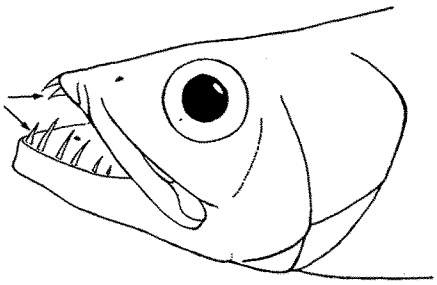
2a. No scutes along belly (even pelvic scute absent); two fang-like canine teeth in upper jaw, pointing forward (Fig. 2); body highly compressed, elongate . . . . . **Chirocentridae**

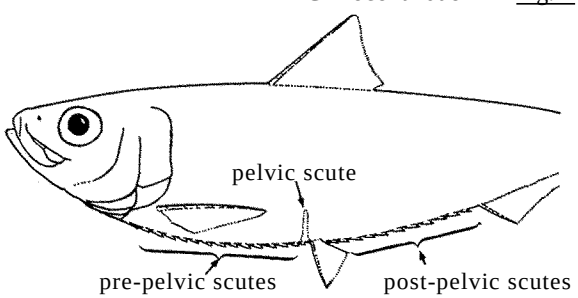


Chirocentridae Fig. 2

2b. Scutes usually present along belly (pelvic scute always present) (Fig. 3); canine teeth rare, never pointing directly forward in upper jaw; body usually oval or round in cross-section

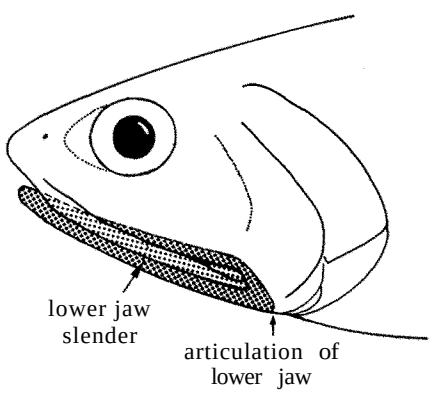
3a. Anal fin moderate, less than 30 finrays (unless mouth inferior, e.g. Dorosoma) . . . . . **Clupeidae**

3b. Anal fin long, at least 30 finrays; lower jaw projecting, mouth directed more or less upward . . . . . **Pristigasteridae**



Clupeidae, Pristigasteridae Fig. 3

lb. Articulation of lower jaw well behind eye, lower jaw usually slender (Fig. 4); snout 'pig-like' and projecting, lower jaw 'underslung' . . . . . **Engraulididae**



Engraulidae Fig. 4

2.1 FAMILY CHIROCENTRIDAE

CHIROC

FAO Names : En - Wolf-herrings.

Diagnostic Features : Elongate, highly compressed, silvery fishes resembling the Clupeidae (herrings, sardines), but without scutes along the belly. Head strongly compressed, with two fang-like canine teeth pointing forward in the upper jaw, a series of canine teeth in lower jaw (larger at the front). Dorsal fin short, set well behind midpoint of body; pectoral fins set low; pelvic fins very small; anal fin longer than dorsal fin, beginning below about dorsal fin origin; caudal fin deeply forked. Scales numerous, small, usually lost; no lateral line down flank. Back bright blue (fading to grey), flanks bright silver.

Biology, Habitat and Distribution : Chirocentrids are marine coastal fishes widely distributed in the warmer parts of the Indo-Pacific region, from the western Indian Ocean (Red Sea, East Africa south to Durban) to the western Pacific (Japan, the Philippines south to northern Australia). They are pelagic inshore predators on small fishes and are said to exhibit a sort of feeding frenzy among small herrings and anchovies during night fishing with lights. Few studies have been made of breeding, but like most other clupeoids they probably scatter pelagic eggs from which planktonic larvae hatch. Among the largest of the clupeoids, they reach 100 cm standard length (Fowler, 1959:30, gave 3.66 m, but this is not correct; followed by Smith, 1953:87). If they are schooling fishes, then the schools are probably of moderate size (at least compared to schools of other clupeoids). No special fisheries exist and catches are small (50 083 tons in 1983).

A single genus, Chirocentrus, with 2 species.

Chirocentrus Cuvier, 1816

CHIROC Chiroc

Chirocentrus Cuvier, 1816, Règne animal, 1st ed., 2:178 (type: Clupea dorab Forsskål, 1775) (for correct dating of Cuvier, see Whitehead, 1967, emended by Cowan, 1969 to 7 December 1816).

Biology, Habitat and Distribution : See family.

