

Keith, Donald E 1985

SHALLOW-WATER AND TERRESTRIAL BRACHYURAN CRABS OF ROATAN AND THE SWAN ISLANDS, HONDURAS

DONALD E. KEITH

CRUSTACEA LIBRARY
SMITHSONIAN INSTITUTION
RETURN TO W-119

SARSIA

KEITH, DONALD E. 1985 12 30. Shallow-water and terrestrial brachyuran crabs of Roatan and the Swan Islands, Honduras. - *Sarsia* 70:251-278. Bergen. ISSN 0036-4827.



There are relatively few published accounts of Brachyura from the northwestern Caribbean and none dealing specifically with the Bay Islands and Swan Islands off mainland Honduras. Brachyura were collected from shallow-water and terrestrial habitats at the Swan Islands from April 1973 through June 1976 and at Roatan and other Bay Islands from May 1975 through March 1979. Sixty-seven species are reported including 32 from the Swan Islands and 50 from Roatan. Of these, 21 species were not previously reported from northwestern Caribbean waters. One new species of *Potamocarcinus* was discovered in a freshwater stream at Port Royal, Roatan. Species diversity was greater at Roatan resulting primarily from the much greater diversity of habitats.

Donald E. Keith, Department of Biological Sciences, Tarleton State University, Tarleton Station, Stephenville, Texas 76402, U.S.A.

INTRODUCTION

There are few published accounts of Brachyura from the western Caribbean and none dealing specifically with the Bay Islands or Swan Islands, Honduras. Major taxonomic publications on west Indian Brachyura include papers by CHACE & HOBBS (1969) and RATHBUN (1933). Other broad resources of major taxonomic significance include four monographs by RATHBUN (1918, 1925, 1930, 1937) on crabs of America and papers by WILLIAMS (1965), GUINOT (1970), and GARTH (1978). POWERS' (1977) catalog and bibliography of crabs of the Gulf of Mexico also contains Caribbean species. Taxonomic nomenclature in this study follows primarily that of RATHBUN except where noted. GUINOT (1970) made major revisions of genera in the family Xanthidae. These revisions have been included, and RATHBUN'S older nomenclature also cited. GARTH (1978) used Guinot's revised names as subgenera of the older genera.

The Swan Islands and Bay Islands are located in the northwestern Caribbean off the coast of mainland Honduras. The Swan Islands are situated approximately 160 km northeast of the Honduran coast and the Bay Islands about 50 km north of the mainland (Fig. 1).

Three islands constitute the Swan Islands chain: Great Swan, Little Swan, and Booby Cay. Fringing reefs are developed around the perimeter of the islands with the most extensive reef growth occurring along the northern shores.

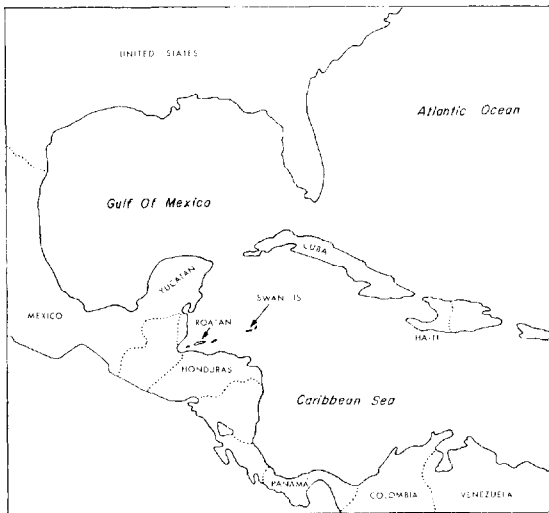
Habitat diversity at the Swan Islands is considerably less than at the Bay Islands. Maximum elevation on Great Swan is only 14 m and 20 m on Little

Swan. There is no source of freshwater. One brackish-water pool is located near Buffalo Point. Drinking-water on the Islands is obtained from cisterns constructed by the US. Weather Service. There are no mangroves or mud flats as found on the Bay Islands. The low habitat diversity results in a low diversity of crab species as compared to the Bay Islands. Principal habitat types at the Swan Islands include coral reefs, *Thalassia* flats with loose coral rubble, rocky shores, sand beaches, and wooded terrestrial areas. Of the 32 species collected from the Swan Islands, none was limited to the islands and most ranged throughout the Caribbean.

The Bay Islands include 65 cays and 8 islands of which Roatan is the largest. Besides Roatan, Saint Helene, Morat, and Barbaret were also visited. Roatan, however, was most extensively collected during the study. This island is approximately 30 km long and has 4 km maximum width. It is the emergent crest of a narrow ridge which runs along the south side of the Bartlett Trough. An account of the geology of the island is given by MCBIRNEY & BASS (1969). Geographical information may be found in DAVIDSON (1974).

Unlike the Swan Islands, Roatan has an extreme diversity of habitats including coral reefs, *Thalassia* flats, cobble and sand beaches, rocky shores, mangrove swamps, mud flats, estuarine bays, freshwater streams, and wooded terrestrial areas. The increased habitat diversity results in an increased crab diversity. Fifty crab species were identified from Roatan.

This paper provides a convenient means for recognizing most of the Bay Islands and Swan Islands species and includes information important to the geographic distribution of many Caribbean



Dromia erythropus (GEORGE EDWARDS, 1771)
Fig. 2A.

Distinguishing features. Carapace pilose, wider than long with posterior lateral margins converging. Front small and tridentate. Four prominent anterior lateral teeth.

Range. From Bermuda and the Bahamas, throughout the Gulf of Mexico and Caribbean to São Paulo, Brazil.

Habitat. Hard substrates including corals, shells, and rocks. Reported by FELDER (1973) to be most common at depths of less than 46 m, but known to 364 m from some areas.

Remarks. The dorsal surface of the carapace is characteristically covered with sponges or compound ascidians. A single specimen was collected at Fort Cay near the water's edge where it presumably was washed in from the nearby reef.

species. Distinguishing features are given for each species as an aid for recognizing differences between related crabs and are not intended to be species descriptions.

MATERIAL AND METHODS

Brachyuran collections were made from terrestrial and shallow-water habitats at the Swan Islands during April 1973, July 1974, January 1975 and June 1976. Crabs were collected by hand during the day. Night collections were also made intertidally and in various terrestrial habitats using lights and nets. Collections from coral reef habitats were made with the aid of SCUBA equipment. Some coral heads were returned to the lab and pulverized to obtain associated crab species. Shallow-water sediments were screened using a No. 60 standard sieve and the undersurfaces of coral rubble were carefully examined for crabs.

Similar techniques were used to collect brachyurans at Roatan and other Honduran Bay islands with the addition of dredging. Extensive collections were made along the southern shores of Roatan during March 1979. Less extensive collections were made at Saint Helene and Barbaret. Collections of brachyurans made by Dr. J. C. Britton, Texas Christian University, during May 1975, May 1976, and March 1977 were also examined. May 1975 collections included some crabs taken by dredging in approximately 35 m of water off Roatan.

Drawings of crabs included in this study were made by tracing projected transparencies of each species. Fine details were added by microscopic examination.

SYSTEMATIC ACCOUNT

Section Brachyura

Subsection Dromiacea

Family Dromiidae

Dromidia antillensis STIMPSON, 1858
Fig. 2B.

Distinguishing features. Carapace pubescent, longer than broad with posterior lateral margins subparallel. Frontal region longitudinally grooved along middle; front strongly deflexed and 5-toothed including supraorbital teeth. Lateral margins of carapace 4-toothed and deflected toward corner of buccal areas.

Range. From Bermuda, North Carolina, Bahamas and Gulf of Mexico, throughout the Caribbean to Espirito Santo, Brazil.

Habitat. Reported from hard bottoms such as rock, shells, and coral at depths from shore to 331 m. Collected at Roatan in shallow water from *Thalassia* flats.

Remarks. The dorsal surface is commonly covered by a sponge or compound ascidian.

Subsection Oxystomata

Family Calappidae

Calappa angusta A. MILNE EDWARDS, 1880
Fig. 2C.

Distinguishing features. Carapace slightly wider than long with anterolateral margins finely granulate, with somewhat larger granules at intervals; front bilobed. Tooth at posterolateral angle of carapace is largest followed anteriorly by four smaller teeth diminishing in size, and posteriorly by one small and one or two very minute teeth. Orbit completely separated from antennular cavity. Chelipeds with upper margin of palm bearing six to eight teeth and lateral margins with coarse granules interspersed with tubercles.

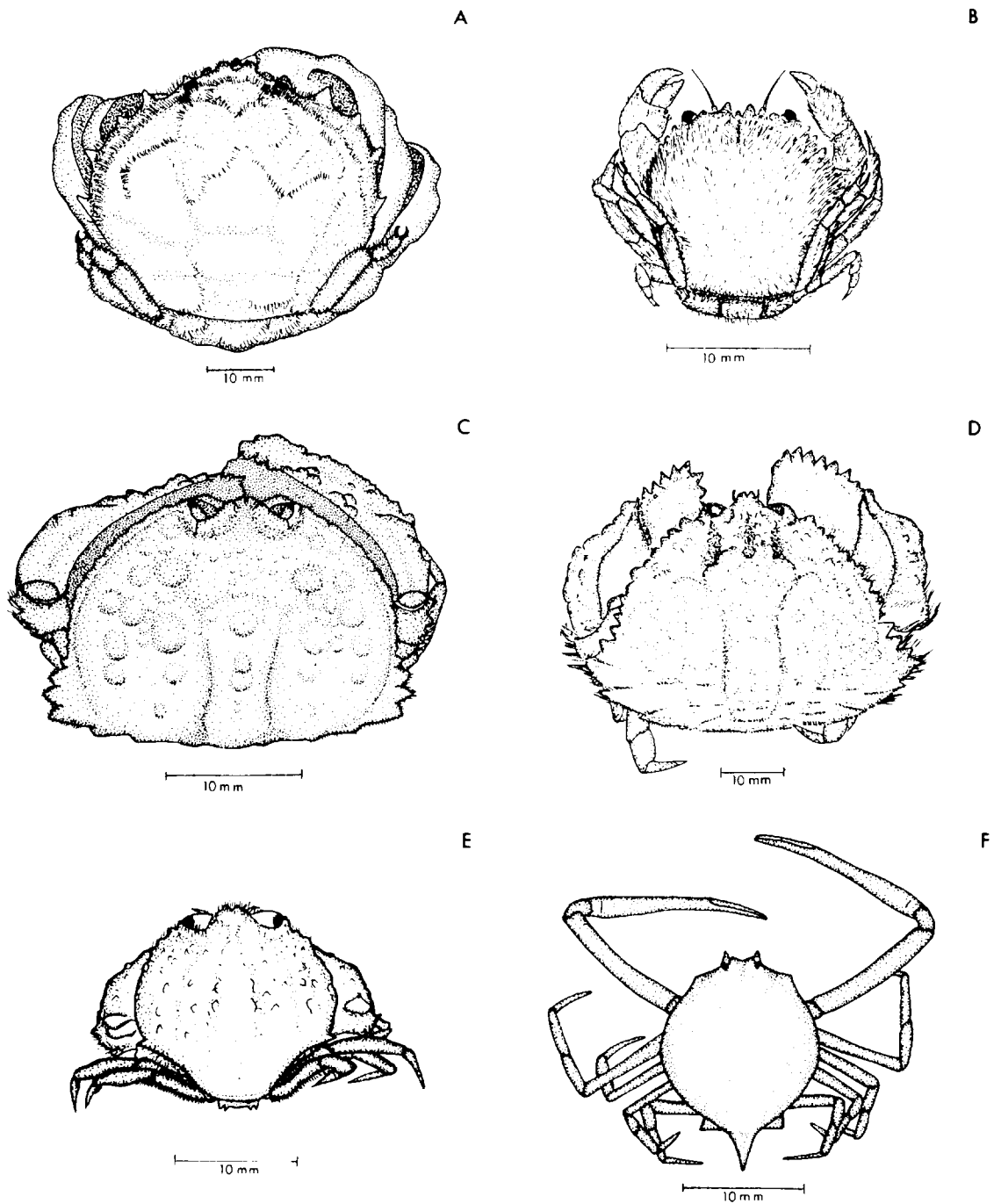


Fig. 2. A. *Dromia erythropus*, female. B. *Dromidia antillensis*, male. C. *Calappa angusta*, male. D. *Calappa gallus*, male. E. *Cycloes bairdii*, male. F. *Iliacantha intermedia*, male.

Range. North Carolina, Florida, Gulf of Mexico, Yucatan to Grenada and Barbados.

Habitat. Reported from coral, broken shell, gravel

and sand bottoms from depths from 13 to 274 m. Specimens were collected at Roatan by dredging over *Thalassia* flats.

Calappa gallus (HERBST, 1803)
Fig. 2D.

Distinguishing features. Carapace width slightly exceeds length with anterior two-thirds covered with tubercles; posterior one-third bears short granulated ridges. A deep sulcus occurs between the gastric and hepatic regions. Longitudinal furrows separate the cardiac and branchial regions. Posterolateral expansions well developed with six teeth, three anterior and two posterior to posterolateral tooth. Prominent rostrum with four subequal blunt teeth.

Range. From Bermuda and Florida Keys, throughout the Caribbean to Bahia, Brazil. GARTH (1978) reports this species to occur also in the eastern Atlantic and Indo-West Pacific but not in the eastern Pacific Ocean.

Habitat. Occurs on hard substrates including reef flats, coral, sand, shell, and rocks from shallow water to 218 m. Individuals were collected at Roatan from cobble beaches in shallow water.

Cycloes bairdii STIMPSON, 1860
Fig. 2E.

Distinguishing features. Carapace subcircular, slightly broader than long, and without a posterolateral expansion. Surface granulate or tuberculate with tubercles partially arranged in longitudinal rows. Anterolateral margins with beaded edge and five to six small teeth behind the orbit. Posterolateral angle with sharp spine. Carapace widens anterior to spine.

Range. North Carolina, Bermuda, Bahamas, Florida, throughout Caribbean to Barbados in the western Atlantic and from Cape San Lucas to Ecuador in the eastern Pacific.

Habitat. Reported from coral, rock, sand and shell bottoms from depths of 3 to 229 m. Collected at Roatan by dredging at approximately 35 m.

Family Leucosiidae

Iliacantha intermedia MIERS, 1886
Fig. 2F.

Distinguishing features. Carapace globular and coarsely granulate. No distinct spine on subhepatic margin. Three spines at posterior extremity with marginal spines short, flattened, and triangular. Chelipeds slender with fingers less than half as long as palm and incurved at tip.

Range. From North Carolina, Florida, Virgin Islands, Venezuela to Bahia, Brazil. Roatan collections extend the distribution to the northwestern Caribbean.

Habitat. Reported from coral, sand, gravel and shell bottoms from depths of 10 to 329 m. At Roatan this species was collected from dredges over a sand-flat area at 10 m.

Iliacantha sparsa STIMPSON, 1871
Fig. 3A.

Distinguishing features. Carapace globular, longer than broad with three spines at posterior end which are widely separated and divergent. Median spine longest and all have upturned tips. Spine also present on subhepatic margin. Chelipeds with slender palms. Fingers and palm subequal in length. Range. Northwest of Tortugas, Puerto Rico, Barbados to Bahia, Brazil. Roatan collections extend the distribution to the northwestern Caribbean.

