

## *Cynoglossus quadriocellatus*, a new species of tonguesole from Western Australia (Teleostei: Cynoglossidae)

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### Abstract

The Ocellated tonguesole *Cynoglossus quadriocellatus* n. sp. is described from off Exmouth Gulf and Dampier Archipelago, Western Australia, eastern Indian Ocean, based on specimens collected at depths of 1-48 metres. The new species is characterised within the *Cynoglossus ogilbyi* species group by the snout bluntly rounded; head length 19-28% of SL, snout length 4-8% of SL; eyes not contiguous; nostrils 2; rostral hook not extending to below eye; lateral lines on eyed side three, on blind side one; mid-lateral line scales 73-88; scales between dorsal and mid-lateral lines 11-14; scales on both eyed and blind sides ctenoid; dorsal-fin rays 96-112; anal-fin rays 88-101; caudal-fin rays 10; vertebrae 8 + 40-44; two ocelli on tail. A key to the species of the *Cynoglossus ogilbyi* species-group is presented, and variation within the group is discussed. Other species in the group include *C. broadhursti* Waite 1905, *C. maccullochi* Norman 1926, *C. ogilbyi* Norman 1926, *C. macrophthalmus* Norman 1926, *C. maculipinnis* Rendahl 1921. *Cynoglossus maccullochi* and *C. ogilbyi* are recorded from Western Australia for the first time.

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

**Zoobank:** [urn:lsid:zoobank.org:pub:DDBCFCB0A-C9E6-447A-BAB2-D2FD3579F29A](https://zoobank.org/pub/DDBCFCB0A-C9E6-447A-BAB2-D2FD3579F29A)

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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 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; it was revised by Menon (1977) who distinguished 49 valid species in 17 species complexes arranged in 4 species groups. Subsequently, *C. 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), *C. westraliensis* from Western Australia (Fricke 2019), and *C. yokomaru* from the East China Sea and Yellow Sea (Naito & Endo 2019). *Paraplagusia dollfusi* Chabanaud 1931 and *C. cleopatridis* Chabanaud 1949 were recently redefined by Munroe and Kong (2016). The genus *Cynoglossus* thus comprises 56 valid species; it is distributed in the Indo-West Pacific and the eastern Atlantic.

The *Cynoglossus ogilbyi* species complex was characterised by Menon (1977: 49) as having contiguous or closely situated eyes with a narrow interorbital space, two or three lateral lines on the eyed side, the dorsolateral line extending full extent or interrupted, and large scales, the interlinear scale count being 8 or 11 to 14; usually cycloid scales on the blind side. Menon (1977) included three Australian species, *C. broadhursti* Waite 1905, *C. maculipinnis* Rendahl 1921, and *C. ogilbyi* Norman 1926. In addition, he synonymized *C. maccullochi* Norman 1926 with *C. maculipinnis*, and distinguished a separate *C. macrophthalmus* species complex with *C. macrophthalmus* Norman 1926 as the single included species, characterized by having a single nostril, but otherwise not distinct from the *C. ogilbyi* species complex.

During a study of the flatfishes of Western Australia, several specimens of an unusual species of *Cynoglossus* were discovered in the collection of the Western Australian Museum. They turned out to belong to an undescribed species in the *C. ogilbyi* species complex, which is described in the present paper.

## Material and Methods

The holotype and paratypes are deposited in the fish collections of the Western Australian Museum (WAM). Abbreviations of repositories follow Fricke and Eschmeyer (2020); they include the following: AMS (The Australian Museum, Sydney); BMNH (The Natural History Museum, London); HJ (Hebrew University of Jerusalem); MNHN (Muséum National d'Histoire Naturelle, Paris); SMF (Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt am Main); SMNS (Staatliches Museum für Naturkunde Stuttgart); WAM (Western Australian Museum, Perth). 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. (2020); the references follow Fricke (2020). The standard length is abbreviated SL; the head length is abbreviated HL. In the new species description, data of the holotype are given first, followed by those of the paratypes, in parentheses.

