THE BRACHYURA OF THE "ASKOY" EXPEDITION

WITH REMARKS ON CARCINOLOGICAL COLLECTING IN THE PANAMA BIGHT

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INTRODUCTION

THE COLLECTION OF BRACHYURA on which the following report is based was made by the "Askoy" Expedition of the American Museum of Natural History under the direction of Dr. Robert Cushman Murphy between February 9 and May 26, 1941. The territory covered by the expedition, defined by Nichols and Murphy (1944, p. 221) as the Panama Bight, embraces the Pacific coast of Panama, Colombia, and Ecuador from the Perlas Islands to Cape Santa Elena and includes the island of Malpelo. As such it is synonymous with the Bay of Panama, *sensu lato*. Considered for convenience as a geographical unit, it represents biologically but the southern and eastern half of the Panamic faunal province, which extends northward to the Gulf of California and westward to the Galápagos Islands.

Previous accounts covering the itinerary, personnel, and sponsorship of the expedition have already appeared (Murphy, 1941, 1942, 1944, 1945). In the course of its oceanographic explorations, both physical and biological, the "Askoy" occupied some 113 stations, and at 31 of these brachyurans were taken. The greatest number of specimens were accounted for by the diving operations of Mr. John C. Armstrong, second in command, who obtained living heads of *Pocillopora* coral at half a dozen localities, but dredging, seining, dipping, and purchases from a local market all contributed to the total. Included in the present paper because of their pertinence are small collections obtained by Dr. C. M. Breder, Jr., while cruising off Ecuador in the "Wilpet" in December, 1942, and by Dr. R. C. Murphy, who returned briefly to the Perlas Islands in November, 1945.

"ASKOY" STATIONS AT WHICH BRACHYURA WERE COLLECTED

The accompanying chart (fig. 1) shows the course of the "Askoy" in 1941 and indicates by means of enlarged figures the stations at which brachyuran Crustacea were obtained. These stations, their locations, and dates are as follows:

STATION	LOCATION	DATE
1	Pacheca Island, Perlas Islands	Feb. 10
2	Saboga Island, Perlas Islands	Feb. 11
6	Between San José and del Rey Islands, Perlas Islands	Feb. 13
7	South Passage, Perlas Islands	Feb. 13
8, 9	Santelmo Bay, Perlas Islands	Feb. 14–15
19	Piñas Bay, Panama	Feb. 24
30	Guayabo Chiquito, Panama	Mar. 4
31	Ardita Bay, Colombia	Mar. 5–6
32	Octavia Bay, Colombia	Mar. 6–7
40	Málaga Bay, Colombia	Mar. 19
49	Lat. 04° 01′ N., long. 80° 26′ W.	Mar. 24
54	Lat. 04° 02′ N., long. 81° 29′ W.	Mar. 25
55	Malpelo Island, Colombia	Mar. 26
76	3 miles west of Cape Santa Elena, Ecuador	Apr. 10
80	La Plata Island, Ecuador	Apr. 12–13
81	Off Cape Pasado, Ecuador	Apr. 14
83	22 miles west of Punta Jama, Ecuador	Apr. 15
87	Lat. 01° 07′ N., long. 79° 53′ W.	Apr. 17
88	Tumaco, Colombia	Apr. 19
89	Gorgona Island, Colombia	Apr. 20–23
91	Lat. 02° 48′ N., long. 78° 11′ W.	Apr. 24
93	Cuevita Bay, Colombia	May 11
100	Utria Bay, Colombia	May 14–15
101	Solano Bay, Colombia	May 16
102	Limón Bay, Gulf of Cupica, Colombia	May 17
103	Humboldt Bay, Colombia	May 18–19
104	Guayabo Chiquito (same as Station 30)	May 20–21
109	Bayoneta Island, Perlas Islands	May 24
110	Contadora Island, Perlas Islands	May 25
111	Saboga Island (same as Station 2)	May 26

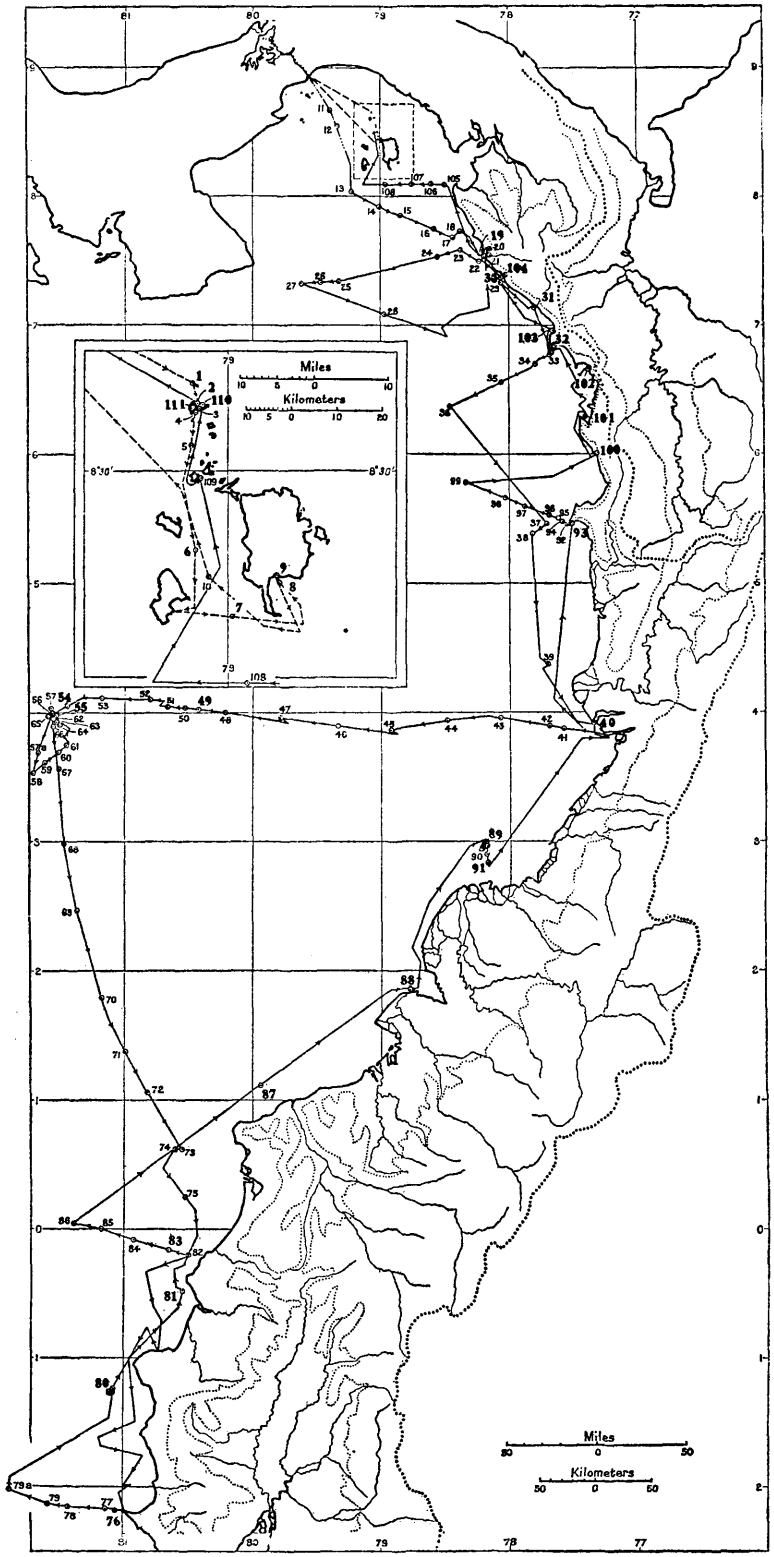


FIG. 1. The Pacific coast of Panama, Colombia, and Ecuador from the Isthmus to Punta Santa Elena, with an enlarged inset of the Perlas Islands. The course of the schooner "Askoy" and the position of 113 stations are plotted. Brachyura were collected at the 31 stations denoted by enlarged figures.

OBSERVATIONS ON BRACHYURA BY "ASKOY" EXPEDITION MEMBERS

The following observations concerning species encountered in particular abundance, made by Dr. R. C. Murphy, are repeated with his permission because of their interest:

Of *Euphylax dovii:* "The beautiful red, purple and blue swimming crab was seen by us only in the general vicinity of Malpelo Island. We first encountered it in the middle of the night at Station 49 (lat. 04° 01′ N., long. 80° 26′ W.), March 23–24, 1941, when two were captured at the surface along with fishes and other organisms. Next morning (March 24), when we were still nearer Malpelo, hundreds of them became visible all around us in a period when the wind and sea were quieting down. In a calm after 6 A.M. March 25, the "Askoy" was once again surrounded by vast numbers of these crabs on the flat surface. One or more of them sparred with our wire when we lowered the bathythermograph. This was five hours before we sighted Malpelo.

"In the azure water all around the island we became very familiar with the crabs, on one occasion capturing a bucket full of them, which we boiled in salt water and ate. They proved toothsome, but hardly substantial enough to make a meal. With the sea birds it was no doubt different because I found later that the stomachs of the swallow-tailed gulls, were crammed with the crabs, and I have no doubt that the big masked boobies were also feeding upon them. I draw this conclusion merely from the feeding behavior of the boobies because there is no record in my notes of finding the crabs in their stomachs.

"The booby referred to is *Sula dactylatra* and the gull, which is endemic at the Galápagos and Malpelo, is *Creagrus furcatus*" (unpublished notes).

Of *Grapsus grapsus* and *Gecarcinus planatus:* "As to actual inhabitants [of Malpelo], the first that we met ashore were crabs and lizards, of which two species of each were abundant. Red amphibious crabs (*Grapsus*) swarmed all over the rocks at sea level, and I found a large one in a crevice engaged in the cheerful occupation of eating a smaller example of its own kind. Even more ghoulish in appearance were the land crabs, fat and bloated looking creatures with shells of a ghostly white. They may be quite harmless toward human beings, yet they seem to eye a visitor with an intent that grows uncomfortable. If you sit long enough, the crabs will move up closer and closer, as if with whetted appetites, and I have a feeling that they would make life miserable for anyone who had to sleep ashore" (1945, p. 16).

Of *Ocypode gaudichaudii:* "On the sandy delta of the Cacique [Río Cacique, Isla del Rey, Perlas Islands] we hauled a seine, taking a variety of fishes including the small threadfins upon which the pelicans and gulls were gorging, and a basketful of puffers or blowfish no bigger than grapes, which they much resembled before their balloons collapsed. Wild swine were our fellow-collectors until the crack of a gun, by no means intended for them, sent them scampering to cover. Coral-red ghost crabs were the game that lured the pigs out of the bush at low tide. These crustaceans lived in holes a foot or so in depth. When feeding, they scooped up mouthfuls of wet sand, later ejecting a pellet the size of a pea after they had extracted all the microscopic nutritive contents. The crabs spent much time at the entrances to their tunnels, but now and then they withdrew to damper regions that protected them from the sun but not from the voracious razor backs. Droves of the latter systematically quartered the exposed flats, rooted their way to the bottom of the burrows, and gobbled up each crab in its cul-de-sac" (1944, p. 281).

Of *Gecarcinus quadratus* and *Cardisoma crassum:* "Most conspicuous and startling of all the forest people, however, were land crabs of the genus *Geocarcinus* which measured perhaps four inches across the breadth of their backs. These rattly creatures were nothing short of uncanny in their ubiquitous presence. They scattered before us at almost every footstep and it was not unusual to take in 50 or more at one glance, all sidling or backing away from my companion and me. We pinned down several in order that they might be securely grasped while I wrote in my notebook exactly what the gaudy brutes looked like. The description may be worth recording:

'a purple-backed carapace, with inconspicuous stalked eyes of the same hue; behind and outside of each eye is a large spot of brilliant orange which simulates an eye and which looks weird and baleful in the dim light; the formidable claws are violet-purple, blending into pale porcellanous tips, and the four pairs of legs upon which the creatures scuttle are clear coral red; just behind the middle of the carapace are two white spots, the hinder edges of which are scalloped with patches of orange and red, which last two colors prevail on the under surface.' [Cf. Pesta, 1931, pl. 5.]

"This crab is only one of several found in the Chocó. At the public market we purchased examples of a kind [*Cardisoma crassum*] that wore only two colors—Prussian blue and carmine. 'A sport-model,' is what Commandante Fallon called it.

"The land crabs range miles inland, but they all return annually to breed in their ancestral ocean home. The migration begins near the end of the dry season. In Panama this means the latter part of Lent, whence the tradition that the crabs are bent upon joining the Good Friday procession. Their pious motive does not deter the human population from capturing and eating vast numbers of them. At the time of the great marches, it is said that the world goes alive with crabs and that the forest floor sounds as though it were being whipped by hail" (1944, p. 481).

A BRIEF RÉSUMÉ OF CARCINOLOGICAL COLLECTING IN THE PANAMA BIGHT

Apparently the first person to collect Crustacea along the stretch of South American coastline between Punta Santa Elena, Ecuador, and Panama was Hugh Cuming, who made a voyage *circa* 1829 on the yacht "Discoverer." Species collected by Cuming within "Askoy" Expedition territory include *Mithrax* (*Mithrax*) *spinipes* (as *Pisa spinipes*) at Santa Elena and *Mithrax* (*Mithrax*) *pygmaeus* and *Tyche lamellifrons* from Panama, the latter two obtained by the "Askoy" as well. Although these were the only localities at which crustaceans were collected, according to Bell (1835, 1836), the following additional localities visited by Cuming have been extracted from the molluscan literature, particularly Carpenter (1856, p. 179): Isla Muerte (old name for Isla Santa Clara in the Gulf of Guayaquil), Isla Plata, Salango, "Mt. Xti" (Montecristi, near Manta), all in Ecuador, and Isla "King" (del Rey), Saboga, Perico, and Taboga, all in Panama. Their importance lies in the fact that Cuming, having dredged at some or all of these mainland localities, may have obtained there certain brachyuran species originally attributed to the Galápagos Islands, among them *Dasygyius depressus* and *gibbosus*, which reappear among "Askoy" collections.

