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Some new crab records (Crustacea: Decapoda) from the late Pleistocene Port Morant Formation of southeast Jamaica

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Abstract

The crab fauna of the siliciclastic Port Morant Formation (late Pleistocene), parish of St. Thomas, southeast Jamaica, is supplemented by carapace fragments and/or chelae that are either new to the Jamaican fossil record or which complement previous data. A new subspecies, *Eriphia gonegra xaymacaensis*, is distinguished by having a distinctive pattern of tuberculation on the propodus. The land crab *Cardisoma guanhumi* Latreille is introduced as a fossil in Jamaica. The stratigraphic and geographic ranges of *Raninoides louisianensis* Rathbun and *Nanoplax* sp. cf. *N. xanthiformis* (A. Milne Edwards) are extended.

Key words: Crustacea, Decapoda, Pleistocene, Jamaica.

Introduction

Crabs from the late Pleistocene Port Morant Formation of southeast Jamaica were discussed in detail by Collins, Donovan & Dixon (1996), in which 17 species belonging to 15 genera were discussed. Subsequent visits to this locality, at which the exposure is continually being modified by wave erosion, have produced a new collection which, while small in numbers, considerably enhances our knowledge of crabs from this deposit. Most of these new collections were made during preparations for, and on, a Geological Society of Jamaica field excursion in April 1997 (Donovan, Pickerill & Mitchell, 1997). Among new records is the raninid *Raninoides louisianensis* Rathbun, 1933, the first fossil raninid to be recorded from the Quaternary of Jamaica; this extant species has not previously been recorded from the island and is, apparently, restricted at the present time to the Gulf of Mexico (Rathbun, 1937). Hitherto, the Raninidae had been represented in Jamaica only by the Campanian(?) *Notopocorystes* (*Cretacoranina*) *trechmanni* Withers, 1927. Provisionally recorded as *Eriphia* sp. from the Pliocene Bowden shell bed (Collins & Portell, 1998), a well-preserved propodus allows description of a new subspecies, *Eriphia gonegra xaymacaensis* ssp. nov. This has characters in common, not only with the nominate species, which ranges from North Carolina to Patagonia, but also with its Pacific coast analogue; by so doing, this subspecies joins the growing number of fossil species of crabs recorded from Jamaica with similar geographic propensities. *Nanoplax* sp. cf. *N. xanthiformis* (A. Milne Edwards, 1880), not hitherto recorded from Jamaica, is the first member of this genus to be recorded from the Port Morant Formation. Also new to the Jamaican fossil record are claw fragments that are attributable to the land crab *Cardisoma guanhumi* Latreille, 1825. Carapace fragments of *Hexapanopeus*

sp. cf. *H. caribbaeus* (Stimpson, 1871), and *Panopeus* sp. cf. *P. herbstii* H. Milne Edwards, 1834, strengthen the evidence for these species in the Port Morant Formation, as does a dactylus of *Panopeus rugosus* A. Milne Edwards, 1880. A merus referred to *Mithrax* sp. is closest to *M.* (*M.*) *pilosus* Rathbun, 1892.

Locality and Horizon

The specimens documented herein were collected from the late Pleistocene Port Morant Formation, Upper Coastal Group, exposed in a coastal section on the southeast side of Port Morant Bay, south of Old Pera, parish of St. Thomas, southeast Jamaica (between grid references 221 354 and 222 354, Jamaican 1:50,000 topographic sheet 19 "Morant Bay", metric (new) edition; about 76°19'9"W, 17°53'0"N; see Collins *et al.*, 1996, figs 1, 2). Concise accounts of the stratigraphy of this section are given in Collins *et al.* (1996) and Donovan *et al.* (1997).

Systematic Palaeontology

Order Decapoda Latreille, 1803
Infraorder Brachyura Latreille, 1803
Section Archaeobrachyura Guinot, 1977
Superfamily Raninoidea de Haan, 1841
Family Raninidae de Haan, 1841
Subfamily Raninoidinae de Haan, 1841
Genus *Raninoides* H. Milne Edwards, 1837

Raninoides louisianensis Rathbun, 1933
(Pl. 14, Fig. 3)

Material: Upper left hand quadrant of a carapace, BMNH IC 99.

Remarks: Although fragmentary, the carapace retains an almost complete outer orbital spine, with a diminutive inner spine, and a short sinus between this and the straight sided spine next to the submedian one. These characters were considered by Rathbun (1937) to distinguish this species from *Raninoides loevis* Latreille, 1825.

The present range of *R. louisianensis* is apparently restricted to the Gulf of Mexico, where it has been taken from a depth of 68 fathoms (*circa* 130 m) (Rathbun, 1937).

