

It ranges from Beaufort, N. C. to the Abrolhos Islands and Bahia, Brazil. Off Cape Fear, N. C., 15–17 fathoms, West Indies, 6–16 fathoms, Florida, and many other localities (Rathbun). Bermuda and Bahia, Brazil (Miers; Rathbun); Abrolhos (Smith, Yale Mus.).

**Microphrys bicornutus** (Latr.) A. M.-Edw. *Spider Crab*.

*Pisa bicornuta* Latreille, Encyc. Meth., Nat. Hist., x, p. 141, 1825.

*Pericera bicorna* H. Milne-Edwards, Hist. nat. Crust., i, p. 337, 1834.

*Pisa bicorna* Gibbes, Proc. Amer. Assoc., 3d meeting, p. 170, 1850.

*Pericera bicornis* Saussure, Crust. Antilles et du Mexique, p. 12, pl. 1, figs. 3, 3c, 1858.

*Milnia bicornuta* Stimpson, Notes on North Amer. Crust., Annals Lye. Nat. Hist., New York, vol. vii, pp. 51, 180, 1860. Smith, Brazil Crust., these Trans., ii, p. 1, 1869.

*Microphrys bicornutus* A. Milne-Edw., Nouv. Arch. Mus. Hist. Nat., viii, p. 247, 1872; Miss. Sci. Mex., v, p. 61, pl. xiv, figs. 2–4, 1873; Bull. Mus. Comp. Zool., viii, p. 1, 1880. Miers, Voy. Chall., Zool., viii, p. 83, 1886 (Bermuda).

*Microphrys bicornutus* M. J. Rathbun, Proc. U. S. Nat. Mus., xv, p. 253, 1892 (synon.); Brach. and Macrura Porto Rico, p. 72, 1901.

*Pisa galibica* and *Pisa purpurea* Schramm and Desb., Crust. Guadeloupe, p. 18, 1867 (t. A. M.-Edw.).

FIGURE 43.

In life, this species nearly always has its carapace covered with closely adherent algæ, bryozoa, sponges, etc. which pretty effectually

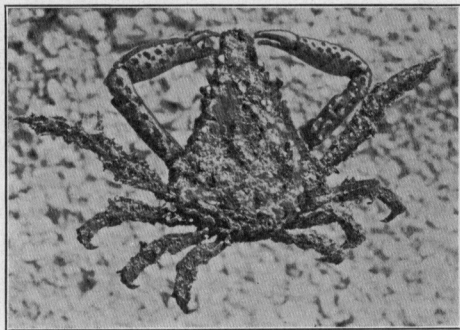


Figure 43.—*Microphrys bicornutus*, nat. size, with foreign growths on the carapace. Phot. A. H. V.

conceal it. When cleaned, it is dull yellowish brown; its chelipeds are always covered with small, round, purplish spots. This is diagnostic for the species.

Many of the females collected April 20, 1901, carried eggs.

It is everywhere common on the rocky shores at low tide and on the reefs, living in crevices and under stones, or often more or less exposed. It is contained in nearly every Bermuda collection, including those of Jones, Goode, and others of early date.

Its range extends from Florida to Bahia, Brazil. Common on coral reefs throughout the West Indies. Abrolhos Reefs, Brazil, Colon, Florida, and Bermuda (Smith); Pernambuco (Rathbun).

**Macroceloma trispinosum** (Latr.) Miers. *Spider Crab*.

*Pisa trispinosa* Latr., Ency. Meth., Nat. Hist., x, p. 142, 1825.

*Pericera trispinosa* H. Milne-Edw., Hist. nat. Crust., i, p. 336, 1834. A. M.-Edw., Miss. Sci. Mex., v, p. 52, pl. xv, fig. 2, 1873.

*Macroceloma trispinosa* Miers, Journ. Linn. Soc. London, xiv, p. 665, 1879; Voy. Chall., Zoöl., xvii, p. 80, 1886. M. J. Rathbun, Proc. U. S. Nat. Mus., xv, p. 249, 1892 (syn. and distribution); Brachy. and Macr. Porto Rico, p. 74, 1901.

