

Cynoglossus westraliensis, a new species of tonguesole from Western Australia (Teleostei: Cynoglossidae)

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Abstract

The Western Australian deep-water tonguesole *Cynoglossus westraliensis* n. sp. is described from off North West Cape, Western Australia, based on two specimens collected at a depth of 250 metres. The new species is characterised within the *Cynoglossus carpenteri* species group by the snout relatively long, bluntly rounded; head length 21-25% of SL, snout length 9.3-11.6% of SL (43.4-46.5% of HL); eyes not contiguous; corner of mouth nearer to posterior edge of opercle than to tip of snout; ocular side with 3 lateral lines, midlateral-line scales 111-115, scale rows between midlateral and dorsolateral lines 20, blind side without lateral lines; ctenoid scales on ocular side, cycloid scales on blind side; dorsal-fin-rays 120-126; anal-fin rays 105-106; caudal-fin rays 8; gill chamber and peritoneum black. A key to the species of the *Cynoglossus carpenteri* species-group is presented.

Keywords: Tonguesole, Cynoglossidae, Western Australia, New species, Identification key, Distribution.

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Introduction

Tonguesoles of the family Cynoglossidae are small to medium sized benthic fishes, which are common in marine waters from tidal pools 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 characterised by the presence of 2-3 lateral lines on the ocular 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 ocular side; 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) and *C. maccullochi* Norman 1926 were reinstated as valid species by authors (e.g. Li and Wang 1995: 375; Johnson 1999: 753), *C. ochiaii* was described from Japan and the East China Sea by Yokogawa et al. (2008), *C. nanhaiensis* from the South China Sea coast of China (Wang et al. 2016), *C. crepida* from the northern Red Sea (Fricke et al. 2017), and *C. yokomaru* from the East China Sea and Yellow Sea (Naito and Endo 2019). *Paraplagusia dollfusi* Chabanaud 1931 and *C. cleopatridis* Chabanaud 1949 were recently redefined by Munroe and Kong (2016). The genus *Cynoglossus* thus comprises 55 valid species; it is distributed in the Indo-West Pacific and the eastern Atlantic.

The *Cynoglossus carpenteri* species group was characterised by Menon (1977: 82 as species complex) as having 3 lateral lines on the ocular side, none on the blind side, two nostrils on ocular side, the snout long and pointed, with the angle of mouth situated nearer to branchial opening than to tip of 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, *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. *Cynoglossus acutirostris* was subsequently recorded from the central Red Sea (Krupp 1987), and *C. suyeni* from Taiwan and northern Australia (Ho et al. 2009, Larson et al. 2013). *Cynoglossus crepida* Fricke, Golani & Appelbaum-Golani 2017 was described from 440 m depth in the Gulf of Aqaba, northern Red Sea (Fricke et al. 2017), adding to a total of 5 species in the *Cynoglossus carpenteri* species group.

During a study of deep water fishes of Western Australia, two specimens of the *Cynoglossus carpenteri*

species group were collected at 250 m depth of the North West Cape. These specimens turned out to belong to an undescribed species, which is described in the present paper.

Material and Methods

The holotype and paratype are deposited in the fish collection of the Western Australian Museum, Welshpool, Western Australia (WAM). Abbreviations of repositories follow Fricke & Eschmeyer (2019). Biometrical counts and measurements follow Hubbs and Lagler (1947), descriptive methods follow Menon (1977) and Krupp (1987); the genus and species classification follows Fricke et al. (2019), family classification follows Laan et al. (2014); the references follow Fricke (2019). The standard length is abbreviated SL, the head length is abbreviated HL. Scale rows between midlateral and dorsolateral lines are counted at level of 30th scale behind origin of midlateral line.

Comparative materials (genus *Cynoglossus*): *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, which is invalid as the holotype was subsequently found), Gulf of Aden. — BMNH 2016.5.1.2 (1 paratype), Gulf of Aden. — MNHN 1939-0268 (1 paratype, ca. 195.3 mm SL), Gulf of Aden. — SMF 17376 (1), Red Sea. — SMF 17377 (2), Red Sea. — SMF 19907 (1), Red Sea. — SMF 32041 (4), Red Sea.

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. — WAM P.33173-004 (1), Western Australia, Jurien Bay. — WAM P.33816-001 (1), Western Australia, Jurien Bay.

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 crepida Fricke, Golani & Appelbaum-Golani 2017: HJ 18063 (holotype), Gulf of Aqaba, Israel.

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 dollfusi (Chabanaud 1931): HJ 11389 (2), Red Sea, Gulf of Suez, Egypt, El Bilaiyim.