Species : In the past, most workers have assumed a single species, C. dorab, occasionally with a second species C. hypselosoma. Whitehead, Boeseman & Wheeler (1966:27) showed that Bleeker's hypselosoma was C. dorab, while Luther 1968) resurrected an early Swainson name, nudus, for a second species in Indian waters. Although variations in body depth are not yet satisfactorily accounted for, modern works recognize two species:

C. dorab (Forsskål, 1775), Indo-West Pacific
C. nudus Swainson, 1839, Indo-West Pacific.

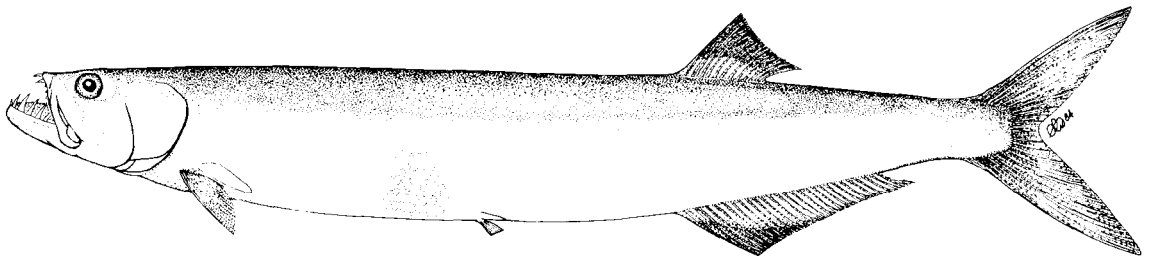
Chirocentrus dorab (Forsskål 1775)

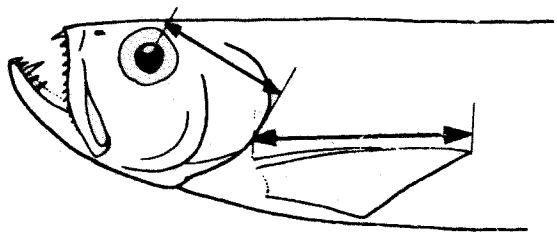
CHIROC Chiroc 1

Clupea dorab Forsskål, 1775, Descr.anim.: xiii, 7 (Djedda and Mocha ,Red Sea).

Synonyms : Clupea dentex Schneider, 1801:428; Esox chirocentrus Lapède, 1803:296; Chirocentrus hypselosoma Bleeker, 1852:71; Chirocentrus dorab - Whitehead et al., 1966:27 (Bleeker's C. hypselosoma); Luther, 1968:194; Whitehead, 1973b:167, fig. 2; SFSA, in press (southern Africa).

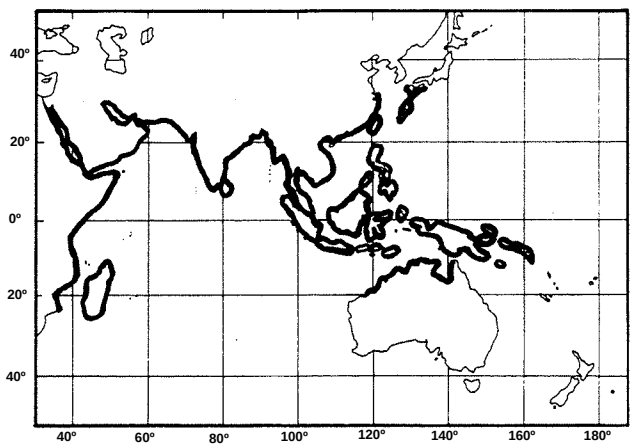
FAO Names : En - Dorab wolf-herring.





Diagnostic Features : The slightly shorter pectoral fin (11 to 13% of standard length; cf. 13 to 18%) and the black marking of the upper part of the dorsal fin are the only satisfactory characters separating this species from C. nudus; there is also some black on the anterior part of the anal fin. Variations in body depth may represent sexual dimorphism, but this needs study. See CHIROC Chiroc 1, Fishing Areas 57, 71 and also 51.

Geographical Distribution : Probably throughout the warmer coastal waters of the Indo-Pacific, from the Arab Gulf, Red Sea, east African coast south to Durban, eastward to Japan, the Philippines and south to northern Australia. However, it is not known to what extent C. nudus may contribute to these records.



Habitat and Biology : Pelagic,inshore fishes; feeding mainly on small fishes, but perhaps also crustaceans, etc.; no precise information on breeding.

Size : To about 100 cm of standard length.

Interest to Fisheries : Separate statistics for Chirocentrus (almost certainly including a proportion of C. nudus) are reported by Tanzania, Pakistan, India, Thailand, Indonesia, Malaysia, Singapore and the Philippines, with a total of 50 083 tons in 1983. The

catches in Palk Bay and around Rameswaram I in the Gulf of Mannar (southern India) are the only ones where the two species of Chirocentrus were positively separated (Luther, 1968); C. dorab contributed only 20% to the catch, the rest being C. nudus. Caught with gillnets, seines, shallow trawls and traps. Marketed fresh or frozen.

