

Research on the coast of Somalia. Crustacea Stomatopoda

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Seventeen species of gonodactyloid stomatopods representing nine genera and four families are recorded from shore habitats in Somalia. All but one are new records for Somalia. *Mesacturoides brevisquamatus* (Paulson 1875) is recorded from below Djibouti for the first time. Two new genera are erected for species previously assigned to the genus *Pseudosquilla* Dana 1852, *Pseudosquillana* for *P. megalophthalma* Bigelow 1893, *Pseudosquillisma* for *P. oculata* (Brullé 1837) and two other species. A new host, *Mesacturoides fimbriatus* (Lenz 1905), is reported for the parasitic gastropod, *Caledoniella montrouzieri* Soubervie 1869.

KEY WORDS: *Caledoniella*, Gastropoda, Somalia, Stomatopoda, new genera, *Pseudosquillana*, *Pseudosquillisma*.

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INTRODUCTION

That nothing is known about the shore stomatopods of Somalia is evident from the fact that all but one of the species reported here are reported for the first time from the Somalian coast. The only other record for a stomatopod from Somalia is that in WEDENISSOW (1894) who recorded *Gonodactylus chiragra* (Fabricius 1781); we

believe that his material can be identified with *Gonodactylus mutatus* (Lanchester 1903).

Background information about the sampling program is quoted directly from GALIL & VANNINI (1990: 22), which is also the source for the map of localities used herein (Fig. 1).

«Between 1971 and 1986 the Centro di Studio per la Faunistica ed Ecologia Tropicali of C.N.R., Florence, Italy, conducted several expeditions along the central and southern coast of Somalia. The expeditions took place during August and October-November 1971, October 1972, June and October-November 1973, July-August 1975, August and November-December 1976, September-October 1979, August 1980, September-October 1981, and August 1986. The major collecting sites are represented in Fig. 1. Sar Uanle is located on a rocky shore, where material was collected from the cliffs, the intertidal platform, the coastal channel and the reef. ... Bender Mtoni and Lac Badana are sheltered creeks with mangrove stands. Gesira offered two habitats, a rocky shore and its adjacent reef, where live corals were examined for their attendant inhabitants, and a mangrove-growing creek exploited as a salt pan...».

The stomatopods were all taken at the following localities, most of which are shown in Fig. 1:

Durbo [11°37'N, 50°20'E]: northern Somalia, in Gulf of Aden.

Ras Filuck [Raas Felug, 11°56'N, 50°37'E]: northern Somalia, in Gulf of Aden.

Mogadiscio [Mogadishu, Muodisho, 2°04'N, 45°22'E]: central Somalia.

Gesira [Jasira, 1°57'N, 45°12'E]: central Somalia, 20 kilometers (km) south of Mogadiscio.

Bender Mtoni [Raas Matooni, 0°30'S, 42°28'E]: southern Somalia, 19 km south of Chisimaio [Kismaayo].

Sar Uanle: southern Somalia, 22 km south of Chisimaio.

Most of the C.N.R. material is deposited in the Museo Zoologico of the University of Florence. A few lots have been deposited in the National Museum of Natural History, Smithsonian Institution, Washington (USNM).

The measurement(s), in millimeters (mm), given after the number of specimens in the sections on material examined is total length, measured on the midline.

SYSTEMATICS

Family Eurysquillidae Manning 1977

Manningia amabilis Holthuis 1967 (Fig. 2)

Manningia amabilis HOLTHUIS 1967: 16, 40 [list], figs 4-5. TIRMIZI & MANNING 1968: 16. MANNING & LEWINSOHN 1986: 3, 15 [list]. MANNING 1989: 115 [list]; 1990: 103 [key].

Manningia pilaensis; MANNING 1989: 115 [list] [not *M. pilaensis* (De Man 1888)].

Material examined. Gesira: X.1979, 1 ♂ (51 mm). Sar Uanle: III.1973, 1 ♀ (42 mm); XII.1976, under dead coral block, rocky tide pools, 1 ♂ (51 mm) [USNM]; XII.1976, intertidal platform, under a carpet of *Cymodocea* roots and muddy sand, 3 ♂♂ (43-57 mm), 1 ♀ (25 mm).

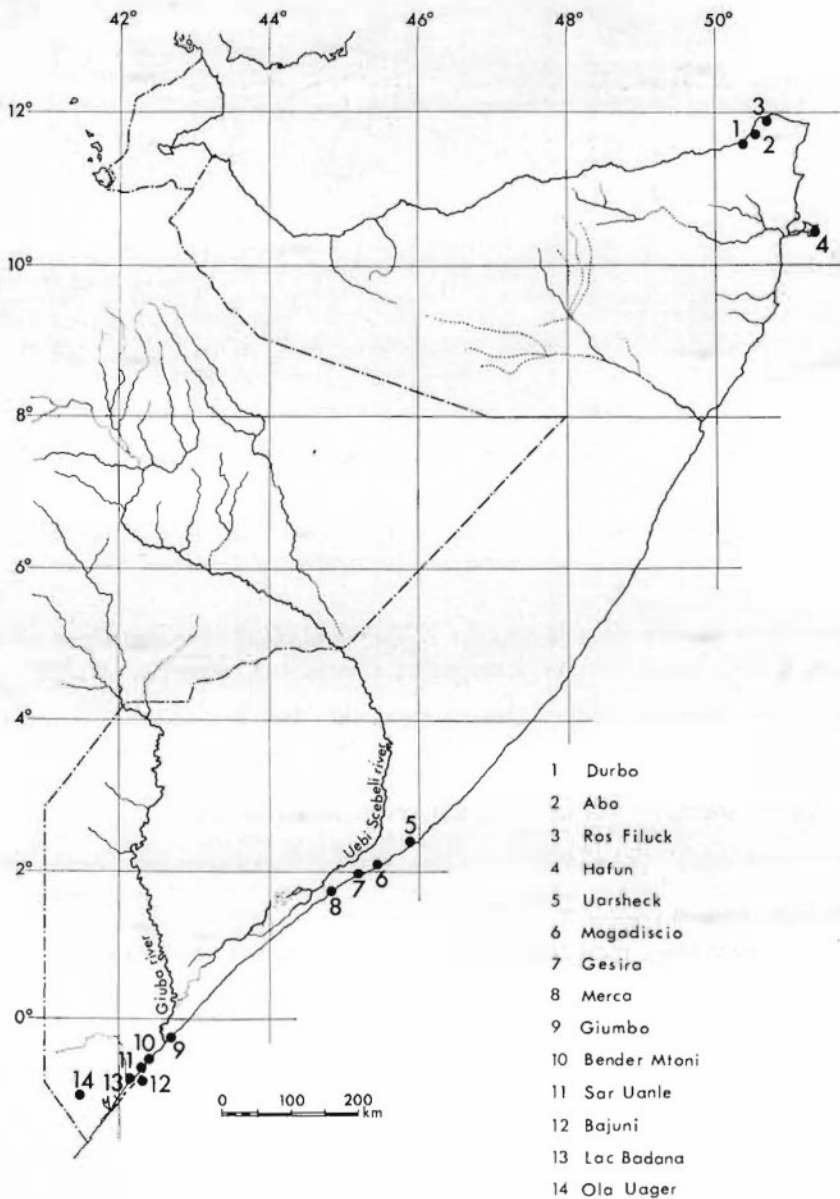


Fig. 1. — Map of Somalia showing major collecting sites mentioned in the text (from GALL & VANNINI 1990: fig. 1).

