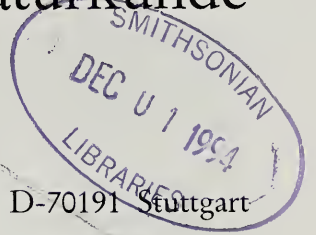


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Professor Dr. Bernhard Ziegler zum 65. Geburtstag

Tripterygiid Fishes of the Genus *Enneapterygius* from Bali, Indonesia, with Descriptions of two New Species (Teleostei: Blennioidei)

By Ronald Fricke, Stuttgart

With 10 figures

Summary

A collection of triplefins of the genus *Enneapterygius* Rüppell, 1835 from coral reefs in Bali, Indonesia resulted in three species, two of which were new to science: *Enneapterygius minutus* (Günther, 1877), *E. unimaculatus* n. sp. (characterized by 13 spines in the second dorsal fin, 9 rays in the third dorsal fin, one spine and 17–18 rays in the anal fin, 14–15 + 19 lateral line scales, the caudal fin with vertical dark streaks, the body with numerous narrow dark brown saddles, the pectoral fin base in the male with a large dark blotch, and the lower sides of the head in the male with a dark brown mask), and *E. ziegleri* n. sp. (characterized by 11–13 spines in the second dorsal fin, 7–9 rays in the third dorsal fin, one spine and 14–17 rays in the anal fin, 11–15 + 17–22 lateral line scales, two large white blotches partly surrounded with dark on the upper sides of the body, the male with a suborbital dark head mask, usually with a row of dark blotches below the posterior lateral line series, the second dorsal fin in the male usually distally blackish, and the caudal fin usually pale or with a few dark spots). The species are described. *Enneapterygius tutuilae* Jordan & Seale, 1906 is recorded from Komodo. A total of 6 species of *Enneapterygius* occur in Indonesia, for which a key is presented.

Zusammenfassung

Eine Sammlung von Dreiflossigen Schleimfischen (Tripterygiidae) der Gattung *Enneapterygius* Rüppell, 1835 aus Korallenriffen in Bali, Indonesien erbringt 3 Arten, von denen 2 der Wissenschaft unbekannt sind. Es handelt sich um *Enneapterygius minutus* (Günther, 1877), *E. unimaculatus* n. sp. (der durch 13 Stachelstrahlen in der zweiten und 9 Gliederstrahlen in der dritten Rückenflosse, einen Stachel und 17–18 Gliederstrahlen in der Afterflosse, 14–15 + 19 Seitenliniensuppen, eine vertikal gestreifte Schwanzflosse, zahlreiche schmale Sattelflecken am Rücken, einen großen dunklen Fleck auf der Brustflossenbasis des Männchens und eine dunkle Kopfmaske beim Männchen charakterisiert ist) und *E. ziegleri* n. sp. (mit 11–13 Stachelstrahlen in der zweiten und 7–9 Gliederstrahlen in der dritten Rückenflosse, einen Stachel und 14–17 Gliederstrahlen in der Afterflosse, 11–15 + 17–22 Seitenliniensuppen, zwei großen weißen, dunkel gesäumten Flecken am Rücken, einer Reihe dunkler Flecken unter dem zweiten Abschnitt der Seitenlinie, einer farblosen Schwanzflosse, einer dunklen

Kopfmusche und einer distal dunklen zweiten Rückenflosse beim Männchen). Die Arten werden abgebildet und beschrieben. *Enneapterygius tutuilae* Jordan & Seale, 1906 wird in Komodo gefunden. Insgesamt sind aus Indonesien 6 Arten der Gattung *Enneapterygius* bekannt, für die ein Bestimmungsschlüssel erstellt wird.

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1. Introduction

The blennioid family Tripterygiidae, popularly known as triplefins, is a group of small benthic fishes distributed widely in temperate and tropical seas. Many species are associated with coral reefs. The largest genus of the family in respect of the number of species and abundance in tropical waters, *Enneapterygius* Rüppell, 1835, has an Indo-West Pacific distribution. A revisionary study of the genus by the author of the present paper is in progress.

CLARK (1980) revised the Tripterygiidae of the Red Sea. HOLLEMAN (1982, 1986) reported on the species from the western Indian Ocean. Tripterygiid fishes of the Maldives Islands were revised by FRICKE & RANDALL (1992). Species of the genus *Enneapterygius* were described under the generic name *Tripterygium* (non Risso, 1826) by WEBER (1909, 1913). No species were yet recorded from Bali.

During a collecting survey in 1982 and 1983, H. LARSON of the Northern Territory Museum of Arts and Sciences (Darwin, Australia) and T. GLOERFELT-TARP (then GTZ Research Associate) collected numerous triplefins of the genus *Enneapterygius* from Sanur Beach reef, Bali. The collection included specimens of *Enneapterygius minutus* (Günther, 1877), and of two species unknown to science, which are described in the present paper.

