

***Stegastes trinidadensis* n. sp. (Pisces: Pomacentridae), a new damselfish from Trindade Island, off Brazil**

João Luiz Gasparini¹, Rodrigo L. de Moura² & Ivan Sazima³

ABSTRACT: *Stegastes trinidadensis*, a new damselfish of the *fuscus-dorsopunicans-variabilis* complex, is described from Trindade Island, volcanic formation about 1.160 km off the Brazilian coast. The new species differs from its congeners of this complex by the following combination of characters: 11½ scale rows from 4th lateral line scale to anus; absence of a reduced opercular scale immediately anterior to opercular spine; region between nape and second dorsal fin vivid yellow in juveniles. This is the third species of damselfish described from Brazilian oceanic islands.

Key words: Brazilian reef fishes, Pomacentridae, *Stegastes*, Trindade Island, Brazil, western South Atlantic

RESUMO: *Stegastes trinidadensis* sp. n. (Pisces: Pomacentridae), uma nova espécie de peixe-donzela da Ilha da Trindade, Brasil. *Stegastes trinidadensis*, uma nova espécie de *Stegastes* do complexo *fuscus-dorsopunicans-variabilis*, é descrita da Ilha da Trindade, formação vulcânica distante cerca de 1.160 km da costa do Brasil. A nova espécie diferencia-se das outras espécies do gênero pela seguinte combinação de caracteres: 11½ escamas na série da quarta escama da linha lateral até o ânus; ausência da escama reduzida no opérculo imediatamente anterior ao espinho opercular; região da nuca até a segunda nadadeira dorsal amarelo vívido nos juvenis. Esta é a terceira espécie de *Stegastes* descrita de ilhas oceânicas brasileiras.

Palavras-Chave: Peixes recifais brasileiros, Pomacentridae, *Stegastes*, Ilha da Trindade, Brasil, Atlântico Sul ocidental

Introduction

The genus *Stegastes* Jenys, 1842, is diagnosed by the following combination of characters: margin of suborbital and preopercle with distinct serrations; notch between pre and suborbital absent; teeth of jaws uniserial, relatively long and close-set; suborbital scaled; snout scaled to nostrils; body depth 1.6-2.3 in SL; dorsal fin spines 12-14 (Allen, 1991).

1 - Departamento de Biologia, Universidade Federal do Espírito Santo, Av. Marechal Campos 1468, 29040-090 Vitória, Espírito Santo, Brazil. E-mail: gaspa.vix@zaz.com.br

2 - Museu de Zoologia, Universidade de São Paulo, Caixa Postal 7172, 01064-970 São Paulo, São Paulo, Brazil

3 - Departamento de Zoologia, Universidade Estadual de Campinas, Caixa Postal 6109, 13083-970 Campinas, São Paulo, Brazil

Thirty-three species of this genus are known from the Tropical Indo-Pacific and Atlantic oceans (Allen, 1991). Two species of *Stegastes* of the *fuscus-dorsopunicans-variabilis* complex (*sensu* Greenfield & Woods, 1974) are known from oceanic islands in the western South Atlantic (Allen, 1991): *Stegastes rocasensis* (Emery, 1972) from Atol das Rocas and Fernando de Noronha Archipelago, and *S. sanctipauli* Lubbock & Edwards, 1981 from Saint Paul's Rocks (Emery, 1972; Lubbock & Edwards, 1981). These two species are regarded as closely related to each other and to *Stegastes variabilis* (Castelnau, 1855) (Emery, 1972; Lubbock & Edwards, 1981).

A new species of *Stegastes* was collected during a recent ichthyological survey on Trindade Island ($20^{\circ}30'S$, $29^{\circ}19'W$), a volcanic formation about 1.160 km off the Brazilian coast (Figure 1). Previous ichthyological surveys at Trindade Island recorded *Eupomacentrus caudalis* (Miranda-Ribeiro, 1919) and *Pomacentrus fuscus* (Carvalho, 1950), both undoubtedly referring to the new species described herein, the only known *Stegastes* from this island.

