a **Egyptian mongoose**, numerous **Barbary striped mice**, a **Hoogstraal's gerbil** (another localized endemic), and a few **greater multimammate mice** (strikingly colored, with red back and yellow belly – I bet this population is going to be split someday).

Yet farther south, the vicinity of Bou Jerif Castle (29.081990N 10.331354W) is another small mammals hotspot; it is reportedly good for **Egyptian mongoose**, **African wolf**, **Barbary ground squirrel**, **lesser Egyptian jerboa**, **Barbary striped mouse**, **fat sand rat**, and **savanna hare**. I saw none of those in two hours of driving and walking around, but was happy to see a **pleasant gerbil**, and particularly some **North African roundleaf bats** flying around the castle in the company of numerous **Kuhl's pipistrelles**.

The Anti-Atlas is a land of quiet roads winding through dry hills covered with olives and sometimes junipers. I spent many hours driving around looking for **Cuvier's gazelles** (recommended locations include 29.933914N 9.335279W and 29.737754N 8.857819W), but didn't see any. The famous **North African sengi** site (30.057191N 9.087985W) near Askar also proved surprisingly difficult: it took me three hours to see one very briefly in a rock pile, while other people have enjoyed prolonged views; I think the reason might be that in summer the sengis don't bask and generally avoid exposure to the sun. **Barbary ground squirrels** (in late morning) and **North African hedgehogs** were very common there (I saw only one live hedgehog but lots of roadkill).

In the far southwest, near the border with Western Sahara, Khnifiss National Park might have fog desert endemics: **Occidental gerbil** and **Saharan shrew**, but I could only find information about its bird fauna.

## 3. Moroccan deserts

There are two deserts in Morocco, with different mammal faunas. In the northeast there is an arid intermontane area infamous for very cold winter nights. I found all its specialties (**greater Egyptian jerboa**, **lesser short-tailed**

**gerbil**, and **Shaw's jird**) in three hours of walking around 33.905809N 2.019357W (near Ain Bni Mathar); the lighter-colored **lesser Egyptian jerboa** is said to occur in sandy patches but I didn't find any of those.

In the south lies the Moroccan part of the Sahara. It doesn't have huge ergs (dune seas) like those in Algeria and Libya, but there is a small one called Erg Chebbi. It is a popular tourist destination, and its western side is lined with hotels. I stayed at Auberge Dunes d'Or (31.201643N 4.028767W; the only hotel stay of the trip), where **Kuhl's pipistrelles** of the pale "*deserti*" ecotype were abundant and a few **Geoffroy's trident bats** were hawking the lights facing the dunes. Spotlighting was best along the erg edge: I found a few **lesser Egyptian gerbils** (hand-caught one subadult), many **pygmy gerbils** (including a baby so tiny I first took it for a windspider), and one **Tarabul's gerbil**; there were also fresh **fennec** tracks. Driving away at first light, I saw another tiny juvenile on the road, a **lesser Egyptian jerboa** (identified by overall color and sandy habitat, see next paragraph). Two **Rueppell's pipistrelles** night-roosted in adobe ruins (31.433223N 4.307253W) near Ksar Honnatsou.

The rest of the desert is hamadas and regs (gravel-covered plains), crossed by very dry mountains. The best place for hamada fauna is just east of Boumalne Dades. The road to the city's garbage dump (famous among birders) starts at 31.366481N 5.960877W and immediately crosses an area with lots of rodent burrows; park in front of some burrows an hour after sunrise and you should see **fat sand rats**. Past the garbage dump there are burrows of **greater jirds**, also active in the morning but generally earlier, and then a small wadi with a **red fox** den on a slope; a small car might have to turn around at that point. Farther east is a paved road (branching off the highway at 31.364199N 5.914051W) where there's virtually no nighttime traffic and I saw a **hamada jerboa** (a species recently recognized as separate from lesser Egyptian jerboa, it differs in being brownish rather than yellowish and having vibrissae dark gray at base rather than white; I didn't see the vibrissae, but the habitat was typical hamada with no sand anywhere in sight). Yet farther east, near Imider, is a rocky canyon (31.369692N 5.821724W) known for roosts of Pharaoh eagle-owls; the owls were absent when I was there but I saw a **red fox**, a few **pygmy gerbils**, and a **fat-tailed gerbil** in that area.