Habitat. Reported from gravel and shell bottoms, on calcareous algae, corals, and sponges at depths from 23 to 73 m. Collected off Bay Islands by trawling at approximately 35 m.

Subsection Oxyrhyncha

Family Majidae

Subfamily Acanthonychinae

Epialtus dilatatus A. MILNE EDWARDS, 1878
Fig. 3B.

Distinguishing features. Eyes without true orbits and with short movable cystalks; preorbital tooth distinct. Carapace subpentagonal, nearly smooth, with hepatic lobe longer than branchial lobe. Rostrum bilobed. Chelipeds of moderate size with four longitudinal crests; fingers short and stout. Range. North Carolina, Bahamas, throughout the Caribbean to St. Thomas and the Virgin Islands. Habitat. Coral, sand, and broken shell bottoms from depths of 5 to 22 m. Collected at Great Swan Island from coral rubble in shallow water.

Remarks. WILLIAMS (1965) points out several variations in carapace shape. The hepatic expansions may vary and the rostrum may vary from triangular to suboblong in shape.

Epialtus longirostris STIMPSON, 1860
Fig. 3C.

Distinguishing features. Appearance is similar to *E. dilatatus* except the rostrum is narrow and truncate. Carapace sides deeply bilobed and nearly as wide across the hepatic as branchial regions. Cheliped with cylindrical arm. Palm long and narrow; fingers thick.

Range. Western Florida, Cuba, Jamaica, St. Thomas and Virgin Islands to northeast Brazil. Roatan collections extend the distribution to the northwestern Caribbean.

Habitat. Collected at Roatan from bottom samples

slightly arcuate in dorsal view. She called this form *Epialtus longirostrus* forma *portoricensis*. This form was known only from Puerto Rican waters. The specimen from Lime Key showed rostral features like those of Rathbun's forma *portoricensis*.

Subfamily Inachinae

Podocheila macrodera STIMPSON, 1860

Fig. 3D.

Distinguishing features. Carapace somewhat triangular, rostrum short, thick, subtriangular and not hollow beneath. Basal segment of antenna with longitudinal sulcus. Propodus of last two legs much longer than dactylus and slightly curved.

Range. Bahamas, Florida, throughout the Caribbean to Brazil.

Habitat. On coral, sand, gravel, under rocks, and on sponges. Depth usually ranges from shallow water to 53 m. COELHO (1971) reported this species from 53 m off Brazil. Collected from Roatan by dredging over *Thalassia* flats.

Podocheila riisei STIMPSON, 1860.

Fig. 3E.

Distinguishing features. Carapace subtriangular with a tubercle projecting downward from the hepatic region. Rostrum short, hood-shaped and hollow beneath. Mature males with narrow gape between fingers. Walking legs slender with last pair about one and one-half times the carapace length. Dactyli of second legs short, propodus two and one half times or more the dactylus length.

Range. North Carolina, Bermuda, Bahamas, throughout Caribbean to Rio de Janeiro, Brazil.

Habitat. Reported from corals, sand, shell and gravel bottoms; also from algal beds, grasses, and among *Sargassum*. Depth ranges from shallow water to 90 m. At Roatan, this species was collected on the coral *Agaricia tenuifolia* DANA at a depth of about 5 m. Individuals had bits of algae attached to the body and legs.

Remarks. POWERS (1977) cites observations of these crabs being covered with other organisms such as bryozoans, ascidians, and red algae. A closely related species, *P. sidneyi* RATHBUN, has been reported from the Gulf of Mexico, Yucatan, and northwest coast of Cuba. Its general appearance is similar to *P. riisei* but can be distinguished by the shorter and more curved dactyli on the last three walking legs. The dactylus of *P. sidneyi* is more than one half the length of the propodus.

Stenorhynchus seticornis (HERBST, 1788)

Fig. 3F.

Distinguishing features. Carapace smooth and somewhat arrow-shaped with a long slender rostrum bearing small lateral spines and often exceeding the carapace length. Legs and chelipeds long and slender with small spines; palm considerably longer than fingers.

Range. Cape Hatteras, North Carolina, Bermuda, Bahamas, Gulf of Mexico, Caribbean to Santa Catarina, Brazil.

Habitat. Coral, rock, sand, shell and pebble bottoms, wharf pilings, and sponges. Depth ranges from shallow water to 1489 m. This species was common at Roatan in crevices and under coral ledges at about 5 m.

Remarks. The growth and biology of this species has been studied by HARTNOLL (1965) and BARR (1971, 1975), and commensal relationships with a Florida anemone have been studied by HERRNKIND, STANTON, and CONKLIN (1976).

Subfamily Mithracinae

Macrocoeloma trispinosum nodipes (DESBONNE & SCHRAMM, 1867)

Fig. 4A.

Distinguishing features. Basal antennal segment broad with spine near inner angle visible dorsally. Orbits project beyond general outline of carapace. Carapace subtriangular with middorsal region elevated and bearing four rounded tubercles. Posterolateral angles terminate in broad spines with margins continuous with that of the carapace. The rostrum bears horns which are usually subparallel at the base, but great variability is shown in length, direction, and curvature. The subspecies *M. t. nodipes* differs from the typical form. *M. trispinosum* (LATREILLE) by having posterolateral projections which are broad and blunt rather than long and acute. The subspecies also shows much less constriction behind the orbits than the typical form.

Range. North Carolina, Bermudas, Florida, Yucatan, West Indies to Cape São Roque, Brazil.

Habitat. Reported from coral, sand, rock, and shell bottoms and from grassy areas, dock pilings, mangrove roots, and masses of floating *Sargassum*. Depth ranges from shore to 48 m. Individuals were collected at Great Swan Island in shallow water near the shoreline on the undersides of loose coral rubble in *Thalassia* beds.

Macrocoeloma diplacanthum (STIMPSON, 1860)

Fig. 4B.

Distinguishing features. Carapace subtriangu-

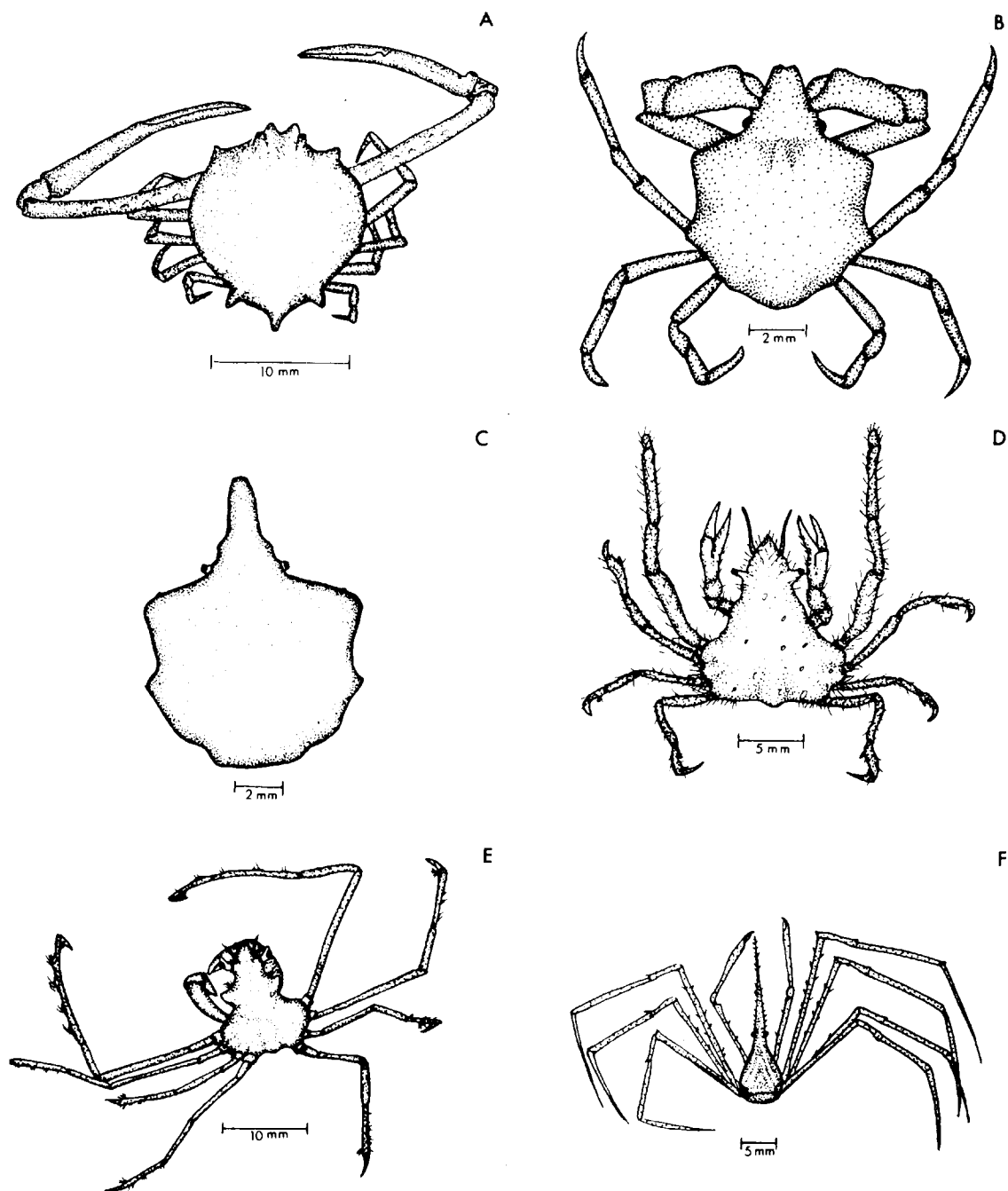


Fig. 3. A. *Iliacantha sparsa*, female. B. *Epialtus dilatatus*, male. C. *Epialtus longirostris*, female. D. *Podochela macrodera*, female. E. *Podochela riisei*, male. F. *Stenorhynchus seticornis*, female.

taken in less than 1 m in an area of interspersed *Thalassia*, sand, and coral rubble. Depth ranges reported by POWERS (1977) are from 3 m off Cuba to 54 m off Brazil.

Remarks. RATHBUN (1925) recognized two forms of the species. Besides the typical *E. longirostris*, she recognized a form in which the rostrum differed slightly, being a little wider and less thick and the tip

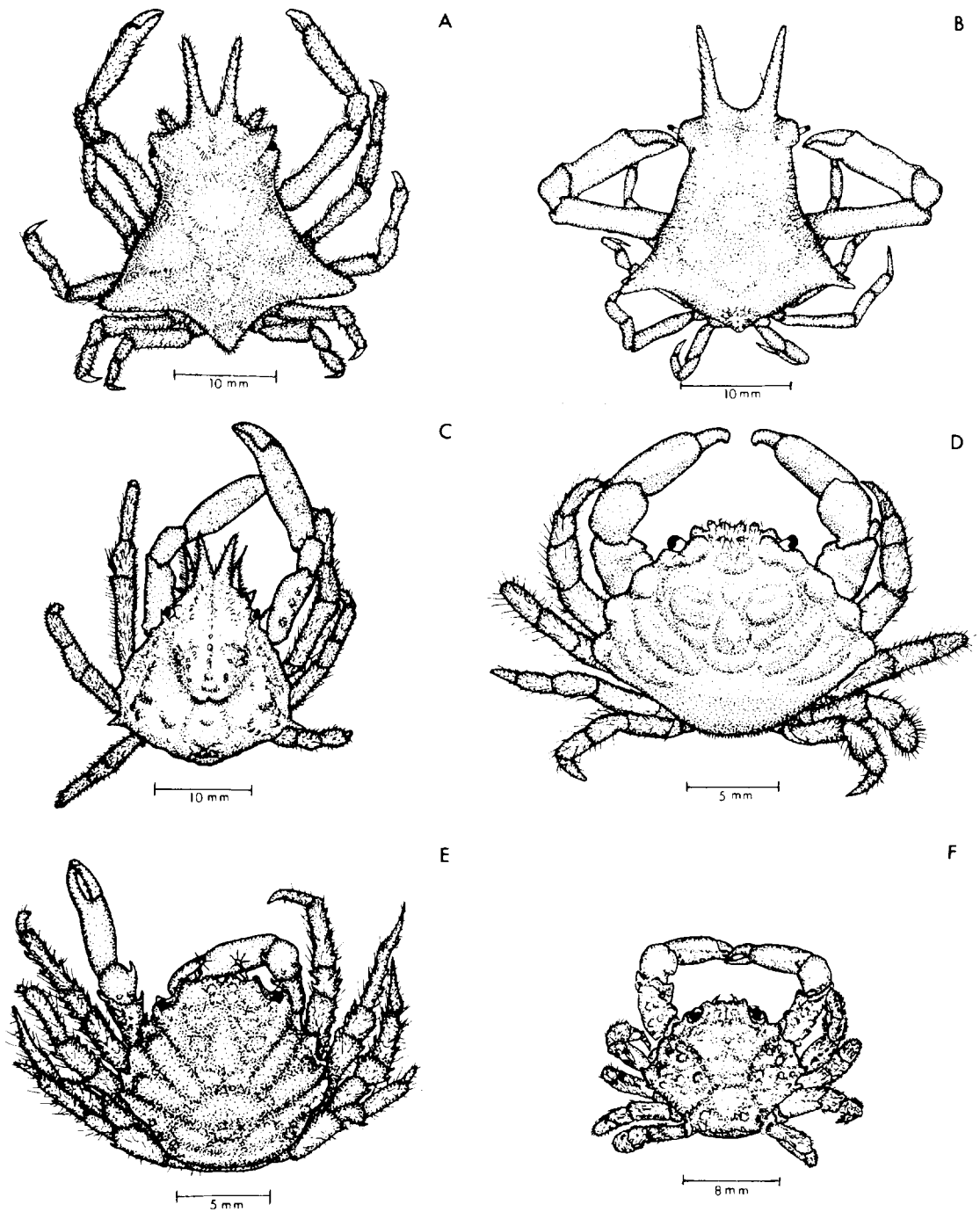


Fig. 4. A. *Macrocoeloma trispinosum nodipes*, female. B. *Macrocoeloma diplacanthum*, male. C. *Microphrys bicornutus*, male. D. *Mithrax coryphe*, male. E. *Mithrax forceps*, female. F. *Mithrax ruber*, male.

denticulate and gaping. Walking legs spinose and covered with hair.

Range. Northern Cuba to Barbados, Curacao.

Swan Island collections extend the distribution to the northwestern Caribbean.

Habitat. On coral, sand, shell, grass, and mud

lar with middorsal regions elevated and bearing four conical tubercles near center of carapace; a smaller spine-like tubercle is located near the posterior medial edge. Posterolateral processes bifid, one spine above the other, with a web-like lamina between. Rostrum long with slender, acute horns which diverge slightly.

Range. Florida, Bahamas, West Indies and Caribbean.

Habitat. Sand, shallow reefs from shallow water to 24 m. Individuals were collected at Roatan from a shallow sand bottom interspersed with coral rubble and clumps of *Thalassia*.

Microphrys bicornutus (LATREILLE, 1825)

Fig. 4C.

