Cretaceous and Cenozoic decapod crustaceans of Jamaica

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Abstract

In the last decade, a rebirth in interest of Jamaican fossil crustaceans has occurred. A summary of known material is provided together with some indications of the directions that future studies should take.

Introduction

The past ten years have seen a renaissance in the study of the fossil shrimps and crabs of Jamaica. Previously, the only publications on the island's decapod crustaceans were a trio of papers by Withers (1922, 1924, 1927), which described taxa from the Upper Cretaceous and Eocene. After this flurry of activity in the 1920s, Jamaican fossil shrimps and crabs were largely ignored until the late 1980s, when Ms Carla Gordon of the University of the West Indies (UWI) collected abundant fragmentary material from the Falmouth Formation (Late Pleistocene, last interglacial). This material formed a significant part of the new collections reported on by Morris (1993) in the first paper on Jamaican crabs in 66 years. Since then the authors, aided by Mr H.L. Dixon (formerly UWI) and other collectors, have been describing the locally abundant decapod remains found in Miocene and younger deposits of the island (Collins et al., 1997, 2001; Collins & Donovan, 1998; Collins & Portell, 1998; Donovan & Dixon, 1998; Portell & Collins, in press). Our current knowledge of Jamaican fossil shrimps and crabs is summarized in Table 1, to which should be added the indeterminate specimens listed in

Morris (1993) and new, but as yet undescribed, collections mentioned below.

Overview of material

The range of depositional settings shown by the decapod-bearing units studied by the authors precludes any suggestion of a recurrent mode of preservation. Complete carapaces are rare, except in the Lower Miocene Montpelier Formation, where a diverse fauna has been collected within slide blocks of scleractinian corals. Although derived from a shallow-water setting, they are preserved in deep-water chalks (Portell & Collins, in press), with a depositional depth in excess of 200 m (Underwood & Mitchell, in press). Of particular interest here is the presence of the symbiotic genus *Trapezia* Latreille, a genus commensal with pocilloporid scleractinians, a group of corals no longer present in the Caribbean (with the exception of *Madracis*). Other deposits include the Bowden shell bed (submarine mass flow, laid down in 100-200 m water depth; Pickerill et al., 1998) of Late Pliocene age, the raised reef of the Late Pleistocene Falmouth Formation (Larson, 1983), coeval shallow-water siliciclastic lagoonal deposits of the Port Morant Formation (Mitchell et al., 2001) and a land crab claw in a fissure fill of terra rosa (Donovan & Dixon, 1998).

That the early studies of Withers gave an incorrect impression of the true stratigraphic and taxonomic diversity of Jamaican decapod crustaceans was determined by the research interests of the

Table 1. Fossil shrimps and crabs from the Cretaceous and Cenozoic of Jamaica; Morris (1993) listed localities and horizons that have yielded indeterminate crab specimens. Data from Morris (1993) unless stated otherwise. Higher classification follows Martin & Davis (2001). Key: + = present; cf. = confer; aff. = affinity (see Bengtson, 1988, for a discussion of cf. and aff. in open nomenclature); 1 = Upper Cretaceous (horizon unknown); 2 = 'Veniella Shales' (Campanian); 3 = Guinea Corn Formation (Campanian-Maastrichtian); 4 = Chapelton Formation, Yellow Limestone Group (Early-Middle Eocene); 5 = White Limestone Group formation unknown (Eocene-Oligocene); 6 = Montpelier Formation, White Limestone Group (Early Miocene) (Portell & Collins, in press); 7 = Bowden shell bed, Bowden Formation, Lower Coastal Group (Late Pliocene) (Collins & Portell, 1998); 8 = Old Pera beds, Manchioneal Formation, Upper Coastal Group (Early Pleistocene) (Collins et al., 2001); 9 = Falmouth Formation, Upper Coastal Group (Late Pleistocene); 10 = Port Morant Formation, Upper Coastal Group (Late Pleistocene) (Collins et al., 1997; Collins & Donovan, 1998); 11 = fissure fill (Quaternary) (Donovan & Dixon, 1998). For a general discussion of the geology of Jamaica, see Robinson (1994).

Taxon	1	2	3	4	5	6	7	8	9	10	11
Infraorder Thalassinidea											
Family Callianassidae											
' <i>Callianassa</i> ' spp.				+	+		+		+		
' <i>Callianassa</i> ' <i>gigantea</i> Withers				+							
' <i>Callianassa</i> ' <i>subplana</i> Withers				+							
' <i>Callianassa</i> ' <i>trechmanni</i> Withers				+							
<i>Neocallichirus peraensis</i> Collins et al.										+	
<i>Glypturus acanthochirus</i> Stimpson										+	
Family Ctenochelidae											
<i>Ctenocheles</i> sp.							+				
Infraorder Anomura											
Family Porcellanidae											
<i>Petrolisthes</i> sp.									+		
Family Albuneidae											
<i>Albunea</i> sp.									+		
Family Diogenidae											
<i>Paguristes</i> sp.							+				
<i>Petrochirus</i> sp.									+		
<i>Petrochirus bahamensis</i> (Herbst)							cf.			+	
Infraorder Brachyura											
Family Dromiidae											
<i>Kromtitis</i> sp. nov.						+					
Family Dynomenidae											
<i>Dynomene</i> sp. nov.						+					
Family Raninidae											
<i>Cretacorantina trechmanni</i> (Withers)			+								
<i>Raninoides louisianensis</i> Rathbun										+	
Family Calappidae											
<i>Calappa gallus</i> (Herbst)									cf.		
<i>Calappa springeri</i> Rathbun							aff.			+	
Family Hepatidae											
<i>Eriosachila bartholomaeensis</i> (Rathbun)				+							
<i>Hepatus</i> sp.							+				
<i>Hepatus praecox</i> Collins et al.										+	
Family Necrocarcinidae											
<i>Necrocarcinus</i> sp.		+									
<i>Paranecrocarcinus?</i> sp.		+									
Family Leucosiidae											
leucosiid gen. et sp. nov.						+					
<i>Persephona punctata punctata</i> (Linné)							aff.			+	
<i>Uhllias limbatus</i> Stimpson									cf.		
Family Mithracidae											
<i>Mithraculus forceps</i> A. Milne Edwards									cf.		
<i>Mithrax</i> sp.							+			+	

Table 1. Continued.

