Suborder TRACHINOIDEI

CHIASMODONTIDAE

Swallowers

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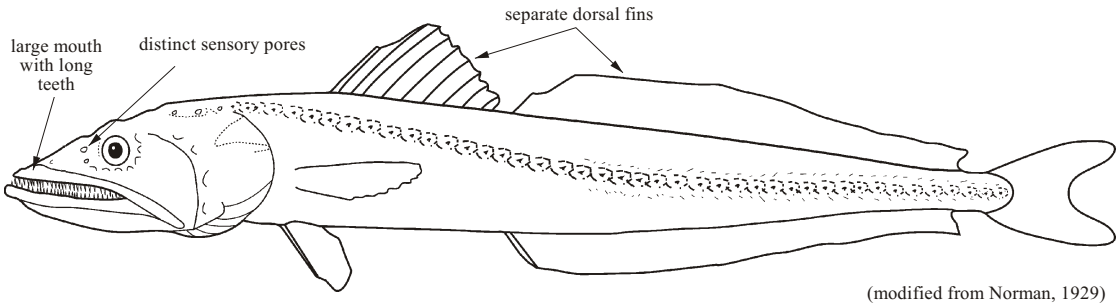
Diagnostic characters: Elongate, slightly compressed, moderate sized (to 40 cm total length) perciform fishes. Eyes small to moderate. Head with rounded or elongate snout, longer than eye diameter; **cranium with distinct sensory pores and rugose bones**. **Mouth large, nearly horizontal, extending beyond eye**; **premaxilla and maxilla non-protractile, slender**. Teeth typically long and slender, present on jaws and palatines, variously present on vomer. Branchiostegal rays 6 or 7. Gill membranes separate and free from isthmus. Dorsal fins separate, first fin short with 7 to 13 spines, second long with 0 or 1 flexible spine and 18 to 30 segmented soft rays; **anal fin long with 1 spine and 17 to 29 soft rays**. **Pectoral fins larger than pelvic fins**. Body naked, ocassionally with spinoid scales covering body, or with 1 to many rows of prickles above and below lateral line. Photophores present in *Pseudoscopelus*, absent in other genera. Single lateral line with a series of obvious pores usually midlateral along length of body. Skeleton mildly reduced; pelvic bones separate from each other and not associated with the pectoral girdle; total vertebrae 33 to 48. **Most species have highly distensible guts** and are capable of swallowing extremely large prey items (including individuals longer than the fish itself). **Colour**: uniformly black or dark brown.



(modified from Norman, 1929)

Habitat, biology, and fisheries: Meso- and bathypelagic fishes, which are occasionally collected in deep midwater trawls; juveniles and larvae encountered in shallower waters; most species broadly distributed in multiple oceans. Adults feed primarily on fishes.

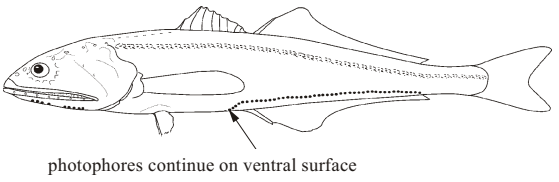
Remarks: The genera *Chiasmodon* and *Pseudoscopelus* need revision. Examples of the current species-level problems include the validity of *C. braueri* and *C. subniger*. Specifically, the validity of *Chiasmodon subniger* has been questioned because most postlarvae of *Chiasmodon* (specimens <35 mm standard length) have spinoid scales, which was the key diagnostic feature.

Similar families occurring in the area

None, no other mesopelagic or bathypelagic fishes have separate dorsal fins containing true spines and a rugose head with distinct sensory pores.

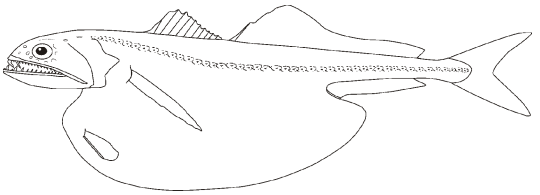
Key to the species of Chiasmodontidae occurring in the area

1a. Photophores present (Fig. 1) . . . . . **(*Pseudoscopelus*) → *2***
1b. Photophores absent (Fig. 2) . . . . . **→ *4***



(modified from Goode & Bean, 1896)

Fig. 1 ***Pseudoscopelus***



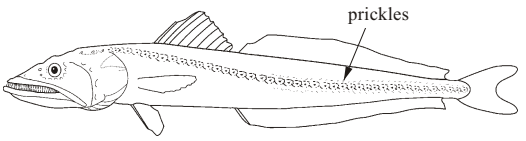
(modified from Goode & Bean, 1896)

Fig. 2 ***Chiasmodon***

2a. Bony scutes along first dorsal-fin base; snout with striking reniform (kidney-shaped) concavity . . . . . ***Pseudoscopelus scutatus***
2b. Scutes absent; snout lacking distinct reniform concavity . . . . . **→ *3***

3a. Pectoral fin less than twice the length of the pelvic fin; longest ray in second dorsal fin about twice as long as longest dorsal spine . . . . . ***Pseudoscopelus altipinnis***
3b. Pectoral fin more than twice the length of the pelvic fin; longest ray in second dorsal fin less than 1.6 times as long as longest dorsal spine . . . . . ***Pseudoscopelus scriptus***

4a. One to many rows of prickles along sides of body above and below lateral line (Fig. 3); jaw teeth arranged in bands of up to 3 or 4 teeth wide . . . . . **(*Dysalotus*) → *5***
4b. No large prickles along sides of body, jaw teeth arranged in bands of 1 or 2 rows . . . . . **(*Chiasmodon, Kali*) → *6***