Distinguishing features. Carapace subtriangular, tuberculate, and moderately hairy with a sharp marginal spine at posterolateral angle. A row of four small tubercles arches upward on intestinal region. Rostral horns long and divergent distally. Eyes are small. A long spine occurs at the anterolateral margin of the basal antennal segment which is visible dorsally. Chelipeds spotted, palm slightly enlarged, fingers hollowed at tip. Arm with three or four tubercles.

Range. From North Carolina, Bermuda, West Indies to Florianapolis, Brazil. Reported by BRATTSTRÖM (1980) from Colombia and Panama (pers. comm) Collections from Roatan and the Swan Islands extend the distribution to the northwestern Caribbean.

Habitat. Common on coral reefs from very shallow water to 30 m. Also, on rocks, sand, shell fragments, sponges, *Thalassia* beds, mud and mangrove roots. This crab was very common on Great Swan Island where it was abundant on the undersides of loose coral rubble in shallow *Thalassia* beds. It was also very common in shallow rubble areas around the Bay Islands.

Remarks. The crab is often covered with sponges, anemones, hydroids, algae or other foreign objects making it very inconspicuous in its habitat.

Mithrax (Mithraculus) coryphe (HERBST, 1801)

Fig. 4D.

Distinguishing features. Carapace nodose with smooth, oblique, branchial sulci, and broader than long. Anterolateral margins behind orbital angle bear three prominent rounded lobes. Rostrum very small. Chelipeds strong, palm broad, fingers deflexed and gaping with crenulated spoon tips; wrist nodose.

Range. Bahamas, Florida, Antilles to Barbados, Caribbean coast of Panama, Colombia, Curacao.

Coast of South America from Trinidad to São Paulo, Brazil. Roatan and Swan Island collections extend the distribution to the northwestern Caribbean.

Habitat. Littoral rocks, sand, and algae, coral crevices, sponges, broken shell, grass, and mud bottoms. Depth ranges from shallow water to 55 m. A very abundant species around the Swan Islands, particularly under coral rubble in *Thalassia* beds and in crevices of the coral *Agaricia agaricites* (LINNAEUS). *M. coryphe* was also collected from shallow cobble beaches around Roatan and other Honduran Bay Islands.

Remarks. *M. coryphe* was the dominant littoral spider crab at Great Swan Island but not at Roatan. Similar habitats at Roatan contained a much greater crab diversity and the most common spider crab was *Mithrax sculptus*.

Mithrax (Mithraculus) forceps (A. MILNE EDWARDS, 1875)

Fig. 4E.

Distinguishing features. Carapace slightly wider than long and deeply sculptured in young individuals. Anterolateral margins with four teeth (not rounded lobes) separated by rounded sinuses. First tooth is usually shortest, other teeth turned forward at tip. Three branchial sulci run diagonally across carapace from first, second, and fourth sinuses. Rostrum with V-shaped median notch. Merus of chelipeds with two anterior spines followed by five spines or spine-like tubercles on posterior margin. Anterior margin with two teeth. Carpus with small spine on inner margin. Palm smooth, fingers gaping in males with hollowed tips. Walking legs spiny and hairy.

Range. Bermuda, North Carolina, Florida, Gulf of Mexico, Antilles, to Rio de Janeiro, Brazil.

Habitat. Under stones and in crevices of coral rubble, on rocky shores, sand, shell and grass bottoms, on sponges. Reported at depths from intertidal to 90 m. At Roatan, this species was collected from under large pieces of coral rubble and from sponges taken from 30 m.

Mithrax (Mithraculus) ruber (STIMPSON, 1871)

Fig. 4F.

Distinguishing features. Carapace with smooth, shallow, branchial sulci and broader than long. Three anterolateral lobes behind orbit blunt or angular in older individuals but last one sharp or spine-like in young specimens. Rounded prominences occur on branchial regions. Chelipeds strong, palm with parallel margins, carpus smooth, fingers

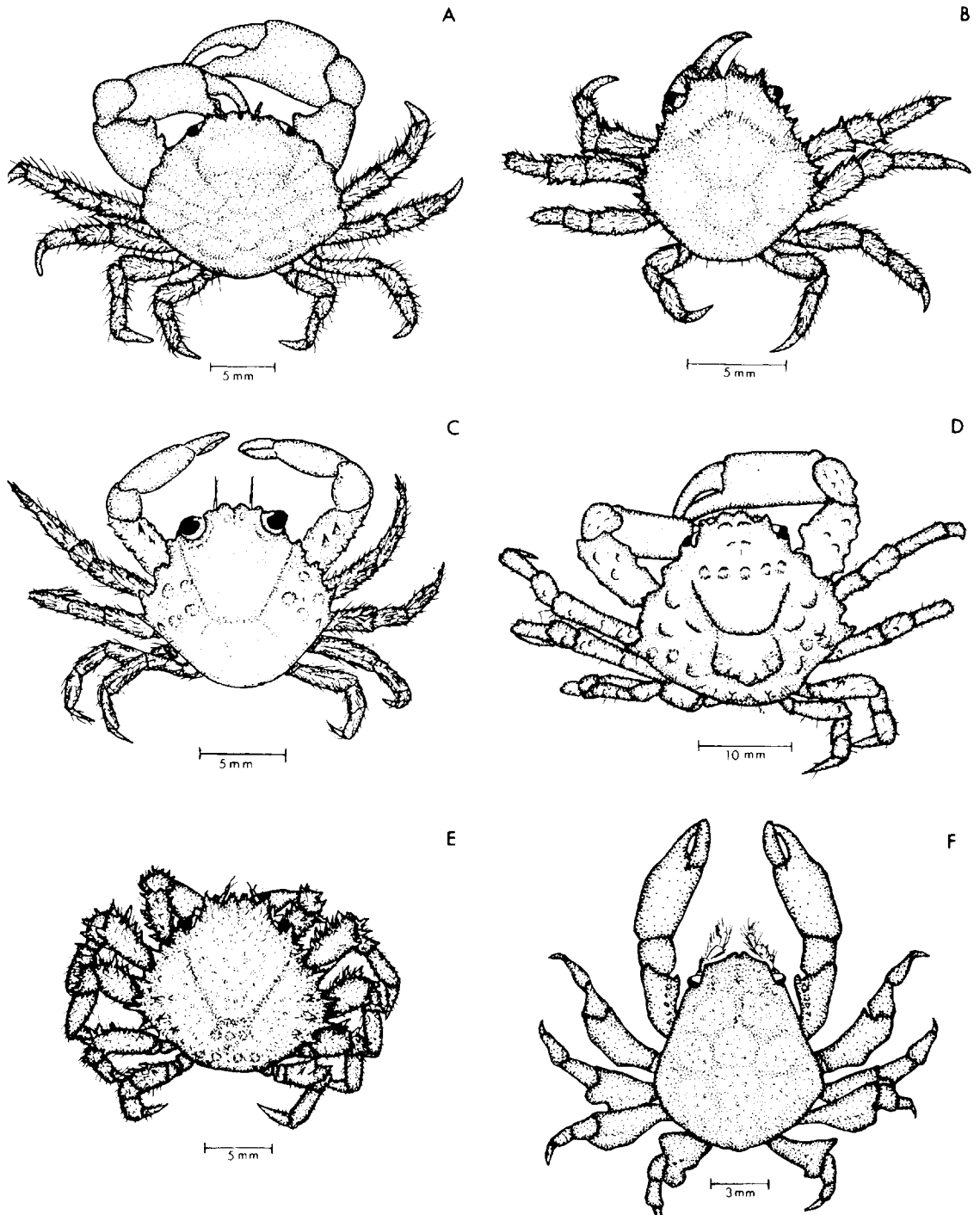


Fig. 5. A. *Mithrax sculptus*, male. B. *Mithrax acuticornis*, male. C. *Mithrax hispidus*, male. D. *Mithrax pleuracanthus*, male. E. *Mithrax verrucosus*, male. F. *Thoe puella*, female.

ly equals width, oblique branchial sulci absent. Carapace covered with flattened, closely set granules. Cervical suture deep. Rostral horns short and

separated by a deep sinus. Anterolateral margins with eight spines occurring in pairs united at bases with the anterior spines being smaller. Posterolateral

bottoms. Also reported from sponges. Occurs at depths from shallow water to 46 m. This species was common on living coral around the Swan Islands, particularly in crevices of *Agaricia agaricites* and individuals were collected at Roatan from the coral *Agaricia tenuifolia*.

Mithrax (Mithraculus) sculptus (LAMARCK, 1818)

Fig. 5A.

Distinguishing features. Carapace broader than long with posterior two-thirds nodose. Branchial areas with oblique sulci. Anterolateral margins with four rounded lobes never angular or spine-like. Chelipeds large in male. Merus bears two spine-like tubercles in front. Carpus smooth and round. Fingers gaping with tooth near base and spooned tips. Color usually greenish and persists in alcohol.

Range. Bahamas, Florida, throughout the Caribbean to the Abrolhos Islands, Brazil.

Habitat. On corals, under stones, on sand, shell, and grass bottoms from shallow water to 55 m. This was the dominant spider crab at Roatan, found predominantly under coral rubble in shallow water, and on sand flats with clumps of *Thalassia* and scattered rubble.

Remarks. RATHBUN (1925) reported two males and one female from the Swan Islands in 1887. However, this species was not collected at the Swan Islands during this study.

Mithrax (Mithrax) acuticornis STIMPSON, 1871

Fig. 5B.

Distinguishing features. Carapace without smooth oblique branchial sulci and longer than wide. Surface covered with spines, particularly in cardiac, branchial, and intestinal regions. Rostral horns taper to point and are variable in length. Four large anterolateral spines (not counting post orbital) and one posterolateral. First spine double; the last three have a smaller spine in front. Chelipeds of male about as stout as walking legs; palm not armed above with spines.

Range. East and west Florida coasts, Yucatan, Antilles to Santos, Brazil.

Habitat. Corals, sand, mud, shell, and rock bottoms from 3 to 33 m. This species was collected from living coral heads around the Swan Islands. The corals were at depths of 3 to 7 m.

Mithrax (Mithrax) hispidus (HERBST, 1790)

Fig. 5C.

Distinguishing features. Carapace without oblique branchial sulci and broader than long. Low rounded prominences occur toward outer margins of the branchial regions. Rostral horns short with

U-shaped notch between. Anterolateral border with four spine-like teeth. The species is distinguished by the one small tooth located just dorsal to the posterolateral margin and by not having more than three tubercles on the posterolateral region. Chelipeds large, merus with four or five spines on upper margin and two on inner margin. Carpus and palm smooth; fingers with spooned tips.

Range. Delaware Bay, South Carolina, Bahamas, Florida, Texas, Jamaica, Curacao to São Paulo, Brazil.

Habitat. Holes in littoral rocks, sand, shell and stone bottoms; on sponges and occasionally sea grass. Reported from shallow water to depths of 65 m. At Roatan this species was dominant on the coral *Agaricia tenuifolia* collected at depths of 7 m.

Remarks. The collection consisted only of young individuals. They differed from RATHBUN'S (1925) description by having rostral horns which were not significantly wider than the notch which separates them, and in the development of the anterolateral spines which were smaller than in RATHBUN'S figures.

Mithrax (Mithrax) pleuracanthus STIMPSON, 1871

Fig. 5D.

Distinguishing features. Carapace slightly broader than long and tuberculate, without oblique branchial sulci. Front wide, rostral horns short (usually shorter than in *M. hispidus*). Four protuberances on anterolateral border; last is spine-like, others tuberculated. Two tubercles, arranged transversely, lead inward from last anterolateral spine. Chelipeds large, merus with five small spines or tubercles on posterior border and scattered tubercles on upper margin. Walking legs dentate and hairy. Fingers with slight gape and spooned tips.

Range. Bermuda, North Carolina, Florida, Bahamas, Yucatan, Antilles to Curacao.

Habitat. Sand, rock, gravel, shell, and mud bottoms, from shallow water to 51 m. Reported by PEARSE (1934) from sponges. Collected at Roatan by dredging over a sand flat.

Remarks. Closely resembles *M. hispidus* and *M. caribbaeus*. It can usually be distinguished from *M. hispidus* by having a tubercle rather than a spine just above the posterolateral margin and shorter rostral horns. *M. caribbaeus* is distinguished by two parallel rows of tubercles and spines which run almost transversely across the posterolateral region.

Mithrax (Mithrax) verrucosus H. MILNE EDWARDS, 1832

Fig. 5E.

Distinguishing features. Carapace length near-

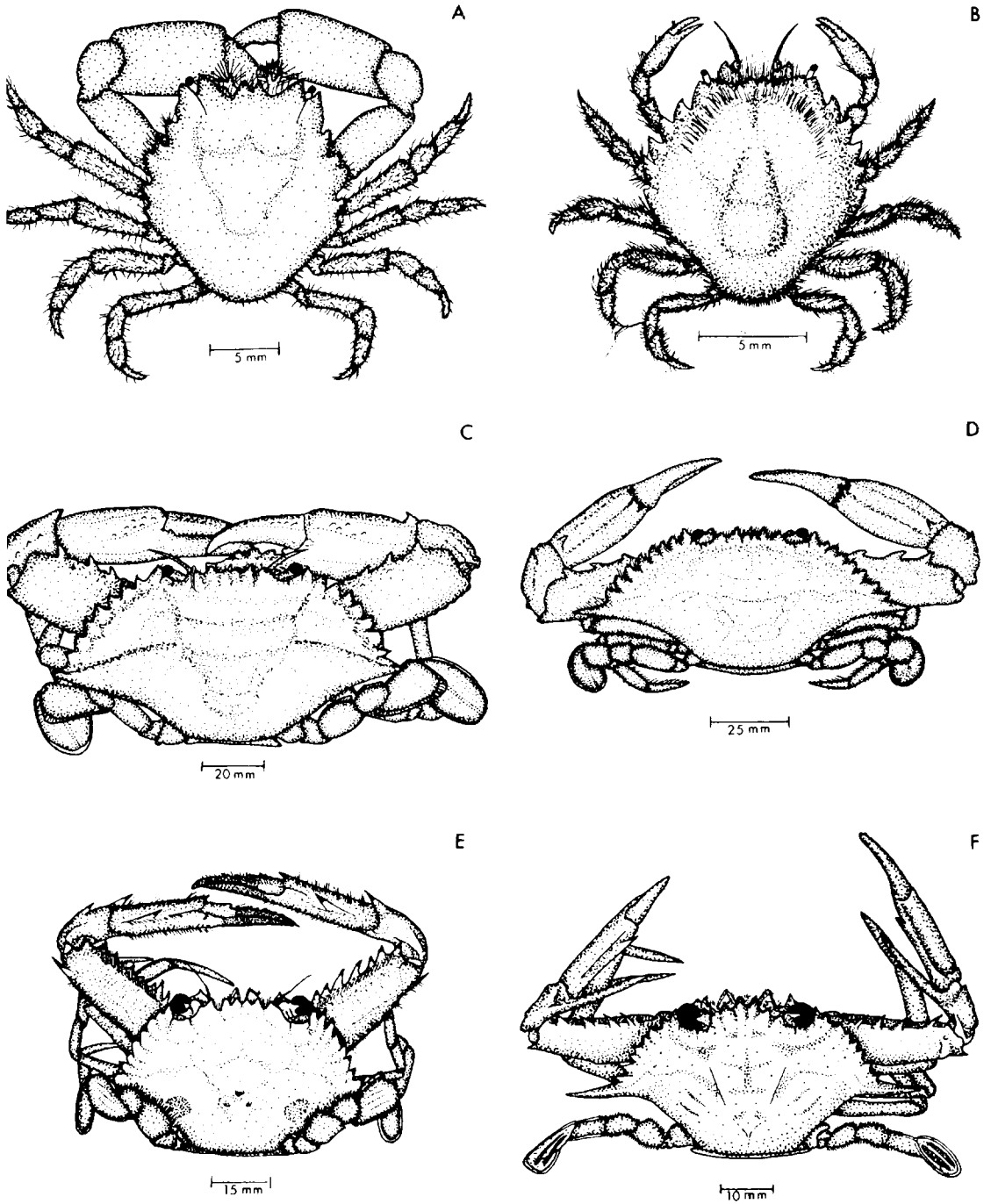


Fig. 6. A. *Pitho aculeata*, male. B. *Pitho mirabilis*, male. C. *Callinectes exasperatus*, male. D. *Callinectes marginatus*, male. E. *Portunus sebae*, male. F. *Portunus spinicarpus*, female.

ly. Lateral spine is less than 2.5 times length of preceding tooth. Gonopods of adult male very short, falling far short of the suture between the ventral thoracic segments bearing the first and second

walking legs. Their tips are divergent. Gonopod differences are the easiest means of distinguishing *C. marginatus* from *C. exasperatus*.

