



***Cynoglossus crepida*, a new species of tonguesole from the Gulf of Aqaba, Red Sea (Teleostei: Cynoglossidae)**

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Abstract

The Bluntnose Deepwater Tonguesole, *Cynoglossus crepida*, n. sp., is described from the Red Sea in the Gulf of Aqaba, off Eilat, Israel, based on a specimen collected in a trammel net at a depth of 440 m. The new species is characterized within the *C. carpenteri*-species group by the relatively long, bluntly rounded snout; head length of 25% SL, snout length 10% SL (40% HL); eyes not contiguous; corner of mouth nearer to the posterior edge of the opercle than to the tip of the snout; eyed side with 3 lateral lines, lateral-line scales 104, scale rows between the midlateral and dorsolateral lines 17, blind side without lateral lines; ctenoid scales on both eyed and blind sides; dorsal-fin rays 115; anal-fin rays 103; caudal-fin rays 8; and the gill chamber and peritoneum black. A key to the species of the *C. carpenteri*-species group is presented.

Key words: taxonomy, ichthyology, systematics, deepwater fishes, Indian Ocean, Israel, tonguefishes, identification key.

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Introduction

The tonguesoles of the family Cynoglossidae are small to medium-sized benthic fishes, common in marine waters from tidal pools down to the continental shelf and upper slope, to a maximum depth of 1,500 m (Munroe 2001). The family includes three valid genera. The largest genus, *Cynoglossus* Hamilton, 1822, is characterized by the presence of 2 or 3 lateral lines on the eyed side of the body, the presence of a rostral hook covering part of the mouth, and the absence of fringes on the lips of the eyed side (Menon 1977). It was revised by Menon (1977) who distinguished 49 valid species in 17 species complexes arranged in 4 species groups. Subsequently, *Cynoglossus purpureomaculatus* Regan, 1905 (distributed from Vietnam to southern Japan) was reinstated as a valid species (e.g. Li & Wang 1995: 375); *C. ochiaii* was described from Japan and the East China Sea by Yokogawa *et al.* (2008); and *C. nanhaiensis* was described from the South China Sea coast of China (Wang *et al.* 2016). *Cynoglossus dollfusi* Chabanaud, 1931 and *Cynoglossus cleopatriidis* Chabanaud, 1949 were recently redefined by Munroe & Kong (2016), and the latter species needs to be added to the list. The genus *Cynoglossus* thus comprises 53 valid species (prior to this paper) distributed in the Indo-West Pacific and the eastern Atlantic Oceans. The tonguefishes of the western Atlantic are all members of the genus *Symphurus*.

The *Cynoglossus carpenteri*-species group was characterized by Menon (1977: 82, as a species complex) as having 3 lateral lines on the ocular side, none on the blind side, two nostrils on the ocular side, the snout long and more-or-less pointed with the angle of the mouth situated nearer to the branchial opening than to the tip of the snout, small eyes usually with a narrow interorbital space (eyes contiguous in *C. suyeni*), and small scales (with the scale count between midlateral and dorsolateral lines 15–22). Menon (1977) included four species in that species group: *C. acutirostris* Norman, 1939 from the Gulf of Aden; *C. carpenteri* Alcock, 1889 from the northern Indian Ocean; *C. marleyi* Regan, 1921 from South Africa; and *C. suyeni* Fowler, 1934 from the Philippines and eastern Indonesia. Some ranges were later expanded, i.e. *C. acutirostris* was recorded from the central Red Sea by Krupp (1987) and *C. suyeni* from Taiwan and northern Australia by Ho *et al.* (2009) and Larson *et al.* (2013), respectively.

During a study of the deepwater fishes of the northern Gulf of Aqaba, Red Sea, a specimen of tonguesole conforming with the *C. carpenteri*-species group was collected at 440 m depth. It belonged to an undescribed species, which is described in the present paper.

Materials and Methods

The holotype is deposited in the fish collection of the Hebrew University of Jerusalem (HUJ). Abbreviations of repositories follow Fricke & Eschmeyer (2017).

Biometrical counts and measurements follow Hubbs & Lagler (1947), descriptive methods follow Menon (1977) and Krupp (1987), the genus and species classification follows Eschmeyer *et al.* (2017), family classification follows van der Laan *et al.* (2014), and the references follow Fricke (2017). The standard length is abbreviated SL, head length is abbreviated HL. Proportions in Table presented as percentage of SL.

Cynoglossus crepida, n. sp.

Bluntnose Deepwater Tonguesole

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Figures 1–2; Tables 1 & 2.

Holotype. HUI 18063, 202.9 mm SL, Red Sea, Gulf of Aqaba, Israel, vicinity of Eilat, ca. 29°30' N 34°56'30" E, 440 m depth, trammel net, A. Baranes, 20 December 1995.

Diagnosis. A species of tonguesole with snout relatively long and bluntly rounded; head length 25% SL, snout length 10% SL (40% HL); eyes not contiguous; corner of mouth nearer to posterior edge of opercle than to tip of snout; eyed side with 3 lateral lines, lateral-line scales 104, scale rows between midlateral and dorsolateral lines 17, blind side without lateral lines; ctenoid scales on both eyed and blind sides; dorsal-fin rays 115; anal-fin rays 103; caudal-fin rays 8; gill chamber and peritoneum black.