The road from Errachidia to Meknes passes through large rocky canyons inhabited by **common gundis**: look in late morning or evening at 32.157522N 4.362427W near Ifri (they are difficult to see from the road, so walk about 50 m north, climb 20-30 m upslope and look back south) and at 32.455161N 4.497234W near Nzala (where they are much more skittish). The Ifri site had **North African gerbils** and a **Chudeau's spiny mouse** at night.

The best site for bats in Morocco is Kef Azigza cave (32.029722N 3.788055W). It is visible from the road, and can be walked to in about ten minutes. You have to cross a river; in July it was only 20 cm deep and full of fish and frogs; I recommend taking a dip. In winter/spring it might have more water, but probably not much because a large dam is nearly completed upstream. In the evening there were **Libyan jirds** along the banks and **desert gundis** around the cave entrance. I confirmed the species of the gundis by measuring their droppings; those of desert gundis are less than 9 mm long on average, and virtually always shorter than 1 cm, while those of common gundis are more than 9 mm on average, and often longer than 1 cm. That record proved to extend the known range by almost 200 km; I've submitted a short notice to a journal.

The cave is easy to explore: there are few junctions and the floor is flat; the main passage looks like a kilometer-long Gothic cathedral. Species composition apparently varies a lot seasonally and from year to year. Unusually for caves, you have to walk far in because you keep encountering new species. Once you enter, start looking up immediately: I found two species – **Blasius's horseshoe bat** and **Geoffroy's trident bat** – only near the entrance. After that you pass an area where I found lots of **Egyptian mouse-tailed bats**. In a few minutes you get to the first fork; be careful exploring the right passage as it soon leads to a dangerous pit. If you step over the pit and keep walking, you quickly get to a chamber where I found a few **greater mouse-tailed bats** (recognizable by larger size, shorter tails, and much smaller noseleaves) among hundreds of Egyptian. A few corridors branch off from that chamber but all end soon. The left (main) passage is much longer; it is amazingly easy to walk through, except for one area with narrow floor and another with low ceiling. Eventually you get to a few large chambers with piles of petrified guano along the walls; at the time of my visit these chambers contained a maternity colony of **Felten's myotis** and a cluster of **desert long-eared bats** (not recorded in the cave previously). This is apparently where **Blasius's horseshoe bats** winter because I found a mummified one here. There is a fork in this area, but you have to climb one of the guano piles to see the side corridor; it is a bit difficult to follow and leads to a dead end where I found a single **Gaisler's long-eared bat**. The main passage goes on; finally you reach a fork where both sides look about the same size; they soon become too narrow to get through. I was glad I made it all the way to the last fork because there I found a single **Maghreb bentwing**; in winter they are reportedly present in large numbers.

Iriqui National Park reportedly has **striped hyenas**, **caracals**, **honey badgers**, **fennecs**, and **dorcas gazelles**, but is difficult to access.

#### **4. Western Sahara**

Western Sahara was invaded and occupied by Morocco in 1975; the native Sahrawi people now mostly live in refugee camps in Algeria, and a huge system of walls, minefields, and forts has been put in place to prevent their return. Larger wildlife was pretty much eliminated in process, but the road to Aousserd, one of those military outposts, has become a popular mammalwatching destination because a few small carnivores are common there.

Many people skip the northern part of the country and fly to its capital Dakhla (as I did). If you drive, you travel through coastal fog desert where a cold current makes rain nearly impossible but provides fog for plants. Saharan mammals seem to avoid the fog desert but it has two endemics (a gerbil and a shrew). Nights can be very cold and windy here even in summer, and days don't normally get hot (during my visit it was around 24C).

Dakhla is located on a flaccid penis-shaped peninsula. It's better to drive along the western side. At the very tip is a camp of Mauritanian migrants called Lassaraga (23.627137N 15.984846W), popular among birders; it's the best place to look for **Atlantic humpback dolphins**. There are now dolphin-viewing tours from Dakhla (also getting **bottlenose dolphins**), but I didn't try to find out more about them because I got the humpbacks at first try. The area north of Dakhla is officially in Dakhla National Park; it has the southernmost population of **occidental gerbil**, one of the fog desert endemics. I found these gerbils to be common just south of 23.7444N 15.930981W.