The most important early collections of Brachyura were made by Dr. Enrico Festa during a residence of three years, 1895–1898, in Ecuador and adjacent Colombia. Localities from which he obtained specimens include Santa Elena Point and Bay, Manta, Esmeraldas, and Río Daule, Ecuador; Tumaco, Colombia; and Isla Flamenco, Panama (Nobili, 1901); Punta and Río Sabana, Río Tuira and Río Lara, Gulf of San Miguel, Darien (Nobili, 1897). Of the 47 species of brachyurans (excluding fresh-water crabs) of Festa's collecting, 22 were obtained by "Askoy" collectors as well. Earlier, in 1884, the "Vettor Pisani" explored the coasts of Chile and Peru, but apparently made no stop between Puná, at the mouth of the Río Guayas, and the Bay of Panama. Here, however, they obtained 22 species, five of them in the Perlas Islands (Cano, 1889). Two of Festa's localities, Santa Elena and Tumaco, and one of the "Vettor Pisani's," Perlas Islands, were revisited by the "Askoy."

In 1891 the "Albatross," with Alexander Agassiz in charge, traversed in part the region covered by the "Askoy," dredging off Galera Point, northern Ecuador, and off Malpelo Island. Since the minimum depths involved, 1573 and 52 fathoms, respectively, were be-

yond the "Askoy's" maximum of 30 fathoms, it is not surprising that the results (Faxon, 1893, 1895) are not directly comparable. On a subsequent voyage, 1904–1905, the "Albatross" obtained 11 species from the littoral of Taboguilla and Perico Islands, Bay of Panama (Rathbun, 1907).

In 1924–1925 the "St. George," with Cyril Crossland aboard, stopped at Taboga Island, the Perlas Islands, and Gorgona Island, Colombia. In reporting on this expedition Finnegan (1931) recorded 39 species of brachyurans from the Pacific American mainland, describing several of them as new. Since she was working with an unfamiliar fauna and did not have access to the Rathbun cancroid volume, or to the collections of the United States National Museum on which the Rathbun monographs were largely based, it is not surprising that the majority of these should have to give way to previously known species. Her zoogeographical discussion reveals a keen grasp of problems of animal distribution and, together with an extensive bibliography, represents the most valuable part of her paper.

In 1926 Waldo L. Schmitt collected at Salinas, Ecuador, his specimens enriching the collections of the United States National Museum. Rathbun (1930, 1937) included the cancroids and oxystomes in subsequent monographs, but the grapsoid and spider crabs are unreported, except for preliminary descriptions of new species (Rathbun, 1935, p. 49).

The Perlas Islands were visited in the spring of 1928 by William K. Vanderbilt on the yacht "Ara," the few specimens collected being reported by Boone (1930), whose account should be considered in the light of Glassell (1934), with further emendations in order, several of which are indicated in the synonymy to follow.

In 1934, in 1935, and in 1938 the "Velero III" traversed the area of "Askoy" explorations, accompanied by W. L. Schmitt and the writer. Extensive collections of Brachyura were made, of which only the Oxystomata of 1934–1935 have been published (Rathbun, 1937). As it is not intended to issue a separate report on Hancock Expedition Brachyura of the Panama-Colombia-Ecuador area, but rather to incorporate these specimens into a more general report covering the mainland coast from Mexico to Peru, the opportunity afforded by the "Askoy" collection of concentrating upon a particular segment in preparation for the larger task has been welcomed.

In 1938 also the "Zaca," with William Beebe aboard, spent several days at Gorgona Island at the termination of an extended cruise devoted largely to Mexico and Central America. Of the Brachyura from this expedition, only the intertidal brachygnathous crabs have been reported (Crane, 1940, 1941, 1947), and from these the Portunidae, Goneplacidae, Pinnotheridae, and the grapsid genera *Sesarma* and *Plagusia* have been excluded.

A collector whose work should be mentioned in passing, although his field of operations lay outside "Askoy" territory, is R. E. Coker, who in 1906–1908 visited Peru. The representative collection of Crustacea that he obtained provided the incentive for Mary J. Rathbun to review the literature for the entire west coast of South America, revising and modernizing the nomenclature, discarding doubtful records, and otherwise facilitating the preparation of the present report. Her "Stalk-eyed Crustacea of Peru and the adjacent coast," appearing in 1910, stood as the authoritative work for the region, until parts of it were incorporated successively into the four monographs on crabs of America (1918, 1925, 1930, 1937).

EARLY RECORDS OF "ASKOY" COLLECTED SPECIES ESTABLISHED BY ITALIAN CARCINOLOGISTS OF THE NINETEENTH CENTURY

Since, before the turn of the century, the Crustacea of the Panama Bight were better known to Italian carcinologists than to those of the English speaking nations, a review of Targioni-Tozzetti (1872, 1877), Cano (1889), and Nobili (1897, 1901) was undertaken. The

first, although omitted from Rathbun's 1910 bibliography, is cited in her 1925 and 1930 monographs. The second named, while containing, as Rathbun has pointed out, many Asiatic species incorrectly referred to American shores and others for one reason or another indeterminable, does give the earliest available record for the occurrence of many species within the territory under consideration. Early Panamanian records of "Askoy"-collected species not mentioned in the monographs but dating from Cano include the following, all incorrectly referred by him to the analogous Atlantic species:

Calappa convexa (as *C. flammea*)
Stenorynchus debilis (as *Leptopodia sagittaria*)
Arenaeus mexicanus (as *Neptunus cribrarius*)
Glyptoxanthus labyrinthicus (as *G. erosus* in the geographical section)

Nobili's papers, although lacking in illustrations, contain a wealth of descriptive material, amplified by color notes, measurements, and enumeration of specimens by age, sex, and provenance, and are the best original source of information on the Crustacea of the region. Early records of "Askoy"-collected species not appearing in the Rathbun monographs but amply substantiated by Nobili include the following:

From the Darien coast of Panama:
Callinectes arcuatus
Cronius ruber
Goniopsis pulchra
Uca brevifrons (as *Gelasimus vocator*)
From Ecuador:
Calappa convexa
Callinectes arcuatus
Cronius ruber
Xanthodius sternberghii
Eurypanopeus planus
Micropanope xantusii (as *Xanthias xantusii*)
Heteractaea lunata
Grapsus grapsus
Pachygrapsus transversus
Plagusia immaculata (as *P. tuberculata*)
Ocypode gaudichaudii

Of these *Calappa convexa*, *Eurypanopeus planus*, *Micropanope xantusii*, *Plagusia immaculata*, and *Uca brevifrons* are particularly important, as they represent the southernmost occurrence of the species concerned on the American mainland.

Maccagno (1928) presents a modern review of a portion of Nobili's work, that covering the genus *Uca*. From her descriptions and figures it is possible to recognize his *Uca vocator* var., listed as indeterminable by Rathbun (1910), as *U. ecuadoriensis* Maccagno, and to declare *U. guayaquilensis* Rathbun (1935) conspecific with *U. festae* Nobili. (Cf. Crane, 1941, p. 167.)

In the light of present knowledge concerning geographical distribution, Rathbun's synonymy of several of Cano's and Nobili's designations stands in need of revision. In the following pages *Thoe edentata* Cano (not Lockington) is referred to *T. sulcata panamensis* rather than to *T. s. sulcata*, and *Gecarcinus ruricola* of both Cano and Nobili (not Linnaeus) to *G. quadratus* rather than to *G. lateralis*. (See Remarks under these species.)

GENERAL OBSERVATIONS REGARDING THE "ASKOY" BRACHYURA

The 106 species of Brachyura included in the present paper are truly representative of the region covered, considering the "Askoy's" limitation to comparatively shallow dredging and the absence of fluvial collecting. None of the Cymopoliidae are represented, although *C. fragilis* has been dredged off Malpelo Island in 52 fathoms (not off Ecuador, as recorded by Rathbun, 1918), and four species of *Cymopolia* occur in the Galápagos Islands (Garth, 1946). Nor are the Potamonidae present, although *?Pseudothelphusa bouvieri* was obtained by the "St. George" from a stream on Gorgona Island (Finnegan, 1931), and eight species of *Pseudothelphusa* are recorded by Rathbun (1910) as occurring in Colombia and Ecuador. The inclusion of a representative of the Pinnotheridae was accidental, as no attempt was made to obtain commensals other than those obligatory to the *Pocillopora* colony. The absence of *Mithrax* (*Mithraculus*) *denticulatus* from the coral is remarkable in view of the fact that a representative of this subgenus, either *denticulatus* along the mainland coast or *nodosus* in the Galápagos Islands, was found by "Velero

III" collectors wherever coral heads were examined. Noteworthy also is the fact that the single *Sesarma* obtained by the "Askoy" was none of the four species obtained by Festa in Pacific Colombia and Ecuador (Nobili, 1901), but a fifth species, *S. (Holometopus) angusta*, known previously from Central America only. The scant representation of the genus *Uca*, abundant in species as well as individuals, as Crane (1941) has so well demonstrated, was in part overcome by later independent additions of Dr. R. C. Murphy.

The use of Brachyura of several species for food by the inhabitants of the Nariño coast is indicated by the presence in the collection of large specimens of *Calappa convexa*, *Callinectes toxotes*, and *Cardisoma crassum* purchased in the public market place at Tumaco, Colombia.

Comparative information useful in studies of breeding habits was obtained by the return of the "Askoy" in late May to two localities visited in February and early March, Saboga Island, Perlas Islands, and Guayabo Chiquito, Panama. In a number of species the percentages of ovigerous females taken at the two dates indicate a breeding cycle culminating in late June or early July. These are data of a type not furnished by private yachts whose visits invariably coincide with the northern winter.

The chief contribution of the "Askoy" collection, however, is in extending the known range of numerous species southward along the American mainland coast. A list of 45 such species follows. In it the ranges of nine species are extended from Colombia to Ecuador only; those of 16 species are extended from Panama to Colombia or Ecuador; while of those extended from territory outside the Panama Bight, seven are from Costa Rica (including two from Cocos Island), 12 are from Mexico north of Manzanillo (including 10 from the Gulf of California-Lower California region), and one is from the Galápagos Islands, although 15 additional species included in the aforementioned categories occur in the Galápagos as well. None represent extensions northward from Chile or Peru, a circumstance which attests the effectiveness of Punta Santa Elena as a faunistic barrier.

Species	Range Extended from	to
Ethusa mascarone panamensis	Panama	Ecuador
Iliacantha hancocki	Colombia	Ecuador
Podochela vestita	L. Calif.	Ecuador
Podochela angulata	Colombia	Ecuador
Inachoides laevis	Panama	Colombia
Euprognatha bifida	L. Calif.	Colombia
Collodes granosus	L. Calif.	Ecuador
Pyromaia tuberculata	Panama	Colombia
Dasygyius gibbosus	?Galápagos	Mainland
Dasygyius depressus	Cocos I.	Colombia
Notolopas lamellatus	Panama	Colombia
Herbstia pubescens	Mexico	Ecuador
Lissa tuberosa	L. Calif.	Colombia
Anaptychus cornutus	Panama	Colombia
Mithrax (Mithrax) pygmaeus	Panama	Ecuador[1]
Mithrax (Mithrax) sinensis	L. Calif.	Ecuador
Teleophrys cristulipes	Colombia	Ecuador[1]
Tyche lamellifrons	Panama	Ecuador[1]
Parthenope (Parthenope) hyponca	Panama	Ecuador
Parthenope (Platylambrus) depressiuscula	Panama	Colombia
Thyrolambrus erosus	L. Calif.	Ecuador
Solenolambrus arcuatus	Panama	Ecuador[1]
Leiolambrus punctatissimus	Colombia	Ecuador
Mesorhoea bellii	Panama	Ecuador[1]
Cryptopodia hassleri	L. Calif.	Colombia
Heterocrypta macrobrachia	Panama	Ecuador
Heterocrypta colombiana	Colombia	Ecuador
Portunus (Achelous) tuberculatus	Colombia	Ecuador[1]
Euphylax robustus	Mexico	Colombia
Carpilodes cinctimanus	Cocos I.	Colombia[1]
Actaea sulcata	Colombia	Ecuador[1]
Hexapanopeus sinaloensis	Panama	Colombia
Menippe obtusa	Panama	Ecuador[1]
Pilumnus pygmaeus	Costa Rica	Colombia[1]
Pilumnus xantusii	Costa Rica	Ecuador[1]
Medaeus spinulifer	L. Calif.	Colombia[1]
Domecia hispida	Colombia	Ecuador[1]
Trapezia cymodoce ferruginea	Colombia	Ecuador[1]
Trapezia digitalis	Panama	Ecuador[1]
Trizocarcinus dentatus	Gulf Calif.	Ecuador
Chasmocarcinus latipes	L. Calif.	Ecuador
Sesarma (Holometopus) angusta	Panama	Colombia
Uca schmitti	Costa Rica	Colombia
Uca pygmaea	Costa Rica	Panama
Uca argillicola	Costa Rica	Colombia

[1] Known also from the Galápagos Islands.

No new Indo-Pacific element is present among "Askoy" Brachyura comparable to *Hapalocarcinus marsupialis* from among Hancock Colombian collections (Schmitt, 1936, p. 34). *Carpilodes cinctimanus* and the two *Trapezia* species obtained as a result of diving operations, plus several other Indo-Pacific species not encountered by the "Askoy," were familiar to Nobili (1901, p. 1), who refers to Faxon (1895, p. 237) for an exposition of the character of the Panamic fauna.

That few novelties are present among "Askoy" collections of Brachyura is in part attributable to the policy by which new species obtained by the "Velero III" were published almost as rapidly as they became known. Five of these, *Raninoides ecuadorensis* and *Iliacantha hancocki* (Rathbun, 1935, p. 1), *Heterocrypta colombiana* and *Chasmocarcinus longipes* (Garth, 1940), and *Daldorfia garthi* (Glassell, 1940), were obtained by the "Askoy," as was *Podochela veleronis*, manuscript name. Species herein described for the first time are *Epialtus murphyi*, *Micropanope armstrongi*, *Pilumnus nobilii*, and *Pinnotheres malagueña*. Species previously known but of which supplementary description, usually of the sex opposite to that of the holotype, is given are *Podochela angulata* (Finnegan, 1931), *Hexapanopeus sinaloensis* (Rathbun, 1930), and *Chasmocarcinus longipes* (Garth, 1940). Species for the first time relegated to synonymy are *Pelia orbiculata* Finnegan (1931), which is referred to *Notolopas lamellatus* Stimpson, *Hexapanopeus setipalpus* Finnegan (1931), which falls to *H. sinaloensis* Rathbun, and *Daira ecuadorensis* Rathbun (1935, p. 49), which gives way to *Xanthodius stimpsoni* (A. Milne Edwards).