Description. Dorsal-fin rays 115; anal-fin rays 103; dorsal and anal fins confluent with caudal fin; pectoral fins absent; pelvic fin present on blind side, connected to anal fin; caudal-fin rays 8; vertebrae 8 + 47. Body lanceolate, snout relatively long, bluntly rounded. Eyes close together but not contiguous, situated on left side of body, the migratory eye situated anterior to the fixed eye. Eyes partly covered with scales. Anterior nostril on eyed side tubular, situated in front of fixed eye; posterior nostril a simple slit in the interorbital region. Corner of mouth distinctly nearer to posterior edge of opercle than to tip of snout. Rostral hook short, its posterior margin reaching to level of fixed eye; mouth cleft reaches far behind posterior margin of lower eye. Lips smooth. Middle part of opercle truncate. Eyed side with three lateral lines which are interconnected in the postorbital region, blind side without lateral lines. Scales on both eyed and blind sides ctenoid. Lateral-line scales 104. Scale rows between midlateral and dorsolateral lines (counted at level of 30th scale behind origin of midlateral line) 17, between midlateral and ventrolateral lines 18.

Color in preservative. (Figs. 1 & 2) Head and body on both sides light brown, edges of scales slightly darker, margins of dorsal and anal fins pale; gill chamber and peritoneum black; dorsal and anal fins yellowish, distally dark grey.

Etymology. The new species is named for the sole of a slipper or sandal (Latin: *crepida*), referring to the sole-like shape of the new tonguesole. The specific epithet is a noun in apposition.

Distribution. (Fig. 3) Known only from the type locality in the vicinity of Eilat in the northern Gulf of Aqaba, Red Sea.



Figure 1. *Cynoglossus crepida*, holotype, HUI 18063, eyed side, 202.9 mm SL, Red Sea, Gulf of Aqaba (D. Golani).



Figure 2 *Cynoglossus crepida*, holotype, HUJ 18063, blind side, 202.9 mm SL, Red Sea, Gulf of Aqaba (D. Golani).

TABLE 1

Cynoglossus crepida, n. sp., holotype, measurements

	actual mm	% SL
Standard length	202.9	
Head length	50.7	25
Maximum body depth	55.9	27.6
Snout length	20.5	10.1
Mouth cleft to end of opercle	22.4	11
Tip of snout to inside corner of mouth cleft	32.8	16.2
Horizontal eye diameter	6.2	3.1
Interorbital width	1.6	0.8

Comparisons. The new species is a member of the *C. carpenteri*-species group, as it has 3 lateral lines on the eyed side of the body, none on the blind side, two nostrils on ocular side, the snout long and more or less pointed, with the angle of mouth situated nearer to branchial opening than to tip of snout a rostral hook covering part of the mouth, small eyes usually with a narrow interorbital space, no fringes on the lips of the eyed side, and small scales, with the scale count between midlateral and dorsolateral lines 17. *Cynoglossus crepida* is compared with the other species of the group in Table 2 (see also below for a key to the species in the group); it differs from all other species in the group by its black peritoneum (light in the other species), and from *C. acutirostris* in its bluntly rounded snout (acutely pointed in *C. acutirostris*), and 115 dorsal-fin rays (117 in *C. acutirostris*), as well as a slightly shorter snout and head; it is distinguished from *C. carpenteri* by its bluntly rounded snout (slightly pointed in *C. carpenteri*), the ctenoid scales on the blind side (cycloid in *C. carpenteri*), its 103 anal-fin rays (80–89 in *C. carpenteri*), 115 dorsal-fin rays (101–110 in *C. carpenteri*), as well as a slightly shorter head; it differs from *C. marleyi* in its 104 lateral-line scales (112–113 in *C. marleyi*), 115 dorsal-fin rays (126 in *C. marleyi*), and a slightly longer head; it is finally distinguished from *C. suyeni* by the eyes which are not contiguous (contiguous in *C. suyeni*), 17 scales between the midlateral and the dorsolateral lines (19–22 in *C. suyeni*), and the black gill chamber (light in *C. suyeni*).

Remarks. This is an interesting finding of a deepwater, long-snouted cynoglossid fish from the Gulf of Aqaba. It was first assumed that it might be conspecific with *Cynoglossus acutirostris* Norman, 1939, which has been recorded from the Gulf of Aden and the main body of the Red Sea south of the Gulf of Aqaba, but a closer examination revealed that it was sufficiently different to describe it as a new species. The new species has the northernmost distribution of the five species in the *C. carpenteri*-species group (Fig. 3).

The holotype of *C. crepida* has a standard length of 202.9 mm SL; the species is thus considerably larger than the specimens of *C. acutirostris* previously recorded from the Red Sea. It is interesting that the nutrient-poor deep waters of the Gulf of Aqaba harbor a relatively large cynoglossid. The closely related *C. marleyi* from South Africa is also large, reaching 350 mm SL.