FIGURE 44.

This is one of the more common crabs at the Bermudas. It occurs from low water to 10 fathoms and more. It is very slow in its

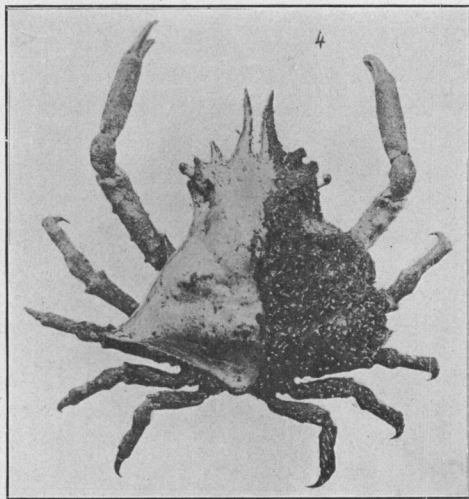


Figure 44.—*Macroceloma trispinosum*, with the hairs, etc., removed from the left side of the carapace; about nat. size. Phot. A. H. V.

motions and for its protection depends largely on the growth of sponges, algæ, etc. which usually entirely covers the nodulose carapace, causing it to resemble a stone or a mass of sponges. When

cleaned, it is reddish brown. Some taken in April, 1898, and April 20, 1901, carried eggs; also one taken in midsummer by Prof. Kincaid. Its range extends from North Carolina to Bahia, Brazil, Dominica I. (Yale Mus., coll., A. H. Verrill).

Off N. Carolina, 17 fathoms (U. S. Fish Com.).

**Macroceloma subparallellum** (Stimp.) Miers.

*Pericera subparallela* Stimpson, Ann. Lye. Nat. Hist. N. York, vii, p. 182 [54], 1860 (St. Thomas); A. M.-Edw., Crust. Miss. Sci. Mex., p. 54, pl. xiii, figs. 3-3d, 1873. Verrill, these Trans., vol. xi, p. 17, 1901 (Bermuda).

*Macroceloma subparallela* Miers, Voy. Chall., Zool., xvii, p. 79, 1886; Rathbun, Proc. U. S. Nat. Mus., xv, p. 250, 1892.

*Macroceloma subparallelum* M. J. Rathbun, Brach. and Macrura Porto Rico, p. 74, 1901.

PLATE XXIII, FIGURES 3, *a*, *c*, *d*.

The first Bermuda specimen known was a small one, taken by the Yale party, in 1898. A much larger specimen (No. 640) was taken in a seine at Nonesuch I., Sept. 3, 1905, by the party from the Field Mus. Nat. History. It is a female carrying eggs. Its carapace is 34<sup>mm</sup> long, less rostrum 27.5<sup>mm</sup>; 29<sup>mm</sup> broad, less spines 23<sup>mm</sup>; length of rostral horns 6.5<sup>mm</sup>; length of chelæ, 10.5; height, 3.5<sup>mm</sup>. The horns are rather long and sharp, nearly parallel, with a large U-shaped space between them. There is a row of seven stout spini-form or conical tubercles across the posterior part of the carapace; the central and two lateral are the larger. It is covered with algæ, beneath which it is provided with a coating of stiff, rough hairs, with hooked tips.

The species ranges from Florida to Brazil.

**Stenocionops furcata** (Olivier) Rathbun.

*Cancer furcatus* Olivier, Encyc. Meth., Hist. Nat., Insectes, vi, p. 174, 1791 (*t.* Rathbun).

*Cancer cornudo* Herbst, Natur. Krabben u. Krebse, iii, part 4, p. 6, pl. lix, f. 6, 1804.

*Pericera cornudo* Latreille, Cuvier's Règne Anim., ed. 2, iv, p. 59, 1829 (*t.* M.-Edw.).

*Maia taurus* Lamarck, Hist., v, p. 242, 1818.

