

# Neogene decapod crustaceans from the Caribbean of Colombia

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## ABSTRACT

An abundant and diverse assemblage of decapod crustaceans from the Neogene (Miocene to Pliocene) from the Las Perdices and Tubará formations in San Jacinto Fold Belt (Colombian Caribbean) is here reported. Found in shallow marine and paralic sediments, specimens of the following species are identified: Callianassidae, *Neocallichirus scotti* (Brown and Pilsbry, 1913), *Glypturus toulai* (Rathbun, 1919), *Petrochirus bouvieri* Rathbun, 1919, *Hepatus lineatinus* Collins and Todd in Todd and Collins, 2005, *Palaeopinixa perornata* Collins and Morris, 1976, *Persephona enigmatica* Collins and Todd in Todd and Collins, 2005, *Microphrys* sp., *Necronectes proavitus* (Rathbun, 1918), *Scylla* sp., *Euphyllax maculatus* Collins and Todd in Todd and Collins, 2005, and *Eurytium* sp. All of these species indicate a correlation with other Caribbean crustaceans from the Neogene, mainly of Panama, Costa Rica, and Venezuela. The facies association and decapod assemblage suggest shallow marine environments for the Neogene units of this area of Caribbean coast of Colombia.

**Keywords:** Crustacea, Decapoda, Neogene, Caribbean, Colombia.

## RESUMEN

Se reporta una diversa y abundante asociación de crustáceos decápodos del Neógeno (Mioceno al Plioceno) de las formaciones Las Perdices y Tubará en el Cinturón Plegado de San Jacinto (Caribe colombiano). En sedimentos marinos y parálcos, fueron encontrados ejemplares de las especies: *Callianassidae*, *Neocallichirus scotti* (Brown and Pilsbry, 1913), *Glypturus toulai* (Rathbun, 1919), *Petrochirus bouvieri* Rathbun, 1919, *Hepatus lineatinus* Collins and Todd in Todd and Collins, 2005, *Palaeopinixa perornata* Collins and Morris, 1976, *Persephona enigmatica* Collins and Todd in Todd and Collins, 2005, *Microphrys* sp., *Necronectes proavitus* (Rathbun, 1918), *Scylla* sp., *Euphyllax maculatus* Collins and Todd in Todd and Collins, 2005, y *Eurytium* sp. Todas estas especies indican una correlación con otras asociaciones caribeñas de crustáceos del Neógeno, principalmente de Panamá, Costa Rica, y Venezuela. Las asociaciones de facies y el conjunto de crustáceos sugieren paleoambientes marinos someros para las unidades neógenas de esta área de la costa caribe de Colombia.

**Palabras clave:** Crustacea, Decapoda, Neógeno, Caribe, Colombia.

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## 1. Introduction

Neogene shallow marine lithostratigraphic units are found at the San Jacinto Fold Belt (SJFB), mainly at the Luruaco anticlinorium, placed between Cartagena de Indias and Barranquilla (N Colombia), where fossiliferous horizons include abundant mollusks, reported by several authors (Pilsbry and Brown, 1917; Anderson, 1927, 1929; Weisbord, 1929). Recently, more detailed stratigraphic and paleontological reports indicate a more precise age and defined paleoenvironments (Pineda-Salgado *et al.*, 2013). This is the first record of Neogene crustaceans from the Colombian Caribbean. Most of the crustacean specimens have a good preservation, including both isolated articles and articulated carapaces, some with fine details of the cuticle. The most abundant crustaceans are callianassoids and portunoids.

### 1.1. LOCATION AND GEOLOGICAL SETTING

The study area is located on the central portion of the Caribbean coast of Colombia, in the Luruaco region (W area of Atlántico department), 50 km SW of Barranquilla (Figure 1), approximately 700 km north of Bogotá, D.C. The crustacean specimens from the Las Perdices Formation were collected in outcrops located 1 km NE of Hibacharo town, Atlántico (Figure 1). The sampled horizons correspond to the SE plunge of the Tubará syncline, at the top of the unit, composed mainly by shales and marls. Crustacean specimens from the Tubará Formation were found along roadcuts that leads to the municipio de Tubará, Atlántico, at the W flank of the Tubará syncline, in marls with intercalations of sandstone and conglomerate.

