

**Mithrax hispidus** (Herbst) Edwards. *Large Red Spider-crab; Coral Crab.*

*Cancer hispidus* Herbst, op. cit., Band i, p. 247, tab. xviii, fig. 100, 1790.

*Mithrax hispidus* H. Milne-Edwards. Mag. de Zoölogie, 2e an., 1832: Hist. nat. des Crust., i, p. 322, 1834. DeKay, Zoölogy of New York, Crust., p. 4, 1844. Gibbes, op. cit., p. 172. Stimpson, Amer. Jour. Sci., 2d ser., xxix, 1860, p. 132: Annals Lyc. Nat. Hist., New York, vol. vii, p. 18, 1860. Smith, these Trans., ii, pp. 2, 32, 1869 (descr. and measurements, Brazil). A. M.-Edw., Miss. Sci. Mex., v, i, p. 93, 1873, pl. xxi, fig. 1, 1875. M. J. Rathbun, Proc. U. S. Nat. Mus., xv, p. 265, 1892 (synon. and distribution); Brach. and Macr. Porto Rico, p. 67, 1901.

*Maia spinicincta* Lám., Hist., v, p. 241, 1818.

FIGURE 40. PLATE XXIII, FIGURES 3, 4. PLATE XXIV, FIGURE 1.

This species grows to large size. In life the larger specimens are nearly uniform deep brownish red or terra-cotta color above, brighter on the chelipeds and darker on the legs (due to brown hairs). The legs often have brighter red bands at the joints. Under parts of body mostly white or bluish white; legs red, specked with pale yellow.

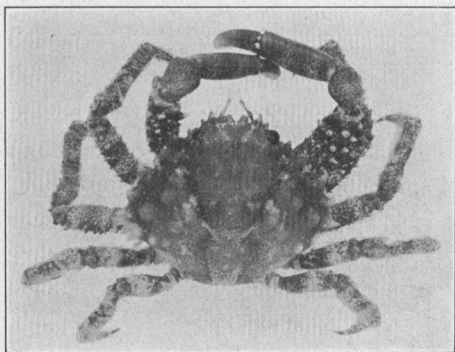


Figure 40.—*Mithrax hispidus*, young ♀, from Bermuda, about  $\frac{1}{3}$  nat. size.  
Phot. A. H. V.

A young specimen (No. 4058, fig. 40) in life had bright colors: the carapace was bright reddish brown, varied with paler patches; the spines and tubercles were light brown; chelæ pink with fine black spots; legs red, banded with pale yellow; ventral parts pale blue and bluish white. (C. S. V.)

In large individuals the gastric area is prominent, wide, with convex sides and defined by a wide and deep groove; the groove bounding the cardiac area is wide, but shallower.

Our larger Bermuda specimen has many unequal conical spines and tubercles on the surface, but between them the surface is smooth

and finely punctate, without granules. The arrangement of the spines is sufficiently well shown by the figures. The posterior lateral spine is simple, very acute, hooked, with the point turned upward and forward; the next, which is the largest and least curved, has three to five small spinules on its base; the next, which is nearly as large and more strongly hooked forward, is very acute and has one or two small basal spinules; the next (or second behind the orbitals) is larger and swollen at base, strongly hooked forward and acute at tip, and bears an acute spinule on its anterior base, and a cluster of about three small tubercles on the swollen upper side of its base; sometimes it appears bifid at base. The next spine in front is usually blunt and tuberculiform, with one or two smaller rounded tubercles on its swollen base, or the two larger tubercles may be subequal. Below the latter, on the subhepatic region, there are two large prominent, unequal spines near together. An irregular row of smaller spines is situated lower down.

The orbit is surrounded by six unequal spines, besides the antennal; of these the inner (preorbital) and outer are about equal, tuberculiform and obtuse; the two superior are small rounded tubercles. The larger antennal spine, which exceeds the rostrals in length, is acute, with tips curved mediad; the smaller antennal is also acute and about equals the inner orbitals in size and length, and it has a small rounded tubercle or tooth at its outer base.

The subrostral process is rather broad, a little concave in front, obtuse, and descends nearly perpendicularly from the rostrum. The buccal area has an angular sinus on each side of the front edge.