Range. North Carolina, Bermuda, Bahamas,

spine also present. Chelipeds with six sharp spines on the posterior margin of merus, and four on the inner margin. Carpus spinose; palm unarmed, elongate; fingers gaping with large tooth near middle of gape. Walking legs hairy with spines on merus and carpus.

Range. South Carolina, Bahamas, Florida, Swan Islands, Antilles, Curacao to Fernando de Noronha, Brazil.

Habitat. Reported from shallow water in rock crevices, and on the coral *Porites porites* (PALLAS) at Curacao by PEARSE (1932). At Great Swan Island the species was collected from living coral (*Agaricia agaricites*) at about 4 m. Individuals were collected at Roatan from cobble beaches, under coral rubble, and in rock crevices.

Thoe puella STIMPSON, 1860
Fig. 5F.

Distinguishing features. Carapace longer than wide with anterolateral margins nearly straight; dorsal surface with lobes and covered with clusters of granules. Rostral horns very short and separated by fissure; antennal flagella setose. Merus and carpus of chelipeds granulated, with line of tubercles on upper margin of merus. Palm smooth, fingers gaping with shallow tooth near base in males. Walking legs with posterior laminate crests on merus longer and wider than anterior crests, their upper margins being concave.

Range. Bahamas, Florida through West Indies to Curacao. Swan Island collections extend the range to the northwestern Caribbean.

Habitat. Corals and littoral rocks in shallow water. At Great Swan Island, individuals were collected in shallow water under loose coral rubble surrounded by *Thalassia*.

Subfamily Ophthalmiinae

Pitho aculeata (GIBBES, 1850)
Fig. 6A.

Distinguishing features. Carapace longer than broad with outer lobe expanded laterally. Width between outer orbital angles two-thirds entire width. Anterolateral margins with five teeth, the second and third teeth joined at their base. Fourth and fifth teeth are small. First movable segment of antenna is much wider than long. Chelipeds of adult male strong, fingers with wide gape, and tooth near proximal end of dactyl.

Range. Bahamas, Florida Keys throughout the West Indies to Curacao. Collections from Roatan and the Swan Islands extend the distribution to the northwestern Caribbean.

Habitat. Sand, shell, coral, grass, and mud bottoms in shallow water. At Great Swan Island, individuals were common in the shallows under coral rubble surrounded by *Thalassia*. At Roatan specimens were collected in shallow water from coral rubble, from dredges taken in mangrove channels, and by dredging over *Thalassia* and sand flats at 10 m.

Pitho mirabilis (HERBST, 1794)
Fig. 6B.

Distinguishing features. Carapace length and width about equal and finely granulated. Granules with coarse hairs on margins of gastric lobes. Five anterolateral teeth which are acute and separated to their bases. Chelipeds slender in both sexes.

Range. Bahamas, Florida Keys to Guadeloupe. Swan Island collections extend the distribution to the northwestern Caribbean.

Habitat. Reported from rock and coral bottoms in shallow water. The species was collected from Great Swan Island under loose coral rubble in shallow water.

Subsection Brachyrhyncha

Family Portunidae

Callinectes exasperatus (GERSTAEKER, 1856)
Fig. 6C.

Distinguishing features. Carapace convex with central trapezoidal (metagastric) area almost half as long as anterior width. Front with four rounded teeth, lateral pair most advanced. Anterolateral margins arcuate, teeth broad and curved forward. Lateral spine less than twice the length of the preceding tooth. Gonopods of adult male reach approximately to suture between ventral thoracic segments bearing the first and second walking legs, their tips curving mesially.

Range. Bermuda, Bahamas, Southern Florida, Yucatan to Panama and Venezuela; Antilles to Santa Catarina, Brazil.

Habitat. Marine and estuarine water, mangrove swamps, and around river mouths from shore to 75 m. A very common species in the bay, and mangrove swamps at Roatan. Individuals were also collected in mangroves around St. Helena Island.

Callinectes marginatus (A. MILNE EDWARDS, 1861)
Fig. 6D.

Distinguishing features. Carapace with central trapezoidal (metagastric) area almost half as long as anterior width. Frontal teeth four, medial pair small. Anterolateral border slightly arched but much less than in *C. exasperatus*, teeth curve slightly anterior-

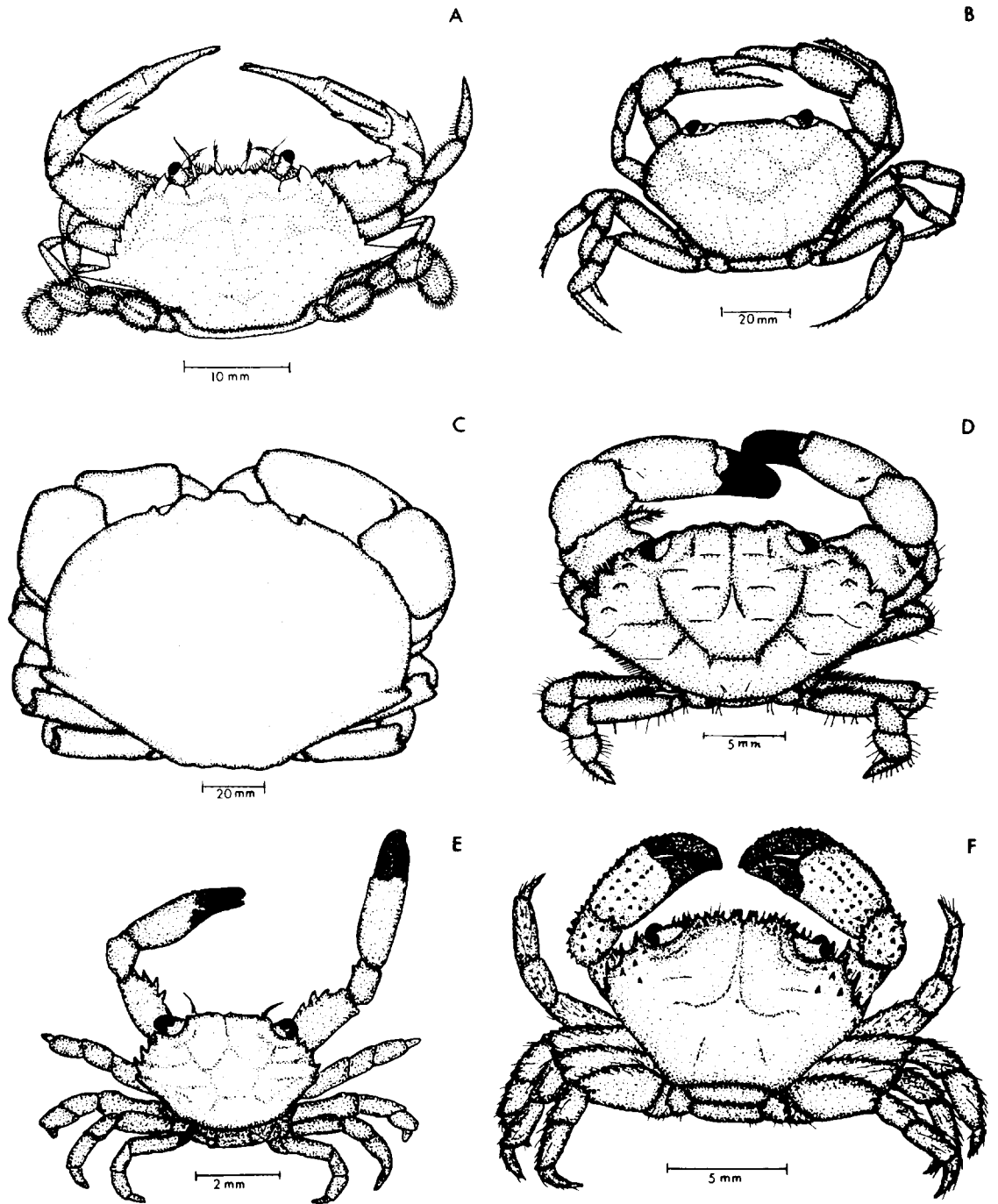


Fig. 7. A. *Portunus ventralis*, female. B. *Potamocarcinus* sp. (new species), female. C. *Carpilius corallinus*, male. D. *Cataleptodius floridanus*, male. E. *Chlorodiella longimana*, male. F. *Domecia acanthophora*, female.

fingers. In males the dark color is continued a short distance on the palm.

Range. From Bermuda and the Bahamas, throughout the Antilles to São Paulo, Brazil. Roatan

and Swan Island collections extend the distribution to the northwestern Caribbean.

Habitat. Reported on coral, *Sargassum*, sponges, sand, mud, and grass bottoms at depths from

southern Florida, Gulf of Mexico, Yucatan to Panama, Antilles to São Paulo, Brazil. Senegal to Angola in the eastern Atlantic.

Habitat. Marine and estuarine, mangrove swamps, around river mouths, sand and mud flats, grass flats, tide pools, and oyster bars. Depth generally ranges from littoral to 15 m. The species was collected from both Swan Islands and Roatan in shallow rocky areas and *Thalassia* flats.

Portunus sebae (H. MILNE EDWARDS, 1834)
Fig. 6E.

Distinguishing features. The species can be easily recognized by two large round reddish spots on the carapace above each posterolateral margin and the dark tips on all of the spines except those of the front and inner orbits. Palm of chela bears a longitudinal carina just below upper margin. Swimming legs with sharp spine at base.

Range. From Bermuda, Florida Keys and Gulf of Mexico to Brazil.

Habitat. Sand, gravel, rocky and mud substrates. Also reported from coral and broken shell bottoms. This species was abundant at Roatan and was collected frequently from bays and around dock pilings.

Portunus spinicarpus (STIMPSON, 1871)
Fig. 6F.

Distinguishing features. The most distinguishing feature is the inner spine on the carpus of the chela which is longer than the palm. Merus bears 4 to 5 curved spines in front and a single distal spine behind.

Range. From North Carolina and Bahamas, Gulf of Mexico and Cuba to São Paulo, Brazil.

Habitat. Open marine waters from c. 9 to 540 m. Substrates include sand, gravel, mud, coral, and broken shell. This species was collected off Roatan during a five-minute bottom trawl haul at about 50 m.

Portunus ventralis (A. MILNE EDWARDS, 1879)
Fig. 7A.

Distinguishing features. Absence of spine at extremity of outer margin of arm. Sharp spine at distal third of upper margin of palm. Front with four blunt teeth of approximately equal length and rounded at their tips.

Range. From Georgia, along the Florida coast, Gulf of Mexico, Cuba, Virgin Islands to Rio de Janeiro, Brazil.

Habitat. Reported from sandy substrates and tide pools. Specimens were collected at Roatan from a

sandy bottom with patches of *Thalassia* and scattered coral rubble.

Family Pseudothelphusidae

Potamocarcinus sp. New species
Fig. 7B.

A new species of freshwater crab was collected at night from a spring-fed stream at Port Royal, Roatan. It was identified as an undescribed species of *Potamocarcinus* by Dr. Alfred Smalley (personal communication). The species has not yet been described. Systematics of freshwater crabs is somewhat unsettled at the present time. RATHBUN (1905) has published the most recent monograph of the group. BOIT (1955) split the family Potamidae into two groups, the Pseudothelphusidae and the Trichodactylidae. PRETZMANN (1965), BOIT (1968), and SMALLEY (1970) have suggested other schemes for classification. Most freshwater crabs have restricted ranges as a result of inhabiting lakes, streams, and caves.

Several juvenile specimens and one large adult were collected at Roatan. Unfortunately, the large male was dead and in poor condition. The specimens were sent to Dr. Smalley for description.

Family Xanthidae

Carpilius corallinus (HERBST, 1783)
Fig. 7C.

Distinguishing features. Carapace very broad, convex, and smooth, with strongly converging posterolateral borders. Front deflexed almost vertically and has three lobes. Legs compressed; chelipeds unequal, with two prehensile teeth on immovable finger of large chela and a single tooth on movable finger. Color pale brick red with yellowish markings; fingers with dark brown tips.

Range. From Bermuda and the Bahamas, Gulf of Mexico, throughout the Antilles to Pernambuco, Brazil.

Habitat. Relatively common in coral reefs on sandy and cobble beaches where it lives in burrows. Reported at depths from 2 to 46 m. At Roatan specimens were collected from cobble beaches in shallow water.

Cataleptodius floridanus (GIBBES, 1850)
Fig. 7D.

Distinguishing features. Carapace suboval with five anterolateral teeth (including outer orbital angle); posterior tooth directed obliquely forward. Front double-edged in middle. Chelipeds with dark

shallow water to 33 m. Also found in tide pools and under stones on cobble beaches. This species was very common at the Swan Islands, Roatan, and other Bay Islands. Most commonly collected from the undersides of coral rubble in cobble-beach areas and *Thalassia* flats.

Remarks. Listed as *Leptodius floridanus* by RATHBUN (1930). Changed to *Cataleptodius floridanus* by GUINOT (1968).

Clorodiella longimana (H. MILNE EDWARDS, 1834)
Fig. 7E.

Distinguishing features. Carapace hexagonal and microscopically granulate; five anterolateral teeth (including orbital angle) widely separated and acute in younger specimens. In older individuals only the last two teeth are acute. Epigastric regions with smooth, transverse ridges: front double-edged. Chelipeds extremely long; two-thirds of arm project beyond carapace. Fingers black with color of immovable finger continued on palm.

Range. From the Bahamas and east Florida coast, throughout the Antilles to Barbados and Curacao. Swan Island collections extend the distribution to the northwestern Caribbean.

Habitat. Reported from coral, sponges, and rocky substrates from 5 to 154 m. At Great Swan Island individuals were collected from the coral *Agaricia agaricites*.

Domecia acanthophora (DESBONNE & SCHRAMM, 1867)

Fig. 7F.