In view of the complete synonymy available in the Rathbun monographs, only two prior references have been considered necessary here, the original description and the first use of the name in its current combination. Excepted are those pertinent records, previously mentioned, placing the organism for the first time in the territory under consideration but for some unaccountable reason omitted from the monographs. Because of the intensified field activities of a younger group of workers, many additions to knowledge of distribution, habitat, and relationship of the species treated have been made in the last two decades, requiring a preponderance of citations following, rather than preceding, the comparatively recent Rathbun monographic entry.

Since the specimens collected by the "Askoy" represent in many cases the southernmost recorded occurrence of the species concerned on the American mainland, every effort has been made to define precisely the northern mainland and western insular limit of range of these species as well. Accordingly, under the heading Range, exact rather than general localities are given, each supported by a reference to the literature in the synonymy above.

ACKNOWLEDGMENTS

The writer wishes to acknowledge his indebtedness to Miss Jocelyn Crane, Research Zoologist, Department of Tropical Research, New York Zoological Society, for examining the species of *Uca* represented in the collections, and to Mr. Steve A. Glassell of Beverly Hills, California, for assistance in describing the new *Pinnotheres*. The drawings accompanying the text are the painstaking work of Mr. Anker Petersen, staff artist, Allan Hancock Foundation. The close-up views of *Euphylax dovii*, *Gecarcinus planatus*, and *Ocypode gaudichaudii* were provided by the Allan Hancock Foundation. Otherwise all photographs were taken by Dr. Robert Cushman Murphy of the American Museum of Natural History, who supplied the explanatory data. For allowing him time in which to pursue this study, and for permission to include pertinent data concerning "Velero III" specimens, the writer is under obligation to Captain Allan Hancock, director of the Allan Hancock Foundation of the University of Southern California.

SYSTEMATIC ACCOUNT

TRIBE **BRACHYURA**

SUBTRIBE **GYMNOPLEURA**

FAMILY **RANINIDAE**

Raninoides benedicti Rathbun

Raninoides benedicti RATHBUN, 1935, p. 1; 1937, p. 9, text figs. 4, 5, pl. 1, figs. 7, 8.

Raninoides laevis lamarcki BOONE, 1930, p. 48 (part), pl. 9, figs. B, C.

RANGE: From off La Paz Bay, Gulf of California, Mexico, to Cape San Francisco, Ecuador; 2–26½ fathoms.

MATERIAL EXAMINED: One hundred and ninety-six specimens (including fragmentary specimens) from nine stations:

PANAMA

Bahia Santelmo, Isla del Rey, Perlas Islands, February 14, 1941, Station 8, 11–14 meters, 2 specimens anterior portion only.

Piñas Bay, February 23, 1941, Station 19, sample 35, 14–33 meters, 4 males, 9 females, 2 specimens anterior portion only.

Guayabo Chiquito, March 4, 1941, Station 30, sample 78, 24–64 meters, 6 males, 13 females, 7 specimens anterior portion only.

COLOMBIA

Ardita Bay, March 6, 1941, Station 31, sample 81, 34–43 meters, 7 males, 3 females, 1 young, 3 specimens anterior portion only.

Octavia Bay, March 6, 1941, Station 32, sample 82, 24–28 meters, 33 males, 32 females, 1 specimen anterior portion only; sample 83, 25 meters, 7 males, 9 females.

Utria Bay, May 14, 1941, Station 100, sample 395, 12–22 meters, 1 male.

Cuevita Bay, May 11, 1941, Station 93, sample 359, 9–36 meters, 22 males, 18 females (9 ovigerous).

ECUADOR

Latitude 00° 55′ N., longitude 80° 08′ W., April 17, 1941, Station 87, sample 342, 36–54 meters, 2 males, 2 females (1 ovigerous).

Latitude 00° 32′ S., longitude 80° 31′ W., April 14, 1941, Station 81, sample 306, 18 meters, 1 male; sample 307, 27 meters, 7 males, 4 females.

MEASUREMENTS: Largest specimen, an ovigerous female, length 33.9 mm., width 17.5 mm., length of movable finger 9.0 mm.

HABITAT: Where recorded, the type of bottom is mud, mud and sand, or sand.

REMARKS: The large series of specimens taken over a four-month period indicates a breeding cycle culminating in the early summer, perhaps in June. It will be observed that no egg-bearing females were taken in February and March, but one in April, while on May 11 at Cuevita Bay half of the females were gravid, although some of the egg masses were small. This is information of a nature not obtained by recent expeditions whose activities were limited to the winter months, and considerably extends our knowledge of the species.

The shearing edge of the dredge must have cut very close to the surface of the ocean floor, judging from the number of specimens of which the posterior third was missing. Had a raking device preceded the dredge to loosen the "top soil," it is believed that almost all of the specimens would have been recovered intact.

Although the very large female measured is not so long as the male holotype (U.S.N.M. No. 57685), it is slightly wider at the midline.

Raninoides ecuadorensis Rathbun

Raninoides ecuadorensis RATHBUN, 1935, p. 1; 1937, p. 15, pl. 80, figs. 5–7. GARTH, 1946, p. 344, pl. 49, figs. 1–5.

RANGE: La Plata Island and Galápagos Islands, Ecuador; 35–55 fathoms.

MATERIAL EXAMINED: Twenty-two miles west of Punta Jama, Ecuador, latitude 00° 08′ N., longitude 80° 42′ W., April 15, 1941, Station 83, sample 323, 61 meters, one female.

MEASUREMENTS: Female specimen, length 20.2 mm., width 11.7 mm.

HABITAT: Sand bottom.

REMARKS: The following note was made on the field label: "Animal from sand picked up in 50 CM silk plankton townet which accidently touched bottom in 61 M."

This is the first specimen to have been recorded since the type series was obtained by the "Velero III" at La Plata Island, Ecuador, in 1934, with the exception of a single specimen obtained by the same vessel in the Galápagos Islands in 1938. A pen and ink drawing of the species by Mr. Anker Petersen appears in Garth (1946).

The measurements of the female given above are almost identical with those given for a male by Rathbun (1937).

Ranilia fornicata (Faxon)

Raninops fornicata Faxon, 1893, p. 162; 1895, p. 41, pl. 7, figs. 1, 1a, 1b.
Ranilia fornicata Milne Edwards and Bouvier, 1923, p. 302. Rathbun, 1937, p. 20, pl. 5, figs. 3, 4. Garth, 1946, p. 345, pl. 60, figs. 1, 2.

Range: From Magdalena Bay, Lower California, Mexico, to La Plata Island, Ecuador; Galápagos Islands; 7–100 fathoms.

Material Examined: Three miles west of light on Cape Santa Elena, Ecuador, April 10, 1941, 41 meters, one female, one young.

Measurements: Largest specimen, a female, length 14.3 mm., width 9.2 mm.

Habitat: Sand bottom.

Remarks: The "Askoy" specimens extend the range of the species southward from La Plata Island to Cape Santa Elena, Ecuador.

Subtribe **DROMIACEA**

Family **DROMIIDAE**

Hypoconcha panamensis Smith

Hypoconcha panamensis Smith, *in* Verrill, 1869, p. 249. Rathbun, 1937, p. 47, pl. 9, figs. 6, 7. Garth, 1946, p. 348, pl. 61, figs. 3, 4.

Range: From Angeles Bay, Gulf of California, Mexico, to Matapalo, Peru; Galápagos Islands; 3–100 fathoms.

Material Examined: Two specimens from as many stations:

Colombia

Utria Bay, May 14, 1941, Station 100, sample 395, 12–22 meters, 1 male.

Málaga Bay, March 19, 1941, Station 40, sample 129, 4–9 meters, 1 male.

Measurements: Largest specimen, a male, length 12.2 mm., width 11.9 mm.

Habitat: Black mud and gray sand bottom.

Remarks: *Hypoconcha panamensis* is but one of three species of *Hypoconcha* to be expected in territory covered by the "Askoy" Expedition. The others are *H. lowei* Rathbun, which ranges from the Gulf of California to Ecuador, and *H. californiensis* Bouvier, which has been found as far south as Taboga Island, Panama. All carry a single valve of a pelecypod dorsally as protective armor. Their distinguishing characters are given in Rathbun (1937).

Hypoconcha lowei Rathbun

Hypoconcha lowei Rathbun, 1933, p. 149; 1937, p. 50, pl. 8, figs. 5, 6.

Range: From San Felipe, Gulf coast of Lower California, Mexico, to Punta Santa Elena, Ecuador; 7–55 fathoms.

Material Examined: Three miles west of light on Cape Santa Elena, Ecuador, April 10, 1941, Station 76, sample 274, 41 meters, two females, one young male.

Measurements: Largest specimen, a female, length 16.5 mm., width 16.9 mm.

Habitat: Sand bottom.

Remarks: The young male was recovered with the half clam shell carried dorsally for protection still intact.

The dredging of this distinctive species off Cape Santa Elena duplicates an earlier record of the "Velero III" at the apparent southern limit of its range.

Family **DYNOMENIDAE**

Dynomene ursula Stimpson

Dynomene ursula Stimpson, 1860, p. 239 (111). Rathbun, 1937, p. 54, pl. 12, figs. 1–4. Garth, 1946, p. 349, pl. 61, figs. 5, 6.

Range: From Ensenada de los Muertos, Gulf of California, Mexico, to La Plata Island, Ecuador; Galápagos Islands; shore to 70 fathoms.

Material Examined: Twenty-six specimens from three stations:

Colombia

Utria Bay, May 15, 1941, Station 100, sample 398, 8 feet, 1 male.

Gorgona Island, April 20–23, 1941, Station 89, sample 346, 5 meters, 1 male, 1 young; sample 348, 4–7 meters, coral, 1 male, 4 young.

Ecuador

La Plata Island, April 12–13, 1941, Station 80, sample 304, seine, 1 male, 1 female, 3 young; sample 302, 5.5 meters, 1 male, 1 ovigerous female, 11 young.

Measurements: Largest specimen, a male, length 15.0 mm., width 19.5 mm.

HABITAT: All specimens recovered from masses of coral with the exception of those attributed to sample 304, a seine haul. According to Mr. John C. Armstrong this seine haul was made on a small beach between rocky headlands, and there is a possibility that the seine dragged over some of the rocks at the edge of the beach, capturing specimens ordinarily associated with rocky, rather than sandy, shore.

REMARKS: The La Plata Island station duplicates an earlier record of the "Velero III" at the southernmost locality at which the species has been taken along South American mainland shores.

SUBTRIBE OXYSTOMATA

FAMILY DORIPPIDAE

Ethusa mascarone americana A. Milne Edwards

Ethusa americana A. MILNE EDWARDS, 1880, p. 30.

Ethusa mascarone americana RATHBUN, 1897, p. 109; 1937, p. 78, pl. 22, fig. 2, pl. 23, fig. 2. FINNEGAN, 1931, p. 615. CRANE, 1937, p. 105.

RANGE: From Tiburon Island, Gulf of California, Mexico, to Taboga Island, Panama; 5–35 fathoms. Occurs also in the Atlantic.

MATERIAL EXAMINED: Eight specimens from three stations:

PANAMA

Bahia Santelmo, Isla del Rey, Perlas Islands, February 14, 1941, Station 8, sample 4, 11–14 meters, 1 male.

COLOMBIA

Malaga Bay, March 19, 1941, Station 40, sample 129, 4–9 meters, 1 male, 2 ovigerous females.

ECUADOR

Latitude 00° 32′ S., longitude 80° 31′ W., April 14, 1941, Station 81, sample 306, 18 meters, 2 males, 2 females (1 ovigerous).

MEASUREMENTS: Largest specimen, a male, length 10.0 mm., width 9.1 mm.

HABITAT: Black mud and gray sand, sand and dead shell fragments.

REMARKS: Two of the above stations represent valuable extensions of range for the subspecies, which occurs in the Gulf of California, at Taboga Island in the Bay of Panama, and also in the Atlantic. Although in young specimens the anterolateral spine is small and by no means as advanced as the median frontal sulcus, the more mature specimens in the same series show the longer and typically outwardly directed spine and so should be referred to *E. m. armericana* A. Milne Edwards, rather than to *E. m. panamensis* Finnegan, in which the spine is small and longitudinally directed.

The range of *E. m. americana* is now extended to Ecuador.

Ethusa lata Rathbun

Ethusa lata RATHBUN, 1893, p. 258; 1937, p. 84, text fig. 19, pl. 24, fig. 1, pl. 25, fig. 1, pl. 28, fig. 3. CRANE, 1937, p. 105. GARTH, 1946, p. 352, pl. 60, fig. 3.

RANGE: From Cedros Island, west coast of Lower California, and San Felipe Bay, Gulf of California, Mexico, to La Plata Island, Ecuador; Galápagos Islands; 2–100 fathoms.

MATERIAL EXAMINED: Ten specimens from five stations:

PANAMA

Guayabo Chiquito, March 4, 1941, Station 30, sample 78, 24–64 meters, 1 male.

COLOMBIA

Ardita Bay, March 6, 1941, Station 31, sample 81, 34–43 meters, 1 male, 1 ovigerous female.

Octavia Bay, March 6, 1941, Station 32, sample 82, 24–28 meters, 2 males, 2 large females.

Solano Bay, May 16, 1941, Station 101, sample 399, 36–54 meters, 1 large male.

Cuevita Bay, May 11, 1941, Station 93, sample 359, 9–36 meters, 1 male, 1 large female.

MEASUREMENTS: Largest specimen, a female, length 18.0 mm., width 19.7 mm. Large male, length 14.5 mm., width 11.2 mm.

HABITAT: Gray sand and black mud bottom.

REMARKS: The measured specimens, while not so large as the type of Faxon's *Aethusa pubescens* (a synonym of *E. lata* Rathbun), are by far the largest to have come under the observation of the writer, who is accustomed to thinking of ethusids in general as small to minute specimens. The two females from Octavia Bay are nearly as large as the Cuevita Bay specimen, the measurements of which appear above.

FAMILY **LEUCOSIIDAE**

Persephona townsendi (Rathbun)

Myra townsendi RATHBUN, 1893, p. 255.
Persephona townsendi RATHBUN, 1898, p. 613; 1937, p. 160, pl. 42, fig. 1, pl. 43, fig. 1. CRANE, 1937, p. 104.

RANGE: From off Punta San Fermin, Gulf of California, Mexico, to Cape San Francisco, Ecuador; 2–58 fathoms.

MATERIAL EXAMINED: Fourteen specimens from six stations:

PANAMA

Piñas Bay, February 23, 1941, Station 19, sample 35, 14–33 meters, 2 young males.

