

## A new species of the genus *Symphysanodon* (Perciformes: Symphysanodontidae) from the Gulf of Aqaba, Red Sea

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### Abstract

A new species of slopefish, *Symphysanodon disii* n. sp., is described on the basis of one specimen, 165 mm standard length (SL), collected off the coast of Aqaba, Jordan, Gulf of Aqaba, Red Sea. It is characterised by the following combination of characters: 10 dorsal soft rays, 7 anal soft rays, 50 tubed scales in the lateral line and  $12 + 25 = 37$  gill rakers on the first gill arch. Body relatively deep (32% of SL); first pelvic ray only slightly produced, not extending to anus; pectoral fin reaching a vertical through base of last dorsal spine; depressed anal fin length 32% of SL; caudal fin deeply forked, both lobes produced into filaments. This is the first record of the family Symphysanodontidae from the Red Sea. Morphologically, the new species is most closely related to the yellowstripe slopefish *Symphysanodon katayamai*, which is widely distributed in the Central Pacific.

### Zusammenfassung

Ein neuer Hangfisch, *Symphysanodon disii* n. sp., wird anhand eines Exemplars von 165 mm Standardlänge (SL) beschrieben. Er wurde bei Aqaba, Jordanien, Golf von Aqaba, Rotes Meer gefangen. Die neue Art ist durch folgende Merkmalskombination gekennzeichnet: 10 Weichstrahlen in der Rückenflosse, 7 Weichstrahlen in der Afterflosse, 50 perforierte Schuppen in der Seitenlinie,  $12 + 25 = 37$  Kiemenreusen auf dem ersten Kiemenbogen. Der Körper ist mit 32 % der SL recht hoch. Der erste Bauchflossenstrahl ist nur geringfügig verlängert und erreicht den Anus nicht. Die Brustflossen erreichen die Position der Basis des letzten Hartstrahls der Rückenflosse; die angelegte Afterflosse hat eine Länge von 32 % der SL. Die Schwanzflosse ist stark gegabelt, beide Spitzen bilden lange Filamente. Dies ist der erste Nachweis der Familie Symphysanodontidae aus dem Roten Meer. Morphologisch steht die neue Art dem im zentralen Pazifik weit verbreiteten Gelbstreifen-Hangfisch *Symphysanodon katayamai*, am nächsten.

### Résumé

Une nouvelle espèce de Symphysanodontidé, *Symphysa-*

*nodon disii* n. sp. est décrite sur base d'un seul spécimen, de 165 mm de longueur standard (SL), collecté au large d'Akaba, Jordanie, Golfe d'Akaba, en Mer Rouge. Elle se distingue par la combinaison suivante de caractéristiques: 10 rayons mous à la dorsale, 7 rayons mous à l'anale, 50 écailles canaliculées sur la ligne latérale et  $12 + 25 = 37$  branchiospines sur le premier arc branchial. Un corps relativement haut (32% de la LS); le premier rayon de la pelvienne assez court, n'atteignant pas l'anus; la pectorale atteignant une verticale traversant la base du dernier rayon dorsal; la longueur de l'anale déployée 32% de la LS; caudale fort échancrée, les deux lobes se terminant en filaments. Il s'agit du premier membre de la famille des Symphysanodontidés signalé en Mer Rouge. Morphologiquement, la nouvelle espèce se rapproche le plus de *Symphysanodon katayamai* qui connaît une vaste distribution dans le Pacifique central.

### Sommario

Una nuova specie di sinfisanodontide, *Symphysanodon disii* n. sp., è descritta sulla base di un esemplare di 165 mm (lunghezza standard, SL), raccolto al largo della costa di Aqaba, Giordania, Golfo di Aqaba, Mar Rosso. La specie si contraddistingue per la seguente combinazione di caratteri: 10 raggi dorsali molli, 7 raggi anali molli, linea laterale con 50 scaglie e  $12 + 25 = 37$  rastrelli sul primo arco branchiale. Corpo relativamente alto (32% della SL); primo raggio pelvico solo leggermente prolungato, non fino all'ano; pinna pettorale che raggiunge una verticale che passa attraverso la base dell'ultima spina dorsale; lunghezza della pinna anale quando depressa pari al 32% della SL; pinna caudale profondamente forcuta, con entrambi i lobi prolungati in filamenti. Rappresenta la prima segnalazione della famiglia Symphysanodontidae nel Mar Rosso. Morfologicamente, questa nuova specie è molto simile al sinfisanodontide dalla stria gialla *Symphysanodon katayamai*, ampiamente distribuito nel Pacifico centrale.