The main road south of Dakhla junction keeps following the coast; I drove it almost to the border with Mauritania during the day and back at night, and saw only one mammal crossing it, an almost-white **savanna path shrew** just north of Bir Gandouz (22.062034N 16.734114W). Near Imbibibi there was a water tower and a bunch of puddles on the side of the road (23.242411N 16.073571W). That place had lots of interesting birds in daytime, and at night I found the best mammal of the trip there: a brown-and-white **Saharan shrew**, another fog desert endemic which hasn't been seen alive for many years. The only other visitor to the puddles was a **Sundevall's jird**. A side road marked with a barely readable sign "Lamhiriz fishing commune" leads from Bir Gandouz to a village where **Mediterranean monk seals** reportedly show up sometimes, mostly at the beach at 22.201104N 16.775985W. I didn't see any but saw two birds of subspecies nesting only in Banc d'Arguin National Park in Mauritania where the main seal colony is located.

17 km before the border is a signposted 7-km long side road to Safia Nature Reserve (21.512910N 16.865241W). There were old tracks near the turnoff that looked like **striped hyena** tracks. A passenger car can make the first 3 km, but then you can get stuck even with deflated tires, so it's better to walk. The sandy part was where I found **lesser Egyptian gerbils** (21.511560N 16.907359W) and hand-caught one subadult. They look rather different here, and I first took them for Nigerian gerbils which occur just across the border in Mauritania. The reserve has fenced-in ostriches (amazingly shy), **addaxes**, and **dama gazelles**. You'd think it would be easy to find the gazelles in a 8 km<sup>2</sup> desert enclosure, but I couldn't. I ended up walking the entire 15.5-km perimeter, and saw one gazelle outside the fence; it was part of a largely unsuccessful release a few years ago (outside the fence there are minefields and feral dogs – no wonder the addax stay inside even though they could cross the fence in some places).

The main mammalwatching attraction of Western Sahara is the road to Aousserd (called Awsard in Google Maps); it branches off the main road 12 km south of Dakhla junction and is 216 km long. In a few minutes you reach a tiny settlement called Tachutant with a water tower and a small pond (23.613333N 15.723611W); I spent some time watching it at different times of day but saw only one mammalian visitor, a **Geoffroy's trident bat**. This was remarkable because bats are generally very rare in Western Sahara. Soon after Tachutant the road enters the "dead zone" where the cold current prevents rain but doesn't supply any fog; this area has no vegetation at all. Finally you begin to see some grass along the road; the landscape still seems incapable of supporting anything larger than a cricket, but this is actually prime habitat for sand cats and fennec foxes. I saw just one very shy **sand cat** (near Qued Ausa, 23.212509N 15.117971W) and three **fennecs**. Two of the fennecs were far from the road, but one was close, and I gradually lured it even closer with a mouse squeaker. Just as I was about to snap a photo, a huge truck came to a screeching halt in front of my car, the driver jumped out and started asking me where I was from and how I liked Morocco. By the time I managed to end the conversation, the fennec was probably in Mauritania and racing towards Senegal. The only rodents I found in that area were two **Tarabul's gerbils**.

Eventually you get to a different landscape, almost a dry savanna. The best place for pretty much everything in this area is a wooded wadi called Qued Jenna (22.6789N 14.49361W). It looked like there'd been some rain the

previous winter, because there were lots of grass and rodent burrows. Many burrows were collapsing and rodents were already difficult to find; I saw only a few **lesser Egyptian** and **Tarabul's gerbils** and one jerboa trackway (the only species in sandy deserts of the area is **lesser Egyptian jerboa**). But there were still lots of predators: in three hours of nighttime I spent there, I saw a **desert hedgehog**, an **African wolf**, and a **wildcat**, plus a possible **Rueppell's fox** at the next wadi to the west (at 22.770354N 14.586411W). There were also small, skinny, very pale hares; the most recent paper on them says that all hares in North Africa should be called *Lepus microtis*, so I guess **savanna hare** would be the proper English name.

A few kilometers before Aousserd, the road passes at the foot of a rocky ridge (22.596060N 14.4011520W) where I spent some time looking for Pharaoh eagle-owls. I didn't find any, but saw a few **pleasant gerbils** and one **fat-tailed gerbil**; there was also a large burrow not far from the road that looked like it could belong to a **honey badger**. As I was sitting in my car there waiting for something to emerge, another car stopped, a guy came out and said that he was a local policeman and the whole area was closed to visitors. I was pretty sure he was wrong, but didn't want to argue, so I promised to leave within half an hour, and he drove on.

