

**A NEW SPECIES OF *Coluber* (*sensu lato*)
FROM THE DAHLAK ISLANDS, ERITREA,
WITH A REVIEW OF THE HERPETOFAUNA OF THE ARCHIPELAGO**

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A new racer species, *Coluber* (*sensu lato*), is described from the small islands of Andeber, Nocra, and Sarad in the Dahlak archipelago. This polymorphous species is most closely related to *C. (s.l.) florulentus* (Geoffroy) and *C. (s.l.) taylori* Parker. Phylogenetic relationships and generic allocation of East African and Palaearctic racer genera are briefly discussed. Three species of amphibians are known from Dahlak al-Kabir, and a total of fifteen terrestrial reptile species including two endemic snakes, viz. the new species of *Coluber* (*s.l.*) and *Echis megalcephalus*, have been recorded from nine islands in the Dahlak archipelago.

Key Words: New species, *Coluber* (*sensu lato*) sp., *Coluber* (*sensu lato*) *florulentus*, *Coluber* (*sensu lato*) *taylori*, systematics, relationships, Dahlak islands.

INTRODUCTION

The Dahlak (Dehalac) archipelago is situated off the Eritrean Red Sea coast between 15°27' – 16°35' N (Fig. 1). It is made up of some larger and numerous smaller islands and islets which are mostly low and composed of coral rock, and sometimes fringed by reefs (e.g., Difnein, Harmil). Separated from the mainland by the Mitsiwa (Massawa) Channel, the Dahlak bank is mostly less than 100 m deep and is studded with shoals of even shallower depths.

Dahlak al-Kabir is the largest island with a maximum length of ca. 60 km between the northwestern and the extreme southeastern end and a maximum elevation of ca. 120 m above sea level in the southwestern part. It is much indented, with rough and precipitous rocky coasts along the northern bays. The southern part gently descends toward the shoreline. Mangroves are found around lagoons. A rich vegetation occurs in some of the deeper canyons, and interspersed patches of grass afford a good supply of grazing during the rainy season.

According to the Hydrographic Department of the Admiralty (1955), Andeber is a coral island, but the main rock of the ridges is crystalline limestone, and Sarad is "rocky." On Nocra (Nakhra, Nakra, Nokra), there are small valleys and grass for pasture,

with here and there a few dom palms (*Hyphaene thebaica*). Dissei (Disei) has abundant vegetation and a series of conical peaks. Acacia trees and *H. thebaica* grow on Dehel (Dohol). Difnein and Romiya are small mangrove islands; the latter has good vegetation cover and, as on Harmil, a few trees are found.

SCIENTIFIC INVESTIGATIONS

The first European scientific expedition to the Dahlak islands was conducted by Friedrich Wilhelm Hemprich and Christian Gottfried Ehrenberg in April 1825. No herpetological items have been reported from their stay on Dahlak al-Kabir but specimens including the type series of the skink *Mabuya brevicollis* (Wiegmann) were collected in the Howakil group (Fig. 1), probably on Howakil Island at 15°10' N 40°16' E (Ehrenberg in Stresemann, 1954; Schätti and Günther, 2001).

The first herpetological specimens from the Dahlak islands were toads and frogs obtained by Eduard Rüppell between November 1826 and March 1827. Boettger (1892) referred these amphibians from Dahlak al-Kabir to *Bufo regularis* (= *B. dodsoni*, Tandy et al., 1985) and *Rana* (= *Ptychadena*) *mascareniensis* (see *Systematic Remarks*).

Apparently, Eduard Rüppell did not collect amphibian or reptile species during his second visit to Dahlak al-Kabir from 16 December 1831 until 13

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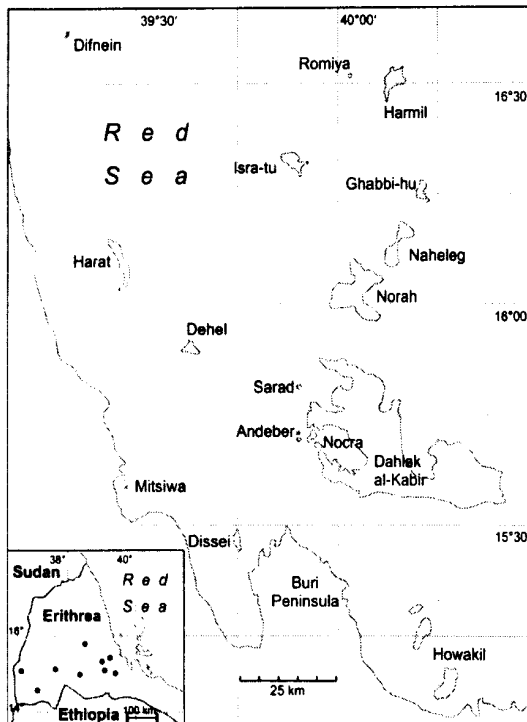