Distinguishing features. Carapace narrows posteriorly, anterolateral border with four to six acute dark spines and several dark spines medial to anterolateral borders. Chelipeds also armed with black spines.

Range. From North Carolina, Florida, Texas coast, Panama and Colombia, throughout the Antilles to Pernambuco, Brazil.

Habitat. Reported from coral, sponges, and cobble beaches. The species was collected at Great Swan Island from living coral heads, particularly *Agaricia*. Individuals were collected at Roatan from cobble beaches in shallow water. Depth ranges have been reported from low tide to 146 m.

Remarks. Reported as *Domecia hispida* by RATHBUN (1930). Changed to *Domecia acanthophora acanthophora* by GUINOT (1964).

Etisus maculatus (STIMPSON, 1860)

Fig. 8A.

Distinguishing features. Carapace hexagonal and areolated with four anterolateral teeth (exclud-

ing orbital angle). Front four-lobed with small median notch. Chelipeds stout and only slightly unequal; fingers dark and spoon-tipped; legs spinulose and hairy. Variations in cheliped and rostral characteristics have been noted in specimens from Colombia, Florida, and Swan Islands by Dr. John Garth of the Allan Hancock Foundation (pers. commn).

Range. Reported from the Bahamas, Florida Keys, throughout the Greater Antilles, and Colombia. Roatan and Swan Island collections extend the range to the northwestern Caribbean.

Habitat. Coral reefs and shallow-water rocky substrates. Specimens were collected at Swan Islands from a stabilized sand flat. The species was very abundant at Roatan in *Thalassia* flats among the coral rubble.

Remarks. Identified by RATHBUN (1930) as *Phymodius maculatus*. GUINOT (1969) transferred the species to *Etisus maculatus* making it the sole representative of this genus in the Atlantic. Other members of the genus are Indo-Pacific.

Micropanope nuttingi (RATHBUN, 1898)

Fig. 8B.

Distinguishing features. Carapace hexagonal to suboval, with second lateral tooth united with the orbital tooth which is small. The three remaining anterolateral teeth are sharp. Front bilobed and separated by a small V-shaped sinus. Chelipeds are heavy with spines on upper margin. Wrist and palm tuberculate. Fingers dark and without a gape.

Range. From Cape Hatteras, North Carolina, Florida, and Gulf of Mexico throughout the Caribbean to Rio Grande, Brazil.

Habitat. Coral, rock, sand and broken shell bottoms, cobble beaches, and sponges from shore to 183 m. Several individuals were collected at Great Swan Island from living brain coral. Most were juvenile.

Remarks. According to GUINOT (1967, 1968) only the type species *M. sculptipes* STIMPSON, and *M. lobifrons* A. MILNE EDWARDS belong to the genus *Micropanope*. The others are divided among four new genera. The paper, however, omits many of the species formerly included in *Micropanope*. LEMAITRE (1984) and WILLIAMS (1978) point out, regarding *Micropanope pusilla* A. MILNE EDWARDS, that because of insufficient knowledge of intrageneric variation of gonopods in the Xanthidae a new genus for *M. pusilla* is not justified at this time. J. Garth (pers. commn) suggested that the genus *Micropanope* be retained for *M. nuttingi* and *M. spinipes* since they had not been assigned to one of Guinot's new genera.

Micropanope spinipes (A. MILNE EDWARDS, 1880)
Fig. 8C.

Distinguishing features. Carapace hexagonal, dorsal surface rough to granular. Five anterolateral teeth; first pair small but not fused with orbital tooth. Third and fourth teeth larger than others. Palms smooth, fingers dark but dark color does not extend onto palms.

Range. From Bermuda Islands, Florida Keys, Gulf of Mexico, Curacao to the Abrolhos Islands, Brazil. Habitat. Reported from coral, sand substrate, and sponges at depths from low tide to 55 m. Specimens were collected at Roatan from the coral *Agaricia tenuifolia* at approximately 8 m.

Neopanope packardii? (KINGSLEY, 1879)

Distinguishing features. Carapace subhexagonal, high and sloping on sides and narrow posteriorly. Five anterolateral teeth with fusion of first and second; last three are spiniform with tips widely separated. Front advanced and arcuate. Finger of large cheliped with large basal tooth.

Range. Florida, Bahamas, west to Louisiana and south to the northern coast of Cuba.

Habitat. Reported from a variety of substrates including rocks, coral, sand, gravel, mud, shell, and grass beds from low tide to 74 m. At Roatan, one specimen was taken from a *Thalassia* flat and one from a bottom trawl at 10 m.

Remarks. The two individuals found at Roatan were both juvenile females making identification extremely difficult. Dr. John Garth of the Allan Hancock Foundation compared the individuals with like size and sex of other *Neopanope packardii* and concluded that they were possibly the same. Because of the lack of mature specimens and uncertainty of the identification this species is not illustrated. See RATHBUN (1930, plate 168) for photograph. If the individuals are *N. packardii* it extends the range of this species to the northwestern Caribbean.

Panopeus occidentalis SAUSSURE, 1857

Fig. 8D.

Distinguishing features. Carapace wider than long and crossed by broken, transverse, granulated lines. Five anterolateral teeth with first and second separated by shallow sinus. Third and fourth teeth larger with convex posterior margins; fifth tooth shorter. Carapace narrows posteriorly; posterolateral border longer than anterolateral border. Fingers pointed, dark color of immovable finger of cheliped not continued on palm.

Range. From North Carolina, Bermuda, Bahamas through Florida and the Antilles to Santa Catarina, Brazil. Previous reports also from Panama. Roatan

collections extend the range to the northwestern Caribbean.

Habitat. Reported from rocks, sand, shell and gravel bottoms; among sponges, ascidians, seaweed, and pier pilings. Depth ranges from shore to 18 m. All individuals collected at Roatan were taken from canals through the mangrove swamps on mud bottoms.

Remarks. RATHBUN (1930) lists two environmental forms in addition to the typical. Roatan individuals conform most closely to Rathbun's forma *serrata* since the third to fifth lateral teeth are prominent and widely separated. The Roatan species closely matches young males from Caledonia Bay, Atlantic Panama in the Allan Hancock Foundation collections but according to Dr. John Garth (pers. commn) neither the Caledonia Bay species or the Roatan species agree completely with larger males from Trinidad and Florida.

Paractaea rufopunctata nodosa (STIMPSON, 1860)

Fig. 8E.

Distinguishing features. Carapace bears high nodules which are granulose and widely separated. Depressions between nodules are hairy. Most anterior nodules not fused with frontal margin. Edges of legs fringed with coarse hair. Fingers hollowed at tips.

Range. From North Carolina, Bahamas, and Florida, throughout Antilles, Curacao to Cape Frio, Brazil. Also reported from Ascension Island in the south Atlantic. Collections from the Swan Islands extend the range to the northwestern Caribbean. Habitat. Reported from coral, stone, broken shell and sand bottoms, and from sponges at depths of 5 to 212 m. Specimens were collected at Great Swan Island near shore from the undersides of coral rubble in *Thalassia* beds.

Remarks. Listed as *Actaea rufopunctata nodosa* by RATHBUN, 1930; changed to *Paractaea rufopunctata nodosa* by GUINOT (1969).

Paraliomera dispar (STIMPSON, 1871)

Fig. 8F.

Distinguishing features. Carapace smooth and shiny and about three-fourths as long as broad. Anterolateral margins without spines or teeth; regions not well defined. Front about one-third width of carapace. Chelipeds unequal, but more equal than in *P. longimana*. Minor chela about half the width of major. Fingers dark with color extending slightly on palm.

Range. From Bermuda, Florida Keys, Antilles, Curacao to Colombia. Swan Island collections extend the range to the northwestern Caribbean.

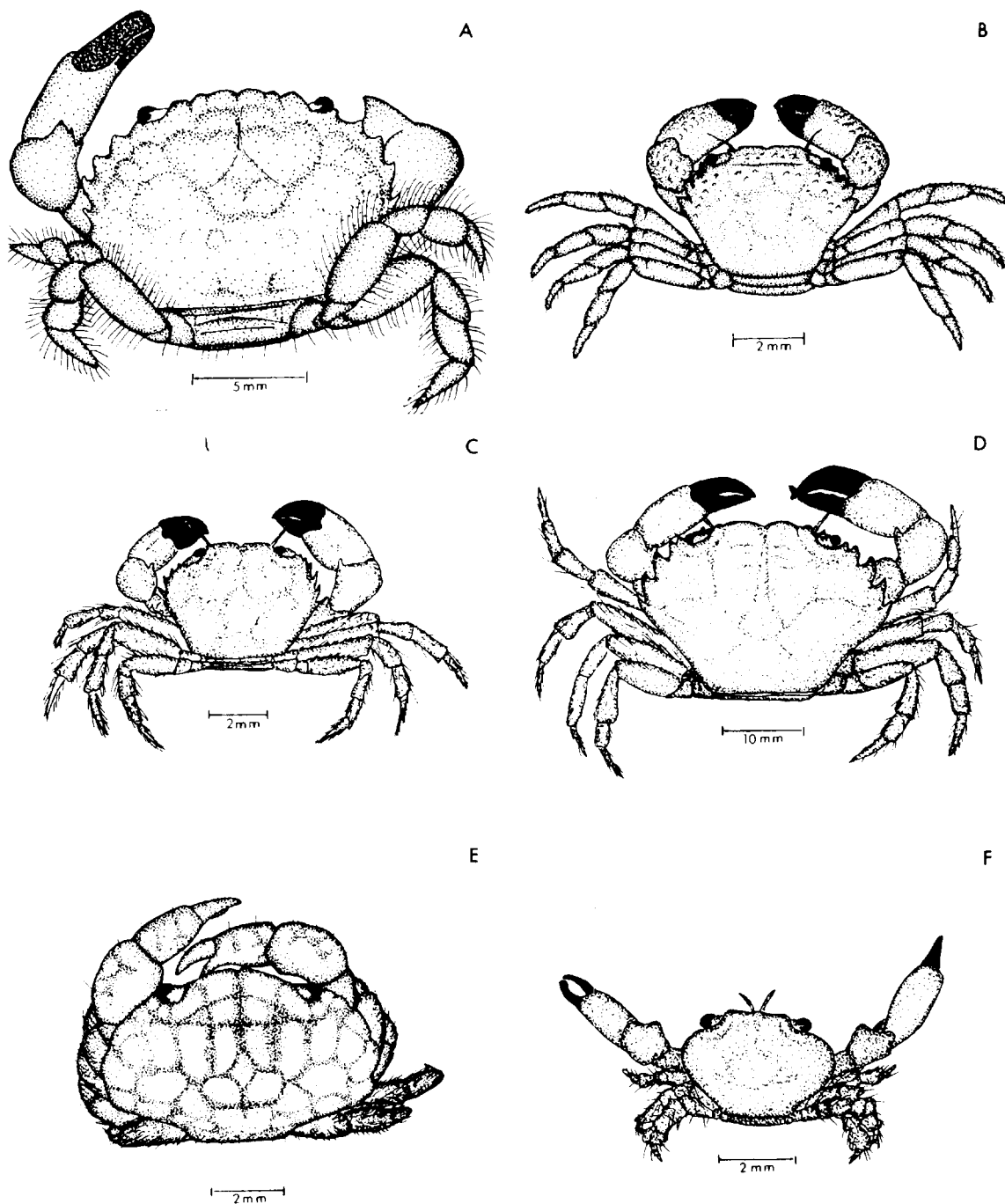


Fig. 8. A. *Etisus maculatus*, male. B. *Micropanope nuttingi*, female. C. *Micropanope spinipes*, female. D. *Panopeus occidentalis*, female. E. *Paractaea rufopunctata nodosa*, female. F. *Paralimera dispar*, female.

Habitat. Reported from coral reefs, sand, shell and mud bottoms, and rocky and grassy areas at depths ranging from shallow water to 154 m. At Great

Swan Island the species was collected from living coral heads at depths of approximately 6 m.

Paraliomera longimana (A. MILNE EDWARDS, 1865)
Fig. 9A.

Distinguishing features. Carapace about three-fifths as long as broad with gastric region plainly visible. Anterolateral margins are faintly four-lobed. Front with transverse fringe of hair. Chelipeds unequal in both sexes and smooth. Palms elongate with larger one heavy and smaller one very slender. Legs smooth and hairy.

Range. From Florida Keys to Barbados. Reported also from Veracruz, Mexico and Curacao.

Habitat. Rocky and grassy substrates and coral reefs from shallow water to 154 m. At Roatan individuals were identified from substrate samples collected on a *Thalassia* flat.

Pilumnus holosericus (RATHBUN, 1898)
Fig. 9B.

Distinguishing features. Carapace covered with hairs which more or less conceal the dorsal tubercles or areoles. Front separated by a median V-shaped sinus. Anterolateral margins with four teeth; first tooth (outer orbital) is smaller. Wrist and palm pubescent like carapace. Fingers short and dark. Legs covered with short hairs and fringed with coarse hairs.

Range. From the Bahamas south to Trinidad and Curacao. Swan Island collections extend the range to the northwestern Caribbean.

Habitat. Reported from shallow water under stones in rocky and coral reef areas. At Great Swan Island, individuals were collected in rock crevices and under coral rubble in *Thalassia* beds near shore.

Pilumnus longleyi RATHBUN, 1930
Fig. 9C.

Distinguishing features. Carapace covered with hairs which are shorter posteriorly. Anterolateral margins with six spines, the third and fourth being joined near base. Chelipeds and legs are long and hairy. Manus of both chelae rough and hairy on outer margins. RATHBUN (1930) points out the ease of confusing this species with *P. caribaeus* DESBONNE & SCHRAMM and *P. sayi* RATHBUN because of the similarities in general appearance. *P. longleyi*, however, can be distinguished by the six spines on the anterolateral margins and the greater number of spines on the dorsal surface of the anterolateral region.

Range. Reported from the Bahamas, Florida Keys, and Dry Tortugas. Collections from Roatan extend the range to the northwestern Caribbean.

Habitat. Rocky and coralline bottoms in shallow water. At Roatan, this species was collected from rocky shores.

Platyactaea setigera (H. MILNE EDWARDS, 1834)
Fig. 9D.

Distinguishing features. Carapace wide, uniformly granulose and covered with short hairs. Nodules low and separated by narrow furrows. Margins of the carapace are lobiform and the posterolateral borders concave. Chelipeds hairy and granulose with black fingers.

Range. Bermuda, Bahamas, Florida Keys, and Dry Tortugas; throughout Antilles to Trinidad; Curacao and Caribbean coast of Colombia. Collections from the Swan Islands extend the distribution to the northwestern part of the Caribbean.

Habitat. Reported in shallow water from coral reefs and rocky substrates. This species was collected at Great Swan Island from the undersides of coral rubble in *Thalassia* beds, and from crevices in the coral *Agaricia*.

Remarks. Identified as *Actaea setigera* by RATHBUN (1930). The species was placed in the genus *Platyactaea* by GUINOT (1967).

Platypodiella spectabilis (HERBST, 1794)
Fig. 9E.

Distinguishing features. Carapace granulate, relatively smooth with low lobules; front deflexed. Anterolateral margins thin, crested and slightly lobed; posterolateral borders concave. Upper borders of chelipeds and legs crested; fingers pointed and dark.

