



**ANOMURA (CRUSTACEA DECAPODA) FROM THE
MAYOTTE REGION, WESTERN INDIAN OCEAN**

*Joseph Poupin, Jean-Marie Bouchard, Vincent Dinhut,
Régis Cleva, and Jacques Dumas*

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This study is dedicated to Dr. Patsy A. McLaughlin (1932-2011)



Pat passed away on April 4, 2011 while this study was in progress. She was an esteemed colleague and the most influential expert on the Anomura. Her help in this study was much appreciated.

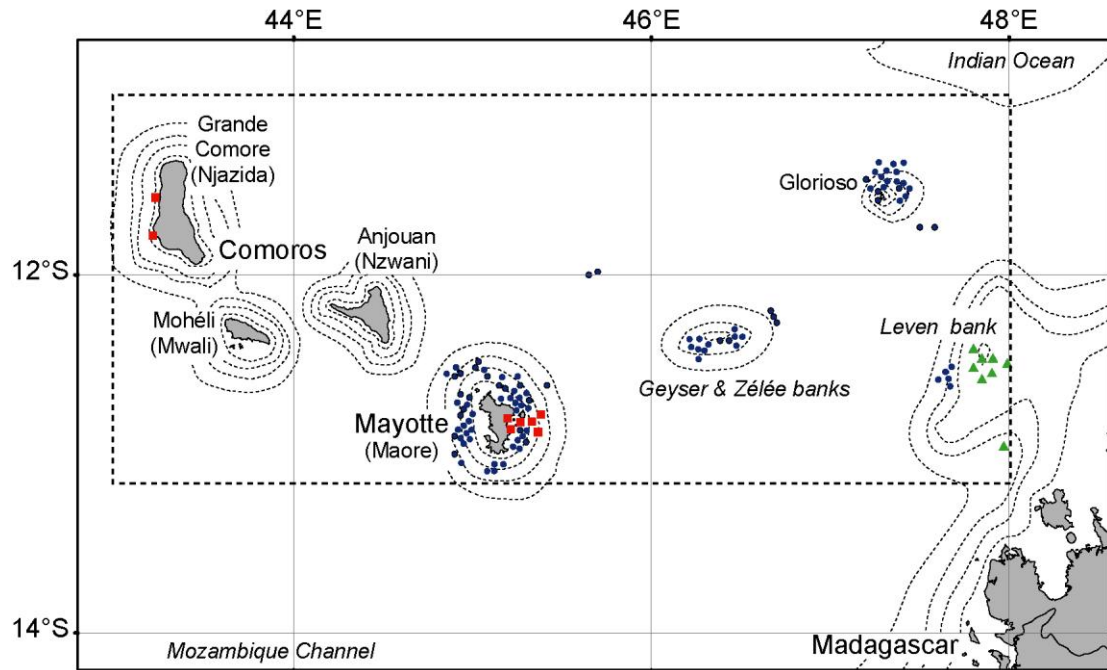


Figure 1. ‘Mayotte region’ as defined for this study (dotted rectangle). This includes Comoros (Grande Comore, Mohéli, Anjouan), Mayotte (Maoré), and Glorioso Islands plus three marine banks (Zélée, Geysier, Leven). Places of collections for three expeditions that have sampled the Crustacea of this region are indicated: red squares, R/V *Anton Bruun* ninth cruise (1964); blue circles, R/V *Suroît BENTHEDI* cruise (1977); green triangles, shrimp boat *Miriky MIRIKY* cruise (2009) (see Historical overview of collections).

