

FIGURE 3. *Paguristes anaryballus*, sp. n., holotype. A. Anterior carapace, X 4. The antennules are not fully extended.; B. Left chela, dorsal view, X 4; C. Second left pereiopod, lateral view, X 4; D. Left chela, medial view, X 4; E. Telson, X 8; F. Third left pereiopod, lateral view, X 4. The setules on all setae have been omitted for clarity.

PARATYPES: 4 males, shield length 2.2 - 3.0 mm; 1 non-ovigerous female, shield length 2.4 mm; 2 ovigerous females, shield length 2.1 and 2.5 mm. Collected with the holotype. Deposited in the Museum of the Institute of Marine Science, University of Miami (UMML 32:2758) (part), and the Museum of Comparative Zoology at Harvard (part).

Diagnosis.—Plumose setae obscuring armature; dactyls of walking legs not longer than propodi, each bearing a row of spines on dorsal margin; female lacking brood pouch; lobes of telson bearing stout spines in addition to setae; shield with three red stripes, eyestalks reddish on distal three-fourths with a fan of plumose setae proximally, pereopods with distinct longitudinal patches of red on segments including dactyls.

Description.—The shield or anterior carapace is longer than wide, the maximum width being about 0.77 the length from tip of rostrum to cervical groove. The surface of the shield is smooth except for inconspicuous punctae; prominent spines are lacking, but some plumose setae are present in groups. The well developed rostrum extends well beyond the frontal projections.

The length of the eyestalks is nearly two-thirds the width of the shield. The eyestalks are rather swollen proximally and taper gradually to slightly dilated corneas. Each eyestalk bears a transverse arc of plumose setae on the proximal third. The ophthalmic acicles are bidentate and reach slightly beyond the tip of the rostrum.

The antennular peduncles when fully extended exceed the tips of the eyes by the length of the terminal segment of the peduncle.

The antennal flagella are short, consisting of about 12-14 segments, each segment bearing numerous setae as long as one or two flagellar segments. The peduncular segment bearing the flagellum is unarmed. The basal segment has three to four spines laterally. The antennal acicle has three spines laterally and two or three spines medially, but these are obscured by plumose setae.

The armature of the subequal chelipeds is very much obscured by plumose setae. There are strong spines along the medial margins of the movable dactyl, the manus, and the carpus of each cheliped. There is a row of spines along the ventro-medial margin of the merus. The dorsal surface of the chela is armed with many blunt tubercles. A lateral fringe of plumose setae makes the chelae appear to be wider than they are.

The second pereopods are fringed with plumose setae on the dorsal and ventral margins, a row of spines on dorsal margin of propodus, and the merus has in addition a group of long setae on the medial surface. The dactyl which ends in a stout corneous spine is approximately as long as the propodus on the right side, but on the left, the dactyl is slightly shorter than the propodus. The dactyl bears a row of corneous spines

