

## *Ptereleotris randalli* n. sp., a new dartfish (Gobioidae: Microdesmidae) from the Brazilian Coast

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### Keywords

Western Atlantic; Brazil; reef fish; Ptereleotrinae; new dartfish; endemism

### Abstract

*Ptereleotris randalli* n. sp., the third species of the genus from the Western Atlantic, is described from the Brazilian Coast. It differs from *P. helenae*, its North Atlantic sister species, in having the second dorsal and anal fins comparatively lower and slightly more elevated anteriorly; a shorter caudal fin with the fifth and sixth rays prolonged as filaments; and shorter pelvic fins which are about the same length as the pectorals. This species is known from Parcel de Manuel Luiz (00°52'S, 44°16'W), NE Brazil to Alcatrazes Archipelago (24°06'S, 45°42'W), SE Brazil, in depths between 8 and 60 m.

### Resumo

*Ptereleotris randalli* n. sp., uma terceira espécie do gênero do Atlântico Ocidental, é descrita da costa Brasileira. Ela difere de *P. helenae*, sua espécie irmã do Atlântico Norte, por possuir a segunda nadadeira dorsal e anal comparativamente mais baixas, elevadas anteriormente; nadadeira caudal curta com o quinto e sexto raios prolongados como filamentos; e nadadeiras pélvicas mais curtas, cujo comprimento é aproximadamente o mesmo que o das peitorais. Esta espécie é conhecida do Parcel Manuel Luiz (00°52'S, 44°16'W), NE Brasil ao Arquipélago dos Alcatrazes (24°06'S, 45°42'W), SE Brasil, em profundidades entre 8 e 60 m.

### Zusammenfassung

*Ptereleotris randalli* n. sp., eine dritte Spezies der Gattung vom westlichen Atlantik, wird von der brasilianischen Küste bestimmt. Sie unterscheidet sich von der *P. helenae*, der nordatlantischen Schwesterspezies dadurch dass die zweite Rücken- sowie Analflosse vergleichsweise flacher aber nach vorne erhöht ist. Sie hat eine kürzere Schwanzflosse mit dem fünften

und sechsten Strahl verlängert als Filament. Die kürzeren Bauchflossen haben in etwa die gleiche Länge wie die Brustflossen. Die neue Art wurde bei den Parcel de Manuel Luiz Riffen (00°52'S, 44°16'W) NO Brasilien bis zum Alcatraz Archipel gefunden (24°06'S, 45°42'W) SO Brasilien in einer Tiefe zwischen 8 und 60 m.

### Résumé

*Ptereleotris randalli* n. sp., troisième espèce atlantique orientale du genre, est décrite de la côte brésilienne. L'espèce diffère de *P. helenae*, espèce-soeur de l'Atlantique nord, par la seconde nageoire dorsale et la nageoire anale moins hautes en arrière et légèrement plus élevées en avant, nageoire caudale plus courte avec les 5e et 6e rayons prolongés en filaments, et des nageoires pelviennes également plus courtes, pratiquement aussi courtes que les pectorales. L'espèce est connue du récif Parcel de Manuel Luiz (00°52'S, 44°16'O), nord-est du Brésil, jusqu'à l'archipel d'Alcatrazes (24°06'S, 45°42'O), sud-est du Brésil, entre 8 et 60 m de profondeur.

### Sommario

Il *Ptereleotris randalli* n. sp., la terza specie del genere dell'Atlantico occidentale, viene descritta sulla base di ritrovamenti sulla costa del Brasile. Si differenzia dal *P. helenae*, la sua specie consorella del nord Atlantico, perché presenta la seconda pinna dorsali e anali più basse e leggermente più elevate anteriormente; una pinna caudale più corta con il quinto e sesto raggio prolungati come filamenti; e pinne pelviche più corte che sono circa della stessa lunghezza dei pettorali. Questa specie è diffusa da Parcel de Manuel Luiz (00°52'S, 44°16'W), NE Brasile, fino all'arcipelago di Alcatraz (24°06'S, 45°42'W), SE Brasile, a profondità tra gli 8 e i 60 m.

