

OBSERVATIONS ON FISHES FROM THE CAROLINE ISLANDS.

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Among the presentations made to the Academy of Natural Sciences of Philadelphia by the late Prof. E. D. Cope was a collection of marine Fishes, comprising forty-five specimens, from the Caroline Islands. Most of these specimens are in a fair state of preservation. They have been made into dry preparations or skins, some of them being only one-half of the skin of the original specimen, but most of them are entire, the bodies having been filled out and varnished on the outside. It is unfortunate that the data are very meagre, no precise localities being given.

EXOCOETIDÆ.

1. *Cypsilurus quindecimradiatus* sp. nov. Plate XVII.

The form of the body is elongate and spindle-shaped. Head flat and broad above, compressed laterally so that the lower surface is rounded, $4\frac{1}{3}$ in the body without the caudal. Eye $3\frac{1}{5}$ in head and about $1\frac{1}{2}$ in the interorbital space, which is level, the orbits being placed in the upper anterior part of the head and with their lower margins below the lower jaw. The eye is also contained $1\frac{1}{2}$ in the space between its posterior margin and that of the operculum. The length of the snout, from the tip of the upper jaw, $1\frac{1}{2}$ in the eye. The mouth terminal, superior, the lower jaw projecting, and with the cleft inclined moderately. The posterior margin of the eye is nearer the origin of the P. than the tip of the upper jaw. Teeth minute. Branchial aperture large. Opercles large, scaled. The greatest depth of the body, which falls considerably short of the length of the head, is contained in the total length of the body about six times. The origin of the P. is situated on a level with the pupil of the eye, the radii of the fin about 14, the first and second somewhat enlarged and the third and fourth the longest; of the former, which are simple, the second is bifid for the terminal half or more, while the rest of these rays are all branched. The outstretched P. probably reached backward to the eleventh

or twelfth D. ray or at least as far as the tip of the V. Origin of the V. about midway between the origin of the P. and the first rudimentary rays of the caudal. Rays of V. 6, the third the longest, tip of the fin extending beyond the origin of the A. Origin of the D. inserted nearly equidistant to the origin of the V. and A., and also equidistant to the origins of the P. and the tip of the upper lobe of the caudal. D. with 15 rays, the posterior of which do not reach near the rudimentary caudal rays. Base of the D. not as long as the head and the base of the A. not as long as the base of the D. Caudal deeply forked, the lower lobe greatly exceeding the upper in length and contained in it $1\frac{2}{3}$ times. The lateral line runs very low along the lower part of the sides of the body and passes near the origin of the V. Rudimentary rays of the lower lobe of the caudal much more robust than those of the upper lobe and about 7 in number. The caudal is much compressed and flattened laterally, the rays being strong and giving great solidity and power to this steering instrument. Total length of the specimen $17\frac{5}{8}$ inches. No. 23,275.

HOLOCENTRIDÆ.

2. *Holocentrus spinifer* (Forsk.)

Sciæna spinifera Forskal, Descript. Animal., 1775, p. 49.

Body compressed, with the anterior dorsal region elevated. Scales 48, about 43 pores. D. xi, 15. A. iv, 10. P. i, 14. V. i, 7. Head about $3\frac{1}{4}$ in length, with caudal which is not quite 5. The greatest depth of the body about equal to the length of the head. Interorbital space very narrow, not as wide as the maxilla with its supplemental bone. The upper profile line of the head is nearly straight from the tip of the snout to the occiput and from this point to the origin of the D. convex, at which latter point the body assumes its greatest depth. There are five rows of scales on the cheeks, the row bordering the eye being the largest. The eye is contained more than $3\frac{2}{3}$ times in the head, and is equal to the snout in length. The præopercular spine is more than one-half the length of the posterior margin of the præoperculum and a trifle larger than the diameter of the eye. The serrations or spines of the præoperculum are much larger than those of the operculum. There are 2 spines at the posterior angle of the operculum, the upper of which is the largest, and the sharpest. The