Fig. 1. Dahlak archipelago and Howakil islands. Inset showing mainland Eritrean records of *Coluber (s.l.) f. florulentus* (after Calabresi, 1925; Scortecci, 1928; Scortecci, 1930a; Scortecci, 1930b; Loveridge, 1945; Largen and Rasmussen, 1993). Drawing Corinne Charvet.

January 1832 ("im Dorfe Delbischet an der Ostküste," in Mertens, 1949). This stay resulted in the first record of *Dugong dugon* from the Red Sea (Rüppell, 1834). The naturalist Arturo Issel collected mollusks on Sarad islet ("Sarato") and Norah ("Nora"), the second largest island of the archipelago, but no herpetological specimens were obtained (Issel, 1873; Issel, 1885).

Boulenger (1896a) studied Vincenzo Ragazzi's Eritrean collection including *Bufo dodsoni* (reported as *B. blanfordii*, see Parker, 1932), *Tarentola a. annularis*, *Acanthodactylus boskianus*, and a new variety of skink, viz. *Chalcides ocellatus* var. *humilis* (syn. *Ch. ragazzii*), from Dahlak al-Kabir, *Tarentola a. annularis* from Nocra, and *Latastia l. longicaudata* from Dissei.

Steindachner (1900) reported *Bufo* cf. *blanfordii* and new records of reptiles from Dahlak al-Kabir (*Mesalina martini*, *Leptotyphlops cairi*) and Nocra (*Hemidactylus* cf. *turcicus*, *M. martini*, *Chalcides ragazzii*, *Echis pyramidum*) obtained by the "Pola" expedition in November 1897 (see *Systematic Re-*

marks). Based on Magretti's collection, Scortecci (1928) added *Zamenis* (= *Platyceps*) *rhodorachis* and *Dispholidus typus* to the list of snakes found on Dahlak al-Kabir. Loveridge (1947) mentioned *Hemidactylus* cf. *turcicus* from the archipelago's main island.

Apart from a few previously reported reptile species from Dahlak al-Kabir, the Israel South Red Sea expedition in spring 1962 (see Clark, 1962; Oren, 1962) recorded the semaphore gecko *Pristurus rupestris* from Romiya islet as well as *Hemidactylus* cf. *turcicus*, *Pristurus rupestris*, *Tarentola a. annularis*, *Chalcides* cf. *ocellatus*, *Leptotyphlops* sp. (see *Systematic Remarks*) and *Coluber (sensu lato) florulentus* from Andeber (Entedebir et al., 1964).

In December 1969 and January 1970, on the occasion of the "Dahlak Quest Expedition," Malcolm J. Largen collected reptiles on Dahlak al-Kabir, Dehel, Dissei, Nocra, and Sarad (Largen, 1997). Based on this material deposited in The Natural History Museum of London, Lanza (1983) and Cherlin (1990) respectively reported the house gecko *Hemidactylus* cf. *turcicus* (as *H. parkeri*) from various islands and saw-scaled vipers (*Echis* cf. *pyramidum*) from Dissei (see *Systematic Remarks*).

Cherlin (1990) described the endemic *Echis megalocephalus* from an unspecified island in the Dahlak archipelago (see *Herpetofauna of the Archipelago*). Largen and Rasmussen (1993: Fig. 1) illustrated a specimen of *Platyceps rhodorachis* from Dahlak al-Kabir and gave midbody scale row and ventral counts for a racer ("*Coluber* sp.") from Sarad islet, which they suspected must represent an undescribed taxon. Finally, Largen (1997) published new records of *Pristurus flavipunctatus*, *Tarentola a. annularis*, and *Chalcides ocellatus* from Dissei, *T. a. annularis* from Dehel and Harmil,² and *P. rhodorachis* from Difnein ("Difrein").