### Introduction

The genus *Ptereleotris* is one of five described genera of the subfamily Ptereleotrinae. Fishes of this

genus are small with an elongate slender body, and are commonly known as dartfishes. They occur in or around coral and rocky reefs of the Indian, Pacific, and Western Atlantic oceans, and take refuge in burrows in the sand when threatened (Randall & Hoese, 1985).

Two dartfishes have previously been described from the Atlantic Ocean: *Ptereleotris calliurus* (Bean, 1882), endemic to the coast of Florida, and *Ptereleotris helenae* (Randall, 1967), from Caribbean islands and the Bahamas (Randall, 1996). In the present paper, a third species of the genus from the Western Atlantic is described.

#### Materials and Methods

Specimens were collected using hand nets during SCUBA dives, and sometimes fresh water or formalin (10%) was injected into the burrow to force the fish out.

Methods for counts and measurements are those described by Randall & Hoese (1985), except for

caudal asymmetry, which is the horizontal distance between the tips of the upper longest rays and the middle caudal rays. Unless otherwise stated, all length measurements are standard length (SL). Data in parentheses in the description refer to paratypes.

Type specimens are deposited at the ichthyological collections of the following institutions: Museu Nacional do Rio de Janeiro, Brazil (MNRJ), Laboratório de Biodiversidade de Recursos Pesqueiros, Universidade Federal do Rio de Janeiro, Brazil (LBRP), Universidade Federal da Paraíba, Brazil (UFPB), Museu de Biologia Professor Mello Leitão, Espírito Santo, Brazil (MBML), and Florida Museum of Natural History, Gainesville, FL, USA (UF).

#### *Ptereleotris randalli* n. sp.

Brazilian dartfish  
(Figs. 1-3; Table I)

*Ptereleotris helenae* non Randall: Moura *et al.*, 1999: 524, Alcatrazes Archipelago, São Paulo, Brazil.



Fig. 1. Holotype of *Ptereleotris randalli* n. sp., MNRJ 20145, 87.1 mm SL. Photo by J. L. Gasparini.



Fig. 2. Holotype of *Ptereleotris randalli* n. sp., photographed in an aquarium immediately after collection. Photo by J. L. Gasparini.



**Fig. 3.** Underwater photograph of *Ptereleotris randalli* n. sp., Abrolhos Area, NE Brazil. Photo by G. R. Allen.

*Ptereleotris* sp. Carvalho-Filho, 1999: 211, Brazil; Rocha, 1999: 81, Parcel Manuel Luiz, Maranhão, Brazil.

**Holotype:** MNRJ 20145, male, 87.1 mm SL, Ilhas Rasas, Guarapari, Espírito Santo, off SE Brazil, at a depth of 12m. Collected by R. Z. P. Guimarães; C. A. Rangel, & J. L. Gasparini, 29 March 1999.

**Paratypes:** LBRP 5445, juvenile, 39.9 mm SL, data as for holotype; UFPB 3750, 2 juveniles, 35.2-40.1 mm SL, João Pessoa, Paraíba, NE Brazil, at a depth of 52.5 m. Collected by L. A. Rocha and B. M. Feitoza, 07 May 1998; UFPB 3978, juvenile, 37 mm SL, Parcel Manuel Luiz Marine State Park, NE Brazil, at a depth of 18 m. Collected by L. A. Rocha and B. M. Feitoza, 14 Jan. 1998; UFPB 4488, female, 43.4 mm SL, Ilhas Rasas, Guarapari, Espírito Santo, SE Brazil, at a depth of 18 m. Collected by J. L. Gasparini and D. A. Jório, 20 Jan. 1998; UFPB 4489, male, 47.7 mm SL, data as for UFPB 4488; UF 113884, female, 50.0 mm data as for UFPB 4488; MBML 402, juvenile, 42.9 mm SL, data as for UFPB 4488; MBML 403, female, 48.8 mm SL, data as for UFPB 4488.