*Pericera cornuta* Latr., Cuvier, R. Anim., 2d ed., iv, p. 58, 1831. H. M.-Edw., Hist. nat. Crust., i, p. 335, pl. xiv, *b*, figs. 4, 5, 1834. Atlas Illust. ed. Cuvier, R. Anim., Crust., pl. xxx, fig. 1. Gibbes, op. cit., p. 172, 1850. Stimpson, Notes, i, op. cit. p. 183 [55]; Bull. Mus. Comp. Zool., ii, p. 113, 1870. A. M.-Edw., Miss. Sci. Mex., v, p. 51, 1875. Hurdus, Rough Notes, p. 361 (Bermuda). Miers, Voy. Challenger, Zool., xvii, p. 76, 1886. M. J. Rathbun, Family *Periceride*, Proc. U. S. Nat. Mus., xv, p. 244, 1892 (descrip., syn., and bathymetrical distrib.).

- Stenoeionops furcata* M. J. Rathbun, Ann. Inst. Jamaica, i, p. 6, 1897;  
 Brachyura and Macrura of Porto Rico, p. 73, 1901.  
*Chorinus armatus* Randall, Journ. Acad. Nat. Sci. Philad., viii, p. 108, 1839  
 (t. M. J. R.).

## PLATE XXV, FIGURE 2.

In life the back of the carapace is closely covered with dark brown, stout hairs, many of them with hooked tips, and in most cases it is more or less concealed by foreign growths, especially sponges (see fig.). Most of the specimens taken in deep water at Dominica I. had the back, and sometimes the legs, covered with an elegantly colored sea anemone (*Calliactis tricolor*), so numerous that the edges of their bases were in close contact, but others had sponges attached to the carapace.

A good male specimen from Egmont Key, W. Florida (No. 971, Yale Mus.), has very little foreign growths on the carapace, except a few small red algæ. But there is considerable fine sand adhering between the hairs. It comes from a sandy region, and had, perhaps, recently moulted. The long hooked hairs are partly in clusters or large groups.

## Measurements.

No.	Sex	Carapace				Chelæ		Dactyl	Locality
		length total	length —horns	bd'th total	bd'th —spines	length	height		
971	♂	115	88	84	63	88	16	30	W. Florida
4061	♂	100	76	63	49	62	10.5	21	Dominica

The total length of a cheliped, of No. 971, is 186<sup>mm</sup>; merus, 74<sup>mm</sup>; carpus, 25<sup>mm</sup>; chela, 88<sup>mm</sup>; rostral horns, 30<sup>mm</sup>.

The old males sometimes become very large, having the body nearly six inches long and four wide, including the horns and spines, but most of our specimens from Dominica are about two-thirds that size.

The only Bermuda record is that given by Hurdis, but he could hardly have mistaken such a peculiar and conspicuous species. His specimen was taken in a lobster-pot.

It ranges from off Georgia to Bahia, Brazil. Gulf of Mexico and off Yucatan, seventeen stations, 21–30 fathoms (Rathbun). Bahia, Brazil (A. M.-Edw.); Dominica I., 10–150 fathoms in fish-traps (A. H. Verrill, 1906, Yale Mus.). Egmont Key, W. Florida, Santa Cruz, and east coast of Mexico (Yale Mus.).

Family **PARTHENOPIDÆ.**

Chelipeds usually much stouter and often very much longer than the legs. Basal joint of the antennæ narrow and small, situated between the front and the bottom of the orbits.

**Parthenope\*** (*Platylambrus*) **crenulata** (Saus.).

*Lambrus crenulatus* Saussure, op. cit., p. 429, pl. i, figs. 4, 4a, 1855. Stimpson, Notes, No. ii, p. 201 [73]; Bulletin Mus. Comp. Zool. ii, p. 129 (*Platylambrus*) 1870.

*Platylambrus serratus* (pars) A. M.-Edw., op. cit., p. 156, pl. xxx, figs. 1-1c, 1875.