Size. Total lengths of males (5), 43-57 mm, of females (2), 25 and 42 mm.

Remarks. This species was found at two localities; the seven specimens in the collection came from six separate samples. This appears to be a relatively rare shore species. In Somalia it was most abundant on the exposed rocky shore at Sar Uanle.



Fig. 2. — *Manningia amabilis* Holthuis 1967, male, 51 mm, Sar Uanle: *a*, frontal region; *b*, sixth abdominal somite and telson. L.K. Manning del.

Habitat. This species was taken under a dead coral block in rocky tide pools and on the intertidal platform, under a carpet of *Cymodocea* roots and muddy sand.

Distribution. Western Indian Ocean, from the Red Sea, the Gulf of Aden, Pakistan, Bombay, India and now Somalia.

Family Gonodactylidae Giesbrecht 1910

Gonodactylolus paulus Manning 1970

Gonodactylolus paulus MANNING 1970b: 207, 209, fig. 1. REAKA 1978: 251. MANNING & REAKA-KUDLA 1990: 80 [list], fig. 1.

Material examined. Gesira: VIII.1980, 1 ♀ (14 mm).

Size. Only one specimen examined, a female, total length 14 mm.

Remarks. This species was originally described from Madagascar by MANNING (1970b) and subsequently identified as one of the hosts of the parasitic gastropod *Caledoniella montrouzieri* Soubervie 1869, based on material from Reunion Island.

This is a very small species of stomatopod. The holotype and the specimen reported here are both females 14 mm long, and the material reported by REAKA (1978) and MANNING & REAKA-KUDLA (1990) also are females, 8.5 and 9 mm long. These four are the only recorded specimens of this species.

This is one of only three species represented by a single specimen in this collection.

Distribution. Western Indian Ocean, from Reunion Island, Madagascar, and now from Somalia, the first record from the African mainland.

***Gonodactylus botti* Manning 1975**

Gonodactylus chiragra; HOLTHUIS 1967: 26, 41 [list], fig. 7a. TIRMIZI & MANNING 1968: 21, fig. 7. [not *G. chiragra* (Fabricius 1781)].

Gonodactylus botti MANNING 1975: 289, fig. 1. MANNING & LEWINSOHN 1986: 5, 15 [list], fig. 3. MANNING 1989: 115 [list]; 1990: 97, 104 [key]. MOOSA 1991: 155.

Material examined. Durbo: X.1973, leg. L. Azzaroli, 46 ♂♂ (20-60 mm), 39 ♀♀ (16-48 mm) [10 ♂♂, 13 ♀♀ USNM]. Mogadiscio: XII.1976, under encrusting algae, at the cliff base, 1 ♀ (35 mm). Gesira: XII.1976, 1 ♂ (53 mm), 1 ♀ (47 mm); V.1980, 1 ♂ (33 mm); X.1981, among the base of dead coral heads, 2 ♂♂ (43 and 56 mm respectively), 1 ♀ (47 mm); VIII.1986, 9 ♂♂ (22-53 mm), 7 ♀♀ (24-48 mm). Sar Uanle: X.1971, 1 ♂ (63 mm); VI.1973, 1 ♀ (48 mm); VII.1975, 1 ♀ (55 mm); XII.1976, sandy tide pools, 1 ♂ (29 mm); XII.1976, rocky tide pools, 2 ♂♂ (45 and 61 mm respectively), 2 ♀♀ (45 and 52 mm respectively).

Size. Total lengths of males (63), 20-63 mm, of females (53), 16-55 mm.

Remarks. MANNING (1990) noted that material from Pakistan identified in the literature with *G. chiragra* (Fabricius 1781) actually could be identified with *G. botti*, whereas specimens from Madagascar could not. All of the specimens reported here are clearly identifiable with *G. botti*.

Gonodactylus arabica Ghosh 1990, described from a female, 44 mm long, taken at Kavaratti, Lakshadweep (formerly the Laccadive Islands), resembles *G. botti* in having very inflated dorsal carinae on the telson at a relatively small size. The rostral plate of GHOSH's type has its anterolateral angles produced anterolaterally, resembling the shape of the plate of *G. smithii* rather than that of *G. botti*. We consider GHOSH's species to be a synonym of *Gonodactylus smithii*.

This is the third most abundant species in the collection, and it was taken at four separate localities. It was most abundant at Durbo, where only two other species, *G. demanii* and *H. lenzi*, were found, possibly reflecting a preference for tide pools rather than coralline habitats.

Habitat. This species was taken from under encrusting algae, at the base of dead coral heads, and in both sandy and rocky tide pools.

Distribution. Western Indian Ocean, from the Red Sea, Persian Gulf, and Pakistan, and now for the first time from Somalia; western Pacific from Indonesia and New Caledonia.

***Gonodactylus demanii* Henderson 1893**

Gonodactylus demanii HENDERSON 1893: 455, pl. 40, figs 23-24. HOLTHUIS 1967: 32, 41 [list]. MANNING 1967: 8, fig. 3; 1968: 50. TIRMIZI & MANNING 1968: 26, fig. 10. MANNING & LEWINSOHN 1986: 6, 15 [list]. MANNING 1989: 115 [list]; 1990: 98, 104 [key].

Gonodactylus demani; KEMP 1913: 4, 11, 147 [key], 164, 198, pl. 9, figs 108-111.

Material examined. Durbo: X.1973, 1 ♂ (19 mm). Ras Filuck: X.1973, 1 ♂ (22 mm), 1 ♀ (26 mm).

Size. Total lengths of males (2), 19-22 mm, of female (1), 26 mm.

Remarks. This is one of the rarest species taken during the C.N.R. studies, as only three specimens were taken at Durbo and Ras Filuck, in the northernmost part of the study area.

Distribution. Western Indian Ocean, from scattered localities between southern India and Moçambique, including Pakistan, the Persian Gulf, the Gulf of Aden, the Red Sea, and now for the first time from Somalia.

Gonodactylus lanchesteri Manning 1967

Gonodactylus spinosus; HOLTHUIS 1967: 34, 42 [list] [not *G. spinosus* Bigelow 1893].

Gonodactylus lanchesteri MANNING 1967: 11, fig. 4. TIRMIZI & MANNING 1968: 25, fig. 9. MANNING 1968: 51; 1969a: 3 [list], 4 [key]; 1970a: 1431. MANNING & LEWINSOHN 1986: 10, 15 [list]. MANNING 1989: 115 [list]; 1990: 98, 104 [key].