### INTRODUCTION

The family Symphysanodontidae, with a single genus, *Symphysanodon* Bleeker, 1878, is repre-

sented by nine described species of small to medium-sized fishes, inhabiting continental shelf areas, the upper continental slope and submarine ridges in the tropical Atlantic and Indo-Pacific (Anderson 1970, Anderson & Springer 2005). Additionally, these authors reported a specimen of an undescribed species known only from the stomach contents of *Latimeria chalumnae*. A diagnosis of the genus *Symphysanodon* is given in Anderson (1970). Thus far, the family had been unknown from the Red Sea. During studies of marine habitats and biodiversity in the Jordanian sector of the Gulf of Aqaba, conducted by scientists of the Marine Science Station in Aqaba (MSSA), a single specimen of *Symphysanodon* was collected by gillnet at a depth of about 150 m. It had not been included in a recent account of the deep-dwelling fishes of

the Gulf of Aqaba (Khalaf & Zajonz 2007) because further research was required. Here, it is now described as a new species. Counts and measurements follow Anderson (1970) and Anderson & Springer (2005), who recently revised the genus.

### *Symphysanodon disii* n. sp.

**Holotype:** MSSA 64-20/1, female, 165 mm SL, Jordan, Aqaba, in front of phosphate port, 29° 29.794' N 35° 59.375' E, ca 150 m depth, 5 October 1999, M. A. Khalaf.

**Diagnosis:** The new species differs from its congeners in the following combination of characters: dorsal-fin rays IX,10; anal-fin rays III,7; tubed scales in lateral line 50; gill rakers on first gill arch



Fig. 1. Freshly collected holotype of *Symphysanodon disii* from Aqaba, SL 165.3 mm, MSSA 64-20/1. Photo by M. A. Khalaf.



Fig. 2. Ethanol-preserved holotype of *Symphysanodon disii* about eight years after collection. Scale bar 50 mm. Photo by S. Tränkner.

**Table I.** Morphometric characters for the holotype of *Symphysanodon disii* n. sp. Standard length is in millimetres; other measurements, in percentage of standard length.

Total length	156.1
Fork length	108.5
Standard length [mm]	165.3
Head length	28.3
Head depth	22.2
Snout length	5.4
Fleshy orbit diameter	8.2
Postorbital head length	14.1
Upper jaw length	13.4
Lower jaw length	14.0
Bony interorbital width	10.6
Body depth	31.8
Caudal peduncle depth	13.4
Caudal peduncle length	26.7
Anal-fin base length	17.2
Anal fin length	31.9
Pectoral fin length	26.1
Pelvic fin length	22.3
Upper caudal-fin lobe	56.1
Lower caudal-fin lobe	50.2
First dorsal spine length	5.1
Second dorsal spine length	8.2
Third dorsal spine length	10.3
Fourth dorsal spine length	11.3
Last dorsal spine length	12.0
Longest dorsal spine length	12.0
First anal spine length	5.2
Second anal spine length	9.6
Third anal spine length	10.8

12 + 25 = 37 total; body relatively deep (32% of SL); first pelvic ray only slightly produced, not extending to anus; pectoral fin reaching a vertical through base of last dorsal spine; depressed anal-fin length 32% of SL; caudal fin deeply forked, both lobes produced into filaments.

**Description:** Dorsal-fin rays IX,10; anal-fin rays III,7, last two dorsal and anal fin rays very close to each other, but clearly separate at base; pectoral-fin rays 17; pelvic-fin rays I,5; principal caudal-fin rays 17 (9 + 8), branched caudal rays 15 (8 + 7); tubed scales in lateral line 50 on right side, 49 on left side; gill rakers on first arch 12 + 25 = 37 total.

Body elongate, compressed, relatively deep; dorsal and ventral profiles convex; snout rather blunt; mouth terminal; anterior ends of premaxillae incised, forming a conspicuous notch, which receives sphere-shaped anterior ends of dentaries; dorsalmost margin of maxilla covered by suborbital when mouth is closed; lower jaws slightly longer than upper jaws; maxilla reaching posteriorly almost to level of posterior margin of eye; anterior and pos-

terior nares closely set; premaxillae and dentaries carrying small, blunt, cone-shaped teeth, which are slightly larger in the anterior parts; premaxillary notch without teeth; dentary covered with teeth extending from elevated posterior surface of jaw to symphysis; symphysis without teeth; teeth at anterior ends of dentaries fit into premaxillary notch; vomer, palatines and endopterygoids with minute teeth; two flat spines on operculum, the lower one pointed, the upper one rounded with a minute tip; preoperculum forming a right angle: horizontal limb smooth, vertical limb very finely serrated.

