

## A GUNDI IN THE FEZZAN, SOUTHERN LIBYA

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**RIASSUNTO - *Un gundi in Fezzan, Libia meridionale.*** L'autore ha fotografato un gundi (Rodentia: Ctenodactylidae) in una regione libica, per la quale non sono disponibili dati relativi a questa famiglia di roditori. *Ctenodactylus* e *Massoutiera*, i due generi possibili per l'individuo fotografato, sono stati trovati solo a considerevoli distanze dal luogo di questa osservazione, uno uadi che solca un altopiano roccioso circondato da vaste distese di sabbia o ghiaia. Poichè i gundi sono animali strettamente rupicoli che evitano i terreni privi di anfratti, è probabile che si tratti di una popolazione isolata. Il Fezzan potrebbe rappresentare una valida area di studio per ottenere maggiori informazioni sull'evoluzione dei gundi, probabili relitti biogeografici.

*Parole chiave:* Ctenodactylidae, distribuzione, relitti biogeografici

The gundi family (Rodentia: Ctenodactylidae) includes four genera and five species of African rodents. They all inhabit rocky outcrops, offering enough vegetable food nearby, in more or less arid regions north of 4°N (Fig. 1). The two species of the same genus, *Ctenodactylus gundi* and *C. vali*, are restricted to the northwestern edge of the Sahara Desert and have originally been described as species from Libya (Rothman, 1776; Thomas, 1902). A central Saharan species, *Massoutiera mzabi*, has a wider, though less continuous, distribution and might also occur in Libya, being present in adjacent areas of Algeria and Chad. During two expeditions to the Fezzan, a southwestern part of Libya, Scortecci (1935, 1937) was informed about the occurrence of gundi-like animals near Serdeles and Ghat. He considered them as belonging to *Ctenodactylus*. However, he did not collect any samples and reported that they were very rare in the area and confused by the natives with hyraxes (Procaviidae, Hyracoidea). In the same period, in Algeria, other field zoologists confused *Ctenodactylus* with *Massoutiera*, and vice

versa (Gouat *et al.*, 1984). Ignoring Scortecci's suggestions, Toschi (1954) reported only Tripolitania as part of the gundi range, particularly northern Tripolitania for *C. gundi* and southern Tripolitania for *C. vali*. Ranck (1968) increased the possible range of *C. vali*, but only northwards. The area of Sokna (about 29°N, 16°E), where *C. vali* was collected for the first time, currently marks the southernmost limit of the total range of *Ctenodactylus*.

On 5 January 2006 I visited a well-known rock art site in the Wadi Methkandoush (25°46'N, 12°10'E, 700 m a.s.l.). A south-east-facing, about 20 m high, much fragmented sandstone escarpment borders a shallow wadi in an undulated boulder-strewn hamada. At the time of my visit there were some small pools of water at the base of the escarpment and a belt of relatively lush vegetation just above the drainage line. At 12:30 h, while I was exploring a tourist-free stretch, I noticed a gundi dashing up from the vegetation line. I could take just one long-distance photograph (Fig. 2) before the animal disappeared among the rocks.

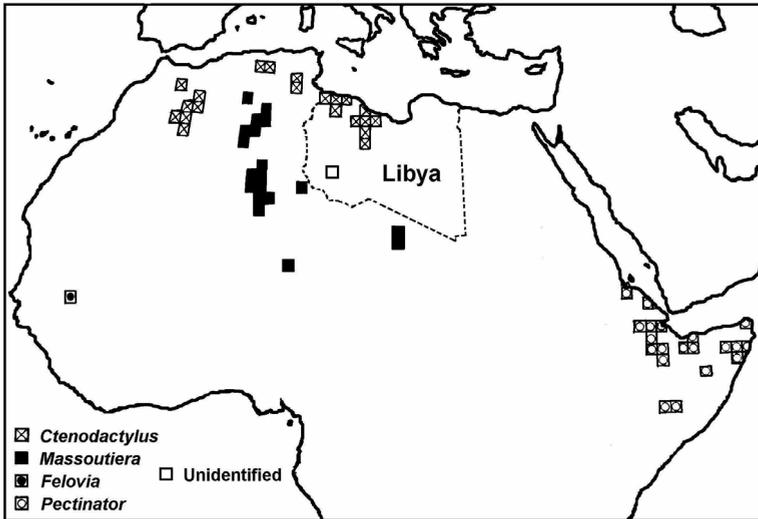


Figure 1 - Distribution of the four living genera of gundis, redrawn from George (1974: certainly incomplete for *Felovia*) with the addition of the new record in Libya, genus unidentified.

