Bonn zoological Bulletin	Volume 57	Issue 2	pp. 297–306	Bonn, November 2010

A crowned devil: new species of *Cerastes* Laurenti, 1768 (Ophidia, Viperidae) from Tunisia, with two nomenclatural comments

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Abstract. A distinctive new species of the viperid genus *Cerastes* is described form Tunisia. It is closely related to *Cerastes vipera* but easily distinguishable from this invariably hornless species by having tufts of erected supraocular scales forming little crowns above the eyes. These crown-like tufts consist of several vertically erect, blunt scales which differ drastically from the supraocular horns of *C. cerastes* or *C. gasperettii* that consist of one long, pointed scale only. Although the new species is based on only one single specimen, further specimens had originally been available but were subsequently lost in private terraria.

The taxonomic status of the nomen *"Cerastes cerastes karlhartli"* is discussed and the name is found to be unavailable (nomen nudum). Also the authorship of "*Cerastes cornutus*" is discussed and ascribed to Boulenger.

Key words. *Cerastes cerastes*, *Cerastes vipera*, *Cerastes* sp. n., *Cerastes c. karlhartli, Cerastes cornutus*, horned viper, North Africa, Tunisia.

INTRODUCTION

The genus *Cerastes* Laurenti, 1768 includes only five taxa (three species and two subspecies), which are distributed in northern Africa and on the Arabian Peninsula. All species are stout-bodied and, as desert snakes, are characterized by many xeromorphic physiological and morphological adaptations. The most impressive adaptations are the strongly keeled serrated lateral body scales, a character they share with their proposed sister taxon *Echis* (Joger & Courage 1999, Pook et al. 2009), but not with the also sand living snakes of the genus *Bitis*.

The largest member of the genus is *Cerastes cerastes* (Linnaeus, 1758) with a maximum body size of 80 cm and an average size of 35 to 60 cm. The distribution range of the nominotypic form includes all Saharan countries with a southernmost distribution in Sudan (Phelps 2010) and the northernmost in central Tunisia (Schleich et al. 1996). Eastwards it reaches the Sinai, Israel and Jordan (Phelps 2010). *Cerastes c. cerastes* occurs in sandy and rocky deserts and around well vegetated oases but not in windblown dunes (Phelps 2010). *Cerastes c. hoofienii* Werner & Sivan 1999, the second subspecies occurs in the extreme southwestern edge of the Arabian Peninsula in Yemen and Saudi Arabia.

The second North African species is *C. vipera* (Linnaeus, 1758). Its distribution range is very similar to *C. cerastes* but more restricted to the Saharan Desert and reaches eastward to the Sinai and Israel as it only occurs in dune systems. Therefore, according to Phelps (2010) both species were never recognized as locally syntopic, but Joger (2003) found both species occurring parapatrically at the edge of the Grand Erg Oriental in Tunisia. *Cerastes vipera* is the smallest viper of the genus and grows up to a maximum size of under 50 cm with an average about 35 cm.

The remaining species is *Cerastes gasperettii* Leviton & Anderson, 1967 with its subspecies *gasperettii* and *C. g. mendelssohni* Werner & Sivan, 1999. It is distributed on the Arabian Peninsula and eastwards to Iraq and Iran, overlapping with other *Cerastes* species in its distribution only in the southern Sinai and the northwestern edge of the Arabian Peninsula.

The common name 'Horned Vipers' is misleading as not all species and not all populations possess supraocular horns. In *C. cerastes* and *C. g. gasperettii* specimens usually bear horns but several populations are hornless. If present, the horns are formed by a long, sulcated, single

spike above each eye, usually surrounded by a ring of elongate spinose but non-sulcated scales. This polymorphism is also known in other viperid snakes as the supraocular horns of *Bitis caudalis* and the supranasal horns of *Bitis gabonica* are absent in some specimens (FitzSimons 1962, Branch 1988). However, *C. g. mendelssohni* and *C. vipera* are strictly hornless as opposed to the other taxa.

Gasperetti (1988) described the characters of the genus *Cerastes* as (a) the eyes are small to moderate and separated from the labial scales by several rows of small scales; (b) body scales with club or anchor shaped keels, not extending to the extremity of the scales; (c) lateral body scales smaller than vertebral scales; (d) anal scale entire; and (e) ventral scales with an obtuse keel on each side. For many decades, only two species, *C. cerastes* and *C. vipera*, were recognized but Werner (1987) and Werner et al. (1991) elevated *C. gasperettii* to full species status, which was later accepted by many authors (e.g. Schätti & Gasperetti 1994, Phelps 2010).

Following Baha el Din (2006) the two African species are easy to distinguish. In *C. vipera*, supraocular horns are never present, there are less than 14 interorbitals and counts of ventral scales are below 120, whereas in *C. cerastes* there are more than 14 interorbitals and more than 130 ventrals. Schleich et al. (1996) distinguished the two snakes mainly by the position of the eye (lateral in *cerastes* and directed upwards in *vipera*), by the presence or absence of a supraocular horn and by the number of interorbital scales (15–21 in *cerastes* and 9–13 in *vipera*). Geniez et al. (2004) distinguished both species by their longitudinal rows of dorsal scales at midbody (27–35 in *cerastes*; 23–27 in *vipera*), but also mentioned the eyes on the top of the head in *C. vipera*.

