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Two new species of *Uranoscopus* Linnaeus, 1758, from the Red Sea : *U. dollfusi* n. sp. and *U. bauchotae* n. sp.

by Rainer BRÜSS

Abstract. — As a result of the " Mission en Égypte 1928-29 " by R. P. DOLLFUS, six fishes of the genus *Uranoscopus* Linnaeus, 1758, were caught in the Gulf of Suez, northern Red Sea, in ca. 50-100 m depth (MNHN, n° 1966.678-680). Although identified as *U. affinis* Cuvier, 1829 (*in* CUVIER & VALENCIENNES), they do not belong to this species. The material is composed of two previously unknown species ; they are described here as *Uranoscopus dollfusi* n. sp. (four specimens) and *Uranoscopus bauchotae* n. sp. (two specimens). They differ from *U. affinis* by a nearly naked nape and much shorter humeral spine. Both new species have about 50 transverse scale rows, dorsal scales merely around first dorsal fin, grained (but not rugose) skull bones, obsolete occipital lobes, strong suprascapular spines, 4-6 preopercular spines, a prelingual filament in adults, one basipterygial process on each side of throat, and a light ground-colour. *U. dollfusi* can be distinguished from *U. bauchotae* by a finer skull-bone granulation, contiguous dorsal fins (*bauchotae* : separated), a larger head, a broader interorbital distance, longer pectoral fins and yellowish exposed bony parts (*bauchotae* : dark reddish-brown). Both species are known from the Gulf of Suez only. They seem to be sister species and appear to be most closely similar to *U. affinis*, occurring in the Indian Ocean. A provisional key to the *Uranoscopus* species occurring in the Red Sea is given.

Résumé. — Six exemplaires du genre *Uranoscopus* Linnaeus, 1758 capturés dans le golfe de Suez par 50-100 m de profondeur, au cours de la mission en Égypte de R. P. DOLLFUS (1928-29), et enregistrés MNHN 1966.678-680 sous le nom d'*U. affinis* Cuvier, 1829 sont décrits ici comme deux espèces nouvelles : *U. dollfusi* (quatre exemplaires) et *U. bauchotae* (deux exemplaires). Elles se distinguent d'*U. affinis* par la nuque presque nue et par l'épine humérale beaucoup plus courte. Ces deux nouvelles espèces ont environ 50 rangées transversales d'écailles, des écailles dorsales disposées seulement autour de la première nageoire dorsale, des os granuleux mais non rugueux, des lobes occipitaux rudimentaires, de fortes épines suprascapulaires, 4 à 6 épines préoperculaires, un filament prélingual chez l'adulte, un processus basiptérygien de chaque côté de la gorge et une coloration de fond clair. *U. dollfusi* se distingue de *U. bauchotae* par la granulation plus fine du squelette, les nageoires dorsales contiguës (séparées chez *U. bauchotae*), la tête plus forte, la distance interorbitaire plus large, les nageoires pectorales plus longues et la coloration jaunâtre des parties osseuses visibles (brun rouge sombre chez *U. bauchotae*). Ces deux espèces, connues seulement du golfe de Suez, semblent être des espèces sœurs très proches de l'espèce *U. affinis* de l'océan Indien. Une clé provisoire des espèces d'*Uranoscopus* de la mer Rouge est donnée.

Rainer BRÜSS, *Konrad-Adenauer-Str. 42, D-5130 Geilenkirchen, F.R.G.*

Introduction

When studying the *Uranoscopus* material from the deep water of the Red Sea, caught during the MESEDA II program (Klausewitz, 1980 ; Brüss, 1986*a*), the author loaned several Indo-West Pacific and Red Sea specimens of this genus for comparison. Among these were six specimens from the Muséum national d'Histoire naturelle, Paris, collected from the Gulf of Suez (ca. 50-100 m depth) by R. P. Dollfus during his "Mission en Égypte 1928-29" (Dollfus, 1931), and identified as *U. affinis* Cuvier, 1829 (*in* Cuvier & Valenciennes). A comparison of these specimens showed that the material is composed of two distinct forms. The further comparison of both forms with the type material of *U. affinis* showed that although, they resemble this species, they differ from it in several criteria (see table 1). As their identity could not be determined using the key of Beaufort & Chapman (1951) nor assigned to any known species, the fishes are described here as new to science.