## PLATE XXVII, FIGURE 5.

Our Bermuda specimen agrees well with Saussure's description and figure, though it is much smaller. The carapace, as in his type, has an elongated, acute, lateral spine on each side. It also has the same form of rostrum, and agrees well in the tubercles and areolation of the carapace and armature of the chelipeds.

The carapace is much cut away and slightly concave behind the large lateral spine, and has no posterior lateral spines or teeth, while there are in front of the large, lateral spine six or seven small, obtuse, nearly even antero-lateral teeth or crenulations, on the evenly convex margin. Its rostrum is wide, and not constricted near the base; the tubercles of the carapace are relatively large and obtuse; five of the largest size stand in the median row, and three or four in a curved row on each side on a ridge nearly parallel with the convex, antero-lateral margin. The cervical constriction is very marked. The under edge of the chelæ has a row of minute granule-like denticles. The only remaining ambulatory leg (3d) is small, slender, and smooth. Most of the other characters are shown in the figure.

There is, on each side, a wide channel on the under side of the carapace, as in *Platylambrus* (Stimp.). Stimpson himself proposed that genus for Saussure's species and another one, similar in respect to the channels. This genus was adopted by A. M.-Edwards. He considered *crenulatus* a synonym of *P. serratus*, but his figure of the latter does not agree with our specimen.

Saussure's type was 18<sup>mm</sup> in length of carapace; breadth, with spines, 24<sup>mm</sup>; without spines, 19<sup>mm</sup>. The Bermuda specimen is 8<sup>mm</sup>

\* Miss Rathbun has shown (Proc. Biolog. Soc. Wash., xvii, p. 170, 1904) that the genus *Parthenope* (Weber, 1795) was restricted by Lamarck, 1801, to the type *P. longimana* (L.), and, therefore, that *Parthenope* should replace *Lambrus* (Leach, 1814), as usually understood.

long; 9<sup>mm</sup> wide with spines; 7.5<sup>mm</sup> without spines; length of chela, 8<sup>mm</sup>; height, 3.5<sup>mm</sup>.

Saussure's specimens were from the Antilles. Off Tortugas (Stimpson).

The single small specimen, which I refer to Saussure's species, without much doubt, was dredged on the Challenger Bank by the party from the Biological Station, in 1903.

In proportions and general appearance it resembles *P. Pourtalesii*, with which it was at first thought to be identical by me and others. The latter is not a *Platylambrus*.

It differs considerably from Stimpson's original description\* of *P. Pourtalesii* in the form of the rostrum, areolation, tubercles, and form of the carapace, number and character of the marginal teeth and of those on the chelipeds, etc.

The principal references to *P. Pourtalesii* are as follows:

*Parthenope Pourtalesii* (Stimp.).

*Lambrus Pourtalesii* Stimpson, Bull. Mus. Comp. Zool., ii, p. 129, 1870.

? A. M.-Edwards, Miss. Sci. Mex., v, p. 149, pl. xxx, figs. 2-2d. In part, M.

J. Rathbun, Amer. Naturalist, xxxiv, p. 514 (fig. 11 copied from S. I. Smith's *L. Verrillii*).

? *Lambrus Verrillii* Smith, Proc. Nat. Mus., iii, p. 415, 1881; op. cit., vol. vi, p. 14, 1883; Annual Rep. U. S. Fish Comm. for 1885, p. [24], pl. ii, fig. 2, 1886.

It should be noted that the figures given by A. M.-Edwards do not agree very well with Stimpson's description.† M.-Edwards' figures show a decidedly larger number of tubercles on the carapace; more numerous lateral teeth; two, instead of one, large posterior spines; more denticles on the chelipeds; a broader rostrum. It may well be doubted whether he really had the same species, unless his figures are very incorrect or the species remarkably variable. Our specimen comes nearer to Stimpson's type, in some respects, than to M.-Edwards' figures. But it agrees much better with Saussure's figure.