Guayabo Chiquito, March 4, 1941, Station 30, sample 78, 24–64 meters, 1 young female.

COLOMBIA

Ardita Bay, March 6, 1941, Station 31, sample 81, 31 meters, 1 large female.

Octavia Bay, March 7, 1941, Station 32, sample 83, 24–28 meters, 1 large female.

Cuevita Bay, May 11, 1941, Station 93, sample 359, 9–36 meters, 2 females, including the largest specimen.

ECUADOR

Latitude 00° 32′ S., longitude 80° 31′ W., April 14, 1941, Station 81, sample 306, 18 meters, 1 male, 3 young; latitude 00° 31′ S., longitude 80° 32′ W., sample 307, 27 meters, 2 males, 1 female.

MEASUREMENTS: Largest specimen, a female, length including posterior spine 32.3 mm., width 26.9 mm., cheliped (extended) 50 mm., chela 26.4 mm., dactyl 15.7 mm.

HABITAT: Green mud, gray sandy mud, sand and dead shell fragments.

REMARKS: In the largest specimen the median posterior spine measures 5.0 mm. in length. Slightly smaller specimens show an even greater proportional length of this spine to length of carapace, along with a corresponding attenuation of the lateral posterior spines and the subcylindrical hepatic spines.

The Ecuadorean specimens obtained by the "Askoy" from slightly south of the Equator extend the range of the species southward from Cape San Francisco, where it was taken by the "Velero III."

Randallia bulligera Rathbun

Randallia bulligera RATHBUN, 1898, p. 614, pl. 44, fig. 6; 1937, p. 176, text fig. 38, pl. 50, figs. 1, 2.
Randallia ornata BOONE (not Randall), 1930, p. 59, pl. 12.

RANGE: From Madgalena Bay, Lower California, Mexico, to Callao, Peru; 2–28 fathoms.

MATERIAL EXAMINED: Off Ecuador, latitude 00° 32′ S., longitude 80° 31′ W., April 14, 1941, Station 81, sample 306, 18 meters, eight males, four females.

MEASUREMENTS: Largest specimen, a male, length 13.5 mm., width 12.7 mm., cheliped (extended) 23 mm., chela 11.6 mm., dactyl 5.6 mm.

HABITAT: Sand and dead shell fragments.

REMARKS: Although from but a single station, the series shows well the changes that take place with growth.

Iliacantha hancocki Rathbun

Iliacantha hancocki RATHBUN, 1935, p. 2; 1937, p. 187, pl. 57, figs. 1, 2.
Persephona edwardsii BOONE (not Bell), 1930, p. 53, fig. A.

RANGE: From Santa Maria Bay, Lower California, Mexico, to Port Utria, Colombia; 10–40 fathoms.

MATERIAL EXAMINED: Twelve specimens from six stations:

PANAMA

Guayabo Chiquito, March 4, 1941, Station 30, sample 78, 24–64 meters, 1 young male, 2 young females.

COLOMBIA

Ardita Bay, March 6, 1941, Station 31, sample 81, 34–43 meters, 1 young male.

Octavia Bay, March 6, 1941, Station 32, sample 82, 24–28 meters, 2 young.

Cuevita Bay, May 11, 1941, Station 93, sample 359, 9–36 meters, 1 male, 1 female.

ECUADOR

Latitude 00° 32′ S., longitude 80° 31′ W., April 14, 1941, Station 81, sample 306, 18 meters, 1 young specimen; latitude 00° 31′ S., longitude 80° 32′ W., sample 307, 27 meters, 2 young specimens.

Three miles west of light on Cape Santa Elena, April 10, 1941, Station 76, sample 274, 41 meters, 1 large male.

MEASUREMENTS: Largest specimen, a male, length 28.6 mm., width 21.7 mm., cheliped (extended) 41 mm., chela 20 mm., dactyl 11.8 mm.

HABITAT: Gray mud, gray sand, mud and live shells.

REMARKS: The species is well represented among the "Askoy" collections, although the size of the specimens is for the most part small. The largest specimen is measured with the posterior spine included in the carapace length; this accounts for the apparent disparity between the measurements above and the key character "chelipeds twice as long as carapace" given as diagnostic by Rathbun (1937).

The range of *I. hancocki* is extended southward from Port Utria, Colombia, to Cape Santa Elena, Ecuador.

FAMILY **CALAPPIDAE**

Calappa convexa Saussure

Calappa convexa SAUSSURE, 1853, p. 362 (9), pl. 13, fig. 3. NOBILI, 1901, p. 29. RATHBUN, 1937, p. 206, pl. 52, figs. 1–3. GARTH, 1946, p. 360, pl. 62, fig. 6.

Calappa flammea CANO (not Herbst), 1889, p. 249.

RANGE: From Magdalena Bay, Lower California, Mexico, to Santa Elena Bay, Ecuador; Galápagos Islands; 0–32 fathoms.

MATERIAL EXAMINED: Four specimens from three stations:

COLOMBIA

Tumaco, April 19, 1941, Station 88, sample 344, purchased in market, 2 large males.

ECUADOR

Latitude 01° 07′ N., longitude 79° 53′ W., April 17, 1941, Station 87, sample 343, 9–27 meters, 1 male.

Salinas, December, 1942, C. M. Breder, Jr., collector, 1 large male.

MEASUREMENTS: Largest specimen, a male, length 82 mm., width 116 mm., width at lateral sinus 106.5 mm., height of palm 66 mm.

HABITAT: Rock and corallines.

REMARKS: Although not mentioned by Rathbun (1937, p. 206), credit for the first record of *C. convexa* from Ecuador should go to Dr. Enrico Festa, whose four specimens, collected at Santa Elena Bay and Point, were recorded by Nobili (1901). Dr. Waldo L. Schmitt duplicated this record in 1926, and "Velero III" collectors added Cape San Francisco and La Plata Island in 1934.

An early Panamanian record for the species is that of Cano (1889) for February, 1884. The specimen was referred erroneously to the Atlantic *C. flammea* (Herbst), and so was in all probability its Pacific analogue, *C. convexa*, rather than *C. saussurei*. This was the conclusion of Rathbun (1910, p. 610).

The male specimen collected by C. M. Breder, Jr., at Salinas is larger than the measured male (U.S.N.M. No. 59275) recorded in Rathbun (1937, p. 206) in two out of three dimensions given. It is not, however, so large as the measured female, nor so large as a male in the collections of the Los Angeles Museum, which measures 98 by 114.5 mm.

Calappa saussurei Rathbun

Calappa saussurei RATHBUN, 1898, p. 609, pl. 41, fig. 6; 1937, p. 206, text fig. 43, pl. 63, figs. 1–4. FINNEGAN, 1931, p. 611, fig. 1. CRANE, 1937, p. 98.

RANGE: From Inez Bay, Gulf of California, Mexico, to La Plata Island, Ecuador; 7–150 fathoms.

MATERIAL EXAMINED: Guayabo Chiquito, Panama, March 4, 1941, Station 30, sample 78, 24–64 meters, one young female.

MEASUREMENTS: Female specimen, length 9.4 mm., width 10.5 mm.

HABITAT: Gray mud.

REMARKS: This species was already well known within territory covered by the "Askoy," having been collected at Gorgona Island by the "St. George" and at La Plata Island by the "Velero III."

Cycloës bairdii Stimpson

Cyclois bairdii STIMPSON, 1860, p. 237 (109).

Cycloës bairdii RATHBUN, 1898, p. 610; 1937, p. 225, pl. 69, figs. 3, 4. FINNEGAN, 1931, p. 613. CRANE, 1937, p. 100. GARTH, 1946, p. 362, pl. 62, figs. 7, 8.

RANGE: From Arena Bank, Gulf of California, Mexico, to La Libertad, Ecuador; Galápagos Islands; 2–70 fathoms. Occurs also in the Atlantic.

MATERIAL EXAMINED: Six specimens from two stations:

PANAMA

Guayabo Chiquito, March 4, 1941, Station 30, sample 78, 24–64 meters, 2 males, 1 female, 1 young, 1 crushed specimen.

ECUADOR

Latitude 01° 07′ N., longitude 79° 53′ W., April 17, 1941, Station 87, sample 343, 9–27 meters, 1 large male.

MEASUREMENTS: Largest specimen, a male, length 29 mm., width 30 mm. Largest female, length 20 mm., width 20.8 mm.

HABITAT: Gray sand, green sand, hard bottom (rocks and corallines).

REMARKS: The variety of bottom types on which this species is encountered perhaps explains in part its widespread occurrence in both Pacific and Atlantic oceans.

Hepatus kossmanni Neumann

Hepatus kosmanni NEUMANN, 1878, p. 28.

Hepatus kossmanni RATHBUN, 1910, p. 593, part (Panama Bay); 1937, p. 239, pl. 72, figs. 3, 4. CRANE, 1937, p. 101, pl. 1, figs. 5, 6.

RANGE: From Abreojos Point, west coast of Lower California, Mexico, and Santa Inez Bay, Gulf of California, Mexico, to La Libertad, Ecuador; 2–25 fathoms.

MATERIAL EXAMINED: Seven specimens from three stations:

PANAMA

Piñas Bay, February 23, 1941, Station 19, sample 35, 14–33 meters, 1 large female, 1 young.

COLOMBIA

Ardita Bay, March 6, 1941, Station 31, sample 81, 34–43 meters, 1 male.

ECUADOR

Latitude 00° 32′ S., longitude 80° 31′ W., April 14, 1941, Station 81, sample 306, 18 meters, 3 young; sample 307, latitude 00° 31′ S., longitude 80° 32′ W., 27 meters, 1 large male.

MEASUREMENTS: Largest specimen, a female, length 43.7 mm., width 61.3 mm.

HABITAT: Green sandy mud, mud and live shells.

REMARKS: Although the nearly related *Hepatella amica* Smith was expected to be present in the "Askoy" collections because of its having been taken by the "Velero III" off Cape San Francisco, Ecuador, none of the specimens listed above proved to be of this species, all having eight clusters of tubercles, three gastric, one cardiac, and two branchial, characteristic of *Hepatus kossmanni*, rather than the smooth carapace of *Hepatella amica*. The largest specimen approaches in size the 50 by 70 mm. male recorded by Rathbun (1937).

SUBTRIBE **BRACHYGNATHA**

SUPERFAMILY **OXYRHYNCHA**

FAMILY **MAJIDAE**

Stenorynchus debilis (Smith)

Leptopodia debilis SMITH, 1871, p. 87.

Leptopodia sagittaria CANO, 1889, pp. 101, 170 (not *L. sagittaria* Leach).

Stenorynchus debilis RATHBUN, 1898, p. 568; 1925, p. 18, pls. 4, 5. FINNEGAN, 1931, p. 617. CRANE, 1937, p. 50. GARTH, 1946, p. 366, pl. 63, fig. 1.

RANGE: From Magdalena Bay, west coast of Lower California, and Patos Island Anchorage, Gulf of California, Mexico, to Chile; Galápagos Islands; low water to 50 fathoms.

MATERIAL EXAMINED: Seven specimens from six stations:

PANAMA

Isla Contadora, Perlas Islands, May 25, 1941, Station 110, sample 431, 10–11 meters, 1 male, 1 female.

Guayabo Chiquito, March 4, 1941, Station 30, sample 78, 24–64 meters, 1 male; May 20–21, 1941, Station 104, sample 410, 9–11 meters, 1 female.

COLOMBIA

Octavia Bay, March 6, 1941, Station 32, sample 82, 24–28 meters, 1 female.

Utria Bay, May 14, 1941, Station 100, sample 395, 12–22 meters, 1 large male.

Gorgona Island, April 23, 1941, Station 89, sample 348, 4–6 meters, 1 young female.

MEASUREMENTS: Largest specimen, a male, length including rostral spine 35.6 mm., rostral spine 20.6 mm., width 12.4 mm., first walking leg (longest) 100 mm., cheliped 58 mm., chela 27.2 mm., dactyl 9.6 mm.

HABITAT: Soft mud, gray sand, coral.

REMARKS: The earliest record for the species within "Askoy" Expedition territory appears to have been that of the "Vettor Pisani," which obtained one female specimen from Pacific Panama in 1884 (Cano, 1889).

The measured specimen above is of exceptional size, exceeding both in length and

breadth the measurements recorded in Rathbun (1925) for a male from the Gulf of California. The first walking leg is exactly 1 decimeter long.

Podochela vestita (Stimpson)

Podonema vestita STIMPSON, 1871, p. 97 (7).
Podochela vestita A. MILNE EDWARDS, 1879, p. 195. RATHBUN, 1925, p. 42, pl. 14. CRANE, 1937, p. 52, pl. 1.

RANGE: From Adair Bay to Cape San Lucas, Gulf of California, Mexico; 11–35 fathoms.

MATERIAL EXAMINED: Latitude 01° 07′ N., longitude 79° 53′ W., off Ecuador, April 17, 1941, Station 87, sample 343, 9–27 meters, one male, two ovigerous females.

MEASUREMENTS: Largest specimen, a female, length including rostrum 9.4 mm., width 6.4 mm.

HABITAT: Hard bottom, rock and corallines.

REMARKS: *Podochela vestita* is one of two species of *Podochela* with a hood-shaped rostrum inhabiting the eastern tropical Pacific, the other being *P. margaritaria* Rathbun of the Galápagos Islands. As noted previously (Garth, 1946, p. 371), the females of both species share the vermiculate sternum given as diagnostic of *vestita*, only the males of *margaritaria* showing the granulation supposedly characteristic of that species. The male specimen recorded above is beautifully decorated with hydroids, including not only hydranths but gonangia as well.

The species, formerly known only from the Gulf of California, ranges widely throughout the Panamic province, as demonstrated by the extensive series collected by the Hancock expeditions with which the "Askoy" specimens were compared. The Ecuadorean locality above is the southernmost record of its occurrence.

Podochela angulata Finnegan

Podochela angulata FINNEGAN, 1931, p. 617, text fig. 3.

RANGE: Known only from the type locality, Gorgona Island, Colombia.

MATERIAL EXAMINED: Two specimens from as many stations:

COLOMBIA

Utria Bay, May 14, 1941, Station 100, sample 395, 12–22 meters, 1 male.

ECUADOR

Latitude 00° 55′ N., longitude 80° 08′ W., April 17, 1941, Station 87, sample 342, 36–54 meters, 1 ovigerous female.

