

Article IV.—*HYNNIS* AND *ALECTIS* IN THE AMERICAN MUSEUM OF NATURAL HISTORY

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PLATE XIX

In November 1913 the Museum received a mounted Silverfish (*Hynn timer cubensis*), thirty-one inches long not counting the caudal fin, which had been captured in February of the same year at Palm Beach, Florida by Mr. John D. Crimmins. This we believe to be the first record of this rare and interesting fish, described from Cuba in 1860, from the shores of the United States. The exact relation of *H. cubensis* to its nearest allies is an interesting, as yet unsettled, problem. It will be worth while to review our material bearing on its solution.

HISTORICAL

In 1833 Cuvier and Valenciennes¹ recognized four genera of Silver and Threadfishes as follows: *Scyris* (*indica*, *alexandrina*); *Blepharis* (*indicus*, *sutor*, *major*); *Gallichthys* (*major*, *chevola*, *ægyptiacus*); and *Hynn timer* (*goreensis*); nine species in all.

In 1880 Lütken,² with laudable courage and, as it has turned out, a scholarly grasp of the fishes' relationships, reduced all these and other described species to three or four which he placed in the single genus *Gallichthys*, the basis for this reduction being that Threadfishes (*Blepharis* and *Gallichthys* forms) with growth approached the *Hynn timer* through the *Scyris* form. His four species were *Gallichthys gallus* and *ciliaris* (East Indian), *Gallichthys ægyptiacus* (Mediterranean and West African), and *Gallichthys crinitus* (Mitchill, 1826, Shoreham, N. Y.), the Atlantic American species close to and doubtfully distinct from *ciliaris*. *Hynn timer cubensis* he considered the full-grown form of *crinitus*.

In 1896 Jordan and Evermann³ followed Lütken's conclusions except for the genus *Hynn timer* which they considered distinct and of which they mentioned four species: *Hynn timer cubensis*; *Hynn timer hopkinsi* (published here for the first time with Jordan and Starks as authors) known from a single specimen from the west coast of Mexico; *Hynn timer goreensis*; and *Hynn timer alexandrinus*, "the Egyptian species," with which they presumably intended to synonymize *Scyris alexandrina* Cuvier and Valenciennes. For the rest, they replaced Cuvier and Valenciennes' generic name,

¹Cuvier and Valenciennes, 1833, Hist. Nat. des Poissons, pp. 145-177, 195-198.

²Lütken, Chr., 1880, Spolia Atlantica, pp. 538-542, 604-605.

³Jordan and Evermann, 1896, Fishes of North and Middle America, I, pp. 931-933.

Gallichthys, with Rafinesque's earlier one, *Alectis*, and synonymized *crinitus* with *ciliaris*, with which, doubtless rightly, they considered it identical. They also called attention to the inavailability of *gallus*, first used for *Selene vomer*, for the form so designated by Lütken.

In 1905 these same authors¹ synonymized the East Indian fish ("gallus," or more properly, *indicus*²) with *ciliaris*. We find, then, five species current: *Alectus ciliaris*, *Hynnys goreensis*, *cubensis*, *hopkinsi*, and *alexandrinus*.

MUSEUM MATERIAL

Alectis ciliaris (Bloch)

From more plentiful material referable to this species, measurements of specimens of different sizes have been tabulated to show the changes with age. No differences between specimens from Japan (*ciliaris*) and the Atlantic coast of the U. S. (*crinitus*) can be found. All (our largest is 7 inches) show at least indications of characteristic dark cross-bands.

Alectis indicus (Rüppell)

The Museum collections contain a specimen of this species collected at Batavia, Java, by Owen Bryant, April 2, 1909. This is 8 inches long to base of caudal and, therefore, fairly comparable with the largest *ciliaris*. In view of its unlikeness to that fish it seems remarkable that the two should have been confused. The smaller eye and deeper pre-orbital give it a quite different appearance and the greater number of gill-rakers should form an easy criterion for younger individuals if they resemble one another as they are said to do. Lütken's differentiation of the two species³ is perfectly tenable; there is not the least doubt that he was right in separating them and that more recent authors who have confused the two are in error. Furthermore, Bloch, 1788 ⁴(as *gallus* = *indicus* and *ciliaris*), and Rüppell,² 1828 (as *indica* and *faciatus* = *ciliaris*), both figured the two species in juxtaposition so as to bring out their specific characters very well.