Comparative material

Uranoscopus fuscomaculatus Kner, SMF 14284, Red Sea, Gulf of Aqaba, Elat, SL 100 mm ; *Uranoscopus* sp. A (Brüss, *in press a*), SMF 16476-16478, holotype and two paratypes, central Red Sea, off Jeddah, SL 115 and 62-114 mm ; *U. marisrubri*, paratype, HUJ F.6319, Red Sea, Gulf of Suez, SL 205 mm ; *Uranoscopus* sp. B (Brüss, *in press b*), holotype and paratype, HUJ F.5797/1-2, southern Red Sea, Dahlak, SL 126 and 66 mm ; *Uranoscopus scaber* Linnaeus, TAU P.5677, northern Red Sea, Ras Garra, SL 113 mm ; *Uranoscopus guttatus* Cuvier *in* Cuv. & Val., holotype, MNHN 3097, Indian Ocean, SE-India, Pondichery, SL 164 mm ; *Uranoscopus affinis* Cuvier *in* Cuv. & Val., holotype MNHN 5263 and MNHN 5262, Indian Ocean, SL 101 et 100 mm ; *Uranoscopus marmoratus* Cuvier *in* Cuv. & Val., holotype, MNHN 5254, Indian Ocean, SL 96 mm ; *Uranoscopus crassiceps* Alcock, syntypes, MNHN 90.324-326, Indian Ocean, east of India, SL 53-75 mm ; *U. crassiceps*, BM(NH) 1939.5.24.1285-1319, ten subad.-ad., western Indian Ocean, Gulf of Aden, SL 91-157 mm ; *Uranoscopus archionema* Regan, syntype, BM(NH) 1921.3.1.32, western Indian Ocean, off Natal, SL 220 mm ; *U. archionema*, BM(NH) 1939.5.24.1281-1282, 1 juv., 1 subad., western Indian Ocean, Zanzibar, SL 52-107 mm.

Distribution of comparative species

From the western Indian Ocean and the Red Sea the following species of *Uranoscopus* are known : *U. guttatus* Cuvier, 1829 (*in* Cuv. & Val.), India, Gulf of Suez (Day, 1878 ; Gruvel & Chabanaud, 1937 ; Kotthaus, 1977) ; *U. affinis, marmoratus* and *filibarbis* Cuvier, 1829 (*in* Cuv. & Val.), Indian Ocean ; *U. fuscomaculatus* Kner, 1868, Fiji Islands, Arafura Sea, New Zealand, Gulf of Aqaba (Beaufort & Chapman, 1951 ; Dor, 1969 ; Klausewitz, *personal notes*) ; *U. crassiceps* Alcock, 1890, India, Gulf of Aden (Alcock,

1899 ; NORMAN, 1939) ; *U. archionema* Regan, 1921, South Africa to Zanzibar (NORMAN, 1939 ; SMITH, 1950) ; *U. scaber* Linnaeus, 1758, Mediterranean, East Atlantic, Black Sea, northern Red Sea (ROUX, 1981 ; BRÜSS, *in press b*) ; *U.* sp. A (BRÜSS, *in press a*), Red Sea ; *U.* sp. B (BRÜSS, *in press b*), southern Red Sea.

METHODS : Measurements were made as shown in fig. 1. The transverse scale rows (Sql) were counted along the middle of the flanges. The snout length was measured from tip of lower jaw (mouth closed) to anterior rim of one eye. The length of the interorbital fossa did not include upper lip, the length of humeral spine was taken at the inner side.

ABBREVIATIONS : *Museum acronymes* : BM (NH) British Museum (Natural History), London ; HUJ Hebrew University of Jerusalem ; MNHN Muséum national d'Histoire naturelle, Paris ; SMF