## Results

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

Superclass Gnathostomata

Class Actinopterygii

Subclass Neopterygii

Division Teleostei

Order Pleuronectiformes

Family Cynoglossidae Jordan 1888

Genus *Cynoglossus* Hamilton 1822

***Cynoglossus quadriocellatus* new species**

(Figs. 1-3, Tabs 1-2)

**Common name:** Ocellated tonguesole

**Holotype:** WAM P.31854-004, 152.3 mm SL, Western Australia, Dampier Archipelago, 5.8 nautical miles northeast of Rosemary Island, 20°24.01'S, 116°41.28'E - 20°24.16'S, 116°40.83'E, 34 m depth, R.J. Slack-Smith & M. Hewitt, 17 July 1999.

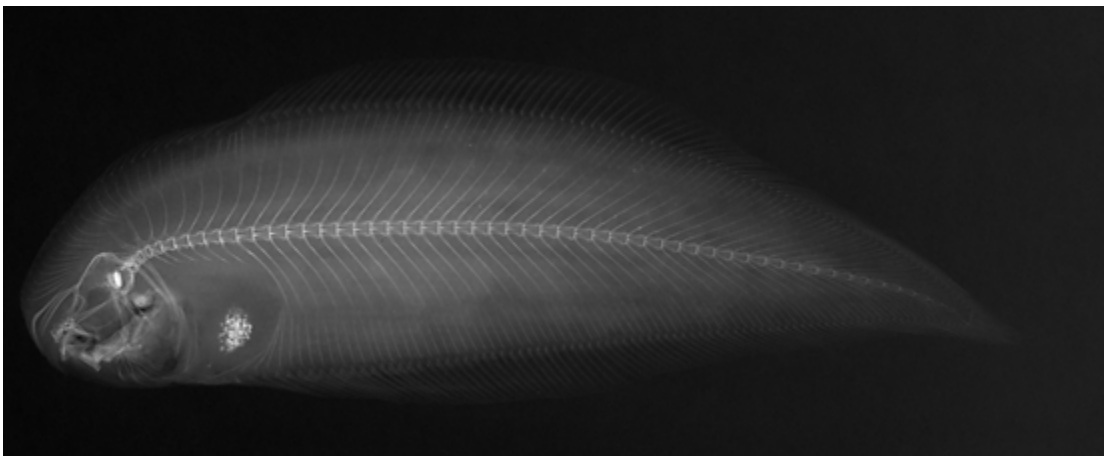
**Paratypes:** WAM P.31013-041, 1, 24.3 mm SL, Western Australia, Exmouth Gulf, northwest tip of Burnside Island, 22°06'S, 114°31'E, rockpool with rock, algae and rubble, J.B. Hutchins et al., 16 Aug 1995. — WAM P.31841-012, 1, 103.8 mm SL, Western Australia, Dampier Archipelago, 5.9 nautical miles northwest of Delambre Island, 20°20.75'S, 117°01.16'E - 20°20.19'S, 117°01.18'E, 32-34 m depth, R.J. Slack-Smith & M. Hewitt, 15 July 1999. — WAM P.31843-005, 1, 85.2 mm SL, Western Australia, Dampier Archipelago, 3.3 nautical miles southwest of south point of Legendre Island, 20°27.27'S, 118°54.20'E - 20°29.91'S, 116°54.48'E, 9.5 m depth, R.J. Slack-Smith & M. Hewitt, 16 July 1999. — WAM P.31857-010, 1, 96.1 mm SL, Western Australia, Dampier Archipelago, Malus Island, 1.2 nautical miles northwest of Courtenay Head light, 20°29.49'S, 116°40.61'E - 20°29.66'S, 116°41.01'E, 11.5 m depth, R.J. Slack-Smith & M. Hewitt, 18 July 1999. — WAM P.32569-001, 1, 165.3 mm SL, Western Australia, 6.91 west-southwest of Point Quobba, 24°31.391'S, 113°21.858'E - 24°30.830'S, 113°21.870'E, 47.9-48.4 m depth, S.M. Morrison, 26 Sept. 2003. — WAM P.33816.002, 1, 190.7 mm SL, Western Australia, Jurien Bay, 30°21.26'S, 114°53.44'E - 30°21.23'S,



