

DESCRIPTION OF THREE SPECIES OF CRABS (OSACHILA) FROM THE EASTERN COAST OF NORTH AMERICA.

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INTRODUCTION.

A reexamination of the specimens of so-called *Osachila tuberosa* in the United States National Museum discloses the presence of three species instead of one in the area extending from Cape Hatteras, North Carolina, to the Gulf of Mexico and the West Indies. The species are very closely related and their ranges overlap. Through the kindness of Dr. Walter Faxon and Prof. C. C. Nutting, I have been permitted to study all the specimens in the Museum of Comparative Zoology and the Museum of the State University of Iowa.

CHARACTERS COMMON TO OSACHILA TUBEROSA AND ITS ALLIES.

Carapace octagonal. Six large protuberances: one mesogastric, one metagastric (paired), one cardiac, one mesobranchial (paired). Protuberances and lateral margins finely eroded, as if worm-eaten. Lobes of front separated by a deep, closed or narrow button-hole fissure. Antero-lateral margin (continued toward the buccal cavity) finely dentate. Postero-lateral margin with four larger teeth or lobes, including the one at the lateral angle. Maxillipeds, sternum and bases of legs below, eroded. Chelipeds eroded. Upper margin of manus tridentate. Margins of legs thin, punctate.

DIFFERENCES.

*O. tuberosa* and *antillensis* are similar in form, while the carapace of *semilevis* has the antero-lateral margin longer in proportion to the postero-lateral, the postero-lateral margin being therefore more transverse. *O. tuberosa* and *antillensis* have a small longitudinal protuberance between the branchial and cardiac protuberances; *O. semilevis* has none. *O. tuberosa* and *semilevis* have the cardiac region subcircular in outline; in *O. antillensis* this region is continued backward in a narrowed prolongation. On either side of the

posterior part of the cardiac region there is a tubercle in *tuberosa* and *antillensis*, but not in *semilevis*. The carapace depressions are everywhere deeply eroded in *antillensis*, more so than the elevations; the depressions in *tuberosa* are only in part eroded, largely closely punctate; all the depressions in *semilevis* are smooth to the naked eye, but microscopically punctate. Frontal lobes of *antillensis* more advanced than in *tuberosa* and *semilevis*. Antero-lateral margin thicker in *antillensis* than in *tuberosa* or *semilevis*. Postero-lateral teeth of *tuberosa* triangular, the first or lateral tooth projecting sideways beyond the antero-lateral margin, the last tooth rectangular, subacute, larger than the two preceding; the postero-lateral prominences in *antillensis* and *semilevis* are rounded lobes; in *antillensis*, the first or lateral lobe does not project sideways beyond the antero-lateral margin, the last lobe is very little longer (from apex to base) than the third lobe, and the third lobe very little longer than the second; in *semilevis* the first or lateral lobe is produced sideways equally with the adjacent antero-lateral tooth, the last lobe is longer (from apex to base) than the others and is wider than the third lobe and narrower than the second lobe. The abdomen of *tuberosa* and *antillensis* is deeply eroded all over, that of *semilevis* is moderately eroded along the sides and on the last two segments. The manus of *tuberosa* has the proximal tooth on the upper margin bifid; in *antillensis* the proximal tooth is tridentulate; in *semilevis* all the teeth are simple and entire. The fixed finger in *semilevis* is shorter and the dactylus more deflexed than in *tuberosa* and *antillensis*. Dactyli of *tuberosa* and *antillensis* covered with a short, dense, feltlike pubescence, which is absent in *semilevis*.

## MEASUREMENTS.

Name.	Sex.	Cat. No.	Length, median.	Width at lateral angle.	Antero-lateral distance.	Postero-lateral distance.
<i>O. tuberosa</i> .....	Female..	8746	18.2	20.2	11.6	10.2
<i>O. tuberosa</i> .....	Male....	46044	9	9.4	5.1	4.7
<i>O. antillensis</i> ...	Female <sup>1</sup> .	9503	19.2	21.2	12.1	11
<i>O. antillensis</i> ...	Male....	9508	11	11.8	6.8	6
<i>O. semilevis</i> ....	Female <sup>1</sup> .	17851	11.6	13	7.5	6.3

<sup>1</sup> Holotype.

## OSACHILA TUBEROSA Stimpson.

Plate 36, fig. 3.