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), Tokei (Tokyo?), Japan. — BMNH 1858.4.15.95 (1 paralectotype), Tokei (Tokyo?), 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. — HJ 20554 (1, 135.7 mm SL), Hong Kong, China, South China Sea. — SMNS 12517 (2), Phetchaburi, Thailand, South China Sea. — SMNS 23771 (1), Singapore. — WAM P.33975-015 (3), Indonesia, West Papua, Pisang Bay.

Cynoglossus lachneri Menon 1977: SMF 368 (1), Eritrea, Massaua. — SMF 15437 (1), Seychelles, La Digue.

— SMF 28567 (1), India, Nicobar Islands, Castle Bay.

Cynoglossus lida (Bleeker 1851): BMNH 1919.9.12.50 (1, 149.5 mm SL), Durban, KwaZulu-Natal, South Africa. — WAM P.33708-002 (1), Indonesia, West Papua, Raja Ampat Islands.

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. — SMF 790 (1), India, Mumbai. — SMF 28811 (2), Indonesia, Sumatra Barat, north of Airbangis.

Cynoglossus maculipinnis Rendahl 1921: WAM P.31838-001 (1), Dampier Archipelago, Western Australia. — WAM P.31841-003 (1), Dampier Archipelago, Western Australia. — WAM P.31846-004 (1), Dampier Archipelago, Western Australia. — WAM P.31848-003 (1), Dampier Archipelago, Western Australia. — WAM P.31849-002 (1), Dampier Archipelago, Western Australia. — WAM P.31853-008 (1), Dampier Archipelago, Western Australia. — WAM P.31856-004 (1), Dampier Archipelago, Western Australia. — WAM P.31861-005 (1), Dampier Archipelago, Western Australia. — WAM P.31863-003 (1), Dampier Archipelago, Western Australia. — WAM P.32169-014 (2), Western Australia, Quondong Point north of Broome.

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): HUI 14764 (1, 142.5 mm SL), Hong Kong, China, South China Sea. — MNHN 0000-0174 (1 syntype of *Areliia 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 ogilbyi Norman 1926: WAM P.33909-001 (1), North Kimberley, Western Australia, 13.85048213°S 127.2886759°E - 13.85244789°S 127.2876071°E, 44.7-45.2 m depth (**new record** for Western Australia).

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; HUI 14701 (4, 89.2-116.1 mm SL), Hong Kong, China, South China Sea.

Cynoglossus purpleomaculatus 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. — HUI 13176 (81.4 mm SL), Gaza, Mediterranean Sea. — HUI 13672 (2, 85.7-91.3 mm SL), Massawa, Eritrea, Red Sea. — HUI 20073 (4, 109.7-116.2 mm SL), Jaffo, Israel, Mediterranean Sea. — HUI 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), 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.

Results

Systematic ichthyology

The present paper follows the classifications provided by Nelson et al. (2016) and Laan et al. (2014):

Superclass Gnathostomata

Subclass Actinopterygii

Subclass Neopterygii

Division Teleostei

Order Pleuronectiformes

Family Cynoglossidae Jordan 1888

Genus *Cynoglossus* Hamilton 1822

Cynoglossus westraliensis new species

(Figs. 1-2, Tables 1-2)

Common name: Western Australian deep-water tonguesole

Holotype: WAM P.31802-008, 210.8 mm SL, Western Australia, off North West Cape, 21°28'01"S 114°06'04"E, 250 m depth, mud bottom, leg. AIMS, 13 Mar. 2001.

Table 1. *Cynoglossus westraliensis* new species, holotype, WAM P.31802-008, 210.8 mm SL, and paratype, WAM P.31801-002, 1 specimen, both from Western Australia, off North West Cape. Measurements and proportions.

	WAM P.31802-008, holotype		WAM P.31801-002 (1 paratype)	
	Measurement (mm)	Percentage of SL	Measurement (mm)	Percentage of SL
Standard length	210.8	--	186.6	--
Head length	45.4	21.5	46.7	25.0
Maximum body depth	51.7	24.5	56.2	30.1
Snout length	19.7	9.3	21.7	11.6
Mouth cleft to end of opercle	21.2	10.1	21.7	11.6
Tip of snout to inside corner of mouth cleft	25.6	12.1	26.6	14.2
Horizontal eye diameter (both eye diameters equal)	4.5	2.1	4.3	2.3
Interorbital width	1.2	0.6	1.6	0.9



Figure 1. *Cynoglossus westraliensis* new species, WAM P.31802-008, holotype, 210.8 mm SL, Western Australia, off North West Cape: Ocular side. Photograph by M. Allen.