MATERIAL, METHODS AND GEOGRAPHIC NAMES

The five specimens of the new colubrid species from the Dahlak archipelago as well as two male

² The occurrence of *Tarentola annularis* on Harmil is based on a photographed specimen (Largen, 1997) obtained by the expedition of the University of Rome in February 1994. A mimeographed report on environmental aspects of this primarily geological study in the Dahlak bank was submitted to the Eritrean Ministry of Marine Resources. Two observations concern reptiles, i.e., "large geckos" on Harmil (*T. annularis*) and an undefined "lizard" on Tor Island at 15°35' N 40°38' E (Hillman, 1994).

Coluber (*s.l.*) *f. florulentus* from Eritrea (i.e., ANSP 25204: Gura, and MZUF 678: Mai Mafel [Mai Mabellis]) and a juvenile male *C. (s.l.) taylora* from Assab (MSNG 29032) were borrowed from the following collections: Academy of Natural Sciences, Philadelphia, USA (ANSP); The Natural History Museum, London, U.K. (BMNH); Museo Civico di Storia Naturale Giacomo Doria, Genoa, Italy (MSNG); Museo Zoologico dell'Università ['La Specola'], Florence, Italy (MZUF); Department of Zoology, Tel Aviv University, Israel (TAU); and Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia (ZISP). MHNG stands for Muséum d'Histoire naturelle, Geneva, Switzerland.

Definitions of terms used in the following description are found in Schätti (1988). Dorsal formulas give the number of longitudinal scale rows at the level of the tenth ventral, at midbody, and immediately prior to the divided anal scale. The position of scale row reductions in Table 1 is expressed as the average of right and left side ventral counts.

Almost no information concerning the smaller islands of the Dahlak archipelago and the islands north of Dahlak al-Kabir is available. Except where otherwise stated, the short descriptions are based on the Hydrographic Office of the United States Navy (1952), the Hydrographic Department of the Admiralty (1955) and, in the case of Harmil and Romiya, the University of Rome report (see footnote 2). The spelling of Eritrean localities and place names is usually the one used by the United States Board on Geographic Names (1982).

SYSTEMATIC REMARKS

Specific reidentification of Dahlak amphibians and reptiles on the basis of literature data is a matter of impossibility. Usually, conventional usage of systematic names is followed throughout the text. Scientific names and authors of the various species are listed in the *Appendix*.

Bufo cf. *blanfordii* and *Ptychadena mascareniensis* have only been reported once from the Dahlak islands (Boettger, 1892; Steindachner, 1900). The identification of the frog species is highly questionable. Although it remains possible that *P. mascareniensis* (Duméril and Bibron) might occur in western Eritrea, the habitat in Dahlak al-Kabir is entirely inappropriate for this species which is intolerant of extreme aridity and requires permanent marshes for sur-

vival. The frog from Dahlak al-Kabir is almost certainly *P. anchietae* (M. J. Largen, *in litt.*).

Lanza (1983) assigned house geckos from Andeber, Dahlak, Dissei, and Nocra to *Hemidactylus parkeri* Loveridge and later (Lanza, 1990) revalidated *H. robustus* Heyden (with *parkeri* as a junior synonym) for eastern African and Arabian populations previously referred to *H. turcicus* (*sensu* Arnold, 1986, see also Loveridge, 1947; Schätti and Desvoignes, 1999). The author joins Largen (1997) in awaiting further clarification and, for the time being, refers Dahlak populations to *H. turcicus* (L.).

An unidentified specimen of blind snake (*Leptotyphlops* sp.) from Andeber recorded by Hoofien and Yaron (1964) is tentatively referred to *L. cairi*, which is reported from Dahlak al-Kabir. Apart from this, Steindachner (1900) published the very first finding of higher snakes from the Dahlak islands consisting of two saw-scaled vipers from Nocra (as *Echis carinatus* (Schneider) from "Nakra"). Further evidence for the occurrence of poisonous species on this island is provided by Roghi and Baschieri (1956:70, as "asps") and the incidence of a bite that "nearly killed the lone police-constable on duty at Nocra village" (Hoofien and Yaron, 1964).