**Figure 1.** *Cynoglossus quadriocellatus* new species, holotype, WAM P.31854-004, 152.3 mm SL, Western Australia, Dampier Archipelago, 5.8 nautical miles northeast of Rosemary Island. Eyed side. Photograph by M. Allen (WAM).



**Figure 2.** *Cynoglossus quadriocellatus* new species, holotype, WAM P.31854-004, 152.3 mm SL, Western Australia, Dampier Archipelago, 5.8 nautical miles northeast of Rosemary Island. Blind side. Photograph by M. Allen (WAM).



**Figure 3.** *Cynoglossus quadriocellatus* new species, holotype, WAM P.31854-004, 152.3 mm SL, Western Australia, Dampier Archipelago, 5.8 nautical miles northeast of Rosemary Island. X-ray. Photograph by M. Allen (WAM).

114°53.14'E, 43-45 m depth, A. Sampey, 24 Apr. 2007. — WAM P.34058-003, 1, 168.3 mm SL, Western Australia, Pilbara, 3.5 km east of North Muiron Island, 21.6391°S, 114.4308°E, 17.5 m depth, R/V Naturaliste, 11 June 2013. — WAM P.34128-001, 1, 133.7 mm SL, 20.6714°S, 115.4089°E, 20 m depth, R/V Naturaliste, 17 June 2013.

**Additional material:** WAM P.31835.003, 1, 173.0 mm SL, Western Australia, Dampier Archipelago, Cape Legendre, 38 m depth, S.M. Slack-Smith & M. Hewitt, 14 July 1999. — WAM P.31850.002, 1, 121.6 mm SL,

**Table 1.** *Cynoglossus quadriocellatus* new species, Holotype and paratypes, Western Australia. (BD maximum body depth; CL mouth cleft to opercle; ED horizontal eye diameter; HL head length; IW interorbital width; SL standard length; SnL snout length; TI tip of snout to inside corner of mouth cleft. Measurements in mm).

Measurements (mm)	Holotype	Paratypes							
	WAM P.31854-004	WAM P.31013-041	WAM P.31841-012	WAM P.31843-005	WAM P.31854-004	WAM P.32569-001	WAM P.32627.002	WAM P.33816.002	WAM P.34058.003
SL	152.3	96.1	103.8	85.2	24.3	168.3	190.7	165.3	133.7
HL	29.2	20.7	23.7	18.2	7.0	34.7	34.5	30.5	26.7
BD	44.7	27.2	31.8	24.4	6.9	48.4	52.6	47.0	38.9
SnL	6.5	6.9	7.8	5.0	1.9	8.5	8.7	8.2	8.2
CL	16.9	10.2	12.2	10.1	3.2	19.9	19.7	20.2	15.4
TI	13.4	10.6	12.1	8.5	2.4	12.8	15.6	11.6	10.3
ED	3.0	3.0	3.6	2.2	0.5	3.9	4.3	3.7	3.7
IW	1.4	0.8	0.8	1.3	0.2	1.8	1.8	1.2	0.9

**Table 2.** *Cynoglossus quadriocellatus* new species, holotype and paratypes, Western Australia. Proportions (percentage of SL). BD maximum body depth; CL mouth cleft to opercle; ED horizontal eye diameter; HL head length; IW interorbital width; SL standard length; SnL snout length; TI tip of snout to inside corner of mouth cleft.