*Osachila tuberosa* STIMPSON, Bull. Mus. Comp. Zool., vol. 2, 1871, p. 154.—  
A. MILNE EDWARDS, Bull. Mus. Comp. Zool., vol. 8, 1880, p. 20 (part;  
specimen from Sombrero, 54 fathoms, only).—SMITH, Ann. Rept.  
Commr. of Fish and Fisheries for 1885 (1886), p. 636 [32].—RATHBUN,  
Bull. Lab. Nat. Hist. State Univ. Iowa, vol. 4, 1898, p. 290 (part; speci-  
men from Station 24).

Distinguished by its thin-edged postero-lateral margin armed with triangular teeth, the first one, which is situated at the lateral angle of the carapace, projecting sideways beyond the antero-lateral margin; the fourth or last tooth prominent, larger than the two preceding.

Carapace not eroded all over.

Cardiac region rounded behind.

Upper margin of palm tridentate, the proximal tooth bifid.

*Color*.—Sand color with reddish cast, white below, claws and legs white (Henderson).

*Variations*.—Stimpson says of *tuberosa* that the lateral tooth of the carapace "forms part of the branchial protuberance." This is true in only two of the nine specimens examined, a female collected by Stimpson (No. 2994, M. C. Z.), and a larger female bearing eggs, from off Sand Key, Florida (No. 47955, U.S.N.M.); the remainder of the specimens have the branchial protuberance separated by more or less of a furrow from the lateral tooth. The separation is most evident in the largest specimen, a female (No. 8746, U.S.N.M.). In most of the 6 smaller specimens the depressions of the carapace are wholly punctate, not eroded. In the single male (No. 46044, U.S.N.M.) the protuberances of the carapace are smaller and the depressions deeper than in the female, the proximal tooth on the upper margin of the manus is so deeply bifid that there appear to be 4 subequal teeth in all. (Stimpson says, "four teeth".) Stimpson also says, "The cardiac protuberance is rounded and smaller than the metagastric ones." This is not true of any specimens that I have seen; the cardiac protuberance may be lower but it is quite as large as, or larger than, the metagastric protuberances.

## LOCALITIES OF SPECIMENS EXAMINED BY THE WRITER.

Off Cape Hatteras, North Carolina, lat. 35° 12' 30'' N.; long. 75° 05' 00'' W., 48 fathoms, bottom temp. 77°, crs. gy. bk. S.; Station 2269, U. S. Fish Comm. Str. *Albatross*, 1884; 1 female, Cat. No. 8746, U.S.N.M.

Off Sand Key, Florida, 40 fathoms; J. B. Henderson collector; 1 male, Cat. No. 46044, U.S.N.M.

S. by E. from Sand Key Light, Florida, 61 fathoms; J. B. Henderson collector; 1 female ovig., Cat. No. 47955, U.S.N.M.

Off Key West, Florida, Sand Key Light bearing W. N. W., Key West Light bearing North, 60 fathoms; Biol. Exped. State Univ. Iowa, June 19, 1893; 1 male, 1 female, 2 young, Cat. No. 12111, Mus. State Univ. Iowa.

Off Sombrero Key, Florida, 54 fathoms; U. S. C. S. Str. *Bache* (Wm. Stimpson), Apr. 2, 5th cast; 1 female, Cat. No. 2995, M. C. Z. Identified by A. Milne Edwards.

S. E. of Key West, Florida, 61 fathoms; J. B. Henderson collector; 2 females, Cat. No. 47956, U.S.N.M.

West coast of Florida, lat.  $25^{\circ} 50' 15''$  N.; long.  $83^{\circ} 41' 30''$  W., 49 fathoms, temp.  $68^{\circ}$ , fne. S. brk. Sh.; Station 5091, U. S. F. C. Sch. *Grampus*, 1889; 2 young females, Cat. No. 15332, U.S.N.M.

West coast of Florida, 50 fathoms; U. S. C. S. Str. *Bache* (Wm. Stimpson); 1 female, Cat. No. 2994, M. C. Z. Identified by A. Milne Edwards.

LOCALITIES GIVEN BY STIMPSON.

According to Stimpson, this species was taken also at the following localities in the Florida Straits by the United States Coast Survey steamer *Bibb* (L. F. de Pourtales). So far as I know, none of the cotypes are extant.

Off Carysfort Reef, lat.  $25^{\circ} 10' 30''$  N.; long.  $80^{\circ} 10' 45''$  W., 60 fathoms, sand; Station 146 P (Cast 5), Mar. 21, 1869.