**ANOMURA (CRUSTACEA DECAPODA)
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BY

**JOSEPH POUPIN¹, JEAN-MARIE BOUCHARD², VINCENT DINHUT²,
REGIS CLEVA³, AND JACQUES DUMAS⁴,**

ABSTRACT

A documented and illustrated checklist of the Anomura is presented for the Mayotte region, Western Indian Ocean. The study area is situated between longitudes 43-48° E and latitudes 11-13°10' S. It includes Comoros, Mayotte, and Glorioso Islands plus three marine banks (Zélée, Geysier, Leven). Records included are from fieldwork in Mayotte during November 2009, and complemented by a review of the literature. In total 75 species are listed including 43 new records for the Mayotte region. The inventory includes 51 Paguroidea, 22 Galatheaidea, 1 Chirostyloidea (*Eumunida* sp.) and 1 Hippoidea (*Hippa adactyla*). The Diogenidae are best represented with 29 species of *Aniculus*, *Areopaguristes*, *Calcinus*, *Ciliopagurus*, *Clibanarius*, *Dardanus*, *Diogenes*, *Paguristes* and *Pseudopaguristes*. Other families represented are the Porcellanidae, with 13 species of the *Aliaporcellana*, *Neopetrolisthes*, *Pachycheles*, *Petrolisthes*, *Pisidia*, *Polyonyx*; the Paguridae, with 11 species of *Anapagrides*, *Catapagurus*, *Cestopagurus*, *Pagurixus*, *Pagurus*, *Pylopaguropsis*, *Trichopagurus*; and the Galatheaidea, with 7 species of *Galathea* and *Macrothea*. Only a few species are listed for the families Coenobitidae, with 5 species of *Birgus* and *Coenobita*; Parapaguridae, with 3 species of *Paragiopagurus*, *Strobopagurus*, *Sympagurus*; Pylochelidae, with 3 species of *Cheiroplatea*, *Pomatocheles*, *Trizocheles*; Munididae, with 2 species of *Munida* and *Sadayoshia*; and Chirostylidae, with 1 species of *Eumunida*. Biotopes investigated include the intertidal area (on foot at low tide) and shallow-waters of the lagoon (scuba diving between 0-62 m). Based on previous marine campaigns in Mayotte region, 11 species are also reported in the 200-700 m depth range.

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The anomuran fauna of Mayotte region is predominantly Indo-West Pacific in its composition (85 % of the species). Twelve species are distributed in Western Indian Ocean only. A comparison with the anomuran fauna of adjacent regions shows that at least 129 anomuran species are potentially present in Mayotte region. Groups that need better sampling include Hippoidea, Diogenidae, and Porcellanidae.

RÉSUMÉ

Une liste documentée et illustrée des anomoures de la région de Mayotte est proposée. La zone étudiée est comprise entre les longitudes 43-48° E et les latitudes 11-13°10' S. Elle comprend les îles Comores, Mayotte, et Glorieuses et trois bancs marins (Zélée, Geysier, Leven). Les signalements proviennent d'un atelier de terrain, réalisé à Mayotte en novembre 2009, complétés par une recherche bibliographique. Au total, 75 espèces sont identifiées dont 43 nouveaux signalements pour la région. Cet inventaire comprend 51 Paguroidea, 22 Galatheaidea, 1 Chirostyloidea (*Eumunida* sp.) et 1 Hippoidea (*Hippa adactyla*). Les Diogenidae prédominent avec 29 espèces des genres *Aniculus*, *Areopaguristes*, *Calcinus*, *Ciliopagurus*, *Clibanarius*, *Dardanus*, *Diogenes*, *Paguristes* et *Pseudopaguristes*. Les autres familles sont les Porcellanidae (13 espèces des genres *Aliaporcellana*, *Neopetrolisthes*, *Pachycheles*, *Petrolisthes*, *Pisidia*, *Polyonyx*), Paguridae (11 espèces des genres *Anapagrides*, *Catapagurus*, *Cestopagurus*, *Pagurixus*, *Pagurus*, *Pylopaguropsis*, *Trichopagurus*), et Galatheaidea (7 espèces des genres *Galathea* et *Macrothea*). Les familles qui ne sont représentées que par quelques espèces sont les Coenobitidae (5 espèces, genres *Birgus*, *Coenobita*), Parapaguridae (3 espèces, genres *Paragiopagurus*, *Strobopagurus*, *Sympagurus*), Pylochelidae (3 espèces, genres *Cheiroplatea*, *Pomatocheles*, *Trizocheles*), Munididae (2 espèces, genres *Munida*, *Sadayoshia*), et Chirostylidae (1 espèce, genre *Eumunida*). Les biotopes visités comprennent la zone intertidale, explorée à pied à marée basse, et les petits fonds du lagon avec des plongées entre 0-62 m. Les grands fonds marins ont été explorés au cours de campagnes maritimes anciennes, avec 11 espèces signalées entre 200-700 m. Les anomoures de la région de Mayotte sont d'origine Indo-ouest Pacifique (85 %). Douze espèces ne sont connues que de l'océan Indien occidental. Une comparaison avec la faune des régions voisines montre qu'au moins 129 anomoures sont potentiellement présents dans la région de Mayotte. Les groupes qui doivent être mieux échantillonnés à l'avenir sont les Hippoidea, Diogenidae et Porcellanidae.