Prof. S. I. Smith, in 1881, described and figured‡ a very similar form from deep water off the eastern coast of the United States, under the name of *L. Verrillii*.

\* Stimpson's types of Crustacea were destroyed in the great Chicago Fire.

† The description in Edwards' work is a mere translation of Stimpson's and does not agree with the figures.

‡ This same figure has been used by Miss Rathbun, without credit, to illustrate *L. Pourtalesii* (Amer. Natur., xxxiv, p. 515, fig. 11). She considers the two identical.

Professor Smith later (1886) noted rather wide variations in the species that he described (see Ann. Rep. U. S. Fish Comm. for 1885), and suggested that it might prove to be the same as *L. Pourtalesii*.

His figure, however, differs much from that of M.-Edwards', especially in the much more spinulose lateral and postero-lateral margins; the much less prominent tubercles on the medial line; different areolations; and narrower front and rostrum. But the chelipeds are much more alike in both figures, than either is like those of the Bermuda form.

Stimpson's specimens were from off Florida, in 40-107 fathoms. Straits of Florida, in 95-116 fath. (M.-Edwards). Off east coast of United States (*L. Verrillii*), in 59-67 fathoms.

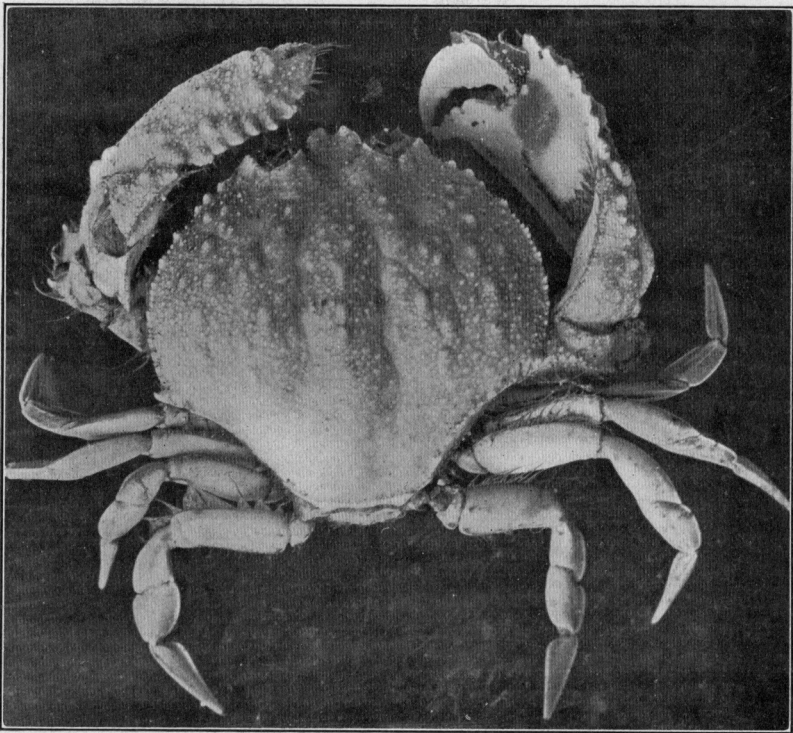


Figure 44a.—*Cycloës Bairdii*, atlantica;  $\times 1\frac{1}{2}$ . Phot. A. H. V.

## OXYSTOMATA OR LEUCOSOIDEA.

Family CALAPPIDÆ. *Box Crabs.***Calappa flammea** (Herbst) Bosc. *Box Crab.*

*Cancer flammea* Herbst, op. cit., vol. ii, p. 161, pl. xl, fig. 2, 1794.

*Calappa flammea* Bosc, Hist. nat. Crust., i, p. 185, 1802. Miers, Voy. Challenger, xvii, p. 284, pl. xxiii, figs. 1-1b, 1886 (synonymy). Rankin, op. cit., p. 532.