Material examined. Ras Filuck: X.1973, 1 ♀ (33 mm). Gesira: XII.1976, rocky tide pools, 1 ♂ (12 mm); V.1980, in *Thalassia*, 1 ♀ (20 mm); X.1981, in *Tridacna jopra*, 1 ♀ (12 mm); VIII.1986, 5 ♂♂ (25-29 mm), 6 ♀♀ (22-30 mm). Bender Mtoni: XII.1976, among muddy tide pools, 1 ♂ (26 mm), 1 ♀ (11 mm). Sar Uanle: X.1971, 3 ♀♀ (27-32 mm); X.1971, in a sponge, 3 ♀♀ (17-24 mm); VIII.1975, 3 ♂♂ (27-30 mm), 2 ♀♀ (18 and 32 mm respectively); XII.1976, sandy tide pools, 42 ♂♂ (14-36 mm), 64 ♀♀ (10-38 mm) [17 ♂♂, 27 ♀♀ USNM]; XII.1976, under dead coral block, rocky tide pools, 33 ♂♂ (13-32 mm), 42 ♀♀ (11-39 mm); XII.1976, under a carpet of *Cymodocea* roots and muddy sand, 1 ♂ (27 mm), 3 ♀♀ (24-29 mm); XII.1976, rocky tide pools, using Noxfish, 8 ♀♀ (18-32 mm).

Size. Total lengths of males (86), 12-36 mm, of females (135), 11-39 mm.

Remarks. This is the second most abundant species in the collection, represented by 221 specimens, 204 of which were taken at Sar Uanle, and it was taken at four other localities. Like *G. botti*, this species may prefer tide pool rather than reef habitats.

Habitat. This species utilizes a wide variety of habitats. It was collected in rocky, sandy and muddy tidepools, under a carpet of *Cymodocea* roots and muddy sand, under a dead coral block, in *Thalassia*, in a sponge, and with *Tridacna jopra*.

Distribution. Western Indian Ocean from Pakistan, the Persian Gulf, the Red Sea, and the Gulf of Aden southward to South Africa, including Madagascar and the Comoro Islands, and now for the first time from Somalia.

Gonodactylus mutatus Lanchester 1903

Gonodactylus chiragra; WEDENISSOW 1894: 10 [not *G. chiragra* (Fabricius 1781)].

Gonodactylus mutatus LANCIESTER 1903: 450. MANNING 1978a: 7, figs 4, 5, 11. MOOSA 1984: 39 [list]. MOOSA & CLEVA 1984: 424. MANNING 1989: 115 [list]; 1990: 104 [key]. MANNING & REAKA-KUDLA 1990: 79 [list]. GHOSH 1990: 200 [list], 201 [key], 209. MOOSA 1991: 159.

Material examined. Gesira: IX.1979, 2 ♂♂ (29 and 37 mm respectively); X.1981, base of live *Acropora* coral heads, 1 ♂ (29 mm), 1 ♀ (17 mm); X.1981, base of live *Pocillopora* coral block, 2 ♂♂ (35 and 41 mm respectively). Sar Uanle: III.1973, 1 ♀ (30 mm); XII.1976, under a carpet of *Cymodocea* roots, 1 ♀ (45 mm) [USNM]; XII.1976, reef, among dead *Porites* heads, 1 ♀ (24 mm).

Size. Total lengths of males (5), 29-41 mm, of females (4), 17-45 mm.

Remarks. This species was found at only two of the southernmost localities, Gesira and Sar Uanle. It apparently is relatively rare on the Somalian coast.

WEDENISSOW (1894) provided the first record of a stomatopod from Somalia, which he identified as *Gonodactylus chiragra*. His comment that his specimens had five dorsal keels on the last abdominal segment clearly identifies his material with this species rather than with *G. chiragra*, which has three dorsal keels on the telson. WEDENISSOW's material was taken between Obbia [= Hoby, 5°20'N, 48°30'E] and Allula [= Caluula, 11°59'N, 50°48'E], an area to the north of the localities recorded here.

Habitat. This species was collected at the base of live *Acropora* coral heads, at the base of a live *Pocillopora* coral block, among dead *Porites* coral heads, and under a carpet of *Cymodocea* roots.

Distribution. Known from the Maldive Islands, the Seychelles Islands, Zanzibar, Mauritius, Madagascar, Aden, and Somalia in the western Indian Ocean, and from Vietnam, Thailand, and New Caledonia in the Pacific.

Gonodactylus platysoma Wood-Mason 1895

Gonodactylus platysoma WOOD-MASON 1895: 11, pl. 3, figs 3-9. MANNING 1962: 3; 1968: 44; 1970a: 1431; 1977: 283. MOOSA 1984: 39 [list]. GHOSH 1990: 200 [list], 201 [key], 204, fig. 3b. MANNING & REAKA-KUDLA 1990: 79 [list].

Gonodactylus chiragra var. *platysoma*; KEMP 1913: 4, 11, 147 [key], 162, fig. 1.

Material examined. Gesira: VIII.1980, 1 ♀ (38 mm); X.1981, reef, base of live *Pocillopora*, 1 ♂ (73 mm).

Size. Total lengths of male (1), 73 mm, of female (1), 38 mm.

Remarks. *Gonodactylus platysoma* is one of the rarest species in the C.N.R. collections from Somalia, where it was taken twice at Gesira. Only two specimens of this species were reported from localities in Madagascar by MANNING (1968). According to DINGLE et al. (1977), *G. platysoma*, like *G. smithii*, may be associated with *Porites wheels*, its restricted habitat preferences perhaps accounting for its relatively rare occurrence in collections.

Habitat. One specimen was taken on a reef at the base of a live *Pocillopora*.

Distribution. Widely distributed in the Indo-West Pacific, from the western Indian Ocean to Japan; it has not been recorded previously from Somalia.

Gonodactylus smithii Pocock 1893

Gonodactylus smithii POCKOCK 1893: 475, pl. 20B, fig. 1. TIRMIZI & MANNING 1968: 23, fig. 8. MANNING 1968: 44; 1970a: 1431; 1977: 283. MOOSA 1984: 39 [list]. MANNING 1990: 99, 104 [key]. GHOSH 1990: 200 [list], 201 [key], 205, fig. 3d. MANNING & REAKA-KUDLA 1990: 79 [list]. MOOSA 1991: 160.

Gonodactylus minikoiensis GHOSH 1990: 199 [list], 201 [key], 202, fig. 1.

Gonodactylus arabica GHOSH 1990: 199 [list], 201 [key], 205, figs 2, 3e.

Material examined. Gesira: XII.1976, reef, among dead coral, 3 ♀♀ (35-60 mm); XII.1976, reef, dead base of live *Acropora*, 1 ♀ (55 mm); VIII.1980, leg. G. Chelazzi, 2 ♀♀ (48 and 51 mm respectively); X.1981, in *Pocillopora*, 1 ♀ (37 mm).

Size. Females only examined (7), total lengths, 35-60 mm.

Remarks. This is one of the rarest species in the collection, having been taken in only five collections at Gesira.

We consider two species described from Lakshadweep (Laccadive Islands) by GHOSH (1990), *Gonodactylus minikoiensis* and *Gonodactylus arabica*, to be synonyms of *G. smithii*. The shape of the rostral plate in both of GHOSH's species is characteristic of *G. smithii*.

Habitat. In reef among dead coral; reef, from the dead base of live *Acropora*; and in *Pocillopora*.

Distribution. Western Indian Ocean to Vietnam, Australia, and New Caledonia; it has not been recorded previously from Somalia.

***Gonodactylus spinosus* Bigelow 1893 (Fig. 3)**

Gonodactylus spinosus BIGELOW 1893: 101; 1926: 579, figs 1-2. MANNING 1962: 3; 1967: 14, fig. 5. MOOSA 1984: 39 [list]. MANNING 1989: 115 [list].