Our Batavian specimen has the following characters: length to base of caudal 8 inches; teeth in narrow bands, small, the outer a little the largest and heaviest; depth in length, 1.7; eye, 4.5 in head, 2.1 in snout;

¹Jordan and Evermann, 1905, Fishes of Hawaiian Ids., Bull. U. S. Fish Comm., XXIII (1903), part 1, pp. 200-202.

²The earliest name available for this fish appears to be *indicus*, *Scyris indica* Rüppell (1828, Atl., Fishes, Fische des rothen Meeres, p. 128, Pl. xxxiii, fig. 1. Djetta) being referable to it.

³Lütken, Chr., 1880, Spolia Atlantica, pp. 539-532, 604-605.

⁴Bloch, 1788, Ichth., VI, Pls. cxci and cxcii.

Table 1
Specimens of *Alectis ciliaris* (Bloch), of varying sizes

A. M. N. H. Nos.	899	959	3225	899	4433	4433
Locality	Japan	New York	North Carolina	Japan	North Carolina	North Carolina
Length to Base of Caudal Teeth	2.0 inches Very small	2.6 inches Small, sharp, in very narrow bands	3.7½ inches Small, sharp, in narrow bands	4.4 inches Small, sharp, in narrow bands	6.4 inches Small, comparatively smaller, in broader bands than smaller specimens	7.0 inches Same as in preceding
Depth in Length	1.0	1.0	1.3	1.2	1.5	1.6
Eye in Head	2.8	2.5	3.0	3.2	3.5	3.6
Snout in Head	3.5	3.0	3.0	3.3	3.4	3.3
Pectoral in Head	1.0	broken	1.0	1.0	0.9	0.9
Ventral in Head	0.5	0.6	0.7	1.4	1.6	1.8
Dorsal and Anal Lobes	Filamentous rays to far beyond caudal	Filamentous rays to beyond caudal	Filamentous rays to far beyond caudal	Filamentous rays to far beyond caudal	Filamentous rays of dorsal to beyond caudal, all but most posterior one broken from anal leaving lobe 2.5 in head	Filamentous rays to far beyond caudal
Dorsal and Anal Spines	Small and distinct	Small and distinct	Small and distinct	Barely evident	Lacking	Dorsal lacking, anal barely evident
Dorsal Soft Rays	18	18	18	18	18	18
Anal Soft Rays	16	16	16	16	15	16
Curve Lat. Line in Straight Part	1.0	1.3	1.1	1.1	0.9	0.9½
Scutes	Too small for count	About 10 evident	6 very weak + 9 better developed	About 13, of which 2 or 3 first and 1 or 2 last very poorly developed	15, first 5 scarcely differentiated	14, first 6 scarcely differentiated
Gill-rakers	18	18	18	18	17	18

pectoral long and falciform, 1.6 in depth, .8 in head, to opposite 14th dorsal ray; ventrals short, extending two-thirds the distance to the origin of the anal. Several dorsal and one or two anal rays elongate as filaments which reach to opposite the caudal; slight scars only indicate the earlier position of dorsal and anal spines. Dorsal with 19, anal with 16 soft rays. Curve of lateral line 1.5 in straight part. Scutes poorly developed, 10 on the peduncle, the central ones well keeled. Gill-rakers 28. Unbanded.

Cuvier and Valenciennes' figure of *Gallichthys major*¹ is of a younger specimen of *indicus*,² with depth 1.4, ventrals still elongate, dorsal spines conspicuous, curve of lateral line 1.7 in straight part, pectoral .7 in head, eye 2.0 in snout. Stead³ has recently figured as *Caranx gallus* from New South Wales a more mature specimen of *indicus* which has depth 2.0, ventral short, 1.6 in head, curve of lateral line not quite 1.4 in straight part, pectoral .6 in head, but reaching only to 11th dorsal ray, filaments of vertical fins reduced. Eye 2.2 in snout.

***Hynnys goreensis* Cuvier and Valenciennes**

The American Museum Congo Expedition brought the Museum two specimens of this form from the mouth of the Congo. The larger of these is 18 inches to base of caudal, the smaller 14.2 inches. No trace remains of dorsal or anal free spines in either specimen. The teeth are very small in narrow bands. The dorsal and anal origins are superimposed; that is, the anal origin is a little less anterior than in Cuvier and Valenciennes' figure but more anterior than in *Hynnys cubensis*. Black axillar spot and opercular blotch are more or less evident.