2. Methods, materials and acknowledgments

Methods: Methods follow HOLLEMAN (1982) and HANSEN (1986), except for the system of counting caudal fin rays; for this, FRICKE (1983) is used. Proportions are given as thousands of standard length (SL). In the descriptions of new species, data for paratypes are given in parentheses.

Material: The Bali tripterygiid material is deposited in the Northern Territory Museum of Arts and Sciences, Darwin, N. T., Australia (NTM).

Acknowledgments: I would like to thank H. K. LARSON (NTM, Darwin) for sending the Bali *Enneapterygius* specimens on loan. Triplefin research was supported by a grant of the Deutsche Forschungsgemeinschaft (DFG) No. Fr 775/2-1.

3. Genus *Enneapterygius* Rüppell, 1835

Enneapterygius Rüppell, 1835: 2 (type species: *Enneapterygius pusillus* Rüppell, 1835 by monotypy). — ROSENBLATT, 1959: 173–176.

Tripterygium (non Risso, 1826): KLUNZINGER, 1871: 498.

Vauclusella Whitley, 1931: 324 (type species: *Tripterygium annulatum* Ramsay & Ogilby, 1887 by original designation).

Diagnosis

First dorsal fin with 3 spines. Anal fin with 1 spine. Lateral line divided in an anterior series of tubular pored scales, and a posterior, notched series. Head and nape naked; abdomen and pectoral fin usually naked. Body with ctenoid scales.

Remarks

Enneapterygius is the largest genus of tripterygiid fishes. It is primarily distributed in the Indo-West Pacific. Several authors referred to it as *Tripterygion* (non Risso, 1826), but this is a different Atlantic genus (see CLARK, 1980). WHITLEY (1931) described a new genus *Vauclusella* for eastern Australian forms; he distinguished it from *Enneapterygius* in having "less than 30 transverse series of scales and higher dorsal fins", but both of these characters are highly variable, overlapping, and not correlated with each other; for example, *E. pusillus* Rüppell, 1835 has 29–36 scale series and high dorsal fins, while the nominal species *E. annulatus* (Ramsay & Ogilby, 1887), synonym of *E. atrogulare* (Günther, 1873) has 32–34 scale rows and relatively high dorsal fins, and *E. ventermaculatus* Holleman, 1982 has 32–34 scale rows and low dorsal fins. As I cannot find osteological or other differences, I am treating the two genera as synonyms, with *Vauclusella* being a junior synonym of *Enneapterygius*.

Three other genera occur at Bali, though *Enneapterygius* has by far the largest number of species and individuals. *Helcogramma* McCulloch & Waite, 1918 is distinguished by its entire (not disconnected) lateral line, the naked anterior dorsal and anal fin bases, and the shape of its head and snout; *Norfolkia* Fowler, 1953 differs in its two anal fin spines, 4 spines in the first dorsal fin, and the scales on the sides of its head and pectoral fin base; *Ceratobregma* Holleman, 1987 (see FRICKE, 1991) has 2 anal fin spines, spiny scales on the head, and preorbital spines.

Around Bali, three species of *Enneapterygius* have so far been found, two of which are new to science. The following species of the genus also occur in Indonesia:

Enneapterygius fasciatus (Weber, 1909);

Enneapterygius tutuilae Jordan & Seale, 1906 (Komodo; new locality record);

Enneapterygius waigiensis (Herre, 1935).

4. Key to species of *Enneapterygius* from Indonesia

* An asterisk and bold type marks species recorded from Bali.

- 1 Anterior lateral line with 12 or less tubular pored scales 2
- Anterior lateral line with 13 or more tubular pored scales 5
- 2 First dorsal fin higher than first spine of second dorsal fin; second dorsal fin with a conspicuous distal black blotch *Enneapterygius tutuilae* Jordan & Seale, 1906
- First dorsal fin lower than first spine of second dorsal fin; second dorsal fin may be distally blackish but without a conspicuous distal black blotch 3
- 3 Anterior lateral line series with 11 or more tubular pored scales; anal fin with 1 spine and 14 or more rays (the last divided at its base) 4
- Anterior lateral line series with 10 or less tubular pored scales; anal fin with about 1 spine and 13 rays (the last divided at its base) *Enneapterygius waigiensis* (Herre, 1935)