*Calappa marmorata* Latr., Hist. nat. Crust., v, p. 392, 1803 (*non* Fabr.). Desmarest, Consid. Crust., p. 109, 1825. H. Milne-Edw., Hist. nat. Crust., ii, p. 104, 1837. Smith, these Trans., iv, p. 263, 1880 (young at Woods Hole; descr. of megalops); Ann. Rep. U. S. Com. Fish and Fisheries for 1885, p. 31, 1886.

*Calappa flammea* M. J. Rathbun, Brach. and Macr. Porto Rico, p. 84, pl. ii (colored).

## PLATE XXV, FIGURE 1.

This large and curious species is easily distinguished from all others by its form and colors.

The most common color variety, taken in Castle Harbor, had the ground-color of the carapace dull olive-brown, in life, streaked irregularly with many flame-shaped blotches of bright red; edges of carapace bright yellow. Distal part of chelipeds yellow, with large broad patches of dark red; digits pale red or pink. Ambulatory legs pink above; the anterior edges bright red; the posterior edges and tarsi bright yellow.

Other specimens had the carapace covered with pretty regular, round, ocellated spots, the center white, surrounded by a ring of dark red or reddish brown. Chelipeds pink, spotted with roundish spots of deep red; spines red; tips of digits yellow. Ambulatory legs purple, with the articulations and posterior edges red; tarsi yellow. Its colors appear to be nocturnally protective.

The young of this species are narrower than the older ones, as shown by the following table. The ratios of the length to breadth of the carapace increases pretty regularly from 1:1.22, up to 1:1.59 in the largest. In still younger specimens examined the ratio is even smaller than the smallest in this table.



*Measurements for proportions of Carapace.*

No.	Sex	Carapace		Ratios	Locality
		length	breadth		
7676	♀	60	85	1:1.42	Jamaica
7567	♂	58	86	1:1.48	Sabanilla
	♂	73.5	111	1:1.59	Brazil
	♂	69	106.3	1:1.54	Key West
	♂	58	85	1:1.46	Egmont Key
	♀	34.3	46.5	1:1.35	Bermuda
	♂	22	27	1:1.23	Vineyard Sound
3166	♂	32	42	1:1.31	Bermuda
3165	♀	65	90	1:1.38	Bermuda

The first seven series of the above are by Prof. S. I. Smith.

*Measurements.*

No.	Sex	Carapace			Chelæ		Locality
		length	breadth total	breadth --spines	length	height	
3165	♀	65	90	84	51	46.5	Bermuda
3166	♂	32	42	38	23	21.5	Bermuda
7567	♂	58	86	72.6	--	--	Sabanilla
7676	♀	60	85	73	--	--	Jamaica
	♀	34	46.5	40	--	--	Bermuda
	♀	54	78	70.5	--	--	Egmont Key

This species has large and curiously shaped larval stages (see S. I. Smith, these *Trans.*, iv, p. 263). It evidently lives a long time in the free-swimming zoea and megalops forms. This, no doubt, accounts in part, at least, for its wide distribution. At Bermuda it is common in sheltered sandy bays and lagoons in shallow water, but is probably more abundant at greater depths. It was taken by us in Castle Harbor and Hungry Bay. It was in the early collections of J. M. Jones, Mr. Goode, C. Hartt Merriam, and others.

Its normal range extends from off Cape Hatteras to Brazil and S. Africa. Taken by the Albatross in 1884, off N. Carolina, in 13-27 fathoms (Smith). Beaufort, N. C. (Stimpson, Kingsley); Charleston, S. C. (Gibbes); Egmont Key, W. Fla. (Yale Mus.); Dominica I., taken in fish-pots in 5-10 fathoms (A. H. Verrill, 1906, Yale Mus.); Brazil (Smith); Simons Bay, Cape G. Hope (Miers).

The megalops stages are frequently carried northward by the Gulf Stream to southern New England at Woods Hole, Newport, etc., in large numbers. In mild winters a few survive. Specimens 1 to 2 inches across have been taken at Woods Hole by Mr. Vinal Edwards and others. (See S. I. Smith, these *Trans.*, iv, p. 263.)