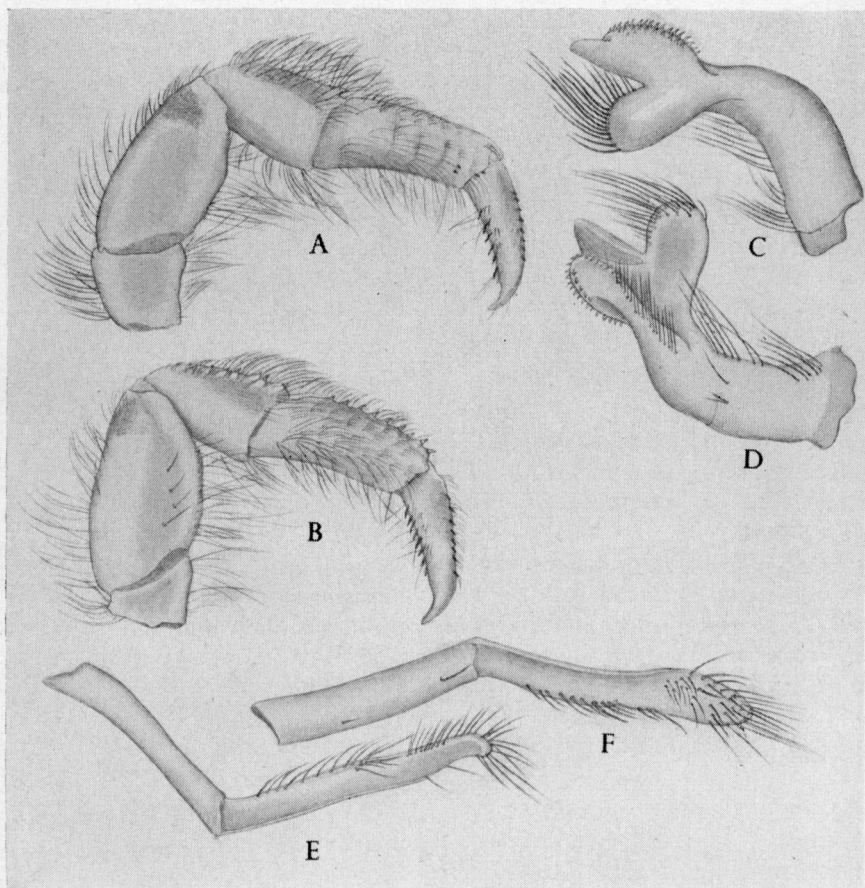


FIGURE 4. *Paguristes anaryballus*, sp. n., holotype. A. Third left pereiopod, medial view, X 4; B. Second left pereiopod, medial view, X 16; C, D. Two views of gonopod of first abdominal somite, right side, X 16; E, F. Ventral and dorsal views of gonopod of second abdominal somite, X 16.

ventrally in addition to a fringe of plumose setae, and an obscured row of small spines dorsally.

The third pereiopods are similar to the second but the dactyl is somewhat shorter, the fringe of setae dorsally is much less prominent, consisting of rather short bristles, and there is no row of prominent spines dorsally on the propodus.

The fourth pereiopods are non-chelate, the propodus of each being nearly two times longer than high and bearing a rasp which reaches nearly

the entire length of the ventro-lateral surface of the segment. There are no corneous granules on the dactyl.

The fifth pereopods are chelate, bearing rasps on each of the two distal segments. In addition to short setae, this appendage bears numerous long, curved simple setae on the terminal segments.

The telson is subequally bilobed, each lobe bearing a number of strong spines or teeth with small ones on the medial margins, and a fringe of long setae along the posterior margins of the lobes.

The males have sexually modified appendages on the first and second abdominal somites as is typical of the genus. The females have a pair of modified appendages on the first abdominal somite only. The females differ from those of most species of the genus in lacking a brood pouch. The ovigerous females examined carry 7, 9, and 11 eggs respectively, but none shows signs of a brood pouch.

Color.—The coloration of this species makes possible immediate field recognition. According to the collector, the now orange-red coloration was much darker in life. Half the series was preserved in alcohol and half in formalin. The specimens in formalin since collection have the following pattern. The eyestalks are red on the distal three-fourths. The anterior carapace has three longitudinal reddish stripes, one reaching from the tip of the rostrum to about the mid-point of the shield, and one extending half as far from each of the frontal projections. The flagella of the antennules and of the antennae are lavender. The chelae are reddish-orange on the medial surfaces of the carpus, the manus, and the distal portion of the merus, laterally on the distal portion of the merus and on the dorsal surface of the carpus. The walking legs are distinctly marked laterally and medially on the dactyl, propodus and carpus, and on the distal portion of the merus as shown in the illustrations. The specimens which have been in alcohol are very much faded, but at this writing even those still show the total pattern.

Remarks.—The name of the species is derived from the Greek *an-*, without, and *aryballos*, pouch or bag.