- 4 Caudal fin with vertical dark stripes; posterior half of body densely stippled with small dark spots (rarely pale), no conspicuous white blotches or smaller dark streaks or blotches *Enneapterygius minutus* (Günther, 1877)*
- Caudal fin mostly pale, without vertical dark stripes; body dorsally with two large white blotches surrounded by dark, sides of body usually with a series of dark blotches below the posterior lateral line *Enneapterygius zieglerei* n. sp.*
- 5 Posterior lateral line series with 15 or less notched scales; anterior lateral line series with about 16 tubular pored scales; body at anal fin base with a row of about 8 black spots, but no dark streaks on anal fin *Enneapterygius fasciatus* (Weber, 1909)
- Posterior lateral line series with 16 or more notched scales; anterior lateral line series with 15 or less tubular pored scales; no black spots on body at anal fin base, anal fin with or without oblique dark streaks 6
- 6 Caudal fin mostly pale, without vertical dark stripes; body dorsally with two large white blotches surrounded by dark, sides of body usually with a series of dark blotches below the posterior lateral line *Enneapterygius zieglerei* n. sp.*
- Caudal fin with vertical dark stripes; posterior half of body densely stippled with small dark spots (rarely pale), or with numerous narrow dark saddles, but without large white blotches 7
- 7 Posterior half of body densely stippled with small dark spots (rarely plain pale), but body without saddles; lower sides of body also densely stippled with dark blotches; male without a large dark blotch on pectoral fin base *Enneapterygius minutus* (Günther, 1877)*
- Body with numerous dark brown saddles; lower sides of body whitish; male with a large dark blotch on pectoral fin base *E. unimaculatus* n. sp.*

5. Species descriptions

5.1. *Enneapterygius minutus* (Günther, 1877) (Figs. 1–2) Minute triplefin

Tripterygium minutum Günther, 1877: 211, pl. 188 D (Apia, Samoa).

Enneapterygius minutus: Jordan & Seale, 1906: 416 (Apia, Samoa).

Enneapterygius tusitalae Jordan & Seale, 1906: 416–417, fig. 97 (Apia, Samoa).

? *Enneapterygius pardochir* Jordan & Seale, 1906: 417–418, fig. 99 (Pago Pago and Apia, Samoa).

? *Enneapterygius cerasinus* Jordan & Seale, 1906: 419, fig. 100 (Apia, Samoa).

Tripterygium callionymi Weber, 1909: 147–148 (Indonesia: Lombok, Sulawesi, Celebes Sea, Saleyer, Tiur). WEBER, 1913: 546–547, figs. 116–117 (Indonesia: 9–22 m depth, coral-line bottom and coral reefs).

Enneapterygius punctulatus Herre, 1935: 432–433 (New Hebrides: Wala Island; Espiritu Santo Island; Malo Island).

Enneapterygius minutus: Herre, 1936: 396–397 (Wala Island, New Hebrides).

Material

Indonesia: NTM S. 10689–044, 2 females, 18.3–25.2 mm SL, Bali, Sanur Beach Reef, 8°40'S 115°15'E, H. LARSON, J. LARSON & T. GLOERFELT-TARP, 9 June 1982.

Diagnosis

A medium sized *Enneapterygius* with a characteristic head and body color pattern (densely spotted with dark brown on yellow background) (rarely pale), anal fin blackish (rarely pale or with a few dark blotches), dark pelvic fin, dark or striped caudal fin, striped lower half of pectoral fin, 10–13 D₂ spines, 8–9 D₃ rays, totally 15–17 A spines and rays, 14–15 pectoral fin rays, 11–14 + 18–21 lateral line scales, 30–34 + 1–2 lateral scale series, and mandibular pore formula of 2 + 1 + 2.

Counts

D₁ III; D₂ XII–XIII; D₃ vii,1; A I,xiii,1 (total 15); P₁ iii,5,vi–vii (total 14–15); P₂ I,ii; C (v),ii,9–10,ii,(v). Scale rows 31–32 + 1. Transverse scale rows 4 + 1 + 5. Lateral line scales 12–14 + 19–21. Mandibular pore formula 1–2 + 1 + 1–2.

Distribution

Indonesia: Lombok, Sulawesi, Celebes Sea, Saleyer, Tiur, Bali. Elsewhere, Western Indian Ocean to the Philippines, east to Samoa, south to northern Australia.

Remarks

Enneapterygius tusitalae Jordan & Seale, 1906, *Tripterygium callionymi* Weber, 1909 and *Enneapterygius punctulatus* Herre, 1935 are within the same range of characters. These three nominal species are therefore synonymized here. Examining larger series of the species from Queensland, tentatively identified as *Enneapterygius tusitalae*, small bleached females for the species agreed perfectly with the *Tripterygium minutum* Günther, 1877 (holotype examined), including meristics and proportions. Specimens from Samoa were checked, and were found to agree as well. Therefore, all four nominal species are synonymized, with *T. minutum* as the senior synonym, and described under the name *Enneapterygius minutum*.

The two females from Bali (NTM S. 10689–044) are unusually pale, but agree otherwise well with material from other areas. Specimens with a pale colouration were also found in collections from Australia and Samoa. The pale condition occurs after an extended formalin fixation, which may destroy the typical colouration of the species rapidly.