The fleeing subject of the photograph shows its head, turned back to watch the intruder, as well as its hindquarters. The shape of the ear evidences its membership to the gundi family. Unfortunately the tail is raised toward the observer and its length is therefore not clear. This would have been a key feature for distinguishing the two genera - the tail is clearly shorter than the hindfoot in *Ctenodactylus*, whilst in *Massoutiera* their lengths are about the same - the other external features being decidedly similar (Ellerman, 1940). The voice and behaviour would offer as good a criterion in the field (George, 1981), but my gundi was far away, very cryptic with its buff coloration and silent. Thus its taxonomic status remains obscure. The geographical location would suggest *Massoutiera mzabi*, because the Wadi Methkandoush is less than 200 km from the nearest point of its known range (Djanet, Algeria), whereas Sokna is about 500 km far. If the animals cited by Scortecchi actually belonged to *Massoutiera mzabi*, some continuity in distribution might be supposed to exist with

the area of Djanet. However, mere distance may be misleading for understanding the distribution of the gundis, rupicolous animals that do not excavate their shelters. The first extensive mark and recapture study for any ctenodactylid rodent (*C. gundi*; Nutt, 2005) pointed out that both females and males are reluctant to leave their natal site, probably as a consequence of the patchy distribution of rocky outcrops, which are separated by wide desert areas without natural shelters. The possible population of the Wadi Methkandoush, which cuts through an isolated plateau surrounded by massive sand dunes and gravel plains, is then likely to be quite isolated. Jaeger (1971) pointed out the relict distribution of *Massoutiera*, but isolated populations may also exist for *C. gundi* (Séguignes and Vernet, 1996). The extant gundis may all be seen as biogeographical relicts, because: 1) although the gundis probably originated in central Asia and their occurrence in Africa dates back to the Miocene (Dawson *et al.*, 1984), the extant forms are few and all restricted to northern Africa;

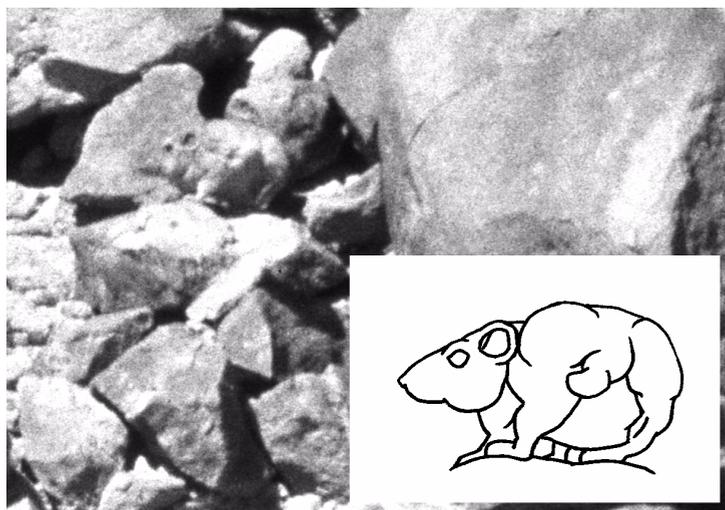


Figure 2 - The gundi photographed in the Wadi Methkandoush (5 January 2006).

2) contrary to most hot-desert rodents, they are diurnal, and they do not hibernate, aestivate, store food, or accumulate fat reserves in their body (Novak, 1999); 3) there is considerable overlap both in the traits of the different species and in their habitats (Gouat and Gouat, 1984; Gouat *et al.*, 1984), which makes it difficult to correlate presumed adaptations to the arid climate with habitat differences within the family (George, 1985; Gouat, 1993).

Relict populations of animals that are typical of less dry regions may well occur in some places of the Fezzan, because this region is geologically a large cuvette with the water table emerging here and there. In the site of my observation, a large crocodile engraved near the wadi floor suggests that water presence may have been quite constant in the rather recent past. According to Ranck (1968), habitat fragmentation makes the Fezzan a favourable region for rodent endemism. Gundis are rather versatile animals with regard to habitat requirements but potentially sympatric species are actually separate, maybe as a consequence of severe competition in the past, which resulted in mutual exclusion (Gouat, 1988).

This mechanism might still be working on populations (within *Ctenodactylus* or *Mas-soutiera*) that possess even slight differences in competitive ability, and spatial isolation might produce further divergence. Fragmented habitats would enhance the process by providing strongholds. Therefore, the Fezzan might represent an effective study area for getting sound information about the distribution, taxonomy and, in general, the evolution of the gundis.

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