Thalassia Salentina
Thalassia Sal. 43 (2021), 3-8
ISSN 0563-3745, e-ISSN 1591-0725
DOI 10.1285/i15910725v43p3
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FIRST SUBSTANTIAL RECORDS OF *PHYSICULUS DALWIGKI* (MORIDAE) FROM THE COAST OF SENEGAL (EASTERN TROPICAL ATLANTIC)

SUMMARY

The capture of two specimens of *Physiculus dalwigki* (Kaup, 1758) from the coast of Senegal is reported in this note. They were two adult specimens which measured 244 mm and 302 mm for total length, respectively, and weighed 81.8 g and 174.0 g, respectively. They were caught by trammel nets in the marine area of Dakar. They were described while mrophometric measurements and meristic counts were provided. These two findings constitute the first substantial records of *P. dalwigki* in the Senegalese waters, but also the southern extension range of the species from the western coast of Africa.

INTRODUCTION

Physiculus dalwigki (Kaup, 1758) is reported in the western Mediterranean, from Nice (southern coast of France), the Ligurian, Tyrrhenian and Ionian coasts of Italy to Sicily (Tortonese, 1970; Cohen, 1986; Cohen *et al*., 1990). Hovewer, Capapé *et al*. (2020) recently recorded the species from the northern coast of Tunisia, and such finding extended southward the range of the species in the Mediterranean Sea.

Physiculus dalwigki is also known along the eastern coast of Atlantic Ocean from the Galician waters in north-west Spain (Bañón *et al*., 2002)

to about 25° N (Blache *et al*., 1970, Cohen *et al*., 1990). However, it appears that captures of this species rather occurred from waters surrounding Madeira Island (Maul, 1952) and Azores Islands (Aguiar and Pereira, 1982). Routine monitoring conducted during some decades of the Senegalese coast together with the assistance of local experienced fishermen aware of fishing grounds allowed to collect two specimens of *P. dalwigki* during investigations conducted in the fishing site of the area. Both specimens are described in the present paper, including morphometric measurements, meristic counts, where it constitutes to date the first substantial records. In addition some comments are provided about the occurrence of *P. dalwigki* and to delineate the status of the species in its new capture area.

MATERIAL AND METHODS

The two specimens of *Physiculus dalwigki* were collected at the landing site of Hann, but following the fishermen they were captured on 08 December 2020, off the fishing site of Yarach, both sites are included in the tourist region of Dakar, located in the Cape Verde Peninsula, by 14°32'45.63"N and 17°27'45.67" W. Both specimens were caught by trammel net of 50 m long and 2 m high, constituted by three layers of netting having 48, 50 and 60 mm of mesh size respectively. The capture occurred at a depth of *ca* 10-16 m, on sandy-muddy bottom, together with other fish species such as striped panray *Zanobatus schoenleinii* (Müller and Henle, 1841), hairy toadfish *Batrachoides liberiensis* (Steindachner, 1867), Gabon gurnard *Chelidonichthys gabonensis* (Poll and Roux, 1955), rombou podas *Bothus podas* (Delaroche, 1802), spotted tongue sole *Symphurus nigrescens* Rafinesque, 1810 and bearded brotula *Brotula barbata* (Bloch and Schneider, 1801).

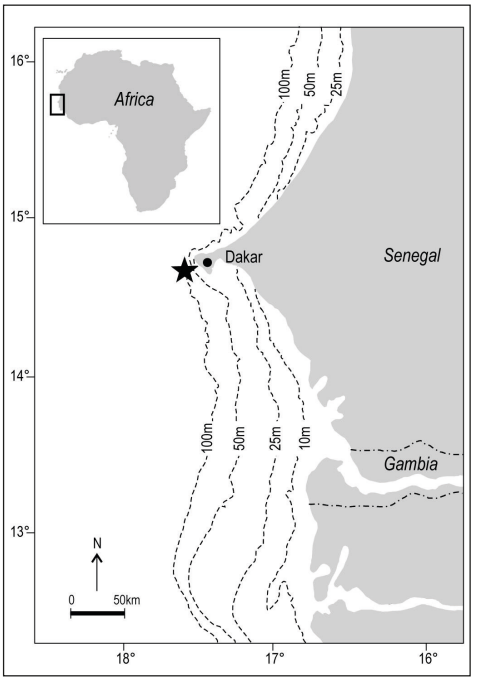

Fig. 1 - Map of the Senegalese coast indicating the capture site of both specimens of *Physiculus dalwigki* (black star).