**Comparative Material:** *Ptereleotris helenae*: UF 13369, paratype, 20 mm SL, St. Thomas, US Virgin Islands; UF 13370, paratype, 78.5 mm SL, Cow Bay, Jamaica; UF 206055, paratype, 44 mm SL, St. John, US Virgin Islands; UF 222893, 3 paratypes, 78.6-88.5 mm SL, Mayaguez, Puerto Rico. *Ptereleotris calliurus*: UF 30633, 70.14 mm SL, North Carolina; UF 73223, 82.44 mm SL, Gulf of Mexico, Apalachee Bay, Florida; UF 205972, 39.8 mm SL, Alligator Reef, Florida; UF 209819, 59.7 mm SL, Florida Keys, Florida.

### Diagnosis

*Ptereleotris randalli* can be distinguished from its Atlantic congeners by the following combination of characters: bright orange-yellow submarginal band in the dorsal and anal fins; second dorsal and anal fins

comparatively low, slightly elevated anteriorly; caudal fin short, the fifth and sixth rays prolonged as filaments; pelvic fins short, about the same length as pectorals.

### Description

Measurements of the type series of *P. randalli* are given in Table I.

Dorsal rays VI – I, 23 (22-24); anal rays I, 22 (21-23); pectoral rays 21 (20-22); pelvic rays I,4; principal caudal rays 15.

Body elongate (depth 6.9 (6.2 – 7.0) in SL) and moderately compressed (width 1.8 (1.6 – 2.1) in depth); head length 5.0 (4.1 – 5.0) in SL; snout short, its length 3.6 (3.3 – 3.8) in head; orbit diameter 4.0 (3.5 – 4.1) in head; interorbital width 3.0 (3.0 – 3.7) in head.

Low median fleshy ridge on top of head, extending from interorbital space to origin of first dorsal fin. Caudal peduncle deeper than long. Mouth very oblique; maxilla reaching vertical in front of pupil. Upper jaw with two rows of teeth; inner row with small teeth and pair of canines; outer row with moderately large canine-like teeth. Lower jaw with single posterior row of conical teeth and two anterior rows, innermost row with two to four enlarged canines. No teeth on vomer or palatine bones.

Very small scales on body, embedded and cycloid anteriorly and only partially embedded and ctenoid posteriorly on body; no scales on head, prepectoral region, or fins except for approximately basal fourth of caudal fin.

Origin of first dorsal fin immediately after vertical at end of ventral fin base. Spines of first dorsal fin longer than rays of second dorsal fin; dorsal fin spines flexible and curved backwards, fifth spine longest; third or fourth dorsal fin ray longest, all rays branched. Anal fin similar to second dorsal fin, slightly elevated anteriorly; pectorals rounded, with tips nearly reaching

**Table I.** Measurements of type specimens of *Ptereleotris randalli* n. sp. as percentages of standard length.

Catalogue No.	Holotype	Paratypes								
	MNRJ 20145	LBRP 5445	UFPB 3750	UFPB 3750	UFPB 3978	UFPB 4488	UFPB 4489	UF 113884	MBML 402	MBML 403
	Male	Juvenile	Juvenile	Juvenile	Juvenile	Female	Male	Female	Juvenile	Female
Standard length (in mm)	87.1	39.9	35.2	40.1	37.0	43.4	47.7	50.0	42.9	48.8
Body Depth	14.5	15.6	17.3	17.9	18.1	15.0	15.5	16.0	14.9	16.2
Body width	9.8	8.9	9.3	9.0	11.1	10.8	9.2	11.0	9.5	11.3
Head length	20.0	24.1	25.0	25.0	23.0	22.3	22.0	22.0	23.3	22.3
Snout length	5.6	6.7	6.2	7.5	4.9	5.1	6.0	5.8	5.8	5.5
Orbit diameter	5.0	6.0	5.4	6.2	6.7	6.0	5.0	5.0	5.8	5.1
Interorbital width	6.5	7.3	3.7	6.1	6.5	7.6	7.7	6.6	7.2	8.4
Caudal peduncle depth	9.5	9.7	10.5	9.7	10.3	9.9	10.3	9.8	10.5	10.8
Caudal peduncle length	9.9	7.9	10.7	9.2	9.7	9.4	9.0	8.6	8.4	8.8
Length of longest dorsal spine	13.9	16.5	13.4	14.9	14.1	15.5	14.0	15.4	17.7	15.4
Length of longest dorsal ray	8.8	11.7	10.8	10.9	10.8	10.6	9.4	12.4	11.4	10.7
Length of penultimate dorsal ray	8.5	4.3	9.9	9.9	8.6	10.4	9.4	11.4	8.6	10.4
Length of anal spine	7.3	6.9	7.1	7.2	7.0	6.7	5.8	7.0	6.7	6.5
Length of longest anal ray	9.5	11.1	11.6	10.5	11.0	10.4	10.3	10.2	11.2	10.4
Length of penultimate anal ray	8.1	8.9	11.4	7.9	9.7	10.4	9.4	9.6	11.0	10.2
Caudal fin length	29.4	35.0	26.4	29.2	34.8	33.6	29.1	28	25.4	34.2
Caudal asymmetry	9.5	11.0	7.6	8.9	4.6	9.4	7.9	8.2	4.5	9.2
Pectoral fin length	12.6	15.5	13.4	14.2	14.6	13.1	14.5	14.0	17.0	15.7
Pelvic fin length	13.7	16.2	17.0	16.0	17.2	14.1	13.4	16.0	17.9	16.1