Characters of the larger fish follow: length to base of caudal, 18 inches; depth, 1.9 in this measure; head, 3.3; eye, 4.3 in head; snout 2.1½; pectoral, .8; ventral, 2.4. Dorsal and anal without filaments, their lobes 1.8 in head. Curve of lateral line 1.3 in straight part. Dorsal with 21, anal with 18 soft rays. Scutes very small, 9 with sharp keels, 3 before these well developed, 6 before these barely appreciable. Gill-rakers 34.

Corresponding characters of the smaller fish are: length, 14.2 inches; depth, 1.8; head, 3.4; eye, 4.9; snout, 2.1; pectoral, .8½; ventral, 2.4. Dorsal and anal lobes each with an initial filament,—to tip of dorsal fila-

¹Cuvier and Valenciennes, 1833, Hist. Nat. des Poissons, IX, Pl. ccliv.

²Lütken made a slight error in referring this figure to *crinitus*. *Blephoris major* was *crinitus*, but *Gallichthys major* was *indicus*, at least the figure.

³Stead, 1908, Edible Fishes of New South Wales, Pl. lviii.

ment .8. Curve of lateral line 1.4 in straight part. Dorsal with 20, anal with 19 soft rays. Scutes very small, about 18, of which the 3 most anterior are scarcely differentiated and the 1 or 2 most posterior minute.

Thus the smaller of our two specimens has dorsal and anal filaments, an *Alectis* character, and in the doubtless deeper, more compressed young one would expect to find other such filaments. In fact, it is not difficult to agree with Lütken that Valenciennes' figure of *Gallichthys ægyptiacus* in the third edition of Cuvier's 'Regne Animal' is as such a young fish should be. Whether or not it be the same as *goreensis*, there can be little doubt that *ægyptiacus* is identical with *Gallus alexandrinus* Geoffroy on which *Scyris alexandrina* Cuvier and Valenciennes is based.

Carus, 1893,¹ evidently accepts Lütken's opinion that *Gallichthys ægyptiacus* Cuvier and Valenciennes, which he gives as synonym of *Caranx alexandrinus* (Geoffroy), is the young of *Hynnys goreensis*, as he states that *Caranx alexandrinus* has dorsal spines only in the young and is found on the coast of West Africa. It should be noted that his scute-count is lower than of our *goreensis*, and that Valenciennes' figure of *ægyptiacus*, above referred to, shows no scutes. Although in related species the full number of scutes may be made out in the young, scutes are smaller in this species and likely not all appreciable until the fish has reached a large size. The probabilities are great that *alexandrinus* of the Mediterranean and *goreensis* of West Africa are really identical, and, if not identical, are at least very close, both undergoing considerable age changes.

***Hynnys cubensis* Poey**

The mounted specimen, previously referred to has the following characters: length to base of caudal, 31 inches; teeth fine, about uniform in size, in rather broad bands; depth in length, 2.8; head, 3.9; eye in head, 5.2½; snout, 2.3; pectoral, .7, to about opposite 8th dorsal ray; ventral, 2.2½, extending a little less than half-way to anal; dorsal and anal lobes respectively 2.0 and 2.5, their rays evidently broken at the end, whence we deduce that the fish, in youth, had filaments characteristic of this group. No dorsal or anal spines. Dorsal with 19, anal with 16 soft rays. Curve of lateral line, 1.0 in straight part. Scutes, 10 on peduncle, the 3 anterior very weak. Anal origin somewhat posterior to dorsal. As this is a mounted specimen the depth of body may not be reliable, and the gill-rakers can not be counted.

¹Carus, J. V., 1893. Prodrömus Faunæ Mediterraneæ, II, p. 671.

Besides the less depth, and the lack of filamentous dorsal and anal rays, this specimen differs from *ciliaris* of 7 inches and less in the smaller eye, deeper preorbital giving a greater snout measurement, fewer scutes, longer pectoral, and resembles them in the long curve of the lateral line. In these respects it compares with the 8-inch Batavian *indicus*, from which, however, it differs in the same long curve of the lateral line. But comparing this lateral line curve with figures of *indicus* of different sizes, it seems probable that same lengthens with increased size and reduced depth of the fish, that the measurement in our mounted specimen is what would be expected for a large *indicus* and is less than one should find in a large *ciliaris*. Of the two, it should be placed with the former, which is known to reach a large size, and indeed it is easier to understand that an occasional stray of an East Indian free-swimming fish should reach the West Indies, as the Whale Shark is known to do, than that the common, cosmopolitan *ciliaris* should be known in its adult form only from an occasional West Indian record. The greatest drawback to synonymizing *cubensis* with *indicus* is that Day¹ says of "*gallus*" = *indicus*: "Teeth apparently villiform in young in jaws . . . , but in adults (23 inches long) they assume an entirely different (or *Sparoid*) character, having rounded crowns, 5 rows in premaxillaries, and 4 in lower jaw, decreasing to 2 or 1 row behind," whereas our large *cubensis* has approximately villiform teeth. Possibly Day is in error here, for the general tendency is for carangid teeth to become more villiform with age, rather than less so.

