

Full Length Research Paper

The crested porcupine, *Hystrix cristata* (Linnaeus, 1758) in Misurata, Libya

Walid Fathy Mohamed

¹Department of Biological Sciences and Geology, Faculty of Education, Ain Shams University, Roxy, Cairo, P. O. Box 11341, Egypt.

²Department of Ecological Sciences, Faculty of Science, Al Jouf University, Sakaka, P. O. Box 2014, Saudi Arabia.
E-mail: wahidfathy72@yahoo.com.

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The crested porcupine *Hystrix cristata* is the biggest rodent in Libya. It has a high value from the faunistic point. It is known in Libya from only one specimen killed in a suburb of Tripoli in 1962. With aids of an animal dealer in Misurata, this work will provide information on the morphology, feeding habits, habitat, cranial and dental characters of this animal.

Key words: Crested portcupine, *Hystrix cristata*, Rodentia, Misurata, Libya.

INTRODUCTION

The crested porcupine is native to regions of northern Africa as well as southern Europe and areas of the Mediterranean. There is only one species of porcupine in the old world, the crested porcupine *Hystrix cristata* in Libya. Hufnagl (1972) mentioned a brief description of this species based on one killed specimen obtained from a suburb in Tripoli in 1962. He also provided his description with an illustrated sketch to the skull of the species with its lower jaw and the footprints of the animal. Santini (1980) gave more data of its ecology and biology in Italy and North Africa. Using the linkage distance relationship for several cranial characters of *H. cristata* and *H. indica*. Angelici et al. (2003) found some similarities between Italian and African porcupines. Status, taxonomy, distribution and specific characters of the crested porcupine were discussed in many ways (Setzer, 1957b; Corbet and Jones, 1965; Amori and Angelici, 1992, 1999; Pigozzi, 1992; Olson and Lewis, 1999; Tong, 2008). Five skulls (three males and two females) of this species were recently obtained in this work from an animal dealer in Misurata city in the northwestern Libya.

This study will add new data on morphology, feeding habits, habitat, cranial and dental characters of this species in Libya.

MATERIALS AND METHODS

Study site

Misurata city lies on the coast of the Mediterranean Sea 211 km East of Tripoli and 825 km west of Benghazi. The location of the city (32° 23' N and 15° 6' E) forms a mixture of a dualism of sea

and sand for it is surrounded by the sea from the north and east and from the south it is surrounded by the golden sands combined with the long palm trees, the shady olives and the green plains which encircle the center of the town with its modern buildings, wide streets and large factories (Figure 1). Misurata is separated from the Mediterranean Sea by a band of sand dunes and occupies a coastal oasis above an underground water table. By the 20th century, irrigation had greatly increased agricultural production, and the town, on the federal coastal road, became a main market and administrative centre.

Collecting specimens and measurement of samples

Skulls and lower jaws were obtained, bleached, measured with a sensitive caliper of 0.1 mm accuracy. The following 28 measurements were taken to the skulls and lower jaws: greatest length of the skull (GLS), condylobasal length (CBL), basal length (BL), viscerocranial length (VCL), facial length (FAL), greatest length of nasals (NL), snout length (SL), palatal length (PL), greatest length of the auditory bulla (ABL), greatest breadth across the mastoid processes (GBM), zygomatic width (ZB), depth of braincase (DP), maximum width of braincase (FM), width across auditory meatus (WAM), width of bulla (WB), cranial height (CH), exoccipitalis height (EOH), foramen occipitalis width (FOW), frontal length (FL) dorsally and ventrally, parietal length (PTL), basi-occipitalis width (BOW), maximum length of upper left alveolar line (AL), distance length of condylar process to dental foramen (CAF), maximum length of lower left alveolar line (LL), mandibular maximum height (MH), mandibular tooththrow (MT) and mandible length (M) (Figure 2).

Food habits

Information about feeding habits of the crested porcupine *H. cristata* in Misurata was collected intensively from the farmers and dwellers. Fields in Misurata are usually cultivated with watermelon, onion and various vegetables. A preliminary survey

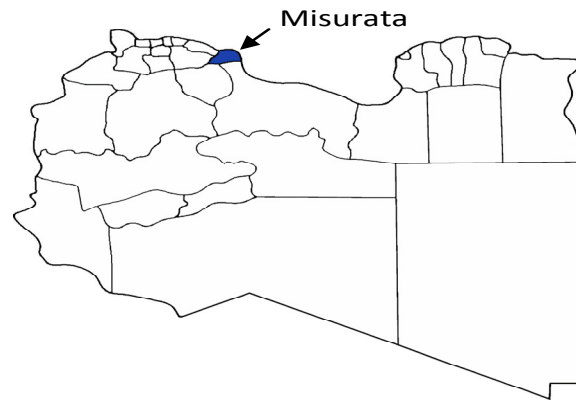


Figure 1. The map of Lybia with the study area indicated with arrow.