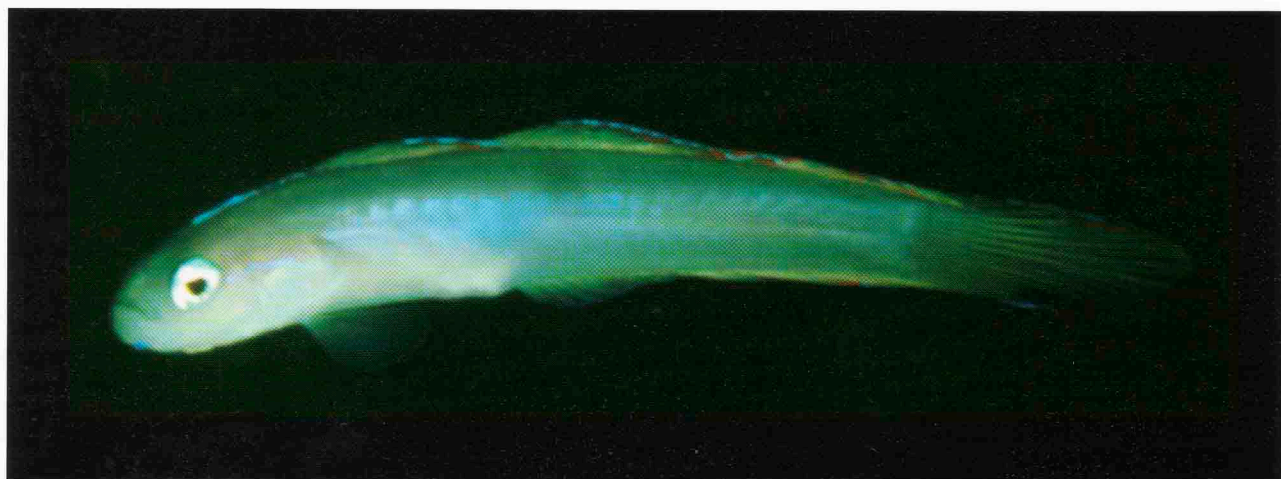
vertical at base of last spine of first dorsal fin, their lengths 1.6 (1.4 – 1.8) in head; pelvic fins moderately short, their lengths 1.5 (1.3 – 1.9) in head, about same as pectoral fins; tips of pelvic fins slightly extending slightly past vertical at base of last spine of first dorsal fin. Caudal fin asymmetric and upper half pointed, its length 3.4 (2.8 – 3.5) in SL.