opercles are evenly striated, the striations forming small serrations on the posterior margin. The interoperculum has 4 or 5 tooth-like serratures on its posterior margin. The suboperculum is nearly smooth, the striations being indistinct, though there are several feeble serrations along the upper and lower portions of the posterior edge. There is a very narrow bony border around the eye which has its outer edge finely serrate. There are 6 præorbital spines, the outer of which are much larger than the 4 central ones, situated along the lower edges of the præorbital bones, they all point downward. The superior cranial bones are strongly radiated. The maxillary extends to the anterior margin of the pupil of the eye. Supplemental maxillary large. The eye is placed above and somewhat anterior to the centre of the head. Teeth all minute. The distance between the origin of the D. and the occiput is a little less than the length of the præopercular spine, the tip of which is directly below the former, while the insertion of the P. is more posterior and the insertion of the V. still more so. The third D. spine is the longest, the last being the smallest and equals the second A. spine. The spines of the D. are all more or less equal in thickness, not being swollen or one much thicker than the other. The membrane connecting the last D. spine with the first soft ray of the same fin is adnate to the latter only at the extreme base. The soft D. is a trifle higher than the spinous D., and its base is contained in the latter about three times, and with its first ray not spinous. The caudal fin is forked and with the upper lobe very little longer than the lower and both lobes are beset both along the upper and lower basal edges with 5 rudimentary rays, all of which, excepting the last posterior, are spinous. The third spine of the A. is greatly enlarged and broadened and the fourth is ensheathed in its posterior excavation. The first A. spine is exceedingly minute, being concealed by the scales around the base of the fin. The P. and V. are of equal size, the first ray of the latter being spinous and a little longer than the innermost, while the first ray of the P. is very short. Lateral line slightly recurved at first, then sloping gradually to its termination, though it does not run along the centre of the caudal peduncle laterally and the pores do not exist on several of the most posterior scales. Scales not striated, but with the posterior edges finely serrated. There is a row of scales along the

base of the A. which is shorter than the base of the soft D. Total length of the specimen about $10\frac{5}{8}$ inches. No. 23,276.

3. *Holocentrus pæcilopterus* Bleeker.

Natuurk. Tydsch. voor Nederl. Indie, Deel VII (New Series, IV), 1854, p. 356.

The three specimens which I refer to this species have the following fin formula: D. xi, 14; xi, 14; xi, 14. A. iv, 9; iv, 9; iii ?, 6 ? (the first A. spine of this latter specimen I am inclined to think is really the second, though I am able to find but three); P. i, 13; i, 13; i, 13; V. i, 7; i, 7; i, 7. The scales in the lateral line average about 52. The first ray of the soft D. is not conspicuously enlarged and is much shorter than the second and third which are the longest rays of the fin. The row of large horny scales at the base of the A. is well developed in all three examples.

Nos. 23,277, 23,278 and 23,279.

SERRANIDÆ.

4. *Bodianus guttatus* Bloch.

Ausl. Fische, IV, 1790, p. 36, pl. ccxiv.

Three specimens. Nos. 23,280, 23,281 and 23,282.

5. *Epinephelus merra* Bloch.

L. c., VII, 1793, p. 17, pl. ccxxix.

Three specimens. Nos. 23,283, 23,284 and 23,285.

LUTIANIDÆ.

6. *Lutianus bohar* (Forsk.)

Sciæna bohar Forskal, Descript. Animal., 1775, p. 46.

Form of the body oblong, compressed. Head large, $3\frac{1}{4}$ in total length, greater than the depth of the body which is about $3\frac{2}{3}$ in the total length. Snout prominent, mouth large and with large maxillary which does not extend posteriorly beyond the anterior half of the eye. The width of the maxillary at its distal extremity is equal to half the diameter of the eye. Eyes $4\frac{1}{2}$ in head and very slightly over twice their diameter in the snout, and situated in the upper central portion of the head. Præorbital bones large, ensheathing the upper portion of the maxillaries. The interorbital width greater than the diameter of the eye and with the surface only slightly convex. The posterior margin of the præoperculum is finely serrated above the notch, which is moderate, below