In the collection of the Zoologisches Forschungsmuseum Alexander Koenig (ZFMK) a specimen of *Cerastes* is present, which is generally similar to *C. vipera* but clearly distinct in possessing supraocular crown-like scale tufts instead of horns of a solitary scale. Because of this striking character, as such tufts or horns are absent in *C. vipera*, the specimen was examined and compared with other *Cerastes* specimens of the ZFMK collection and with relevant literature.

MATERIAL & METHODS

This description is based on the comparison of 75 preserved *Cerastes* specimens and three vouchers of other snakes of the ZFMK collection (see below) and the relevant literature (Jooris & Fourmy 1996; Schleich et al. 1996; Geniez et al. 2004; Baha el Din 2006; Phelps 2010). Measurements were taken with a digital-calliper to the nearest 0.1 mm. The number of ventral scales was counted excluding the anal scale. The number of subcaudals included the terminal scale. The dorsal scale row count is given as (a) fore body: one head length behind head, (b) midbody at the level of the ventral plate corresponding to a half of the total number of ventrals), and (c) hind body one head length before vent.

For SEM images a Hitachi S-2460N was used to compare the scale morphology of different snake species. Dorsal body scales from about the middle of the dorsum were used from the following specimens: *Cerastes* sp. n. (ZFMK 58054, Tunisia), *Bitis peringueyi* (Boulenger, 1888) (ZFMK 44887: Namibia, Swakopmund) and *Bitis schneideri* (Boettger, 1886) (ZFMK 88450: Namibia, without locality). These were compared with SEM-photographs from *C. cerastes* and *C. vipera* published by Joger & Courage (1999).

Material examined. ***Cerastes cerastes*: Algeria**: ZFMK 7649-7650, Colomb-Béchar; ZFMK 18082, 60km west of Touggourt; ZFMK 18083-084, 20km north of Bou-Saada; ZFMK 18085, Hoggar Mts., Guelta Afiale; ZFMK 23000, south of Temassinin, Flatters; ZFMK 23001, Bordj-Saada; ZFMK 23002-005, south of Ouargla; ZFMK 38248, 20km south of Djanet. **Egypt**: ZFMK 22996, Isna (=Esne); ZFMK 22997, vicinities of Cairo; ZFMK 50295, Aswan desert; ZFMK 50296, Faijum desert; ZFMK 50299-300, Nada el Wahda desert; ZFMK 32488, 50297-298, without locality. **Libya**: ZFMK 63668, Wadi Matendus; **Mauretania**: ZFMK 17593, Chami. **Morocco**: ZFMK 65218, Draa Valley. **Niger**: ZFMK 20258, between Arlit and Agadez, 120km south of Arlit; ZFMK 36629, 40km northeast of Wadi Gougaram. **Sudan**: ZFMK 32462, 100km southwest of Burget Tuyur depression; ZFMK 32463, Dafur, Teiga Mts., west of Eisa; ZFMK 32464, Darfur, Djebel Rahib; ZFMK 33697, Nubian desert, 130km southeast of Wadi Halfa; ZFMK 33698-700, Wadi Halfa; ZFMK 38410, 80km north of Port Sudan. **Tunisia**: ZFMK 18081, 10km west of Tozeur, Oasis Stil; ZFMK 22998-999, Tunisian desert; ZFMK 29047, El Hamma du Djerid near Tozeur; ZFMK 29809-812, 29046, Tozeur; ZFMK 47020-024, between Tozeur and Nefta; ZFMK 49858, Oasis Nefta. ***Cerastes gasperettii*: Iraq**: ZFMK 18843-844, vicinities of Basrah; ZFMK 19414, Basrah. **Kingdom of Jordan**: ZFMK 44340, Wadi Araba, Fidan. **Kingdom of Saudi Arabia**: ZFMK 43659, 100km northeast of Riyadh. **United Arab Emirates**: ZFMK 52419, Al-Mundam. ***Cerastes vipera*: Algeria**: ZFMK 22984, El Alia; ZFMK 41176, Ain Sefra. **Egypt**: ZFMK 22989-994, 50339, vicinities of Cairo; ZFMK 22995, Sinai, Wadi Arish; ZFMK 50301-302, El Wasta, Abwid desert. **Libya**: ZFMK 32489, Tripolis. **Mauretania**: ZFMK 17594, Chami. **Tunisia**: ZFMK 22985-988, Tunesian Sahara, without locality. **Western Sahara**: ZFMK 83340, Laayoune Plage; ***Bitis caudalis*: Namibia**: ZFMK 65212, Swakopmund; ***Bitis peringueyi*: Namibia**: ZFMK 88453, without locality. ***Bitis schneideri*: Namibia**: ZFMK 88450, without locality.