Measurements (mm)	Holotype	Paratypes							
	WAM P.31854-004	WAM P.31013-041	WAM P.31841-012	WAM P.31843-005	WAM P.31854-004	WAM P.32569-001	WAM P.32627.002	WAM P.33816.002	WAM P.34058.003
HL	19.2	21.5	22.8	21.4	28.8	20.6	18.1	18.4	20.0
BD	29.3	28.3	30.6	28.6	28.4	28.8	27.6	28.4	29.1
SnL	4.3	7.2	7.5	5.9	7.8	5.1	4.6	5.9	6.1
CL	11.1	10.6	11.8	11.8	13.2	11.8	10.3	12.2	11.5
TI	8.8	11.0	11.7	10.0	9.9	7.6	8.2	7.0	7.7
ED	2.0	3.1	2.6	2.6	2.1	2.3	2.3	2.2	2.8
IW	0.9	0.8	0.8	1.5	0.8	1.1	0.9	0.6	0.7

**Table 3.** Comparison of the species in the *Cynoglossus ogilbyi* species complex. Character states different from *C. quadriocellatus* n. sp. are printed in bold face.

	<i>C. quadriocellatus</i> n.sp.	<i>C. broadhursti</i>	<i>C. maccullochi</i>	<i>C. macrophthalmus</i>	<i>C. maculipinnis</i>	<i>C. ogilbyi</i>
Head length (% SL)	19-28	17-21	20-23	23-25	19-25	19-23
Snout length (% SL)	4-8	4-7	6-8	5-7	5-7	6-7
Snout	bluntly rounded	<b>rounded</b>	<b>rounded</b>	<b>rounded</b>	<b>rounded</b>	bluntly rounded
Eyes	not contiguous	not contiguous	not contiguous	not contiguous	not contiguous	not contiguous
Nostrils	2	2	2	1	2	2
Rostral hook extending to	not below eye	not below eye	not below eye	below eye	not below eye	not below eye
Lateral lines/eyed s.)	3	2	3	3	2	2
Lateral lines/blind s.)	1	<b>none</b>	<b>none</b>	<b>none</b>	<b>none</b>	<b>none</b>
Mid-lateral-line scales	73-88	72-77	78	100-103	7-90	66-70
Scales between dorsal and midlateral lines	11-14	12-14	13	17-18	13-15	7-8
Scales/eyed side	ctenoid	ctenoid	ctenoid	ctenoid	ctenoid	ctenoid
Scales/blind side	ctenoid	<b>cycloid</b>	ctenoid	ctenoid	ctenoid	<b>cycloid</b>
Dorsal-fin rays	96-112	105-110	106	111	100-106	111-115
Anal-fin rays	88-101	<b>83-87</b>	80	90	<b>78-85</b>	95-97
Caudal-fin rays	10	10	8	10	10	8
Vertebrae	8 + 40-44	<b>9 + 42-45</b>	unknown	<b>9 + 44</b>	8 + 39-40	<b>9 + 47</b>
Ocelli on tail	2	<b>none</b>	<b>none</b>	<b>none</b>	<b>none</b>	<b>none</b>
Distribution	WA	WA,SA	WA,QLD	<b>QLD</b>	WA,NT,QLD	WA,QLD
Depth range (m)	1-48	45	17-29	37	39	41-45

Western Australia, Dampier Archipelago, Legendre Island, 37-38 m depth, S.M. Slack-Smith & M. Hewitt, 17 July 1999. — WAM P.32506-001, 1, 167.5 mm SL, Western Australia, Carnarvon, 14.6-14.5 m depth, S.M. Morrison, 2 July 2003. — WAM P.32568.002, 1, 139.8 mm SL, Western Australia, Point Quobba, 34.1-32.3 m depth, S.M. Morrison, 26 Sept. 2003. — WAM P.32576.002, 1, 146.7 mm SL, Western Australia, Shark Bay, Cape Peron flats, 17.1-17.6 m depth, S.M. Morrison, 27 Sept. 2003. — WAM P.32627.002, 1, 118.3 mm SL,

Western Australia, Exmouth Gulf, Learmonth, 22°15.292'S, 114°13.69'E - 22°15.827'S, 114°13.655'E, 9.9-9.8 m depth, S.M. Morrison, 11 Mar. 2004.