Section Heterotremata Guinot, 1977
Superfamily Xanthoidea MacLeay, 1838
Family Xanthidae MacLeay, 1838
Genus *Eriphia* Latreille, 1817

Type species: *Eriphia spinifrons* (Herbst, 1785), by subsequent designation of H. Milne Edwards (1837).

Eriphia gonagra (Fabricius, 1781)
Eriphia gonagra xaymacaensis ssp. nov.
(Pl. 14, Figs. 4, 5)

Derivation of name: From Jamaica.

Material: Holotype, a right propodus, BMNH IC 100.

Description: Manus subquadrate, almost as long as high. Outer surface well-rounded with four large, flat, squamiform tubercles along the gently convex upper margin and four tubercles, spaced alternately below, are followed by one row of four and another of five slightly smaller tubercles set either side of the lower articulating facet; a fifth, weaker row continues in line with the fixed finger and the area below is smooth (Pl. 14, Fig. 4). There is a weak depression before the fixed finger, which is about half the length of the manus and rather more than one third its height; a median groove extends almost its entire length. The third cusp on the opposing margin is largest. The straight interdigital margin is inclined slightly backwards and the carpal margin obliquely forwards. A short proximal 'ridge' of three granules overhangs an otherwise smooth, moderately convex inner surface.

Remarks: The above description is given to highlight the slight differences from the specimen of *E. g. gonagra* figured by Rathbun (1930, pl. 202). There is an overall similarity of BMNH IC 100 to that of *E. g. gonagra*, which differs in having an extra basal row of small tubercles set alternately with those above; a scattering of granules replaces the overhanging 'ridge'. The fixed finger of *E. g. gonagra* is half the height of the manus and its median groove is concave rather than straight. This groove is also straight on *Eriphia squamata* Rathbun, 1930, the Pacific analogue

of *E. g. gonegra*, which also has, though less well developed, the additional, lowermost row of tubercles on the manus. It differs further from *E. g. gonagra* and *E. g. xaymacaensis* in having a smooth area immediately bordering the interdigital margin.

Three dactyli from the underlying, late Pliocene, Bowden shell bed were assigned to *Eriphia* sp. by Collins & Portell (1998), who considered them to be probably the first fossil record of the genus in the Caribbean region. Rathbun (1930) recorded specimens taken from a "Brackish pond near shore" and from a nearby coral reef near Bogue Islands.

Genus *Hexapanopeus* Rathbun, 1898

Hexapanopeus sp. cf. *H. caribbaeus* (Stimpson, 1871)
(Pl. 14, Fig. 6)

Material: The upper left hand quadrant of a carapace, BMNH IC 102.

Remarks: This species was previously recorded from the Port Morant Formation based on a right chela (Collins *et al.*, 1996, pl. 16, figs. 2, 3). This species lives among sponges and algae in brackish water, between mangrove roots and with corals (Rathbun, 1930).

Genus *Nanoplax* Guinot, 1967

Nanoplax sp. cf. *N. xanthiformis* (A. Milne Edwards, 1880)
(Pl. 14, Fig. 1)

Material: A carapace, BMNH IC 98.

Remarks: The subquadrate outline of the carapace agrees with *N. xanthiformis*, but differs in the absence of hepatic 'ridges'. Although not recorded from Jamaica by Rathbun (1930), she noted the range of this species to be from Cape Hatteras, North Carolina to Cape Frio, Brazil, in water depths between 8.5–182 fathoms (*circa* 16.5–360 m).

Morphologically similar *Micropanope* sp. cf. *M. nuttingi* (Rathbun, 1898) and *Micropanope* sp. cf. *M. spinipes* A. Milne Edwards, 1880, both occur in the late Pliocene Bowden shell bed (Collins & Portell, 1998) and the latter species is also known from the late Pleistocene Falmouth Formation (Morris, 1993).

Genus *Panopeus* H. Milne Edwards, 1834

Panopeus sp. cf. *P. herbstii* H. Milne Edwards, 1834
(Pl. 14, Fig. 2)

Material: An upper left quadrant of a carapace, BMNH IC 97.

Remarks: This carapace augments the chelae recorded from the late Pliocene Bowden shell bed, and the late Pleistocene Port Morant and Falmouth Formations (Collins *et al.*, 1996; Collins & Portell, 1998; Morris, 1993). It differs from the figures of Rathbun (1930) in that the mesogastric 'ridge' is lacking and (as it is in some of the 'forms' figured by Rathbun, 1930) the first anterolateral spine appears to be more distant from the outer orbital spine.