Figure 2. *Cynoglossus westraliensis* new species, WAM P.31802-008, holotype, 210.8 mm SL, Western Australia, off North West Cape: Blind side. Photograph by M. Allen.

Paratype: WAM P.31801-002, 1, 186.6 mm SL, Western Australia, off North West Cape, 21°26'25''S 114°08'17''E, 250 m depth, mud bottom, leg. AIMS, 13 Mar. 2001.

Diagnosis: Snout relatively long, bluntly rounded; head length 21.5% of SL, snout length 9.3-11.6% of SL (43.4-46.5% of HL); eyes not contiguous; corner of mouth nearer to posterior edge of opercle than to tip of snout; ocular side with 3 lateral lines, midlateral-line scales 111-115, scale rows between midlateral and dorsolateral lines 20, blind side without lateral lines; ctenoid scales on ocular side, cycloid scales on blind side; dorsal-fin-rays 120-126; anal-fin rays 105-106; caudal-fin rays 8; gill chamber and peritoneum black.

Table 2. Comparison of the species in the *Cynoglossus carpenteri* species group. Character states different from *C. westraliensis* n. sp. are printed in bold face.

	<i>C. westraliensis</i>	<i>C. crepida</i>	<i>C. crepida</i>	<i>C. carpenteri</i>	<i>C. marleyi</i>	<i>C. suyeni</i>
Head length (% SL)	21-25	25	26-38	28-34	18-21	19-23
Snout length (% SL)	9-11	10	11-22	9-13	8-15	15-24
Snout	bluntly rounded	bluntly rounded	acutely pointed	slightly pointed	rounded	rounded
Eyes	not contiguous	not contiguous	not contiguous	not contiguous	not	contiguous
Midlateral-line scales	111-115	104	94-112	75-96	112-113	102-126
Scales between orsolateral and midlateral lines	20	17	16-21	15-19	18-19	19-22
Scales on ocular side	ctenoid	ctenoid	ctenoid	ctenoid	ctenoid	ctenoid
Scales on blind side	cycloid	ctenoid	ctenoid	cycloid	ctenoid	ctenoid
Dorsal-fin rays	120-126	115	117-129	101-110	126-127	115-126
Anal-fin rays	105-106	103	98-108	80-89	105-107	92-105
Caudal-fin rays	8	8	7-10	10	10	10
Vertebrae	8 + 42	8 + 47	9 + 49-50	9 + 39-46	9 + 53	9 + 48-52
Gill chamber	black	black	black	black	black	light
Peritoneum	black	black	light	light	light	light
Depth range (m)	250	440	220-1,400	124-421	55-274	216-316

Description: Proportions are given in Table 1. Body lanceolate, snout relatively long, bluntly rounded. Eyes close together but not contiguous, situated on left side of body, the migratory eye situated in advance of the fixed eye. Eyes partly covered with scales. Anterior nostril on ocular side tubular, situated in front of fixed eye; posterior nostril a simple slit in the interorbital region. Corner of mouth nearer to posterior edge of opercle than to tip of snout. Rostral hook short, its posterior margin reaching to level of lower eye; mouth cleft reaches to level of posterior margin of lower eye. Lips smooth. Middle part of opercle truncate, notched. Ocular side with three lateral lines, blind side without lateral lines. Scales on ocular side ctenoid, on blind side cycloid. Midlateral-line scales 115 (ca. 111). Dorsolateral line running from behind head to upper caudal peduncle, scales ca. 122; ventrolateral line running from belly to lower caudal peduncle, scales ca. 120. Scale rows between midlateral and dorsolateral lines 20 (20), between midlateral and ventrolateral lines 18 (19).

Dorsal-fin rays 120 (126). Anal-fin rays 105 (106). Dorsal and anal fins confluent with caudal fin. Pectoral fins missing. Pelvic fin present on blind side, connected to anal fin. Caudal-fin rays 8 (8). Vertebrae 8 + 42.

Colour in life: The holotype was described as beige and white, the paratype as beige and silver.

Colour in preservative: (Figs. 1, 2) Head and body on both sides light brown, edges of scales slightly darker; gill chamber and peritoneum black; dorsal and anal fins yellowish, distally dark grey, caudal fin blackish.

Distribution: (Fig. 3) Known only from the type locality off North West Cape, Western Australia.

Etymology: The name *westraliensis* refers to the type locality in Western Australia. The name is applied as an adjective, with a masculine ending when in genus *Cynoglossus*.