The new species is apparently endemic to the Gulf of Aqaba. In the Red Sea, there are several cases of species endemic in the Gulf of Suez and/or Gulf of Aqaba, which are distinct from closely related species in the southern parts. Including the new species here, and with the addition of *Callionymus profundus* (Fricke & Golani 2013), *Evoxymetopon moricheni* (Fricke *et al.* 2014), *Heteroleotris psammophila* (Kovačić & Bogorodsky 2014), *Mixomyrophis longidorsalis* (Hibino *et al.* 2014), *Pempheris tilman* (Randall & Victor 2015), and

TABLE 2

Comparison of the species in the *Cynoglossus carpenteri*-species group
(character states non-overlapping or different from *C. crepida* in bold)

	<i>C. crepida</i> , n.sp.	<i>C. acutirostris</i>	<i>C. carpenteri</i>	<i>C. marleyi</i>	<i>C. suyeni</i>
Head length (% SL)	25	26–38	28–34	18–21	19–23
Snout length (% SL)	10	11–22	9–13	8–15	15–24
Snout shape	bluntly rounded	acutely pointed	slightly pointed	rounded	rounded
Eye placement	not contiguous	not contiguous	not contiguous	not contiguous	contiguous
Lateral lines/eyed side	3	3	3	3	3
Lateral lines/blind side	absent	absent	absent	absent	absent
Lateral-line scales	104	94–112	75–96	112–113	102–126
Scales between dorsal and midlateral lines	17	16–21	15–19	18–19	19–22
Scales/eyed side	ctenoid	ctenoid	ctenoid	ctenoid	ctenoid
Scales/blind side	ctenoid	ctenoid	cycloid	ctenoid	ctenoid
Dorsal-fin rays	115	117–129	101–110	126–127	115–126
Anal-fin rays	103	98–108	80–89	105–107	92–105
Caudal-fin rays	8	7–10	10	10	10
Vertebrae	8 + 47	9 + 49–50	9 + 39–46	9 + 53	9 + 48–52
Gill chamber color	black	black	black	black	light
Peritoneum color	black	light	light	light	light
Depth range (m)	440	220–1,400	124–421	55–274	216–316

Suculentophichthus nasus (Fricke *et al.* 2015), a total of 66 species are now known to be endemic to the northern Red Sea (which is here restricted to the Gulf of Suez and Gulf of Aqaba), including 15 species endemic to the Gulf of Suez and 41 species endemic to the Gulf of Aqaba (Golani *et al.* 2013). The northern Red Sea endemics amount to about one-third of all fish species endemic to the Red Sea. The main reason for a high degree of endemism in the extreme northern part of the Red Sea is apparently the salinity level, which is higher than that of the main body of the Red Sea (Wyrski 1971). Fricke (1988: 538) discusses a theory of isolation of the Red Sea with speciation under a relatively high salinity level, and subsequent restriction of such species to the high-salinity waters of the northern Red Sea.

Golani & Bogorodsky (2010: 54) reported 7 species of *Cynoglossus* and a single species of *Paraplagusia* in the Red Sea. *Cynoglossus dollfusi* (Chabanaud, 1931) can here be confirmed as a valid species, but *Cynoglossus lingua* (*non* Hamilton, 1822) must be removed from the list since that record by Chabanaud in Gruvel & Chabanaud (1937) was based on a misidentified *C. dollfusi*. In addition, the record of “*C. dollfusi*” (*non* Chabanaud, 1931) reported in the same paper is apparently a different species that probably still remains unnamed. With the addition of the new species described here, eight species of cynoglossids can be confirmed to occur in the Red Sea: *C. acutirostris*, *C. bilineatus*, *C. crepida*, *C. dollfusi*, *C. lachneri*, *C. pottii*, *C. sinusarabici*, and *Paraplagusia bilineata*.