Off French Reef, 45 fathoms; Station 143 P (Cast 2), Mar. 21, 1869.

Off Conch Reef, 40 fathoms; Station 142 P (Cast 1), Mar. 21, 1869.

West of Tortugas, lat.  $24^{\circ} 41' 30''$  N.; long.  $83^{\circ} 19' 00''$  W., 36 fathoms, sand and shells; Station 85 P (Cast 4), Jan. 16, 1869.

West of Tortugas, lat.  $24^{\circ} 42' 00''$  N.; long.  $83^{\circ} 22' 45''$  W., 36 fathoms, sand, shells, and sponges; Station 86 P (Cast 5), Jan. 16, 1869.

*OSACHILA ANTILLENIS*, new species.

Plate 36, fig. 2.

*Osachila tuberosa* A. MILNE EDWARDS, Bull. Mus. Comp. Zool., vol. 8, 1880, p. 20 (part; all specimens, except from Sombrero).—RATHBUN, Bull. Lab. Nat. Hist. State Univ. Iowa, vol. 4, 1898, p. 290 (part; specimen from off Havana).

Distinguished by its cardiac region not broadly rounded behind but narrowed and continued backward almost to a point.

Carapace eroded all over.

Postero-lateral margin thick, with rounded lobes, the first or lateral lobe not projecting sideways beyond the antero-lateral margin.

Proximal tooth on upper margin of manus tridentulate.

*Variations.*—Eighteen specimens were examined. While the majority of the specimens, including the two largest ones, are, as stated above, deeply eroded in the depressions as well as on the protuberances of the carapace, this is not true in all cases. One out of two males of equal size (No. 9508, U.S.N.M.), one male in a set of two, male and female (No. 2603, M. C. Z.), one very small male (No. 2595, M. C. Z.), one male (No. 2731, M. C. Z.), and one female of good size (No. 2922, M. C. Z.) have the depressions mostly simply punctate. The frontal lobes, though more advanced in the full grown specimens than in *tuberosa* of the same size, are not more advanced when smaller specimens are compared.

## LOCALITIES OF SPECIMENS EXAMINED BY THE WRITER.

Off Havana, Cuba, lat.  $23^{\circ} 10' 31''$  N.; long.  $82^{\circ} 19' 55''$  W., 114 fathoms, coral; Station 2331, U. S. F. C. Str. *Albatross*, 1885; 1 female, holotype, Cat. No. 9503, U.S.N.M.

Off Havana, Cuba, lat.  $23^{\circ} 10' 42''$  N.; long.  $82^{\circ} 18' 24''$  W., 67 fathoms, wh. Co.; Station 2334, U. S. F. C. Str. *Albatross*, 1885; 2 males, Cat. No. 9508, U.S.N.M.

Off Havana, Cuba; Biol. Exped. State Univ. Iowa, May 26, 1893; 1 male, Cat. No. 20496, Mus. State Univ. Iowa.

Off Frederickstadt, Santa Cruz, lat.  $17^{\circ} 37' 55''$  N.; long.  $64^{\circ} 54' 20''$  W., 117 fathoms, R. brk. Sh., temp.  $65^{\circ}$ ; Station 132, U. S. C. S. Str. *Blake*, Jan. 5, 1879; 1 male, Cat. No. 2591, M. C. Z.; 1 male, 1 female, Cat. No. 2603, M. C. Z.

Off Montserrat, lat.  $16^{\circ} 41' 54''$  N.; long.  $62^{\circ} 13' 24''$  W., 88 fathoms, temp.  $69^{\circ}$ ; Station 156, U. S. C. S. Str. *Blake*, Jan. 16, 1879; 1 female, Cat. No. 2774, M. C. Z.

Off Dominica, lat.  $15^{\circ} 32' 18''$  N.; long.  $61^{\circ} 30' 10''$  W., 118 fathoms, S. brk. Sh., temp.  $65^{\circ}$ ; Station 177, U. S. C. S. Str. *Blake*, Jan. 24, 1879; 2 males, 1 female, Cat. No. 2768, M. C. Z.

Off Dominica, lat.  $15^{\circ} 17' 20''$  N.; long.  $61^{\circ} 24' 22''$  W., 138 fathoms, fine S. M., temp.  $63\frac{3}{4}^{\circ}$ ; Station 192, U. S. C. S. Str. *Blake*, Jan. 30, 1879; 1 female, Cat. No. 2922, M. C. Z.