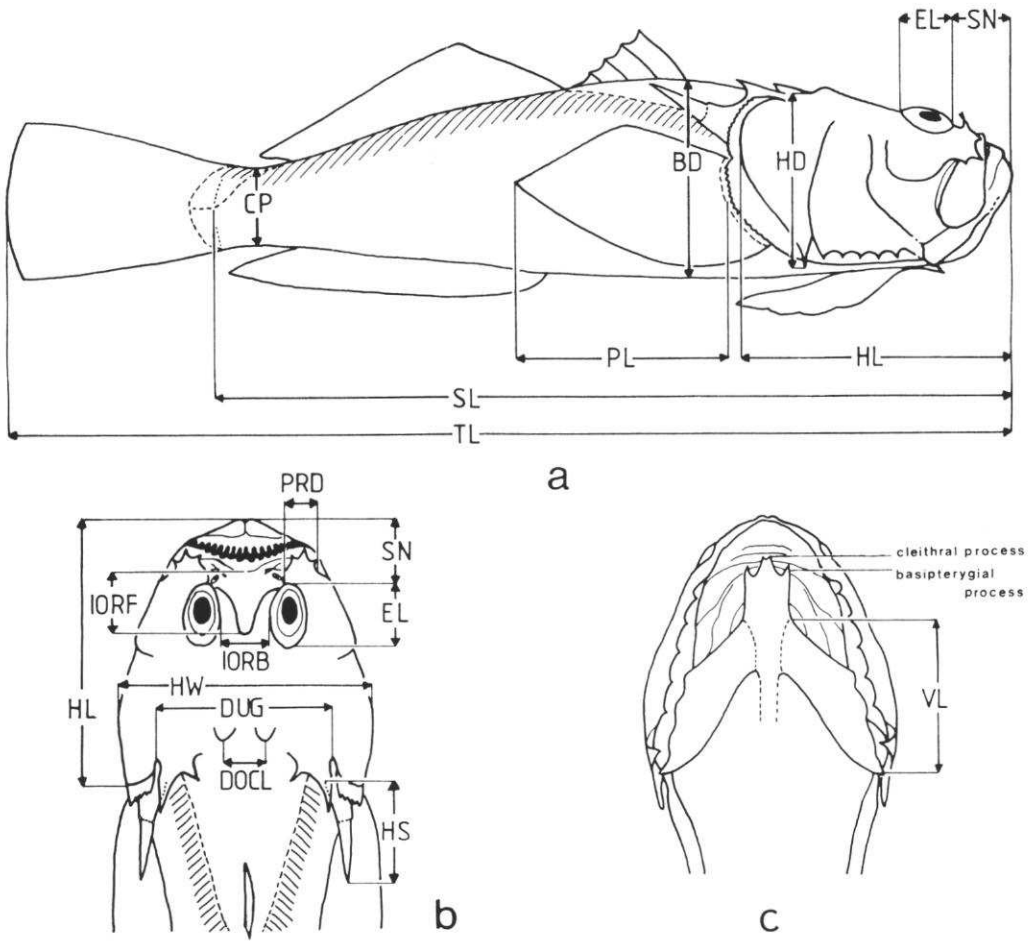

FIG. 1. — Semi-schematic sketch of *Uranoscopus* showing the body measurements employed in the descriptions : a, lateral view ; b, head from above ; c, head from below. Explanation of abbreviations see next page.

Senckenberg Museum, Frankfurt. *Technical terms* : A anal fin ; B branchiostegal rays ; BD body depth ; C caudal fin ; CP caudal peduncle ; D (D_1, D_2) dorsal fin ; DOCL distance between occipital lobes ; DUG distance between upper gillopenings ; EL eye length ; HD head depth ; HL head length ; HS humeral spine ; HW head width ; IORB interorbital width ; IORF length of interorbital fossa ; P pectoral fin ; PL pectoral fin length ; PRD preorbital depth ; SL standard length ; SN snout length ; Sql lateral scales, transverse rows ; TL total length ; V pelvic fin ; VL pelvic fin length.

The studies were carried out in the Ichthyological Section of the Senckenberg Museum, Frankfurt, under the supervision of Prof. Dr. W. Klausewitz.

Uranoscopus dollfusi n. sp.

(Fig. 2)

Holotype : MNHN 1966.680, ad., Red Sea, Gulf of Suez, station 31 (28°4′ N 33°29′ E-28°8′ N 33°34′ E), 60-73 m depth, hard mud bottom (" vase dure "), R. P. Dollfus leg. 24.I.1929 ; SL 190 mm (TL 237 mm).

Paratypes : MNHN B.3022, ad., SL 173 mm (TL 221 mm) ; MNHN B.3023, subad., SL 126 mm (TL 158 mm) (collecting data same as holotype) ; MNHN 1966.679, subad., Red Sea, Gulf of Suez, station 18 (28°4′ N 33°28′ E-28°9′ N 33°35′ E), 60-70 m depth, muddy sand (" sable vaseux "), R. P. Dollfus leg. 26.XII.1928 ; SL 121 mm (TL 150 mm).

Differential diagnosis : A species of the genus *Uranoscopus* Linnaeus, 1758, which differs from its close relative *U. affinis* Cuvier, 1829 (*in* Cuv. & Val.), by a naked anterior nape ; less rough skull bones ; broader, somewhat longer and flatter head ; longer interorbital fossa ; lower preorbital ; distinctly shorter humeral spine.

Etymology : The species is named after R. P. Dollfus, who collected the type material during his " Mission en Égypte " (but erroneously determined it as *affinis*).

Meristic data (holotype ; paratypes in parentheses) : B 6 ; D IV/13 (IV/12-14) ; A 13 (13[14]) ; P 17 (18-19) ; V I/5 ; preopercular spines 4-6 (5-6) ; Sql 53 (47-54).

Morphometric data (measurements as % of SL ; holotype, paratypes in parentheses) : BD 23.2 (23.1-28.2) ; CP 10.5 (9.9-10.7) ; HL 38.2 (38.4-38.9) ; HW 32.6 (30.6-33.5) ; HD 22.6 (19.1-23.8) ; DUG 19.5 (18.2-19.8) ; DOCL 5.0 (4.1-5.2) ; EL 6.2 (6.4-6.7) ; IORB 7.2 (6.7-7.4) ; IORF 7.4 (7.4-7.8) ; PRD 5.7 (5.6-5.8) ; SN 10.5 (9.5-10.3) ; HS 10.5 (11.4-11.9) ; PL 27.9 (28.1-30.2) ; VL 21.1 (21.9-22.5).

Indices (holotype ; paratypes in parentheses) : BD in SL 4.32 (3.55-4.33), HL 2.62 (2.57-2.60) ; CP in HL 3.63 (3.59-3.92), HW 1.17 (1.15-1.26), HD 1.69 (1.63-2.02), DUG 1.96 (1.96-2.11), DOCL 7.63 (7.54-9.30), EL 6.14 (5.83-6.05), IORB 5.29 (5.17-5.76), PRD 6.71 (6.65-6.84), SN 3.63 (3.72-4.08), HS 3.63 (3.27-3.37) ; PRD in EL 1.09 (1.10-1.15) ; EL in IORB 1.16 (1.01-1.15), in SN 1.69 (1.43-1.60), in HS 1.69 (1.77-1.82) ; IORF in IORB 0.98 (0.87-0.96).