5.2. *Enneapterygius unimaculatus* n. sp. (Figs. 3–4)

Onespot Triplefin

Material

Total: 2 specimens.

Indonesia, Bali: **Holotype**: NTM S. 11081–021, male, 30.2 mm SL, Sanur Beach Reef, 8°40'S 115°15'E, 0–0.5 m, reef crest and surge groove in front of beach, bottom coralline rock and coralline algae, H. LARSON, 11 June 1983. – **Paratype**: NTM S. 11081–037, 1 female, 24.0 mm SL, same data as the holotype.

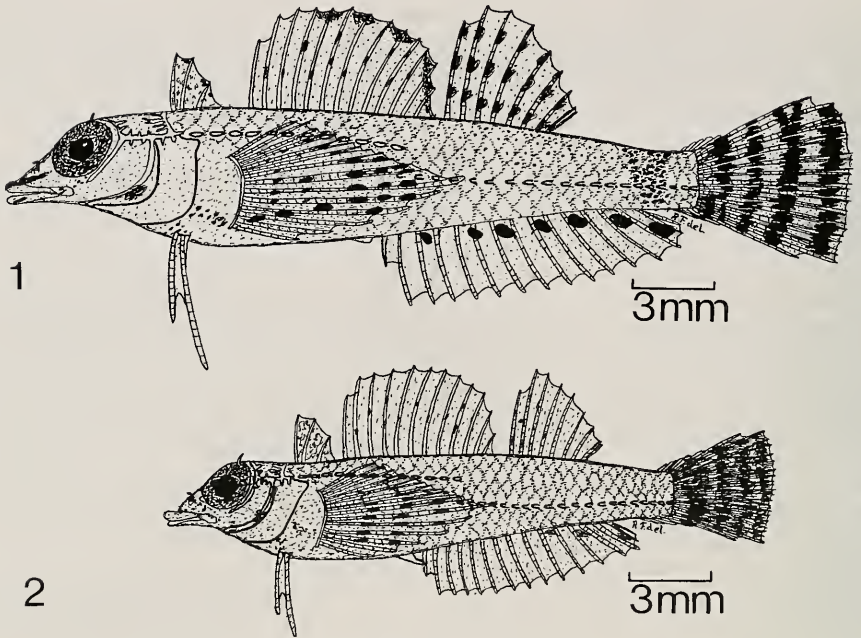
Diagnosis

A medium sized species of *Enneapterygius* with 13 spines in the second dorsal fin, 9 rays in the third dorsal fin, one spine and 17–18 rays in the anal fin, 14–15 + 19 lateral line scales, one median mandibular pore, the caudal fin with vertical dark streaks, the body with numerous narrow dark brown saddles, the body at the anal fin base without black spots, the pectoral fin base in the male with a large dark blotch, and the lower sides of the head in the male with a dark brown mask.

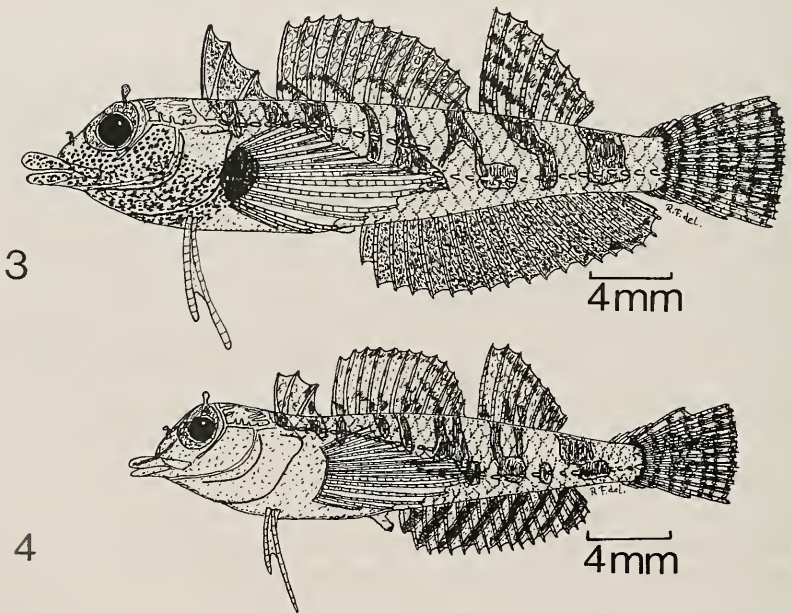
Description

D₁ III (III); D₂ XIII (XIII); D₃ viii,1 (viii,1); A I,xvii,1 (total 19) (I,xvi,1, total 18); P₁ iii,5,vii (total 15) (iii,5–6,vi–vii, total 15); P₂ I,ii (I,ii); C (vi),ii,9,ii,(v) [(vi),ii,9,ii,(v)]. Scale rows 31–32 + 1 (31 + 1). Transverse scale rows 5 + 1 + 5 (5 + 1 + 5). Lateral line scales 14–15 + 19 (14 + 19). Mandibular pore formula 3 + 1 + 3 (3 + 1 + 3).