Panopeus rugosus A. Milne Edwards, 1880
(Pl. 14, Fig. 8)

Material: A left dactylus, BMNH IC 101.

Remarks: This dactylus appears typical of the minor chelae. It augments the record of this species in the Port Morant Formation previously represented by a right propodus, the inner surface of which was inadvertently figured as the outer by Collins *et al.* (1996, pl. 18, fig. 4). Although an inhabitant of the West Indies, the species was not recorded from Jamaican waters by Rathbun (1930), nor has it been found in the Bowden shell bed and Falmouth Formation.

Superfamily Majoidea Samouelle, 1819
Family Majidae Samouelle, 1819
Subfamily Mithracinae Balss, 1929
Genus *Mithrax* Desmarest, 1823
Subgenus *Mithrax* (*Mithrax*) Desmarest, 1823

Mithrax sp.
(Pl. 14, Fig. 7)

Material: A merus, BMNH IC 107.

Remarks: Two extant species of the subgenus

Mithrax (*Mithrax*), *M.* (*M.*) *hispidus* (Herbst, 1790) and *M.* (*M.*) *verrucosus* H. Milne Edwards, 1832, were recorded from the Port Morant Formation, on the basis of chelae parts, by Collins *et al.* (1996). Rathbun (1897, 1899) documented a further three living species from Jamaica. The recently found merus - probably a 1st pereiopod - more closely resembles that segment of *Mithrax* (*Mithrax*) *pilosus* Rathbun, 1892, a Caribbean species not recorded from Jamaica by Rathbun (1925). However, the single specimen, though finely preserved, is not considered sufficient evidence to confidently establish that species in the fossil record of Jamaica.

Section Thoracotremata Guinot, 1977
Family Gecarcinidae MacLeay, 1838

Genus *Cardisoma* Latreille, 1825

Cardisoma guanhumi Latreille, 1825
(Pl. 14, Figs. 10-13)

Material: Two fragmentary dactyli (left and right), a partial fixed finger and a near-complete fixed finger, BMNH IC 103-106. For comparison, the right dactylus of a modern specimen from Jamaica is figured (BMNH IC 108; Pl. 14, Fig. 9).

Remarks: This markedly heterochelous species was previously recorded from a fixed finger from the Pliocene Port Limon Formation, city of Port Limon, Costa Rica (Rathbun, 1919). The newly-found limb fragments from the Port Morant Formation, which are some four times larger than the Costa Rican specimen, provide the first published evidence of *Cardisoma guanhumi* from the fossil record of Jamaica, although a further dactylus is known from a late Pleistocene fissure fill deposit in eastern Jamaica (Donovan & Dixon, research in progress). These crabs range through the Caribbean region south to Brazil (Rathbun, 1918). The habitat of this large species is in burrows in open fields, in forests, in bush covered hills and on the margins of swamps (Rathbun, 1918); they also take readily to pools and rivers (Chace & Hobbs, 1969). Rathbun (1918) further stated of these crabs, "they are said to repair to sea during the mating season", an annual occurrence which no doubt, at least partially, accounts for their apparent scarcity in the Port Morant Formation.

Previous reports of the occurrence of this species in West Africa should be referred to *Cardisoma armatum* Herklots, 1851 (Manning & Holthuis, 1981, amongst others).

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Plate 14

Fig. 1. *Nanoplax* sp. cf. *N. xanthiformis* (A. Milne Edwards, 1880), BMNH IC 98, carapace.

Fig. 2. *Panopeus* sp. cf. *P. herbstii* H. Milne Edwards, 1834, BMNH IC 97, upper left quadrant of a carapace.

Fig. 3. *Raninoides louisianensis* Rathbun, 1933, BMNH IC 99, the upper left hand quadrant of carapace.

Figs. 4, 5. *Eriphia gonagra xaymacaensis* ssp. nov., holotype, BMNH IC 100, a right propodus, outer (4) and inner (5) surfaces.

Fig. 6. *Hexapanopeus* sp. cf. *H. caribbaeus* (Stimpson, 1871), BMNH IC 102, the upper left hand quadrant of a carapace.

Fig. 7. *Mithrax* sp., BMNH IC 107, a spinose merus.

Fig. 8. *Panopeus rugosus* A. Milne Edwards, 1880, BMNH IC 101, a left dactylus.

Fig. 9. *Cardisoma guanhumi* Latreille, 1825, BMNH IC 108, Recent, Jamaica (precise locality unknown, specimen bought from roadside vendor). Right dactylus, inner surface, ×1.1.