INTRODUCTION

This study is the second of a series that aims to present the faunistic results obtained during the Kraken Underwater Works C^{ie} (KUW) fieldwork, held in Mayotte Island, southwestern Indian Ocean, in November 1-21, 2009. This fieldwork was organized by J.-M. Bouchard, head of the KUW Cie at Mayotte, with scientific participation of the Institut de Recherche de l'Ecole Navale (IRENav), Brest, and the Muséum national d'Histoire naturelle (MNHN), Paris. It was supported by the DAF (Direction de l'Agriculture et de la Forêt) of Mayotte and Total foundation, and was dedicated to the inventory of the Crustacea Decapoda and Stomatopoda of the island.

The first study by Bouchard *et al.* (2011) was devoted to the land, mangrove, and freshwater species and includes a presentation of the KUW 2009 fieldwork with a map and detailed list of the 39 stations realized.

The present study is dedicated to the Anomura. The Galatheidae and Munididae have been already partly published in a systematic review by Macpherson & Cleva (2010) with description of one new genera (*Macrothea*) and two new species (*Galathea denticulata*, *Macrothea bouchardi*). Additional families treated here are the Eumunididae, Porcellanidae, Hippidae, Coenobitidae, Diogenidae, Paguridae, Parapaguridae, Pylochelidae. Three taxa have been recognized has new species and are treated separately in systematic revisions. These are a porcellanid, *Polyonyx* aff. *boucheti*, and two pagurids (*Cestopagurus caeruleus* Komai & Poupin, 2012, and *Trichopagurus asper* Komai & Poupin, 2012).

In complement of the species collected during the KUW fieldwork a literature search of anomuran species previously recorded in Mayotte region (as defined in figure 1) has been realized and the main steps for collections of the anomuran in this region are presented in an historical overview.

For each species the list includes: a documented origin of the record(s), geographic distribution (with depth range), and additional remarks, when needed. To facilitate the identification most of the species are illustrated by photographs, most of them taken during the KUW fieldwork. Species richness is discussed after the checklist as are the ecology and biogeography of the anomurans of Mayotte region. An additional list of 50 common anomurans that could be reasonably found in the region in the future is also included.

METHODS

ABBREVIATIONS – ACRONYMS

ANR, French Agence Nationale de la Recherche; BIOTAS, acronym for a research program at la Réunion: ‘The Southwest Indian Ocean biodiversity hotspot: A biota-level study of diversification on land and sea’; ECOMAR, Laboratoire d'Ecologie marine, Université de la Réunion; IFREMER, Institut français de recherche pour l'exploitation de la mer; IO, Indian Ocean; IRD, Institut de Recherche pour le Développement, IWP, Indo-West Pacific; KUW, Kraken Underwater Works C^{ie}, Mamoudzou, Mayotte; Lc, carapace length; Lt, total length; MEPA, acronym for ‘Mission îles Eparses’ part of the BIOTAS program; MNHN, Muséum national d'Histoire naturelle, Paris; ORSTOM, Institut Français de Recherche Scientifique pour le Développement en Coopération (changed in IRD since 1998); P1, pereopod 1 or cheliped, P2–4, pereopods 2–4 or first to third walking legs; P5, pereopod 5 or last legs; PNI, Pro-Natura International; R/V, Research Vessel; Sl, shield length; St., Station; UF, Florida Museum of Natural History, Gainesville; USNM, National Museum of Natural History, Smithsonian Institution, Washington, D.C.; WIO, Western Indian Ocean.

STUDY AREA

The study area ‘Mayotte region’ is defined in figure 1. It includes Mayotte Island, the Comoros archipelago (Grande Comore or Njazida, Mohéli or Mwali, Anjouan or Nzwani) and the Glorioso Islands. These islands are located within a rectangle delimited by longitudes 43-48° E and latitudes 11-13°10' S. Three marine banks are also included: Zélée, Geysier, and Leven banks. The Zélée and Leven banks are submerged, with their summits at 10-17 m and 15-70 m, respectively; the Geysier bank is partly exposed at low tide (see Daniel *et al.*, 1972; Thomassin *et al.*, 2009).

SAMPLING EVENTS

Details on the 39 stations sampled in the Mayotte region are available in Bouchard *et al.* (2011), and online [1]. In addition, a few stations made in the Glorioso Islands by BIOTAS team (M. Malay and colleagues) in May 2009, are also listed in Appendix 1 (see also Historical overview of Collections).