The ambulatory legs are covered above with sharp spines, except on the dactylus; the spines are in two or three rows. There is also a row of five or six acute spines on the lower anterior border of the merus of the two anterior legs; two or three spines on the third, and none on the last leg, below. The ambulatory legs are covered above, between the spines, with unequal sharp hairs which are most abundant on the dactyls, which have naked horn-colored tips.

The chelipeds, especially of the larger males, are unequal, large and strong. In the female they are equal. The merus bears two large, unequal, stout, subacute spines on the front margin, the distal one the longer and more curved; the upper surface has about ten unequal conical spines irregularly arranged (four or five in younger specimens); the posterior border has a row of about five to seven longer conical, subacute spines, sometimes with a few small ones interpolated. The carpus is large and swollen, punctate, nearly

smooth, but faint indications of three to five nearly obsolete tubercles can usually be seen, and in some cases two or three small proximal ones are fairly distinct. The manus is strongly compressed above, proximally, with a large round articular tubercle, but smooth, with no indication of spines or granules.

*Measurements of M. hispidus and M. ? depressus.*

No.	Sex	Carapace			Bet. orbits	Chelæ		Manus above
		length, total	breadth, total	—spines		length	height	
3019	♂	8.5	9	8.5	4	5.5	2	3.5
3265	♀	20	22.5	---	12	14	4	---
1810	♀	23	27	24	8.5	17.5	5	10
4054	♀	29	34	31	9	22	6	13
1753	♂	29.5	35	31	---	23	7	13
4058	♀	69	87	73	---	60	17	33.5
868 F.	♂	67	86	74	16	{ r. 57 l. 61	{ 17 } r. 18 } l.	{ 32 } { 35 }
34	♂	87	115	100	---	60	36	---

Nos. 3019, 4054, 4058, 868 F. Mus., and 34 are from Bermuda; No. 3265, from St. Thomas; No. 1810, East Mexico; No. 1753, Key West, Fla.

Nos. 34 and 1753 were measured by Prof. S. I. Smith. No. 34, from Goode's Bermuda collection, I have not examined.

Nos. 3019, 2265, 1810 are those referred, more or less doubtfully, to *M. depressus*.

*Proportions of M. hispidus and M. ? depressus.*

Catalogue number	3019	3265	1810	4054	1753	4058	868F.M.	34
Sex	♂	♀	♀	♀	♂	♀	♂	♂
Length carapace	8.5	20	23	29	29.5	69	76	87
Length to breadth	1:1.06	1:1.12	1:1.17	1:1.17	1:1.18	1:1.26	1:1.28	1:1.32
Length to breadth minus spines	1:1.0	---	1:1.04	1:1.07	1:1.05	1:1.07	1:1.10	1:1.15
Locality	Berm.	St. Th.	Mex.	Berm.	Key W.	Berm.	Berm.	Berm.

The two first in this series (No. 3265 and 4054, Yale Mus.) were labelled as *M. depressus* by Miss Rathbun. Nos. 3019, 3265, 4054, and 4058 are figured on plate xxiii.

This fine species is rare at Bermuda, at least in shallow water. It has not been found in many of the collections made there. The largest Bermuda specimen known to me was obtained by Mr. Goode (No. 34) in 1887. It was probably taken outside the reefs in fish-traps. My Yale party took a small one in 1898, and a larger one

(No. 4058) 1901, both in shallow water. The party from the Field Nat. Hist. Mus., 1905, obtained a larger and perfect specimen from off Tuckerstown point. Probably it was taken in a fish seine.

Very likely it is common in deeper water, on rough bottoms, among and outside the outer reefs, where it can be taken only in baited fish-traps. It appears to be one of the species that the fishermen call "coral crabs," probably on account of its red color.

It is commonly taken, of large size, in the West Indies, on similar rough bottoms, in five to thirty fathoms, in fish-traps. It is sluggish in its motions.

It ranges from S. Carolina to the Abrolhos Islands, Brazil (Smith). S. Carolina (Gibbes); Florida (Stimpson); Abrolhos Is., 30 fath., and off Cape St. Roque, 20 fath. (M. J. Rathbun).

**Mithrax depressus** A. M.-Edw. *Spider Crab*.

? *Mithrax depressus* A. Milne-Edw., Mission Sci., Mexico, part v, i, p. 96, pl. xx, figs. 4-4d, 1875. (Guadeloupe.) Verrill, these Trans., vol. x, p. 577, 1900 (Bermuda). M. J. Rathbun, Brach. and Macr. Porto Rico, p. 68, 1901.