Aousserd is mostly a bunch of military camps, and the unmarked turnoff to the small civilian part of the town is easy to miss. I actually did miss it, and soon realized that I was already on the Aousserd-Tichla Road, which supposedly is a closed area. But since nobody was stopping me, I decided to pretend I didn't know that I missed the turnoff, and kept driving until I got to about 10 km from Tichla. The landscape there is again different: bare clay crossed by sandy washes with scattered trees. Before turning back, I climbed a low ridge east of the road and spotted a distant **dorcas gazelle** (from 21.657169N 14.862706W) in fading light. The only mammals I saw on the way back to Aousserd were a **Libyan striped weasel** (22.463936N 14.345757W) and a **pleasant gerbil** (22.528270N 14.320467W); there was also a golden nightjar sitting in the middle of the road.

### Addendum I. Identifying shrews of Morocco and Western Sahara.

Only six species of shrews occur in Morocco; four of them also occur in northwestern Western Sahara, and just two in Dakhla area and farther south. Some of them are pretty much impossible to identify in the field in some areas. Abbreviations: M = Morocco, WS = Western Sahara, e = ear length, hb = head & body length, hf = hind foot length, p = pilosity (the relative length of the part of the tail covered with long guard hairs in addition to short fur), t = tail length. Species marked with asterisk occur in central and southern Western Sahara.

#### 1. Genera.

Tiny (hb<50), slender, p=100%: **Etruscan shrew** (*Suncus etruscus*); very rare and limited to NE M.  
Larger (hb>50 except in one sp. not occurring in NE M): **white-toothed shrews** (*Crocidura*).

#### 2. White-toothed shrews.

Species	hb, mm	t, mm	hf, mm	e, mm	p, %	upperparts	underparts	other	range
<b>Savanna path</b> * ( <i>C. viaria</i> )	80-100	55-68 (0.7hb)	15-17	12-14	85-100	pale brown or pale gray	gray	reddish-brown throat	SW M, WS (N to Agadir)
<b>Greater white-toothed</b> ( <i>C. russula</i> )	61-79	27-43 (0.5hb)	11-13	8-11	60-70	brown	gray	dorsal fur bases yellowish	N & NW M (S to Agadir)
<b>Saharan</b> * ( <i>C. tarfayensis</i> )	50-69	33-42 (0.6hb)	11-14	8-11	70-80	brown	white	sharply bicolored	SW M, WS (N to Agadir)
<b>Mauritanian</b> ( <i>C. lusitania</i> )	45-68	29-37 (0.6hb)	9-10	5-6	100	cinnamon, head gray	grayish	head small & flat; fur short	SW M, NW WS (N to Agadir)
<b>Whitaker's</b> ( <i>C. whitakeri</i> )	56-64	28-34 (0.5hb)	11-13	8-11	90-100	brown	white	dorsal fur white-speckled	M (except SE), NW WS

### Addendum II. Identifying gerbils of Morocco and Western Sahara.

More than half rodent species in Morocco and almost all in Western Sahara are gerbils. Their taxonomy is constantly changing, and some are difficult to identify, so here's a little guide. An important identifying feature is whether the soles of the hind feet are hairy or naked; if you briefly saw the animal and aren't sure, just look at its tracks. Abbreviations: M = Morocco, WS = Western Sahara, e = ear length, hb = head & body length, hf = hind foot length, t = tail length (all in millimeters). Species marked with asterisk occur along Aousserd Rd.

### 1. Genera.

Rat-sized, with very short naked tail ( $t < 0.5hb$ ), nocturnal: **fat-tailed gerbil\*** (*Pachyuromys duprasi*); non-sandy deserts in much of M, with isolated populations in WS.

Rat-sized, with relatively short tail ( $t = 0.7hb$ ), belly tawny, diurnal: **fat sand rat\*** (*Psammomys obesus*); shrubby deserts in M and WS, usually in disturbed places.

Rat-sized ( $hb > 120$ ), long-tailed ( $t \sim hb$ ), belly white, nocturnal but sometimes active in the morning/evening: **jirds** (*Meriones*). Size of a mouse or a small rat ( $hb < 120$ ), long-tailed ( $t > 0.75hb$ ), belly white, nocturnal: **gerbils** (*Gerbillus*).