The systematics and taxonomy of *Echis* spp. from the Red Sea area is a matter of controversy (see, e.g., Cherlin, 1990; Golay, 1993; David and Ineich, 1999). In particular, the specific allocation of saw-scaled vipers from Dahlak islands (other than *E. megalocephalus*) is uncertain. Largen and Rasmussen (1993) referred populations from Dissei and Nocra to *E. varius* Reuss, a taxon revalidated by Cherlin [1990, as *Echis (Toxicoa) v. varia*] for populations from Sudan to the Horn of Africa. However, three complete specimens and two heads (BMNH 1973.3213 – 1973.3217) from these islands are reportedly similar to *E. pyramidum* (Geoffroy) (Cherlin, 1990:214). Saw-scaled vipers putatively belonging to this latter species occur on other islands of the southern Red Sea, e.g., in the Farasan archipelago (Farasan al-Kabir) and on Hanish al-Kabir at 13°45' N 42°45' E (Schätti and Gasperetti, 1994; I. Ineich, *in litt.*).³

³ Schätti and Gasperetti (1994) contested some of Cherlin's (1990) systematic conclusions. Contrary to their opinion, the author considers *Echis (Toxicoa) khosatzkii* Cherlin, 1990 to be a valid species from eastern Yemen and Dhofar on the basis of morphological and molecular evidence (unpublished data).

For the purpose of this paper, the Afrotropical *Coluber (s.l.) florulentus* group is considered to include *C. florulentus* Geoffroy, *C. taylori* Parker, *C. brevis* (Boulenger) spp. (see Schätti in Lanza, 1990), and the new taxon described hereafter.

Cope (1896: Plate XXI, Fig. 6) described the genus *Tylanthera* after an *in situ* hemipenis of a "*Zamenis florulentus* Geoffr." from "Western Asia." *Coluber (s.l.) florulentus* (Geoffroy) is an African species (see *Comparison*, footnote 5), so confusion with a Saharo-Sindian taxon, e.g., *Platycephalus rhodorachis* (Jan), cannot be ruled out.⁴

The *Coluber (s.l.) florulentus* group and *Platycephalus* Blyth (type species: *Coluber ventromaculatus* Gray) cannot be distinguished on the basis of apomorphic characters. Although the African racers in question may ultimately turn out to be congeneric with *Platycephalus* spp., the author considers it reasonable to follow here a conservative approach regarding their generic allocation in order to prevent further confusion (see, e.g., Schätti and McCarthy, 2001).

Recently, Nagy et al. (2000) published preliminary results of nucleotide sequences of cytochrome b from six Palearctic racers and *Coluber (s.l.) socotrae* (Günther). Some of their results will be addressed in detail in a forthcoming paper. The conclusion that Palearctic and Afrotropical racers have different phylogenetic origins is entirely and unconvincingly based on a comparison of *Hierophis* and *Hemorrhois* spp. with the species from Sokotra which belongs to a monotypic new genus (Schätti and Utiger, in preparation).

Racers from Andeber tentatively referred to *Coluber (s.l.) florulentus* (Hoofien and Yaron, 1964; Schätti, 1988), the Sarad specimen (Largen and Rasmussen, 1993), and two previously unreported indi-

viduals from Nocra represent a new taxon. It is hereafter described in honor of Malcolm J. Largen for his untiring collecting activities and important contributions to the herpetofauna of Ethiopia and Eritrea.

Coluber (sensu lato) largeni n. sp.

Coluber florulentus Geoffroy, 1827 (?) — Hoofien and Yaron, 1964:38 ("Entedebir Island," TAU 8091, 8092).

Coluber cf. *f. florulentus* — Schätti, 1988:98, 111, Fig. 1 [map] (discussion of Andeber specimens).

Coluber sp. — Largen and Rasmussen, 1993: 338, map 15 [413] (Sarad islet, BMNH 1973.3211); Largen, 1997:89 (Andeber, Sarad).

Holotype. BMNH 1973.3211, "Sarad Island, Dahlak, Ethiopia" (♀, coll. M. J. Largen, January 7, 1970).

Paratypes. TAU R8091, Andeber (Entedebir), "Devil's Crack" (♂, Israel South Red Sea expedition 1962, E62/2345); TAU R8092, Andeber, "Bitter Well" (juv. ♀, Israel South Red Sea expedition 1962, E62/2393). ZISP 20553, Nocra (♂, March 4, 1979, no collector given, see *Herpetofauna of the Dahlak Archipelago*); ZISP 20554, same origin (juv. ♂, February 10, 1979).

Description of holotype. Adult ♀. Nine supralabials (fifth and sixth entering orbit), anterior subocular situated between fourth and fifth supralabial; with an additional scale (corresponding in size and general shape to the subocular) between the loreal and the subocular. Loreal and preocular single; two postoculars and anterior temporals; two (left) or three temporals in second row. Nine infralabials, four in contact with anterior chin shields which are slightly shorter than posterior pair.