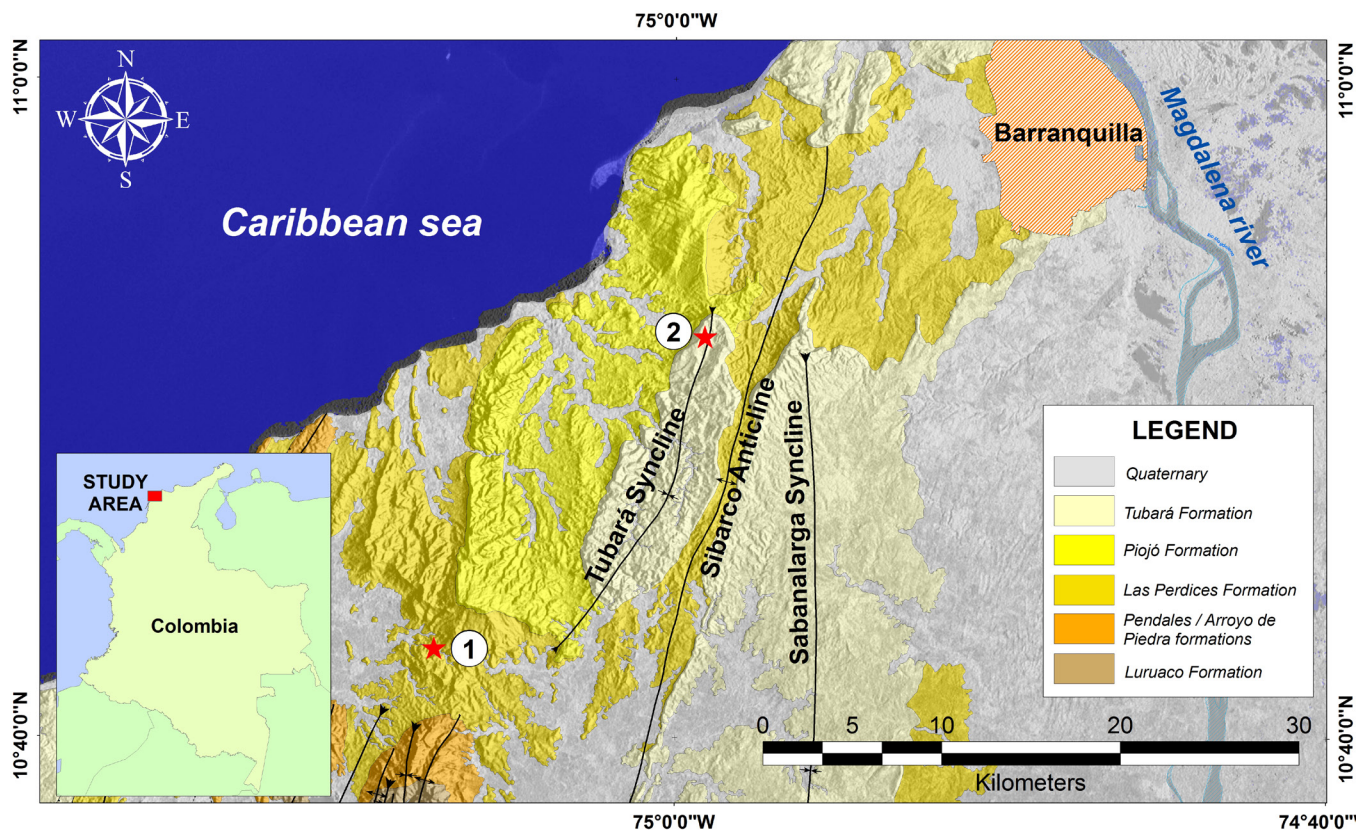
### 1.2. STRATIGRAPHY

The Luruaco anticlinorium includes Neogene sediments of the Las Perdices, Piojó and Tubará formations (Figure 2). The Las Perdices Formation (Upper Oligocene – middle Miocene) consists mainly of mudstone, marl and gray shale, with a few horizons with calcareous concretions,

and thin sandstones and siderite lenses near the top. The Piojó Formation (middle – upper Miocene) consists of very thick sandstone beds at the base, followed by thick layers of mudstone and shale, intercalated with sandstone beds at the top. The Tubará Formation (upper Miocene – Pliocene) consists of conglomerate and sandstone at the base, followed by mudstone and fossiliferous sandstone, with abundant layers of coquina. The fine-grained sequences include abundant macroinvertebrate fossils, mainly mollusks, echinoderms and annelid tubes, as well as foraminifera and fish remains. These fossils have been partially studied by several authors: Anderson (1929), Weisbord (1929), Barrios (1960), Bermúdez *et al.* (2009), Pineda-Salgado *et al.* (2013), Vega and Bermúdez (2015).

Crustacean specimens were collected near the top of the Las Perdices Formation, within concretions in a thick, dark-gray massive claystone, with coal fragments, and bivalves, gastropods, polychaete tubes, and echinoids. Based upon calcareous nanoplankton, foraminifera and pollen biostratigraphy, these layers were deposited during early to middle Miocene as muds deposited in low-energy, anoxic environments with occasional influence of marine water. These conditions have been shown to cause stress and prevent a presence of infaunal organisms (Maceachern *et al.*, 2005; Bhattacharya and MacEachern, 2009). Presence of siderite reinforce the paleoenvironmental interpretation of a reducing environment in fluvial to estuarine facies with abundant vegetal remains (Berner, 1971), where oxygen is removed by the influence of anoxic bacteria, causing siderite precipitation and presence of methane (Berner, 1981; Middleton and Nelson, 1996; Laenen and De Craen, 2004). This prevents the presence of filter-feeding organisms (Coates and MacEachern, 2007), as seen in most coastal lagoons.

Crustacean remains are more abundant and diverse within the fossiliferous beds of the Tubará Formation, found near the top of Pliocene age stratigraphic unit (Molinares *et al.*, 2007), within thin to thick fossiliferous dark-gray shale layers,



**Figure 1** Location map of the Luruaco anticlinorium, north region of SJBFB province, Caribbean of Colombia, with position of fossil localities: (1) Hibacharo area, Las Perdices Formation, (2) Tubará area, Tubará Formation.

interbedded with thick, cross-bedded, grayish-yellow, lithic sandstone and coquinoid beds (including gastropods, bivalves, cirripedians, polychaete tubes, shark teeth and turtle remains). Storm accumulations of bioclasts include crustacean remains at the top of the Tubará Formation, in a lithology dominated by sandstone, whereas more complete crab remains are found in fine sandstone, suggesting low energy and fast burial, as indicated by the presence of articulated corpses and molts.