Head length 281 (304). Eye diameter 94 (96). Supraorbital tentacle short, lobate, its length 25 (23). Interorbital distance 23 (27). Preorbital length 52 (65). Maxillary length 124 (118). Posttemporal lateral line branch nearly I-shaped, with about 5 long



Figs. 1–2. *Enneapterygius minutus* (Günther, 1877); Indonesia, Bali; pale morph, lateral view. – 1. NTM S. 10689–044, specimen 1, female, 25.2 mm SL; – 2. NTM S. 10689–042, specimen 2, female, 18.3 mm SL.



Figs. 3–4. *Enneapterygius unimaculatus* n. sp.; Indonesia, Bali; lateral view. – 3. NTM S. 11081–021, holotype, male, 30.2 mm SL; – 4. NTM S. 11081–037, paratype, female, 24.0 mm SL.

anterior branches. Body depth 218 (217). Body width 173 (137). Lateral line consisting of an anterior series of 14–15 tubular pored scales, reaching about to below second half of second dorsal fin; continuing two rows lower with a posterior series of 19 notched scales. Caudal peduncle length 145 (135). Caudal peduncle depth 89 (79).

First dorsal fin low in both sexes; first spine 122 (80), second spine 92 (81), third spine 54 (76). Predorsal (1) length 249 (260). First spine of second dorsal fin 127 (123), 5th spine 141 (140). Predorsal (2) length 364 (371). First ray of third dorsal fin 171 (159), 5th ray 121 (86). Predorsal (3) length 689 (670). Anal fin beginning below vertical through 6th–7th membrane of second dorsal fin (about under 10th–11th lateral line pore). Anal spine 55 (43); 5th anal ray 122 (102), penultimate ray 112 (75). Preanal fin length 513 (522). Pectoral fin very large, reaching about to base of 6th–7th anal fin membrane. Pectoral fin length 311 (314). Prepectoral fin length 307 (353). First ray of pelvic fin 170 (140), 2nd ray 220 (220). Prepelvic fin length 238 (252). Caudal fin length 177 (192).

Color in alcohol: Head and body brown, eye dark gray, sides of head in the male densely spotted with dark, in the female plain whitish, with a narrow preorbital dark streak. Pectoral fin base in the male with a large dark blotch. Body with 8–9 narrow oblique dark brown streaks running from the dorsal surface to the posterior lateral line. Lower sides of body whitish. First dorsal fin brown in the male, light in the female. Second dorsal fin with basal oblique dark bands, distal half in the male with white spots. Third dorsal fin with oblique dark streaks. Anal fin plain dark gray in the male, with 8 oblique dark bands in the female. Caudal fin with 6–7 narrow vertical dark bands. Pelvic and pectoral fins plain whitish.

Sexual dimorphism: Sexes differ mainly in the colouration of the head and the anal fin; the male also has a higher first dorsal fin than the female.

Etymology

"*Unus*" (Latin) means one; "*macula*" (Latin) means spot, blotch. The name refers to the characteristic single dark blotch on the pectoral fin base of the male.

Distribution

This new species is known only from the type locality in Bali, Indonesia.

Relationships

Enneapterygius unimaculatus n. sp. is similar to *E. minutus* (Günther, 1877) in its counts and in the vertical stripes on the caudal fin, but differs in the body colouration (body with numerous dark brown saddles, lower sides of body whitish in *E. unimaculatus*; posterior half of body densely stippled with small dark spots (rarely plain pale), but body without saddles, lower sides of body also densely stippled with dark blotches in *E. minutus*), and the presence or absence of a large dark blotch on the pectoral fin base of the male (present in *E. unimaculatus*; absent in *E. minutus*), and the striped anal fin in females of *E. unimaculatus* (*E. minutus*: anal fin dark, pale, or with a few dark spots). The new species differs from *E. zieglerei* n. sp. in the striped caudal fin (*E. zieglerei*: caudal fin mostly pale, without stripes), and the body colouration (*E. unimaculatus*: posterior half of body densely stippled with small dark spots (rarely pale), or with numerous narrow dark saddles, but without large white blotches; *E. zieglerei*: dorsally with two large white blotches surrounded by dark, sides of body usually with a series of dark blotches below the posterior lateral line), the

male's second dorsal fin (distally blackish in *E. zieglerei*, with whitish spots in *E. unimaculatus*), and the male's anal fin (plain blackish in *E. unimaculatus*, striped in *E. zieglerei*).