One preventral, 193 ventrals, anal divided, tail incomplete (truncated, 54 subcaudals). Dorsal scales in 21-21-15 longitudinal rows; reductions at the 121-st (right) and 123-rd ventral by fusion of rows 9 + 10 (right) and 8 + 9, the 131-st and 123-rd (rows 2 + 3), and the 166th and 170th ventral (rows 6 + 7, 7 + 8),

⁴ Cope's (1896) specimen could not be traced for reidentification. This individual is not deposited in the herpetological collections of the Academy of Natural Sciences, Philadelphia, or the United States National Museum (Smithsonian Institution) in Washington (R. I. Crombie and N. S. Gilmore, *in litt.*).

TABLE 1. Type series of *Coluber (s.l.) largeni*

Specimen	Sex	Ventrals	Subcaudals	Dorsal scale rows	Reduction pattern	Maxillary teeth	Origin
BMNH 1973.3211	♀	193	—	21-21-15	122 (p), 127 (l), 168 (p)	11+2	Sarad
TAU 8091	♂	187	90	19-21-15	123-126 (l, p), 158 (p)	10+2	Andeber
TAU 8092	juv. ♀	197	87	21-21-15	125 (l), 126.5 (p), 170 (p)	11++2	Andeber
ZISP 20553	♂	193	—	21-21-15	99 (l), 121 (p), 174 (p)	12++2	Nocra
ZISP 20554	juv. ♂	182	87	21-21-15	120 (p), 126 (l), 160 (p)	—	Nocra

Note. p, paravertebral; l, lateral fusions; +, diastema narrow; ++, distinct. See *Methods* for further explanation.

i.e., at 63, 66, and 87% of the total number of ventrals (average of right and left side, Table 1).

Snout-vent length 445 mm. Right maxillary with 11 + 2 (enlarged) teeth, right palatine 8 teeth. Coloration light grayish, head without distinct pattern, dorsal scales black-edged, with interspersed completely black paraventral scales (Fig. 2).

Variation. Ten supralabials on left side in ZISP 20554, sixth and seventh in contact with eye. ZISP 20553 without a presubocular, i.e., no additional scale present between the small anterior subocular and the loreal. Both specimens from Nocra have broader anterior chin shields and the posterior pair separated by small scales.

Males 182 – 193 ventrals and 87 – 90 subcaudals, female paratype (TAU 8092) 197 and 87, respectively. Apical pits paired (not discernible in holotype). TAU 8091 with only 19 dorsal scale rows on the neck, increased to 21 rows at the 29-th ventral by splitting of ninth row. One low and two high (paravertebral) reductions on each side, the last (from 17 to 15 rows) always high; low fusion usually involving third and fourth row. In terms of ventrals, the first reduction occurs at 51% in ZISP 20553 (ventrals 83 – 115) and between 63 – 66% in the remaining specimens; the second reduction is situated at 62 – 69%, and the last at 84 – 90% (Table 1).

Maximum snout-vent length of paratype series ca. 35 cm (ZISP 20553); ZISP 20554 with less than 200 mm total length. Ten to twelve anterior maxillary teeth followed by two enlarged teeth, extent of diastema variable (comparatively narrow or distinct). Hemipenis in TAU 8091 (previously dissected by an earlier investigator) reaching to tenth ventral, insertion of *M. retractor penis magnus* ca. at ventral 30.

Coluber (*s.l.*) *largeni* is a polymorphous species. Unlike the holotype, the general dorsal coloration of the paratypes is brown, or grayish-brown, with a distinct pattern made up of 4 to 6 longitudinal rows of spots; the median (paravertebral) series are most distinct. Moreover, these specimens exhibit a marked head pattern including transverse darker areas between the eyes and across the anterior parietal and temporal region (Fig. 3) reminiscent of the one found in *C. (s.l.) florulentus*. The dorsal coloration of TAU 8092 (Fig. 3) and ZISP 20554 resembles the subadult pattern of *f. florulentus*.

A conspicuous brownish nuchal spot present in juvenile specimens (Fig. 3). Anteriormost part of neck sometimes with a few transverse bands. Median rows of spots usually in two juxtaposed series but some flecks may be situated at the same level along the body axis and confluent along the midline, thus



Fig. 2. *Coluber* (*s.l.*) *largeni* n. sp. (female holotype, BMNH 1973.3211). Photo P. Brauchli.