Local Names : INDIA: Dorab; Calcutta: Chela, Khanda, Samudrik; RED SEA: Dorab, Samak abu sayf.

Literature : Luther (1968 - separation of C. dorab from C. nudus); Whitehead (1973 - key to species, synonyms, references, fig.).

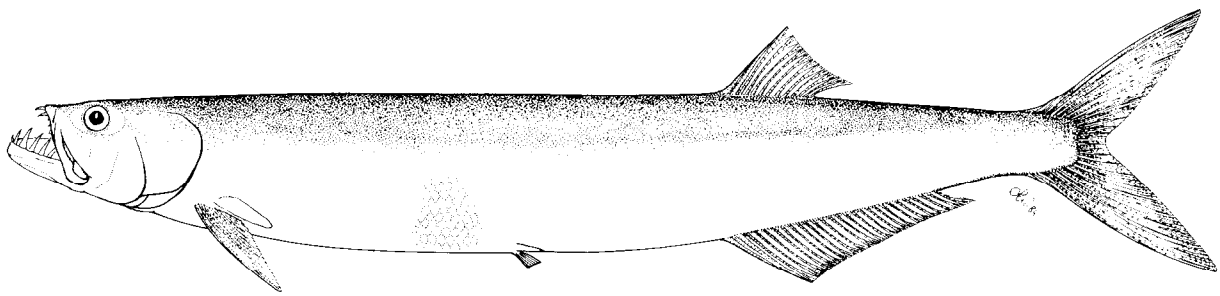
Chirocentrus nudus (Swainson, 1839)

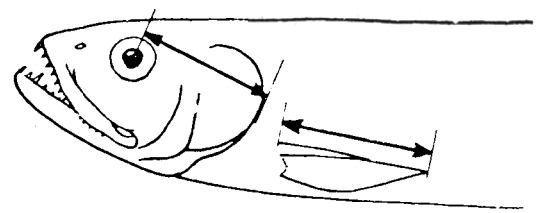
CHIROC Chiroc 2

Chirocentrus russellii Swainson, 1838. Nat.hist.anim., 1:289 (on Wallah of Russell, 1803) (nomen oblitum). Chirocentrus nudus Swainson, 1839, Ibid, 2:294 (also on Walla).

Synonyms : Chirocentrus dorab by many authors; Chirocentrus nudus - Luther, 1968:194; Whitehead, 1973b:168, fig. 3; Talwar, 1976:324.

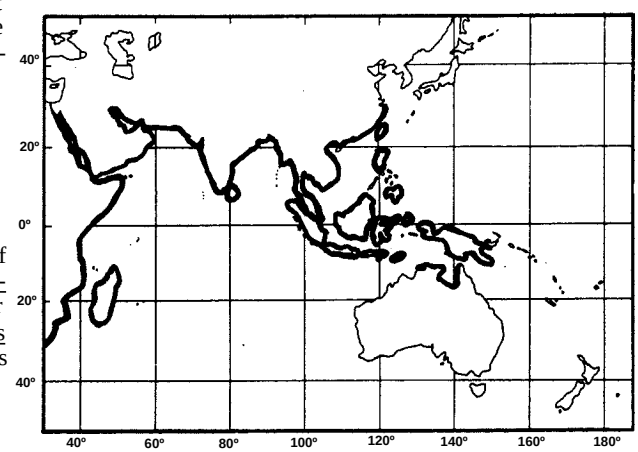
FAO Names : En - Whitefin wolf-herring.





Diagnostic Features : The slightly longer pectoral fin (13 to 18% of standard length; cf. 11 to 13%) and the absence of black markings on the dorsal fin tip are the only satisfactory characters separating this species from the otherwise virtually identical C. dorab; also, there is no black on the anterior part of the anal fin. Again, variations in body depth need more study. See CHIROC Chiroc 2, Fishing Areas 57, 71 and also 51.

Geographical Distribution : Probably similar to that of C. dorab, but not always distinguished from that species. Certain records are from Mombasa, the "Gulf", India (east and west coasts), Sri Lanka, the Indo-Australia archipelago and Canton.



Habitat and Biology : Apparently the same as for C. dorab.

Size : To about 100 cm standard length.

Interest to Fisheries : As for C. dorab. It is of interest that C. nudus predominated (80%) in the Chirocentrus catches of Palk Bay and the Gulf of Mannar (Luther, 1968), and comprised the total Chirocentrus catch off the Orissa coast (Talwar, 1976); in both cases these were gillnet fisheries.

Local Names : As for C. dorab.

Literature : Luther (1968 - separation from C. dorab); Whitehead (1973b - key to species, synonyms, references, fig.); Talwar (1976 - diagnosis).