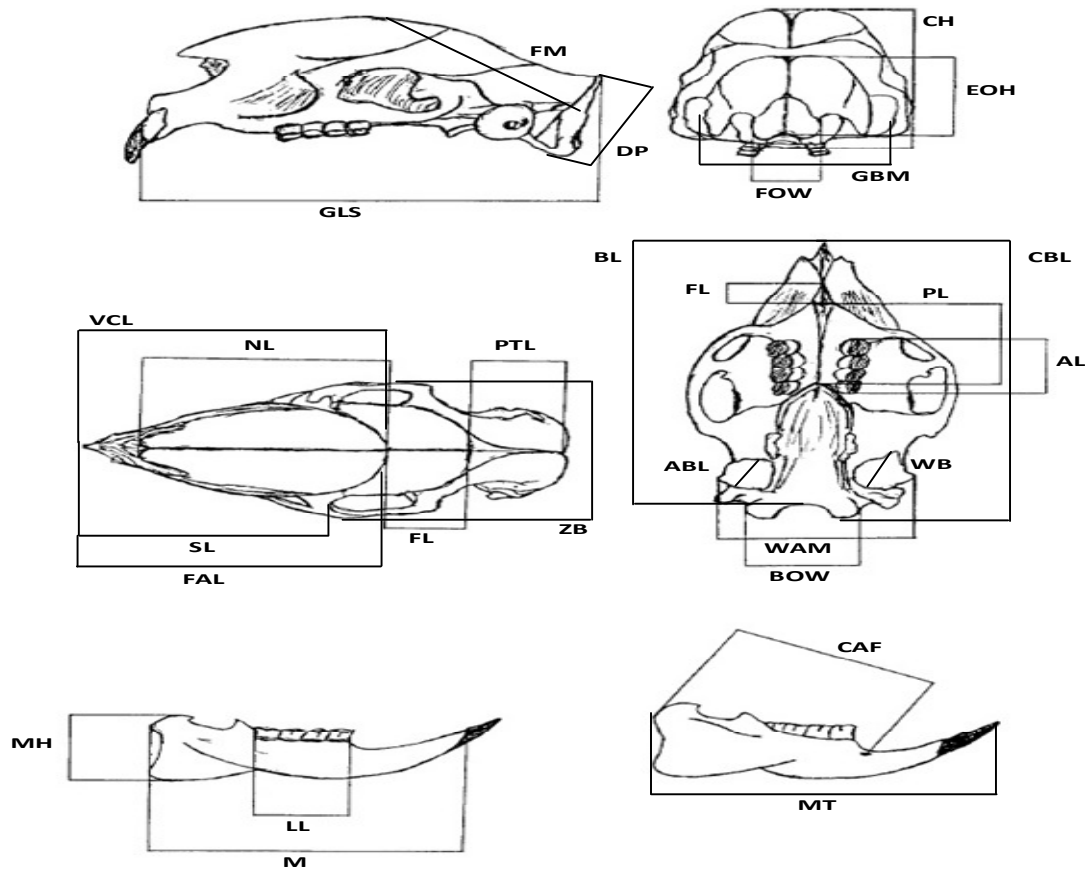


Figure 2. Measurements of skull and lower jaw after been modified Angelici et al. (2003).

was constructed to collect data about the types of plants and the parts eaten by the species.

RESULTS AND DISCUSSION

Morphology

Porcupine is the largest rodent in Libya. The hind part

of its back is covered with long sharp spines white at their tips and banded with black colour. The adult animal weight is about 18kg and has few natural predators (Walker, 1999; Hufnagl, 1972; Macdonald, 2006). The structure of the rattle quills in its short tail is shaken to frighten enemies and may be in social communication, which produces a loud rattling sound so they strike against each other (Santini, 1980;

Table 1. Means and standard deviations (SD) of the skulls of the crested porcupine, *Hystrix cristata* from Misurata city. For abbreviations see materials and methods.

	Means (cm)	SD
GLS	12.19	0.45
CBL	12.18	0.49
BL	11.29	0.23
VCL	8.40	0.08
FAL	8.25	0.40
NL	6.94	0.03
SL	6.35	0.04
PL	6.38	0.06
ABL	1.57	0.08
GBM	4.34	0.23
ZB	6.44	0.17
DP	3.49	0.17
FM	4.38	0.11
WAM	4.75	0.20
WB	1.68	0.11
CH	5.12	0.69
EOH	2.54	0.19
FOW	1.54	0.10
FL (dorsally)	1.92	0.19
FL (ventrally)	0.74	0.06
PTL	2.88	0.04
BOW	2.68	0.06
AL	2.90	0.03
CAF	6.17	0.30
LL	3.20	0.08
MH	3.19	0.13
MT	5.30	0.14
M	8.04	0.59

Pigozzi, 1992).