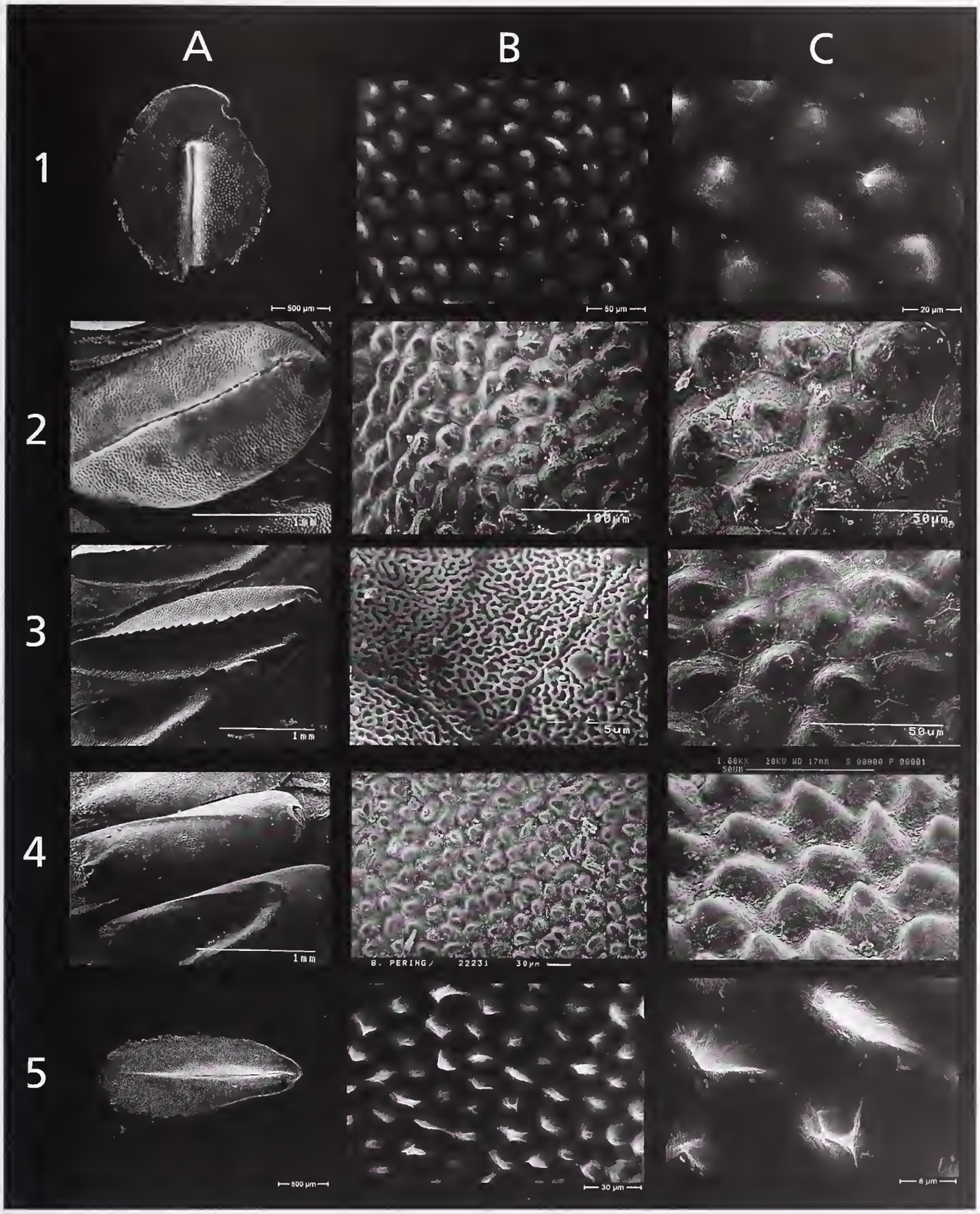

Fig. 1. SEM images of dorsal body scales of viperid snakes.
1= *Cerastes* sp. n. from central Tunisia (ZFMK 58054); **2**= *Cerastes cerastes* published by Joger & Courage 1999; **3**= *Cerastes vipera* published by Joger & Courage 1999; **4**= *Bitis peringueyi*, 4A published by Joger & Courage 1999, 4B & 4C from Namibia (ZFMK 44887), and 4A= published by Joger & Courage 1999; **5**= *Bitis schneideri* from Namibia (ZFMK 88450).
A= dorsal scale, complete; **1B**= dorsal scale, verrucate, secondary structure; **2B**= dorsal scale, verrucate, secondary structure; **3B**= dorsal scale, liniar, tertiary structure; **4B**= dorsal scale, verrucate to cristate, secondary structure; **5B**= dorsal scale, cristate, secondary structure; **1C**= dorsal scale, secondary structure in detail; **2C**= dorsal scale, secondary structure in detail; **3C**= dorsal scale, secondary structure in detail; **4C**= dorsal scale, secondary structure in detail; **5C**= dorsal scale, secondary structure in detail.

RESULTS & DESCRIPTION

The comparison of the fine structure of a dorsal, non-rattling scale of the single specimen with images of lateral, rattling scales of *Cerastes* and lateral scales of *Bitis* (see fig. 1) shows similarities between the single specimen and *Cerastes*. On the other hand, differences of the typical scale fine structure of *Bitis* are distinct enough to recognize the single specimen as a non-*Bitis* species. The structure typical in *Bitis* specimens is obvious in *Bitis schneideri* (fig. 1.5). They possess a structure of slender, elongated bulges, which are very distinct from *Cerastes*. However, *Bitis peringueyi*, (fig. 1.4) also a sand burrowing snake, is the only species of *Bitis* showing a similar scale structure to *Cerastes* species, but obvious from figure 2, this species is very distinct from the new species of *Cerastes*.