**Coloration in life:** Body lavender grey to pale blue, with blue band running from behind centre of eye to posterior margin of opercle. Iridescent blue line extending over dorsal fleshy ridge on top of head, from interorbital space to origin of first dorsal fin. Dorsal fins with bright blue marginal bands, orange to

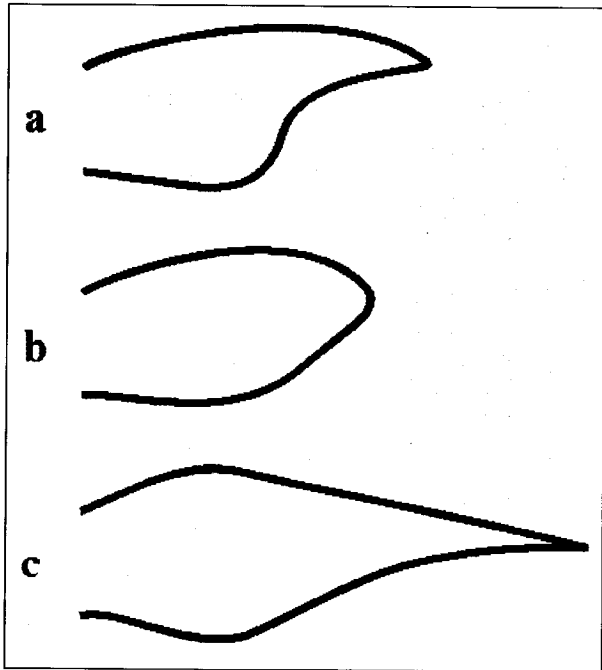
yellow submarginal bands and blue spots posteriorly in some individuals; colour of anal fin similar to that of dorsal, but without blue spots; pelvic fins translucent to pale blue; pectorals translucent. Large adults with orange submarginal band on lower portion of caudal fin (Figs. 2, 3). Juveniles with bright yellow or brown area on central portion of caudal fin, bright yellow dorsal and anal fins, and distinctive blue spots on posterior portion of dorsal fin.

**Distribution and Behaviour**

The known distribution of *Ptereleotris randalli* extends from Parcel de Manuel Luiz Marine State