**Diagnosis:** Snout bluntly rounded; head length 19-28% of SL, snout length 4-8% of SL; eyes not contiguous; nostrils 2; rostral hook not extending to below eye; lateral lines on eyed side three, on blind side one; mid-lateral line scales 73-88; scales between dorsal and mid-lateral lines 11-14; scales on both eyed and blind sides ctenoid; dorsal-fin rays 96-112; anal-fin rays 88-101; caudal-fin rays 10; vertebrae 8 + 40-44; two ocelli on tail.

**Description:** Proportions are given in Tables 1-2. Body lanceolate, snout short, 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 eyed side tubular, situated in front of fixed eye; posterior nostril situated in the anterior interorbital region, posterior part covered by a triangular dermal flap. Corner of mouth distinctly nearer to tip of snout than to posterior edge of opercle. Rostral hook short, its posterior margin not reaching to level of fixed eye; mouth cleft reaches to below posterior margin of lower eye. Lips smooth. Middle part of opercle truncate. Eyed side with three lateral lines which are interconnected in postorbital region, blind side with a single, median lateral line. Scales on both sides ctenoid. Median lateral-line scales on eyed side 88 (71-84). Scale rows between mid-lateral and dorsolateral lines (counted at level of 30<sup>th</sup> scale behind origin of mid-lateral line) 12 (11-14), between mid-lateral and ventrolateral lines 13 (12-15).

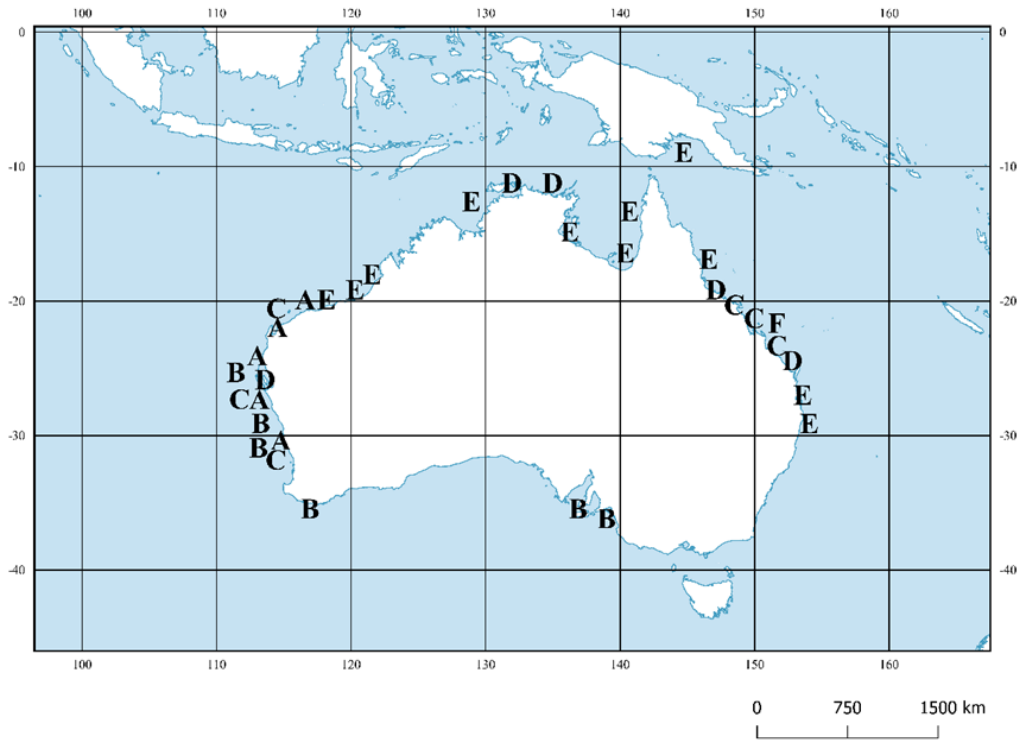
Dorsal-fin rays 96 (100-112). Anal-fin rays 92 (88-101). Dorsal and anal rays with broad folds on fins rays on blind side. Dorsal and anal fins confluent with caudal fin. Pectoral fins missing. Pelvic fin present on blind side, connected to anal fin. Caudal-fin rays 10 (10). Vertebrae 8 + 44 (8 + 40-41) (Fig. 3).