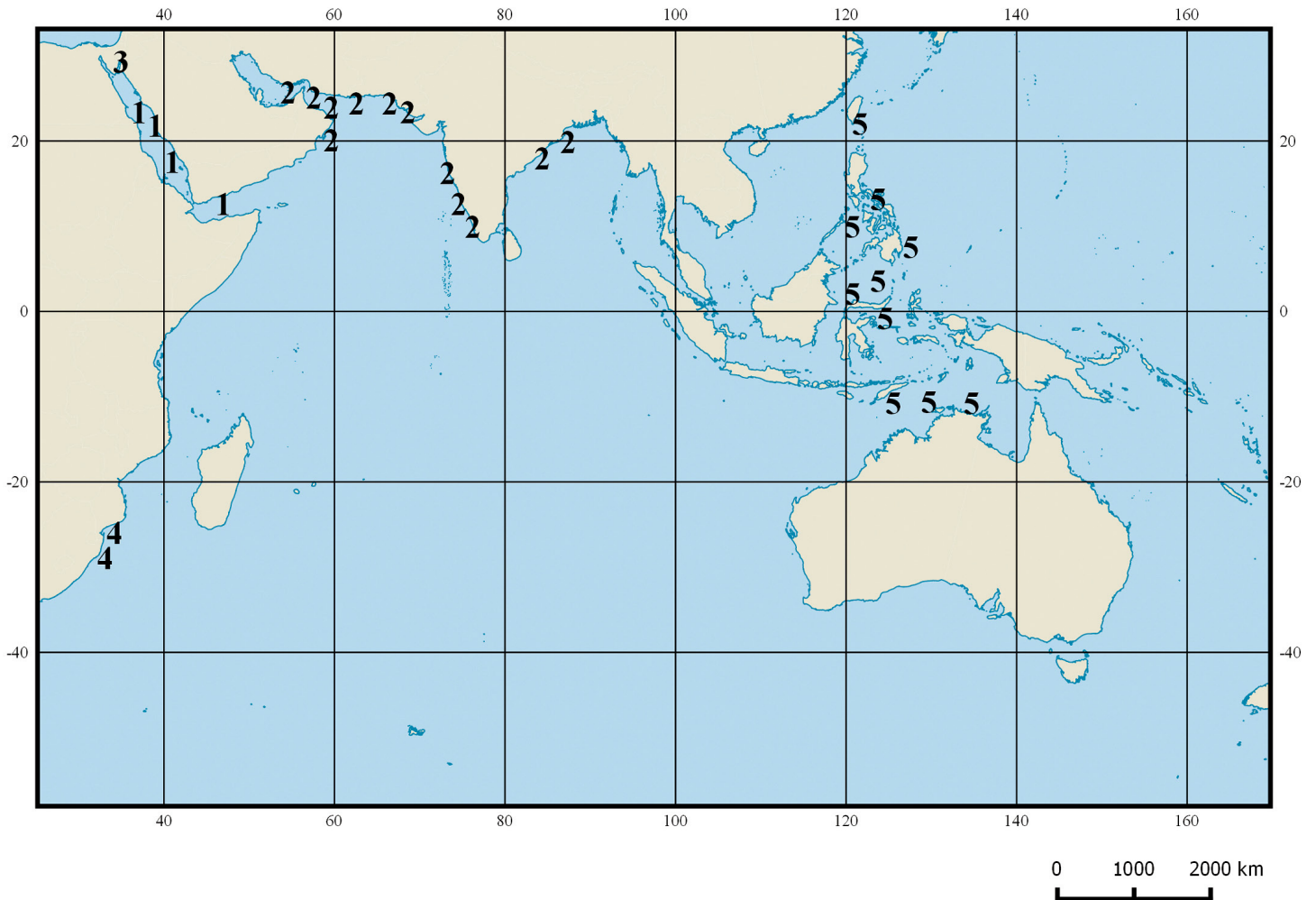


Figure 3. Geographical distribution of the *C. carpenteri*-species group in the Red Sea and Indo-West Pacific Ocean: 1) *C. acutirostris*; 2) *C. carpenteri*; 3) *C. crepida*; 4) *C. marleyi*; 5) *C. suyeni*.

Key to the species of the *Cynoglossus carpenteri*-species group

- 1a. Cycloid scales on blind side *Cynoglossus carpenteri*
1b. Ctenoid scales on blind side 2
- 2a. Eyes contiguous *Cynoglossus suyeni*
2b. Eyes not contiguous 3
- 3a. Snout acutely pointed; head length 26–38% of SL *Cynoglossus acutirostris*
3b. Snout rounded; head length 18–25% of SL 4
- 4a. Peritoneum light; lateral-line scales 112–113; head length 18–21% SL *Cynoglossus marleyi*
4b. Peritoneum black; lateral-line scales 104; head length 25% SL *Cynoglossus crepida*, n. sp.

Comparative material examined:

Cynoglossus acaudatus Gilchrist, 1906: BMNH 1904.11.4.85 (1), South Africa; BMNH 1908.3.23.149–152 (4), Cargados Carajos; BMNH 1922.3.27.18 (1 syntype of *Areliscus natalensis* Bonde, 1922, 116.2 mm SL), KwaZulu-Natal, South Africa.

Cynoglossus acutirostris Norman, 1939: BMNH 2016.5.1.1 (holotype, 211 mm SL), Gulf of Aden; BMNH 1939.5.24.1800–1809 (10 paratypes, including lectotype of Menon 1977), Gulf of Aden; BMNH 2016.5.1.2 (1 paratype), Gulf of Aden; MNNH 1939-0268 (1 paratype, ca. 195.3 mm SL), Gulf of Aden.

Cynoglossus arel (Bloch & Schneider, 1801): BMNH 1860.3.19.433 (holotype of *Plagusia grandisquamis* Cantor, 1849, 159.3 mm SL), Penang, Malaysia; HUI 14739 (2, 183.4–209.3 mm SL), Hong Kong, China, South China Sea.

Cynoglossus attenuatus Gilchrist, 1904: BMNH 1903.12.31.10 (1 syntype, 196.9 mm SL), KwaZulu-Natal, South Africa.

Cynoglossus bilineatus (Lacepède, 1802): HUI 5840 (1, ca. 440 mm SL), Eilat, Israel, Gulf of Aqaba, Red Sea; HUI 9019 (1, 395.0 mm SL), Eilat, Israel, Gulf of Aqaba, Red Sea; HUI 9046 (1, 332.5 mm SL), Dahab, Egypt, Gulf of Aqaba, Red Sea; HUI 9178 (1, 426.3 mm SL), Gulf of Aqaba, Red Sea; SMNS 1080 (1), Cape Province, South Africa; SMNS 1767 (1), Al-Qusayr, Egypt, Red Sea; SMNS 2270 (1), Townsville, Queensland, Australia; SMNS 25208 (4), Kuwait, Persian Gulf.

Cynoglossus broadhursti Waite, 1905: BMNH 1925.7.22.83 (1), off mouth of Murray River, South Australia.