MEASUREMENTS: Male specimen, length including rostrum 10.3 mm., width 7.25 mm.; chela 5.2 mm., dactyl 2.2 mm.; first ambulatory leg 36.3 mm., propodus 13.5 mm., dactyl 4.4 mm.; fourth leg 10.7 mm., propodus 3.0 mm., dactyl 2.2 mm.

SUPPLEMENTARY DESCRIPTION: Since the specimens listed above include the first recorded male of the species, the following supplementary description of the male is given: Chelipeds both finely and coarsely pubescent, manus moderately inflated, fingers meeting with a narrow gape, gape without teeth for its basal third, teeth alternating. First ambulatory leg three and one-half times length of carapace, its dactylus slender, unarmed, and equal to one-third the length of the propodus; dactyli of remaining legs spinulous, that of leg 4 almost as long as the propodus; all legs bearing clusters of curved hairs above and single straight hairs below. Sternal plates not deeply separated from one another; sternum with two setose tubercles in advance of abdomen. Otherwise as in female.

HABITAT: Soft gray mud.

REMARKS: The ovigerous female from Ecuador compares very well with a female from the Secas Islands, Panama, identified for the writer from among Hancock Expedition material by the late Mary J. Rathbun as *P. angulata* Finnegan. This specimen was later sent to the British Museum for comparison with the type, also a female, along with a male from the type locality, Gorgona Island. Of these specimens Isabella Gordon writes: "Unfortunately the holotype of *Podochela angulata* Finnegan is incomplete since most of the appendages are missing. But I think there can be no doubt that the male specimen from the type locality (Gorgona Island) belongs to *P. angulata*. I think also that the rostrum of the holotype may have been damaged at some time (during the crab's life). It may be that the rostrum is

variable in shape and that the specimen determined as *P. angulata* by Miss Rathbun represents the opposite extreme to that found in your male specimen." Gordon is inclined to regard all three specimens (the holotype, the topotype, and the specimen from Secas Islands) as conspecific. To this list the writer would now add the two "Askoy" specimens.

The range of the species is extended from Colombia to Ecuador.

Podochela veleronis, manuscript name

RANGE: From Tres Marias Islands, Mexico, to La Plata Island, Ecuador; 0–15 fathoms.

MATERIAL EXAMINED: Four specimens from three stations:

COLOMBIA

Humboldt Bay, May 18, 1941, Station 103, sample 404, 6–10 feet, coral, 1 male and 1 female, badly fragmented.

Utria Bay, May 15, 1941, Station 100, sample 397, low tide, 1 male.

ECUADOR

Latitude 01° 07′ N., longitude 79° 53′ W., April 17, 1941, Station 87, sample 343, 9–27 meters, 1 male.

MEASUREMENTS: Largest specimen, a male, length including rostral spine 5.35 mm., width 3.75 mm.

HABITAT: Hard bottom, rock and coral-lines but no coral. Also occurs intertidally and in the *Pocillopora* coral colony.

REMARKS: The species has been known to the writer since 1934, when a single specimen was collected at La Plata Island, Ecuador, by the "Velero III." However, it was not until 1939 that sufficient material was obtained, including ovigerous females, to warrant description. These proved it to be a small and distinct species, rather than the young of *P. hemphillii* (Lockington), as believed by Rathbun. An apparent ecological factor also exists, *P. veleronis* having been found at low tide but not at depths greater than 15 fathoms (27 meters) whereas *hemphillii* occurs to 50 fathoms, but not usually intertidally. A complete description and figures of the new species will appear in the forthcoming report of the Hancock Expedition collections from the mainland.

Inachoides laevis Stimpson

Inachoides laevis STIMPSON, 1860, p. 192 (64). RATHBUN, 1925, p. 61, pl. 22, figs. 3–6. CRANE, 1937, p. 53.

RANGE: From Magdalena Bay, west coast of Lower California, and Inez Bay, Gulf of California, Mexico, to Panama; 3–29 fathoms.

MATERIAL EXAMINED: From Málaga Bay, Colombia, March 19, 1941, Station 40, sample 129, 4–9 meters, one male.

MEASUREMENTS: Male specimen, length including rostrum 5.9 mm., width 4.25 mm., cheliped: merus 4.6 mm., carpus 1.4 mm., chela 4.3 mm., dactyl 2.2 mm.

HABITAT: Black mud and gray sand.

REMARKS: With recent additions to its range by the "Zaca" (Crane, above) and the "Askoy," *I. laevis* is now known to occur on both sides of the peninsula of Lower California, in the Bay of Panama, and south along the mainland coast to Málaga Bay, Colombia.

Eucinetops panamensis Rathbun

Eucinetops panamensis RATHBUN, 1923, p. 73; 1925, p. 87, pl. 23, figs. 3, 4. CRANE, 1947, p. 71.

RANGE: From San Francisquito Bay, Gulf of California, Mexico, to Perlas Islands, Panama.

MATERIAL EXAMINED: From Saboga Island, Perlas Islands, February 11, 1941, Station 2, sample 1, shore, one male.

Measurements: Male specimen, length 6.5 mm., width 5.3 mm.

HABITAT: Intertidal.

REMARKS: The "Askoy" Expedition was fortunate in duplicating Garman's record for the species, the Perlas Islands being the southernmost station at which *panamensis* is known to occur. The other Pacific members of the genus are limited in range to the Gulf of California, where *panamensis* also occurs.

Euprognatha bifida Rathbun

Euprognatha bifida RATHBUN, 1893, p. 231; 1925, p. 103, pl. 34, figs. 5, 6. CRANE, 1937, p. 55.

RANGE: From off Cedros Island, Lower California, and southeast of Tiburon Island, Gulf of California, to the Cape San Lucas Region, Mexico; ½–45 fathoms.

MATERIAL EXAMINED: Three specimens from two stations:

PANAMA

Piñas Bay, February 23, 1941, Station 19, sample 35, 14–33 meters, 2 males.

COLOMBIA

Utria Bay, May 14, 1941, Station 100, sample 395, 12–22 meters, 1 male.

MEASUREMENTS: Male specimen, length 6.4 mm., width 6.0 mm.

HABITAT: Green mud, green sandy mud.

REMARKS: Known previously from the Lower California-Gulf of California region, the range of the species is extended by the "Askoy" explorations to include the Bay of Panama and the Colombian coast.

Collodes granosus Stimpson

Collodes granosus STIMPSON, 1860, p. 194 (66), pl. 2, fig. 4. RATHBUN, 1925, p. 106, pl. 36, figs. 1, 2, pl. 217, fig. 1. Not Boone, 1930, p. 76, pl. 21, figs. A, B.

RANGE: From east of La Paz, Gulf of California, to Cape San Lucas, Lower California, Mexico; shallow water to 10 fathoms.

MATERIAL EXAMINED: Three specimens from two samples of a single station:

ECUADOR

Latitude 00° 32′ S., longitude 80° 31′ W., April 14, 1941, Station 81, sample 306, 18 meters, 1 female; latitude 00° 31′ S., longitude 80° 32′ W., sample 307, 27 meters, 2 females.

MEASUREMENTS: Largest specimen, a female, length 7.6 mm., width 7.3 mm.

HABITAT: Mud and live shell bottom.

REMARKS: *Collodes granosus* Stimpson is another species previously known only from the Gulf of California. Its range is now extended to Cape Pasado, Ecuador. Only the three specimens listed above are typical. Other specimens from Station 81, as well as from Panamanian and Colombian stations, lacking the characteristic dorsal spines of *granosus* and more finely granulate in appearance have been referred to *Dasygyius gibbosus* (Bell).

Pyromaia tuberculata (Lockington)

Inachus tuberculatus LOCKINGTON, 1876 (1877), p. 30 (3).

Pyromaia tuberculata RATHBUN, 1925, p. 133, pl. 40, fig. 3, pl. 218, figs. 1–4. CRANE, 1937, p. 56.

Collodes granosus BOONE (not Stimpson), 1930, p. 76, pl. 21, figs. A, B.

RANGE: From Monterey Bay, California, to the Bay of Panama; 3½–66 fathoms.

MATERIAL EXAMINED: Utria Bay, Colombia, May 14, 1941, Station 100, sample 395, 12–22 meters, one female.

MEASUREMENTS: Female specimen, length 6.5 mm., width 4.9 mm.

HABITAT: Soft gray mud.

REMARKS: The single specimen obtained by the "Askoy" fits the description of Rathbun's "var. B" (1925, p. 136) from Panama Bay. Apparently southern specimens differ sufficiently from northern to justify lettered varieties, or perhaps even subspecific names; not sufficiently, however, to justify their reference to a species of another genus, as was done by one recent writer.

The range of the species is extended southward to Utria Bay, Colombia.

Dasygyius gibbosus (Bell)

Microrhynchus gibbosus BELL, 1835, p. 88; 1836, p. 41, pl. 8, figs. 1–1c.

Dasygyius gibbosus RATHBUN, 1925, p. 138, pl. 274, figs. 1–4.

RANGE: Known only from the type locality, Galápagos Islands, 6 fathoms, sandy mud.

MATERIAL EXAMINED: Fifteen specimens from four (possibly five) stations:

PANAMA

Piñas Bay, February 23–24, 1941, Station 19, sample 35, 14–33 meters, 2 females.

Guayabo Chiquito, March 4, 1941, Station 30, sample 78, 24–64 meters, 1 male.

COLOMBIA

Ardita Bay, March 6, 1941, Station 31, sample 81, 34–43 meters, 3 males, 4 females.

ECUADOR

Off Cape Pasado, April 14, 1941, Station 81, sample 306, 18 meters, 1 female; sample 307, 27 meters, 2 females.

Two additional young females without data.

MEASUREMENTS: Largest specimen, male, length 13.0 mm., width 10.7 mm., cheliped 14.3 mm., chela 6.2 mm., dactyl 3.2 mm., second ambulatory leg (longest) 27.2 mm.

HABITAT: Green sandy mud, gray mud.

REMARKS: The finding of specimens refer-

able to *Dasygyius gibbosus* in the Bay of Panama and near Santa Elena, Ecuador, is not surprising in view of the fact that these localities were visited by Cuming, on whose collection the Bell report was based. Since the species has not been found again in the Galápagos Islands, and since sandy mud, its designated habitat, is not the usual bottom encountered in the archipelago, it seems reasonable to assume that the type specimen came from either Panama or the Ecuadorean mainland, and not from the Galápagos. The degree of correspondence between the measured male from Ardita Bay, Colombia, and the original figures in Bell from which the Rathbun illustrations are copied, particularly those of the male chela and abdomen, is striking.

For the record, the range of the species may be said to have been extended from the Galápagos.

Dasygyius depressus (Bell)

Microrhynchus depressus BELL, 1835, p. 88; 1836, p. 42, pl. 8, figs. 2, 2d–f.

Dasygyius depressus RATHBUN, 1898, p. 570; 1925, p. 138, pl. 1, pl. 274, figs. 5–8. BOONE, 1930, p. 78, pl. 22. CRANE, 1937, p. 56.

RANGE: From the Santa Inez area to the Gordon Banks, Gulf of California, Mexico; Galápagos and Cocos Islands; 6–60 fathoms.

MATERIAL EXAMINED: Thirty-six specimens from five stations:

PANAMA

Piñas Bay, February 23–24, 1941, Station 19, sample 35, 14–33 meters, 1 male, 3 females (2 with soft shell).

Guayabo Chiquito, March 4, 1941, Station 30, sample 78, 24–64 meters, 4 females (2 with soft shell, 1 fragmentary).

COLOMBIA

Ardita Bay, March 6, 1941, Station 31, sample 81, 34–43 meters, 1 male, damaged.

Octavia Bay, March 6–7, 1941, Station 32, sample 82, 24–28 meters, 6 males, 10 females; sample 83, same depth, 1 male, 3 females.

Utria Bay, May 14, 1941, Station 100, sample 395, 12–22 meters, 4 males, 3 females.

MEASUREMENTS: Largest specimen, a female, length 15.4 mm., width 14.8 mm.

HABITAT: Gray sand, green sandy mud, green mud, gray mud.

REMARKS: Unlike the preceding *Dasygyius gibbosus* (Bell), which has been unreported since first taken by Cuming *circa* 1829, *D. depressus* has been taken frequently and in good numbers by the "Albatross," the "Ara," the "Zaca," and the "Velero III." It is one of the most characteristic inhabitants of the detritus-rich mud which occurs in shallow bays bordered by tropical rain forest and hence offering an abundance of decomposing animal and vegetable matter for food. At three of the five stations above, the two *Dasygyius* species were taken together, as they were originally by Cuming, judging by the identical data, 6 fathoms, sandy mud.

The range of the species is extended from Cocos Island, Costa Rica, to Utria Bay, Colombia. The Galápagos record is open to doubt (see Remarks under the preceding species).

Epialtus murphyi, new species

Figure 2

TYPE: Female holotype, A.M.N.H. No. 10009, from La Plata Island, Ecuador, 5.5 meters; specimen collected by "Askoy" Expedition, Station 80, sample 302, April 13, 1941.

MEASUREMENTS: Female holotype: length of carapace including rostrum 6.15 mm., length of rostrum 1.1 mm., width of carapace at hepatic level 6.15 mm., at branchial level 5.8 mm.; length of cheliped extended 6.9 mm., of manus 3.5 mm., of dactyl 1.2 mm.; height of hand 1.2 mm.

DIAGNOSIS: Rostrum bilobed, preorbital lobe prominent. Hepatic lobe larger than branchial, anterior margins horizontal and minutely dentate. Carapace posteriorly eroded, two tubercles at gastric level. Legs cristate, propodal tuft absent. Hand tuberculate.