Range. Distributed throughout the Caribbean and Gulf of Mexico from Bermuda and the Bahamas as far south as Fernando de Noronha, Brazil.

Habitat. Reported from coral reefs, under stones and occasionally from sponges from 4 to 13 m. Specimens were collected at Great Swan Island from living coral heads.

Remarks. This species was identified by RATHBUN (1930) as *Platypodia spectabilis*. GUINOT (1967) transferred it to the new genus *Platypodiella*.

Xantho denticulatus WHITE, 1848
Fig. 9F.

Distinguishing features. Carapace more or less oval and anterolateral borders bear nine to ten teeth (not including orbital angle) and continue behind widest part of the carapace. Front with small, shallow median notch. Upper wrist surface and palm rugose. Inner margin of wrist bears two teeth. Fingers pointed and dark.

Range. Widely distributed, ranging from Bermuda, Florida Keys, throughout Antilles to Trinidad and from Panama to the Abrolhos Islands, Brazil with range extensions to the Gulf of Guinea and west coast of Africa.

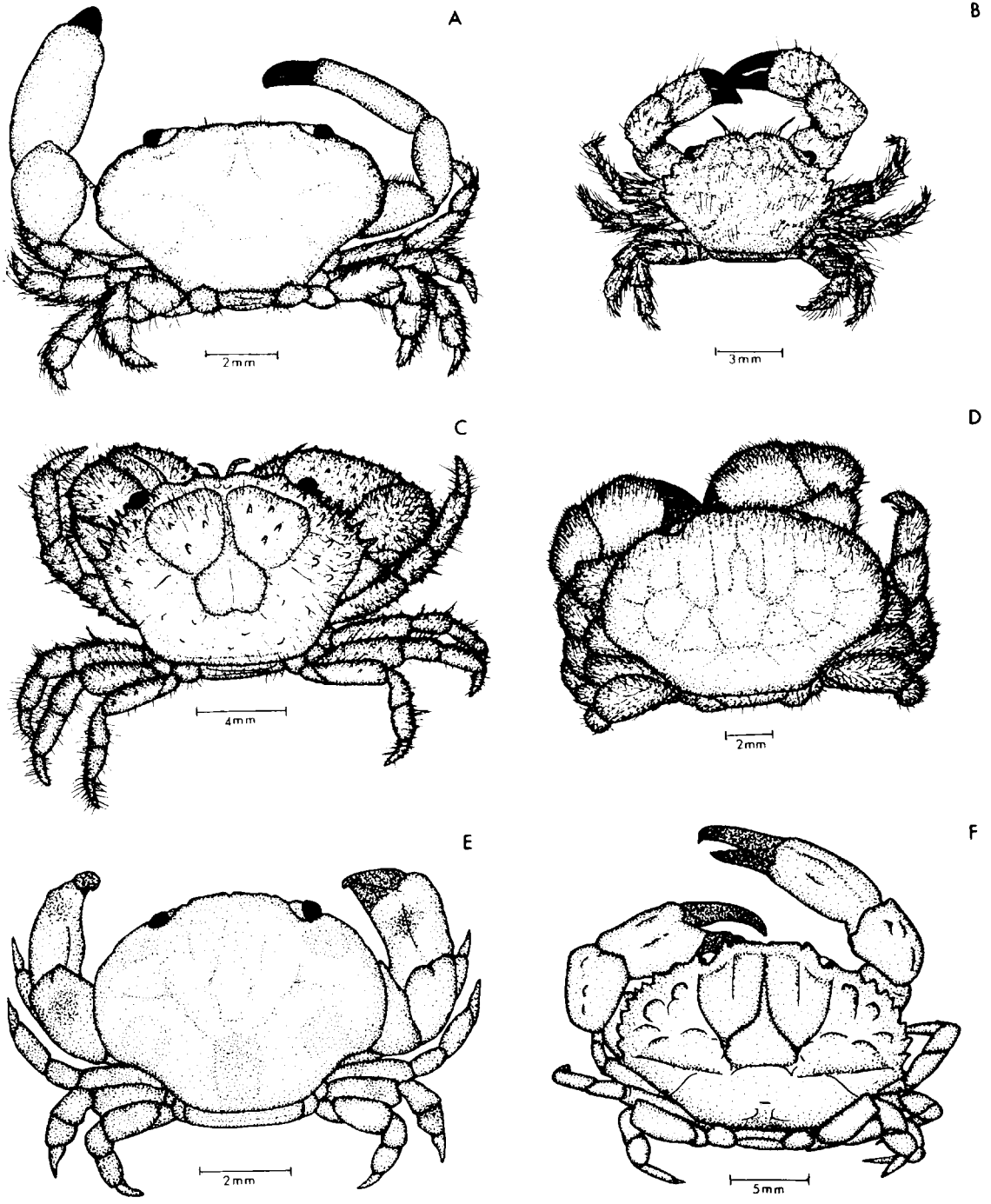


Fig. 9. A. *Paraliomera longimana*, male. B. *Pilumnus holosericus*, male. C. *Pilumnus longleyi*, male. D. *Platyuctaea setigera*, male. E. *Platypodiella spectabilis*, male. F. *Xantho denticulatus*, male.

Habitat. Reported from coral reefs, under stones, and in tide pools. The species was abundant at Great Swan Island under coral rubble and in beds of

Thalassia. Specimens were also obtained from brain coral and coralline sand.

Remarks. The species was originally described

under the genus *Xantho* but was transferred by RATHBUN (1930) to *Xanthodius*. Most carcinologists, however, continue to use the older genus. GUINOT (1968) raised some questions about differences between the South American and African species.

Family Pinnotheridae

Dissodactylus borradailei RATHBUN, 1918
Fig. 10A.

Distinguishing features. Carapace smooth and very convex with concave posterolateral surfaces. A ridge runs dorsally from the lateral angles halfway to median line. Outer maxillary palp 3-jointed.

Range. Reported from Florida and Jamaica. Roatan collections extend their distribution to the northwestern Caribbean.

Habitat. RATHBUN (1918) reported individuals from fine white sand taken in dredges from 49 to 55 m. At Roatan individuals were collected from dredges through *Thalassia* flats. They were found to be commensal with the sea biscuit, *Meoma ventricosa* (LAMARCK). Most of the urchins had several crabs clinging to the spines on their oral side.

Family Grapsidae Subfamily Grapsinae

Geograpsus lividus (H. MILNE EDWARDS, 1837)
Fig. 10B.

Distinguishing features. Carapace subrectangular with lateral margins well defined. Transverse striations occur laterally and anteriorly. Upper margin of front bears four tubercles; edge nearly straight. Tooth located on the lateral margins posterior to the orbital angle. Chelipeds subequal; wrist with tooth on inner angle. Inner arm margin expanded and denticulate proximally. Palm tuberculate dorsally; fingers pointed.

Range. A widely distributed species ranging from Bermuda, Florida Keys throughout Antilles to Trinidad and from the Caribbean coast of Colombia to São Paulo, Brazil. It also occurs in the eastern Pacific from Baja California to Chile with extensions to the Clipperton, Galapagos, and Hawaiian Islands. Habitat. Frequents rocky shores and cobble beaches from midlittoral to supralittoral zones. Specimens were collected at Great Swan Island from the undersides of coral rubble in shallow water and on rocks in the splash zone.

Goniopsis cruentata (Latreille, 1803)
Fig. 10C.

Distinguishing features. Carapace subquadrate with distinct striations both laterally and anteriorly;

sharp tooth at the posterior orbital angle; front sharply deflexed. Third maxillipeds gape widely exposing the mandibles and they do not bear an oblique hairy ridge. Fossa between second and third walking legs fringed with hair. Chelipeds subequal with inner margins of merus expanded and denticulate; palm of chela tuberculate dorsally. The species is often recognized by its bright colors which vary from yellow-brown to red. There is often purple markings and spots along the lateral margins and upper parts of legs.

Range. From Bermuda and Bahamas. Gulf of Mexico, throughout Antilles to Rio de Janeiro, Brazil. Reported also from the eastern Atlantic from Senegal to northern Angola.

Habitat. Frequents mangrove swamps and is often seen among mangrove roots near the water's edge. This species was extremely common in the mangrove swamps at Roatan and other Honduran Bay Islands. The crab has also been reported from wet muddy marine shores, along inlets and estuaries. HARNOLL (1965) observed small individuals sheltering under leaves and debris beneath the Jamaican mangroves. *G. cruentata* does not construct burrows but may take refuge in the burrows of other crabs such as *Ucides cordatus*.

Grapsus grapsus (LINNAEUS, 1758)
Fig. 10D.

Distinguishing features. Carapace subcircular in adults with distinct transverse striations in branchial regions; front sharply deflexed. A sharp tooth occurs just posterior to outer orbital angle. Merus of legs with transverse striations. Chelipeds short and subequal with longitudinal ribs on sides of palms. Upper margin of palms tuberculate; wrist with spine on inner margin. Fingers with spooned tips.

Range. This species has an extremely wide distribution from the Bermudas, Florida, throughout the Antilles to Estado de Pernambuco, Brazil. It is also distributed throughout the Caribbean from Curacao to the Gulf of Mexico. The range extends to the eastern Atlantic from southern Portugal to northern Angola and in the eastern Pacific from central Baja California to central Chile and to the Galapagos and Clipperton Islands.

Habitat. A frequent inhabitant of littoral and supralittoral rocky shores. Also, reported from cobble beaches and on cliff walls. The species was extremely common at the Swan Islands and Bay Islands from rocky areas where they were particularly abundant in the splash zones. At the Swan Islands, they were also abundant on drifts of *Thalassia* at the shoreline.

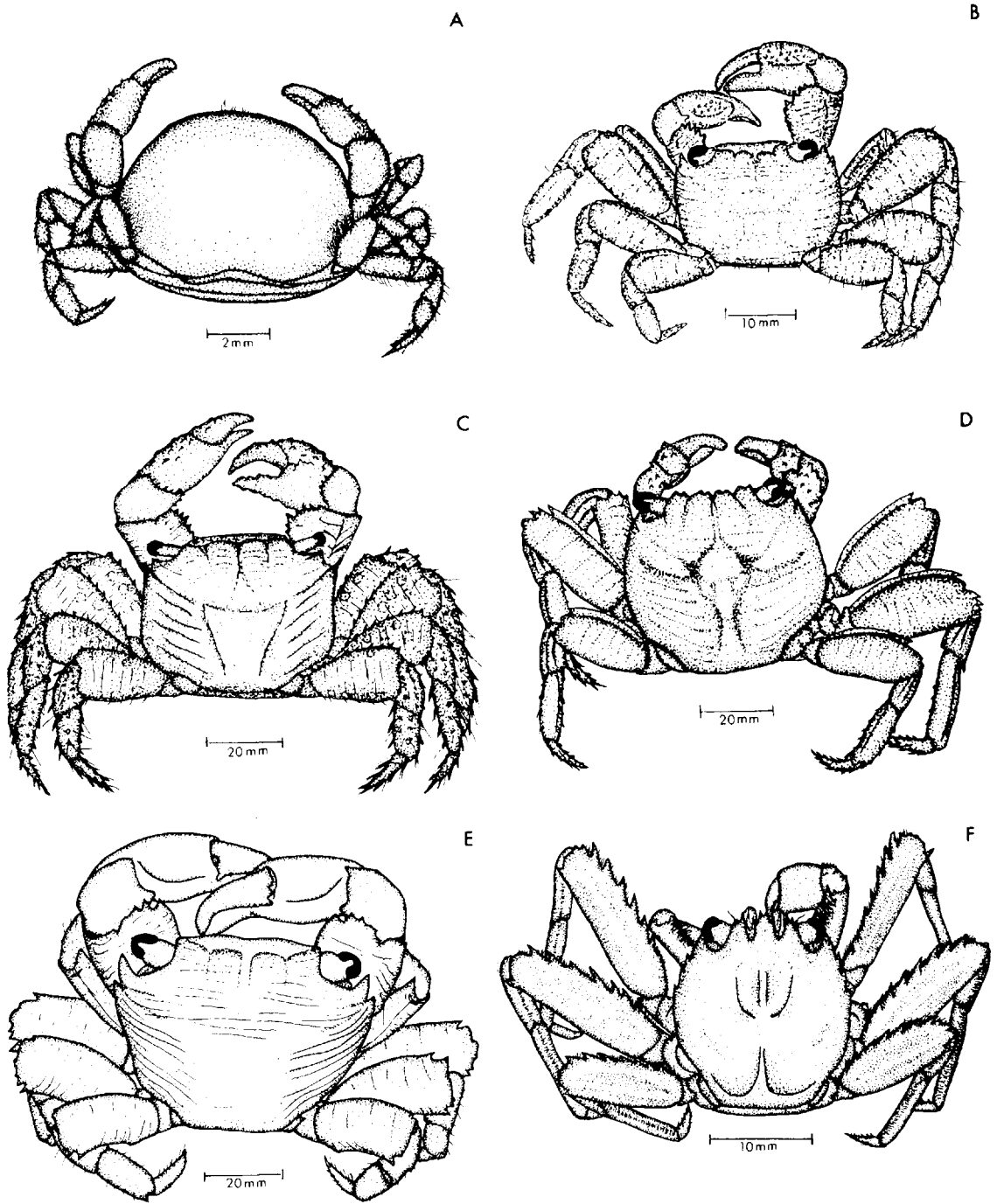


Fig. 10. A. *Dissodactylus borradalei*, female. B. *Geograpsus lividus*, male. C. *Goniopsis cruentata*, male. D. *Grapsus grapsus*, male. E. *Pachygrapsus transversus*, male. F. *Percnon gibbesi*, male.

Pachygrapsus transversus (GIBBES, 1850)

Fig. 10E.

Distinguishing features. Carapace trapezoidal,

about one-third broader than long, and covered by transverse striations anteriorly and laterally. Sides convergent posteriorly and armed with a sharp tooth behind the outer orbital tooth. Front sinuose and

slightly more than half the greatest width. Chelipeds subequal and bear a laminate expansion on the inner margin of the arm. Inner wrist margin with blunt tooth; fingers with spooned tips.

Range. Extremely wide range from North Carolina, Bermuda, Bahamas, Florida, throughout the Antilles and along the Brazilian coast to Uruguay. Also occurs throughout the Caribbean and Gulf of Mexico. The range extends to the eastern Atlantic from the Mediterranean Sea to Angola, and in the eastern Pacific from central California to Peru. The species is also reported from the Galapagos and Easter Islands.

Habitat. Common beneath stones near the tide line. Also, reported from rocks, pilings, and wharves. Occasional reports on mangrove roots and sand beaches. Individuals were collected at Roatan under rocks at the shoreline and at Great Swan Island under coral rubble in beds of *Thalassia*.

Percnon gibbesi (H. MILNE EDWARDS, 1853)

Fig. 10F

Distinguishing features. Carapace longer than wide, ovate and flattened, with four anterolateral spines including the outer orbital spine; dorsal tubercles flattened. Front spinose and narrow between antennules. Arm and wrist of chelipeds spinose, palm smooth, fingers short and hollowed at tips. Merus of walking legs with spines on upper margins.