## 2. Material

The study specimens are deposited in the Paleontological Collection of the Universidad Nacional de Colombia, Facultad de Ciencias, Departamento de Geociencias, Bogotá D.C., Colombia, under catalog numbers UN-DG-CR.

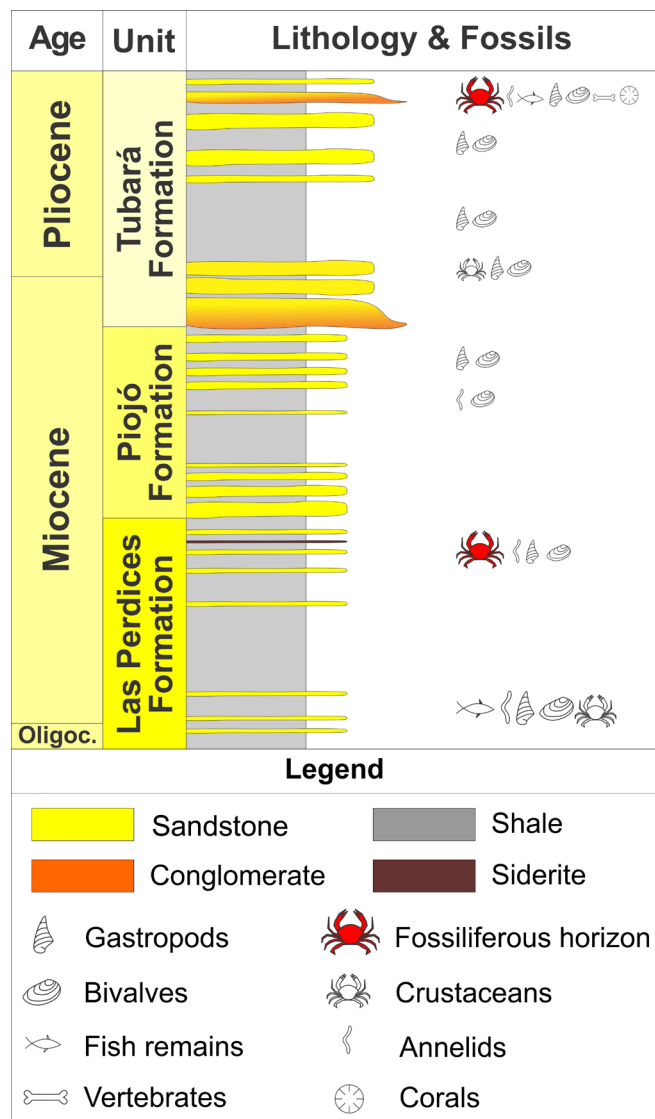
Systematic order is mainly based on de Grave *et al.* (2009).

## 3. Systematic paleontology

Order Decapoda Latreille, 1802  
 Infraorder Axiidea de Saint Laurent, 1979  
 Superfamily Callianassoidea Dana, 1852  
 Family Callianassidae Dana, 1852

Figure 3.1

**Description.** Merus elongated, semirectangular, with sharp longitudinal keel on outer surface; carpus narrow, one-third the length of carpus, smooth outer surface; propodus semirectangular, as high as carpus. The specimens are incomplete to offer a more specific identification.



**Figure 2** Stratigraphic section of Neogene units of Luruaco anticlinorium area (North SJFB province), showing position of horizons containing crustacean specimens.

**Material.** Two incomplete left chelipeds, UN-DG-CR-033 and UN-DG-CR-034. Tubará Formation, Upper Miocene-Pliocene.

**Measurements.** UN-DG-CR-033, length = 33.2 mm, height = 14.2 mm; UN-DG-CR-034, length = 35.4 mm, height = 16.8 mm.

**Comments.** Callianassidae remains are reported from the middle to Late Miocene of Panama (Rathbun, 1918).

Genus *Neocallichirus* Sakai, 1988

*Neocallichirus scotti* (Brown and Pilsbry, 1913)

Figure 3.2, 3.3

**Description.** Right propodus subquadrate, upper and lower margins slightly divergent distally, dorsal and ventral margins smooth, outer surface finely granulated, inner surface smooth; fixed finger elongated, half the length of propodus.

**Material.** One right propodus, UN-DG-CR-035. Tubará Formation, Upper Miocene-Pliocene.

**Measurements.** UN-DG-CR-035, left propodus length = 18.2 mm, height = 15.5 mm.

**Comments.** Right propodus subquadrate, dorsal and ventral margins slightly divergent distally are features that suggest affinity of the Colombian specimens to *Neocallichirus scotti*, reported also from the Miocene of Panama (Culebra and Gatun formations) (Rathbun, 1919).