5.3. *Enneapterygius zieglerei* n. sp. (Figs. 5–10) Ziegler's Triplefin

Tripterygium (*callionymi* M. Web. var.?): WEBER, 1913: 547 (Sanana, Sula-Besi).

Material

Total: 141 specimens.

Indonesia, Bali: **Holotype**: NTM S. 10689–026, male, 25.1 mm SL, Sanur Beach Reef, 8°40'S 115°15'E, H. LARSON, J. LARSON & T. GLOERFELT-TARP, 9 June 1982. — **Paratypes**: NTM S. 10689–041–043, 41 specimens, 13.8–26.6 mm SL, same data as the holotype. — NTM S. 10695–004, 14 specimens, 22.4–31.0 mm SL, Sanur Beach Reef, reef edge, 8°40'S 115°15'E, T. GLOERFELT-TARP, 10 June 1982. — NTM S. 11081–032, 84 specimens, 18.1–27.7 mm SL, Sanur Beach Reef, 8°40'S 115°15'E, 0–0.5 m, reef crest and surge groove in front of beach, bottom coral rock and coralline algae, H. LARSON, 11 June 1983. — NTM S. 11127–007, 1 female, 24.1 mm SL, Sanur Beach Reef, 8°40'S 115°15'E, T. GLOERFELT-TARP, 1983.

Diagnosis

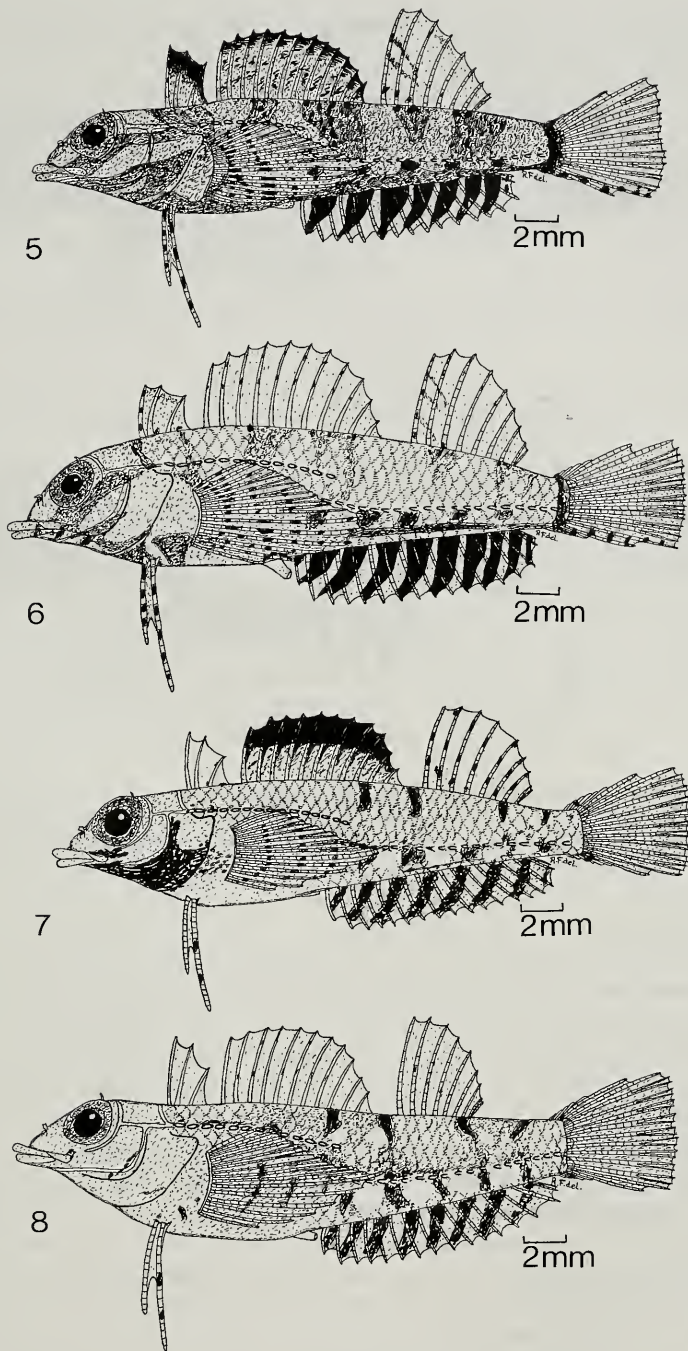
A medium sized species of *Enneapterygius* with 11–13 spines in the second dorsal fin, 7–9 rays in the third dorsal fin, one spine and 14–17 rays in the anal fin, 11–15 + 17–22 lateral line scales, one or two median mandibular pores, two large white blotches partly surrounded with dark on the upper sides of the body, the male with a suborbital dark head mask, usually with a row of dark blotches below the posterior lateral line series, occasionally with a vertical dark band on the caudal peduncle, the second dorsal fin in the male usually distally blackish, and the caudal fin usually pale or with a few dark spots.