Comparison: The new species is a member of the *Cynoglossus carpenteri* species group, as it has 3 lateral lines on the ocular side of the body, none on the blind side, two nostrils on ocular side, the snout long and bluntly rounded, 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 ocular side, and small scales, with the scale count between midlateral and dorsolateral lines 20. *Cynoglossus westraliensis* n. sp. is compared with the other species of the group in Tab. 2 (see also below for a key to the species in the group); it differs from all other species in the group except *C. crepida* by its black peritoneum (light in the other species), and from all other species except *C. carpenteri* by its cycloid scales on the blind side (other species

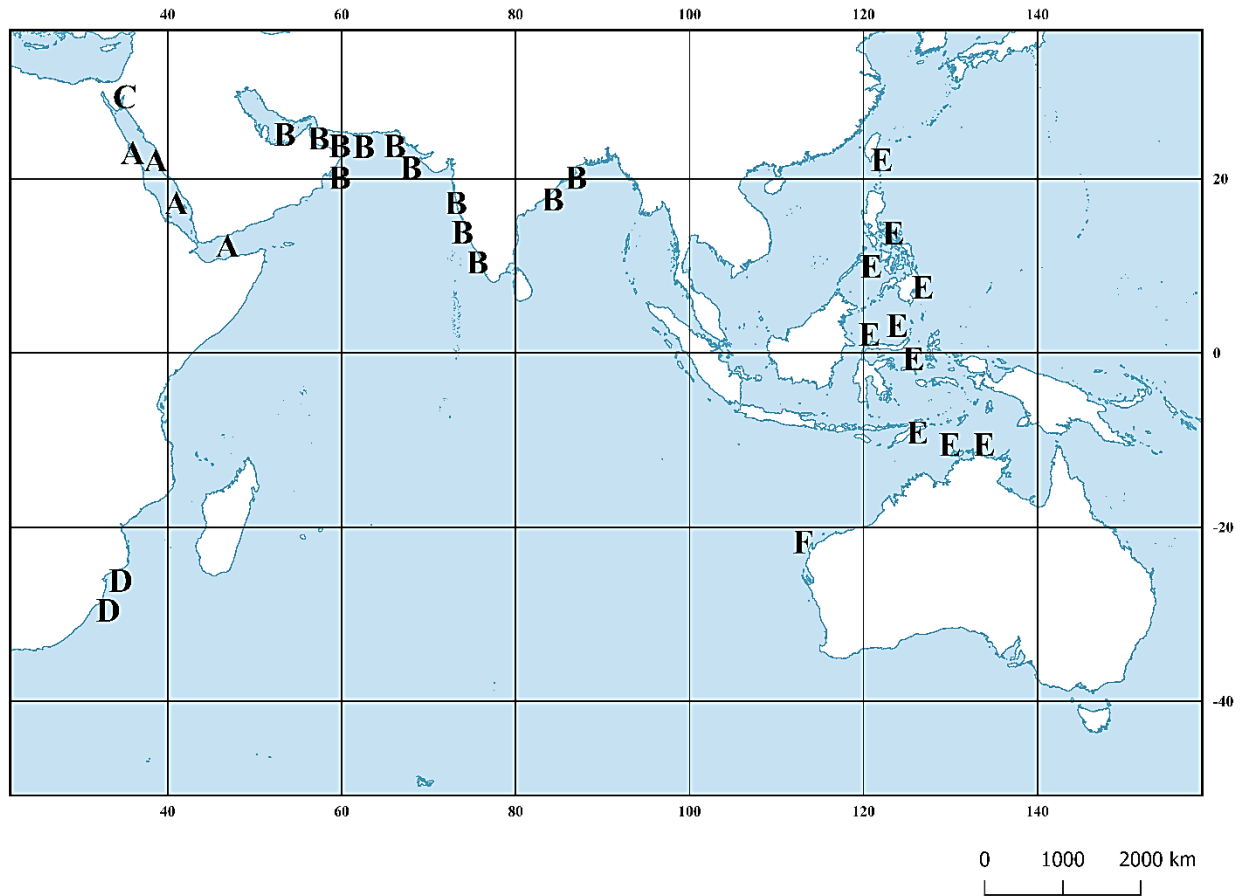


Figure 3. Geographical distribution of long-snouted species of *Cynoglossus* in the Red Sea and Indo-West Pacific. (A) *Cynoglossus acutirostris* Norman 1939, (B) *C. carpenteri* Alcock 1889, (C) *C. crepida* Fricke, Golani & Appelbaum-Golani 2017, (D) *C. marleyi* Regan 1921, (E) *C. suyeni* Fowler 1934, (F) *C. westraliensis* new species. The species's distribution follows the specimens examined in the present paper, and literature references.