Figs. 10–13. *Cardisoma guanhumi* Latreille, 1825.

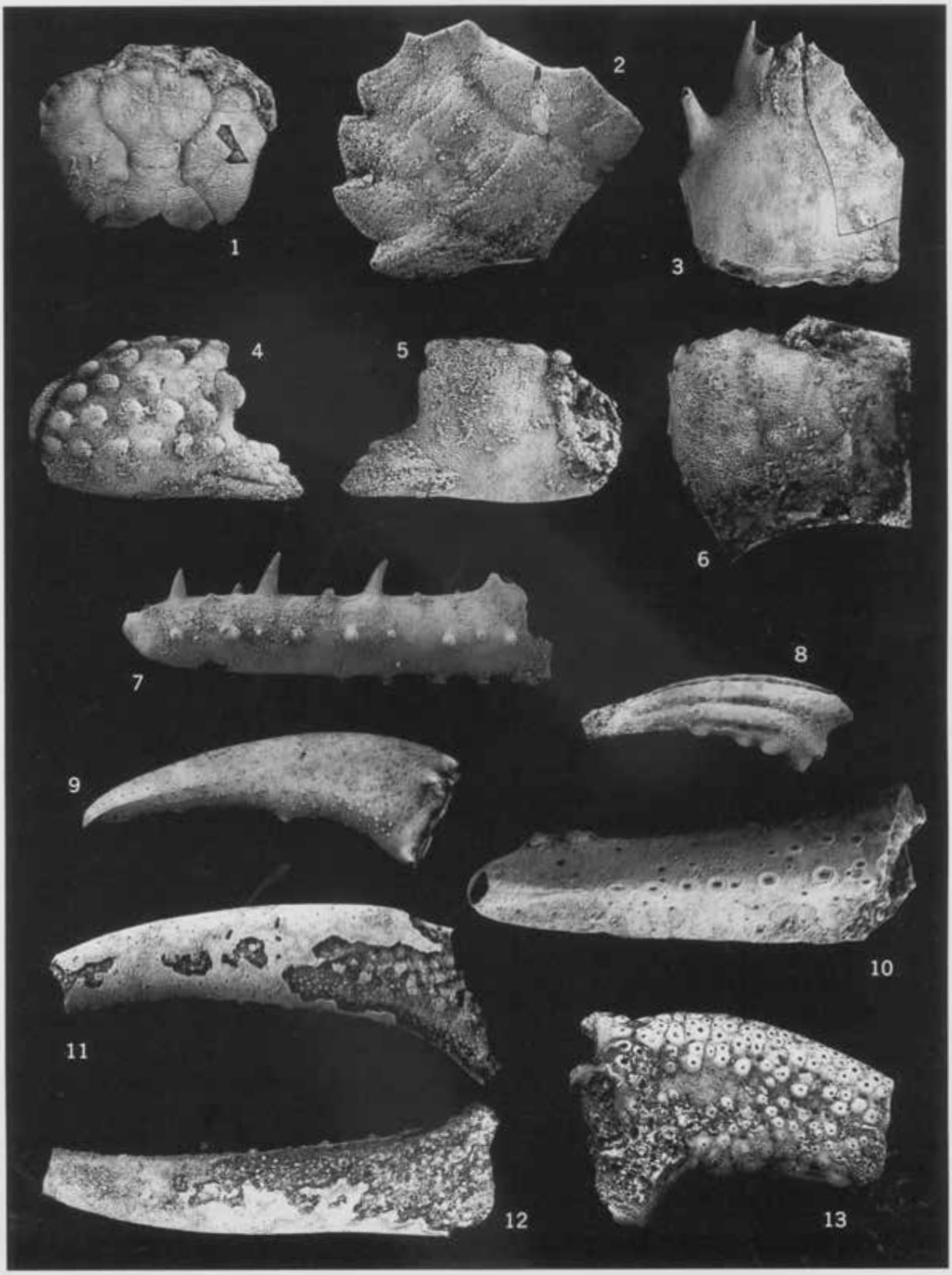
Fig. 10. BMNH IC 105, distal tip of right fixed finger, inner surface.

Fig. 11. BMNH IC 104, right dactylus, outer surface, ×1.3.

Fig. 12. BMNH IC 103, left fixed finger, outer surface, ×1.2.

Fig. 13. BMNH IC 106, decorticed base of left dactylus, inner surface.

All specimens are from the late Pleistocene Port Morant Formation of southeast Jamaica unless stated otherwise. Figs. 1–6 are ×2.7; Figs. 7, 8, 10, 13 are ×2.8. All specimens coated with ammonium chloride sublimate.


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