Description

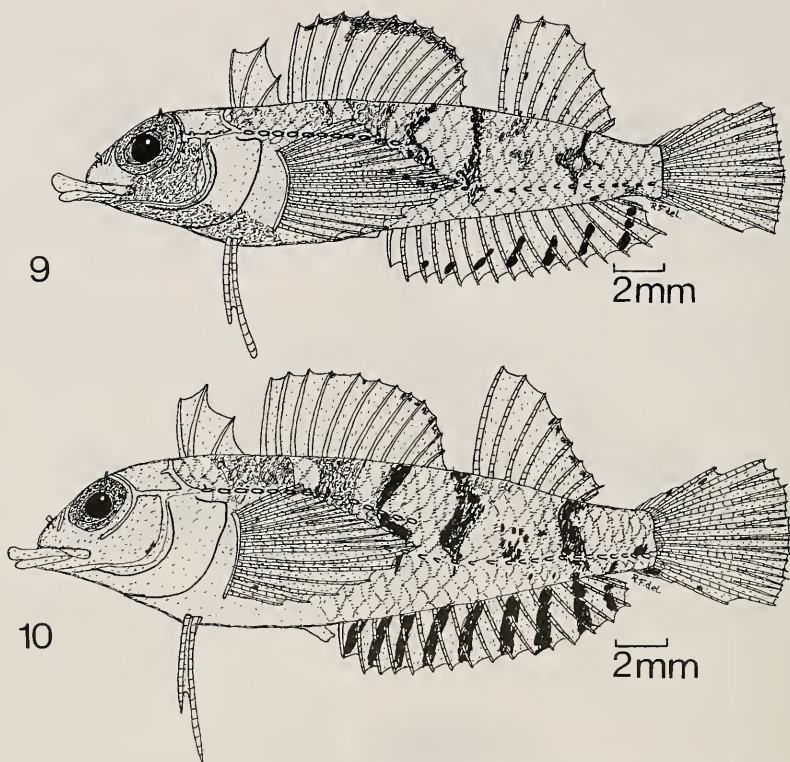
D₁ III (III); D₂ XII (XI–XIII); D₃ vii,1 (vi–viii,1); A I,xiv,1 (total 16) (I,xiii–xvi,1, total 15–18); P₁ iii,4–5,vi (total 13–14) (iii–v,3–7,v–vii, total 13–16); P₂ I,ii (I,ii); C (v),ii,9,ii,(v) [(iv–vii),ii,8–9,ii,(iv–vii)]. Scale rows 29–30 + 1 (28–33 + 1). Transverse scale rows 4 + 1 + 4 (4–5 + 1 + 4–5). Lateral line scales 10 + 20–21 (11–15 + 17–22). Mandibular pore formula 2 + 2 + 2 (2–3 + 1–2 + 2–3).

Head length 314 (267–313). Eye diameter 101 (87–115). Supraorbital tentacle small, simple, its length 4 (2–13). Interorbital distance 38 (15–42). Preorbital length 61 (47–75). Maxillary length 107 (99–141). Posttemporal lateral line branch nearly I-shaped. Body depth 223 (209–276). Body width 163 (162–226). Lateral line consisting of an anterior series of 10–15 tubular pored scales, reaching about to below middle of second dorsal fin; continuing two rows lower with a posterior series of 17–22 notched scales. Caudal peduncle length in adult males 168 (147–171), in females and small males 95–146. Caudal peduncle depth 88 (73–101). Maximum observed SL 31.0 mm.

First dorsal fin low in both sexes; first spine 123 (93–124), second spine 112 (72–128), third spine 89 (49–95). Predorsal (1) length 246 (223–279). First spine of second dorsal fin in adult males 115 (108–126), in females and small males 127–156, 5th spine 147 (139–172). Predorsal (2) length 345 (323–393). First ray of third dorsal fin 207 (128–192), 5th ray 128 (75–133). Predorsal (3) length 662 (638–761). Anal fin beginning below vertical through 6th–8th membrane of second dorsal fin



Figs. 5–8. *Enneapterygius zieglerei* n. sp.; Indonesia, Bali; lateral view. – 5–6. Dark morph. – 5. NTM S. 10689–041, paratype, male, 25.2 mm SL; – 6. NTM S. 10689–042, paratype, specimen 6, female, 26.5 mm SL. – 7–8. Medium morph. – 7. NTM S. 10689–026, holotype, male, 25.1 mm SL; – 8. NTM S. 10689–043, paratype, specimen 6, female, 26.6 mm SL.