which and for a short distance along the lower margin, it is coarsely serrated, the anterior portion of this lower margin being smooth. The interoperculum is furnished with a small bony protuberance which is opposite the præopercular notch and into which it does not fit. The operculum terminates in a small pointed flap which extends backward beyond the base of the P. The mouth is furnished with four canines in the front of both jaws, the outer pair of the upper being the largest and the strongest. The posterior nares are situated within half an eye diameter of the anterior border of the eye. The profile line of the body from the snout to the origin of the D. appears to be gently concave. The distance between the anterior border of the eye and the first D. spine is equal to the length of the P. The origin of the D. is situated over the tip of the opercular flap, of course falling posterior to that of the P. Spinous D. longer than soft D., the radii x, 14, the spines being strong and sharp, and graduated to the third, which, with the fourth, fifth and sixth, are the longest, being, in fact, longer than any of the soft rays. The scales of the body pass over on to the basal portion of the soft D., covering it anteriorly for more than one-half its height, though this encroachment gradually diminishes posteriorly so that only a few scales are to be seen at the bases of these rays. The scales also pass out over the basal portion of the soft rays of the A. and are distributed in the same manner, though they do not extend out so far as on the soft D. The caudal has its base also scaled, the scales of the caudal peduncle passing over to the base of the tail in unbroken series, and even covering the rudimentary rays, for about one-half its length. All these scales which cover the portions of the fins mentioned are much smaller than any others on any part of the body except a few at the base of the P. P. i, 16, not reaching A., but reaching posteriorly beyond the tips of the V. The origin of the V. slightly posterior to the origin of the P. V. i, 5. A. iii, 8? The third spine of the A. is the longest and the strongest, though very little longer than the second. The tail is moderately forked, the depth of the emargination being about one-fourth its length. The spinous D. is more or less distinct from the soft D., to which it is joined. There are eight or nine rows of scales on the cheeks. Operculum and interoperculum scaled and a row of large scales from occiput to suprascapula and two rows between the former

row, and running parallel with it, and the eye, the rest of the head naked except the scales in postocular region which are a continuation of the series on the cheeks. Lateral line running along the upper part of the body, and not running along the centre of the caudal peduncle laterally, sloping from its dorsal position gently till it terminates in the centre of the caudal fin. Scales about 64. The general color of the specimen appears to have been of an olivaceous tinge, the light spots at the base of posterior rays of the D. very distinct. Irides reddish. Dark oblique bands above the lateral line, and longitudinal bands below. Scales of the thoracic and postoccipital region smaller than those on the sides of the body. Upper caudal lobe the longest.

No. 23,286.

7. *Genyoroge marginata* (Cuvier and Valenciennes).

DiaCOPE marginata Cuvier and Valenciennes, Hist. Nat. Poiss., II, 1828, p. 320.

Form of the body sparoid, with the antero-dorsal region produced. The profile line from the snout to the occiput is straight and from the latter point to the origin of the D. convex. The lower profile line from the snout to the A. is nearly straight or only very slightly convex. Head a little over 3 in the total length and the depth of the body about the same. Eyes placed in the upper anterior portion of the head, nearer the snout than the opercles and about 4 in the length of the head. Mouth large, the maxillaries extending posteriorly for about one-third the diameter of the eye. The distal extremity of the maxillary bones is dilated and about equal to one-half the diameter of the eye. The upper and anterior portions of the maxillaries are ensheathed by the orbital bones. Nostrils separated from the anterior margin of the eye by a space that is greater than the space between themselves. Interorbital space convex, not equal to the diameter of the eye, equal to the space between the anterior nostril and the anterior margin of the eye. Posterior margin of the præoperculum finely serrated above the notch, below and on the posterior edge of the lower margin strongly serrated. Interopercular knob developed and fitting closely into the præopercular notch. Posterior margin of the operculum developed into a flap. Suprascapula serrated. Origin of the D. over the tip of the opercular flap, both of these are situated posterior to the origin of the P. D. x,

14, the third to sixth spine the longest. Bases of soft D., caudal and A., covered with small scales though not extending very far on any of the fins. Longest spines of D. longer than any of the soft rays. Caudal emarginate, though not deeply. P. falcate, nearly extending to first A. spine, radii i, 14. V. situated directly below P., radii i, 5, tips not extending posteriorly to tips of P., though the tips of the latter may have reached as far as the A. spine. A. iii, 8, second and third spines very stout and about equal. A series of large scales from the suprascapula to the occiput, anterior and parallel to this several series of smaller ones. Opercles and interopercles scaled and the cheeks with 6 rows extending over the postocular region, and a row of small scales directly over the eye toward the suprascapula, rest of head naked. The ventral rays are very stout and strong. Lateral line curved, then descending to the centre of the base of the caudal, not running along the centre of the caudal peduncle laterally. Scales about 55. Eye $\frac{4}{5}$ of the least depth of the caudal peduncle.

Teeth even, large. The color of this specimen has apparently entirely faded, it being at present a pale buff-brown, with traces of red irides. Total length $10\frac{3}{4}$ inches.