However, all *Cerastes* species are similar in their verrucate secondary structure; cell borders are well visible. These borders are invisible in the cristate or verrucate secondary structure of *Bitis* species.

The comparison of the voucher with *C. vipera* and *C. cerastes* results in a morphological similarity to *C. vipera*. Both are similar in body size, shape of the nostril and head scalation (see fig. 2, tab. 1). However, in other aspects they are clearly distinct: the specimen has lower scale counts as in *C. vipera* in its morphological variation of the entire distribution in northern Africa. The specimen possesses supraocular horns, which are absent in *C. vipera* and horns, encompassing several scales, are also not known in *C. cerastes*. Therefore, we regard this specimen as a new species of *Cerastes*:

Cerastes boehmei sp. n.

Holotype. ZFMK 58054. Female specimen from Tunisia, SW Remada, east of Djebel National Park, close to the road midway between Beni Kadeche (Bani Kheddache) and Ksar el Hallouf, leg. T. Holtmann, 1991.

Diagnosis. This new species of *Cerastes* is characterized by: (a) head depressed, eyes on the lateral part of the head but slightly directed upwards; (b) supraocular coronets (crowns) present, consist of several sulcated, medium sized scales, instead of the supraocular horn formed by a single sulcated long scale in *C. cerastes* or *C. gasperettii*; (c) nostril slit-shaped; (d) low number of interorbital scales; (e) 19–26–16 dorsal scale rows around fore-, mid- and hind body.

Differential diagnosis. The new species differs from (a) *C. vipera* in possessing supraocular coronets, a low number of interocular scales (7 instead of 9–13 fide Schleich et al. [1996], but 6–13 fide Jooris & Fourmy [1996]), a lower number of circumocular scales (11 instead of 19–29 fide Jooris & Fourmy (1996), a lower number of supralabial/infralabial scales (11–12/12–11 instead of 20–33/19–27 fide Jooris & Fourmy [1996]) and a lower number of subcaudal scales (25 instead of 33–57 fide Jooris & Fourmy [1996]). Counts of dorsal scale rows around midbody are ambiguous and depending on the method of counting (see fig. 3). They differ from *C. vipera* (21 instead of 23–27 fide Phelps [2010]) or lie with 26 scale rows within this range; from (b) *C. cerastes* in a lower number of interocular scales (7 instead of 15–21, fide Schleich et al. [1996]), in its smaller size, in possessing a slit-shaped nostril, in possessing supraocular coronets each formed by more than one elongated scale; and finally from (c) *C. gasperettii* in possessing supraocular coronets each formed by more than one elongate scale and in possessing a slit-shaped nostril.

From all recognized synonyms of *C. vipera* (mainly *C. vipera inornatus* Werner, 1929 and *C. richiei* Gray, 1842) the new species differs in possessing supraocular coronets, whereas the synonymised taxa are lacking horns or equivalent structures.

From the recognized synonyms of *C. cerastes* (mainly *C. c. mutila* Doumergue, 1901) the new species differs in possessing supraocular coronets, as all synonymised taxa are lacking horns or equal structures. Following Boulenger (1896) *Cerastes cornutus* Boulenger, 1896 (see also nomenclatural comment as part of the discussion), regarded as a synonym of *C. cerastes* following e.g. Schleich et al. 1996, is also with either horn-bearing or hornless individuals, but differs from *C. boehmei* sp. n. in a higher number of interorbital scales (15 to 21), in possessing supraocular horns made up of a single scale, a higher number of scale rows around midbody (27–35) and a higher number of ventral (130–165) scales.

Description of holotype (fig. 4). *Habitus*. Body elongate and slender, somewhat compressed and oval in profile; head flattened, triangular and well distinct from neck; Eye small to moderate, with vertically elliptical pupil, on upper lateral side, but nearly on top of head; nostril slit-shaped, slightly longer than first supralabial scale.

Measurements (in mm): Total length: 218.5; head length: 16; head width: 9.4; head height: 5.5; snout-vent length: 195; tail length: 25.5.

Scalation of head: Rostral broader than high, semicircular, slightly visible from above; menthal scale only in contact and smaller than first infralabial scale, followed by two large chinshields; nasal scale divided by large scale