Food habits

African porcupines is strictly vegetarian and usually feed on all sorts of roots, bark, bulbs and fallen fruits (Hufnagl, 1972). According to the preliminary survey of feeding habits of the crested porcupine, Libyan dwellers in Misurata mentioned that porcupines feed on the cultivated crops such as: maize, watermelon, cucumber, green pepper, pumpkin, potato, tomato, onion and date that are found on the ground. They cause a great damage to the crops in the cultivated areas (Table 2). Paci et al. (2006) recorded tobacco (*Nicotiana tabacum*) as a new trophic resource for the crested porcupine in Italy.

Habitat

Hufnagl (1972) mentioned that the crested porcupine preferred hilly ground and they wander into cultivated ground at night. Libyan dwellers in Misurata noticed that they build its burrows along the banks of canals in the cultivated fields where the vegetation make a good

cover for it.

Cranial and dental characters

Table 1 shows all measurements taken to the skulls and lower jaws of the collected animals.

Conclusion

The major target of this work is to study the existence of the crested porcupine (*H. cristata*) in Libyan Arab Jamahiriya and to make an overview on its morphology, feeding habits, habitat and cranial and dental measurements. Crested porcupine was being known in Libya from only one killed animal in Tripoli forty eight years ago without any reference to its feeding habits and habitat. This work introduces some comprehensive data on the crested porcupine in Misurata city in the northwestern Libya.

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Table 2. Cultivated plants, families of plants and parts eaten from the plants by the crested porcupine (*Hystrix cristata*) in Misurata city.

Common name	Scientific name	Family	Parts eaten
Maize	<i>Zea mays</i>	Poaceae	Seeds
Watermelon	<i>Citrullus lanatus</i>	Cucurbitaceae	Fruit and seeds
Cucumber	<i>Cucumis sativus</i>	Cucurbitaceae	Fruit
Green pepper	<i>Capsicum annuum</i>	Solanaceae	Fruit and seeds
Pumpkin	<i>Cucurbita pepo</i>	Cucurbitaceae	Fruit and seeds
Potato	<i>Solanum tuberosum</i>	Solanaceae	Tuber
Tomato	<i>Solanum lycopersicum</i>	Solanaceae	Fruit and seed
Onion	<i>Allium cepa</i>	Alliaceae	Bulb
Date	<i>Phoenix dactylifera</i>	Arecaceae	Fruit

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REFERENCES

- Amori G, Angelici FM (1992). Note on the status of the crested porcupine *Hystrix cristata* in Italy. *Lutra*, 35: 44-50.
- Angelici FM, Amori G (1999). Distribution of the crested porcupine *Hystrix cristata* L., 1758 in peninsular Italy and Sicily. *Boll. Mus. Reg. Sci. Nat. Torino*, 16: 83-88.
- Angelici FM, Capizzi D, Amori G, Luiselli L (2003). Morphometric variation in the skulls of the crested porcupine *Hystrix cristata* from mainland Italy, Sicily, and northern Africa. *Mamm. Biol.*, 68: 165-173.
- Corbet GB, Jones LA (1965). The specific characters of the crested porcupines, subgenus *Hystrix*. *Proceedings of the Zoological Society of London*, 144(2): 285-300.
- Hufnagl E (1972). *Libyan mammals*. The Oleander Press, England, p. 85.
- Leadley E, Jury S (2006). *Taxonomy and Plant Conservation: The Cornerstone of the Conservation and the Sustainable Use of Plants*. Cambridge University Press, p. 366.
- Macdonald DW (2006). *The Encyclopedia of Mammals*. 2nd edition, Oxford University Press, p. 930.
- Olson R, Lewis AM (1999). *Porcupine ecology and damage management techniques for rural homeowners*. University of Wyoming, Cooperative Extension Service, pp. 1-14.
- Pigozzi G (1992). On the distribution, management and conservation of the crested porcupine, *Hystrix cristata* (L.), in Italy. *Atti Soc. Ital. Sci. Nat. Museo Civ. Stor. Nat. Milano*, 133: 33-40.
- Paci AM, Croce M, Raggiotti L, Convito L (2006). A new trophic resource for the big rodents *Hystrix cristata* and *Myocastor coypus*: Tobacco *Nicotiana tabacum*. *Hystrix It. J. Mamm.*, 10th Int. Conf. Rodents and Spatium.
- Santini L (1980). The habits and influence on the environment of the old world porcupine *Hystrix cristata* L. in the northernmost part of its range. *Vertebrate Pest Conference Proceedings Collection, Proceedings of the 9th Vertebrate Pest Conference*, pp. 149-153.
- Setzer HW (1957b). A review of Libyan Mammals. *J. Egypt Publ. Hlth. Ass.*, 32: 41-82.
- Tong H (2008). Quaternary *Hystrix* (Rodentia, Mammalia) from North China: Taxonomy, stratigraphy and zoogeography, with discussions on the distribution of *Hystrix* in Palearctic Eurasia. *Quaternary Int.*, 179: 126-134.
- Walker EP (1999). *Walker's Mammals of the World*. 6th edition, edited by Ronald M. Nowak. John Hopkins University Press, Baltimore, pp. 1004-1009.