

**ILISHA COMPRESSA, A NEW SPECIES
OF CLUPEID FISH FROM THE PERSIAN GULF**

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ABSTRACT. - *Ilisha compressa* (Clupeidae: Pristigasterinae) is described from four specimens taken by trawl in 8-10 m in the Persian Gulf off Kuwait. It is characterized by a postcoelomic extension of the swim bladder on each side, a body depth 3.1-3.2 in standard length, body width 3.4-3.5 in depth, 48-52 anal rays, 32-33 coarse ventral scutes, 10 + 18 gill rakers, 51 vertebrae, and the origin of the anal fin below midbase of dorsal fin. With its description, the total number of species of the genus *Ilisha* is raised to 16.

INTRODUCTION

The genus *Ilisha* is one of nine genera of the subfamily Pristigasterinae (regarded as a family by some authors, such as Whitehead, 1985) of the family Clupeidae. It is currently represented by one species in West Africa, one in the Amazon River, one in the tropical eastern Pacific, and 11 in the Indo-Pacific region (Whitehead, 1985). The genus was proposed by Richardson (1846) for a species from China named *Ilisha abnormis* by him; however, this is a junior synonym of *Ilisha elongata* (Bennett, 1830), described in *Memoir of the Life and Public Services of Sir Stamford Raffles*, edited by Lady Raffles.

Day (1876-1878) erred in treating *Ilisha* as a synonym of *Pellona Valenciennes*, in Cuvier & Valenciennes, 1847. Norman (1923) revised *Ilisha* and placed *Pellona* in synonymy. Myers (1950) and Hildebrand (1963) followed Norman in submerging *Pellona* in *Ilisha*. Berry (1964a, b), however, resurrected it on the basis of its having a hypomaxilla, a slender tooth-bearing bone at the edge of the upper jaw between the premaxilla and maxilla. *Ilisha* lacks this bone, though there is a ligament in its place. Whitehead (1966) recognized *Ilisha* as a valid genus in this and other papers on clupeid fishes. Seshagiri Rao (1976) reviewed the Indo-Pacific species of the genus, recognizing eight species and providing a key. In his PhD thesis, Wongratana (1980, unpublished) revised the genus, describing two more new Indo-Pacific species and recognizing *I. novacula* (Valenciennes) from rivers of Burma as valid. Wongratana (1983) provided diagnoses and names for his two new species of *Ilisha*. Drawing heavily on Wongratana (1980), Whitehead (1985) treated the 14 species of *Ilisha* in a FAO catalogue. Kailola (1986) added a fifteenth species, *I. lunula*, from Northern Australia, Queensland, and southern Papua New Guinea.

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While conducting field work in Kuwait in 1985, the author collected six specimens of *Ilisha* by trawling from the R/V "Bahith" of the Kuwait Institute for Scientific Research. Following Blegvad (1944), the fish were initially identified as *Ilisha elongata* (Bennett). Recently, while re-examining the specimens, it was noted that there are two species in this lot. Two of the specimens proved to be *I. melastoma* (Bloch & Schneider) [*I. elongata* of Blegvad (1944) and Kuronuma & Abe (1986)]. The remaining four specimens were expected to be *I. sirishai* Seshagiri Rao (1975), a second species of the genus known from the Persian Gulf. However, it was soon apparent from several characters that they represent a new species. The purpose of the present paper is to describe this fish.

METHODS AND MATERIALS

Lengths given for specimens are standard length (SL), the straight-line measurement from the front of the upper lip in the median plane to the base of the caudal fin (posterior end of hypural plate). Body depth is the maximum depth to the distal end of the ventralmost scutes; body width is the maximum width taken just posterior to the gill opening. Head length is measured from the front of the upper lip in the median plane to the posterior edge of the opercular membrane; snout length is taken from the same anterior point to the nearest edge of the eyeball. Eye diameter is the greatest diameter of the eye taken directly on the eyeball (facilitated by bending the snout to one side). Interorbital width is the least bony width. Upper jaw length is measured from the front of the upper lip to the posterior edge of the maxilla. Caudal peduncle depth is the least depth, and caudal peduncle length the horizontal distance from the base of the last anal ray to the base of the caudal fin. Measurements of the paired fins, when intact, were made from the most anterior part of the base of the fins to the end of the longest ray. Caudal-fin length is the horizontal distance from the fin base to the end of the longest ray; caudal concavity is the horizontal distance between verticals at the tips of the longest and shortest caudal rays. As is well known, trawling can be damaging to specimens. Unfortunately, the dorsal fin is not fully intact on any of the type specimens of the new species of *Ilisha*, and the anal and paired fins were also damaged, some to the extent that measurements of rays could not be made.