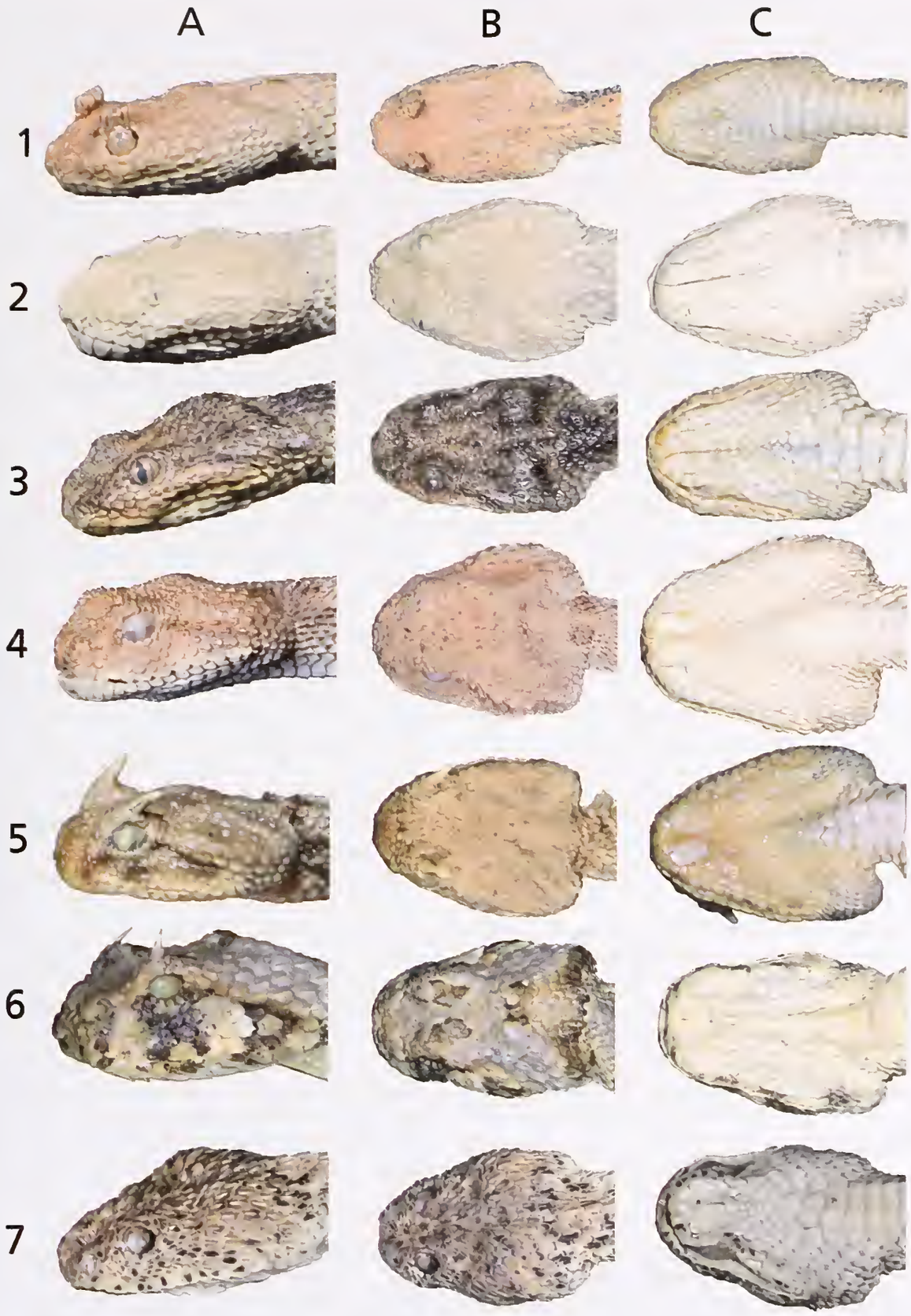

Fig. 2. Comparison of different viperid snakes from Africa.
1= *Cerastes boehmei* sp. n.: ZFMK 58054, Tunisia; **2**= *Cerastes vipera*: ZFMK 22985, Tunisia, without locality; **3**= *Cerastes vipera*: ZFMK 83340, Western Sahara, Laayoune Plage; **4**= *Cerastes cerastes*: ZFMK 63668: Libya, Wadi Matendus; **5**= *Cerastes cerastes*: ZFMK 65218, Morocco, Draa Valley; **6**= *Bitis caudalis*: ZFMK 65212: Namibia, Swakopmund; **7**= *Bitis peringueyi*: ZFMK 88453: Namibia, without locality. **A**= head in profile; **B**= head from above; **C**= head from below.

Table 1. Comparison of the three *Cerastes* species occurring in northern Africa.

	C. boehmei sp. n.	*C. vipera**	*C. cerastes***
Interorbital scales	7	less than 14 (6–13)	more than 14 (14–21)
Ventral scales	110	below 120	more than 130
Subcaudal scales	25	33–57	18–42
Position of the eye	lateral	directed upwards	lateral
Supraocular horn	present	absent	present/absent
Scale rows around midbody	21 (26)***	23–37	27–35
Circumocular scales	11	19–29	–

*=fide Jooris & Fourmy 1996, Schleich et al. 1996, Baha el Din 2006, Phelps 2010. **= fide Schleich et al. 1996, Baha el Din 2006, Phelps 2010. ***= see fig. 3

bearing nostril at its upper fringe, with smaller overlaying scale; five, more or less trapezoidal internasal scales, the two outer scales twice as large as three inner scales, all keeled; no enlarged prefrontal scales; occipital tubercle absent; supraocular coronets present, consist of elongate, sulcate scales, four on left, five on right side; 11 circumocular scales on each side; interorbital scales 7 at midlevel of supraocular coronets; loreals 3 on each side; supralabial scales: 11 on left, 12 on right side, only first in contact with nasal scale, three scales between supralabial scales and eye (including ocular scale); infralabial scales: 12 on left, 11 on right side.

Scalation of body: Ventral scales: 110; subcaudal scales: 25; number of scale rows around fore-body: 19, mid-body: 21 or 26 (see fig. 3), hind-body: 16; vertebral row not enlarged, in 107 scales on body.