Taxon	1	2	3	4	5	6	7	8	9	10	11
<i>Mithrax</i> sp. nov. A						+					
<i>Mithrax</i> sp. nov. B						+					
<i>Mithrax caribbaeus</i> Rathbun									cf.		
<i>Mithrax hispidus</i> (Herbst)										+	
<i>Mithrax spinosissimus</i> Lamarck									+		
<i>Mithrax verrucosus</i> H. Milne Edwards										+	
<i>Teleophrys</i> sp. nov.						+					
Family Pisidae											
<i>Chlorilia</i> sp.							aff.				
<i>Hyas</i> sp.							aff.				
<i>Rochinia</i> sp.							aff.				
Family Tychidae											
<i>Pitho</i> sp.							+				
<i>Pitho anisodon</i> (von Martins)										+	
Family Dairidae											
<i>Daira</i> sp. nov.						+					
Family Parthenopidae											
<i>Mesorhoea sexspinosus</i> Stimpson							aff.				
<i>Platylambrus</i> sp.							+				
Family Cancridae											
<i>Cancer</i> sp.							aff.				
Family Portunidae											
<i>Callinectes jamaicensis</i> Withers				+							
<i>Callinectes sapidus</i> Rathbun							aff.				
<i>Callinectes toxodes</i> Ordway										cf.	
<i>Euphylax fortispinosus</i> Collins et al.								+			
<i>Ovalipes</i> sp.							aff.				
<i>Portunus</i> sp.						+					
portunid gen. et sp. nov.							+				
Family Carcineretidae											
<i>Carcineretes woolacotti</i> Withers			+								
Family Carpiliidae											
<i>Carpilius corallinus</i> Herbst										+	
Family Goneplacidae											
<i>Nanoplax xanthiformis</i> (A. Milne Edwards)										cf.	
Family Panopeidae											
<i>Eurypanopeus</i> sp.							+				
<i>Eurypanopeus abbreviatus</i> (Stimpson)									+		
<i>Eurypanopeus depressus</i> (Smith)										cf.	
<i>Hexapanopeus caribbaeus</i> (Stimpson)										cf.	
<i>Lophopanopeus</i> sp. nov. A						+					
<i>Lophopanopeus</i> sp. nov. B						+					
<i>Micropanope nuttingi</i> (Rathbun)							aff.				
<i>Micropanope polita</i> Rathbun									cf.		
<i>Micropanope spinipes</i> A. Milne Edwards									cf.		
<i>Micropanope</i> sp. nov.						+	aff.				
<i>Neopanope</i> sp.									+	cf.	
<i>Panopeus herbstii</i> H. Milne Edwards							+			+	
<i>Panopeus rugosus</i> A. Milne Edwards						+					
<i>Panopeus</i> sp. nov.							aff.				

Table 1. Continued.

Taxon	1	2	3	4	5	6	7	8	9	10	11
Family Pilumnidae											
<i>Pilumnus pannosus</i> Rathbun							aff.				
<i>Pilumnus sayi</i> Rathbun										cf.	
<i>Pilumnus spinosissimus</i> Rathbun							aff.				
Family Trapeziidae											
<i>Trapezia</i> sp. nov.						+					
Family Xanthidae											
xanthid gen. et sp. nov.						+					
<i>Chlorodiella</i> sp. nov.						+					
<i>Eriphia</i> sp.							+				
<i>Eriphia gonagra xaymacaensis</i> Collins & D'n										+	
" <i>Euryoda</i> " sp.										cf.	
<i>Eurytium limosum</i> (Say)						+	aff.				
<i>Leptodius</i> sp. nov.									cf.		
<i>Phymodius maculatus</i> (Stimpson)				+							
<i>Xanthilites? rathbunae</i> Withers											
Family Ocypodidae											
<i>Uca</i> sp.									+		
Family Gecarcinidae											
<i>Cardisoma guanhumi</i> Latreille										+	+
Family Grapsidae											
<i>Pachygrapsus</i> sp.									+		
<i>Varuna?</i> sp.				+							

collectors of these specimens, D. Woolacott and C.T. Trechmann. It could be argued that the bias of earlier studies towards the Upper Cretaceous and Eocene has now been overcompensated by our focus on the younger Cenozoic. However, the mid-Cenozoic White Limestone Group (Middle Eocene-Middle Miocene), with its commonly mold-like preservation and low yield of fossils, has deterred many macropaleontologists over the years. The description of abundant carapace material from the Early Miocene Montpelier Formation (Portell & Collins, in press) must be regarded as a triumph, rather than a failure to find crabs in the rest of the White Limestone Group. New collections of Pliocene and Pleistocene crabs await description by one of us (RWP), particularly from the Late Pliocene Hopegate Formation (dolomitized raised reef) and further taxa from the Falmouth Formation. However, it is anticipated that our program of fieldwork will now shift to the Paleogene, notably the Early-Middle Eocene Chapeltown Formation, Yellow Limestone Group, which has already yielded a small diversity of taxa (Table 1). Also high on

the agenda is the re-examination of the long-neglected Cretaceous deposits that yielded the material described by Withers.

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