Gonodactylus demani var. *spinosus*; KEMP 1913: 4, 11, 147 [key], 165, pl. 9, fig. 112.

Material examined. Gesira: XII.1976, in dead base of live *Acropora*, 1 ♀ (26 mm); reef, among dead coral, 1 ♂ (23 mm).

Size. Total lengths of male (1), 23 mm, of female (1), 26 mm.

Remarks. This relatively rare species was taken at only two collections at Gesira.

The excellent figures given by BIGELOW (1926) are reproduced here, as they are often overlooked.

Habitat. *Gonodactylus spinosus* was collected on a reef, among dead coral and in the dead base of live *Acropora*.

Distribution. Western Indian Ocean, from Mauritius, the Seychelles Islands, the Maldives Islands, Ceylon, and now for the first time from Somalia.

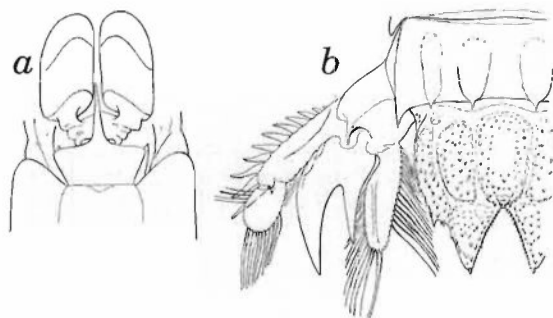


Fig. 3. — *Gonodactylus spinosus* Bigelow 1893, female syntype, 20 mm, Mauritius: a, frontal region; b, sixth abdominal somite, telson, and uropod (from BIGELOW 1926: figs 1-2).

***Mesacturoides brevisquamatus* (Paulson 1875)**

Gonodactylus brevisquamatus PAULSON 1875: 126, pl. 21, fig. 3. KEMP 1913: 4, 10, 148 [key], 174-175, pl. 10, figs 115-116. MANNING 1962: 8, fig. 2a.

Mesacturus brevisquamatus; HOLTHUIS 1967: 38, 42 [list].

Mesacturoides brevisquamatus; MANNING & LEWINSOHN 1986: 11, 15 [list]. MANNING 1989: 115 [list]; 1990: 104 [key].

Material examined. Gesira: X.1981, base of dead *Pocillopora*, 1 ♂ (11 mm).

Size. Male only examined, total length 11 mm.

Remarks. This is one of the rarest species in the collection, represented by only one specimen. This is the first record of this species from south of Djibouti and the Red Sea.

Habitat. The only specimen taken in the C.N.R. collections was taken at the base of dead *Pocillopora*.

Distribution. Red Sea and now from Somalia.

***Mesacturoides fimbriatus* (Lenz 1905)**

Gonodactylus fimbriatus LENZ 1905: 388, pl. 47, fig. 2. KEMP 1913: 4, 11, 148 [key], 175. MANNING 1962: 8, fig. 2B.

Mesacturoides raymondi TIRMIZI & KAZMI 1980: 61, figs 1-2. MANNING 1989: 115 [list].

Mesacturoides fimbriatus; MANNING 1990: 99, 104 [key].

Material examined. Gesira: XII.1976, reef, under dead corals, 29 ♂♂ (13-30 mm), 25 ♀♀ (23-31 mm) [18 ♂♂, 10 ♀♀ USNM]; XII.1976, base of live *Acropora variabilis*, 3 ♂♂ (14-29 mm), 2 ♀♀ (20 and 25 mm respectively); XII.1976, base of live *Pocillopora damicornis*, 1 ♂ (26 mm), 1 ♀ (29 mm); XII.1976, base of live *Pocillopora danae*, 1 ♂ (26 mm), 1 ♀ (17 mm); X.1979, 2 ♂♂ (20 and 24 mm respectively); X.1979, base of live undetermined coral heads, 1 ♂ (17 mm), 4 ♀♀ (10-27 mm); X.1979, base of live *Pocillopora*, 2 ♂♂ (22 and 24 mm respectively); X.1979, base of live *Pocillopora damicornis*, 2 ♂♂ (15 and 19 mm respectively), 2 ♀♀ (24 and 26 mm respectively); X.1979, base of live *Pocillopora danae*, 1 ♂ (27 mm), 1 ♀ (19 mm); X.1979, base of live *Pocillopora verrucosa*, 4 ♂♂ (17-28 mm), 3 ♀♀ (19-29 mm); X.1979, base of live *Pocillopora bulbosa*, 1 ♀ (24 mm); X.1979, base of live *Acropora variabilis*, 7 ♂♂ (17-27 mm), 6 ♀♀ (18-28 mm); X.1979, base of live *Acropora hemprichi*, 1 ♂ (18 mm), 2 ♀♀ (14 and 18 mm respectively); X.1979, base of live *Porites nigrescens*, 1 ♀ (17 mm); X.1979, base of live *Porites andrewsi*, 1 ♂ (17 mm), 2 ♀♀ (15 and 23 mm respectively); X.1979, base of live *Stylophora mordax*, 1 ♂ (24 mm), 2 ♀♀ (24 and 25 mm respectively); VIII.1980, leg. G. Chelazzi, 12 ♂♂ (14-29 mm), 11 ♀♀ (15-30 mm); X.1981, base of live *Pocillopora*, 30 ♂♂ (14-30 mm), 31 ♀♀ (14-30 mm); X.1981, base of dead *Pocillopora*, 30 ♂♂ (13-28 mm), 29 ♀♀ (14-29 mm); X.1981, base of live *Acropora*, 3 ♂♂ (14-26 mm), 4 ♀♀ (17-29 mm); X.1981, in *Pocillopora*, 3 ♂♂ (13-14 mm) [1 ♂, 13 mm with parasitic gastropod, *Caledoniella montrouzieri* Souverbie 1869]; X.1981, reef, 2 ♂♂ (21 and 24 mm respectively), 5 ♀♀ (21-27 mm); X.1981, in a *Dardanus* shell, 1 ♂ (19 mm), 1 ♀ (26 mm); X.1981, in *Tridacna jopra*, 1 ♂ (18 mm); VIII.1986, 2 ♂♂ (25 and 26 mm respectively). Sar Uanle: XII.1976, base of live *Tubipora musica*, 1 ♀ (24 mm); XII.1976, base of live *Stylophora mordax*, 2 ♂♂ (22 and 30 mm respectively), 1 ♀ (31 mm). Localities unknown: XII.1976, 1 ♂ (14 mm), 2 ♀♀ (22 and 25 mm respectively) (in two lots).

Size. Total lengths of males (143), 13-30 mm, of females (138), 10-31 mm.

Remarks. *Mesacturoides fimbriatus* was the most abundant species in the collection, in which it was represented by 104 samples from four localities. Most specimens came from Gesira, where this was the dominant species.

This is the first record for this species and for a member of this genus as a host for the parasitic gastropod *Caledoniella montrouzieri* Souverbie 1869 (see records summarized in MANNING & REAKA-KUDLA 1990).

Habitat. This species was taken most frequently in association with live corals, including members of the genera *Acropora*, *Pocillopora*, *Stylophora*, and *Tubipora*. Some specimens were taken in dead coral, two were taken in a *Dardanus* shell, and one in *Tridacna jopra*.