Subfamily Callichirinae Manning and Felder, 1991

Genus *Glypturus* Stimpson, 1866

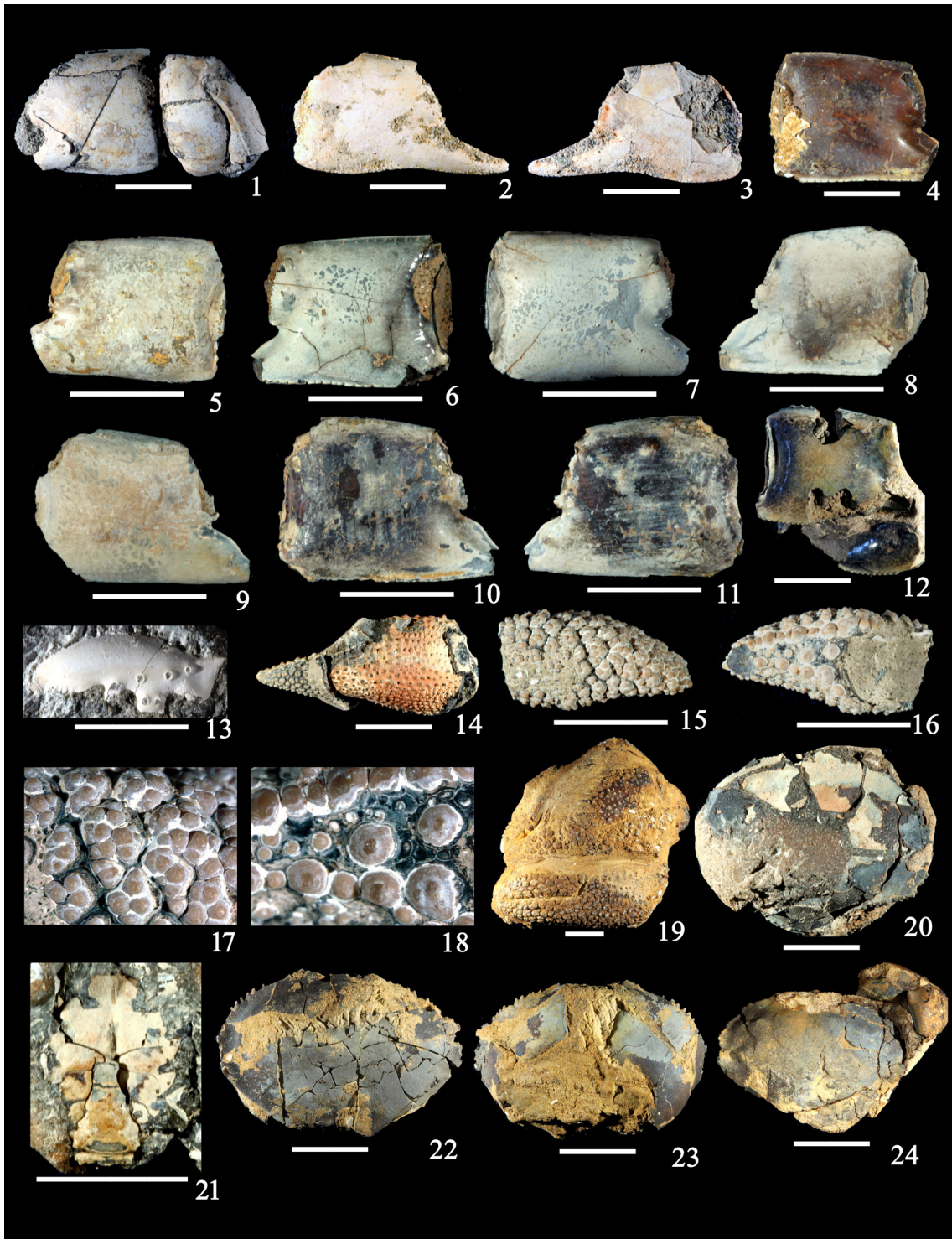
*Glypturus toulai* (Rathbun, 1919)

Figure 3.4 – 3.13

**Description.** Merus subovate, with serrate lower margin; propodus nearly as long as high, serrated ventral margin, traces of spines on dorsal margin, inner and outer surfaces smooth, outer portion of anterior margin bears few small tubercles; fixed finger short, with sharp ridge on posterior portion; left dactylus with few tubercles on proximal portion, serrated on distal portion of occlusal surface.

**Material.** Three left propodi (one includes merus), two right propodi and one left dactylus, UN-DG-CR-036 to UN-DG-CR-041. Tubará Formation, Upper Miocene – Pliocene.

**Measurements.** UN-DG-CR-036, left propodus length = 18.2 mm, height = 15.5 mm; UN-DG-CR-037, right propodus length = 17.7 mm, height = 14.6 mm; UN-DG-CR-038, right propodus length = 19.8 mm, height = 11.5 mm; UN-DG-CR-039, left propodus length = 19.2 mm, height = 12.5 mm; UN-DG-CR-040, left propo-