DISCUSSION

These fishes are all closely related. By British authors they are included with a host of more generalized forms in the genus *Caranx*. The remarkably specialized young, and the very extent of their age-changes, however, justify their separation, which is also a matter of convenience. *Goreensis*, the type of *Hynniss*, and probably identical with *alexandrinus*, is also less closely related to *Hynniss cubensis* and *H. hopkinsi* (see beyond) than these are to *Alectis indicus* and *A. ciliaris*. There is no excuse either in the fishes' relationship or in convenience for recognizing the genus *Hynniss*, and all recognized species, whether the young or the old form, should stand as *Alectis*.

So far, little mention has been made of *hopkinsi*, known from a single specimen 26 inches long taken on the west coast of Mexico. This specimen has not been examined but there is an excellent figure of it which

¹Day, 1889, Fauna of British India, Fishes, p. 166.

shows the eye 1.8 in snout, curve of lateral line .7 in straight part (1.0 in description).¹ From the appearance of the rays in dorsal and anal lobes we judge that when younger it had filamentous rays. Dorsal and anal rays are given as 18 and 15, scutes 12, gill-rakers 12. This, more than any other specimen we know of, suggests an overgrown *ciliaris*, but the gill-rakers are definitely too few and it should stand as a distinct species.

Whereas the structural changes with size in *ciliaris* parallel those in *indicus*, we know of no material tending to prove that *ciliaris* reaches a very large size or, like *indicus*, becomes a fish of very different character from what it is when small. It is not improbable that it retains the characters which are more or less larval elsewhere in the genus. It is the commonest and most widely distributed species, found in the warmer parts of the Atlantic, Pacific and Indian oceans, and drifted northward in the Gulf Stream and corresponding Japan Current of the western Pacific.

REVIEW OF THE GENUS *Alectis*

Alectis comprises marine fishes, of the subfamily Caranginae, with deep and compressed form, especially in the young (thus differing from *Caranx*, *Carangoides*, etc.), teeth in bands (like *Carangoides*), scales obsolete or absent on rest of the body as well as on chest (thus differing from *Citula*), one or more of the soft dorsal and anal rays prolonged in filaments, at least in the young (thus differing from *Vomer*), scutes few and small but always present on the peduncle (thus differing from *Selene*). Individuals undergo marked changes with growth, becoming less deep and compressed with age, the ventrals at first long, shortened by abrasion, the dorsal and anal filaments, as well as the dorsal spines, also entirely lost in those which reach a large size.

***Alectis alexandrinus* (Geoffroy)**

Gallus alexandrinus GEOFFROY, 1809, Desc. Egypte, etc., I, part 1, Pl. xxii, fig. 2. Alexandria.

Hynn timer goreensis CUVIER AND VALENCIENNES, 1833, IX, p. 195, Pl. cclvii. West Africa.

Gallichthys ægyptiacus LÜTKEN, 1880, Spolia Atlantica, pp. 538-542.

Caranx alexandrinus CARUS, 1893, Faunæ Mediterraneæ, II, p. 671.

Mediterranean and West Africa.

¹Jordan and Evermann, 1900, Fishes of North and Middle America, IV, pl. cxliii.

Alectis indicus (Rüppell)

Scyris indica RÜPPELL, 1828, Atl., Fische, Pl. xxxiii, fig. 1. Djetta.

Caranx gallus GÜNTHER, 1860, Cat., II, p. 455, and recent British authors.

Hynnys cubensis POEY, 1860, Memorias, II, p. 235; Havana. JORDAN AND EVERMANN, 1896, Fishes of North and Middle America.

Indian Ocean and adjacent seas, large individuals straying to Cuba and Florida.

Alectis hopkinsi (Jordan and Starks)

Hynnys hopkinsi JORDAN AND STARKS, 1896, in Jordan and Evermann, Fishes of North and Middle America, I, p. 933; 1900, idem, IV, Pl. cXLIII. Mazatlan, west coast of Mexico.

Only the type known.