Distribution. Western Indian Ocean, Zanzibar, the Seychelles Islands, Persian Gulf, Pakistan, and now for the first time from Somalia.

Family Protosquillidae Manning 1980

Chorisquilla spinosissima (Pfeffer 1888)

Gonodactylus spinosissimus PFEFFER 1888: 35. KEMP 1913: 4, 11, 150 [key], 191, pl. 10, figs 124-125.

Protosquilla spinosissima; HOLTHUIS 1967: 42 [list]. MANNING 1968: 55.

Chorisquilla spinosissima; MANNING & LEWINSOHN 1986: 15 [list]. MANNING 1989: 115 [list]; 1990: 104 [key]. MOOSA 1991: 164.

Material examined. Gesira: X.1979, Lourdie, 1 ♂ (32 mm); X.1979, base of live undetermined coral heads, 1 ♂ (33 mm) [USNM]; X.1979, base of live *Pocillopora danae*, 1 ♀ (39 mm); VIII.1980, leg. G. Chelazzi, 5 ♂♂ (19-27 mm), 2 ♀♀ (27 and 34 mm respectively); X.1981, base of dead *Pocillopora*, 1 ♂ (23 mm).

Size. Total lengths of males (8), 19-33 mm, of females (3), 27-39 mm.

Remarks. This is one of several species taken only at Gesira. It, too, is relatively rare in collections.

Habitat. All three lots in the collection were taken with coral, one from an undetermined coral heads, one from the base of live *Pocillopora danae*, and one from the base of dead *Pocillopora*.

Distribution. Indo-West Pacific from scattered localities between the western Indian Ocean and Japan, including the Red Sea, Madagascar, and now for the first time from Somalia.

Haptosquilla lenzi (Holthuis 1941)

Protosquilla glabra LENZ 1905: 388, pl. 47, fig. 13 [preoccupied].

Gonodactylus glaber KEMP 1913: 4, 11, 149 [key], 182, pl. 10, fig. 121.

Gonodactylus lenzi HOLTHUIS 1941: 288. MANNING 1962: 11.

Protosquilla lenzi; HOLTHUIS 1967: 36, 42 [list]. MANNING 1968: 54. TIRMIZI & MANNING 1968: 19, fig. 6.

Chorisquilla lenzi; MANNING 1969b: 157 [error for *Haptosquilla* in legend to fig. 6].

Haptosquilla lenzi; MANNING 1970a: 1431; 1977: 283. MANNING & LEWINSOHN 1986: 15 [list]. MANNING 1989: 115 [list]; 1990: 104 [key].

Material examined. Durbo: X.1973, leg. L. Azzaroli, 1 ♂ (19 mm); 1 ♂ (18 mm), 1 ♀ (24 mm). Ras Filuck: X.1973, leg. L. Azzaroli, 1 ♀ (33 mm) [USNM]. Gesira: VIII.1986, 1 ♀ (18 mm). Sar Uanle: XII.1976, intertidal rocky platform, 1 ♂ (36 mm). Unknown locality, 1 ♂ (18 mm).

Size. Total lengths of males (4), 18-36 mm, of females (3), 18-33 mm.

Remarks. This widely distributed species appears to be relatively rare in Somalia. Although it was taken at four separate localities, only seven specimens were taken in six separate samples.

Habitat. One of the specimens was taken on an intertidal rocky platform.

Distribution. Indo-West Pacific, western Indian Ocean from the Red Sea, Madagascar, and now for the first time from Somalia, and from the Philippines and Viet Nam.

Haptosquilla pulchella (Miers 1880)

Gonodactylus trispinosus var. *pulchellus* MIERS 1880: 122.

Gonodactylus pulchellus; KEMP 1913: 4, 11, 149 [key], 177, pl. 10, figs 117-118.

Protosquilla pulchella; HOLTTHUIS 1967: 42 [list]. MANNING 1968: 54. TIRMIZI & MANNING 1968: 17, fig. 5.

Haptosquilla pulchella; MANNING 1977: 284. MANNING & LEWINSOHN 1986: 15 [list]. MANNING 1989: 115 [list]; 1990: 100 [list], 104 [key].

Material examined. Gesira: X.1979, tide pools, 1 ♀ (20 mm); VIII.1986, 15 ♂♂ (16-36 mm), 8 ♀♀ (14-38 mm). Bender Mtoni: XII.1976, muddy tide pools, 1 ♂ (29 mm), 1 ♀ (31 mm) [USNM].

Size. Total lengths of males (16), 16-36 mm, of females (10), 14-38 mm.

Remarks. Although this is the fourth most abundant species in the C.N.R. collection, almost all specimens, 23 of the 26, were taken at a single station at Gesira.

Habitat. Several specimens were taken in tide pools.

Distribution. Red Sea and East Africa to Australia; it has not been recorded previously from Somalia.

Family Pseudosquillidae Manning 1977

Genus *Pseudosquilla* Dana 1852

Definition. Cornea subcylindrical, elongate or broadened anteriorly, not bilobed. Carapace lacking median black spot. Dactylus of claw with 3 teeth. Intermediate carinae of sixth abdominal somite with single spine. Telson with median carina and three pairs of carinae on each side of median. Basal prolongation of uropod terminating in 2 spines, outer longer.

Type species. *Squilla ciliata* Fabricius 1787 by subsequent designation by the International Commission on Zoological Nomenclature under its plenary powers in Opinion 785.

Remarks. The genus *Pseudosquilla* is here restricted to its type species, *Pseudosquilla ciliata* (Fabricius 1787) and four other species. *Pseudosquilla ciliata* has a very slender eye and lacks single or paired round spots on the carapace. The other species, *P. hieroglyphica* Manning 1972, *P. komaii* Moosa 1991, *P. ornata* Miers 1880, and *P. oxyrhyncha* Borradaile 1898, have a broad but not bilobed cornea and paired round spots on the carapace. They will be placed in another genus by R.B. MANNING in a review of the Vietnamese stomatopods now in preparation.

The slender cornea that is not bilobed, the presence of only three pairs of dorsal carinae on the telson, and the lack of a median black spot on the carapace, will distinguish members of *Pseudosquilla* from members of the two new genera recognized below.

Pseudosquilla ciliata (Fabricius 1787)

Squilla ciliata FABRICIUS 1787: 333.

Pseudosquilla ciliata; KEMP 1913: 3, 10, 96, 196. MANNING 1962: 2. HOLTHUIS 1967: 15, 40 [list]. MANNING 1968: 42; 1969a: 3 [list], 4 [key]; 1970a: 1431; 1977: 284. MOOSA 1984: 39 [list]. MOOSA & CLEVA 1984: 426. MANNING & LEWINSOHN 1986: 12, 15 [list]. MANNING 1989: 115 [list]; 1990: 100 [list], 103 [key]. GHOSH 1990: 200 [list], 201 [key], 210. MOOSA 1991: 169.

Material examined. Gesira: XII.1976, rocky tide pools, 1 ♀ (20 mm); X.1979, base of live *Acropora eurystoma*, 2 ♀♀ (15 mm); X.1981, Nimu, 1 ♀ (37 mm); VIII.1986, 5 ♂♂ (18-41 mm), 3 ♀♀ (22-37 mm). Bender Mtoni: X.1971, 1 ♂ (46 mm). Sar Uanle: III.1973, 1 ♂ (29 mm); XII.1976, half muddy substratum of the carpet of *Cymodocea roots*, 1 ♂ (47 mm).