Measurements are presented as percentages of the standard length in Table 1. Proportional measurements in the text are rounded to the nearest 0.05.

Pectoral-ray counts include the short uppermost ray closely adhered to the long second ray. In spite of the loss of most scales from the specimens (clupeids are well-known for having deciduous scales), it was possible to get accurate counts of the scales in longitudinal series by counting scale pockets of missing scales. This count was made from the upper end of the gill opening to the base of the caudal fin. Gill-raker counts were made on the first gill arch; the number of rakers on the upper limb is given first, followed by those of the lower limb (including the one at the angle).

In the description below, data in parentheses refer to paratypes.

Type specimens are deposited in the Bernice P. Bishop Museum, Honolulu (BPBM); Natural History Museum, London (BMNH); and U.S. National Museum of Natural History, Washington, D.C. (USNM).

Table 1. Proportional measurements of type specimens of *Ilisha compressa*, expressed as percentages of the standard length

	HOLOTYPE		PARATYPES	
	BPBM	BMNH	BPBM	USNM
Museum number	33196	1994.7.22.4	36412	329752
Standard length (mm)	225	175	194	238
Body depth	31.0	32.2	31.1	31.2
Body width	9.1	9.5	9.2	8.9
Head length	23.2	23.6	23.4	23.5
Snout length	6.6	6.8	6.8	6.6
Eye diameter	7.6	8.1	7.8	6.9
Interorbital width	2.2	2.1	2.1	2.3
Upper jaw length	12.9	12.5	13.4	12.6
Caudal peduncle depth	9.3	9.2	8.9	8.9
Caudal peduncle length	7.4	7.5	7.3	7.2
Predorsal length	48.4	47.5	48.4	48.5
Preanal length	56.6	58.0	58.2	58.8
Prepelvic length	42.2	44.4	44.5	42.8
Base of dorsal fin	10.6	9.2	10.8	10.9
Longest dorsal ray	broken	broken	broken	broken
Anal fin base	40.4	40.5	39.4	39.5
Longest anal ray	8.9	9.2	9.3	broken
Caudal fin length	25.7	27.8	28.4	25.2
Caudal concavity	17.9	18.4	19.8	17.2
Pectoral fin length	broken	broken	19.3	19.2
Pelvic fin length	6.8	broken	broken	6.2

Ilisha compressa, new species

(Fig. 1)

Ilisha filigera (non Valenciennes) Khalaf, 1961: 19 (Persian Gulf and Shatt-el-Arab).*Ilisha elongata* (non Bennett) Kuronuma & Abe, 1986: 39, pl. 3, lower figure (Kuwait City market).**Material examined.** - Holotype - BPBM 33196, 225 mm SL, Persian Gulf, Kuwait, Kuwait Bay, mud bottom, 8-10 m, trawl, R/V "Bahith", J.E. Randall and crew, 21.viii.1985.

Paratypes - BMNH 1974.7.22.4, 175 mm SL; BPBM 36412, 194 mm SL; and USNM 329752, 238 mm SL, same collecting data as holotype.

Diagnosis. - Swim bladder with postcoelomic extensions on each side; anal rays 48-52; ventral scutes 22-23 + 10-11; body depth 3.1-3.2 in SL; body width 3.4-3.5 in depth; gill rakers 10 + 18; vertebrae 51; origin of anal fin below middle of dorsal-fin base.**Description.** - Dorsal rays 18 (17 -18), the first three unbranched; anal rays 52 (48-51), the first four unbranched; pectoral rays 18 (18-19); pelvic rays 7, the first and last unbranched; principal caudal rays 10 + 9 (10 + 9 - 10 + 10), the upper and lower unbranched; upper procurrent caudal rays 11 (10-11); lower procurrent caudal rays 8 (8-9); longitudinal scale series 56 (55-56); transverse scales 14; median predorsal scales 14 (a few more anterior scales but overlapping); prepelvic scutes 22 (22-23); postpelvic scutes 10 (10-11); total ventral