Dorsal fin continuous, not incised at junction of spines and rays; scales ctenoid; head, including maxillae, dentaries, lacrymals, interorbital region and snout covered with scales; dorsal aspect of snout with small scales, anteriormost scales not overlapping; most parts of dorsal and anal fins without scales, but lower portion of last two dorsal soft-rays and all anal soft-rays covered with small scales; scaly sheaths at dorsal and anal fin bases; lower part of pectoral rays scaled; caudal fin densely covered with scales, except posterior margin and filaments; enlarged and elongated scales present dorsal to pelvic spines (axillary scales) and in ventral midline between the pelvic fins (interpelvic scales); lateral line gently curved; caudal fin deeply forked with both lobes prolonged into filaments, upper filament longer than lower one (Fig. 1).

Vertebrae 25 (10 precaudal, 15 caudal), with first preural centrum and ural centrum counted as one vertebra; pleural ribs on vertebrae 3 to 10; hypurals 1, 2 and 5 autogenous; hypurals 3 and 4 forming a single plate; epurals 3. In Table I, morphometric measurements are presented in percentages of standard length.

**Colour:** Flanks of the freshly caught specimen (Fig. 1) red, turning to a lighter pinkish ventrally and to dark orange-red dorsally; indistinct, broad, yellow-orange, longitudinal band from operculum to caudal peduncle (hardly visible); dorsal fin yellow, caudal fin reddish orange, with yellow hind-margin on upper lobe; anal, pectoral and pelvic rays light reddish, membranes transparent and without pigmentation. The ethanol-preserved specimen is light straw colour without distinctive pigmentation (Fig. 2).

**Etymology:** The new species is named in honour of Dr. Ahmad M. Disi, Professor of Zoology at the University of Jordan, Amman, in recognition of his contributions to our knowledge of the vertebrate fauna of Jordan.

**Remarks:** Geographically, the species occurring

closest to *S. disii* n. sp. is *S. andersoni* Kotthaus, 1974, which has been reported from the north-western Indian Ocean off the coast of Somalia and from the Gulf of Kutch (Kotthaus 1974, Anderson & Springer 2005). The new species differs markedly from *S. andersoni* in having fewer scales in the lateral line (50 vs. 60-61) and fewer gill rakers (37 vs. 41-42).

*Symphysanodon disii* n. sp. most closely resembles, and is probably most closely related to, *S. katayamai* Anderson, 1970, with which it shares general appearance and many meristic and morphometric characters. *Symphysanodon katayamai* has been reported from Hawaii, southern Japan, Taiwan, Palau and Sulawesi (Masuda et al. 1984, Anderson & Springer 2005). The new species differs from *S. katayamai* in the following characters: it has a larger number of gill rakers (37 vs. 33-35), a greater interorbital width (10.6% vs. 8.1% of SL), a shorter anal fin (31.9% vs. 38.9% of SL), shorter pelvic fin (22.3% vs. 26.6% of SL) and shorter caudal spines (see Table I and description in Anderson 1970). The two species also differ in colour pattern. Given the similarity of the two species, one might argue that they represent subspecies of the same species. However, we concur with Gill & Kemp (2002) and Anderson & Springer (2005), who suggest that well-diagnosed geographic forms of widely-distributed Indo-Pacific shore fishes should be awarded full-species rank. Given the fact that collections of deep-dwelling fishes from the Red Sea are rather rare and since the specimen is clearly distinct from its congeners, it is deemed justified describing a new species from a single specimen. Once additional samples are obtained, it will be desirable to confirm the present systematic concept of the genus by a phylogenetic study based on morphological and molecular data.

Thus far, Disi's slopefish is only known from its type locality near Aqaba, but given the fact that suitable habitat is available in much of the Red Sea and Gulf of Aden, it presumably could have a wider distribution. The deep slopes of this area have not yet been surveyed systematically.

The discovery of a new fish species at the northern tip of the Red Sea, which is most closely related to a species from the Central Pacific and Hawaii, is remarkable, but not unique. Similarly, *Pseudanthias fasciatus* (Kamohara, 1954) had only been known from Japan, Taiwan and Australia until Krupp & Paulus (1991) recorded it from Aqaba. Several fish species, which had previously been

known from various parts of the Indo-Pacific, but not from the Red Sea, have recently been recorded from the Jordanian sector at the northern tip of the Gulf of Aqaba (e.g. Khalaf et al. 1996, Khalaf & Disi 1997, Khalaf & Zajonz 2007). The new species increases the number of deep-dwelling fishes recorded from the coast of Jordan (Khalaf & Zajonz 2007) to 81 species in 57 families.

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