Size. Total lengths of males (8), 18-47 mm, of females (7), 15-37 mm.

Habitat. One sample was taken in the half muddy substratum of carpets of *Cymodocea roots*, one was collected in rocky tide pools, and one from the base of a live *Acropora eurystoma*.

Distribution. All tropical oceans except the eastern Pacific; it has not been recorded previously from Somalia.

Pseudosquillana new genus

Definition. Cornea strongly bilobed in adults, broadened anteriorly. Carapace with single median circular black spot. Dactylus of claw with 3 teeth. Intermediate carinae of sixth abdominal somite terminating in 2 spines in adults. Telson with median carina and 4 pairs of carinae on each side of median. Basal prolongation of uropod terminating in 2 spines, outer longer.

Type species. *Pseudosquilla megalophthalma* Bigelow 1893, by present designation and monotypy.

Etymology. The generic name is formed by combining the generic name *Pseudosquilla* with the Latin suffix *-ana*, having the nature of. The gender is feminine.

Remarks. The large, bilobed eyes, double spine on the intermediate carinae of the sixth abdominal somite, and the single black median spot on the carapace are diagnostic for this genus. Juveniles always have a broader eye than is found in *Pseudosquilla*, and differ from adults in this feature and in having only a single posterior spine on the intermediate carinae of the sixth abdominal somite.

***Pseudosquilla megalophtalma* (Bigelow 1893) n. comb. (Figs 4-5)**

Pseudosquilla megalophtalma BIGELOW 1893: 101. KEMP 1913: 3, 10, 96 [key], 103. HOLTHUIS 1967: 40 [list]. MANNING 1977: 285. MANNING & LEWINSOHN 1986: 12, 15 [list], fig. 4. MANNING 1989: 115 [list]; 1990: 103 [key]. MOOSA 1991: 174.

Pseudosquilla richeri MOOSA 1991: 175, fig. 5.

Material examined. Gesira: X.1981, base of dead *Pocillopora*, 1 ♀ (30 mm).

Size. Female only examined (1), total length 30 mm.

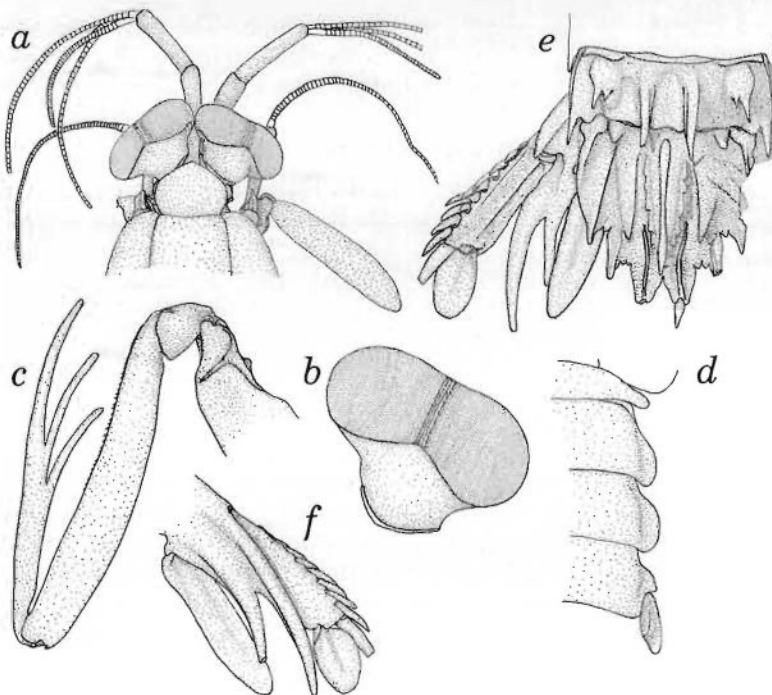


Fig. 4. — *Pseudosquilla megalophtalma* (Bigelow 1893), male holotype, 68 mm, Mauritius; a, anterior part of carapace and frontal region; b, eye; c, terminal segments of raptorial claw; d, lateral processes of exposed thoracic somites; e, sixth abdominal somite, telson, and uropod; f, uropod, ventral view. L.K. Manning del.

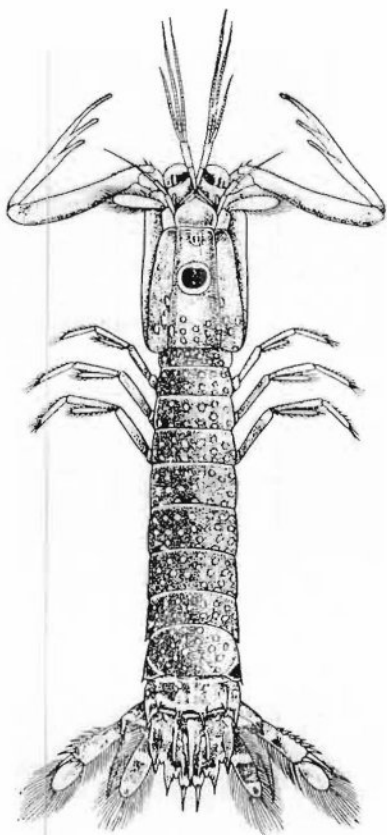


Fig. 5. — *Pseudosquillana megalophthalma* (Bigelow 1893), male, 38 mm, Philippines. Whole animal in dorsal view to show color pattern (from KEMP 1915: pl. 1).

Remarks. This is one of the rarest species on the collection, being represented by one specimen from Gesira.

We believe that *P. richeri* Moosa from New Caledonia is based on a juvenile of this species. We have examined the holotype of *P. richeri*, a male 27 mm long, which has the characteristic single median black spot on the carapace and the long slender claw. The dorsal carina of the lateral tooth on the telson is scarcely visible on the type, so it represents a condition similar to that shown by MANNING & LEWINSOHN (1986: fig. 4b) for a smaller specimen, 16 mm long, from the Red Sea. All of the other features of *P. richeri* are exhibited by other specimens of *P. megalophthalma* in the collections at Washington.

Habitat. The only specimen in the collection was taken at the base of dead *Pocillopora*.

Distribution. Western Indian Ocean to the central Pacific, including New Caledonia; it has not been recorded previously from Somalia.

Pseudosquillisma new genus

Definition. Cornea broadened anteriorly, wider than stalk. Carapace with paired submedian circular black spots. Dactylus of claw with 3 teeth. Intermediate carinae of sixth abdominal somite terminating in 1 spine in adults. Telson with median carina and 4 pairs of carinae on each side of median. Basal prolongation of uropod terminating in 2 spines, outer longer.

Type species. *Squilla oculata* Brullé 1837, by present designation. The genus also includes *Pseudosquillisma adialtata* (Manning 1964) n. comb. from the eastern Pacific and one other species from the Indo-West Pacific, *Pseudosquillisma guttata* (Manning 1972) n. comb.

Etymology. The generic name is formed by combining the generic name *Pseudosquilla* with the Latin suffix *-isma*, having the nature of. The gender is feminine.