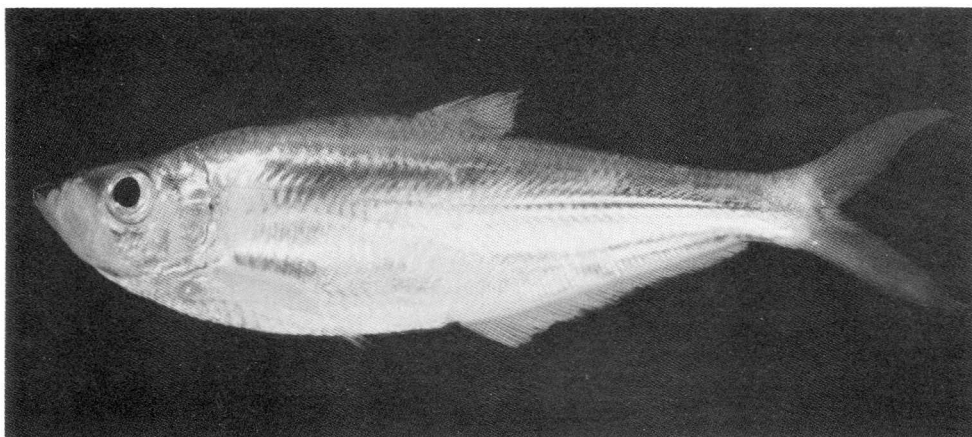


Fig. 1. Holotype of *Ilisha compressa*, BPBM 33196, 225 mm SL, Kuwait Bay, Persian Gulf (J. Randall).

scutes 32 (32-33); gill rakers 10 + 18; pseudobranchial filaments 16 (16-21); branchiostegal rays 6; vertebrae 51; supraneural (predorsal) bones 11, all vertical, each ending in a space between neural spines (the most anterior between first two neural spines).

Body deep, 3.2 (3.1-3.2) in SL, the deepest part above pelvic fins; body compressed, the width 3.4 (3.4-3.5) in depth; head small, the length from front of snout 4.3 (4.25) in SL; dorsal profile of head above upper jaw slightly concave, becoming convex on nape; ventral profile from front of lower jaw to anus convex; snout length 3.5 (3.45-3.55) in head; eye large, the diameter greater than snout length, 3.05 (2.9-3.4) in head; interorbital space very narrow anteriorly, widening posteriorly, its least width 10.5 (10.0-11.0) in head; interorbital space elevated, flat medially, each upper edge with a prominent longitudinal bony ridge which converges to join ridge of other side at base of premaxilla and ends on occiput; a lesser bony ridge adjacent, lateral, and slightly ventral to main ridge, joining it posteriorly; caudal peduncle depth 2.5 (2.55-2.65) in head; caudal peduncle length less than peduncle depth, 3.15 (3.15-3.25) in head.

Mouth superior, the opening with mouth closed transverse and straight; lower jaw projecting a half snout length before mouth, nearly flat dorsally; upper jaw strongly curved along its ventral edge, overlapping most of flange of upper lip when mouth closed; rounded end of maxilla ending posterior to a vertical at front edge of pupil (may extend to below center of eye), the upper jaw length 1.8 (1.75-1.9) in head; two supramaxillae, the first slender, overlapping the anterior ramus of second supramaxilla and extending slightly in front of it; second supramaxilla straight on its dorsal edge, its posterior two-thirds with a broadly curved ventral extension; dorsal part of upper jaw fitting beneath suborbital series when mouth closed; exposed ventral edge of maxilla with a series of small close-set teeth, preceded by the hypomaxillary ligament (a bone in the *Pellona*) about two-thirds eye diameter in length, ending at lateral edge of premaxilla; lateral ends of premaxilla with a row of minute teeth, the symphyseal tooth-free gap a half eye diameter in width; front of lower jaw with a row of small, conical, strongly recurved teeth, partially covered by lower lip; a broad fleshy flange on side of lower lip, its lower edge fitting into groove on side of dentary; a broad shelf-like membrane extending into mouth from just behind lower teeth, its medial length about half eye diameter. Front of tongue broadly rounded.