Colouration in preservative. After 20 years of preservation in ethanol, the specimen has more or less uniform sandy colouration. Head uniform, upper side down to height of supralabial scales sandy, underside up to height of infralabial scales dirty white; body sand-coloured, with irregular pattern of slightly darker blotches; upper fore part of tail banded dark sand-coloured, underside dirty white, from mid-tail to tip uniform dark, nearly black on both sides; belly dirty white.

Colouration in life. Similar to preserved specimen: uniform yellowish sand-coloured with shades of some slightly darker blotches. Head and forepart of body uniform yellowish-sandy, without darker pattern (see fig. 5).

Etymology. This new species is named, in deep respect, after our 'scientific father' Prof. Dr Wolfgang Böhme, deputy director and head of the Herpetology section at the Zoologisches Forschungsmuseum Alexander Koenig in Bonn, for his contributions to African herpetology for the past four decades and for the time he invested in his young students. With his encouraging lectures, discussions, excursions and fieldtrips he had a significant influence on the authors leading to their scientific current dedication with herpetological systematics, ecology and zoogeography.

Distribution. So far only known from the type locality, but an adult male was caught by a local snake hunter near Beni Kadeche (T. Holtmann pers. comm.). The new species appears currently to be endemic to Tunisia and is probably widespread in the area of Bani Kheddache.

Biology. Nearly no information is available on the biology of this species. In captivity the adult female gave birth to living young which reflects the close relationship to *C. vipera*. In respect to colouration, a sandy habitat can be assumed.

Comments. Although the species is described here based on a single voucher, more specimens were known but became apparently lost. This specimen was one of three juveniles caught together with an adult female at the type locality. The adult female had five juveniles in captivity. Additionally, an adult male was caught in the area of the type locality by a local hunter. All of these specimens have shown the described character of the unique supraocular horns.

DISCUSSION

Though described from a single specimen only, the validity of *C. boehmei* sp. n. is beyond doubt. As becomes obvious from the comparison of fine structure of body scales, the new species must be clearly assigned to the genus *Cerastes*, being distinct from burrowing *Bitis* species from southern Africa. However, the fine structure is similar to

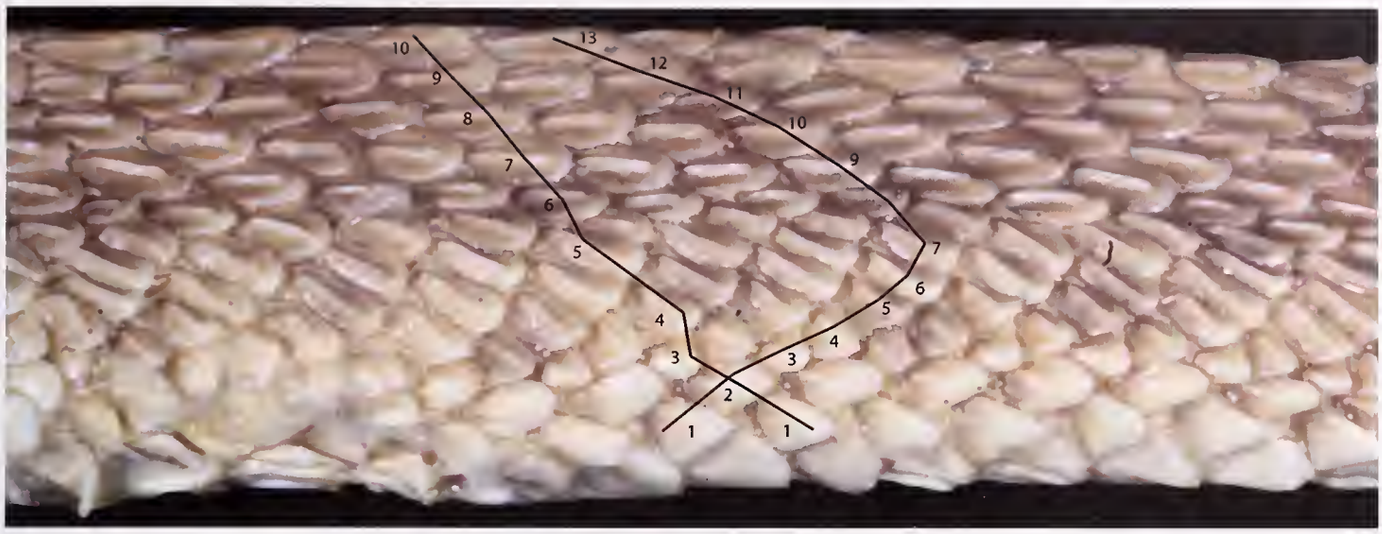

Fig. 3. Two different methods to count scale rows of dorsal scales around the midbody region of the holotype of *Cerastes boehmei* sp. n., ZFMK 58054.