Remarks. The broad eyes and paired submedian black circular spots on the carapace are diagnostic for this genus and will distinguish its members from *Pseudosquilla*, which lacks paired black circular spots on the carapace and has very slender eyes with the cornea neither broadened nor bilobed. Those same features will also distinguish members of this genus from *Pseudosquillana* in which the eyes are bilobed and which have a single median black circular spot on the carapace.

***Pseudosquillisma oculata* (Brullé 1837) n. comb. (Fig. 6)**

Squilla oculata BRULLÉ 1837: 18, fig. 3.

Pseudosquilla oculata; KEMP 1913: 96 [key], 102. MANNING 1970a: 1431, 1439; 1977: 285. MOOSA 1984: 39 [list].

Material examined. Mogadiscio: X.1979, base of live undetermined coral heads, 1 ♂ (28 mm). Gesira: XII.1976, reef, among dead coral blocks, 1 ♂ (51 mm); X.1981, base of live *Pocillopora*, 1 ♂ (32 mm); X.1981, base of live *Acropora*, 2 ♂♂ (27 and 36 mm respectively).

Size. Males only examined (5), total lengths 27-51 mm.

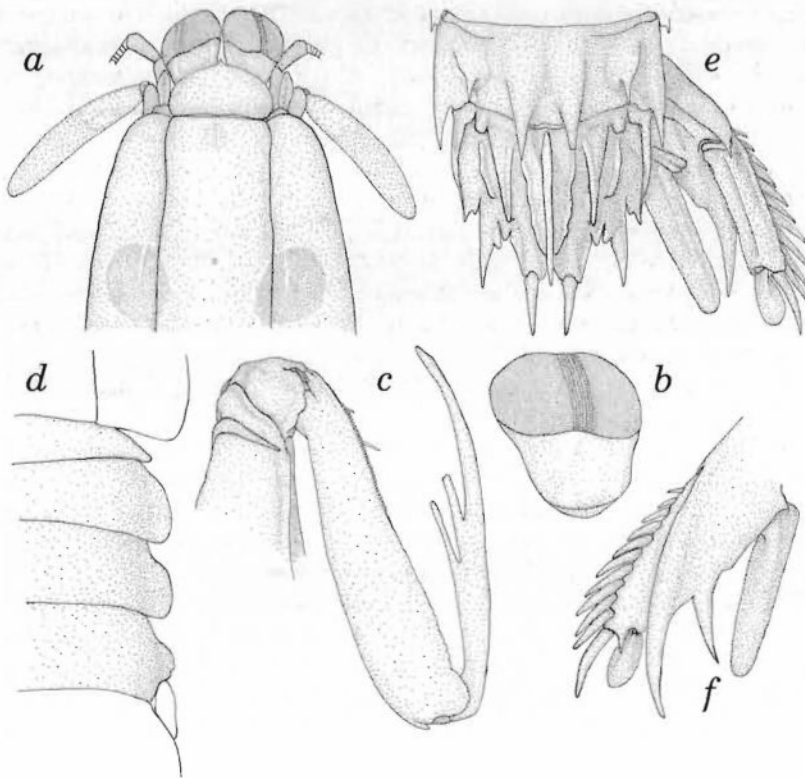


Fig. 6. — *Pseudosquillisma oculata* (Brullé 1837), male, 90 mm, Florida: a, anterior part of carapace and frontal appendages; b, eye; c, distal segments of raptorial claw; d, lateral processes of exposed thoracic somites; e, sixth abdominal somite, telson, and uropod; f, uropod, ventral view. L.K. Manning del.

Habitat. Found on a reef among dead coral blocks, at the base of live undetermined coral heads, and at the base of live *Pocillopora* and live *Acropora*.

Distribution. Widely distributed in the Indo-West Pacific region from Hawaii to the western Indian Ocean and on both sides of the Atlantic. It has not been recorded previously from Somalia.

DISCUSSION

Zoogeographic notes. Ten of the 17 species recorded here from Somalia are relatively widely distributed, occurring at least to the western Pacific. These are (their ranges in parentheses): *G. botti* (to New Caledonia), *G. mutatus* (to New Caledonia), *G. platysoma* (to Japan), *G. smithii* (to New Caledonia), *C. spinosissima* (to Japan), *H. lenzi* (to the Philippines), *H. pulchella* (to Japan), *P. ciliata* (to Hawaii and Japan, also both sides of the Atlantic), *Pseudosquillana megalophthalma* (to New Caledonia), and *Pseudosquillisma oculata* (to Hawaii, also both sides of the Atlantic). The remainder of the species are restricted to the western Indian Ocean.

Ten of the 17 species now known from the Somalia coast are shared with the Red Sea, where 33 species are known (MANNING & LEWINSOHN 1986). The shared species include *M. amabilis*, *G. botti*, *G. demanii*, *G. lanchesteri*, *M. brevisquamatus*, *C. spinosissima*, *H. lenzi*, *H. pulchella*, *P. ciliata*, and *Pseudosquillana megalophthalma*.

In contrast, only seven species are shared with the Persian Gulf, where 23 species have been recorded (MANNING 1990). These are: *G. botti*, *G. demanii*, *G. lanchesteri*, *G. smithii*, *M. fimbriatus*, *H. pulchella*, and *P. ciliata*. The genus *Manningia* is represented in the Persian Gulf by a different species, *M. arabica* Manning 1990.

Of 20 species reported from the Seychelles by MANNING (1962) and MOOSA & CLEVA (1984), only five are shared with the Somalian coast. The five are: *G. demanii*, *G. mutatus*, *G. platysoma*, *H. lenzi*, and *P. ciliata*. The status of the species identified with *Gonodactylus chiragra* and *G. falcatus* by MANNING (1962) remain to be determined. Many of the species in MOOSA & CLEVA were not shore species. The genus *Mesacturoides* is represented here by a different species than in Somalia, *M. crinitus* (MANNING 1962).

MOOSA (1984) listed 26 species from Reunion and Mauritius, only seven of which also occur in Somalia; they are *G. mutatus*, *G. platysoma*, *G. smithii*, *G. spinosus*, *P. ciliata*, *Pseudosquillana megalophthalma* and *Pseudosquillisma oculata*. The status of material identified with *G. chiragra* and *G. falcatus* by MOOSA needs to be clarified. Note that on Reunion there is a different species of *Manningia*, *M. zehntneri* Manning 1974, and *Mesacturoides crinitus* occurs on both islands.

MANNING (1968, 1970a, 1970b, 1978b) reported 43 species from Madagascar, 27 of which were in families not found on the Somalian coast. Of the 16 gonodactyloids, 10 also are now known from Somalia (again, the status of material identified with *G. chiragra* and *G. falcatus* needs clarification, also below for South African records). The species from Madagascar shared with Somalia are: *Gonodactylolus paulus*, *G. demanii*, *Gonodactylus lanchesteri*, *G. platysoma*, *G. smithii*, *C. spinosissima*, *H. lenzi*, *H. pulchella*, *P. ciliata*, and *Pseudosquillisma oculata*. Curiously, no species of *Manningia* or of *Mesacturoides* have been taken on Madagascar.

Apparently, southern Africa and Somalia share only two species, *G. lanchesteri* and the ubiquitous *P. ciliata*, both having been recorded from Moçambique (MANNING 1969a).