Off Barbados, lat.  $13^{\circ} 11' 54''$  N.; long.  $59^{\circ} 38' 45''$  W., 73 fathoms, Co. S. Sh., temp.  $70\frac{3}{4}^{\circ}$ ; Station 290, U. S. C. S. Str. *Blake*, Mar. 9, 1879; 1 male, Cat. No. 2595, M. C. Z.

Off Barbados, lat.  $13^{\circ} 04' 12''$  N.; long.  $59^{\circ} 36' 45''$  W., 76 fathoms, Co. brk. Sh., temp.  $64\frac{3}{4}^{\circ}$ ; Station 272, U. S. C. S. Str. *Blake*, Mar. 5, 1879; 1 female, Cat. No. 2579, M. C. Z.; 1 female, Cat. No. 2643, U.S.N.M.

Off Grenada, lat.  $11^{\circ} 27' 00''$  N.; long.  $62^{\circ} 11' 00''$  W., 164 fathoms, S. Sh., temp.  $57^{\circ}$ ; Station 254, U. S. C. S. Str. *Blake*, Feb. 27, 1879; 1 female, Cat. No. 2921, M. C. Z.



Off Grenada, lat.  $11^{\circ} 25' 00''$  N.; long.  $62^{\circ} 04' 15''$  W., 96 fathoms, Co. brk. Sh., temp.  $58\frac{1}{2}^{\circ}$ ; Station 253, U. S. C. S. Str. *Blake*, Feb. 27, 1879; 1 male, Cat. No. 2731, M. C. Z.; 1 male, Cat. No. 2923, M. C. Z.

One female collected by the U. S. C. S. *Blake* and labeled "Station 272. Montserrat." Station 272 is off Barbados, 76 fathoms. Cat. No. 17852, U.S.N.M.

ADDITIONAL "BLAKE" STATIONS CITED BY A. MILNE EDWARDS.

Station 155, same locality as Station 156, above.

Station 232, off St. Vincent, lat.  $13^{\circ} 06' 45''$  N.; long.  $61^{\circ} 06' 55''$  W., 87 fathoms, Co., temp.  $62^{\circ}$ , Feb. 21, 1879.

OSACHILA SEMILEVIS, new species.

Plate 36, fig. 1.

Postero-lateral margin much shorter than antero-lateral.

Carapace smooth except on elevations.

No longitudinal elevation between cardiac and mesobranchial elevations.

Postero-lateral margin thick, with rounded lobes, the first or lateral lobe projecting sideways equally with the adjacent antero-lateral tooth, the last lobe prominent.

Teeth on upper margin of manus simple.

*Variations*.—One specimen only, a rather small female, has a small protuberance between the mesobranchial and cardiac protuberances. In some cases the penultimate lobe of the postero-lateral margin is so shallow that it has no appearance of a lobe but only a straight piece of thickened margin. In the female, No. 17851, U.S.N.M., the mesobranchial lobe may be said to include the lateral marginal lobe, but this is scarcely true in the other specimens.

LOCALITIES OF SPECIMENS EXAMINED BY THE WRITER.

West coast of Florida, lat.  $29^{\circ} 14' 00''$  N.; long.  $85^{\circ} 29' 15''$  W., 25 fathoms, Co.; Station 2373, U. S. F. C. Str. *Albatross*, 1885; 1 female, holotype, Cat. No. 17851, U.S.N.M.

West coast of Florida, lat.  $26^{\circ} 19' 00''$  N.; long.  $83^{\circ} 11' 00''$  W., 27 fathoms, S. Algae, temp.  $68^{\circ}$ ; Station 5108, U. S. F. C. Sch. *Grampus*, 1889; 1 female, Cat. No. 18203, U.S.N.M.

West coast of Florida, lat.  $25^{\circ} 34' 30''$  N.; long.  $83^{\circ} 01' 00''$ , 27 fathoms, fue. S. blk. Sp., temp.  $68^{\circ}$ , Station 5079, U. S. F. C. Sch. *Grampus*, 1889; 1 female. Cat. No. 18204, U.S.N.M.

EXPLANATION OF PLATE 36.

- FIG. 1. *Osachila semilevis*, female, partially overgrown with bryozoans and worm tube. Holotype.  $\times 2\frac{1}{2}$ .  
 2. *Osachila antillensis*, female. Holotype.  $\times 2$ .  
 3. *Osachila tuberosa*, female. Cat. No. 8746.  $\times 2\frac{1}{2}$ .