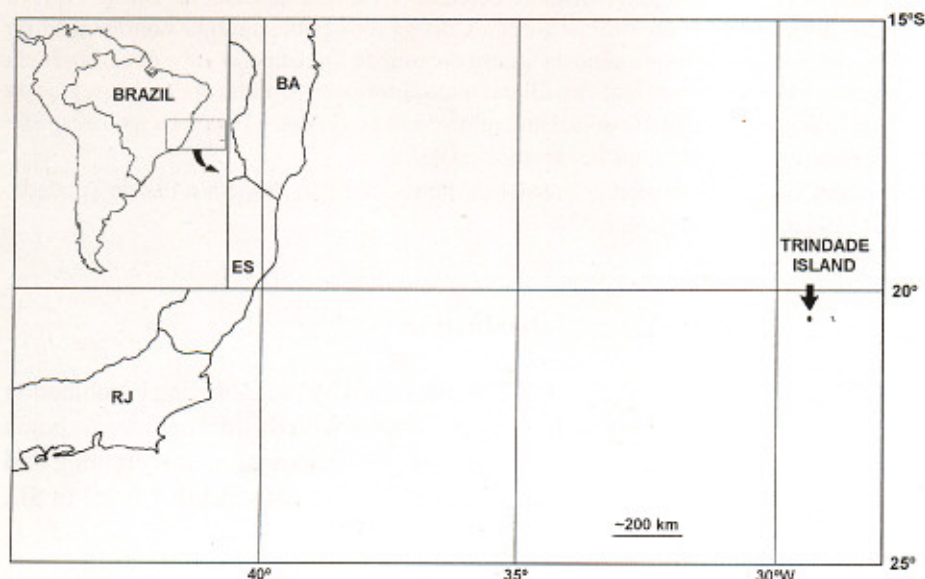


Figure 1. Map of the western South Atlantic and Brazilian coast. Arrow indicates Trindade Island ($20^{\circ}30'S$, $29^{\circ}19'W$), a volcanic formation about 1.160 km off Brazil. Abbreviations: BA, ES and RJ: States of Bahia, Esp rito Santo and Rio de Janeiro, respectively.

Methods

Measurements and counts follow Emery & Burgess (1974). In the description, range of counts and measurements is presented first, followed by values for the holotype in parentheses. Color names follow Kernerup & Wanscher (1961). Preserved color is that after fixation in formalin and storage in ethanol. Vertebrae number was obtained from a radiograph of the holotype. Institutional abbreviations follow Leviton *et al.*, (1985), except UFPB (Departamento de Sistemática e Ecologia, Universidade Federal da Paraíba) and MBML (Coleção Zoológica, Museu de Biologia Professor Mello Leitão). Type specimens are in the fish collections of MZUSP, ZUEC, and UFPB.

Stegastes trinidadensis n. sp.

(Figure 2 and 3; Table 1)

Eupomacentrus caudalis - Miranda-Ribeiro, 1919: 175, Ilha da Trindade (material examined: MNRJ 2048).

Pomacentrus fuscus - Carvalho, 1950: 99, Ilha da Trindade (listed).

Holotype: MZUSP 51243, 89.3 mm SL, Enseada dos Portugueses, Ilha da Trindade (20° 30'S, 29° 19'W), off State of Espírito Santo, Brazil, coll. J. L. Gasparini, 19.vii.1995.

Paratypes: MZUSP 51245 (1), 40.5 mm SL, same locality as holotype, coll. J. L. Gasparini and S. R. Floeter, 08.ix.1995; MZUSP 51246 (1), 52.7 mm SL, same locality and collector as MZUSP 51245; MZUSP 51429 (10), 27.3-31.0 mm SL, 20.ii.1997; MZUSP 51430 (1), 33.5 mm SL, 20.ii.1997; MZUSP 51432 (4), 24.7-30.6 mm SL, 19.ii.1997; ZUEC 2688 (1), 73.3 mm SL; ZUEC 2689 (1), 56.2 mm SL, 19.vii.1995; ZUEC 3031, (1), 48.0 mm SL, 24.ix.1995; ZUEC 3155 (1), 56.6 mm SL, 20.ii.1997; ZUEC 3156 (1), 60.3 mm SL, 20.ii.1997 and UFPB 3547 (1), 29.0 mm SL, 19.ii.1997, all from the same locality and collector as holotype.