both, *C. cerastes* and *C. vipera* but many other characters (e.g. shape of nostril, position of the eye, pholidosis, reproductive biology) show that the new species is more closely related to *C. vipera* than to *C. cerastes*. Accepting the results of the morphological analysis of *C. vipera* published by Jooris & Fourmy (1996) the new species has lower counts in circumocular, subcaudal, supralabial, infralabial scales and of ventral and interocular scales are on the lower limit of morphological variation in *C. vipera*. Therefore, *C. boehmei* sp. n. is clearly distinct from *C. vipera* also in pholidosis. Nevertheless, in *C. cerastes* both hornless and horned individuals are known but (a) the morphology of the "crowns" of *C. boehmei* sp. n. is clearly distinct to all other known horn structures in *Cerastes* and (b) the fact that supraocular horns or similar structures are completely unknown in *C. vipera* strengthens the validity of the new taxon as new and full species. Also Jooris & Fourmy (1996) who analysed 246 specimens comparing pholidosis in relation to a directed distribution did not mention any individuals with horn-like structures. Also none of the known synonyms of *C. vipera* possesses horns or similar structures. Nevertheless, supraocular horns as spontaneously mutation are extremely implausible. Only one case is documented where a specimen of *Macrovipera lebetina* possessed a solitary horn only on one side of the head (Böhme & Wiedl 1994).

Nevertheless, in *C. cerastes* and *C. gasperettii* hornless and horn-bearing individuals are known and a taxonomic differentiation is only known from *C. gasperettii* where the subspecies *mendelsohni* is hornless. Therefore, it can be also assumed that the supraocular scale tufts are simply a so far unknown variation within of *C. vipera*. But first of all, *C. vipera* is a well known species and e.g. Jooris & Fourmy (1996) have analysed a high number of vouchers and no single specimen is known which possess supraocular tufts and second these supraocular tufts are strongly abnormal and very distinct to the supraocular horns of *cerastes* and *gasperettii* who possess similar supraocular horns to each other.

The function of supraocular horns remains unknown. There were many speculations on the function of the horns in *Crotalus cerastes* Hallowell, 1854 from America. Klauber (1956) mentioned that they serve as radiators of heat or shaders for the eyes, whereas Cowles (1953) regarded them simply as a whim of evolution and Cohen & Myres (1970) suggest that they have the function of an eyelid protecting the snake's eye while passing through burrows. They supported this hypothesis with an ecological comparison between *C. cerastes* and *C. vipera*: the former is only known to bury itself partially and frequent rodent burrows whereas *C. vipera* is only known to bury itself fully in sand and is not reported from rodent burrows. However, another, not yet discussed, function could be a sexual recognition between the two snakes. In many reptile groups (e.g. Chamaeleonidae, Agamidae) body ornaments are known for identification during mating time. Although only males possess in most cases ornaments, it should be verified if only those population of *C. cerastes* (as this species does not strictly possess horns) bear horns, which occur directly syntopically with the hornless *C. vipera*.

Currently the new species is only known from central Tunisia and a restricted distribution can be assumed. A similar case is found in *Pseudocerastes urarachnoides* Bostanchi, Anderson, Kami & Papenfuss, 2006 which was described from a small area and a further study (Fathinia et al. 2009) found a third locality relatively close the localities of the types only.