**Figure 3** 1, Callianassidae, left merus, carpus and propodus UN-DG-CR-033. 2, 3, *Neocallichirus scotti* (Brown and Pilsbry, 1913), right propodus UN-DG-CR-035. 4, 5, *Glypturus toulai* (Rathbun, 1919), 4, 5, left propodus UN-DG-CR-036; 6-11, right propodus UN-DG-CR-037 to UN-DG-CR-039; 12, left merus and propodus UN-DG-CR-040; 13, left dactylus UN-DG-CR-041. 14-19, *Petrochirus bouvieri* Rathbun, 1919, 14, left propodus and dactylus UN-DG-CR-042; 15-18, left dactylus and close-ups of cuticle ornament and occlusal surface UN-DG-CR-043; 19, left and right chelae UN-DG-CR-044. 20-24, *Hepatus lineatinus* Collins and Todd in Todd and Collins, 2005; 20, 21, dorsal and ventral carapace with sternum and abdomen UN-DG-CR-045; 22, 23, dorsal and ventral carapace UN-DG-CR-046; 24, dorsal carapace with right cheliped UN-DG-CR-047. All specimens from the Tubará Formation, Upper Miocene-Pliocene. Scale bars = 10 mm.

length = 20.1 mm, height = 10.3 mm; UN-DG-CR-041, left dactylus length = 12.5 mm, height = 5.1 mm.

**Comments.** Propodus serrated ventral margin and traces of spines on dorsal margin, suggest affinities of the new specimens with *Glypturus toulai* (Rathbun, 1919), which is reported from the Lower to Upper Miocene of Panama (Culebra and Gatun formations, respectively) (Rathbun, 1919; Todd and Collins, 2005; Hyžný *et al.*, 2013; Klompmaker *et al.*, 2016).

Infraorder Anomura MacLeay, 1838  
 Superfamily Paguroidea Latreille, 1802  
 Family Diogenidae Ortmann, 1892  
 Genus *Petrochirus* Stimpson, 1858  
*Petrochirus bowieri* Rathbun, 1919  
 Figure 3.14 – 3.19

**Description.** Left and right chelae covered by strong tubercles; right chela as long as left chela but twice its height; right propodus curved, dactylus triangular, with short spines on dorsal surface, covered by strong multituberculated ornament, occlusal surface covered by strong granules of diverse size, fixed finger two-thirds the length of dactylus, covered by strong multituberculated ornament; left propodus slightly inflated, propodus slightly shorter than fixed finger, dactylus as long as fixed finger, both densely ornamented with multituberculated granules.

**Material.** One left propodus, one right dactylus and a pair of chelae, UN-DG-CR-042 to UN-DG-CR-044. Tubará Formation, Upper Miocene – Pliocene.

**Measurements.** UN-DG-CR-042, left propodus length = 24.6 mm, height = 9.8 mm; UN-DG-CR-043, right dactylus length = 13.8 mm, width = 7.8 mm; UN-DG-CR-044, pair of chelae, right propodus length = 42.1 mm, height = 24.3 mm, right dactylus length = 18.9 mm, height = 9.7 mm, left propodus length = 45.2 mm, height = 12.6 mm, dactylus length = 25.7 mm, height = 11.2 mm.

**Comments.** Shape of chelae and strong tubercles ornamentation indicates affinity of the study specimens with *Petrochirus bowieri*, reported also from the Miocene of Panama (Gatun and Chagres formations) (Rathbun, 1919; Todd and Collins, 2005).

Infraorder Brachyura Latreille, 1802  
 Family Aethroidea Dana, 1851  
 Genus *Hepatus* Latreille, 1802  
*Hepatus lineatinus* Collins and Todd in Todd and Collins, 2005  
 Figure 3.20 – 3.24

**Description.** Carapace of medium size, transversely subovate, one-third wider than long, multiple short spines on anterolateral margin, about two-thirds the maximum carapace length, posterolateral margin covered by small granules, about half the maximum length, dorsal carapace regions weakly defined, surface covered by fine granules; sternum narrow, last sternites become much narrower; pleon triangular, narrow, fused somites 3 to 5. Right cheliped robust.

**Material.** Three nearly complete carapaces, one (UN-DG-CR-045) preserving sternum and abdomen and one other preserving right cheliped, UN-DG-CR-045 to UN-DG-CR-047. Tubará Formation, Upper Miocene-Pliocene.

**Measurements.** UN-DG-CR-045, carapace with sternum and abdomen, length = 32.1 mm, width = 22.5 mm; UN-DG-CR-046, carapace, length = 18.8 mm, width = 32.4 mm; UN-DG-CR-047, carapace with right cheliped, length = 19.4 mm, width = 25.4 mm.

**Comments.** Size of carapace, cuticle ornamented with fine granules and multiple short spines on anterolateral margins indicate affinity with *Hepatus lineatinus*. This species is reported from the Miocene and Pliocene of Panama (Gatun and Escudo de Veraguas formations) (Todd and Collins, 2005).

Superfamily Hexapodoidea, Miers, 1886  
 Family Hexapodidae Miers, 1886  
 Genus *Palaeopinnixa* Vía-Boada, 1966

*Palaeopinixa perornata* Collins and Morris, 1976

Figure 4.1

**Description.** Carapace small, suboval, twice as wide as long; anterior margin two-thirds of maximum width; anterolateral margin concave, two-thirds of carapace length; posterolateral margin also concave, one-third the carapace length; posterior margin straight, three-fourths the carapace width; cervical groove deeply impressed; remains of finely granulated cuticle are observed on the steinkern of one specimen; protogastric region distinct; cardiac region with two small tubercles; two small swellings on each side of cardiac region; strong chelipeds with inflated palms, pereopods 2 to 4 slender.