No. 23,287.

LABRIDÆ.

8. *Thalassoma immanis* sp. nov. Plate XVIII, fig. 2 (middle figure).

Shape of the body oblong-ovate, strongly compressed, its greatest depth situated anteriorly and in the region of the P. fins. The appearance is altogether very robust and strongly built. Greatest depth of the body nearly as great as the length of the head, and contained in the total length of the body about $3\frac{3}{4}$ times. Eyes superior and slightly anterior in position, about $6\frac{1}{2}$ in the head, 3 in the snout and $1\frac{1}{2}$ in the maxillary. Posterior margin of maxillary about midway in the space between the tip of the snout and the front margin of the eye. Upper and lower profile lines of the head sloping anteriorly in the form of an isosceles triangle, when viewed laterally, with the mouth at the apex. Interorbital space convex, about $1\frac{3}{4}$ in snout and a little over 4 in the length of the head. The eye is $1\frac{1}{2}$ in the interorbital space. Head entirely naked and with the skin on the cranium, the interorbital space, the upper and anterior portions of the operculum, the posterior

and lower portions of the præoperculum, the interoperculum, suboperculum, the branchiostegal region and the sides and lower or under portion of the mandible papillose or rugose. On the upper portion of the operculum are 3 shallow tube-like elevations parallel with its upper margin, and which become indistinct after passing over the anterior half. The orbitals are strongly rugosely striate. Teeth strong, canines strongly developed, two pairs in the front of each jaw and the lower fitting in between the upper pair when the jaws are closed. The other teeth in both jaws are graduated from the canines backward, the largest of course being anterior and about one-half the size of the canines. Origin of the P. inferior in the depth of the body and anterior to the tip of the opercular flap which is very small. P. ii, 14, perhaps slightly anterior to the V. which are contained in the former $1\frac{1}{2}$ and have the radii i, 5. Origin of the D. nearly over the same of the V. radii viii, 13, the spines sharp, rather strong, and not thickened, of about equal length, similar to the soft rays which are of nearly uniform length. A. ii, 10 or 11, the first spine shorter than the second and the first soft ray the longest. Upper and lower rays of caudal produced into a projecting point, the lower reaching beyond the upper and the emargination being thus formed is oblique. Rays of the caudal, like those of soft D. and A., very strong and stout, of the former fin the bases of those which are produced are covered with several rows of small scales, much smaller than the other scales at the base of the same fin. Scales along the bases of the D. and A. smaller than those on the rest of the body and extending somewhat upon the bases of the fins. Scales about 28, the lateral line straight to about the twentieth scale when it falls and runs along the centre of the caudal peduncle. The tubes of the lateral line with several branches on each scale, some of which are in turn themselves branched. Most of the color in life has disappeared, yet the head appears to have been green, with the loreal region and the frontal region together with the space behind and below the eye forming a band along the margin of the præoperculum, across the operculum and over the interoperculum, of a different color. A green spot, in one specimen, divides the lighter color on the interoperculum and extends for a short distance upon the lower portion of the operculum, this spot being much larger than the same of the largest specimen. A

light band from the opercular flap to the caudal rays and directly below this, and parallel to it, starting from the P. region, is another similar band. Longitudinal stripes along D. and A., longitudinal stripes along the inner of the produced caudal rays and the basal half of the rest of most the caudal rays of the same color as the lateral stripes. With the exception of a thoracic stripe from the interoperculum backward the body is bright green. Length about $11\frac{3}{4}$ inches. The specimens which I refer to this species show considerable color variation, which may be due to individual variation. There are three specimens, one of which is very young.

Nos. 23,288, 23,289 and 23,290.

SCARIDÆ.

9. *Scarus pronus* sp. nov. Plate XVIII, fig. 3 (lower figure).