Diagnosis

A medium-sized species of *Stegastes* of the *fuscus-dorsopunicans-variabilis* complex (*sensu* Greenfield & Woods, 1974), distinguished from its congeners of this complex by the following combination of characters: 11½ scale rows from 4th lateral line scale to anus; absence of a reduced opercular scale immediately anterior to opercular spine; region between nape and second dorsal fin vivid yellow in juveniles.

Description

Dorsal fin XI (1 paratype)-XII (XII), 14-17 (17), anal fin II, 13-15 (14), pectoral fin 19-21 (20), pelvic fin I, 5 (5), principal caudal rays 16-18 (16), gill rakers on lower limb including rudiments 7-10 (9). Tubular lateral line scales 19-21 (20), lateral scale series from lateral line origin to caudal fin base 23-24 (23), transverse scale series from 4th lateral line scale to anus 11½; margin of opercle smooth, suborbital and preopercle distinctly serrate.

Body moderately deep, forehead high and rounded; mouth terminal and slightly oblique, maxilla reaching posteriorly to a vertical through anterior part of orbit (Figure 2). Morphometric proportions of the holotype and eight paratypes are presented in Table 1.

Scales finely ctenoid. Head and body completely scaled, except for chin, lip, snout tip and the region between eye and upper lip. Four rows of scales on cheek and two major rows on operculum. Lateral line arched beneath dorsal fin, ending approximately below base of 5th soft dorsal ray. Teeth close-set, spatulate, in a single row at front of jaws. About 26-30 teeth on premaxilla and 30-34 teeth on dentary. Nostril with a low fleshy rim.

Coloration in alcohol: Adults with head and body brownish gray, bearing brownish bars on flanks; black spot on pectoral fin base and on upper caudal peduncle; dorsal and anal fins brownish gray; pectoral, pelvic, and caudal fins paler (Figure 2). Juveniles (smaller than 40.5 mm) grayish yellow on cheeks, flanks, belly, and caudal peduncle; a distinctive pale (bright yellow in life) area on dorsum, from nape to second dorsal fin; ocellus covering the base of one or two last dorsal spines and three first soft rays.

Coloration in life: Body olive brown lighter on belly, head with scattered deep blue spots. Body of juveniles vivid blue fading to greyish blue on ventral region, nape to second dorsal fin vivid yellow (Figure 3).

Comparison with other species

Five species of *Stegastes* occur in the western South Atlantic (including Saint Paul's Rocks), all endemic to the Brazilian Zoogeographic Province (*sensu* Briggs, 1974). *Stegastes pictus* (Castelnau, 1855), is readily distinguished from its Southwestern Atlantic congeners by the bicolored coloration on tail and caudal fin (Figure 6). The remaining species, all members of the *fuscus-dorsopunicans-variabilis* complex (*sensu* Greenfield & Woods, 1974) are all very similar and it is difficult to find a single diagnostic character (Emery, 1972; Lubbock & Edwards, 1981).

Stegastes trinidadensis n. sp. is most similar to *S. fuscus* (Cuvier, 1830), a continental species, from which it is readily distinguished by the vivid yellow and blue juvenile coloration (Figures 3 and 4). From the continental *S. variabilis* (Castelnau, 1855) (Figure 5) and the insular *S. rocasensis* (Emery, 1972) and *S. sanctipauli* Lubbock & Edwards, 1981, the new species is distinguished by the absence of a reduced opercular scale immediately anterior to the opercular spine, presence of 11½ scale rows from the 4th lateral-line scale to anus, and "reverse" color pattern of juveniles (Figure 3), which is blue or dark on dorsum in the formers (Allen, 1991, p. 184-186). *Stegastes variabilis* (Castelnau, 1855), described from Brazil and considered wide ranging in the Western Atlantic (Greenfield & Woods, 1974; Allen, 1991), is in fact endemic to the Brazilian Province (D. Ross Robertson, pers. com.), as are all other *Stegastes* from this area.