Fig. 3. *Coluber* (*s.l.*) *largeni* n. sp. (juvenile paratype, TAU 8092). Photo C. Rattou.

forming transverse markings. ZISP 20553 has a very clearly marked dorsal pattern on trunk and tail. Lateral series of flecks may include two longitudinal rows of spots or transverse bars (e.g., ZISP 20554); paraventral spots in TAU 8091 running onto tail. Belly distinctly dotted along the lateral edges of the ventrals, partly in two longitudinal rows of dark spots (e.g., ZISP 20553); mid-venter without pattern.

Distribution and ecological notes. Remarkably, *Coluber (s.l.) largeni* has so far been recorded only from small islands close to Dahlak al-Kabir, i.e., Andeber, Nocra, and Sarad (Fig. 1). Most probably, further populations exist in the archipelago, in particular on Andeber's southern sister island Intraya (Ente-raia).

The holotype and the Nocra specimens were collected from January to March. According to the attached label, BMNH 1973.3211 was taken from under a boulder in very arid terrain, "though with fair cover of vegetation." The sample from Andeber was obtained during a brief visit in March or April. The male from the "Devil's Crack" (TAU 8091) was "found climbing a smooth cliff wall, near a body of brackish water"; the juvenile specimen (TAU 8092) was encountered in a bush growing inside a shallow brackish well (H. Steinitz in Hoofien and Yaron, 1964).

Up to now, *Coluber (s.l.) largeni* is the only reptile species recorded from Sarad. This islet has a surface of ca. 1 km². On Andeber (ca. 1.5 km²) and Nocra, this racer is found sympatric with *Hemidactylus cf. turcicus*, *Pristurus rupestris*, *Tarentola a. annularis*, *Mesalina martini*, *Chalcides cf. ocellatus*, *Ch. ragazzii*, *Leptotyphlops cf. cairi*, *Echis pyramidum*, and, most probably, *E. megalocephalus* (see below).

COMPARISON

Hoofien and Yaron (1964) assigned the Andeber specimens to *Coluber (s.l.) florulentus* because of their dorsal color pattern but emphasized fewer ventral scales. Largen and Rasmussen (1993) noted "some resemblances to *C. florulentus*, but [...] a strikingly different colour pattern" in the Sarad specimen and "suspect that this represents an undescribed taxon." Largen (1997) recommended "further examination and preferably supplementation with additional material" from the archipelago to assess the systematic status of the Dahlak racer.

Coluber (s.l.) f. florulentus is distributed from the Mediterranean coastal plain in Egypt south to Uganda. In Eritrea, records of this subspecies are restricted

to inland stations mostly above 1000 m (Fig. 1). It is known from the Red Sea littoral in Sudan (Schätti, 1988: Fig. 1) but its occurrence in the Eritrean coastal plain has never been reported.⁵

Ventral counts in males of *Coluber (s.l.) florulentus* from Eritrea are 195 – 196 for MZUF 678 and ANSP 25204, and more than 200 in three males from Asmara, Barentu and Tessenei (Calabresi, 1925; Scortecci, 1930a; Scortecci, 1930b; Loveridge, 1945). Dorsal scale rows range from 21 (Gura, Mai Mafel) to 23 (Barentu, Tessenei).⁶ Most Eritrean *florulentus* exhibit a dorsal pattern made up of transverse dark bands or longitudinal series of blotches (Schätti, 1988: Fig. 8) but a few individuals virtually without markings are documented; Scortecci (1928) reported a uniformly olive ("olivastro uniforme") specimen from Mandafena (14°55' N 39°20' E).

Coluber (s.l.) largeni has definitely fewer ventrals than *C. (s.l.) florulentus*, 182 – 193 (♂♂) and 193 – 197 (♀♀) compared with 195 or more. With regard to dorsal color pattern, the paratypes of *largeni* are similar to typical *f. florulentus*. The peculiar pattern of the Sarad specimen (female holotype, Fig. 2) is not reported for Geoffroy's racer, though. These species also differ in maxillary teeth counts, 14 – 16 in *f. florulentus* versus 12 – 14 in *largeni*, and maybe in the number of subcaudals (fewer in *largeni*).