DESCRIPTION: Carapace broad as long, widest at hepatic level, smooth anteriorly, eroded posterior to cardiac and branchial regions. Front produced to equal or exceed in length its constricted basal width, sides tapering forward of a single lateral setose tubercle, tip bilobed, the indentation between lobes displacing the equivalent of one lobe inverted; tip thickened and hollowed beneath in frontal view. A prominent postorbital lobe

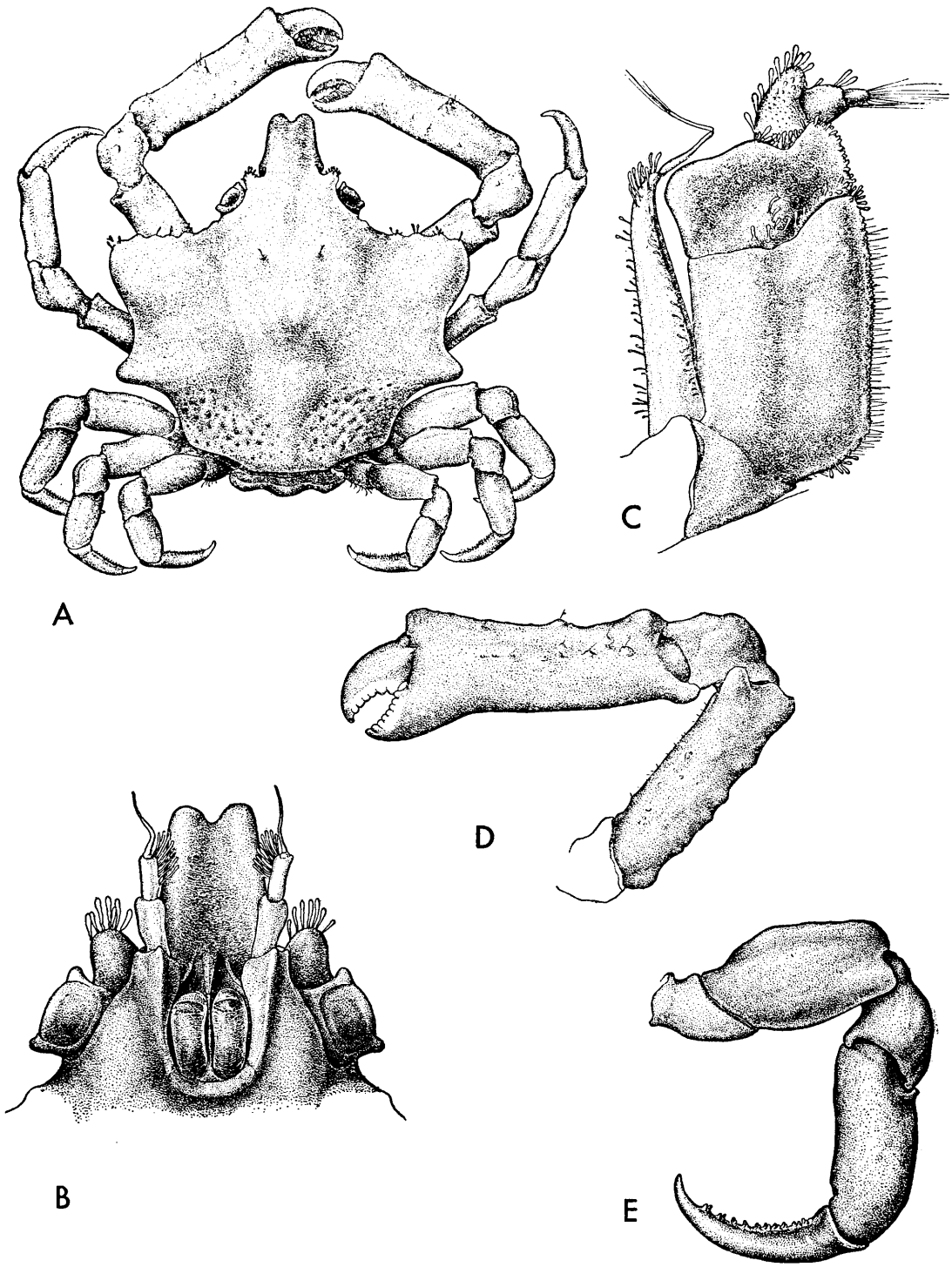


FIG. 2. *Epialtus murphyi*, new species, female holotype. A. Dorsal view, ×8.8. B. Ventral view of frontal region, ×21.5. C. Right outer maxilliped, ×38.3. D. Left cheliped, ×12.7. E. Right fourth ambulatory leg, ×22.2.

bearing a cluster of six or seven clavate hairs above and hollow beneath. A minute postorbital denticle. Hepatic margins anteriorly almost horizontal, bearing three or four setose tubercles, laterally broadly rounded, giving a "broad shouldered" effect. Branchial lobes much sharper, culminating in a non-setose tubercle. Branchial width almost equaling hepatic width in the type specimen; in the Gorgona Island specimen (see Variation below) it exceeds the hepatic width. Regions slightly elevated and obscurely defined, except for cardiac and gastric, which are rounded, elevated, and together form a low, median ridge occupying about one-third of the carapace and clearly set off from the "wings." Gastric region bearing a pair of low tubercles in advance of its summit.

Basal antennal article slender, bearing a thickened ridge internally which culminates in a blunt tooth. First two segments of antenna thickened and compressed, only the hair-like flagellum produced beyond tips of rostrum. Merus of third maxilliped broader than long, notched internally to receive palpus.

Female chelipeds robust, tuberculate, massive, the chelae in particular elongated and broadened. Merus with three or four low tubercles on outer margin. Carpus with several tubercles and a median ridge. Manus elongated, crested above, bearing setose tubercles on both its internal and external surfaces, at least some of which tend to form a median longitudinal row. Fingers short, stout, convex and toothed exteriorly, the concave inner margins lined with shaggy hairs to which particles of dirt cling. Dactyl with rounded superior margin, pollex slightly deflexed; teeth and ridges of both dactyl and pollex outlined in white, emphasizing "parrot beak" effect. Ambulatory legs cristate; first leg the longest, merus with two sharpened tubercles along its lower anterior border; remaining pairs of legs similar, meri bearing a lamellate ridge most advanced medially and distally, carpi with a similar rounded crest; propodi but slightly thickened medially and without a distal tooth; dactyli of all legs spinulous, dactylus of the fourth pair overreaching propodus by the length of its curved, yellow nail.

Female abdomen and sternum covered with the same type of erosion that characterizes the posterior portion of the carapace.

VARIATION: A second specimen, also a female, from Gorgona Island, Colombia, "Askoy" Station 89, sample 348, 4–7 meters, April 23, 1941, departs in important particulars from the description above, which is based on the holotype. The width of the carapace exceeds the length (measurements: length 8.0 mm., width 8.15 mm.), which may be owing to a short rostrum, which appears to have been injured; and the branchial width exceeds the hepatic, making these two proportions of doubtful value in diagnosing the new species. Being slightly larger, it is correspondingly more mature and shows the arrangement of tubercles on the carpus and manus of the cheliped to better advantage. These are four in a diamond on the carpus and four in a square at the base of the hand, the upper two falling in line with a median longitudinal row of tubercles.

REMARKS: In key characters the new species conforms with *E. dilatatus* A. Milne Edwards, an Atlantic species. The outline of the carapace agrees with Rathbun (1925, text fig. 53j) rather closely, but not with her plate 45, figure 2, from which it is also apparent that the female of *dilatatus* lacks the robust chelipeds of the new species. Nothing is said about erosion on the carapace of *dilatatus*, from which it is assumed to be smooth. The presence of gastric tubercles (as in *E. minimus* Lockington) and the absence of anything resembling a propodal tuft of hairs also serve to distinguish the new species.

I take pleasure in naming the new *Epialtus* for Dr. Robert Cushman Murphy, a friend of long standing, and leader of the "Askoy" Expedition on which it was obtained.

Notolopas lamellatus Stimpson

Notolopas lamellatus STIMPSON, 1871, p. 97 (7). RATHBUN, 1925, p. 287, pl. 81, pl. 238, fig. 1.

Pelia orbiculata FINNEGAN, 1931, p. 621, text fig. 4.

RANGE: From Manzanillo, Mexico, to Panama. Also off Beaufort, North Carolina.

MATERIAL EXAMINED: Ten specimens from four stations:

PANAMA

Piñas Bay, February 24, 1941, Station 19, sample 35, 14–33 meters, 1 male.

Guayabo Chiquito, March 4, 1941, Station 30, sample 78, 24–64 meters, 1 young male, 2 young females.

COLOMBIA

Ardita Bay, March 6, 1941, Station 31, sample 81, 34–43 meters, 1 male.

Málaga Bay, March 19, 1941, Station 40, sample 129, 4–9 meters, 1 male, 4 females.

MEASUREMENTS: Largest specimen, a male, length 10.2 mm., width 5.8 mm.

HABITAT: Gray sand, green sandy mud.

REMARKS: It is out of geographical considerations, rather than purely morphological ones, that *Pelia orbiculata* Finnegan, the type of which was taken at Balboa, Panama (Canal Zone), is referred to *Notolopas lamellatus* Stimpson rather than to *N. brasiliensis* Miers. While it is possible that each species may occur on both sides of the Isthmus of Panama, as indicated by the single record off Beaufort, North Carolina, of a *Notolopas* attributed to the Pacific species *N. lamellatus*, it seems more probable that each is restricted to one side, and that occasional individuals of both species show characters reverting to the common ancestor from which they have been derived, possibly as recently as early Pliocene, certainly no more remotely than middle Miocene, when the two oceans were last confluent. The character in question is the relative length of the rostral spines and the depth of the division between them, in respect to which the holotype of Finnegan's species tends to favor the longer and more deeply cleft rostrum of *N. brasiliensis*.

The range of the species is extended from Panama southward to Málaga Bay, Colombia.

Herbstia tumida (Stimpson)

Herbstiella tumida STIMPSON, 1871, p. 95 (5).

Herbstia tumida RATHBUN, 1925, p. 299, pl. 105, figs. 5, 6. FINNEGAN, 1931, p. 623. ?CRANE, 1937, p. 59; 1947, p. 72.

RANGE: From the Gulf of California, Mexico, to Gorgona Island, Colombia.

MATERIAL EXAMINED: Fourteen specimens from three stations:

PANAMA

Isla Saboga, Perlas Islands, May 26, 1941, Station 111, sample 432, 4 meters, 1 male.

Guayabo Chiquito, May 20–21, 1941, Station 104, sample 410, 8–10 meters, 1 male, 1 female, 3 young.

COLOMBIA

Gorgona Island, April 20–23, Station 89, sample 346, 4.5 meters, 3 males (1 large), 4 ovigerous females; sample 348, 4–6.5 meters, 1 ovigerous female.

MEASUREMENTS: Largest specimen, a male, length 10.9 mm., width 9.1 mm., cheliped (extended) 14.4 mm., chela 8.1 mm., dactyl 3.5 mm.

HABITAT: The specimens at each of the above stations were recovered from masses of living coral.

REMARKS: The "Askoy" collections duplicate the southernmost record for the species, that of the Crossland ("St. George") Expedition at Gorgona Island, Colombia, and help to fill in the large gap between it and Manzanillo, Mexico, with stations in Panama.

The largest specimen in the "Askoy" series, a male, is not so large as a female specimen from the Gulf of California already in the collection of the American Museum, which measures 13.5 by 10.7 mm.

Herbstia pubescens Stimpson

Herbstia pubescens STIMPSON, 1871, p. 92 (2). RATHBUN, 1925, p. 302.

RANGE: Known only from the type locality, Manzanillo, Mexico.

MATERIAL EXAMINED: Six specimens from three stations:

PANAMA

Guayabo Chiquito, May 20–21, 1941, Station 104, sample 410, 8–10 meters, 1 young, sponge covered.

COLOMBIA

Gorgona Island, April 20–23, 1941, Station 89, sample 346, 4.5 meters, 1 young male; sample 348, 4–6.5 meters, 1 male, 1 ovigerous female.

ECUADOR

La Plata Island, April 13, 1941, Station 80, sample 302, 5.5 meters, 2 young males.

MEASUREMENTS: Largest specimen, a female, length 14.6 mm., width 11.0 mm.

HABITAT: As with the preceding species, *H. tumida* (Stimpson), all specimens were recovered from clumps of *Pocillopora* coral.

REMARKS: *Herbstia pubescens* is one of the few spider crabs of which no illustration appeared in Rathbun (1925), no specimen having been taken at that time since Stimpson's non-existent type. It is one of the rare pleasures in systematic work, in some respects more gratifying than the discovery of a new species, to come upon a specimen or specimens which fit the description of a "lost" species as accurately as the "Askoy" specimens recorded above fit Stimpson's description of *H. pubescens*.

The range of the species is extended from Manzanillo, Mexico, to La Plata Island, Ecuador, and the male of the species is now known.

Lissa tuberosa Rathbun

Lissa tuberosa RATHBUN, 1898, p. 574, pl. 41, fig. 3; 1925, p. 333, pl. 246, fig. 1. CRANE, 1937, p. 59.

RANGE: Southern part of the Gulf of California, Mexico; 7–30 fathoms.

MATERIAL EXAMINED: Utria Bay, Colombia, May 15, 1941, Station 100, sample 398, 8 feet, one female.

MEASUREMENTS: Female specimen, length 13.0 mm., width 12.2 mm.

HABITAT: The specimen above was obtained from coral.

REMARKS: The range of the species is extended from the Gulf of California, in the neighborhood of latitude 24° N., to Utria Bay, Colombia, latitude 06° N. for a latitudinal distance of 18 degrees, or 1080 nautical miles.

Thoe sulcata panamensis Nobili

Thoe panamensis NOBILI, 1901, p. 30. RATHBUN, 1925, p. 351, text fig. 113, pl. 125, figs. 5, 6. FINNEGAN, 1931, p. 624.

Thoe sulcata panamensis CRANE, 1947, p. 71, text fig. 2A.

Thoe edentata CANO (not Lockington), 1889, pp. 101, 183.

RANGE: From Corinto, Nicaragua, to Gorgona Island, Colombia.

MATERIAL EXAMINED: Eight specimens from two stations:

COLOMBIA

Humboldt Bay, May 18, 1941, Station 103, sample 404, 6–10 feet, 1 male.

Gorgona Island, April 20, 1941, Station 89, sample 346, 4.5 meters, 4 males, 3 females (1 ovigerous).

MEASUREMENTS: Largest specimen, a male, length 8.85 mm., width 7.7 mm.

HABITAT: Coral.

REMARKS: Following the suggestion of Rathbun (1925, p. 351) that *Thoe panamensis* Nobili might not be specifically distinct from *T. sulcata* Stimpson, Crane (1947, p. 71) has combined the two, retaining *panamensis* as a subspecies on the basis of the rather sharply differentiated male pleopod. The distinction formerly used to separate the two species, namely, the degree of obsolescence of the outer row of excavations on the arm, is apparently of questionable value. Crane reports finding Nicaraguan specimens that on the basis of this character would have to be referred to the northern subspecies, *sulcata*, in which the outer row of excavations is as deeply eroded as the inner row, although with respect to the pleopod they conform with the southern subspecies, *panamensis*, in which the outer row of excavations is normally obsolescent. Only a long series of specimens from localities between Manzanillo, Mexico, and Corinto, Nicaragua, will elucidate this problem further, and in this respect the "Askoy" material adds nothing to that of the "Zaca." The Gorgona Island station duplicates the earlier record of the Crossland ("St. George") Expedition.