Description

Body elongate ; head and anterior body depressed ; caudal peduncle compressed ; humeral spine lateral, behind occiput. Two dorsal fins (D_1, D_2) connected at base ; one anal fin present.

Complete lateral line, extends, from above upper gillopening, along dorsal line, to

middle of caudal base. Small cycloid scales, not overlapping, arranged in 47-54 (subad.-ad.) oblique transverse rows (from dorso-rostrad to ventro-caudad ; juvenile specimens probably with less rows) ; the scale rows begin below lateral line. Above lateral line, smaller embedded scales, below D_1 (rows not distinct), reaching to about one eyelength anterior to origin of the fin (very few, sporadic, scales on nape). Anterior nape, head and belly naked.

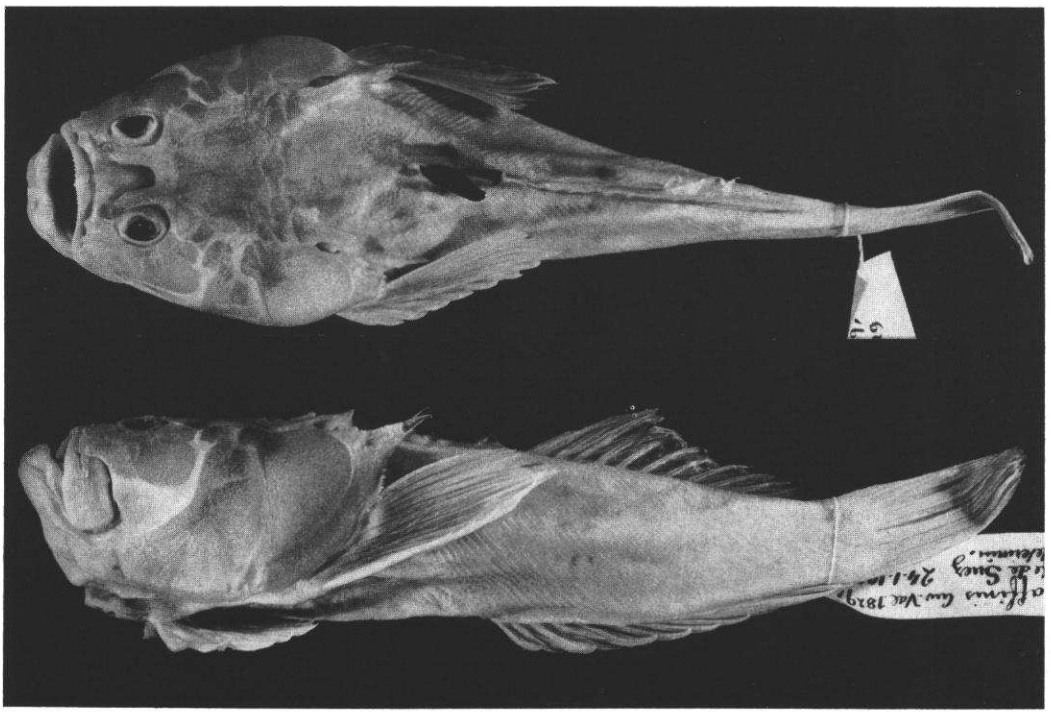

FIG. 2. — *Uranoscopus dollfusi,* holotype, MNHN 1966.680 : dorsal and lateral views (phot. Senck. Mus.).

Head (ca. 2.6 in SL) longer and broader than high (HD in HL ca. 1.8). Eyes longitudinally oval (ca. 6 in HL), on the flat top of head ; interorbital distance exceeds eye diameter. V-shaped interorbital fossa, relatively narrow (holotype : somewhat broader) ; its rounded end does not reach postorbital margin. Posterior nostril just anterior to eye ; anterior nostril tubular, with brush-like appendix (absent in specimen 1966.679 ; possible loss incurred by damage to specimen). Granulation of skull bones, medium fine in subadults, coarse in adults ; the surface is grained in type material (subad.-ad.), but may be rugose in juveniles. Occipital lobes very faintly developed (in juveniles probably more distinct). Suprascapular spines acute and very strong ; the inner spines distinctly shorter. Outer spines divergent, points of inner spines convergent. Furrowed humeral spine (ca. 3.5 in HL ; in juveniles surely longer), oblique, dorsally directed, may surpass dorsal line. Preopercle with four to six spines, subopercle with one ; all ventrally directed. Preorbital

with three blunt spines ; middle spine longest, inferior spine sometimes scarcely visible. Membranous posterior margin of operculum finely fringed, divides wide gillopening into upper and lower part ; a faint notch on level with upper edge of P. Mouth large, cleft oblique to vertical ; lower lip with numerous relatively long tentacles, upper lip with few, shorter tentacles. Anteriorly, pointed teeth of upper jaw arranged in four rows ; laterally, teeth arranged in two rows. The larger teeth of lower jaw anteriorly arranged in two rows, laterally in one row. Teeth on vomer and palatine equal or nearly equal in size ; inner vomerine teeth smaller. Prelingual filament in adults about length of eye, in subadults about two eye lengths ; broad and smooth-edged.