FIGURE 41. PLATE XXIII, FIGURES 1?, 2.

The only Bermuda record of this species is based on a very young ♂ specimen (No. 3019, see pl. xxiii, fig. 1) taken in April, 1898.\* It has the carapace only 8.5<sup>mm</sup> long by 9<sup>mm</sup> broad.

It agrees closely in spinulation with the larger specimens of *M. hispidus*, but the dorsal spinules appear sharper. All the marginal spinules are simple and acute, with the points turned forward. The basal joint of the antennæ has a long, acute, central tooth, with the tips slightly incurved, as in the larger ones, and also a smaller outer acute tooth. The carpus of the chelipeds bears several small tubercles; the merus has one small spine on the inner edge; others above.

The carapace is yellowish white, with blotches of bright red; the two largest spots of red are over the branchial areas; a median is on the cardiac area; a pair is situated farther back; another small pair is behind the orbits; and another underneath the orbits; legs yellowish white, blotched or barred with red; chelæ light red with pale tips.

Although this young specimen differs from the larger ones of *M. hispidus* in proportions and general appearance, the details of the spinulation, etc., are the same. It does not agree well with the figures of *M. depressus* given by A. M.-Edwards. There are, how-

\* This is the specimen recorded by me in 1900, as *M. depressus*, on the authority of Miss Rathbun, who had examined it.

ever, specimens of intermediate sizes, that seem to unite the two supposed species together in one series.

Although this specimen appears to me to be the young of *M. hispidus*, I have kept it under *M. depressus* out of deference to the opinion of Miss Rathbun, who has examined it, for she has had opportunities to study a far larger series of both forms than I have had.

It differs from the original figure of *M. depressus* (see our fig. 34), not only in its proportions, but especially in having all the four antero-lateral marginal teeth acute and curved forward, while in the latter the anterior three are tuberculiform and obtuse. Its front is narrower between the orbits. The basal antennal joint has the

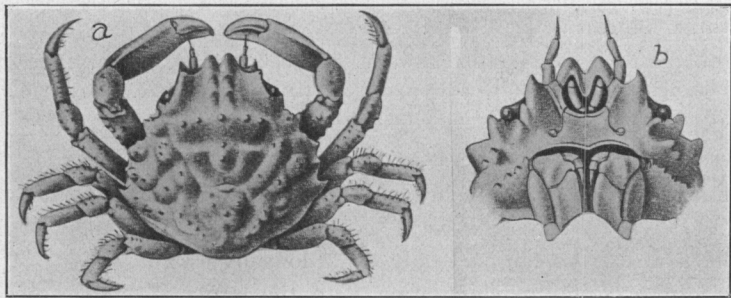


Figure 41.—*Mithrax depressus*; a, dorsal view,  $\times 2\frac{1}{3}$  times; b, under side of front, more enlarged. After A. M. Edwards' original figures. According to the natural size diagram of Edwards, his specimen was 13<sup>mm</sup> long and 12<sup>mm</sup> wide.

inner tooth narrower and sharper, and the outer one more prominent and acute. The merus of the chelipeds has a different form, the proximal end being concave instead of convex, etc. It is rather smaller than Edwards' type, which was also young, but longer than wide, while ours is wider than long.

On plate xxiii, fig. 2, I have figured a St. Thomas specimen of larger size, also labelled as *M. depressus* by Miss Rathbun, for comparison. This is rather larger than Edwards' type and agrees more nearly with his figure in respect to the form of the marginal teeth, but is otherwise very similar to the undoubted young of *M. hispidus*. The carpus of the young of the latter is also spinulose.

The larger antennal tooth is shorter and more obtuse than in any of the others figured.

From the east coast of Mexico, near Vera Cruz, we have a specimen (No. 1810 ♀ Yale Mus.) which agrees very closely with Edwards' figure of *M. depressus* as to the tubercles of the carapace and the marginal spines, and also as to the teeth of the basal antennal joint. But the merus of the maxillipeds is concave proximally, as in our other specimens. In this, the most posterior (4th) marginal tooth is very acute and hooked forward, but the other three are short-tuberculiform or broad obtuse-conical, with coarse granules on their bases; the more anterior are the larger, as in Edwards' figure. The tubercles of the carapace are broadly rounded or flattened, which is the case in *depressus*.