Range. Widely distributed from North Carolina, Bermuda, Bahamas, Florida, throughout Antilles to Brazil. Range extends to the eastern Atlantic from the Azores to the Cape of Good Hope and to the eastern Pacific from Baja California to Chile.

Habitat. Found in lower rocky intertidal areas and on rock and pebble bottoms. The species was collected at Great Swan Island from coral rubble in the splash zone at night.

Plagusia depressa (FABRICIUS, 1775)

Fig. 11A.

Distinguishing features. Carapace subcircular, slightly wider than long, tuberculate, and partially covered with short hairs forming a scale-like pattern. Front divided by deep lobes exposing antennules dorsally. Anterolateral borders with four teeth including outer orbital angle. Palm of chelipeds with dorsal tubercles arranged in row and separated by setose furrows. Merus of walking legs with terminal and subterminal spines on anterior border. Last three leg segments fringed with dense hair.

Range. From North Carolina, Bermuda, Florida, Gulf of Mexico, Panama, Colombia, throughout the

Antilles to Pernambuco, Brazil; and in the eastern Atlantic from the Azores to Angola.

Habitat. Found intertidally among rocks, on jetties and in tide pools. Individuals were collected from Great Swan Island under coral rubble and at Roatan from a cobble-beach habitat in shallow water.

Subfamily Sesarminae

Aratus pisonii (H. MILNE EDWARDS, 1853)

Fig. 11B.

Distinguishing features. Carapace trapezoidal with lateral margins striated and converging posteriorly. Front strongly deflexed and about seven-tenths as wide as carapace. Antennae excluded from orbit. Merus of third maxillipeds with oblique hairy ridge and gaping, exposing mandibles. Chelipeds subequal, palm with dorsal tubercles; fingers with spooned tips. Walking legs broad and flattened with subterminal tooth on anterior margin. Dactyls of legs very short.

Range. From the Bahamas and Florida throughout the Antilles to Estado de São Paulo, Brazil. In the eastern Pacific from Nicaragua to Peru.

Habitat. Very common among mangroves and along shores of estuaries. Also reported from rock piles and wharves. It is present on most of the Caribbean Islands, especially in mangrove swamps where it actively climbs among the mangroves close to their seaward margins. At Roatan this species was most commonly observed inhabiting the roots of the red mangrove, *Rhizophora mangle* LINNAEUS, above and just below the water line. Larger crabs were reported by HARTNOLL (1965) to climb to considerable heights to reach mangrove leaves which were their principal diet. The crabs are active both during the days and night and when pursued, escape by climbing or dropping off into the water where they swim to the nearest root and ascend.

Cyclograpsus integer H. MILNE EDWARDS, 1837

Fig. 11C.

Distinguishing features. Carapace subrectangular, wider than long, and nearly smooth. Lateral margins smooth and subparallel. Third maxilliped with oblique hairy ridge across merus and gaping widely, exposing mandibles. Chelipeds subequal, fingers pointed. Merus of walking legs with a blunt subterminal tooth on anterior margin.

Range. From Bermuda, Florida, and Bahamas, throughout the Caribbean and Gulf of Mexico to Pernambuco, Brazil. Ranges in the eastern Atlantic from Senegal to Zaire.

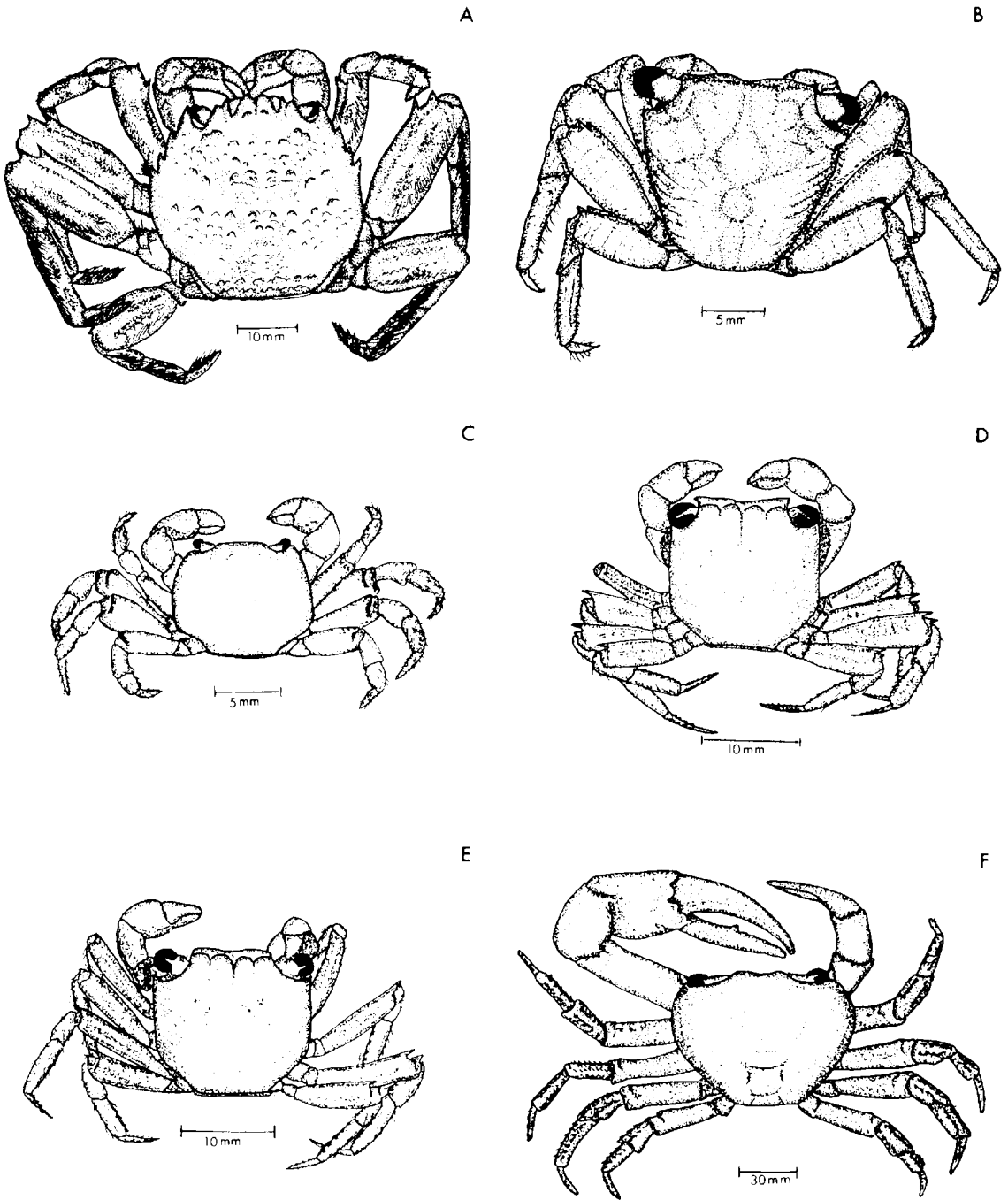


Fig. 11. A. *Plagusia depressa*, male. B. *Aratus pisonii*, male. C. *Cyclograpsus integer*, male. D. *Sesarma ricordi*, male. E. *Sesarma roberti*, male. F. *Cardisoma guanhumi*, male.

Habitat. Reported from splash areas along rocky beaches. Burrows in marshy marine areas. At

Roatan individuals were collected from under small stones along the shoreline.

Sesarma ricordi H. MILNE EDWARDS, 1853
Fig. 11D.

Distinguishing features. Carapace subquadrate, lightly striate laterally, and slightly wider posteriorly. No tooth present posterior to outer orbital angle. Front strongly deflexed at postfrontal lobes and broadens distally. Distance between outer orbital angles subequal to maximum carapace width. Third maxillipeds with oblique hairy ridge on surface of merus, and gaping widely. Chelipeds subequal, fingers with wide aperture at base, pointed and hollowed out.

Range. From Bermuda, Bahamas, and Florida, throughout Antilles to Trinidad; Curacao, Yucatan. Habitat. Among rocks and debris along the shoreline from the littoral zone to about 50 m inland. Also, reported from the edges of mangrove swamps and in grassy areas above sandy beaches. HARTNOLL (1965) reported that some individuals occasionally traveled up to 100 m from the sea, and sometimes shared burrows with *Cardisoma guanhumi*. *S. ricordi* was extremely common at Roatan, particularly around mangrove swamps and under driftwood along the shoreline. They were also found under rocks and short distances inland under logs and leaf litter.

Sesarma roberti H. MILNE EDWARDS, 1853.
Fig. 11E.

Distinguishing features. Carapace subquadrate, striate laterally, with subparallel margins which converge slightly anteriorly. No tooth present posterior to outer orbital angle. Distance between outer orbital angles slightly less than maximum carapace width. Front strongly deflexed at postfrontal lobes and does not broaden distally. Third maxillipeds with oblique hairy ridge on surface of merus, and gaping widely. Chelipeds subequal; fingers spoon-tipped.

Range. From Cuba throughout Antilles to Venezuela and from Vera Cruz, Mexico to Nicaragua.

Habitat. Frequents a wide range of brackish and freshwater habitats including rivers, streams, bays, and mangrove swamps. Reported to burrow along muddy slopes of river banks. This species was collected at Roatan from a freshwater stream at Port Royal. They were found submerged among rocks in the shallow flowing spring about 100 m from the seashore. Individuals were also collected along the muddy shores of some mangrove swamps.

Remarks. *Sesarma roberti* closely resembles *S. ricordi* but can easily be distinguished by the front. In *S. ricordi* the front widens distally, whereas in *S. roberti* the lateral margins of the front are subparallel.

There has been some confusion regarding the taxonomic status of *S. roberti* and *S. angustipes* DANA. HARTNOLL (1965) used *S. angustipes* as a senior synonym for *S. roberti* after comparing a male syntype of *S. roberti* with specimens of *S. angustipes* used by RATHBUN (1918). CHASE & HOBBS (1969) agreed with HARTNOLL'S finding regarding RATHBUN'S species but was not convinced that *S. roberti* was a junior synonym. CHASE & HOBBS maintained that until a specimen of the Caribbean species with distinct frontal and pleopodal features is found on the northeastern and eastern coasts of South America the two should be considered distinct species. ABELE (1972) in his summary of the taxonomic status of several sesarmids agreed with CHASE & HOBBS.

Family Gecarcinidae

Cardisoma guanhumi LATREILLE, 1825

Fig. 11F.

Distinguishing features. Carapace broad, oval, and smooth. Distance between outer orbital angles more than half the carapace width. Third maxilliped gaping, exopod visible and hairy. Dactyls of walking legs with four rows of spines. Color varies from pale blue or lavender to ashy grey or tan; chelipeds smooth and unequal in both sexes, but much more so in males; fingers stout and meet only at tips.

Range. Includes the Gulf of Mexico, eastern Mexico to Colombia and the western Atlantic from the Bermuda Islands to São Paulo, Brazil.

Habitat. This is one of the most common semiterrestrial land crabs occurring throughout the Caribbean. *C. guanhumi* inhabits low-lying coastal areas, mangrove swamps, river banks, and drainage ditches. It is primarily nocturnal except in heavily shaded areas or on very cloudy days. This species was collected at Roatan from low-lying forested areas and mangrove mud flats. Younger crabs inhabited burrows nearer the shore overlapping with *Uca rapax*. Larger members of the species tended to inhabit supralittoral areas. At Great Swan Island this species was not as abundant as the other gecarcinid species but was frequently observed along the shore and short distances inland at night.

Remarks. This crab is harvested commercially as food on some Caribbean Islands such as Puerto Rico. POWERS (1977) reports this crab to be an agricultural pest in southern Florida because of extensive burrowing in the fields and consumption of plant shoots.

Gecarcinus lateralis (FREMENVILLE, 1835)

Fig. 12A.

Distinguishing features. Carapace widest at anterolateral angles. Distance between outer orbital

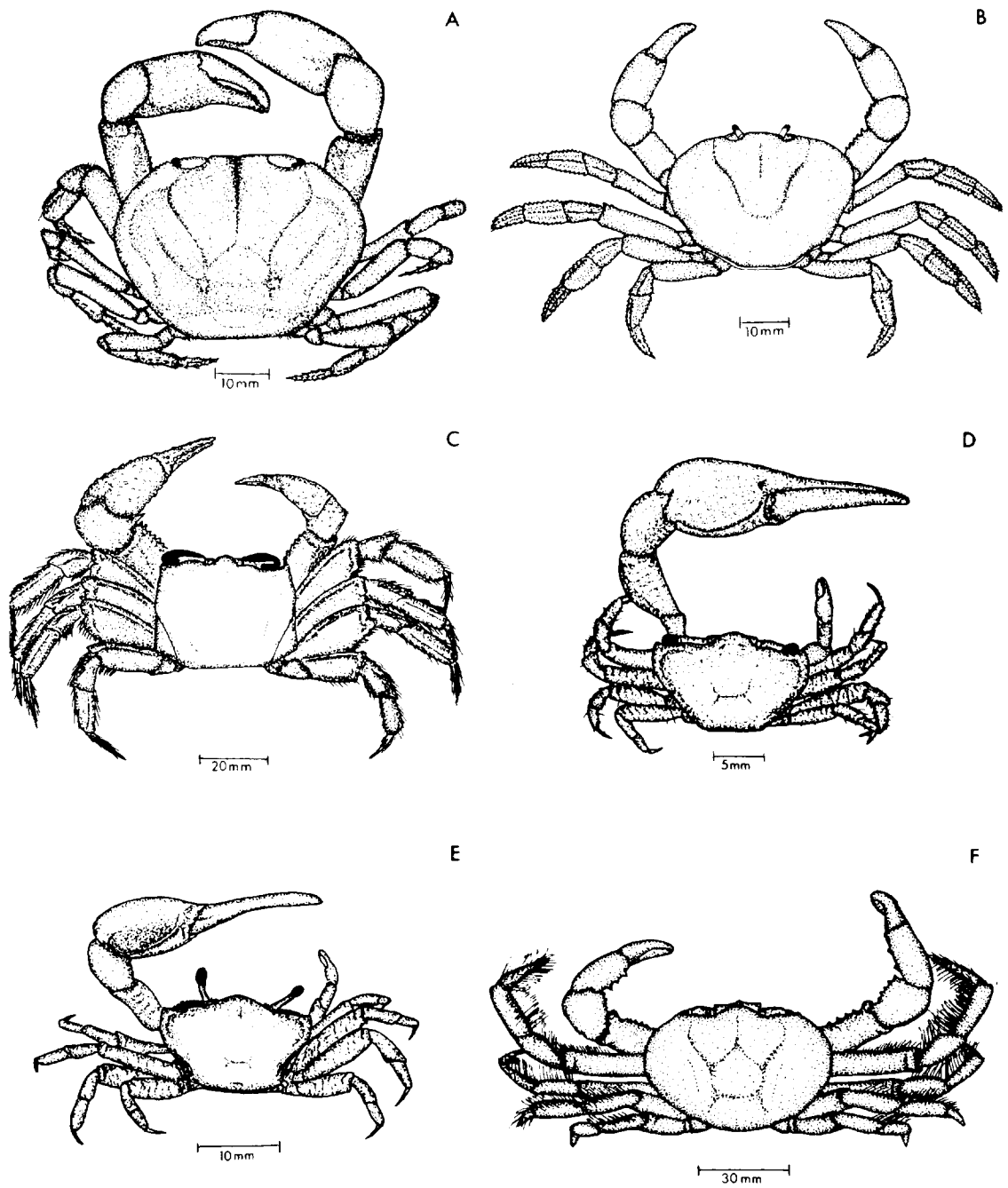


Fig. 12. A. *Gecarcinus lateralis*, male. B. *Gecarcinus ruricola*, female. C. *Ocypode quadrata*, male. D. *Uca burgersi*, male. E. *Uca rapax*, male. F. *Ucides cordatus*, male.

angles half or slightly less than half greatest carapace width. Merus of third maxilliped bears shallow marginal notch distally. Chelipeds unequal in older

males but usually subequal in young individuals. Dactyls of legs armed with four rows of spines. Carapace with dark reddish-brown central area.