D_1 short, consisting of four flexible spines ; the first two longest (ca. 1.3-1.5 eye length). D_2 connected at base with D_1, ending ca. 1.3-1.5 eye length before caudal base ; first two rays unbranched ; third to fifth longest (ca. 1.5-1.7 caudal peduncle depth), fin becoming lower posteriorly. Anal fin corresponds with D_2 ; rays stout, first one shorter than the remainder, becoming gradually longer posteriorly (their average length about equal to caudal peduncle depth). Caudal fin somewhat longer than head depth and slightly convex. Pectoral fin very broad (length ca. 2.7 caudal peduncle depth), slightly pointed posteriorly, dorso-posterior portion truncated. Length of jugular pelvic fin (five stout soft rays and a small spine, obscured by skin) about two caudal peduncle depths or more ; one anteriorly directed basipterygial process on each bone, extending to (or nearly to) below the antero-inferior angle of maxillary.

Colouration (preserved fish) : Ground-colour very light yellowish-brown ; skull and opercular bones yellowish ; belly creamy white ; back without distinct marks. Skin covering parts of head, whitish ; snout region, including interorbital fossa, like ground-colour ; prelingual filament brown. D_1 black, first and last ray white (sometimes fin base) ; other fins light brown (like body). The specimen 1966.679 has a somewhat darker and more reddish ground-colour.

Distribution : The type material of *U. dollfusi* n. sp. comes from the northern Red Sea, Gulf of Suez (60-70 m depth) and was found on muddy sand (" sable vaseux ") and hard mud bottom (" vase dure "). Known only from the four type specimens ; the species is probably wide-spread in the Red Sea, and may possibly be endemic to this region.

Relationships : Discussed following description of the second new species (see below).

Uranoscopus bauchotae n. sp.

(Fig. 3)

Holotype : MNHN 1966.678, ad., Red Sea, R. P. Dollfus leg. 1928/29 ; SL 156 mm (TL 195 mm).

Paratype : MNHN B.3021, ad. (collecting data same as holotype) ; SL 150 mm (TL 187 mm).

Differential diagnosis : A species of the genus *Uranoscopus* Linnaeus, 1758, which differs from its close relative *U. affinis* Cuvier, 1829 (*in* Cuv. & Val.), by a naked anterior nape ; less rough skull

bones ; separated dorsal fins ; flatter and somewhat shorter head ; smaller eye ; narrower interorbital space ; lower preorbital ; distinctly shorter humeral spine ; dark reddish-brown bony structures.

ETYMOLOGY : The species is named after Mme M.-L. BAUCHOT, Muséum national d'Histoire naturelle, Paris, who kindly made the type material available to the Senckenberg Museum.

MERISTIC DATA (holotype ; paratype in parentheses) : B 6 ; D IV/12 (IV/14) ; A 13 (14) ; C 12 ; P 17 ; V I/5 ; preopercular spines 5-6 (5) ; Sql 51 (49).

MORPHOMETRIC DATA (measurements as % of SL ; holotype, paratype in parentheses) : BD 26.3 (22.0) ; CP 9.6 (10.0) ; HL 37.2 (37.3) ; HW 30.1 (28.7) ; HD 22.8 (22.3) ; DUG 17.9 (18.0) ; DOCL 5.1 (5.3) ; EL 6.2 (6.0) ; IORB 6.2 (6.5) ; IORF 7.1 (6.8) ; PRD 5.4 (5.7) ; SN 9.6 (9.3) ; HS 11.2 (10.7) ; PL 26.3 (27.3) ; VL 22.4 (22.7).

INDICES (holotype ; paratype in parentheses) : BD in SL 3.8 (4.6), HL 2.69 (2.68) ; CP in HL 3.87 (3.73), HW 1.23 (1.30), HD 1.63 (1.67), DUG 2.07 (2.07), DOCL 7.25 (7.00), EL 6.04 (6.22), IORB 5.98 (5.44), PRD 6.82 (6.59), SN 3.87 (4.00), HS 3.31 (3.5) ; PRD in EL 1.13 (1.06) ; EL in IORB 1.01 (1.14), in SN 1.56 (1.56), in HS 1.82 (1.78) ; IORF in IORB 0.88 (1.01).

DESCRIPTION

Body elongate, head and anterior body depressed, caudal peduncle compressed ; humeral spine lateral, behind occiput. Two separate dorsal fins (D_1, D_2) and one anal fin present.

Complete lateral line, extends, from above upper gillopening, along dorsal line, to middle of caudal base. Small cycloid scales, not overlapping, arranged in 49-51 (ad.) oblique transverse rows (from dorso-rostrad to ventro-caudad ; juvenile specimens probably with less rows) ; the scale rows begin below lateral line. Above lateral line, smaller embedded scales, below D_1 (rows not distinct), reaching to about one and a half eye lengths anterior to origin of the fin (very few, sporadic, scales on nape). Anterior nape, head and belly naked.