(modified from Norman, 1929)

Fig. 3 ***Dysalotus***

5a. Single row of emergent prickles above and below lateral line (Fig. 4); vomerine teeth present . . . . . ***Dysalotus oligoscolus***
5b. Two or more (often many) rows of emergent prickles above and below lateral line (Fig. 5); vomerine teeth absent . . . . . ***Dysalotus alcocki***

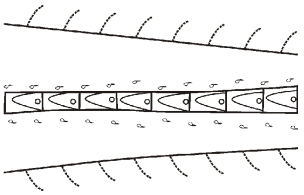


Fig. 4 ***Dysalotus oligoscolus***

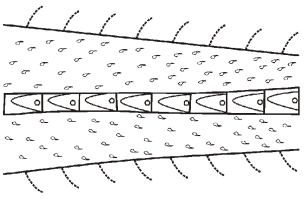


Fig. 5 ***Dysalotus alcocki***

6a. One or more of the 3 anteriormost jaw teeth distinctly longer than the posterior teeth; gill tooth plates absent; 43 to 48 vertebrae (Fig. 2) . . . . . ***Chiasmodon* spp.**
6b. None of the 3 anteriormost jaw teeth distinctly longer than the posterior teeth; toothplates (with 1 to 3 teeth per plate) present on first 3 gill arches; 33 to 41 vertebrae . . . . . **(*Kali*) → *7***

7a. Segmented dorsal-fin rays 18 to 21 . . . . . **→ *8***
7b. Segmented dorsal-fin rays 22 to 26 . . . . . **→ *9***

8a. Nine or ten dorsal-fin spines; 3 or 4 teeth in inner row of upper jaw; 7 to 10 teeth in inner row of lower jaw . . . . . ***Kali macrura***

8b. Eleven or 12 dorsal-fin spines; 9 to 13 teeth in inner row of upper jaw; 7 to 19 teeth in inner row of lower jaw . . . . . ***Kali parri***

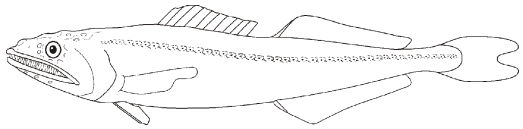
9a. Six to 12 teeth in outer row of upper and lower jaws . . . . . ***Kali indica***

9b. Fourteen to 38 teeth in outer row of upper and lower jaws . . . . . → ***10***

10a. Ten or 11 pectoral-fin rays . . ***Kali macrodon***

10b. Twelve or 13 pectoral-fin rays . . ***Kali kerberti***

(Fig. 6)



(modified from Johnson & Cohen, 1974)

Fig. 6 adult *Kali*

List of species occurring in the area

Chiasmodon bolangeri Osório, 1909. To 26 cm total length; meso- or bathypelagic Atlantic. Accepted synonym of *C. niger*.

Chiasmodon braueri Weber, 1913. To at least 5 cm total length; bathypelagic, known from the Eastern Central Atlantic and Banda Sea.

Chiasmodon niger Johnson, 1864. To 33 cm total length; meso- or bathypelagic worldwide.

Chiasmodon subniger Garman, 1899. To 40 cm total length; meso- or bathypelagic worldwide.

Dysalotus alcocki MacGilchrist, 1905. To 23 cm total length; meso- or bathypelagic worldwide.

Dysalotus oligoscolus Johnson and Cohen, 1974. To 33 cm total length; meso- or bathypelagic worldwide.

Kali indica Lloyd, 1909. To 27 cm total length; bathypelagic worldwide.

Kali kerberti (Weber, 1913). To 27 cm total length; bathypelagic worldwide.

Kali macrodon (Norman, 1929). To 27 cm total length; bathypelagic worldwide.

Kali macrura (Parr, 1933). To 27 cm total length; bathypelagic worldwide.

Kali parri Johnson and Cohen, 1974. To 23 cm total length; bathypelagic Atlantic.

Pseudoscopelus altipinnis Parr, 1933. To 20 cm total length; bathypelagic Atlantic and possibly Western Pacific.

Pseudoscopelus scriptus Lütken, 1892. To at least to 14 cm total length; bathypelagic worldwide.

Pseudoscopelus scutatus Krefft, 1971. To at least to 12 cm total length; bathypelagic Atlantic and Pacific.

References

Goode, G.B. & Bean, T.H. 1896. Oceanic ichthyology, a treatise on the deep-sea and pelagic fishes of the world, based chiefly upon the collections made by the steamers Blake, Albatross and Fish Hawk in the northwestern Atlantic, with an atlas containing 417 figures. *U.S. National Museum, Special Bulletin*, 1–553.

Johnson, R.K. & Cohen, D.M. 1974. Results of the research cruises of FRV "Walther Herwig" to South America. XXX. Revision of the chiasmodontid fish genera *Dysalotus* and *Kali*, with descriptions of two new species. *Archiv für Fischereiwissenschaft*, 25(1/2): 13–46.

Johnson, R.K. & Keene, M.J. 1986. Chiasmodontidae. *In* M.M. Smith & P.C. Heemstra, eds. *Smiths' sea fishes*. Johannesburg, Macmillan South Africa, pp. 731–735.

Johnson, R.K. & Keene, M.J. 1990. Chiasmodontidae. *In* J.-C. Quéro, J.-C. Hureau, C. Karrer, A. Post & L. Saldanha, eds. *Check-list of the fishes of the eastern tropical Atlantic*. Paris, UNESCO, pp. 899–904.

Norman, J.R. 1929. The teleostean fishes of the family Chiasmodontidae. *Annals and Magazine of Natural History* (Ser. 10), 3: 529–544.