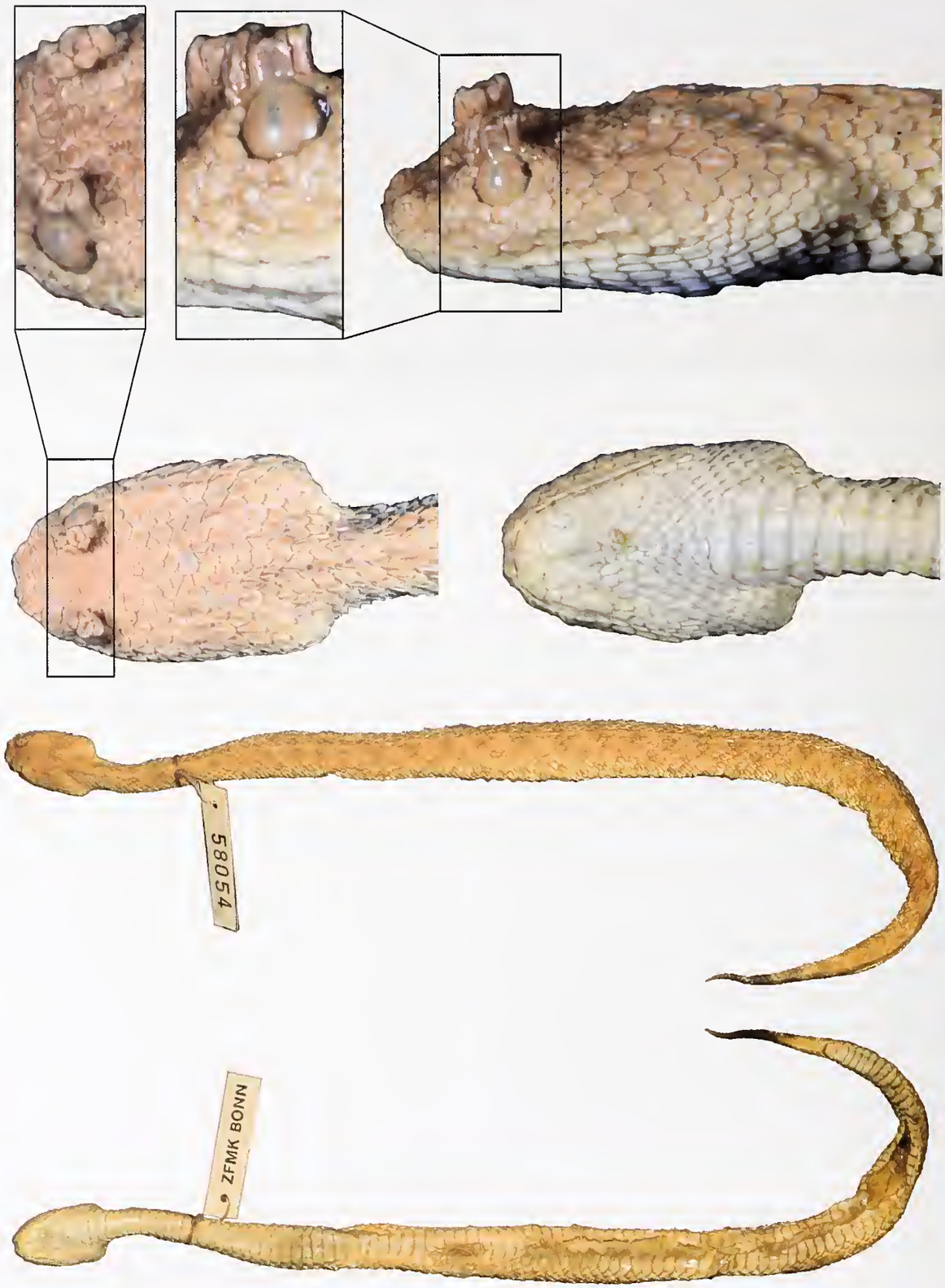

Fig. 4. Holotype of *Cerastes boehmei* sp. n.: ZFMK 58054 from SW Remada, Tunisia.

Fig. 5. Living holotype of *Cerastes boehmei* sp. n. in eaptivity.

The SEM analyses of dorsal scales show that *Bitis peringueyi* is different to other *Bitis* species in its secondary structure (Beyerlein 1993, and fig. 1). This structure is more or less a verrucate structure and not comparable with the cristate structure of e.g. *Bitis schneideri*, but similar to the *Cerastes* species. However, it is distinct to *Cerastes* as the imprints of borders between Clear layer cells, which are present in *Cerastes*, are not visible. Both, the *Cerastes* species and *B. peringueyi* are moreover similar in their habitats as *B. peringueyi* is one of the sand-burrowing *Bitis* species living in windblown sands of the Namib desert. Other burrowing *Bitis* like e.g. *B. schneideri* (see fig. 1) or *B. caudalis* (imaged in an unpublished thesis, see Beyerlein 1993) show the typical cristate secondary structur of *Bitis*. *B. schneideri* occurs in stable vegetated sand dunes and not like *B. peringueyi* and *Cerastes* in windblown sands. Therefore, this scale structure could be interpreted as an adaptation for this special habitat of windblown sands.

Nomenclatural comment to the nomen '*Cerastes c. karlhartli*'. Sochurek (1974) 'described' a subspecies of *C. cerastes* which he called '*C. cerastes karlhartli*'. However, the description was done in his privately published so-called 'Herpetologische Blätter', which according to art. 8.1 of the International Code of zoological Nomenclature (ICZN 1999) does not constitute a publication and therefore the description is not valid. Later, Sochurek (1979) used the name again in a summary of North African snakes but failed to provide a diagnosis, description or figure and moreover did not designate a holotype. He only mentioned the distribution and a type locality. Later, Tiedemann & Häupl (1980) accepted the name as a valid subspecies in their herpetological type catalogue of the Natural History Museum in Vienna. Werner & Sivan (1992) placed the 'subspecies' in the synonymy of *C. cerastes*, whereas Golay et al. (1993) placed it in the synonymy of *C. gasperettii*. Werner et al. (1999) did not mention the name, whereas McDiarmid et al. (1999) and Baha el Din (2006) followed Werner & Sivan (1992). However, all these authors gave neither a diagnosis nor a figure of a specimen. Therefore the name '*Cerastes cerastes karlhartli*' must be recognized as a nomen nudum.

Nomenclatural comment to the nomen *Cerastes cornutus* Boulenger, 1896. The name is used for the first time in Forskål (1775, IX), and he is often mentioned as the author of this taxon name (e.g. Schleich et al. 1996, Baha el Din 2006). But Petrus Forskål died during the Danish Arabia expedition, and Carsten Niebuhr published Forskål's results after his death. Nevertheless, the name is part of a summary about different species which Forskål wanted to describe, but finally never managed to do before his untimely death. Additionally, this nomen is not accompanied by either a description or a drawing. Therefore, Boulenger (1896) who was the first to use the name together with a description must be recognised as the author of *Cerastes cornutus*, despite the fact that Boulenger himself mentions Forskål as the author of this species.

Acknowledgements. We are grateful to Thorsten Holtmann (Oberhausen) for providing information about the species and the image of the holotype alive. We are very thankful to Melanie Strauch (Bonn) who provided SEM specimens of the holotype and *Bitis schneideri*. Wolfgang Böhme (Bonn), Andreas Schmitz (Genève) and Bradley Sinclair (Ottawa) gave very important comments to the manuscript and we are thankful for fruitful discussions with them.

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Received: 10.V.2010
Accepted: 29.VI.2010