The writer departs from the synonymy of Rathbun (1910, p. 618) in considering Cano's *Thoe edentata* a synonym of *T. s. panamensis* Nobili, rather than *T. s. sulcata* Stimpson, because of the Perlas Islands locality at which the "Vettor Pisani" specimens were taken. Lockington's *Platypes edentata* is a different matter, since Lockington's type localities were northern and well within the known Gulf of Californian and Mexican range of *T. s. sulcata*.

Anaptychus cornutus Stimpson

Anaptychus cornutus STIMPSON, 1860, p. 184 (56), pl. 2, figs. 1, 1a, 1b. RATHBUN, 1925, p. 378, text fig. 122, pl. 134, figs. 4, 5, pl. 254, fig. 1. CRANE, 1947, p. 72.

Mitrax trigonopus CANO, 1889, p. 183, pl. 7, fig. 8.

RANGE: From Tepoca Bay, Sonora, Mexico, to Perlas Islands, Bay of Panama.

MATERIAL EXAMINED: Utria Bay, Colombia, May 15, 1941, Station 100, sample 397, one male.

MEASUREMENTS: Male specimen, length 9.3 mm., width 9.1 mm.

HABITAT: "From under stones along shore at low tide in ½ foot of water" (field label).

REMARKS: From a study of the figure in Cano (1889, pl. 7, fig. 8) it is apparent that his *Mitrax trigonopus* should be referred to *Anaptychus cornutus* Stimpson, thus giving us another early record from Panama, the type locality of the species.

The range of the species is extended southward from the Perlas Islands, Panama, to Utria Bay, Colombia.

Mithrax (Mithrax) pygmaeus Bell

Mithrax pygmaeus BELL, 1835, p. 172; 1836, p. 55, pl. 11, figs. 3, 3f–h. FINNEGAN, 1931, p. 624. CRANE, 1947, p. 73.

Mithrax (Mithrax) pygmaeus RATHBUN, 1925, p. 406, pl. 262, figs. 1–4.

RANGE: From Port Parker, Costa Rica, to Perlas Islands, Bay of Panama; Galápagos Islands.

MATERIAL EXAMINED: Twenty-two specimens from five stations:

PANAMA

Isla Contadora, Perlas Islands, May 25, 1941, Station 110, sample 431, 9–10 meters, 1 young female.

Isla Saboga, Perlas Islands, May 26, 1941, Station 111, sample 432, 4 meters, 6 males (2 large), 6 females (5 ovigerous).

COLOMBIA

Utria Bay, May 15, 1941, Station 100, sample 397, low tide, 1 female.

Gorgona Island, April 20, 1941, Station 89, sample 346, 4.5 meters, 2 males, 5 females (4 ovigerous).

ECUADOR

Latitude 01° 07′ N., longitude 79° 53′ W., April 17, 1941, Station 87, sample 343, 9–27 meters, 1 male.

MEASUREMENTS: Largest specimen, a male, length 7.7 mm., width 9.3 mm., cheliped (extended) 16.7 mm., chela 9.4 mm., dactyl 3.6 mm.

HABITAT: Coral, under stones at low tide, dredged on hard bottom (rock and corallines).

REMARKS: This tiny species appears to occur in a variety of situations, as the data given under habitat above tend to show. The proportionately large number of ovigerous females at the Saboga Island and Gorgona Island localities suggests that the breeding cycle was well advanced by mid-May. The range of the species is extended from the Perlas Islands southward to Ecuador.

Mithrax (Mithrax) sinensis Rathbun

Mithrax sinensis RATHBUN, 1892, p. 266, pl. 38, fig. 2.

Mithrax (Mithrax) sinensis RATHBUN, 1925, p. 419, pl. 151, figs. 3, 4, pl. 260. CRANE, 1931, p. 60.

RANGE: From San Esteban Island to Gorda Banks, Gulf of California, Mexico; 7–30 fathoms.

MATERIAL EXAMINED: Two specimens from as many stations:

COLOMBIA

Humboldt Bay, May 18, 1941, Station 103, sample 404, 6–10 feet, 1 male, chelipeds lacking.

ECUADOR

Latitude 01° 07′ N., longitude 79° 53′ W., April 17, 1941, Station 87, sample 343, 9–27 meters, 1 young, doubtfully referred to the above species.

MEASUREMENTS: Male specimen, length 12.0 mm., width 13.65 mm.

HABITAT: Coral, hard bottom (rock and corallines).

REMARKS: The very young specimen from Ecuador was taken in the same dredge haul with *M. (M.) pygmaeus* Bell, and it is perhaps straining a point to segregate it from that species. The range of *M. (M.) sinensis* is now known to include at least Humboldt Bay, Colombia, and perhaps extends to Ecuador.

Teleophrys cristulipes Stimpson

Teleophrys cristulipes STIMPSON, 1860, p. 190 (62), pl. 2, fig. 2. RATHBUN, 1925, p. 441, pl. 159, figs. 1, 2, 7, pl. 262, fig. 7. FINNEGAN, 1931, p. 625. GARTH, 1946, p. 396, pl. 68, figs. 5, 6. CRANE, 1937, p. 61; 1947, p. 73.

RANGE: From Arena Bank, Gulf of California, Mexico, to Gorgona Island, Colombia; Galápagos Islands.

MATERIAL EXAMINED: Fifty-five specimens from five stations:

PANAMA

Guayabo Chiquito, May 20–21, 1941, Station 104, sample 410, 8–10 meters, 2 females (1 ovigerous).

COLOMBIA

Humboldt Bay, May 18, 1941, Station 103, sample 404, 6–10 feet, 3 males, 4 females (3 ovigerous).

Utria Bay, May 15, 1941, Station 100, sample 397, shore, 2 males, 1 female.

Gorgona Island, April 20–23, 1941, Station 89, sample 346, 4.5 meters, 2 males, 3 females (2 ovigerous); sample 348, 4–6.5 meters, 5 males, 7 females (1 ovigerous).

ECUADOR

La Plata Island, April 12–13, 1941, Station 80, sample 302, 5.5 meters, 3 males, 3 females (2 ovigerous); sample 304, 9 males, 7 females (4 ovigerous), 4 young.

MEASUREMENTS: Largest specimen, a male, length 9.2 mm., width 10.1 mm., cheliped (extended) 14.5 mm., chela 8.1 mm., dactyl 4.5 mm.

HABITAT: Coral, under stones at low tide.

REMARKS: In examining the several score specimens which make up the "Askoy" series of *Teleophrys*, careful watch was kept for the appearance of *T. tumidus* Cano among them. The fact that representatives of this genus as far south along mainland shores as La Plata Island, Ecuador, as well as in the Galápagos Islands, are of the Stimpson species would seem to bear out the writer's expressed belief (Garth, 1946, p. 400) that *tumidus* does not occur north of Peru.

Microphrys platysoma (Stimpson)

Milnia platysoma STIMPSON, 1860, p. 180 (52).
Microphrys platysoma A. MILNE EDWARDS, 1875, p. 62. RATHBUN, 1925, p. 497, pl. 176, figs. 1, 2. CRANE, 1937, p. 63; 1947, p. 74. GARTH, 1946, p. 405, pl. 68, figs. 3, 4.

RANGE: From Patos Island, Gulf of California, Mexico, to Salinas, Ecuador; Galápagos Islands; low tide to 70 fathoms.

MATERIAL EXAMINED: Gorgona Island, Colombia, April 20, 1941, Station 89, sample 346, 4.5 meters, three males, one ovigerous female.

MEASUREMENTS: Largest specimen, a male, length 13.9 mm., width 12.0 mm., cheliped (extended) 11.8 mm., chela 5.9 mm., dactyl 2.5 mm.

HABITAT: Coral.

REMARKS: The repeated occurrence of this species, thought to belong principally to the Gulf of California fauna, in the Bay of Panama (Meek and Hildebrand, collectors) and now in Colombian waters ("Askoy" Expedition), suggests that other species might better have been cited by this writer as examples of the infiltration into the Galápagos Islands of a northern element. (Cf. Garth, 1946.)

The Chilean and Peruvian species, *M. weddelli* Milne Edwards, is also known to occur within territory covered by the "Askoy," the species having been taken by Festa in Santa Elena Bay, Ecuador (Nobili, 1901).

Tyche lamellifrons Bell

Tyche lamellifrons BELL, 1835, p. 173; 1836, p. 58, pl. 12, figs. 3, 3f–j. RATHBUN, 1925, p. 508, pl. 273, figs. 1–6. CRANE, 1937, p. 64. GARTH, 1946, p. 406, pl. 54, figs. 1–6.

RANGE: From the Santa Inez area, Gulf of California, Mexico, to Panama; Galápagos Islands; 0–29 fathoms.

MATERIAL EXAMINED: Latitude 01° 07′ N., longitude 79° 53′ W., off Ecuador, April 17, 1941, Station 87, sample 343, 9–27 meters, two females (one ovigerous), one young.

MEASUREMENTS: Largest specimen, a female, length 18.2 mm., width 11.2 mm.

HABITAT: Hard bottom, rock and coral-lines.

REMARKS: One of the female specimens is decorated with algae in such a manner as to make it almost unrecognizable as a crab. The other carries coralline algae and a barnacle covering almost a fourth of the carapace.

The range of the species is extended from Panama south to Ecuador along the mainland of South America, although it has been recorded as occurring in the Ecuadorean Islands of Galápagos.

FAMILY **PARTHENOPIDAE**

Parthenope (Parthenope) hyponca (Stimpson)

Lambrus hyponcus STIMPSON, 1871, p. 100 (10).
Parthenope (Parthenope) hyponca RATHBUN, 1925, p. 514, pl. 275, figs. 4–6.

RANGE: From Mazatlan, Mexico, to Panama.

MATERIAL EXAMINED: Three specimens from three stations:

PANAMA

Piñas Bay, February 23, 1941, Station 19, sample 35, 14–33 meters, 1 male.

ECUADOR

Latitude 01° 07′ N., longitude 79° 53′ W., April 17, 1941, Station 87, sample 343, 9–27 meters, 1 female.

Three miles west of Cape Santa Elena, April 10, 1941, Station 76, sample 274, 41 meters, 1 male.

MEASUREMENTS: Largest specimen, a female, length 13.9 mm., width 15.6 mm., cheliped (extended) 33 mm., chela 17 mm., dactyl 6.8 mm.

HABITAT: Gray sandy mud.

REMARKS: This species was one of several Pacific parthenopids not represented in the collections of the United States National Museum at the time of the writing of the Rathbun monograph (1925), necessitating the repetition of the A. Milne Edwards (1878) figures.

The range of the species is extended southward from Panama to Cape Santa Elena, Ecuador.

Parthenope (Platylambrus) depressiuscula (Stimpson)

Lambrus depressiusculus STIMPSON, 1871, p. 101 (11).

Parthenope (Platylambrus) depressiuscula RATHBUN, 1925, p. 524, pl. 188.

RANGE: From Manzanillo, Mexico, to Panama.

MATERIAL EXAMINED: Three specimens from two stations:

PANAMA

Isla Bayoneta, Perlas Islands, May 24, 1941, Station 109, sample 428, 8–9 meters, 1 female.

COLOMBIA

Málaga Bay, March 19, 1941, Station 40, sample 129, 4–9 meters, 1 male, 1 female.

MEASUREMENTS: Largest specimen, a female, length 16.1 mm., width 20.4 mm., cheliped (extended) 37 mm., chela 18.3 mm., dactyl 8.4 mm. Male, length 12.6 mm., width 15.7 mm.

HABITAT: Sand bottom is recorded for the Perlas Islands specimen, black mud and gray sand for the Málaga Bay specimens.

REMARKS: This species, represented in the collections of the United States National Museum at the time of the writing of the Rathbun monograph (1925) by two female specimens purchased from Henry Ward, has heretofore been considered a rarity. Apparently it occurs sparingly throughout the Panamic province. The present records extend its known range southward from Panama to Málaga Bay, Colombia.

Thyrolambrus erosus Rathbun

Thyrolambrus erosus RATHBUN, 1898, p. 579, pl. 42, fig. 1; 1925, p. 533, pl. 197, pl. 281, fig. 2.

RANGE: From San Lorenzo Channel to Cape San Lucas, Gulf of California, Mexico; 8–31 fathoms.

MATERIAL EXAMINED: Latitude 01° 07′ N., longitude 79° 53′ W., April 17, 1941, Station 87, sample 343, 9–27 meters, one young female.

MEASUREMENTS: A young female specimen, length 7.8 mm., width 10.0 mm.

HABITAT: Hard bottom (rock and corallines).

REMARKS: The delicate beauty of the reticulations of the carapace and of the two rows of compound spinules on the chela can be appreciated only in very young specimens like the above. In older specimens these details are eroded away.

The species is superficially similar to *Daldorfia garthi* Glassell (1940), from which it may be separated by the thin fingers, the less massive chelipeds, and the marked separation of the hepatic and branchial regions.

The range of the species is extended greatly, from the Gulf of California region to Ecuador.

Solenolambrus arcuatus Stimpson

Solenolambrus arcuatus STIMPSON, 1871, p. 101 (11). RATHBUN, 1925, p. 538. FINNEGAN, 1931, p. 625. GARTH, 1946, p. 413, pl. 69, figs. 3, 4.

Solenolambrus typicus CANO (not Stimpson), 1889, pp. 102, 187.

RANGE: Panama and St. Elmo (Santelmo) Bay, Perlas Islands; Galápagos Islands; 10–60 fathoms.

MATERIAL EXAMINED: Five specimens from three stations:

PANAMA

Bahia Santelmo, Isla del Rey, Perlas Islands, February 14, 1941, Station 8, sample 4, 11–14 meters, 1 young.

COLOMBIA

Málaga Bay, March 19, 1941, Station 40, sample 129, 4–9 meters, 1 male, 2 females.

ECUADOR

Off Cape Pasado, April 14, 1941, Station 81, sample 306, 18 meters, 1 male.

MEASUREMENTS: Largest specimen, a male, length 10.5 mm., width 13.2 mm., cheliped (extended) 30 mm., chela 14.3 mm., dactyl 5.2 mm.

HABITAT: Sand, black mud and gray sand, sand and dead shell bottom.