Alectis ciliaris (Bloch)

Zeus ciliaris BLOCH, 1788, Ichth., VI, p. 27, Pl. cxci. East Indies.

Cosmopolitan in warm seas, north in the Gulf Stream and Japan Current.

KEY

Preorbital deep, eye about twice or more in snout (or one and two-thirds in the very young), gill-rakers 25 to 35.

Dorsal with 21 or 22, anal with 19 soft rays. *alexandrinus*.¹

Dorsal with 19, anal with 16 soft rays. *indicus*.²

Preorbital less deep, eye a little less than twice in snout, gill-rakers 12. *hopkinsi*.

Preorbital narrow, eye about equal to snout, gill-rakers 17 to 18. *ciliaris*.

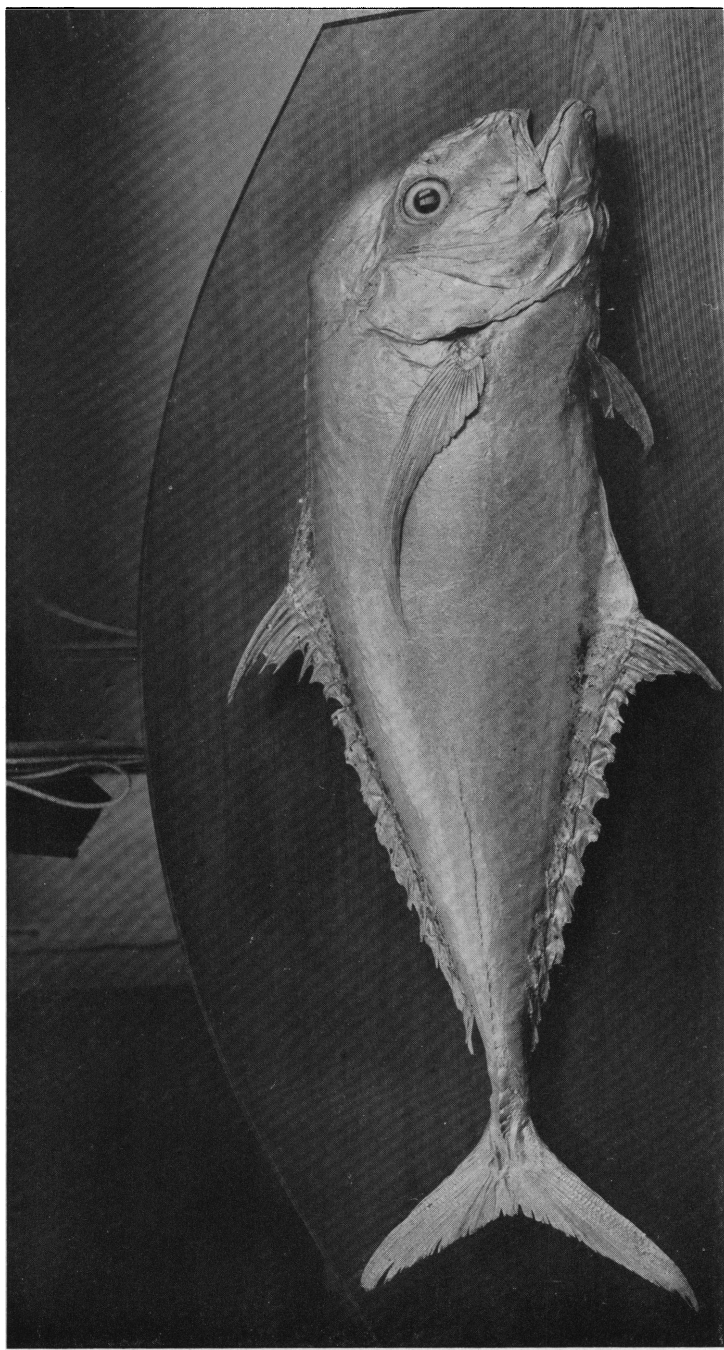
DOUBTFUL SPECIES

¹Scutes 15 to 18, a single dorsal ray notably produced in the young. *goreensis*.

Scutes 14 or less, 3 or 4 dorsal rays almost equally produced in the young. *alexandrinus*.

²Teeth in large fish in 4 or 5 or less rows, sparoid in character with rounded crowns. *indicus*.

Teeth in large fish small, in rather broad bands. Young not known. *cubensis*.



Hymnis cubensis, 31 in. long to base of caudal. From a mounted specimen from Florida, taken by John D. Crimmins.