Cynoglossus browni Chabanaud, 1949: MNHN 1949-0023 (holotype, 214.7 mm SL), Sierra Leone; BMNH 2011.10.18.3 (1), Liberia.

Cynoglossus cadenati Chabanaud, 1947: MNHN 1949-0020 (holotype, 114.7 mm SL), Senegal; MNHN B.2547 (1 paratype, 103.6 mm SL), Senegal; MNHN 1949-0021 (holotype of *Cynoglossus cadenati honoris* Chabanaud, 1949, 105.5 mm SL), Sierra Leone.

Cynoglossus canariensis Steindachner, 1882: BMNH 1914.11.2.72 (lectotype of *Cynoglossus lagoensis* Regan, 1915), Lagos Nigeria; BMNH 1914.11.2.71 (1 paralectotype of *Cynoglossus lagoensis* Regan, 1915), Lagos Nigeria.

Cynoglossus capensis (Kaup, 1858): BMNH 1904.11.4.4 (1, 84.1 mm SL), Cape Point, South Africa.

- Cynoglossus carpenteri* Alcock, 1889: BMNH 1890.7.31.10–12 (3, ca. 138.8–165.5 mm SL), Ganjam coast, India, leg. A. W. Alcock; BMNH 1890.11.28.27–29 (ca. 156.7–163.2 mm SL), Ganjam coast, India; BMNH 1925.3.20.75.77 (4), Bay of Bengal, India; MNHN 1890-0359–1890-0362 (4, 145.9–163.7 mm SL), India.
- Cynoglossus cleopatridis* Chabanaud, 1949: MNHN 1949-0024 (holotype, 127.7 mm SL), Gulf of Suez, Egypt; MNHN 1966-0747 (1 syntype of *Cynoglossus sinusarabici*, 112.7 mm SL), Gulf of Suez, Egypt.
- Cynoglossus cynoglossus* (Hamilton, 1822): BMNH 1862.6.3.9 (1), Sumatra, Indonesia, leg. P. Bleeker; BMNH 1862.6.3.17 (1 paralectotype of *Plagusia oxyrhynchus* Bleeker, 1851), Indonesia; BMNH 1928.3.20.133 (1, paralectotype of *Cynoglossus deltae* Jenkins, 1910, 62.3 mm SL), Sundarbans, Bangladesh.
- Cynoglossus dispar* Day, 1877: BMNH 1889.2.1.4061 (1 paralectotype, 201.1 mm SL), Madras, India; BMNH 1889.2.1.4062–4063 (2 paralectotypes, 123.7–167.8 mm SL), Madras, India.
- Cynoglossus dubius* Day, 1873: BMNH 1911.12.6.16 (1, 245.7 mm SL), Karachi, Pakistan; BMNH 1983.5.10.29–32 (4), Pakistan.
- Cynoglossus durbanensis* Regan, 1921: BMNH 1920.7.23.37 (lectotype), Durban, KwaZulu-Natal, South Africa; BMNH 1920.7.23.38 (paralectotype), Durban, KwaZulu-Natal, South Africa.
- Cynoglossus feldmanni* (Bleeker, 1854): BMNH 1989.11.20.2 (1), Nakhon Sawan, Thailand; MNHN 1965-0466 (holotype of *Cynoglossus aubentoni* Stauch, 1965, 107.4 mm SL), Cambodia.
- Cynoglossus gilchristi* Regan, 1920: BMNH 1903.9.29.2 (holotype, 132.0 mm SL), Kwa-Zulu Natal, South Africa; BMNH 1981.6.25.102–103 (2, 71.7–84.1 mm SL), Rufiji Delta, Tanzania.
- Cynoglossus gracilis* Günther, 1873: BMNH 1873.7.30.57–58(a–b) (3 syntypes, 80.9–210.0 mm SL), Shanghai, China.
- Cynoglossus hardenbergi* Norman, 1931: BMNH 1931.4.23.54 (holotype, 198.4 mm SL), Sumatra, Indonesia.
- Cynoglossus heterolepis* Weber, 1910: BMNH 1913.12.15.36 (1 syntype, ca. 182.1 mm SL), Lorentz River, Papua, Indonesia; BMNH 1937.3.17.1 (1, 181.2 mm SL), Upper Fly River, Papua New Guinea.
- Cynoglossus interruptus* Günther, 1880: BMNH 1855.9.19.47 (1), China; BMNH 1879.5.14.92 (1 syntype, 133.6 mm SL), Yokohama, Japan; BMNH 1890.2.26.146 (1 syntype, 86.9 mm SL), Yokohama, Japan; BMNH 1923.2.26.650–659 (10), Tokyo, Japan.
- Cynoglossus itinus* (Snyder, 1909): SMNS 24758 (7), Kueishan Island, Taiwan, western Pacific Ocean.
- Cynoglossus joyneri* Günther, 1878: BMNH 1858.4.15.94 (lectotype of Chabanaud, 1951: 269), Yokei, Japan; BMNH 1858.4.15.95 (1 paralectotype), Yokei, Japan; BMNH 1892.12.12.32 (holotype of *Cynoglossus tshusanensis* Chabanaud, 1951), Tshusan Archipelago, China; BMNH 1892.12.12.33–34 (2 paratypes of *Cynoglossus tshusanensis* Chabanaud, 1951), Tshusan Archipelago, China; BMNH 1924.12.15.870 (lectotype of *Cynoglossus lighti* Norman, 1925), Wenshow, China; BMNH 1924.12.15.88–89 (2 paralectotypes of *Cynoglossus lighti* Norman, 1925), Wenshow, China; BMNH 1924.12.15.90 (1 paralectotype of *Cynoglossus lighti* Norman, 1925, 113.8 mm SL), Wenshow, China.
- Cynoglossus kopsii* (Bleeker, 1851): BMNH 1879.5.14.81 (132.3 mm SL), Arafura Sea; BMNH 1890.2.26.147 (1 syntype of *Cynoglossus kopsi digramma* Chabanaud, 1951, ca. 109.6 mm SL), Arafura Sea; BMNH 1890.2.26.148 (1 syntype of *Cynoglossus kopsi digramma* Chabanaud, 1951, ca. 83.4 mm SL), Arafura Sea; BMNH 1908.3.23.148 (1 syntype of *Cynoglossus kopsi digramma* Chabanaud, 1951, 97.9 mm SL), Almirantes, Seychelles; MNHN 1890-0134 (1 syntype of *Cynoglossus kopsi digramma* Chabanaud, 1951, 109.8 mm SL), Arafura Sea; HUI 20554 (1, 135.7 mm SL), Hong Kong, China, South China Sea; SMNS 12517 (2), Phetchaburi, Thailand, South China Sea; SMNS 23771 (1), Singapore.
- Cynoglossus lida* (Bleeker, 1851): BNMNH 1919.9.12.50 (1, 149.5 mm SL), Durban, KwaZulu-Natal, South Africa.
- Cynoglossus lingua* (Hamilton, 1822): BMNH 1855.12.26.601 (1, 250.7 mm SL), River Ganges, India, leg. J. McClelland.
- Cynoglossus luctuosus* Chabanaud, 1948: BMNH 1932.2.6.1 (holotype, 129.4 mm SL), Madras, India; BMNH 1932.2.6.2–9 (8 paratypes, 117.7–137.2 mm SL), Madras, India.
- Cynoglossus macrolepidotus* (Bleeker, 1851): SMNS 10586 (1 paralectotype), Jakarta, Java, Indonesia.
- Cynoglossus macrophthalmus* Norman, 1926: SMNS 14298 (2), Exmouth Gulf, Western Australia, southeastern Indian Ocean.