**Colour in preservative:** (Figs. 1, 2) Head and body on both sides light brown, eyed side covered with numerous brown spots except for tip of snout which is pale yellowish; scales on eyed side may be distally bordered by dark pigment; eyes black; belly on eyed side with two large black ocelli, posterior part of tail with a large black ocellus each at dorsal and ventral margin; gill chamber and peritoneum pale; dorsal and anal fins pale, basally with elongate brown bars, distally with two rows of brown spots, getting gradually darker towards the caudal fin.

**Distribution:** (Fig. 4) Western Australia: Shark Bay, Exmouth Gulf and Dampier Archipelago. Found in shallow water from tidal pools to 48 m depth.

**Etymology:** *Quadri-* (Latin) means four, *ocellatus* (Latin) means ocellate. The name is applied as an adjective, with a masculine ending when in *Cynoglossus*.

**Comparison:** The new species is a member of the *Cynoglossus ogilbyi* species group, as it has closely situated eyes with a narrow interorbital space, three lateral lines on the eyed side, the dorsolateral line extending full extent, and large scales, the interlinear scale count being 11 to 14; caudal-fin rays 10. *Cynoglossus quadriocellatus* n. sp. is compared with the other species of the group in Table 3 (see also below for a key to the species in the group); it differs from all other species in the group in the presence of one lateral line on the blind side, and two ocelli on the tail; it also differs from *C. broadhursti* in its bluntly rounded snout (versus rounded in *C. broadhursti*), lateral lines on the eyed side 3 (versus 2), ctenoid scales on the blind side (versus cycloid), anal-fin rays 88-101 (versus 83-87), and trunk vertebrae 8 (versus 9); it is distinguished from *C. maccullochi* by its bluntly rounded snout (versus rounded in *C. maccullochi*), anal-fin rays 88-101 (versus 80), and caudal-fin rays 10 (versus 8); it differs from *C. macrophthalmus* in its bluntly rounded snout (versus rounded in *C. macrophthalmus*), two nostrils (versus a single nostril), rostral hook not extending to below eye (versus extending to below eye), mid-lateral line scales 73-88 (versus 100-103), scales between dorsal and mid-lateral lines 11-14 (versus 17-18), and trunk vertebrae 8 (versus 9); it is distinguished from *C. maculipinnis* by the bluntly rounded snout (versus rounded in *C. maculipinnis*), lateral lines on eyed side 3 (versus 2), and anal-fin rays 88-101 (versus 78-85); it finally differs from *C. ogilbyi* in its lateral lines on eyed side 3 (versus 2 in



**Figure 4.** Distribution of species of *Cynoglossus* in shallow water (less than 200 metres) around Australia. **A)** *Cynoglossus quadriocellatus* new species. **B)** *C. broadhursti* Waite 1905. **C)** *C. maccullochi* Norman 1926. **D)** *C. macrophthalmus* Norman 1926. **E)** *C. maculipinnis* Rendahl 1921. **F)** *C. ogilbyi* Norman 1926.