In its plumose setation, lack of a brood pouch and general appearance this species appears most closely related, among West Indian forms, to *Paguristes anomalus* Bouvier, 1918. It differs from the latter in having a less elongate shield, in lacking spines on the antero-lateral surfaces of the shield, in details of armature and in its completely different coloration. *P. anomalus* has a general green color, the dactyls of the pereopods are cream-yellow, and the brood pouch, while very much reduced, is present as a rudiment. *P. tortugae* (Schmitt, 1933) is somewhat similar to both *P. anomalus* and *P. anaryballus* but although it sometimes has a purple-reddish color, the larger size, the banded cephalic appendages, and the

absence of striping makes that species easy to distinguish in the field. *P. tortugae* differs from both these other species in having a well developed brood pouch. *Paguristes hummi* Wass, 1955, which ranges from Texas eastward to southwest Florida and occurs on the northeast coast of Florida as well, lacks a brood pouch entirely as does the presently described species and the modified appendages of the first abdominal somite of females while present are so greatly reduced that only very careful examination at high magnification will reveal them. In males of all these species however, both pairs of gonopods are present and well developed.

The variation in development of the brood pouch and sexual appendages of females in some species of this genus may be reflected in the growth of individuals of all of them. Provenzano and Rice (In Press.) reported upon the gradual development and variable rate of development of these features in *Paguristes sericeus* A. Milne-Edwards, 1880. Since these characters are among those used as diagnostic features of the genus, it is obvious that small, perhaps immature, specimens of both sexes might not be recognized as belonging to *Paguristes*.

The species was discovered by Dr. Hazlett during his field studies on the social behavior of the hermit crabs of Curaçao. The habitat from which they were collected is a wave-exposed, rocky shelf on the south side of the island, extending from the tide line out to a depth of approximately 1.5 m where it drops suddenly another meter to a broad slightly sloping sand bottom. The specimens were all taken from under a single rock on the shelf. Within a few inches of the rock were specimens of *Pagurus miamensis*, *Pagurus pygmaeus* (Bouvier, 1918), and *Pylopagurus operculatus*, all species which prefer exposed rocky habitats.

SUMMARY

Paguristes starcki, sp. n., known only from the holotype collected at Alligator Reef, Florida, is most closely allied to *Paguristes cadenati* Forest with which it shares the characters of: lack of setation, presence of a groove on the carpus of the chelipeds, dactyls of the second and third pereopods being longer than the propodi, and general reddish color. It differs in the shape of the chelipeds and shield, in having spines on the dorsal surface of the manus of the cheliped, in not having a white and red colored shield.

Paguristes anaryballus, sp. n., is described on the basis of nine specimens collected in about one meter, from a rocky habitat at Curaçao, Netherlands Antilles. It is most similar to *Paguristes anomalus* Bouvier with which it shares the dense plumose setation, lack of a brood pouch in females, and general gross morphological similarity. It differs from *P. anomalus* in having a shorter, unarmed shield, in details of armature, and especially in having completely different coloration, *P. anomalus* having a green color

with yellow dactyls, *P. anaryballus* having very dark red patches on all the hard parts.

SUMARIO

DOS NUEVOS CANGREJOS HERMITAÑOS DEL GÉNERO *Paguristes*
(DECAPODA: DIOGENIDAE)

Paguristes starcki, sp. n., conocido solamente por el holotipo colectado en Alligator Reef, Florida, está muy próximo a *Paguristes cadenati* Forest con el cual comparte los caracteres de: falta de quetas, presencia de un surco en el carpo de los quelípedos, dactilos del segundo y tercer períodos más largos que los propodios y color rojizo en general. Difiere en la forma de los quelípedos y la cubierta, en que tiene espinas en la superficie dorsal de la mano del quelípedo, y que no tiene una cubierta color blanco y rojo.

Paguristes anaryballus, sp. n., se describe basándose en nueve ejemplares colectados en alrededor de un metro, de un habitat rocoso en Curazao, Antillas Holandesas. A quien más se parece es a *Paguristes anomalus* Bouvier con el que comparte las densas quetas plumosas, falta de una bolsa de incubación en las hembras, y similitudes en la morfología general. Difiere de *P. anomalus* en que tiene una cubierta desnuda más corta, en detalles de la armadura y especialmente en tener coloración completamente diferente, *P. anomalus* tiene color verde con dactilos amarillos, *P. anaryballus* tiene manchas color rojo muy oscuro en todas las partes duras.

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