The merus of the chelipeds has a single obtuse spine on the inner edge; five on the outer, and two on the upper surface. The carpus is angular and uneven, with a distal transverse fossa and about nine unequal rounded tubercles.

This approaches the type of *M. depressus* more nearly than any other that I have seen. It has the adult form of the female abdomen, while number 4558 (*M. hispidus*), which is considerably larger, has the immature form of the abdomen. It is, however, very unlike the small Bermuda specimen, described above.

The range of *M. depressus* is from Florida to the Abrolhos Islands, Brazil (t. M. J. Rathbun). East coast of Mexico (Yale Mus.).

***Mithrax forceps*** (M.-Edw.) sub-sp. ***hirsutipes*** Kings. *Common Spider Crab.*

? *Mithraculus forceps* A. M.-Edw., Exp. Sci. Mex. Crust., i, p. 109, pl. xxiii, fig. 1, Dec., 1875 (t. Miers).

*Mithrax hirsutipes* Kingsley, Proc. Boston Soc. Nat. Hist., xx, p. 147, 1879 (deser.); Proc. Acad. Nat. Sci., Philad., p. 389, pl. xiv, figs. 1, 1a, 1879 (measur.) Rankin, Crust. Berm., p. 532, 1900.

*Mithrax forceps* Miers, Rep. Voy. Chall., xvii, pp. 87, 88, 1886. Rathbun, Bull. Labr. Nat. Hist., Univ. Iowa, 1898, p. 260 (Bahamas and Florida).

*Mithrax forceps* Rathbun, Proc. U. S. Nat. Mus., xv, p. 269, 1892 (deser., synonym., and distribution); Brach. and Macrura Porto Rico, p. 70, 1901.

FIGURE 42. PLATE XXIII, FIGURES 4, 5, 6.

This species is easily distinguishable, from the others found at Bermuda, by the three strongly marked oblique ridges and intervening wide grooves on the branchial areas of the carapace. The last of these is more or less broken up and nodular; the two anterior are stronger and smoother, but often bear small tubercles. Two pairs of small tubercles are situated behind the rostral teeth, but there are no tubercles on the median line, and no transverse row on the gastric

area. The four antero-lateral spines are usually all similar in size, simple, and mostly acute and curved forward, but the anterior one is often a little shorter than the 2d and rather obtuse; the 2d and 3d are always acute, with the tips bent forward; the 4th is often smaller and more conical and less acute. The surface of the carapace and chelipeds is polished and shining, with no indications of hairs or granulus.

The chelipeds of the adult males are relatively large and strong, subequal, with the claws gaping. The dactyl is curved, denticulate only distally, with a strongly excavate tip, and it bears a strong tooth about the middle; the thumb has a broader denticulate tooth toward the base. In the young these teeth are absent.

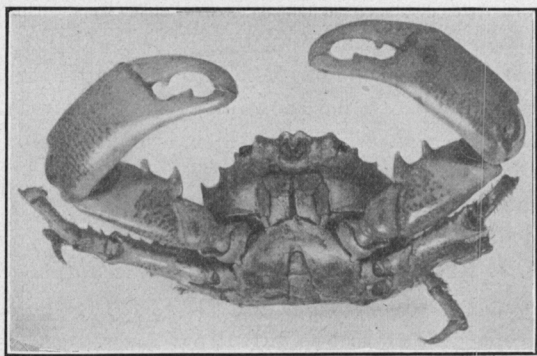


Figure 42.—*Mithrax forceps, hirsutipes*, adult male from Bermuda, under side, about nat. size. Phot. A. H. Verrill.

The carpus and chelæ are smooth, with no tubercles except a small denticle on the inside edge of the carpus; the merus bears two large acute spines on the inner margin, and about 4 or 5 much smaller, obtuse ones on the outer margin; the upper surface may have a few minute ones, or in adults a row of two or three obtuse ones. The ambulatory legs are rough with small short spines and long unequal stiff hairs; the dactyls are strong, incurved, with sharp tips; there is a prominent articular plate at the superior distal end of the propodus.

The basal antennal plate is wide and thick, tridentate; the outer tooth, which is much the largest, is broad and obtuse, its base occupying about half the width of the plate; the next is not more than half as large and subacute; it is separated from the still smaller

inner one by the notch for the base of the flagellum; the inner one is inconspicuous and often abortive. The notch between the two larger teeth is broadly concave. The outer tooth is just about the same length and size as the preocular tooth, but is more obtuse. The rostral teeth are short and obtuse, with thickened and slightly upturned edges in the adults. The subrostral process is large, concave, and obtuse.