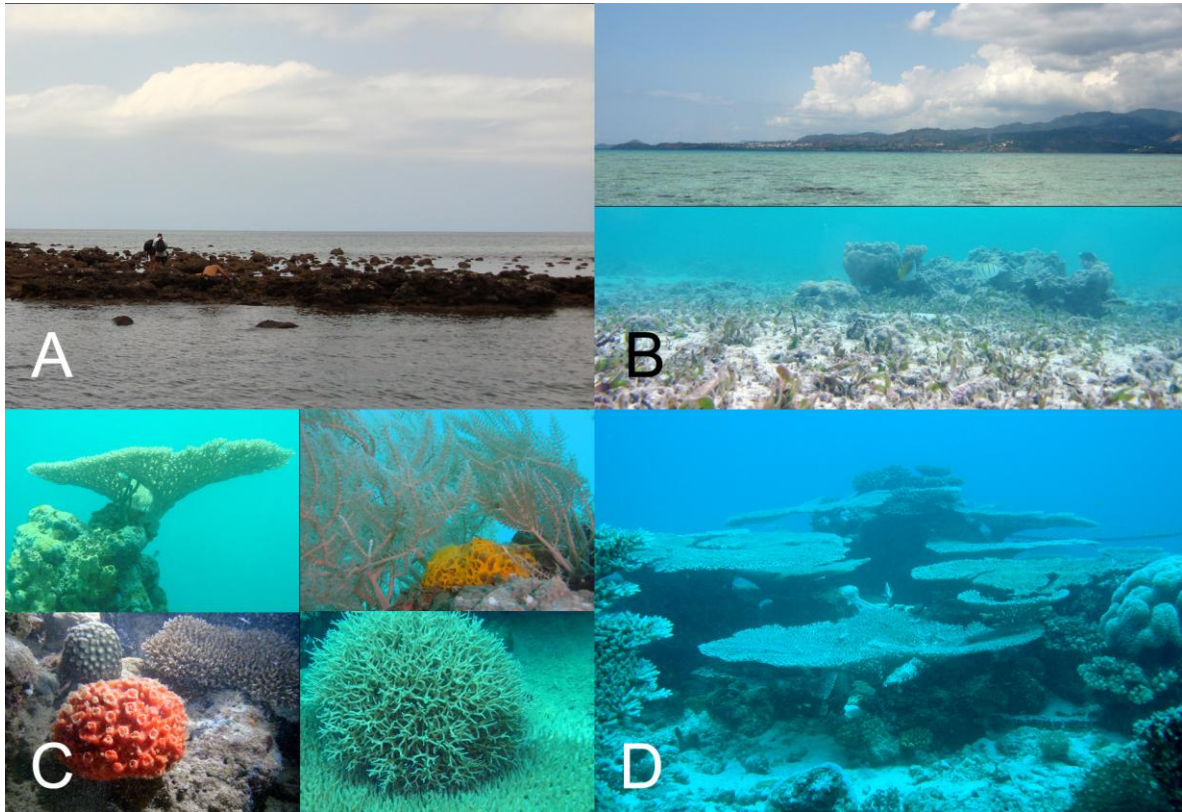


Figure 2. Aspect of some biotopes studied during the KUW 2009 fieldwork with list of anomurans species collected.

A) Intertidal area at low tide, St. 10, islet Quatre Frères (Vatou), rocks and tide pools: *Clibanarius eurysternus*, *Clibanarius humilis*, *Clibanarius laevimanus*, *Clibanarius rhabdodactylus*, *Petrolisthes lamarckii*.

B) Shallow waters of the lagoon, St. 5, Great north east reef, seagrass bed and sand, 1 m: *Calcinus latens*, *Ciliopagurus tricolor*, *Dardanus lagopodes*, *Dardanus scutellatus*, *Neopetrolisthes maculatus*, *Pagurus hirtimanus*.

C) Four aspects of St. 12 (visited during day and night) soft and stony corals (*Acropora*, *Pocillopora*, *Seriatopora* ...), sponges, coral boulders, sand bottom, 6-12 m: *Calcinus rosaceus*, *Calcinus latens*, *Cestopagurus caeruleus*, *Dardanus deformis*, *Dardanus guttatus*, *Galathea aegyptiaca*, *Galathea mauritiana*, *Pagurixus rubrovittatus*, *Polyonyx* aff. *boucheti*.

D) St. 14, La Prudente bank, various corals (*Acropora*, *Pocillopora* ...), coral boulders, sponges, sand bottom, 15-17 m: *Aliaporcellana pygmaea*, *Areopaguristes abbreviatus*, *Calcinus rosaceus*, *Cestopagurus caeruleus*, *Galathea denticulata*, *Galathea tanegashimae*, *Galathea mauritiana*, *Pagurixus carinimanus*, *Polyonyx triunguiculatus*.