Form of the body elliptical, oblong, compressed and with the greatest depth more or less in the centre and apparently greater than the length of the head which is contained in the total length about $4\frac{1}{2}$ times. Eye not quite 6 in the head, about $2\frac{2}{5}$ in snout, in postocular region $2\frac{1}{2}$ and in the interorbital space twice. The greatest depth of the head is inferior to its length and the upper profile line from the tip of the snout to the interorbital space moderately convex, and from this latter point to the occiput with a very strong convex appearance formed by the elevation of the supraoccipital ridge. Snout produced, mouth small and with lateral canine-like teeth, projecting externally, at the angle, there is one on each side of the upper and two similar on the lower. The jaws which are modified into a beak, which is small, have the teeth small, at present whitish, and the lips appear to have covered the greater portion. Origin of the P. below the level of the eye, directly above that of the V., radii ii, 12, shorter than the head and equal to the base of the P. V. $1\frac{1}{2}$ in P., radii i, 5, much stronger than P. Origin of the D. a little behind that of the P. and V., radii ix, 10, the spines rather firm, though they may have been more or less pungent during life, and together with the soft rays of uniform size. A. ii, 9, the soft rays of the D. similar and the tips of both not much if any produced beyond a point. Caudal rays strong, the outer produced into points thus leaving the posterior edge deeply incised. Body covered with very

large scales, a row along the base of the D., not much smaller than those on the other parts of the body except some smaller scales alongside the base of the A. The lateral line which is parallel with the back to the region below the posterior D. rays, where it is interrupted, traverses in this space 18 scales, it then appears again on the antero-lateral region of the caudal peduncle and traverses 5 or 6 scales, to the caudal. The tubes appear to be single. The head, with the exception of the nasal, loreal, frontal and labial regions naked, the rest covered with rather large scales. Three rows of scales below the eye, the middle row with 6 and the præoperculum with 3. Scales on the opercles and cranium large. General color greenish with the outer edges of each scale broadly bordered with light green or yellowish. The D. with a longitudinal bar, of lighter color than the green, which bifurcates near the middle which results in an intervening bar of the greenish color of the rest of the fin. A. similar to the D., but without the median green bar. P. and V. greenish, their lower and inner portions lighter. A bar, evidently reddish and bordered above and below by a dark olivaceous band from the anterior margin of the eye across the snout. Total length $11\frac{3}{4}$ inches.

No. 23,291.

10. *Scarus lupus* sp. nov. Plate XVIII, fig. 1 (upper figure).

Form of the body oblong, elliptical, deep and compressed, the greatest depth which is situated medianly about equal to the length of the head and $3\frac{1}{2}$ in the total length. Profile gently convex from snout to origin of D. The eye is situated in the upper portion of the head and nearly median, and in which it is contained 6, and in the snout $2\frac{3}{5}$, and in the postocular region $2\frac{2}{5}$, and in the interorbital space 2 and in the greatest depth of the head nearly 5 times. The greatest depth of the head falls short of its length by an eye-diameter, though it is longer than the P. by nearly the same distance. Snout very prominent, the beak large and powerful, the upper projecting beyond the lower and with small denticulations which are rounded and do not form a very sharp cutting edge. No lateral teeth at the bases of either jaw like those of the preceding species and the lips thin and covering the bases of the jaws for a short distance only. Head, with the exception of the nasal, loreal, præopercular,

labial, frontal and ceratohyal regions scaled, though there is a naked strip above and behind the eye. The bare tracts mentioned are more or less striated, especially around the eyes and the lores, the præoperculum is strongly so, and the rest of the tracts on the under surface of the head are papillose. The opercular flap is about median in the depth of the body, the origin of the P. anterior to its extremity at which point directly above, the D. is inserted. The P. extends posteriorly beyond the A. a short distance, radii ii, 13. V. extending for two-thirds of the distance between their origin and that of the A., the rays not being enlarged and with the fin formula i, 5. A. basis not so long as the length of the P., about equal to the V. and with the radii ii, 9. D. ix, 10, its base very long and the rays of nearly uniform length. No row of scales along the bases of either D. or A. Upper and lower rays of the caudal produced into points extending beyond the posterior edge of the fin for about an eye-diameter, the margin of which is deeply convex above sloping obliquely to base of the lower projection. Body covered with very large scales, those on the cheek in 2 series and with 5 or 6 scales in the lower row. Lateral line parallel with the back, interrupted, extending over 19 scales before the interruption, after which it starts on the antero-lateral portion of the caudal peduncle where it continues over 6 scales to the caudal. The scales which ensheathe the base of the caudal are 3 in number, enlarged and widened. Tubes of the lateral line branched. General color greenish or greenish olivaceous, with the opercles bluish. A light band from the lores across the snout and a light round spot above each maxillary. Beak white. Total length $11\frac{5}{8}$ inches.

No. 23,292.

CHÆTODONTIDÆ.

11. *Chætodon auriga* Forskal.