Young specimens differ much from the adults in appearance. The oblique ridges of the carapace are all more broken up into nodules and tubercles, and the whole surface of the carapace is more nodose, so that it resembles that of *M. sculptus* in this respect, but the latter can easily be distinguished by the tuberculiform lateral teeth, roughened carpus, and other characters. The carapace of the young is also longer in proportion to the breadth (1:1.12 to 1:1.15).

Specimens recently preserved in alcohol and not much altered are mostly light yellowish brown or chestnut-color, varying in the same lot to orange and to purplish brown.

In life the carapace is usually uniform yellowish brown, varying to dull yellow and to greenish brown, without mottlings. Often there is a wide, pale yellow, medial dorsal stripe, especially in the young. Large males are sometimes plain chestnut or terra-cotta color. In the young the legs are often banded with lighter colors.

Females carrying abundant eggs were often taken in April and May, 1898 and 1901. A large female, taken in midsummer by Prof. Kincaid, also carried eggs. This crab is often captured by the large *Octopus*.

Measurements of Bermuda specimens.

No.	Sex	Carapace			Front bet. orbits	Chela		
		length total	breadth total	breadth —spines		length total	manus above	height
3169	♂	22	26	24.5	9	25	13	10
3169a	♂	25	31	28	10	28	14	13
3169b	♂	19	21.5	20	8	19	11	9
718	♂	23	28	26	9	27	14	10.5

The ratios of length to total breadth in the above are 1:1.18, 1:1.24, 1:1.13, 1:1.22 respectively.

The egg-bearing females, taken in April and May, can be grouped in three pretty distinct sizes, though some intermediate ones occurred. The larger ones averaged in length of carapace, about 16<sup>mm</sup>; breadth, 18<sup>mm</sup>; those in the next smaller series average about 13<sup>mm</sup> long; 15<sup>mm</sup> wide; the smallest group, about 11<sup>mm</sup> long; 12.5<sup>mm</sup> wide. The



smallest individual with eggs is 10<sup>mm</sup> long, 11.5<sup>mm</sup> wide. Some of the eggs contain well developed young, about ready to hatch.

Dr. Stimpson failed to recognize this common species among the large W. Indian collections that he studied. He probably confused it with *M. sculptus*, which is closely allied.

Although several recent writers identify this species with *M. forceps* M.-Edw. (from S. America), it must be admitted that it does not agree with his figure and description. However, I have examined Brazilian specimens agreeing well with those from Bermuda. But two similar species may occur there.

Edwards does not describe his species as having strong, oblique branchial ridges and grooves, though they are, perhaps, faintly indicated in his figure. He says that the surface of the carapace is scarcely nodular, some tuberculiform elevations showing only near the branchial regions.

The carapace, as stated by him, is proportionately the same as ours (length, 30<sup>mm</sup>; breadth, 35<sup>mm</sup>; ratio 1:1.17; in our larger males it is from 1:1.18 to 1:1.24. The form of the merus of the maxillipeds is quite unlike our species, and the same is true of the basal joint of the antennæ. Unless his figures and description were very incorrect, in all these and other respects, it would be unreasonable to consider them identical, for the allied species do not vary to any such extent in these important characters. Of the present species I have had more than a hundred specimens, of all sizes, for comparison. Although the young differ considerably from the adults, as to areolations, they have essentially the same forms of the basal antennal plate and maxillipeds and do not approach those figured by Edwards.

The chelæ of the male, according to his description and figure, are rather long and slender, length to breadth as 3:1; while in ours, of similar size or smaller, they are much stouter, ratios about as 2:1. Moreover specimens of the present species, formerly sent to M. Edwards by Prof. Smith, were not identified as his species by him.

Therefore I have preferred to retain *hirsutipes* (Kings.) as the name for the Bermuda and West Indian form, at least as a variety or geographical race, until Edwards' type can be reëxamined.

We found this one of the most common crabs at the Bermudas. It occurred on almost every rocky shore and reef in crevices and living under stones and dead corals, and also often exposed, between tides and in shallow water; 1-17 fathoms (Challenger coll.).

It was in the collections of Jones; Goode; the Challenger; and nearly every other later collector.