It must be noted that faunistic differences between Somalia and other localities in the western Indian Ocean may be the result of differences in sampling. The C.N.R. shore collections certainly reflect the intensity of their collecting efforts in Somalia and their attention to sampling specific habitats.

Relative abundance. The species collected fall into three major groups in terms of abundance. First, three species were represented in the collections by more than 100 specimens: *Mesacturoides fimbriatus* comprised 281 specimens taken in 104 separate samples at four localities; 98 of the samples and 272 of the specimens came from Gesira. There were 221 specimens of *Gonodactylus lanchesteri*, 204 of which were taken at Sar Uanle; the species was found in 24 samples from five localities. *Gonodactylus botti*, the third most abundant species, also was found at five localities, from which 116 specimens were taken in 16 different samples.

The second group of species was represented in the collections by five to 26 specimens. *Haptosquilla pulchella* was taken in three samples from three localities; 24 of the 26 specimens in the collection are from Gesira. *Pseudosquilla ciliata* was represented by 15 specimens in seven samples taken at four localities; 12 of the specimens came from Gesira. *Chorisquilla spinosissima* comprised 11 specimens taken at five samples from Gesira. *Gonodactylus mutatus* was taken at eight samples from two different sites; only nine specimens were found. Three species were represented by seven specimens: *Haptosquilla lenzi*, taken in six samples at four sites; *Manningia amabilis*, collected in six samples from two sites; and *Gonodactylus smithii*, taken in five samples from one site. Five specimens of *Pseudosquillisma oculata* were found in five samples at two sites.

Five species were represented in the collection by less than five specimens. There were three specimens of *Gonodactylus demanii* taken in two collections at two sites; two specimens of *Gonodactylus platysoma* and *Gonodactylus spinosus* from two samples at one site; and the three rarest species, *Gonodactylolus paulus*, *Pseudosquillana megalophthalma*, and *Mesacturoides brevisquamatus*, were each represented by one specimen.

Habitats. Under the species accounts we have summarized the occurrence of species taken together at specific stations, as indicated by station data with the specimens. Here we give another indication of possible associations, based on the number of species taken at each geographic locality; the numbers in parentheses indicate number of samples and total number of specimens from that locality. Any of the totals could well reflect collecting effort, although localities with live or dead coral are much more likely to provide habitats for the greater number of species.

1. Durbo, the northernmost locality, in the Gulf of Aden, sheltered beaches with mangroves. Three species were taken here: *G. botti* (2 samples, 85 specimens); *H. lenzi* (2, 3); *G. demanii* (1, 1).

2. Ras Filuck, near Durbo, in the Gulf of Aden, sheltered beaches with mangroves. Three species were taken here, none in large numbers: *G. demanii* (1 sample, 2 specimens); *G. lanchesteri* (1, 1); *H. lenzi* (1, 1).

3. Mogadiscio, central Somalia, an exposed rocky shore. Only two species were taken here: *G. botti* (1 sample, 1 specimen); *Pseudosquillisma oculata* (1, 1).

4. Gesira, central Somalia, sheltered coastal area with tide pools, *Thalassia* flats, and carpet of *Cymodocea* roots and mud. Seven species were collected here: *H. pulchella* (1 sample, 23 specimens); *G. botti* (2, 17); *G. lanchesteri* (2, 12); *P. ciliata* (1, 8); *M. fimbriatus* (1, 2); *H. lenzi* (1, 1); *M. amabilis* (1, 1).

Gesira, half exposed rocky shore and reef area. Fourteen of the 17 species in the collection occurred here: *M. fimbriatus* (24 samples, 272 specimens); *C. spinosissima* (5, 11); *G. smithii* (5, 7); *G. mutatus* (5, 6); *Pseudosquillisma oculata* (4, 4); *G. botti* (3, 5); *P. ciliata* (3, 4); *G. lanchesteri* (2, 2); *G. platysoma* (2, 2); *G. spinosus* (2, 2); and four species each represented by one specimen, *Gonodactylolus paulus*, *M. brevisquamatus*, *H. pulchella*, and *Pseudosquillana megalophthalma*.

5. Bender Mtoni, southern Somalia, lagoon with mangroves. Three species were taken here: *G. lanchesteri* (1 sample, 2 specimens); *H. pulchella* (1, 2); and *P. ciliata* (1, 1).

6. Sar Uanle, southern Somalia, an exposed rocky shore with tide pools and a carpet of *Cymodocea* roots. Seven species were taken here: *G. lanchesteri* (18 samples, 205 specimens); *G. botti* (8, 8); *M. amabilis* (5, 6); *M. fimbriatus* (3, 4); *G. mutatus* (3, 3); *H. lenzi* (2, 2); and *P. ciliata* (2, 2).

Size. All of the species in the C.N.R. collections from Somalia are relatively small, the largest, *G. platysoma*, being only 73 mm long. The species fall into three groups, one containing five species with a total length greater than 50 mm: *M. amabilis*, *G. botti*, *G. platysoma*, *G. smithii*, and *Pseudosquillisma oculata*. All but *M. amabilis* also occur in the Pacific Ocean.

Twelve of the 17 species studied had total lengths of less than 50 mm, and six of these were between 35 and 50 mm long: *G. mutatus*, *P. ciliata*, *G. lanchesteri*, *C. spinosissima*, *H. lenzi*, and *H. pulchella*. All but *G. lanchesteri* are known to occur in the Pacific Ocean.

Six of the 17 species were less than 35 mm long: *G. demanii*, *G. spinosus*, *M. fimbriatus*, *Pseudosquillana megalophthalma*, *Gonodactylolus paulus*, and *M. brevisquamatus*. Only one of these, the pseudosquillid *Pseudosquillana megalophthalma*, occurs outside of the western Indian Ocean; the remainder are not known to occur outside of that area.

Size ranges for species from Somalia are similar to those reported for the same species from other localities, as summarized below in tabular form (total length, in mm; Red Sea I data from HOLTHUIS 1967; Red Sea II data from MANNING & LEWINSOHN 1986; Persian Gulf data from MANNING 1990).

| Species | Red Sea I | Red Sea II | Persian Gulf | Somalia |
|--------------------------|-----------|------------|--------------|---------|
| <i>M. amabilis</i> | 32-50 | 27-54 | — | 25-57 |
| <i>G. botti</i> | 17-79 | 19-61 | 35-73 | 16-63 |
| <i>G. demanii</i> | 11-40 | 11-42 | 10-35 | 19-26 |
| <i>G. lanchesteri</i> | 10-35 | 13-29 | 14-39 | 11-39 |
| <i>G. smithii</i> | 18-63 | — | 20-64 | 35-60 |
| <i>M. brevisquamatus</i> | 10-31 | 11-32 | — | 11 |
| <i>H. lenzi</i> | 9-38 | — | — | 18-36 |
| <i>P. ciliata</i> | 44-62 | 22-74 | — | 18-47 |

However, some of the larger species are much larger elsewhere. KEMP (1915) reported specimens of *G. platysoma* as large as 110 mm from the Philippines, and *Pseudosquilla oculata* from the western Atlantic can be as large as 125 mm (MANNING 1969c). *Pseudosquillana megalophthalma* is a much larger species than is indicated by size records in the literature; there are specimens in the collection at Washington up to 94 mm long.

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