**Material.** Two dorsal carapaces and pereopods found in calcareous concretions UN-DG-CR-64 and UN-DG-CR-65. Las Perdices Formation, Lower Miocene.

**Measurements.** UN-DG-CR-64, carapace with articulated pereopods, length = 7.5 mm, width = 11.2 mm; UN-DG-CR-65, carapace with articulated pereopods, length = 7.2 mm, width = 9.5 mm.

**Comments.** The small carapace and traces of finely granular cuticle indicate affinity of the Colombian specimens to *Palaeopinixa perornata*. This species is reported from the early Miocene of Barbados and Trinidad (Collins and Morris, 1976), Venezuela (Feldmann and Schweitzer, 2004; Aguilera *et al.*, 2010) and Mexico (Vega *et al.*, 2009).

Superfamily Leucosioidea Samouelle, 1819

Family Leucosiidae Samouelle, 1819

Subfamily Philyrinae Leach, 1817

Genus *Persephona* Leach, 1817

*Persephona enigmatica* Collins and Todd in Todd and Collins, 2005

Figure 4.2 – 4.6

**Description.** Carapace small, subglobose, posterior portion narrow, with three short posterolateral spines; surface finely granular, ornamented by

relatively coarse granules, evenly spaced. Orbits suboval.

**Material.** One complete and one partial carapaces, UN-DG-CR-048 and UN-DG-CR-049. Tubará Formation, Upper Miocene-Pliocene.

**Measurements.** UN-DG-CR-048, carapace length = 22.1 mm, width = 18.5 mm; UN-DG-CR-049, carapace, length = 8.9 mm, width = 12.5 mm.

**Comments.** The finely granulated cuticle and position, carapace shape and position of the central and two posterolateral spines suggest affinity with this species, also reported from the Pliocene Cayo Agua Formation of Panama (Todd and Collins, 2005).

Superfamily Majoidea Samouelle, 1819

Family Majidae Samouelle, 1819

Subfamily Mithracinae MacLeay, 1838

Genus *Microphrys* H. Milne-Edwards, 1851

*Microphrys* sp.

Figure 4.7

**Description.** Carapace large, broadly pyriform, somewhat depressed, dorsal surface covered by broadly spaced sharp spines, a small marginal spine or tubercle at lateral angle of branchial region.

**Material.** One incomplete carapace, UN-DG-CR-050. Tubará Formation, Upper Miocene-Pliocene.

**Measurements.** UN-DG-CR-050, carapace length = 45.7 mm, width = 38.8 mm.

**Comments.** Carapace subpyriform and dorsal carapace ornament of scattered strong spines, suggest affinity to *Microphrys*. The sole specimen represents the first fossil record for the genus, however more complete specimens are needed in order to offer a detailed specific identification.

Superfamily Portunoidea Rafinesque, 1815

Family Portunidae Rafinesque, 1815

Subfamily Necronectinae Glaessner, 1928

Genus *Necronectes* A. Milne-Edwards, 1881

*Necronectes proavitus* (Rathbun, 1918)

Figure 4.8 – 4.11

**Description.** Carapace medium to large, wider than long, dorsal surface weakly convex transversely, covered by fine granules; carapace regions very weakly developed; frontal margin with four short triangular spines; anterolateral margin convex, longer than posterolateral margin, with eight to nine acute triangular spines; posterolateral margin weakly concave; posterior margin one-fourth the maximum carapace width; thoracic sternites narrow, sternites three and four fused, fourth sternites triangular; lateral sternal process well defined, strongly concave and curving around anterolateral angle of fifth somite, two straight marginal faces distally; fifth sternites separated from anterior sternal plate by distinct groove; abdomen triangular, wider at level of fused somites 3 – 5, proximal abdominal somites reduced, carried in subvertical position; buccal cavity rectangular, wider than long; third maxillipeds do not cover axial portion of cavity; no pereiopods or chelipeds preserved.

**Material.** Five incomplete carapaces, UN-DG-CR-052 to UN-DG-CR-056. Tubará Formation, Upper Miocene-Pliocene.

**Measurements.** UN-DG-CR-052, carapace length = 33.3 mm, width = 54.2 mm; UN-DG-CR-053, carapace length = 43.3 mm, width = 62.3 mm; UN-DG-CR-054, carapace length = 23.3 mm, width = 32.3 mm; UN-DG-CR-055, carapace length = 24.1 mm, width = 34.8 mm; UN-DG-CR-056, carapace length = 12.5 mm, width = 22.7 mm.

**Comments.** Shape and size of carapace, anterolateral margin convex, longer than posterolateral margin, with eight to nine acute triangular spines, are features observed in the new specimens from Colombia that suggest affinity with this species, previously reported from the Miocene of Puerto Rico, Panamá, Venezuela and Ecuador (Roberts, 1975; Schweitzer *et al.*, 2006; Collins *et al.*, 2009; Cáceres *et al.*, 2016).

Genus *Scylla* De Haan, 1833*Scylla* sp.

Figure 4.12, 4.13

**Description.** Carapace wider than long, regions poorly defined, carapace covered by fine granules; anterolateral margins curved, with at least seven spines; female abdominal somites 3 – 5 fused, wide.