Coluber (s.l.) largeni needs comparison with *C. (s.l.) taylori* (Parker, 1949), a poorly known lowland species from northern Somalia to Assab in southern Eritrea (Boulenger, 1896b, as *Zamenis smithi*). The latter record is based on MSNG 29032, a juvenile male with 191 ventrals, 96 subcaudals, and 23 midbody scale counts (21 on neck and 15 prior to anal plate). Both species are also most similar in maxillary dentition (12 to 13 in *taylori*). Taylor's racer differs from *largeni* mainly in its dorsal color pattern with a characteristic longitudinal series of distinct large and partly confluent paravertebral spots separated by light areas (Schätti, 1988: Fig. 10).

⁵ An insular population may occur on Jazirat Shaqir (Shadwan Island, 27°30' N 33°59' E) at the northeastern limit of distribution. This assumption is based on a juvenile specimen deposited in the Forschungsinstitut und Naturmuseum Senckenberg (SMF 65705) with 215 ventrals, 114 subcaudals, and 21 midbody scale rows; it requires further examination.

⁶ No specific data for Eritrean female specimens are available. Ventral counts of female *Coluber (s.l.) f. florulentus* from Northern Sudan, generally similar to Eritrean populations, are 210 – 221 (Schätti, 1988). MZUF 678 is exceptional among the specimens discussed in this paper in having an additional paravertebral reduction on the posterior part of the body (13 rows prior to anal).

HERPETOFAUNA OF THE DAHLAK ARCHIPELAGO

Two species of toad, *Bufo* cf. *blanfordii* and *B. dodsoni*, and the frog *Ptychadena* cf. *anchietae* are reported from Dahlak al-Kabir (see *Systematic Remarks*). *B. blanfordii* and *B. dodsoni* are confined to northeastern Africa, while *P. anchietae* is much more widespread, extending from Eritrea to South Africa.

Up to now, fifteen terrestrial reptile species have been recorded from at least nine islands and islets of the archipelago (*Appendix*, footnote 2). A single taxon is reported from Difnein (*Platycephalus rhodorachis*), Dehel and Harmil (*Tarentola a. annularis*), Romiya (*Pristurus rupestris*), and Sarad [*Coluber* (*s.l.*) *largeni*].⁷ On the other hand, eight species have been recorded from Dahlak al-Kabir, seven from Nocra and six from both Andeber and Dissei. They represent the whole reptile fauna known so far from the archipelago.

Echis megalcephalus was described from an unspecified island in the southern Red Sea (Cherlin, 1990:212), i.e., the Dahlak archipelago (see Cherlin, 1990: Fig. 5, locality 14). The type series was obtained by a Soviet Navy surgeon. Apparently, two paratypes of *Coluber* (*s.l.*) *largeni* from Nocra (ZISP 20553, 20554) are from the same collector (N. Ananjeva, *in litt.*). Most probably, the type locality of *E. megalcephalus* is Nocra Island, a former base of the Soviet naval forces (Borkin and Cherlin, 1995), and it appears that two species of saw-scaled viper including *E. pyramidum* occur on this island (see *Systematic Remarks*).

Published records of the Saharo-Sindian lacertid *Acanthodactylus boskianus* and the Afrotropical opisthoglyph *Dispholidus typus* are restricted to Dahlak al-Kabir (Boulenger, 1896a; Scortecchi, 1928). These species as well as reptiles so far only reported from Dissei (i.e., *Pristurus flavipunctatus*, *Latastia l. longicaudata*) have just once been recorded from the Dahlak islands.

Tarentola annularis, the most widespread reptile species in the archipelago, is distributed from Morocco and Senegal to Egypt and Somalia. It is known from "no less than six islands" including Dehel and

Harmil and this large gecko "is very likely to be present on many more," possibly due to introduction by passive transport on dhows (Largen, 1997).

Reptile species with large distribution ranges (i.e., *Hemidactylus turcicus*, *Pristurus rupestris*, *Chalcides ocellatus*, and *Platycephalus rhodorachis*), as well as *Pristurus flavipunctatus* (type locality "Massaua") and *Echis pyramidum* that are found on both sides of the southern Red Sea, are also known from islands of the Arabian shelf, in particular the Farasan archipelago. At least *P. rhodorachis* (MHNG 2613.1) and *E. pyramidum* occur on Hanish Island (Hanish al-Kabir). Two Subsaharan and mainly eastern Africa lizards (see Schätti, 2001), *Latastia longicaudata* and *Mesalina martini*, have conspecific populations in Yemen.