with ctenoid scales). The new species is also distinguished from *C. acutirostris* by its bluntly rounded snout (versus acutely pointed in *C. acutirostris*), 8 + 42 vertebrae (versus 9 + 49-50 in *C. acutirostris*), and head length 21-25% of SL (versus 26-38%); from *C. carpenteri* by its bluntly rounded snout (versus slightly pointed in *C. carpenteri*), 120-126 dorsal-fin rays (versus 101-110), 105-106 anal-fin rays (versus 80-89), and caudal-fin rays 8 (versus 10); from *C. crepida* by its 111-115 midlateral-line scales (versus 104 in *C. crepida*), and 20 scales between the dorsolateral and midlateral lines (versus 17); from *C. marleyi* by its 8 caudal-fin rays (versus 10 in *C. marleyi*), and 8 + 42 vertebrae (versus 9 + 53); and from *C. suyeni* by the eyes which are not contiguous (versus contiguous in *C. suyeni*), 8 caudal-fin rays (versus 10), 8 + 42 vertebrae (versus 9 + 48-52), snout length 9-11% of SL (versus 15-24%), and a black gill chamber (versus light).

Remarks: This is an interesting finding of a deep water, long snouted cynoglossid fish from off Western Australia. This is the second species in this group known from Australia, besides *C. suyeni* which has been found off Northern Territory. The *Cynoglossus carpenteri* species group is mainly distributed in the tropical Indian Ocean and the adjacent western Pacific (Fig. 3); it now comprises 6 species. The snout morphology of the group is found to be somewhat variable; the snout is always elongate, but may be pointed or bluntly rounded. *Cynoglossus westraliensis* n. sp. is apparently endemic to the Pilbara region of Western Australia. Hoese et al. (2006) calculated 1078 species of fishes endemic to Australia (24% of the total number of species); Western Australia has the highest proportion of Australian endemic species, with 57% of the Australian endemic species found in the state.

Concerning the cynoglossid fish fauna of Australia, 10 species of *Cynoglossus*, 4 species of *Paraplagusia* and 2 species of *Symphurus* were reported by Hoese and Bray (2006). *Cynoglossus westraliensis* n. sp. and another undescribed species of the genus may be added to the list as well, so the following 17 species can be confirmed to occur in Australia: *Cynoglossus bilineatus* (Lacepède 1802); *C. broadhursti* Waite 1905; *C. heterolepis* Weber 1910; *C. kopsii* (Bleeker 1851); *C. maccullochi* Norman 1926; *C. macrophthalmus* Norman 1926; *C. maculipinnis* Rendahl 1921; *C. ogilbyi* Norman 1926; *C. puncticeps* (Richardson 1846); *C. suyeni* Fowler 1934; *C. westraliensis* n. sp.; *Paraplagusia bilineata* (Bloch 1787); *P. blochii* (Bleeker 1851); *P. longirostris* Chapleau, Renaud & Kailola 1991; *P. sinerama* Chapleau & Renaud 1993; *Symphurus australis* McCulloch 1907; *S. microrhynchus* (Weber 1913). Six species, or 35.3% of the total species, are endemic to Australia: *C. broadhursti*, *C. maccullochi*, *C. macrophthalmus*, *C. ogilbyi*, *C. westraliensis*, *S. australis*. Among those endemics, only *C. westraliensis* is endemic to Western Australia, equalling 5.9% of the Australian cynoglossid species. The 11 Australian species of *Cynoglossus* represent 19.6% of the global number of species in the genus; the five Australian endemics 8.9%, and the single Western Australian endemic 1.8% of the global species.

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

- 1a. Cycloid scales on blind side 2
 1b. Ctenoid scales on blind side 3
 2a. Peritoneum light; dorsal-fin rays 101-110; anal-fin rays 80-89; midlateral-line scales 75-96
 *Cynoglossus carpenteri* Alcock 1889
 2b. Peritoneum black; dorsal-fin rays 120-126; anal-fin rays 105-106; midlateral-line scales 111-115
 *Cynoglossus westraliensis* new species
 3a. Eyes contiguous *Cynoglossus suyeni* Fowler 1934
 3b. Eyes not contiguous 4
 4a. Snout acutely pointed; head length 26-38% of SL *Cynoglossus acutirostris* Norman 1939
 4b. Snout rounded; head length 18-25% of SL 5
 5a. Peritoneum light; caudal-fin rays 10; vertebrae 9+53 *Cynoglossus marleyi* Regan 1921
 5b. Peritoneum black; caudal-fin rays 8; vertebrae 8+42 ... *Cynoglossus crepida* Fricke, Golani & Appelbaum-Golani 2017

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