Head (ca. 2.7 in SL) longer and broader than high (HD in HL ca. 1.6-1.7). Eyes longitudinally oval (ca. 6.1 in HL), on the flat top of head ; interorbital distance equals or slightly exceeds eye diameter. Interorbital fossa almost U-shaped (relatively narrow in holotype ; more V-shaped, somewhat broader in paratype) ; its rounded end does not reach postorbital margin. Posterior nostril just anterior to eye ; anterior nostril tubular, with brush-like appendix in holotype, not present in paratype only (possible loss incurred by damage to specimen). Granulation of skull bones very coarse ; surface is grained in type material (ad.), but may be rugose in juveniles. Occipital lobes very faintly developed (in juveniles probably more distinct). Suprascapular spines acute, less strong than in *U. dollfusi* ; the inner spines shorter. Outer spines divergent, points of inner spines convergent. Furrowed humeral spine (ca. 3.4 in HL ; in juveniles surely longer), nearly horizontal, posteriorly directed, does not surpass dorsal line. Preopercle with five to six spines, subopercle with one ; all ventrally directed. Preorbital with three blunt spines (sometimes acute) ; middle spine longest, inferior spine shortest. Membranous posterior margin of operculum finely fringed, divides wide gillopening into upper and lower part ; more (paratype) or less (holotype) notched on level with upper origin of P. Mouth large, cleft oblique to vertical ; lower lip with numerous relatively long tentacles, upper lip with few,

FIG. 3. — *Uranoscopus bauchotae,* holotype, MNHN 1966.678 : dorsal and lateral views (phot. Senck. Mus.).

shorter tentacles. Anteriorly, pointed teeth of upper jaw arranged in three rows ; laterally, teeth arranged in one row. The larger teeth of lower jaw anteriorly arranged in two rows, laterally in one row. Teeth on vomer and palatine equal or nearly equal in size ; inner vomerine teeth smaller. Prelingual filament about a third of head length ; smooth-edged, slender (holotype) or broad (paratype).

D_1 short, consisting of four flexible spines ; first three longest (about equal to depth of caudal peduncle). D_2 begins very closely behind (but is separate) and ends ca. 1.3 eye lengths before caudal base ; first two rays unbranched, third to fifth ray longest (about twice length of interorbital fossa), fin becomes lower posteriorly. Anal fin corresponds with D_2 ; rays stout, first one shorter than the remainder, becoming gradually longer posteriorly (their average length about caudal peduncle depth or longer). Caudal fin about four eye diameters in length ; slightly convex. Pectoral fin very broad (length as caudal), slightly pointed posteriorly, dorso-posterior portion truncated. Length of jugular pelvic fin (five stout soft rays and a small spine, obscured by skin) about as head depth ; one anteriorly directed basipterygial process on each bone, reaching to below the antero-inferior angle of maxillary.

COLOURATION (preserved fish) : Ground-colour very light creamy reddish-brown, belly creamy white ; visible bony structures (skull and opercular bones, teeth, fin rays, spines) dark reddish-brown ; back without distinct marks. Skin covering parts of head (including

humeral spine), whitish ; snout region, including interorbital fossa and mouth cavity, like ground-colour ; prelingual filament dark brown. D_1 black, anterior edge and base of first ray, together with membrane behind last ray, white ; D_2 hyaline, C and P hyaline to creamy white, A and V creamy white. Humeral spine dark reddish-brown.

DISTRIBUTION : The type material of *U. bauchotae* n. sp. surely comes from the northern Red Sea. Although the etiquette of the fishes reads merely "Mer Rouge", they must have been caught either in the Gulf of Suez (more probably) or in the Gulf of Aqaba, because DOLLFUS is known to have collected in these areas only. Known only from the two type specimens ; the species is probably more wide-spread in the Red Sea, and may possibly be endemic to this region.

DISCUSSION

From the descriptions given above, it is clear that *Uranoscopus dollfusi* n. sp. and *U. bauchotae* n. sp. are closely similar species. Among the *Uranoscopus* of the Red Sea

FIG. 4. — *Uranoscopus affinis,* holotype, MNHN 5263 : dorsal and lateral views (phot. Senck. Mus.).

and Indian Ocean, they are most similar to *U. affinis*. The criteria supporting these relationships are summarized in table 1.

The most distinct difference between *U. affinis* and both new species is the squamation pattern of back and nape : in *affinis*, the whole area between the lateral lines is covered by small, embedded scales, in *U. dollfusi* and *U. bauchotae* only the posterior portion around D_1 is scaly. Additionally, *affinis* has shorter paired fins and a much longer humeral spine (14-15 % SL versus 10.5-12 %) : this is not only due to the smaller size of the *affinis* types (100 mm SL versus 120-190 mm), as only juvenile *Uranoscopus* have distinctly longer humeral spines than adults (BRÜSS, *in press a*). A small, brush-like appendix on the anterior

TABLE 1. — Some characteristics of the type specimens of *Uranoscopus affinis, dollfusi* and *bauchotae*. (Explanations of abbreviations p. 958)