Hoofien and Yaron (1964) concluded that the herpetofauna of the Dahlak archipelago is "of recent creation, and of comparatively limited general interest." This assertion is qualified by the presence of endemic snakes. Apart from *Coluber* (*s.l.*) *insulanus* Mertens, 1965 from Sarad Sarso and Sindi Sarso islets in the northeastern Farasan archipelago (Saudi Arabia), *C. (s.l.) largeni* and *Echis megalcephalus* are the only reptile species restricted to Red Sea islands.⁸

Although some larger islands (e.g., Ghabbi-hu, Harat, Isra-tu, Naheleg) have been subjected to very little natural history collecting and are virtually unexplored regarding their terrestrial fauna, it is obvious that the Dahlak archipelago has an "impoverished insular herpetofauna" (Hoofien and Yaron, 1964). Strangely enough, there is but a single species of the gekkonid genus *Hemidactylus* Oken reported, viz. *H. cf. turcicus* (see *Systematic Remarks*). Most striking is the absence of records of *H. flaviviridis* Rüppell (type locality "Insel Massaua"). Although this widely introduced gecko is notorious for being transported by human agency, it has so far not been recorded from the Dahlak islands. Further reptile species absent from the archipelago but found on islands at or near Mitsiwa (Massawa) are *Hemidactylus* cf. *sinaitus* Boulenger from Shaykh Sayd Island (Sheh Seid, 15°35' N 39°28' E) as well as a chameleon species (*Chamaeleo africanus* Laurenti or *Ch. calcarica-*

⁷ Largen (1997) was wrong to claim that Hoofien and Yaron (1964) had reported *Hemidactylus* cf. *turcicus* from Romiya. The specimen in question (field tag TAU E62/2346) is from Dahlak al-Kabir.

⁸ Remarkably, no endemic lizards are known from this region. *Euprepes pyrrhocephalus* Wiegmann, 1837 from the Ashiq islets (Zahrat Ashiq) near the Saudi-Yemeni border is a synonym of the widespread scincid *Mabuya brevicollis* (Wiegmann).

rens Böhme) and the colubrid snake *Aparallactus lunulatus* (Peters) from "Isole presso Massaua" (Rüppell, 1835; Scortecci, 1928; Lanza, 1983).

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APPENDIX

Amphibians and reptiles recorded from the Dahlak islands (based on Boettger, 1892; Boulenger, 1896a; Steindachner, 1900; Scortecci, 1928; Parker, 1932; Loveridge, 1947; Hoofien and Yaron, 1964; Arillo et al., 1967; Pasteur, 1981; Lanza, 1983; Tandy et al., 1985; Cherlin, 1990; Largen and Rasmussen, 1993; Borkin and Cherlin, 1995; Largen, 1997; see *Systematic Remarks*).

Andeber: *Hemidactylus* cf. *turcicus* (L.), *Pristurus rupestris* Blanford, *Tarentola a. annularis* (Geoffroy), *Chalcides* cf. *ocellatus* (Forskål), *Leptotyphlops* cf. *cairi* (Duméril and Bibron), *Coluber* (s.l.) *largeni*.

Dahlak al-Kabir: *Bufo* cf. *blanfordii* Boulenger, *B. dodsoni* Boulenger, *Ptychadena* cf. *anchietae* (Bocage), *H.* cf. *turcicus*, *T. a. annularis*, *Acanthodactylus boskianus* (Daudin), *Mesalina martini* (Boulenger), *Chalcides ragazzii* Boulenger, *L. cairi*, *Platycephalus rhodorachis* (Jan), *Dispholidus typus* (Smith).

Dehel: *T. a. annularis*.

Difnein: *P. rhodorachis*.

Dissei: *H.* cf. *turcicus*, *Pristurus flavipunctatus* Rüppell, *T. a. annularis*, *Latastia l. longicaudata* (Reuss), *Ch. o. ocellatus*, *Echis pyramidum* (Geoffroy).

Harmil: *T. a. annularis*.

Nocra: *H.* cf. *turcicus*, *T. a. annularis*, *M. martini*, *Ch. ragazzii*, *C.* (s.l.) *largeni*, *Echis pyramidum*, *E. megalcephalus* Cherlin (see text).

Romiya: *P. rupestris*.

Sarad: *C.* (s.l.) *largeni*.