Morphometric measurements were recorded to the nearest milllimetre and total body weight in gram. They are summarized in Table 1, together with meristic counts. The standard length is abbreviated as SL and total length as TL. The number of gill rakers were counted on the first branchial arch, and number of vertebrae from a X-ray photograph. Both specimens were fixed in 10% buffered formaldehyde, preserved in 75% ethanol and deposited in the Ichthyological Collection of the Institut Fondamental d'Afrique Noire Cheikh Anta Diop of Dakar, under the catalogue number IFAN Phy -dal –01 and IFAN Phy -dal –01, respectively.

Tab. 1 Morphometric measurements (in mm, and as %SL), total body weight in gram, and meristic counts recorded from both specimens of *Physiculus dalwigki* collected off the coast of Senegal.

References	Present study IFAN Phy-dal 01		Present study IFAN Phy-dal-02	
Morphometric measurements	[mm]	[%SL]	[mm]	[%SL]
Total length	244	115.1	302	115.7
Standard length [SL]	211	100.0	261	100.0
Pre-anal length	53	25.0	68	26.1
Pre-dorsal fin length	54	25.7	70	26.8
Pre-pectoral fin length	50	23.6	68	26.1
First dorsal fin length	11	5.2	18	6.9
Second dorsal fin length	134	63.2	166	63.6
Anal fin length	145	68.1	180	70.1
Pectoral fin length	35	16.5	46	17.6
Head length	48	22.5	60	23.0
Eye diameter	9	4.2	11	4.2
Body depth	37	17.6	52	19.9
Pre-orbital length	12	5.7	14	5.36
Inter-orbital length	12	5.7	15.5	5.9
Length of upper jaw	15	6.9	22	8.4
Length of lower jaw	11	5.1	16.5	6.3
Length of right pelvic fin	32	15.2	40	15.3
Length of left pelvic fin	25	11.8	32	12.3
Meristic counts				
First dorsal fin rays	8		8	
Second dorsal fin rays	65		65	
Anal fin rays	71		71	
Pectoral soft fin rays	23		23	
Scales on lateral line	117		119	
Rows between dorsal and lateral line	12		12	
Gill rakers	13		13	
Vertebrae	60		59	
Total body weight in gram	81.8		174.0	

RESULTS AND DISCUSSION

Both specimens were identfied as *Physiculus dalwigki* from the combination of the following morphological characters: elongated body slightly compressed with large head (4.3 times in SL) and tapering posteriorly, chin barbel present, oblique mouth, large eye, two dorsal fins, the first slightly higher than the second, anal fin not indented originated behind the origin of second dorsal fin, caudal fin rounded at distal end, pectoral fins extending beyond the origin of pelvic fin, filamentous ray of pelvic fin extending slightly beyond anal fin origin, light organ located between bases of pelvic fins, colour pinkish tan, oral cavity pale. and Guinea-Bissau (Sanches, 1991).

Morphology, morphometric measurements, meristic counts and colour are in total agreement with the previous descriptions of *P. dalwicki* provided by Maul (1952), Tortonese (1970), Aguiar and Pereira (1982), Cohen (1986), Cohen *et al.* (1990), Bañón *et al.* (2002) and CapapÉ *et al.* (2020). Additionally, these captures constitute the first substantial records of *P. dalwicki* from the Senegalese coast and, therefore, the species could be included in the local ichthyofauna.