Cynoglossus macrostomus Norman, 1928: BMNH 1889.2.1.4076 (1 paratype, 118.3 mm SL), China.

Cynoglossus marleyi Regan, 1921: BMNH 1921.3.1.21 (holotype, ca. 317.7 mm SL), Kwa-Zulu Natal, South Africa.

Cynoglossus melanopterus (Bleeker, 1851): BMNH 1862.6.3.13 (1 paralectotype), Indonesia.

Cynoglossus microlepis (Bleeker, 1851): BMNH 1984.1.13.248 (1, 86.2 mm SL), Singapore; MNHN 0000-0399 (5 paralectotypes of *Cynoglossus solum* Sauvage, 1878, 191.0–222.8 mm SL), Mekong River, Vietnam; MNHN 0000-9516 (lectotype of *Cynoglossus solum* Sauvage, 1878, 191.9 mm SL), MNHN 0000-9640 (5 paralectotypes of *Cynoglossus solum* Sauvage, 1878, 203.0–231.7 mm SL), Mekong River, Vietnam.

Cynoglossus microphthalmus (Bonde, 1922): BMNH 1922.3.27.17 (holotype, 166.0 mm SL), KwaZulu-Natal, South Africa.

Cynoglossus monodi Chabanaud, 1949: MNHN 1949-0018 (holotype, 318.6 mm SL), Benin; BMNH 1949.4.30.4 (1 paratype, 236.4 mm SL), Benin.

Cynoglossus monopus (Bleeker, 1849): HJ 14764 (1, 142.5 mm SL), Hong Kong, China, South China Sea; MNHN 0000-0174 (1 syntype of *Arelia ceratophrys* Kaup, 1858), Indonesia.

Cynoglossus nigropinnatus Ochiai, 1963: SMNS 24645 (1), Kueishan Island, Taiwan, western Pacific Ocean; SMNS 24757 (1), Kueishan Island, Taiwan, western Pacific Ocean.

Cynoglossus oligolepis (Bleeker, 1855): BMNH 1862.6.3.2 (1, ca. 279.5 mm SL), Jakarta, Java Indonesia, leg. P. Bleeker.

Cynoglossus puncticeps (Richardson, 1846): BMNH 1855.12.26.602 (holotype of *Cynoglossus brevis* Günther, 1862, 93.5 mm SL), Ganges, India; BMNH 1862.6.3.15 (1, ca. 102.9 mm SL), Indonesia, leg. P. Bleeker; HJ 14701 (4, 89.2–116.1 mm SL), Hong Kong, China, South China Sea.

Cynoglossus purpureomaculatus Regan, 1905: BMNH 1908.6.6.247 (holotype, 194.5 mm SL), Inland Sea, Japan.

Cynoglossus robustus Günther, 1873: BMNH 1873.7.30.61 (holotype, 293.0 mm SL), Shanghai, China; BMNH 1905.6.6.248 (holotype of *Cynoglossus brunneus* Regan, 1905, ca. 176.8 mm SL), Inland Sea, Japan.