**Fig. 4.** *Ptereleotris helenae*, Puerto Rico. Photo by J. E. Randall.

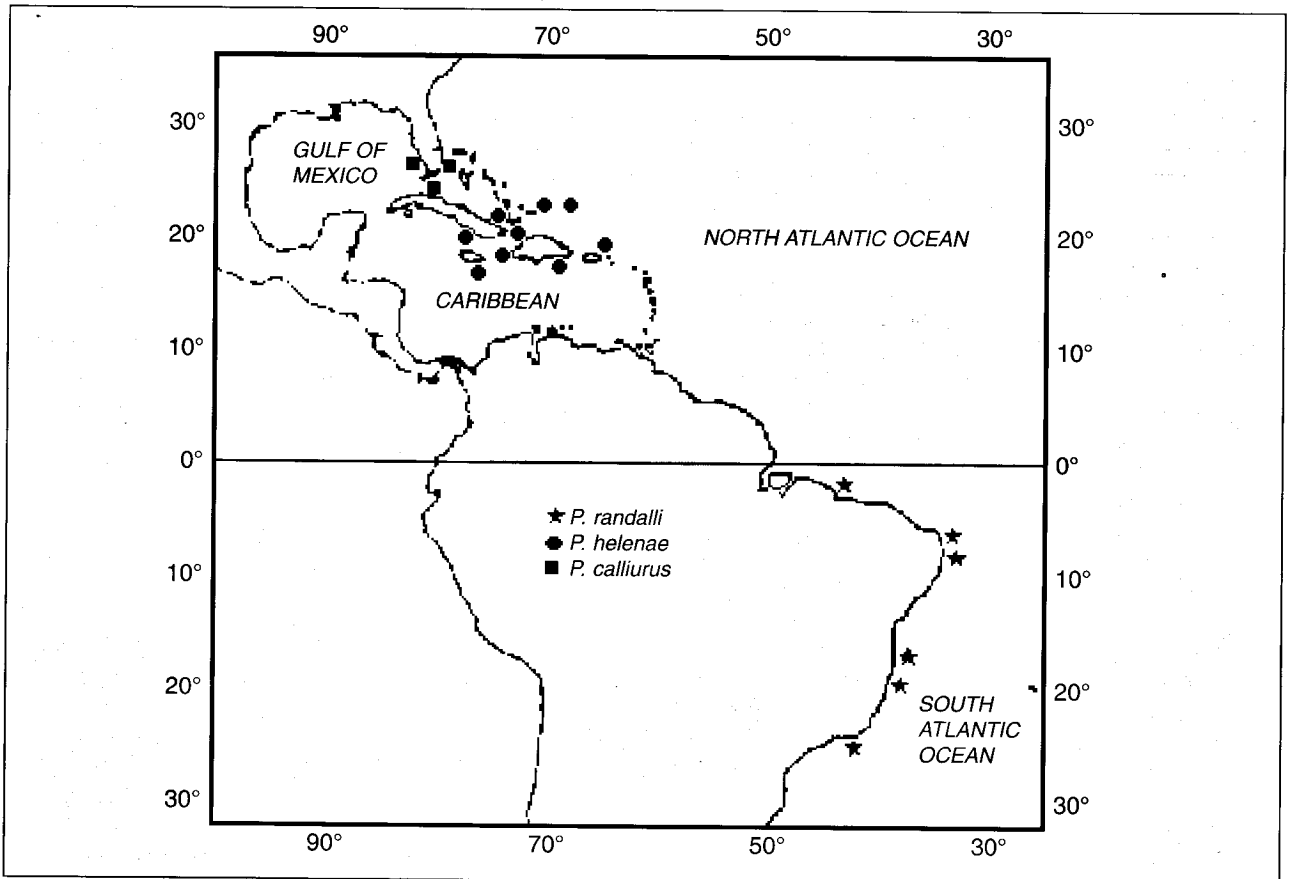


**Fig. 5.** Schematic view of the caudal fins of *Ptereleotris randalli* n. sp. (a), *P. helenae* (b), and *P. calliurus* (c).

Park in northeastern Brazil (0°56'S, 44°16'W) (Rocha, 1999) to the Alcatrazes Archipelago in southeastern Brazil (24°06'S, 45°42'W) (Moura *et al.*, 1999) (Fig. 6); it occurs at depths between 8 and 60 m. Like other dartfishes, it hovers over its burrow feeding on plankton, and dives headfirst into the burrow when threatened. It is found mostly over sandy bottom close to reefs, but is also common over sand patches as small as 10 cm in diameter, enclosed by rocky areas, or in calcareous algae (*Lithothamnion* sp.) banks.

**Affinities**

The species most closely resembling *P. randalli* is *P. helenae* (Randall)(Fig. 4). The two species have very similar colour patterns, and several counts and measurements appear to be identical. However, *P. randalli* has the fifth and sixth rays of the caudal fin prolonged as filaments, whereas *P. helenae* has a rounded caudal fin (Fig. 5). In contrast to *P. helenae*, in which the penultimate rays of both the anal and dorsal fins are longest, in *P. randalli* the fourth or fifth rays are longest. *Ptereleotris randalli* also has shorter pelvic fins and a bright orange-yellow submarginal band in the dorsal and anal fins, instead of a red band as in *P. helenae*. *P. randalli* is restricted to Brazilian coastal waters (see Floeter & Gasparini, 2001),



**Fig. 6.** Known distribution of *Ptereleotris randalli* n. sp., *P. helenae*, and *P. calliurus* in the western Atlantic.

whereas *P. helenae* has been recorded only from islands in the western North Atlantic region (Fig. 6).

The third western Atlantic species of dartfish, *P. calliurus* (Bean), has a relatively long caudal fin (Fig. 5) and distinctive black margins on dorsal fins, a feature which is absent in *P. randalli* and *P. helenae*.

### Remarks

The Brazilian dartfish has been collected for the aquarium trade. It is generally sold under the name "Opistognathus leitoso". The population of *P. randalli* could be declining fast in some areas of the Brazilian coast due to the increased commercial exploration of the calcareous algae banks, mainly off the States of Espírito Santo and Bahia.

### Etymology

This species is named *randalli* after the prominent ichthyologist John E. Randall, in recognition of his numerous contributions to the taxonomy of reef fishes in both the Atlantic and Pacific oceans.

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