**Material.** One incomplete carapace, UN-DG-CR-051. Tubará Formation, Upper Miocene-Pliocene.

**Measurements.** UN-DG-CR-051, carapace length = 38.5 mm, width = 28.5 mm.

**Comments.** The single specimen resembles *Scylla costata* Rathbun, 1919, from the Oligocene – Miocene of Puerto Rico and Haiti, in shape and number of spines on anterolateral margin, but more complete specimens are to be found in order to confirm this affinity.

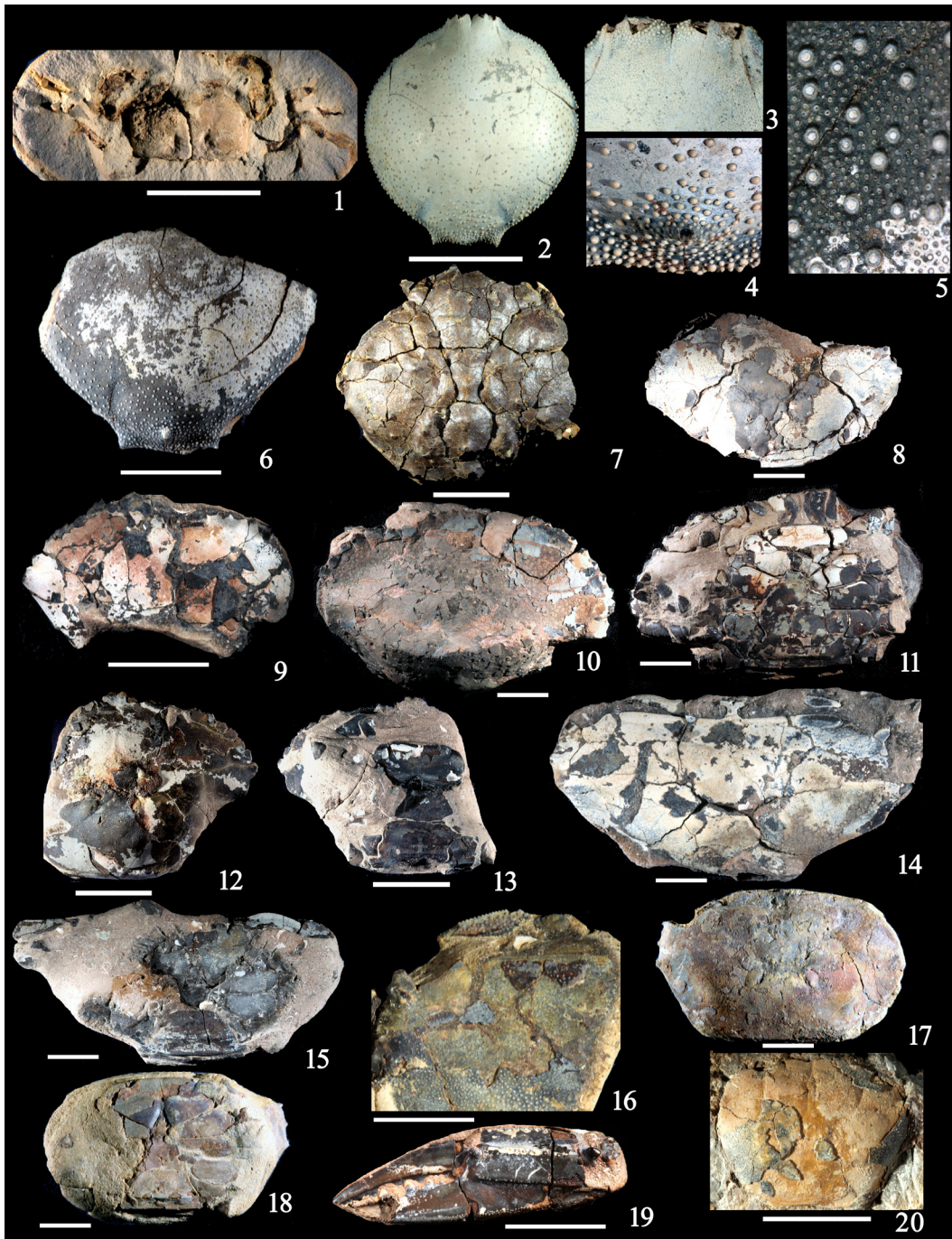
Subfamily Podophthalminae Dana, 1851

Genus *Euphyllax* Stimpson, 1860*Euphyllax maculatus* Collins and Todd in Todd and Collins, 2005

Figure 4.14 – 4.19

**Description.** Carapace transversely subovate, length about two-thirds the maximum width, slightly arched transversely, in longitudinal section it rises to rounded protogastric region; cardiac and branchial regions elevated; orbitofrontal margin equals entire carapace width; rostrum wide, T-shaped and deeply constricted at its base; granulated upper orbital margins; anterolateral margins straight, shorter than sinuous posterolateral margins, with four anterolateral short spines; epi-branchial ridge distally bounded by double row of granules; hepatic, mesogastric and lateral parts of the metabranchial lobes are depressed, other lobes weakly tumid; thoracic sternite 3 subhexagonal, weakly concave anteromedially; sternite 4 sub-