REMARKS: While this species has been known since the time of Wm. Stimpson, no illustration of it appeared prior to 1946. It is not common, even in the Galápagos Islands, where five specimens were obtained by Hancock expeditions. The Perlas Island station above duplicates the Finnegan record for the species, whereas the Colombian and Ecuadorean records represent extensions of range southward.

Leiolambrus punctatissimus (Owen)

Parthenope punctatissima OWEN, 1839, p. 81, pl. 24, fig. 4.

Leiolambrus punctatissimus HOLMES, 1900, p. 46. RATHBUN, 1925, p. 543, pl. 198. FINNEGAN, 1931, p. 626.

RANGE: California (?). From off Guaymas, Gulf of California, Mexico, to Gorgona Island, Colombia; 20–26½ fathoms.

MATERIAL EXAMINED: Four specimens from two stations:

COLOMBIA

Solano Bay, May 16, 1941, Station 101, sample 399, 36–54 meters, 1 male.

ECUADOR

Latitude 00° 55′ N., longitude 80° 08′ W., April 17, 1941, Station 87, sample 342, 36–54 meters, 1 large male, 1 young male, 1 young female.

MEASUREMENTS: Largest specimen, a male, length 19.6 mm., width 24.8 mm., cheliped 52 mm., chela 25 mm., dactyl 8.3 mm.

HABITAT: Black mud.

REMARKS: The young specimens above show particularly well a feature not mentioned in the description of the species, long golden hairs which grow from each of the many teeth along the margins of the cheliped, including not only merus and propodus, but even the denticles of the movable finger.

The range of the species, until recently known only from the Gulf of California, is extended to Ecuador from Gorgona Island, Colombia, where it was taken by the "St. George."

Mesorhoea bellii (A. Milne Edwards)

Solenolambrus bellii A. MILNE EDWARDS, 1878, p. 163, pl. 29, figs. 6–6d.

Mesorhoea bellii RATHBUN, 1925, p. 548, pl. 201, figs. 1–4. CRANE, 1937, p. 65. GARTH, 1946, p. 414, pl. 69, figs. 5, 6.

RANGE: From Abreojos Point, west coast of Lower California, and Consag Rock, Gulf of California, Mexico, to Bay of Panama; Galápagos Islands; 9–80 fathoms.

MATERIAL EXAMINED: Latitude 00° 55′ N., longitude 80° 08′ W., off Ecuador, April 17, 1941, Station 87, sample 342, 36–54 meters, one male.

MEASUREMENTS: Male specimen, length 16.0 mm., width 20.8 mm., cheliped 35 mm., chela 18 mm., dactyl 5.3 mm.

HABITAT: Mud bottom.

REMARKS: The male specimen in the "Askoy" collection compares favorably with the measured female specimen in Rathbun (1925).

The range of the species is extended southward along the mainland coast from Panama Bay, where it was taken by the "Albatross," to Ecuador. It also occurs in the Galápagos Islands, where some eight specimens were obtained by the "Velero III."

Cryptopodia hassleri Rathbun

Cryptopodia hassleri RATHBUN, 1925, p. 554, pl. 202, figs. 1, 2.

RANGE: Known only from the type locality, Magdalena Bay, Lower California, Mexico.

MATERIAL EXAMINED: Málaga Bay, Colombia, March 19, 1941, Station 40, sample 129, 9 meters, one male.

MEASUREMENTS: Male specimen, length 6.6 mm., width 10.3 mm.

HABITAT: Black mud and gray sand.

REMARKS: This small species, unique among parthenopids in that the walking legs are completely hidden from dorsal view by the projecting carapace, has been known heretofore only from the Gulf of California. Its range is now extended to Colombia.

Heterocrypta macrobrachia Stimpson

Heterocrypta macrobrachia STIMPSON, 1871, p. 103 (13). RATHBUN, 1925, p. 558, pl. 203, figs. 3, 4, pl. 282, figs. 4, 5.

RANGE: From Magdalena Bay, Lower California, Mexico, to Panama; 12–51 fathoms.

MATERIAL EXAMINED: Off Cape Pasado, Ecuador, April 14, 1941, Station 81, sample 306, 18 meters, two males, one female.

MEASUREMENTS: Largest specimen, a male, length 10.4 mm., width 13.7 mm., cheliped (extended) 27 mm., chela 13 mm., dactyl 4.5 mm.

HABITAT: Sand and dead shell fragments.

REMARKS: The range of the species is extended southward from Panama to Ecuador.

Heterocrypta colombiana Garth

Heterocrypta colombiana GARTH, 1940, p. 71, pl. 18, figs. 1, 2.

RANGE: From Salinas Bay, Costa Rica, to Port Utria, Colombia; 1½ fathoms.

MATERIAL EXAMINED: Latitude 01° 07′ N., longitude 79° 53′ W., off Ecuador, April 17, 1941, Station 87, sample 343, 9–27 meters, one male.

MEASUREMENTS: Male specimen, length 5.8 mm., width 7.9 mm.

HABITAT: Hard bottom (rock and coral-lines).

REMARKS: The male specimen above is the third representative of the species known, and the first to have been collected since the types were obtained by Hancock expeditions. The range of the species is extended from Colombia to Ecuador, its vertical range from 3 to 27 meters.

SUPERFAMILY **BRACHYRHYNCHA**

FAMILY **PORTUNIDAE**

Portunus (Portunus) acuminatus (Stimpson)

Achelous acuminatus STIMPSON, 1871, p. 112 (22).

Portunus (*Portunus*) *acuminatus* GARTH, 1940, p. 73, pl. 19, figs. 1–3. Not *Portunus* (*Portunus*) *acuminatus* Rathbun, 1930, p. 56, pl. 19.

RANGE: From Isabel Island, Mexico, to La Libertad, Ecuador; 2–50 fathoms.

MATERIAL EXAMINED: Off Cape Pasado, Ecuador, April 14, 1941, Station 81, sample 306, 18 meters, two males.

MEASUREMENTS: Male specimen, length 10.0 mm., width 16.4 mm. (excluding lateral spines).

HABITAT: Sand and dead shell bottom.

REMARKS: The finding among collections of the "Velero III" of an entire series of *Portunus* ranging from Isabel Island, Mexico, to La Libertad, Ecuador, which could not be determined according to the system proposed by Rathbun (1930), in which *acuminatus*, *asper*, and *panamensis* are grouped as possible forms of a single species, and the application to them of the name *acuminatus* Stimpson in what was presumably its original intent have already been set forth (Garth, 1940, p. 73). The slender chelate and long-spined species represented by the Hancock expeditions series and by the two "Askoy" specimens recorded above was not among the limited number of specimens from the Bay of Panama available to Rathbun, who applied Stimpson's name to the most likely specimen before her, an atypical *asper* with an unusually long lateral spine.

Portunus (Portunus) asper
(A. Milne Edwards)

Neptunus asper A. MILNE EDWARDS, 1861, p. 325, pl. 30, figs. 3–3c.

Portunus (*Portunus*) *asper* RATHBUN, 1930, p. 56, pl. 20, figs. 2, 3, pl. 21, pl. 22, figs. 1, 2.

RANGE: From Panama to Chile; shoal water to 16 fathoms.

MATERIAL EXAMINED: Twenty specimens from 10 stations:

PANAMA

Bahia Santelmo, Isla del Rey, Perlas Islands, February 14, 1941, Station 8, sample 4, 11–14 meters, 1 male.

Piñas Bay, February 24, 1941, Station 19, mud bottom sample 35, 10–33 meters, 3 males, 2 females.

Guayabo Chiquito, March 4, 1941, Station 30, sample 78, 24–64 meters, 2 males.

COLOMBIA

Ardita Bay, March 6, 1941, Station 31, sample 81, 34–43 meters, 1 female.

Octavia Bay, March 6, 1941, Station 32, sample 82, 24–28 meters, 1 female.

Utria Bay, May 14, 1941, Station 100, sample 395, 12–22 meters, 1 male.

Cuevita Bay, May 11, 1941, Station 93, sample 359, 9–26 meters, 1 male, 2 females.

ECUADOR

Latitude 02° 48′ N., longitude 78° 11′ W., April 24, 1941, dipnet at current measurement station, 1 male, 1 young female.

Latitude 01° 07′ N., longitude 79° 53′ W., April 17, 1941, Station 87, sample 342, 36–54 meters, 1 female.

Off Cape Pasado, April 14, 1941, Station 81, sample 306, 18 meters, 3 males.

MEASUREMENTS: Largest specimen, a female, length 31.9 mm., width (including lateral spines) 70 mm., length of lateral spine 10.5 mm., cheliped (extended) 68 mm., chela 36 mm., dactyl 17.5 mm.

HABITAT: Sand, gray sandy mud, sand and dead shell, mud.

REMARKS: Judging from the number of stations at which it was taken, *Portunus* (*P.*) *asper* is the widely distributed portunid of the Panama Bight, conceived of as extending southward to Cape Santa Elena, Ecuador. For a discussion of the three common Pacific Panamanian species of *Portunus* and the manner in which they can be readily distinguished from one another, the reader is referred to the citation mentioned under the foregoing *P.* (*P.*) *acuminatus* (Garth, 1940, p. 73), rather than to the discussion in Rathbun (1930, p. 53) under the heading "the *acuminatus-asper-panamensis* group." The latter will prove misleading to one desirous of understanding the portunids of the greater Bay of Panama, as Rathbun labored without knowledge of the true identity of *acuminatus*. (See also Remarks under this species.)

It is interesting to note that the most extensive series was obtained with a mud bottom sampling device, and to note that the species was dipped from the surface at a current measurement station some distance from shore.

Portunus (Portunus) panamensis (Stimpson)

Achelous panamensis STIMPSON, 1871, p. 112 (22).

Portunus (*Portunus*) *panamensis* RATHBUN, 1910, pp. 577, 610; 1930, p. 58, pl. 20, fig. 1, pl. 22, fig. 3, pls. 23, 24. FINNEGAN, 1931, p. 626, text fig. 5.

RANGE: From Panama Bay to Bay of Sechura, Peru (from Angeles and Mulege bays, Gulf of California, Mexico, only if Rathbun's synonymy of *Amphitrite pauci-spinis* Lockington be accepted); to 33 fathoms.

MATERIAL EXAMINED: Twenty-five specimens from five stations:

PANAMA

South Passage, Perlas Islands, February 13, 1941, Station 7, 27 meters, 1 male, 1 female.

Piñas Bay, February 23, 1941, Station 19, 14–33 meters, 2 young males, plus 3 young doubtfully referred to the same species.

Guayabo Chiquito, March 4, 1941, Station 30, sample 78, 24–64 meters, 1 male, 11 young.

COLOMBIA

Octavia Bay, March 7, 1941, Station 32, sample 83, 25 meters, 1 male, chelipeds lacking.

ECUADOR

Three miles west of light on Cape Santa Elena, April 10, 1941, Station 76, 41 meters, 2 males, 3 females.

MEASUREMENTS: Male specimen, length 14 mm., width (including lateral spines) 30.3 mm., length of lateral spine 4.0 mm.

HABITAT: Sand, gray mud, black mud.

REMARKS: Although *Portunus* (*P.*) *panamensis* and the preceding *P.* (*P.*) *asper* enjoy essentially the same range, from Panama to Peru, or even Chile, the former appears to be more abundant in the northern portion of its range, the latter in the southern.

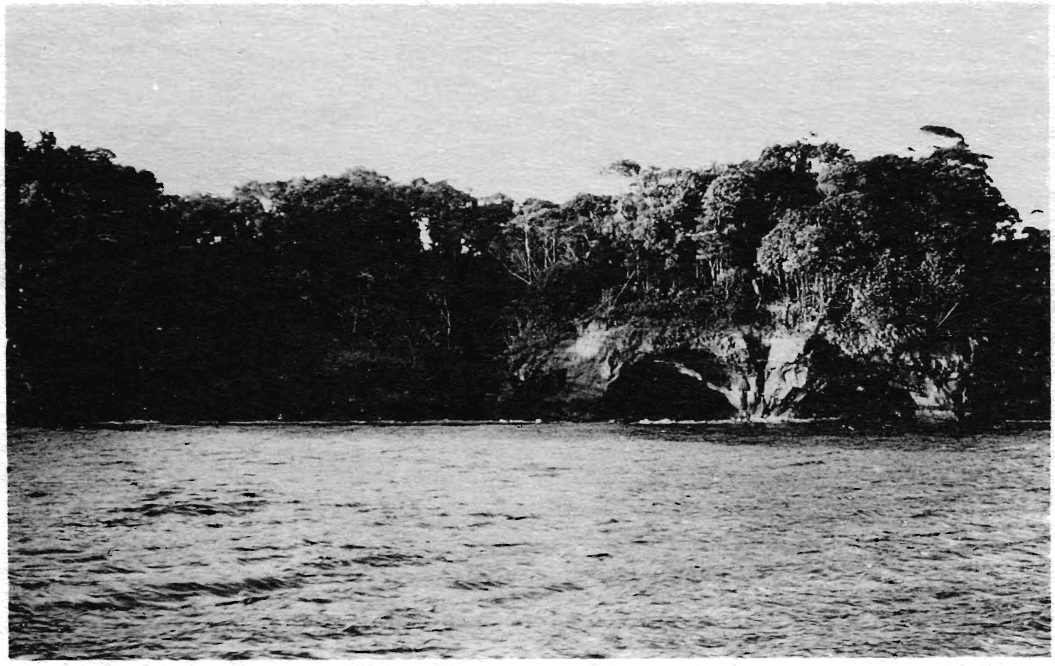
Portunus (Achelous) tuberculatus
(Stimpson)

Achelous tuberculatus STIMPSON, 1860, p. 223 (95).

Portunus (*Achelous*) *tuberculatus* RATHBUN, 1898, p. 596; 1930, p. 90, pl. 44. FINNEGAN, 1931, p. 629. CRANE, 1937, p. 68. GARTH, 1946, p. 421, pl. 71, fig. 2.

RANGE: From Cape San Lucas, Lower California, Mexico, to Gorgona Island, Colombia; Galápagos Islands; 3–70 fathoms.

1. Stations 1 and 110, the Alpha and Omega of "Askoy" exploration. Beyond the "Askoy," riding at anchor off Contadora Island, Perlas Islands, Panama (Station 110), are Pacheca and Pachequilla Islands (Station 1) at which collecting was commenced some three and one-half months earlier



2. "Askoy" Station 40. Entrance to Malaga Bay, Colombia, showing the remarkable sea caves on the northern side. This is the type locality for *Pilumnus nobilii* and *Pinnotheres malagueña*, new species (see text)