*C. ogilbyi*), mid-lateral line scales 73-88 (versus 66-70), scales between dorsal and mid-lateral lines 11-14 (versus 7-9), scales on blind side ctenoid (versus cycloid), caudal-fin rays 10 (versus 8), and trunk vertebrae 8 (versus 9).

**Remarks:** Menon (1977: 49) defined the *Cynoglossus ogilbyi* species complex for three Australian species, characterised as follows: “contiguous or closely situated eyes with a narrow interorbital space, two or three (*C. maculipinnis*) lateral lines, the dorsolateral line extending full extent or interrupted, and large scales, the interlinear scale count being 8 or 11 to 14 and usually eight rays in caudal fin and cycloid scales on the blind side.” During a reexamination of the included species (*C. broadhursti*, *C. maculipinnis* including *C. maccullochi*, *C. ogilbyi*), a different variation in these defining characters was observed from what Menon described. The eyes of all species has a narrow interorbital space, but none had contiguous eyes; two lateral lines on the eyed side were observed in *C. broadhursti*, *C. maculipinnis* and *C. ogilbyi*, three in *C. maccullochi*; the interlinear scale count was 12-14 in *C. broadhursti*, 13 in *C. maccullochi*, 13-15 in *C. maculipinnis* and 7-9 in *C. ogilbyi*; the principal caudal-fin rays were eight in *C. maccullochi* and *C. ogilbyi*, but 10 in *C. broadhursti* and *C. maculipinnis*; the scales on the blind side were cycloid in *C. broadhursti* and *C. ogilbyi*, but ctenoid in *C. maccullochi* and *C. maculipinnis*.

Menon (1977: 50) treated *C. maccullochi* Norman 1926 as a junior synonym of *C. maculipinnis* Rendahl 1921, but subsequent authors considered them as distinct species [e.g. Johnson (1999: 753); Hutchins (2001: 47) as *C. mccullochi*; Munroe (2001: 3894) as *C. mccullochi*; Hoese & Bray (2006: 1855); Wang et al. (2016: 138); Motomura et al. (2017: 228)]. Here, it can be confirmed that the two are separate; *C. maccullochi* is distinguished from *C. maculipinnis* by having 3 lateral lines on the eyed side (versus 2 in *C. maculipinnis*), and 8 caudal-fin rays (versus 10).



Examining another Australian cynoglossid species, *C. macrophthalmus* Norman 1926, I come to the conclusion that it can be also assigned to the *C. ogilbyi* species group, as it has the eyes not contiguous but close together, three lateral lines on the eyed side, although a slightly higher count of interlinear scales of 17-18, 10 caudal-fin rays, and ctenoid scales on the blind side. The presently described new species, *C. quadriocellatus* n. sp., is assigned to the *C. ogilbyi* species group, having the eyes not contiguous but close together, three lateral lines on the eyed side, interlinear scales 11-14, 10 caudal-fin rays, and ctenoid scales on the blind side. Furthermore, it is especially characterised by 2-4 ocelli (2 ocelli on the tail always present), and the presence of a lateral line on the blind side. A key to the species of the *C. ogilbyi* species group is presented below.

The holotype of the new species was chosen because it had the best preserved colour pattern among the WAM material of the species. The type locality is at the northern limit of the known distribution range. *Cynoglossus quadriocellatus* n. sp. is endemic to Western Australia, and thus the 5<sup>th</sup> species of the *C. ogilbyi* species group found in that state. It is found from Shark Bay to Dampier Archipelago, and co-occurs with *C. maccullochi*, *C. macrophthalmus* and *C. maculipinnis*. *Cynoglossus broadhursti* is are found further south, from Shark Bay southward; *C. ogilbyi* is distributed further north, from Kimberley northward. The known distribution ranges are shown in Figure 4.