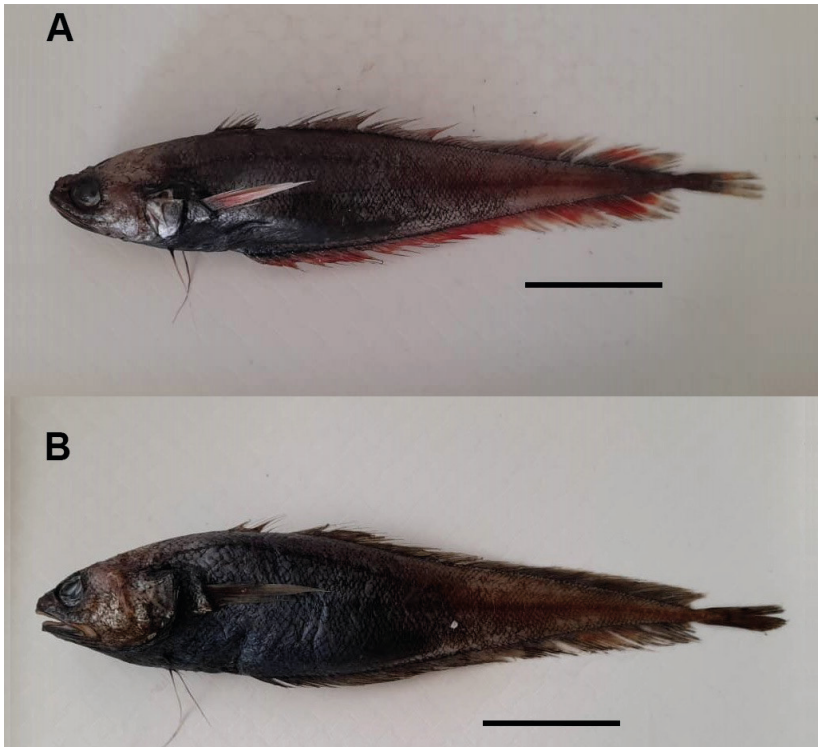

Fig. 2 - *Physiculus dalwigki* collected off the coast of Senegal. **A.** Specimen ref. IFAN Phy-dal 01. **B.** Specimen IFAN Phy-dal 01. Scale bar = 50 mm.

Following Cohen (1986) and Cohen et *al.* (1990), *P. dalwicki* reaches 300 mm as maximum TL, the studied specimens measured 244 mm TL, 211 mm SL and 302 mm TL, 261 mm SL, they were larger and probably adult specimens. These sizes are generally close to those recorded from other marine regions (Table 2).

Tab. 2. Sizes of *Physiculus dalwigki* recorded from specimens from different marine regions; as total length (TL) or standard length (SL).

Authors	Size (mm)	Area
Maul (1952)	185-267 (SL)	Madeira Islands
Tortonese (1970)	250 (TL)	Italian Seas
Aguiar and Pereira (1982)	255 (SL)	Azores Islands
Cohen (1986)	300 (TL)	Mediterranean
Cohen *et al.* (1990)	300 (TL)	Mediterranean
Bañón *et al.* (2002)	255 (SL)	North-western Spain
CapapÉ *et al.* (2020)	190 (SL)	Tunisian coast
Present study	211-261 (SL)	Senegalese coast

P. dalwicki is a by-catch species not targeted by fishermen, generally discarded at sea following information provided by local fishrmen and according to associated fauna during capture. Therefore, only large specimens are landed in fish markets where they could have some economical interest. Such pattern could also explain the gap between the coasts of Portugal (Cohen, 1986), Morocco (Lloris and Rucabado, 1998), Mauritania (Maigret and Ly, 1986) where the species is unknown and the coast of Senegal. Additionally misidentifications with close relative species cannot be totally ruled out and *P. dalwicki* could escape from scientific investigations.

P. dalwicki is not recorded from Guinea-Bissau (Sanches, 1991), consequently the Senegalese coast could be considered as the southernmost extension range of the species along the western African shore. Therefore, its occurrence to about 25° N no more remains questionable (see (Blache *et al.*, 1970, Cohen *et al.*, 1990). However, further records are needed to determine the real status of the species and therefore if a viable population is successfully established in Senegales waters.

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