CRITERIA	*U. affinis* MNHN 5262-63	*U. dollfusi* MNHN 1966.679-680 MNHN B.3022-23	*U. bauchotae* MNHN 1966.678 MNHN B.3021
SL (mm)	100-101	121-190	150-156
D	V/13(14), contiguous	IV/12-14, contiguous	IV/12-14, separated
Preorb. spines	3, blunt to somewhat acute	2-3, blunt	3, blunt to somewhat acute
Suprascap. spines	strong	very strong	strong
Occipit. lobes	weak knobs, somewhat pointed	very weak, no knobs	very weak, no knobs
Skull bones	coarse-grained, somewhat rugose	somewhat coarse-grained, not rugose	very coarse-grained, not rugose
Sql	48-51	47-54	49-51
Dorsal scales	densely covering back and nape	reaching to 1 EL before D_1, nape nearly scaleless	reaching to 1.5 EL before D_1, nape nearly scaleless
% of SL : HL	37.6-38.0	38.2-38.9	37.2-37.3
HW	27.7-29.0	30.6-33.5	28.7-30.1
HD	23.8-24.0	19.1-23.8	22.3-22.8
EL	6.7- 7.0	6.2- 6.7	6.0- 6.2
IORB	7.3	6.7- 7.4	6.2- 6.5
IORF	7.2	7.4- 7.8	6.8- 7.1
PRD	6.1- 6.4	5.6- 5.8	5.4- 5.7
HS	14.0-15.0	10.5-11.9	10.7-11.2
PL	25.7	27.9-30.2	26.3-27.3
VL	20.8	21.1-22.5	22.4-22.7
Colour pattern (body)	whitish-brown, bony parts (head) yellowish	whitish-brown, bony parts (head) yellowish	light creamy reddish-brown, bony parts (head) dark reddish-brown
Colour pattern (D_1)	white, median upper part black	black, 1st and last ray (sometimes fin base) white	black, 1st and last ray white

nostril is present in most specimens of *dollfusi* (3 of 4) and *bauchotae* (1 of 2), but absent in both specimens of *affinis*.

Due to its scaly nape, JORDAN & HUBBS (1925) would probably have assigned *U. affinis* to their genus *Zalescopus* ; however, according to MEES (1960), this name must be considered as a junior synonym of *Uranoscopus*.

U. bauchotae differs from *U. dollfusi* by a coarser skull bone granulation, separated dorsal fins, a shorter and narrower head, a narrower interorbital space, a shorter interorbital fossa, a shorter pectoral fin, somewhat weaker suprascapular spines, a more horizontal humeral spine and dark reddish-brown bones (skull bones, opercular bones, teeth, spines, fin rays).

I do not regard the dark colour of bones as different response to conservation : MEES (1960 : 50) described this colour for fresh specimens of his species *Ichthyoscopus barbatus*.

A fourth similar species is *U. marmoratus* Cuvier, 1829 (*in* CUV. & VAL.), but it differs from the species discussed above by distinctly less dorsal scales (only some single scales below D_1), more lateral scales (Sql 56, SL 96 mm), a smaller head (HL 35.4 % SL, HW 27.1 %), smaller eyes (EL 5.7 % SL), rougher (very rugose) skull bones and a marmoration pattern on the body.

Uranoscopus affinis, known to inhabit the Indian Ocean only (Cuvier, 1829, *in* CUV. & VAL.), is very similar to *U. dollfusi* and *bauchotae* (table 1) ; therefore it could be the closest relative of both species. The common ancestor of them (perhaps *affinis*) could have intruded the Red Sea by passing through the straits of Bab-el-Mandeb, thus giving cause to the origin of two endemic new species, *U. dollfusi* and *bauchotae*.

PROVISIONAL KEY TO THE SPECIES OF *Uranoscopus* OCCURRING IN THE RED SEA

1 Scales on posterior part of dorsal area between lateral lines present, distinctly reaching to before origin of D_1. 2

— Scales on posterior part of dorsal area between lateral lines absent or, if present, not reaching to origin of D_1 ; 2 blunt preorbital spines ; suprascapular spines very short ; prelingual filament fringed. 3

2 Dorsal scales about as large as lateral scales below, arranged in dense rows ; suprascapular spines very strong. 4

— Dorsal scales smaller than lateral scales below, rows not distinct ; skull bones fine or coarse grained, but not rugose (except in juveniles)..... 5

3 Occipital knobs strongly developed ; dorsal fins contiguous ; HL in SL ca. 3 ; Sql 47-71 (juv.-ad., rows sometimes partly inverse) ; dorsal scales always absent ; 4-5 preopercular spines ; brown, flanges with more or less distinct lighter longitudinal patches or streaks..... ..... *U. scaber* Linnaeus, 1758

— No occipital knobs developed ; dorsal fins separated ; HL in SL ca. 2.5 ; Sql 43-47 (juv. probably less) ; dorsal scales absent, or present beside posterior half of D_1 ; 5-7 preopercular spines ; light brown, with distinct dark dots dorsally and laterally..... *U. fuscomaculatus* Kner, 1868

4 HW in HL ca. 1.4 ; skull bones rugose, coarse-grained ; post-interorbital knobs present ; occipital lobes developed as knobs ; Sql 55 (juv. probably less) ; brown, with distinct light dots dorsally and laterally..... *U. guttatus* Cuvier, 1829, *in* CUV. & VAL.