Descript. Animal., 1775, p. 60.

Three specimens. Nos. 23,293, 23,294 and 23,295.

12. *Chætodon semeion* Bleeker.

Natuurk. Tydsch. voor Nederl. Indie, Deel VIII (New Series, V) 1855, p. 450.

Two examples. Nos. 23,296 and 23,297.

TEUTHIDIDÆ.

13. *Monoceros vlamingii* (Cuvier and Valenciennes).

Naseus vlamingii Cuvier and Valenciennes, Hist. Nat. Poiss., X, 1835, p. 216.

Form of the body oblong ovoid, very much compressed. The greatest depth of the body about the anterior part and about 3 in the total length without caudal filaments. Head, from tip of the snout, $5\frac{1}{5}$ in total length (excluding filaments), its greatest depth in that of the body not quite 2, much shorter than the length of the head, and equal to the space between the tip of the rostrum and the origin of the D. The rostrum or horn-like projection does not extend beyond the tip of the snout and with its apex bluntly rounded. The interorbital space very strongly convex and contained nearly 2 in the snout and 3 in the head. Nostrils in an oblique slit directly in front of the eye. Eye situated high in the head, the lower half horizontal with the rostrum or horn and posterior $4\frac{1}{3}$ in the head, $1\frac{1}{2}$ in interorbital space and $2\frac{2}{3}$ in snout. Space between tip of snout and posterior margin of eye and space between posterior extremity of maxillary and upper posterior edge of operculum equal. Teeth small, even and smooth, without groove, conical and without sharp edge. Præoperculum very oblique, forming an obtuse angle anterior to the eye. Origin of the P. below the mouth, radii ii, 15, equal to the space between the points formed by the branchial aperture. Origin of the D. slightly behind the eye, anterior to the branchial aperture, on a line with which the P. is inserted and with large strong spines, the radii vi, 26, and of uniform length. Origin of V. behind P., radii i, 2, the spines roughened and strong. Origin of the A. below the last D. spine, radii ii, 27, its base equal to the soft D. which it greatly resembles. Two large keeled immovable laminae on the caudal peduncle, which is small, with the keels projecting forward. Caudal triangular in shape, the upper and lower outer rays produced into long filaments which project for a space beyond the fin, equal to the depth of the body. Posterior margin of caudal truncate. Body covered with very small granulations which are rough to the touch, this roughness extending over many of the spines of the fins and entirely over the caudal. General color dark blackish brown, the upper part of the trunk with indistinct blackish spots and the lateral and lower portions

with indistinct narrow, wavy, blackish stripes arranged crosswise. Posterior portion of the caudal lighter than the general color and with a dark terminal band along the margin which is light. Tips of both D. and A. project posteriorly as far as the posterior margin of the posterior lamina. Lateral line present extending along the upper part of the trunk parallel to the line of the back to below the posterior D. region where it terminates. Total length, without filaments, $17\frac{1}{4}$ inches.

Two fine specimens. Nos. 23,298 and 23,299.

14. *Teuthis guttatus* (Bloch and Schneider).

Acanthurus guttatus Bloch and Schneider, Syst. Ichth., 1801, p. 215.

Acanthurus guttatus Cuvier and Valenciennes, Hist. Nat. Poiss., X, 1835, p. 143.

Harpurus guttatus Forster, Descript. Animal., Ed. Lichtenstein, 1844, p. 218.

Acanthurus guttatus Günther, Cat. Fish. Brit. Mus., III, 1861, p. 329; and in Fische der Südsee, Journal des Mus. Godeffroy, II, 1873-75, p. 109, pl. 69, f. a.

The name *Acanthurus guttatus* of Bloch and Schneider is the earliest for this species that is tenable, though they refer to " *Harpurus guttatus* J. R. Forster, iii, 9," which seems to me to refer to some unpublished work, as the first reference to *Harpurus guttatus* is published in the *Descript. Animal.*, Ed. Lichtenstein.

Nos. 23,300 and 23,301.

15. *Teuthis achilles* (Shaw).

Acanthurus achilles Shaw, General Zoölogy, IV, 1803, p. 383.