#### Key to the species of the *Cynoglossus ogilbyi* species group

- 1a. Nostril single; rostral hook extending to below eye; mid-lateral scales more than 99 ... *Cynoglossus macrophthalmus* Norman 1926  
 1b. Nostrils 2; rostral hook not extending to below eye; mid-lateral scales less than 91 ..... 2  
 2a. No lateral lines on blind side; no ocelli on tail ..... 3  
 2b. One lateral line on blind side, two ocelli on tail ..... *C. quadriocellatus* n. sp.  
 3a. Snout bluntly rounded; mid-lateral line scales less than 71; scales between dorsal and midlateral lines less than 10; anal-fin rays more than 94 ..... *Cynoglossus ogilbyi* Norman 1926  
 3b. Snout rounded; mid-lateral line scales more than 71; scales between dorsal and mid-lateral lines more than 11; anal-fin rays less than 88 ..... 4  
 4a. Lateral lines on eyed side 3; caudal-fin rays 8 ..... *Cynoglossus maccullochi* Norman 1926  
 4b. Lateral lines on eyed side 2; caudal-fin rays 10 ..... 5  
 5a. Scales on blind side cycloid; mid-lateral line scales 72-77; dorsal-fin rays 105-110 ..... *Cynoglossus broadhursti* Waite 1905  
 5b. Scales on blind side ctenoid; mid-lateral line scales 77-90; dorsal-fin rays 100-106 ..... *Cynoglossus maculipinnis* Rendahl 1921

**Comparative material:** (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), 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; 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. — HJ 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): HJ 5840 (1, ca. 440 mm SL), Eilat, Israel, Gulf of Aqaba, Red Sea. — HJ 9019 (1, 395.0 mm SL), Eilat, Israel, Gulf of Aqaba, Red Sea. — HJ 9046 (1, 332.5 mm SL), Dahab, Egypt, Gulf of Aqaba, Red Sea. — HJ 9178 (1, 426.3 mm SL), Gulf of Aqaba, Red Sea. — HJ 11404

(1), Et-Tur, Egypt, Gulf of Suez, 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.I.13258-001 (1 syntype), between Fremantle and Geraldton, Western 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 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): HNJ 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), 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. — MNNH 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. — 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 maccullochi* Norman 1926: AMS E.2693 (holotype), 7-10 miles northwest of Hummocky Island, Queensland, Australia. — WAM P.25846-001 (1), Western Australia, Houtman Abrolhos, 28°24'24"S 113°44'42"E (new record for Western Australia). — WAM P.31704-001 (1), Western Australia, Shark Bay. — WAM P.32275-003 (1), Western Australia, Shark Bay. — WAM P.32276-002 (1), Western Australia, Shark Bay. — WAM P.32302-002 (1), Western Australia, Dirk Hartog Island. — WAM P.32497-001 (1), Western Australia, Shark Bay.

*Cynoglossus macrolepidotus* (Bleeker 1851): SMNS 10586 (1 paralectotype), Jakarta, Java, Indonesia.

*Cynoglossus macrophthalmus* Norman 1926: AMS E.1978 (holotype), 20 miles off Bustard Head Light, Queensland, Australia. — 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: BMNH 1933.8.14.24 (1), northwestern Australia. — 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), Beni. — 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 *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 ogilbyi* Norman 1926: AMS E.2796 (holotype), southern Queensland, Australia. — WAM P.33909-001 (1), Western Australia, North Kimberley, 13.85048213°S 127.2886759°E - 13.85244789°S 127.2876071°E, 44.7-45.2 m depth (**new record** for Western Australia). — WAM P.34715-001 (1), Western Australia, Eclipse Islands, 13°29'37.615"S 125°51'05.878"E - 13°29'35.828"S 125°51'08.352"E, 41.7-42.5 m depth.

*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 westraliensis* Fricke 2019: WAM P.31802-008 (holotype), off North-West Cape, Western Australia. — WAM P.31801-002 (1 paratype), off North-West Cape, Western Australia.

*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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