Cynoglossus roulei Wu, 1932: BMNH 1924.12.15.64 (1, 253.5 mm SL), Amoy, China.

Cynoglossus sealarki Regan, 1908: BMNH 1908.3.23.153 (lectotype), Saya de Malha Bank; BMNH 1908.3.23.154–156 (3 paralectotypes), Saya de Malha Bank.

Cynoglossus semilaevis Günther, 1873: BMNH 1898.2.28.9 (1, 405.0 mm SL), Liao-hu, China.

Cynoglossus senegalensis (Kaup, 1858): MNHN B.2671 (1 syntype, ca. 270 mm SL), Dakar, Senegal; MNHN 1999-049 (1 syntype, ca. 535 mm SL), Dakar, Senegal; BMNH 1949.4.30.3 (1), Badougbe, Togo; MNHN 1949-0022 (holotype of *Cynoglossus senegalensis simulator* Chabanaud, 1949, ca. 386 mm SL), Dakar, Senegal.

Cynoglossus sinusarabici (Chabanaud, 1931): BMNH 1938.10.7.1 (1 syntype, 100.5 mm SL), Great Bitter Lake, Suez Canal, Egypt; HJ 13176 (81.4 mm SL), Gaza, Mediterranean Sea; HJ 13672 (2, 85.7–91.3 mm SL), Massawa, Eritrea, Red Sea; HJ 20073 (4, 109.7–116.2 mm SL), Jaffo, Israel, Mediterranean Sea; HJ 20553 (1, 81.4), Hertzeliya, Israel, Mediterranean Sea; MNHN 1967-0601 (3 syntypes, 88.1–98.3 mm SL), Gulf of Suez, Egypt; MNHN 1967-0602 (5 syntypes, 98.2–120.0 mm SL), Gulf of Suez, Egypt; MNHN 1967-0603 (2 syntypes, 88.6–90.6 mm SL), Gulf of Suez, Egypt.

Cynoglossus trigrammus Günther, 1862: BMNH 1855.9.19.1215 (lectotype, 180.1 mm SL), China; BMNH 1851.12.27.169 (1 paralectotype), China.

Cynoglossus trulla (Cantor, 1849): BMNH 1862.11.1.225 (1), Borneo, Indonesia; BMNH 1933.7.31.28–29 (2), Singapore.

Cynoglossus waandersii (Bleeker, 1854): SMNS 3754 (1), Singapore.

Cynoglossus xiphoideus Günther, 1862: BMNH 1859.7.1.52 (lectotype), Thailand; BMNH 1859.7.1.53 (1 paralectotype), Thailand; BMNH 1898.4.2.130–134 (5, 159.3–238.2 mm SL), Mae Nam Chao Phraya River, Thailand.

Cynoglossus zanzibarensis Norman, 1939: BMNH 1939.5.24.1813 (holotype, 144.6 mm SL), Zanzibar, Tanzania; BMNH 1939.5.24.1810–11 1814 (2 paratypes, 143.4–165.0 mm SL), Zanzibar, Tanzania; BMNH 1939.5.24.1812 and 1814 (2 paratypes, 120.0–142.7 mm SL), Zanzibar, Tanzania.