Form of the body oblong ovoid, somewhat produced anteriorly, much compressed and with the greatest depth about the anterior third, and contained twice in the length without caudal. Head about $1\frac{4}{5}$ in depth of the body and $4\frac{1}{4}$ in the length from tip of snout to the margin of the middle caudal rays. Snout small and produced and the region forming the anterior profile line of the head above convex, rounded, and having a swollen appearance; cheeks concave. Nares directly in front of the eye. Eye midway between the tip of the snout and the tip of the first D. spine and also midway between the upper anterior profile line of the head and the upper point formed by the branchial aperture; 3 in snout, a little over 4 in head and $1\frac{2}{5}$ in the interorbital space. Teeth broad, the edge forming 4 or 5 lobate denticulations, which are more distinct in the upper jaw than in the lower, and about

8 or 10 in each jaw. Lower angle of the præoperculum anterior to the eye, and the operculum with striations. Scapular girdle exposed and with striations. Origin of the P. on a level with the mouth, and the caudal spine, anterior to that of the D., and behind the branchial aperture. P. ii, 14, not reaching beyond the tips of the V., though they exceed the latter in length and also extend beyond the origin of the A. V. i, 5, its origin posterior to that of the P. and its first soft ray the longest, expanded and produced into a filament-like point. D. ix, 30 or 31, the spines graduated to the eighth and ninth, which are the longest and of more or less equal height with the soft rays. A. iii, 27 (?) or 28, the spines and anterior soft rays graduated and then even, like the soft D. Caudal triangular, with developed rudimentary rays, the true radii 16 in number; several of the upper and lower rays are produced into long sharp points, which project beyond the margins of the other caudal radii for a distance equal to the width of a naked postero-lateral space on trunk. This space, which is deeply ovoid, includes in its apical portion the keeled spine of the caudal peduncle, which is furnished with a groove in the body, and also with its posterior portion produced into a small backward projecting point. Scales of the body very small, those upon the thoracic region especially so. Lateral line distinct, superior and crossing the upper part of the wide lateral space to the base of the caudal. General color blackish, cheeks light and with wavy stripes. Naked lateral space and basal portion of posterior D. and A. rays, which latter are in the form of narrow bands, slightly increasing in width upon the last rays, at present brownish. Caudal with a broad basal black band and the space between this and a black posterior bar which becomes attenuated above and below, and extends upon the produced rays for about half their distance when they run back and join the basal black band, brownish. This pattern on the tail is the same shape as the tail itself, only smaller and leaving a margin all around, which is broad medianly, and of a whitish color. Eyes reddish. Four specimens, the largest of which measures $9\frac{1}{4}$ inches.

Nos. 23,302, 23,303, 23,304 and 23,305.

16. *Teuthis aliala* (Lesson).

Acanthurus aliala Lesson, Voyage Coquille, Zool., pt. i, tome II, 1830, p. 150.

No. 23,306.

BALISTIDÆ.

17. *Balistapus aculeatus* (Linnaeus).

Balistes aculeatus Linnaeus, Syst. Nat., Ed. X, 1758, p. 328.

Two fine specimens. Nos. 23,307 and 23,308.

18. *Balistapus undulatus* (Mungo Park).

Balistes undulatus Mungo Park, Trans. Linn. Soc., London, III, 1797, p. 37.

Two specimens represent this species, and they vary slightly, especially in the pattern of the coloration. In the smaller example there are three small spots on the labial margin and one below the distal extremity of the maxilla.

Nos. 23,309 and 23,310.

19. *Melichthys piceus* (Poey).

Balistes piceus Poey, Proc. Acad. Nat. Sci. Phila., 1863, p. 180.

Three specimens. Nos. 23,311, 23,312 and 23,313.

OSTRACIIDÆ.

20. *Ostracion sebæ* Bleeker, Verhandl. Batavia. Genootsch. Kunst. Wetensch., Deel XXIV, 1852, p. 34, pl. vi, f. 13.

No. 23,314.

21. *Ostracion punctatus* Bloch and Schneider, Syst. Ichth., 1801, p. 501.

Nos. 23,315, 23,316 and 23,317.

TETRAODONTIDÆ.

22. *Arathron nigropunctatus* (Bloch and Schneider).

Tetrodon nigropunctatus Bloch and Schneider, l. c., 1801, p. 501.

No. 23,318.

23. *Arathron* — sp.?

A young specimen, most likely *Arathron reticulatus* (Günther).

No. 23,319.



Fowler, Henry W. 1899. "Observations on Fishes from the Caroline Islands." *Proceedings of the Academy of Natural Sciences of Philadelphia* 51, 482–496.

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