### 2. Jirds.

Large white ear patch, dark-gray tail tuft, white claws: **Sundevall's jird\*** (*M. crassus*); all types of desert in M and WS.

Darker overall, orange line on flanks, reddish tail base, black tail tuft, black claws: **Libyan jird** (*M. libycus*); overgrown dunes, wadis and desert fields, often around tamarisk shrubs, in M and N WS.

Ochre flanks, dark ears, small black tail tuft, gray claws: **Shaw's jird** (*M. shawi*); arid grasslands, deserts and fields in NE M.

Large ( $hf > 38$ ), ochre flanks, black tail tuft, grey claws: **greater jird** (*M. grandis*); all habitats in M, except very dry deserts.

### 3. Gerbils

Species	hb	t	face markings	tail tip	soles	other	soil	range
<b>Pleasant*</b> ( <i>G. amoenus</i> )	70-105	90-145 (1.3 hb)	white brow & ear patch, dark line from eye to ear	dark brush	naked	e10-14, white rump patch	hard	M (Sahara only), WS
<b>North African</b> ( <i>G. campestris</i> )	99-112	118-153 ( $> 1.3 hb$ )		dark brush	naked	e15-20, long hair	hard	M, N WS
<b>Lesser Egyptian*</b> ( <i>G. gerbillus</i> )	70-105	90-136 ( $> 1.3 hb$ )	white brow & ear patch	pale brush	hairy	pale, white rump patch	sand	M (Sahara only), WS
<b>Tarabul's*</b> ( <i>G. tarabuli</i> )	84-117	107-155 (1.3 hb)	white brow & ear patch	dark crest	hairy		sand	M (Sahara only), WS
<b>Pygmy</b> ( <i>G. henleyi</i> )	55-73	73-107 (1.3 hb)	white brow & ear patch, black line on eyelids	small brush	naked		any	M (Sahara only), N WS
<b>Lesser short-tailed</b> ( <i>G. simoni</i> )	70-103	57-96 ( $< hb$ )		no brush	naked		hard	NE Morocco
<b>Greater short-tailed</b> ( <i>G. maghrebi</i> )	106-119	102-111 ( $< hb$ )	white brow	small brush	naked	pinkish belly	hard	NW Morocco
<b>Western</b> ( <i>G. hesperinus</i> )	90-114	98-120 (1-1.2hb)		small brush	hairy		sand	Essaouira area
<b>Hoogstraal's</b> ( <i>G. hoogstraali</i> )	80-100	103-130 (1.2hb)	white brow & ear patch, dark line under eye	small brush	hairy		sand	Agadir area, lower Souss Valley
<b>Occidental</b> ( <i>G. occiduus</i> )	75-99	98-126 (1-1.2hb)	white brow & ear patch, dark eye ring	small brush	hairy		sand	coast Goulimine to Dakhla

### Addendum III. A few photos.



Hedgehogs: North African (left) and desert.





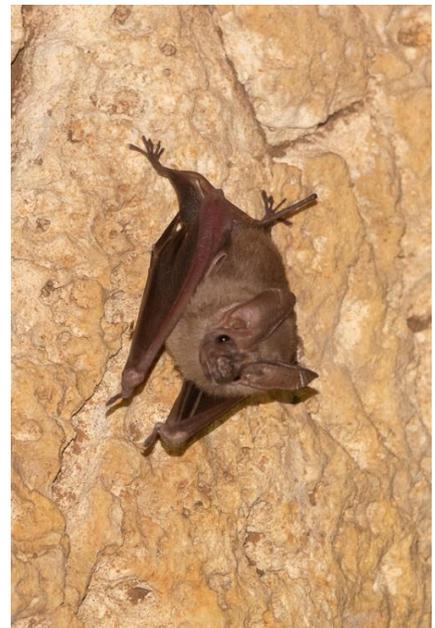
Addax, Barbary macaques and aoudads.



Felten's myotis and Blasius's horseshoe bat.



Egyptian and greater mouse-tailed bats.





Common and desert gundis



Barbary ground squirrels and greater jird



Gerbils: Tarabul's from Oued Jenna, lesser Egyptian from Erg Chebbi and from Safia Reserve.