Figs. 9–10. *Enneapterygius zieglerei* n. sp.; Indonesia, Bali; lateral view, light morph. – 9. NTM S. 11081–032, paratype, male, 23.8 mm SL; – 10. NTM S. 11081–033, paratype, specimen 6, female, 25.7 mm SL.

(about under 10th–11th lateral line pore). Anal spine 65 (38–80); 5th anal ray 94 (82–119), penultimate ray in large males 88 (60–89), in females and small males 88–122. Preanal fin length 500 (475–561). Pectoral fin reaching about to base of 4th–6th anal fin membrane. Pectoral fin length 312 (259–329). Prepectoral fin length 328 (295–348). First ray of pelvic fin 164 (142–198), 2nd ray 249 (199–260). Prepelvic fin length 242 (205–277). Caudal fin length 219 (193–233).

Color in alcohol: Head and body whitish, yellowish or light brown, sides of head pale or with about three dark brown streaks, with a dark brown or blackish mask in males, eye dark gray. Back usually with two white blotches partly surrounded with dark brown, often each blotch with 2–3 blackish spots below the dorsal fin bases. Dark streaks surrounding the white blotches below the 9th membrane of the second dorsal fin, one below the interspace between second and third dorsal fin, one below the penultimate third dorsal fin ray, and one on the dorsal side of the caudal peduncle. Lower sides of body with a row of 5–6 brown blotches below the posterior lateral line series, often with a dark brown streak below. Caudal peduncle occasionally with a vertical dark brown streak.

First dorsal fin distally blackish in males, colorless in females, with a few brown spots. Second and third dorsal fins colorless, rays with a few brown spots, distally

blackish in males. Anal fin with 7–10 oblique black bands. Lower margin of caudal fin spotted with black, or caudal fin plain whitish. Pelvic fin rays usually spotted with dark brown, pectoral fin usually with vertical rows of faint dark brown spots.

Sexual dimorphism: Sexes differ in the overall darker color pattern of the male (especially distally dark first and second dorsal fins, darker body, and dark head mask). Males have a longer caudal peduncle than females, and a slightly longer first ray of the second dorsal fin and penultimate anal fin ray. Females have a more robust body than males.

Etymology

This new species is named in honor of Prof. Dr. BERNHARD ZIEGLER, Stuttgart.

Distribution

Enneapterygius zieglerei n. sp. is known only from Bali and Sulawesi, Indonesia. The species was collected on coralline ground in very shallow water of 0–0.5 m depth.

Relationships

Enneapterygius zieglerei n. sp. is similar to *E. minutus* (Günther, 1877) in its counts, but differs in the caudal fin colouration (mostly pale in *E. zieglerei*, with vertical dark stripes in *E. minutus*) and the body color pattern (body dorsally with two large white blotches surrounded by dark, sides of body usually with a series of dark blotches below the posterior lateral line in *E. zieglerei*; posterior half of body densely stippled with small dark spots (rarely pale), or with numerous narrow dark saddles, but without large white blotches in *E. minutus*). The new species was compared with *E. unimaculatus* in the "relationships" section of that species.

Remarks

This species is highly variable in its colouration. Usually, the dorsal sides of the body are bearing two white blotches surrounded by two dark streaks each, and there is a dark head mask below the eye in the male. The anal fin is usually covered with oblique blackish bands. However, these marks differ in intensity, and the dorsal fins, pectoral, pelvic and caudal fins may be spotted or plain pale. A row of dark blotches below the posterior lateral line series may be present or absent, and there may be an additional dark streak below. The extent of distal dark colouration on the male's second dorsal fin varies. Three typical color morphs of the species are shown in Figs. 5–10, each with male and female.

As the three color morphs co-occur, as there is some overlap between the morphs, and as the three morphs are morphologically identical, they are treated as belonging to the same species. Similar variation in the color pattern is found in *Enneapterygius hemimelas* (Kner & Steindachner, 1866) around northern Australia and in the south-western Pacific.

WEBER (1913) mentioned a so-called variation of *Tripterygium callionymi* (now *Enneapterygius minutus*) from Sulawesi with 12 spines in the second dorsal fin, 8 rays in the third dorsal fin, 18 anal fin rays, 30 total lateral scale rows, a row of dark blotches below the lateral line, two white blotches on the back surrounded with brown, caudal fin hyaline, anal fin with 8 oblique brown bands. As WEBER had a single specimen only, he was not sure about its identity: "Vielleicht liegt hier eine neue, mit *Tr. callionymi* nah verwandte Art vor. Nach dem einzigen mir vorliegenden, verblichene Exemplar, wage ich dies aber nicht zu entscheiden." The cha-

racters stated by WEBER agree well with the present, new species, which is clearly separate from *E. minutus* (synonym *E. callionymi*).

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