Distribution

Stegastes trinidadensis n. sp. is known only from Trindade Island (20°30'S, 29°19'W), off southeastern Brazil, and probably is endemic to this volcanic formation. It would be of interest to know whether this species occurs also on Martim Vaz Archipelago, distant only 47 km from Trindade Island.

Etymology

The name *trinidadensis* is derived from Trindade Island, the type locality. The common name "Trindade Gregory" is proposed.

Natural history

Juveniles of *Stegastes trinidadensis* n. sp. were recorded in tidepools and on rocky and *Lithothamnion* reefs in depths ranging from 0.1 to 8 m, adults being found up to 15 m depth. This damselfish was observed grazing on benthic algae, and defending their territories from other fishes, mainly herbivores (*Acanthurus bahianus*, *Acanthurus coeruleus*, *Kyphosus sectatrix* and *Microspathodon chrysurus*).

Additional and comparative material examined

Stegastes fuscus: MBML 301 (1), Guarapari, State of Espírito Santo, Brazil; MZUSP 49065 (1), Laje de Santos, State of São Paulo, Brazil.

Stegastes pictus: MNRJ 18284 (1), MBML 283 (1), Guarapari, State of Espírito Santo, Brazil; MZUSP 45786 (1), Laje de Santos, State of São Paulo, Brazil;

Table 1. Morphometric proportions of selected type-specimens of *Stegastes trinidadensis*, n. sp.

	Holotype								
	MZUSP 51243	MZUSP 51245	MZUSP 51246	MZUSP 51429	ZUEC 2688	ZUEC 2689	ZUEC 3155	ZUEC 3156	UFPB 3547
Standard length (mm)	89.3	40.5	52.7	30.8	73.3	56.2	56.6	60.3	29.0
1- Head length	24.74	31.60	32.26	35.39	31.11	32.21	31.80	32.01	34.48
2- Body depth	40.10	44.44	48.77	44.81	51.02	46.09	46.11	48.42	47.24
3- Pectoral fin length	21.97	31.60	29.60	26.30	30.83	29.00	27.39	26.87	26.55
4- Pelvic fin length	25.81	39.26	35.67	35.39	37.65	37.01	36.04	34.99	34.48
5- Snout length	32.13	23.44	28.82	24.77	33.33	27.07	30.00	27.98	24.00
6- Orbit diameter	29.24	34.38	34.12	33.94	33.33	33.15	32.78	32.12	39.00
7- Caudal peduncle depth	49.82	46.88	46.47	39.45	51.32	47.51	45.56	48.19	46.00
8- Interorbital width	29.96	25.00	30.00	20.18	30.26	27.07	23.33	24.87	23.00

Values from 1 to 4 expressed as percentages of standard length; values from 5 to 8 expressed as percentages of head length.



Figure 2. *Stegastes trinidadensis* n. sp., holotype MZUSP 51243, adult (89.3 mm SL) from Trindade Island, off Brazil. Photo by D. Bucher.



Figure 3. *Stegastes trinidadensis* n. sp., MBML 229, juvenile (45.5 mm SL) from Trindade Island, off Brazil.



Figure 4. *Stegastes fuscus*, MBML 301, juvenile (34.1 mm SL) from Guarapari, State of Espírito Santo, Brazil.



Figure 5. *Stegastes variabilis*, MBML 302, juvenile (39.2 mm SL) from Guarapari, State of Espírito Santo, Brazil.



Figure 6. *Stegastes pictus*, MNRJ 18284, juvenile (50.1 mm SL) from Guarapari, State of Espírito Santo, Brazil.