— HW in HL ca. 1.1 ; skull bones not rugose, fine-grained (juv. : rugose, coarse-grained) ; no post-interorbital knobs present ; occipital lobes developed as longitudinal keels ; Sql 46-50 (juv.-subad., ad. probably more) ; reddish-brown without distinct marks..... *U.* sp. B (BRÜSS, *in press b*)

5 Dorsal fins distinctly separated (ca. 1/2 EL distance) ; prelingual filament present in juveniles only ; HL 38-42 % SL (juv. 44 %), HW 32-37 % ; suprascapular spines acute and short (ad. stronger) ; occipital lobes pointed (juv.), obsolete (subad.) or blunt knobs (ad.) ; 4 preopercular and 3 blunt preorbital spines ; Sql 38-50 (juv.-ad.) ; greyish-brown, with fine dark reticulation dorsally and laterally. ..... *U.* sp. A (BRÜSS, *in press a*)

— Dorsal fins not distinctly separated ; prelingual filament present in adults ; HL 37-39 % SL ; suprascapular spines acute and strong ; subadults and adults without occipital knobs ; Sql 47-54 (juv. probably less) ; 4-6 preopercular spines ; body light, without distinct marks..... 6

6 Dorsal fins definitely contiguous ; skull bones somewhat coarse-grained ; HW 30.5-33.5 % SL, IORB 6.5-7.5 % ; 2-3 blunt preorbital spines ; whitish-brown, skull bones yellowish..... ..... *U. dollfusi* n. sp.

— Dorsal fins close together, but separated ; skull bones very coarse-grained ; HW 28.5-30 % SL, IORB 6-6.5 % ; 3 blunt to somewhat acute preorbital spines ; light creamy reddish-brown, skull bones dark reddish-brown. ..... *U. bauchotae* n. sp.

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REFERENCES

ALCOCK, A., 1899. — Descriptive catalogue of the Indian deep-sea fishes in the Indian Museum. Calcutta, 211 + VIII p.

BEAUFORT, L. F. de, & W. M. CHAPMAN, 1951. — The fishes of the Indo-Australian Archipelago. Leiden, **9** : 1-484.

BRÜSS, R., *in press a*. — Tiefenwasser- und Tiefseefische aus dem Roten Meer. XIII. *Uranoscopus marisrubri* n. sp. aus dem zentralen und nördlichen Roten Meer. *Senckenberg. biol.*, Frankfurt a.M.

— *in press b*. — Zwei *Uranoscopus*-Arten aus dem Roten Meer : *U. dahlakensis* n. sp. und Neunachweis von *U. scaber* Linnaeus 1758. *Senckenberg. biol.*, Frankfurt a.M.

CUVIER, G., & A. VALENCIENNES, 1829. — Hist. Nat. Poiss. Paris. **3** : 500 p.

DAY, F., 1878. — The fishes of India. London, **1-2** : 816 p., 198 pls.

DOLLFUS, R. P., 1931. — Compte rendu sommaire d'une mission en Égypte (1928-1929). *Bull. Mus. natn. Hist. nat., Paris,* **3** (5) : 389-391.

DOR, M., 1969. — Nouveaux poissons pour la faune de la Mer Rouge. *Contr. Knowledge Red Sea*, Haifa, **44** : 7-28.

GRUVEL, A., & P. CHABANAUD, 1937. — Mission A. Gruvel dans le Canal de Suez. II. Poissons. *Mém. Inst. Égypte,* Cairo, **35** : 1-31.

JORDAN, D. S., & C. L. HUBBS, 1925. — Record of fishes obtained by David Starr Jordan in Japan, 1922. *In* : W. J. HOLLAND (ed.), *Mem. Carneg. Mus.*, Pittsburgh, **10** : 93-346, 12 pls.

KLAUSEWITZ, W., 1980. — Tiefenwasser- und Tiefseefische aus dem Roten Meer. I. Einleitung und Neunachweis für *Bembrops adenensis* Norman 1939 und *Histiopterus spinifer* Gilchrist 1904. *Senckenberg. biol.*, Frankfurt a. M., **61** (1/2) : 11-24, 2 figs, 2 mps.

KOTTHAUS, A., 1977. — Fische des Indischen Ozeans. Ergebnisse der ichthyologischen Untersuchungen während der Expedition des Forschungsschiffs " Meteor " in den Indischen Ozean, Oktober 1964 bis Mai 1965. A. Systematischer Teil, XIX. Percomorphi (9). " *Meteor "-Forschr.-Ergebn.*, Berlin, Stuttgart, D **25** : 24-44.

MEES, G. F., 1960. — The Uranoscopidae of Western Australia. *J. Proc. R. Soc. West. Aust.*, Perth, **43** (2) : 45-53.

NORMAN, J. R., 1939. — Fishes. *Scient. Rep. John Murray Exped.*, 1933-34, London, **7** (1) : 1-116.

ROUX, C., 1981. — Uranoscopidae. *In* : W. FISCHER, G. BIANCHI & W. B. SCOTT, *FAO Spec. Ident. Sheets,* E. C. Atlantic, Fishing Areas 34, 47 (in part). Ottawa, **4**.

SMITH, J. L. B., 1950. — The sea fishes of South Africa. Grahamstown, 580 p.