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References

- Chabanaud, P. (1951) Sur divers *Cynoglossus* de la région Indo-Pacifique. *Annals and Magazine of Natural History*, (Ser. 12), 4 (39, 26), 268–273.
- Eschmeyer, W.N., Fricke, R. & van der Laan, R. (Eds.) (2017) *Catalog of Fishes*, electronic version (3 January 2017). San Francisco, CA (California Academy of Sciences). Available at <http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp> (last accessed 26 January 2017).
- Fowler, H.W. (1956) *Fishes of the Red Sea and southern Arabia. Volume 1. Branchiostomida to Polynemida*. Weizmann Science Press of Israel, Jerusalem, Israel, 240 pp.
- Fricke, R. (1988) *Systematik und historische Zoogeographie der Callionymidae (Teleostei) des Indischen Ozeans*. Inaugural-Dissertation, Freiburg im Breisgau, Albert-Ludwigs-Universität, 612 pp.
- Fricke, R. (Ed.) (2017) *References in the Catalog of Fishes*, electronic version (3 January 2017). San Francisco, CA (California Academy of Sciences). Available at <http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp> (last accessed 26 January 2017).
- Fricke, R. & Eschmeyer, W.N. (2017) *A guide to fish collections in the Catalog of Fishes*, electronic version (3 January 2017). San Francisco, CA (California Academy of Sciences). Available at <http://researcharchive.calacademy.org/research/ichthyology/catalog/collections.asp> (last accessed 26 January 2017).
- Fricke, R. & Golani, D. (2013) *Callionymus profundus* n. sp., a new species of dragonet from the Gulf of Aqaba (Gulf of Eilat), Red Sea (Teleostei: Callionymidae). *Stuttgarter Beiträge zur Naturkunde A, N.S.* 6, 277–285.
- Fricke, R., Golani, D. & Appelbaum-Golani, B. (2014) *Evoxymetopon moricheni*, a new cutlassfish from the northern Red Sea (Teleostei: Trichiuridae). *Ichthyological Research*, 61 (3), 293–297. [First published online without volume number, p. 1–4]
- Fricke, R., Golani, D. & Appelbaum-Golani, B. (2015) *Suculentophichthus nasus*, a new genus and new species of snake eel from the northern Gulf of Aqaba, Red Sea (Teleostei: Ophichthidae). *Journal of the Ocean Science Foundation*, 16, 56–66.
- Golani, D. & Bogorodsky, S.V. (2010) The fishes of the Red Sea – reappraisal and updated checklist. *Zootaxa*, 2463, 1–135.
- Golani, D., Fricke, R. & Tikochinski, Y. (2013) *Sillago suezensis*, a new whiting from the northern Red Sea, and status of *Sillago erythraea* Cuvier (Teleostei: Sillaginidae). *Journal of Natural History*, 2013, 1–16 [Electronic version. Printed version appeared in 2014, v. 48 (nos. 7–8), 413–428.]
- Goren, M. & Dor, M. (1994) *An updated checklist of the fishes of the Red Sea*. CLOFRES II. The Israel Academy of Sciences and Humanities, Jerusalem, Israel, xii+120 pp.
- Gruvel, A. & Chabanaud, P. (1937) Missions A. Gruvel dans le canal de Suez. II. Poissons. *Mémoires de l'Institut d'Égypte, Nouvelle Série*, 35, 1–30.
- Hibino, Y., Kimura, S. & Golani, D. (2014) A new ophichthid species from the Red Sea of the genus *Mixomyrophis*, formerly known as Atlantic genus. *Ichthyological Research*, 62, 184–188. [First published online, p. 1–5]
- Ho, H.-C., Lin, C.-C., Ju, Y.-M., Wang, S.-I., Shao, K.-T. & Chang, C.-W. (2009) Specimen catalog of the National Museum of Marine Biology and Aquarium transferred from Tunghai University. (I) Order Pleuronectiformes. *Platax*, 6, 1–16.
- Hubbs, C.L. & Lagler, K.F. (1947) Fishes of the Great Lakes Region. *Bulletin Cranbrook Institute of Science, Bloomfield Hills, Michigan*, 26, vi+186 pp.

- Kovačić, M., Bogorodsky, S.V. (2014) A new species of *Heteroleotris* (Perciformes: Gobiidae) from the Red Sea. *Zootaxa*, 3764(4), 474–481.
- Krupp, F. (1987) Tiefenwasser- und Tiefseefische aus dem Roten Meer. XV. The occurrence of *Cynoglossus acutirostris* Norman 1939 in the Red Sea. *Senckenbergiana Maritima*, 19, 249–259.
- Larson, H.K., Williams, R.S. & Hammer, M.P. (2013) An annotated checklist of the fishes of the Northern Territory, Australia. *Zootaxa*, 3696(1), 1–293.
- Li, S.-Z. & Wang, H.-M. (1995) *Fauna Sinica. Osteichthyes. Pleuronectiformes*. Science Press, Beijing, China, vii + 433 pp. [In Chinese, English summary]
- Menon, A.G.K. (1977) A systematic monograph of the tongue soles of the genus *Cynoglossus* Hamilton-Buchanan (Pisces: Cynoglossidae). *Smithsonian Contributions in Zoology*, 238, i–iv + 1–129, pls. 1–21.
- Munroe, T.A. (2001) Cynoglossidae. Tonguesoles. In: Carpenter, K.E. & Niem, V.H. (Eds), *Species identification guide for fishery purposes. The living marine resources of the western central Pacific. Bony fishes part 4 (Labridae to Latimeriidae), estuarine crocodiles, sea turtles, sea snakes and marine mammals. Volume 6*. FAO, Rome, Italy, pp. 3890–3901.
- Munroe, T.A. & Kong, X.-Y. (2016) Resolving uncertainties regarding the nomenclature and status of the tongue soles, *Paraplagusia dollfusi* Chabanaud, 1931 and “*Cynoglossus (Trulla) dollfusi* (Chabanaud, 1937)” (Teleostei: Pleuronectiformes: Cynoglossidae). *Proceedings of the Biological Society of Washington*, 129, 10–23. [Published online as ‘issue in progress’]
- Randall, J.E. & Victor, B.C. (2015) Descriptions of thirty-four new species of the fish genus *Pempheris* (Perciformes: Pempheridae), with a key to the species of the western Indian Ocean. *Journal of the Ocean Science Foundation*, 18, 1–77.
- van der Laan, R., Eschmeyer, W.N. & Fricke, R. (2014) Family-group names of recent fishes. *Zootaxa*, 3883(2), 1–230.
- Wang, Z.-M., Munroe, T.A. & Kong, X.-Y. (2016) A new species of tongue sole (Pisces: Pleuronectiformes: Cynoglossidae: *Cynoglossus*) from coastal waters of the South China Sea. *Proceedings of the Biological Society of Washington*, 129, 129–143.
- Wyrtki, K. (1971) *Oceanographic atlas of the International Indian Ocean Expedition*. National Science Foundation, Washington (DC), USA, xii+531 pp.
- Yokogawa, K., Endo, H. & Sakaji, H. (2008) *Cynoglossus ochiaii*, a new tongue sole from Japan (Pleuronectiformes: Cynoglossidae). *Bulletin of the National Museum of Natural Sciences A*, Supplement 2, 115–127.