Gill membranes free from isthmus. Longest gill rakers on first gill arch on lower limb near angle, slightly longer than longest gill filaments. Pseudobranchial filaments free.

Swim bladder with a long, tapering, postcoelomic extension on each side (in the holotype its length posterior to anus 1.25 in head length).

No lateral line. No scales on head; scales on body large, cycloid, easily detached; striae of scales discontinuous and not overlapping; each pectoral fin with a large axillary scale, nearly half length of fin. Ventral scutes strongly keeled, each with a sharp, posteriorly-directed point, the first scute on isthmus below center of eye.

Origin of dorsal fin nearer front of snout than base of caudal fin, the predorsal length 2.05 (2.05-2.1) in SL; height of dorsal fin probably about 1.5 in head length (fin damaged on all specimens); origin of anal fin below middle of dorsal-fin base; first branched anal ray longest, 2.6 (2.5-2.55) in head, about twice as long as posterior rays; caudal fin large, 3.9 (3.5-4.0) in SL, and strongly forked, the caudal concavity 5.6 (5.05-5.8) in SL; oblique base of pectoral fin centered below posterior end of gill opening, the upper edge of pectoral base at level of lower edge of maxilla; pectoral fins broken on holotype (5.2 in SL of two paratypes); pelvic fins nearer lower base of pectoral fins than anus, the prepelvic length 2.35 (2.25-2.35) in SL; pelvic fins very small, 3.4 (3.8) in head.

Color of holotype in alcohol: back light brown with a median dusky stripe extending anteriorly from origin of dorsal fin to above gill opening; side of body without scales silvery (scales transparent yellow, so where present, the color is light golden); top of head between diverging ridges gray; fins pale yellowish, the caudal edged with blackish.

Color of holotype in life: yellowish gray dorsally, soon shading to silvery on side and ventrally; top of upper and lower jaws blackish; iris silvery with brassy reflections; dorsal, anal, and pelvic fins whitish; caudal fin yellow with a blackish edge; pectoral fins yellow on upper part, shading to pale yellowish.

Etymology. - This species is named *Ilisha compressa* from the Latin for compressed, in reference to its thin body.

Remarks. - At the present time *Ilisha compressa* is known only from the northern Persian Gulf, but it might be expected to range more widely. The first record of this species was that of Khalaf (1961) who reported it as *I. filigera* (Cuvier & Valenciennes) from the Persian Gulf and Shatt-el-Arab; his count of 50 anal rays and 22-23 + 10-11 ventral scutes is diagnostic for *I. compressa* among the three species of the genus known from the Persian Gulf. Kuronuma & Abe (1986) reported it as *I. elongata* (Bennett) from three specimens, 263-274 mm SL, obtained in the Kuwait City market, and deposited at the Museum of the Tokyo University of Fisheries. Their color illustration, count of 51 anal rays, and 21-27 + 11 ventral scutes leave little doubt that their material is *I. compressa*. Unfortunately, these three specimens are not extant (Hiroshi Kohno, Tokyo University of Fisheries, pers. comm.). A fourth specimen, 147 mm SL, with 46 anal rays, 20 + 12 scutes, and 11 + 39 gill rakers also identified as *I. elongata* by Kuronuma and Abe appears to be *I. melastoma* (Bloch & Schneider).

Talwar & Whitehead (1971) discovered a useful character whereby the species of *Ilisha* may be divided into three groups. In one, the swim bladder terminates at the posterior end

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of the body cavity; in a second group there is a long tapering postcoelomic projection on the right side; and in the third group there is a prolonged extension on both sides. *Ilisha compressa* falls in the third group, along with five other Indo-Pacific species: *I. kampeni* (Weber & de Beaufort), *I. lunula* Kailola, *I. melastoma*, *I. obfuscata* Wongratana, and *I. striatula* Wongratana. Collectively, these five species have 35-48 anal rays, 25-31 ventral scutes, and 36-48 vertebrae (vertebral count not recorded for *I. obfuscata*). *Ilisha compressa* differs from all of these species in its counts of 48-52 anal rays, 32-33 ventral scutes, and 51 vertebrae. It differs from all but *I. lunula* in having 18 lower-limb gill rakers (other species with 20-28 lower rakers, except *I. lunula* with 18-20).

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