**Figure 4** 1, *Palaeopinnixa perornata* Collins and Morris, 1976, Las Perdices Formation, Lower Miocene, dorsal carapace and pereiopods UN-DG-CR-64. 2-6, *Persephona enigmatica* Collins and Todd in Todd and Collins, 2005, Tubará Formation, Upper Miocene-Pliocene, 2-4, dorsal carapace and close-ups of anterior and posterior portions of cuticle UN-DG-CR-048; 5, 6, close-up of cuticle and incomplete dorsal carapace UN-DG-CR-049. 7, *Microphrys* sp., Tubará Formation, Upper Miocene-Pliocene, incomplete dorsal carapace UN-DG-CR-050. 8-11, *Necronectes proavitus* (Rathbun, 1918), Tubará Formation, Upper Miocene-Pliocene, 8, incomplete dorsal carapace UN-DG-CR-052; 9, small, incomplete dorsal carapace UN-DG-CR-056; 10, 11, nearly complete dorsal and ventral carapace UN-DG-CR-053. 12, 13, *Scylla* sp., Tubará Formation, Upper Miocene-Pliocene, incomplete dorsal and ventral carapace UN-DG-CR-051. 14-19, *Euphylax maculatus* Collins and Todd in Todd and Collins, 2005, Tubará Formation, Upper Miocene-Pliocene, 14, 15, nearly complete dorsal and ventral carapace UN-DG-CR-058; 16, close-up of left anterolateral portion of incomplete carapace, showing dorsal cuticle of left propodus UN-DG-CR-060; 17, 18, incomplete dorsal and ventral carapace UN-DG-CR-061; 19, left chela UN-DG-CR-057. 20, *Eurytium* sp., Tubará Formation, Upper Miocene-Pliocene, incomplete dorsal carapace UN-DG-CR-063. Scale bars = 10 mm.

trapezoidal, 3 remainder sternites peltoid, becoming narrow towards posterior portion of carapace; male abdomen triangular, wider at level of fused abdominal somites 3 – 5, proximal abdominal somites reduced; female abdomen semicircular, widest at level of somite 3; chelae of similar size and shape, fingers flattened, tricuspidate, dactylus ridged medially, fixed finger ridged along basal margin; dorsal margin of left palm, covered by granules, arranged in longitudinal rows on lateral margins; left palm with three longitudinal keels on outer surface, strong tubercle near junction with carpus.

**Material.** One complete and four incomplete carapaces UN-DG-CR-057 to UN-DG-CR-061, Tubará Formation, Upper Miocene-Pliocene.

**Measurements.** UN-DG-CR-057, carapace length = 29.3 mm, width = 46.1 mm; UN-DG-CR-058, carapace length = 41.8 mm, width = 66.5 mm; UN-DG-CR-059, carapace length = 20.3 mm, width = 41.4 mm; UN-DG-CR-060, carapace length = 20.1 mm, width = 25.1 mm; UN-DG-CR-061, carapace length = 32.3 mm, width = 38.9 mm.

**Comments.** Subhexagonal carapace shape, presence of four anterolateral spines and shape and ornamentation of chelae suggest affinity of the Colombian specimens to this species. The species is reported from the Miocene-Pliocene of Panamá and the Pleistocene of Costa Rica (Todd and Collins, 2005).

Superfamily Xanthoidea MacLeay, 1838  
 Family Panopeidae Ortmann, 1893  
 Subfamily Panopeinae Ortmann, 1893  
 Genus *Eurytium* Stimpson, 1859

*Eurytium* sp.  
 Figure 4.20

**Description.** Carapace of medium size, subhexagonal, wider than long, widest at midlength; cuticle with granules of uniform size; anterior margin two-thirds maximum width, orbits semicircular, small, rimmed, front subrectangular, projected

beyond orbits, with median groove; anterolateral margin concave, half the length of carapace; posterolateral margin slightly concave, half the length of carapace; posterior margin straight, narrow, one-third carapace width; protogastric region inverted-subtriangular; mesogastric region subpentagonal, with a narrow process that extends only to base of rostrum; urogatric region depressed, narrow; cardiac region subtrapezoidal; mesobranchial region semioval, inclined; metabranchial region a raised platform; cervical groove deeply impressed.

**Material.** One incomplete carapace UN-DG-CR-063, Tubará Formation, Upper Miocene-Pliocene.

**Measurements.** UN-DG-CR-063, carapace length = 19.2 mm, width = 17.9 mm.

**Comments.** The specimen resembles *Eurytium granulatum* Schweitzer, Velez-Juarbe, Martinez, Hull, Feldmann, and Santos, 2008, from the Miocene of Puerto Rico, in size, shape and ornament of carapace, but more complete specimens are needed to confirm this affinity.

## 4. Conclusions

The new crustacean assemblage from the Neogene of the Caribbean of Colombia represents an important addition to the fossil decapod diversity of Colombia. The shallow marine to estuarine crustacean assemblage reinforces recent interpretations of shallow facies for the Las Perdices and Tubará formations, previously interpreted as composed by deep marine sediments. Due to the numerous reports on fossil decapods from the Caribbean, it is possible to document a strong paleobiogeographic affinity with Neogene (Miocene-Pliocene) crustacean assemblages from Panama, Puerto Rico and Costa Rica.

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