All photographs, except the holotype, were taken in aquarium immediately after collection by J. L. Gasparini.

MZUSP 49066 (2), Arrail do Cabo, State of Rio de Janeiro, Brazil.

Stegastes rocasensis: MZUSP 48264 (532), Atol das Rocas, off State of Rio Grande do Norte, Brazil; MZUSP 47474 (4), Fernando de Noronha Archipelago, off State of Pernambuco, Brazil.

Stegastes sanctipauli: MZUSP 14604 (holotype), MZUSP 14605 (1, paratype), both from Saint Paul's Rocks, off State of Rio Grande do Norte, Brazil.

Stegastes trinidadensis n. sp.: MNRJ 2048 (8, material cited in Miranda-Ribeiro, 1919); MNRJ 4155 (6); MBML 229 (1, nontype specimen), USNM 356389 (3, nontype specimens), all from Trindade Island, off State of Espírito Santo, Brazil.

Stegastes variabilis: MBML 302 (1), Guarapari, State of Espírito Santo, Brazil; MZUSP 47138 (1), Alcatrazes Archipelago, State of São Paulo, Brazil; MZUSP 45781 (1), Laje de Santos, State of São Paulo, Brazil.

Acknowledgments

We thank the Marinha do Brasil (through 1° Distrito Naval) and the Tamar Project (through L. Magnabosco) for logistical support; S. R. Floeter for the friendship and help throughout the work, J. C. G. Pereira, V. C. Vidal, A. M. Dantas, V. H. Gasparini and K. S. Izabel for help in the field; J. L. Figueiredo, F. A. Bockmann and Ierece L. Rosa for critical comments on the manuscript; D. Bucher for help in the laboratory, photos and constant support; the AVIDEPA (grant to JLG), the CNPq (grant 300992/79 to IS), and the FAPESP (grants 96/0927-0 to RLM and 96/5328-8 to IS) for financial support.

References

- ALLEN, G. R. 1991. *Damselfishes of the world*. Mergus Publishers, Germany, 271 p.
- BRIGGS, J. C. 1974. *Marine zoogeography*. McGraw-Hill, New York, 475 p.
- CARVALHO, J. P. 1950. Resultados científicos do cruzeiro do "Baependi" e do "Vega" à Ilha da Trindade. *Bol. Inst. Paul. Oceanogr.*, 1: 97-133.
- EMERY, A. R. 1972. A new species of damselfish (Pisces: Pomacentridae) from the eastern coast of South America. *Copeia*, 1972: 330-335.
- EMERY, A. R. 1973. Atlantic bicolor damselfish (Pomacentridae): a taxonomic question. *Copeia*, 1973: 590-594.
- EMERY, A. R. & BURGESS, W. E. 1974. A new species of damselfish (*Eupomacentrus*) from the western Atlantic, with a key to known species of that area. *Copeia*, 1974: 879-886.
- GREENFIELD, D. W. & WOODS, L. P. 1974. *Eupomacentrus diencaeus* Jordan and Rutter, a valid species of damselfish from the western tropical Atlantic. *Fieldiana (Zoology)*, 65: 9-20.

- LEVITON, A. E., GIBBS JR., R. H., HEAL, E. & DAWSON, C. E. 1985. Standards in herpetology and ichthyology: Part I. Standard symbolic codes for institutional resource collections in herpetology and ichthyology. *Copeia*, 1985: 802-832.
- KORNERUP, A. & WANSCHER, J. H. 1961. *Taschenlexikon der Farben*. Musterchmidt-Verlag, Zürich, 242 p.
- LUBBOCK, R. & EDWARDS, A. 1981. The fishes of Saint Paul's Rocks. *J. Fish Biol.*, 18: 135-157.
- MIRANDA-RIBEIRO, A. 1919. A fauna vertebrada da Ilha de Trindade. *Arch. Mus. Nac. R. Janeiro*, 22: 171-194.