Range. Widespread throughout the Caribbean and Gulf of Mexico, southeast Florida, Bahamas, and Bermuda Islands.

Habitat. Burrows in dry, sandy areas further inshore than *Cardisoma*. It has been reported from dune ridges and back dune areas of Florida and from wooded areas under logs and leaf litter. At Great Swan Island, it was very abundant in wooded areas. The species was also observed at Roatan and Barbaret from inland wooded areas. *G. lateralis* is most frequently observed during the evening or on cloudy days after a rain.

Gecarcinus ruricola (LINNAEUS, 1758)

Fig. 12B.

Distinguishing features. Carapace with brachial regions greatly swollen. Distance between outer orbital angles about two-fifths maximum carapace width in adults, but may approach half the carapace width in half-grown individuals. Chelipeds subequal with dentate fingers narrowly gaping. Merus of third maxilliped rounded distally without a marginal notch. Dactyls of legs bear six rows of spines. Color is extremely variable.

Range. From the Bahamas, southeast Florida to Barbados. Also reported from the Cayman Islands, Swan Islands, Nicaragua, and Curacao.

Habitat. Frequently observed in low and marshy ground of the savannas of the West Indies. The species was very abundant in the wooded areas at Great Swan Island. It was observed mostly at night and in evenings on rainy days. In southeast Florida the species occasionally occurs among dense populations of the smaller gecarcinid, *G. lateralis*.

Remarks. The species is reported to migrate down from the hills in some areas of the West Indies in swarms during the rainy season in May. The females enter the sea allowing the young to hatch. After a few weeks they migrate back into the hills (GREEN 1963).

Family Ocypodidae

Ocypode quadrata (FABRICIUS, 1787)

Fig. 12C.

Distinguishing features. Carapace nearly sub-square in adults with a fine granular surface. Front narrow and deflexed. Distance between outer orbital angles nine-tenths carapace width. Specialized hair-fringed openings occur between the basal joints of the second and third pairs of walking legs in all members of this family. Chelipeds similar and unequal in both sexes. Palm of largest chela bears a stridulating ridge on its medial surface.

Range. Occurs throughout the Gulf of Mexico and

Caribbean. Ranges from Florida along the Atlantic coast north to Rhode Island and as far south as Santa Catarina, Brazil.

Habitat. Constructs burrows in supralittoral sand beaches from the high-water mark to back-dune areas. Older individuals have been observed to construct burrows further inland than young crabs. The species was a common inhabitant of the Swan Islands and the Bay Islands on sandy beaches.

Remarks. This is the only species of the genus *Ocypode* which has been described from the Gulf of Mexico and the Caribbean. It was described as *Ocypode albicans* BOSC. by RATHBUN (1918) and others prior to revision by HOLTHUIS (1959).

Uca burgersi HOLTHUIS, 1967

Fig. 12D.

Distinguishing features. Carapace subtrapezoidal to hexagonal and broader than long. Distance between outer orbital angles equal to maximum carapace width. Chelipeds unequal in males and subequal in females. Fingers longer than palm in large chela of males and gaping. Second, third, and fourth walking legs bear hairs on outer margins of the carpus and propodus. First pleopod (gonopod) of male has a laterally directed tip (posterior view), the lateral lobe being much wider than medial. Cornea of eyestalk occupies about two-fifths of its extensor surface.

Range. From the Florida east coast and Bahamas, throughout Antilles to Trinidad. Curacao and Caribbean coast of Panama to the eastern coast of Yucatan. Range extends along South America from Venezuela to Rio de Janeiro, Brazil.

Habitat. Mud flats around river mouths, marshes, and in mangrove mud flats and thickets. This was the only species of *Uca* found on Great Swan Island. It was collected from a flat, near a brackish-water pool.

Uca rapax (SMITH, 1870)

Fig. 12E.

Distinguishing features. This species is similar in appearance to *U. burgersi* but distinguished (CHASE & HOBBS, 1969) by the cornea and male gonopods. The cornea of *U. burgersi* typically occupies less than two-fifths of extensor surface of distal eyestalk segment, whereas in *U. rapax* it occupies about two-fifths of the surface. The first denuded pleopod (gonopod) of *U. rapax* terminates (posterior view) in two projections with the lateral lobe only slightly broader than the medial. In *U. burgersi* the lateral lobe is very broad and the medial lobe is inconspicuous.

Range. Florida east coast and Bahamas throughout

the Antilles to Santa Catarina, Brazil and from Mexico and northeast Yucatan to Panama.

Habitat. Mud and sandy mud flats, mud banks of streams, salt marshes, and edges of mangroves. This species is often sympatric with *U. burgersi* but *U. rapax* usually occurs nearer the open sea and, according to CRANE (1975), in more saline conditions. At Roatan and other Bay Islands the species was very abundant in mud flats and near the edge of mangrove swamps ranging from the shoreward mangrove fringe and extending inland some distance. In Jamaica it primarily inhabits the *Laguncularia* and *Avicennia* zones and was characterized as an upper-swamp species by WARNER (1969).

Remarks. This is a widespread and very abundant species of *Uca* in the Caribbean. *U. rapax* was listed as a subspecies of *U. pugnax* (SMITH) by RATHBUN (1918) until a revision by TASHIAN & VERNBERG (1958) separated *U. rapax* out as a separate species.

Ucides cordatus (LINNAEUS, 1763)

Fig. 12F.

Distinguishing features. Carapace of male about one and one-fourth times wider than long. Distance between outer orbital angles no more than two-thirds maximum carapace width. Chelipeds unequal in both sexes; palm concave along lower margin. Walking legs of male bear long hairs on the ventral margins; first pair are longer and last pair shorter than the others. The crab is relatively large with a bluish-gray carapace reaching up to 90 mm in width. Females differ by having a narrower carapace, shorter legs and chelipeds, and fewer hairs on the legs.

Range. From the Bahamas and northeastern Mexico, throughout the Caribbean to Santa Catarina, Brazil.

Habitat. Found around river mouths and in areas of standing brackish water. Also among mangrove roots and mud flats. At Roatan this species burrowed in mangrove mud flats. These areas were also occupied by *Uca rapax*, *Goniopsus cruentata*, and young *Cardisoma guanhumi*.

Remarks. CHACE & HOBBS (1969) transferred *Ucides* from the family Gecarcinidae to Ocypodidae.

ACKNOWLEDGMENTS

Appreciation is expressed to Tarleton State University for the organized research grant which made this study possible, and to the Texas Christian University Research Foundation who sponsored trips to the Swan Islands. I thank Mr. Frank Roulstone of the U.S. Weather Service for his assistance in coordinating trips to the Swan Islands, and Dr. J. C. Britton, Texas Christian University, for making brachyuran collections from the Swan Islands and Roatan available for study. I especially thank Dr. John S. Garth of the Allan Hancock Foundation, University of Southern California, for his help in confirming many of the brachyuran species and for his review of this manuscript.

REFERENCES

- Abele, L.G. 1972. The status of *Sesarma angustipes* Dana, 1852, *S. trapezium* Dana, 1852, and *S. miersii* Rathbun, 1897 (Crustacea: Decapoda: Grapsidae) in the western Atlantic. - *Caribbean Journal of Science* 12:165-170.
- Barr, L. 1971. Observations on the biology of the arrow crab, *Stenorhynchus seticornis* (Herbst) in Lameshur Bay, St. John, Virgin Islands. - Pp. 213-220 in: Miller, J., J. van Derwalker & R. Walkers (eds). *Scientists-in-the-sea*. Department of Interior, Washington, D.C.
- 1975. Biology and behavior of the arrow crab, *Stenorhynchus seticornis* (Herbst), in Lameshur Bay, St. John, Virgin Islands. - Pp. 47-56 in: Results of the Tektite Program. *Bulletin of the Museum of Natural History, Los Angeles County* 20.
- Bott, R. 1955. Die Süßwasserkrabben von Afrika (Crust., Decap.) und ihre Stammesgeschichte. - *Annales du Musée du Congo Belge. Serie in Quarto, Zoologie* 1:209-352.
- 1968. Fluss-Krabben aus dem östlichen Mittelamerika und von dem Grossen Antillen (Crustacea, Decapoda). - *Senckenbergiana Biologica* 49:39-49.
- Brattström, H. 1980. Rocky-shore zonation in the Santa Marta area, Colombia. - *Sarsia* 65:163-226.
- Chace Jr, F.A. & H.H. Hobbs Jr. 1969. The freshwater and terrestrial decapod crustaceans of the West Indies with special reference to Dominica. - *Bulletin, United States National Museum* 292:1-258.
- Coelho, P.A. 1971. Nota prévia sobre os Majidae do norte e nordeste do Brasil. - *Archivos Museu Nacional Rio de Janeiro* 54:137-146.
- Crane, J. 1975. *Fiddler Crabs of the World. Ocypodidae: Genus Uca*. Princeton Univ. Press, New Jersey. 736 pp.
- Davidson, W.V. 1974. *Historical geography of the Bay Islands, Honduras*. - Southern Univ. Press, Birmingham, Ala. 199 pp.
- Felder, D.L. 1973. An annotated key to crabs and lobsters (Decapoda, Reptantia) from coastal waters of the northwestern Gulf of Mexico. - *Publ. No. LSU-SG-73-02 of the Center for Wetland Resources, Louisiana State University, Baton Rouge*. 103 pp.
- Garth, J.S. 1978. Marine biological investigations in the Bahamas 19. Decapoda Brachyura. - *Sarsia*. 63:317-333.
- Green, J. 1963. *A biology of Crustacea*. H.F. and G. Witherby Ltd., London. 180 pp.
- Guinot, D. 1964. Les trois espèces du genre *Domecia* (Decapoda, Brachyura): *D. hispida* Eydoux and

- Souleyet, D. *glabra* Alcock, et *D. acanthophora* (Desbonne and Schramm). – *Crustaceana* 7:267–283.
- 1967. Recherches préliminaires sur les groupements naturels chez les Crustacés Décapodes Brachyours III. A propos des affinités des genres *Dairoides* Stebbing et *Daira* de Haan. – *Bulletin du Museum National d'Histoire Naturelle, Paris* 39:540–563.
 - 1968. Recherches préliminaires sur les groupements naturels chez les Crustacés Décapodes Brachyours. IV. Observations sur quelques genres de Xanthidae. – *Bulletin du Museum National d'Histoire Naturelle, Paris* 39:695–727.
 - 1969. Sur divers Xanthidae notamment sur *Actaea* de Haan et *Paractaea* gen. nov. (Crustacea Decapoda, Brachyura). – *Cahiers du Pacifique* 13:223–285.
 - 1970 (1971). Recherches préliminaires sur les groupements naturels chez les Crustacés Décapodes Brachyours VIII. Synthèse et bibliographie. – *Bulletin du Museum National d'Histoire Naturelle, Paris* Ser. 2. 42:1063–1090.
- Hartnoll, R.G. 1965. Notes on the marine grapsoid crabs of Jamaica. – *Proceedings of the Linnean Society of London* 176:113–147.
- Herrnkind, W., G. Stanton & E. Conklin 1976. Initial characterization of the commensal complex associated with the anemone, *Lebrunia danae*, at Grand Bahama. – *Bulletin of Marine Science* 26:65–71.
- Holthuis, L.B. 1959. The Crustacea Decapoda of Suriname (Dutch Guiana). – *Zoologische Verhandelingen, Leiden* 44:1–296.
- Lemaitre, R. 1984. Decapod crustaceans from Cay Sal Bank, Bahamas, with notes on their zoogeographic affinities. – *Journal of Crustacean Biology* 4:425–447.
- McBirney, A.R., & M.N. Bass 1969. Geology of Bay Islands, Gulf of Honduras. In: McBirney, A.R. (ed.) Tectonic relations of northern Central America and the western Caribbean – The Bonaca Expedition. – *American Association of Petroleum Geologists, Memoir* 11:229–243.
- Pearse, A.S. 1932. Observations on the parasites and commensals found associated with crustaceans and fishes at Dry Tortugas, Fla. – *Papers, Tortugas Laboratory* 28:103–115.
- 1934. Inhabitants of certain sponges at Dry Tortugas. – *Papers, Tortugas Laboratory* 28:117–124.
- Powers, L.W. 1977. A catalog and bibliography to the crabs (Brachyura) of the Gulf of Mexico. – *Contributions to Marine Science, University of Texas, Supplement to Vol. 20*. 190 pp.
- Pretzmann, G. 1965. Vorläufiger Bericht über die Familie Pseudothelphusidae. – *Anzeiger der Österreichischen Akademie der Wissenschaften* 1965:1–10.
- Rathbun, M.J. 1905. Les crabes d'eau douce (Potamonidae). Pt. 2. – *Archives du Museum National d'Histoire, Paris*, Ser. 4, 7:159–321.
- 1918. The grapsoid crabs of America. – *Bulletin, United States National Museum* 97:1–461.
 - 1925. The spider crabs of America. – *Bulletin, United States National Museum* 129:1–613.
 - 1930. The cancrioid crabs of America of the families Euryalidae, Portunidae, Atelecyclidae, Cancridae and Xanthidae. – *Bulletin, United States National Museum* 152:1–609.
 - 1933. Brachyuran crabs of Porto Rico and the Virgin Islands. – *Scientific survey of Porto Rico and the Virgin Islands* 15:1–121. New York Academy of Sciences.
 - 1937. The oxystomatous and allied crabs of America. – *Bulletin, United States National Museum* 166:1–278.
- Smalley, A.E. 1970. A new genus of freshwater crab from Guatemala, with a key to the middle American genera (Crustacea Decapoda, Pseudothelphusidae). – *American Midland Naturalist* 83:96–106.
- Tashian, R.E. & F.J. Vernberg 1958. The specific distinctness of the fiddler crabs *Uca pugnax* (Smith) and *Uca rapax* (Smith) at their zone of overlap in northwestern Florida. – *Zoologica* 43:89–92.
- Warner, G.F. 1969. The occurrence and distribution of crabs in a Jamaican mangrove swamp. – *Journal of Animal Ecology* 38:379–389.
- Williams, A.B. 1965. Marine decapod crustaceans of the Carolinas. – *Fishery Bulletin* 65:1–298.
- 1978. Transfer to *Pseudomedaeus* of the xanthid crab *Micropanope distinctus* (Rathbun). – *Proceedings of the Biological Society of Washington* 91:546–557.

Accepted 14 May 1985.