Anomura were collected at low tide in the intertidal area (Fig. 2 A) or during scuba dives in the lagoon and outer reef (Fig. 2 B-D, 4). The dives were made between 1-35 m with a single dive at 62 m. Largest species were collected by hand or photographed *in situ* when they could be clearly identified based on color pattern, such as *Dardanus spp.* or *Ciliopagurus tricolor* (Fig. 3). Medium to small-sized species were usually collected mixed with coral debris and rubble brought to the surface in large bins for careful sorting after each dive (Fig. 4 C-D). The smallest species (e.g. *Polyonyx spp.*, *Pagurixus spp.*) were collected in fine coral sediment collected with a suction pump associated with a 1 mm mesh filter (Fig. 4 A-B). Details on these sampling techniques are in Bouchard *et al.* (2009: 9-12).

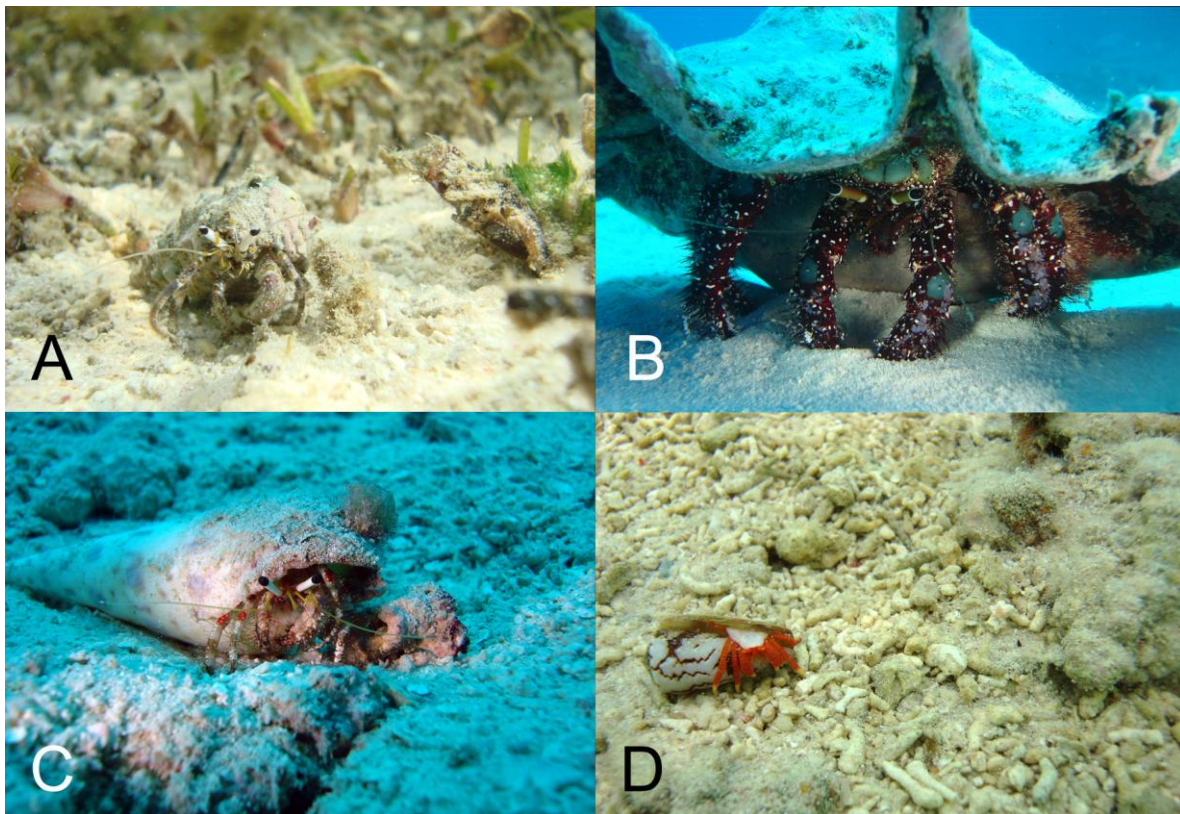


Figure 3. Examples of a few anomurans from Mayotte recognized *in situ* based on their color pattern. A) *Dardanus scutellatus*, St. 5, Great north-eastern reef, seagrass bed, 1 m. B) *Dardanus guttatus*, St. 17, North reef, sand bottom, 22 m. C) *Dardanus lagopodes*, St. 20b, islet M'tzamboro, sand and coral rubbles, 10-15 m. D) *Ciliopagurus tricolor*, St. 5, Great north east reef, coral rubbles, 1 m.

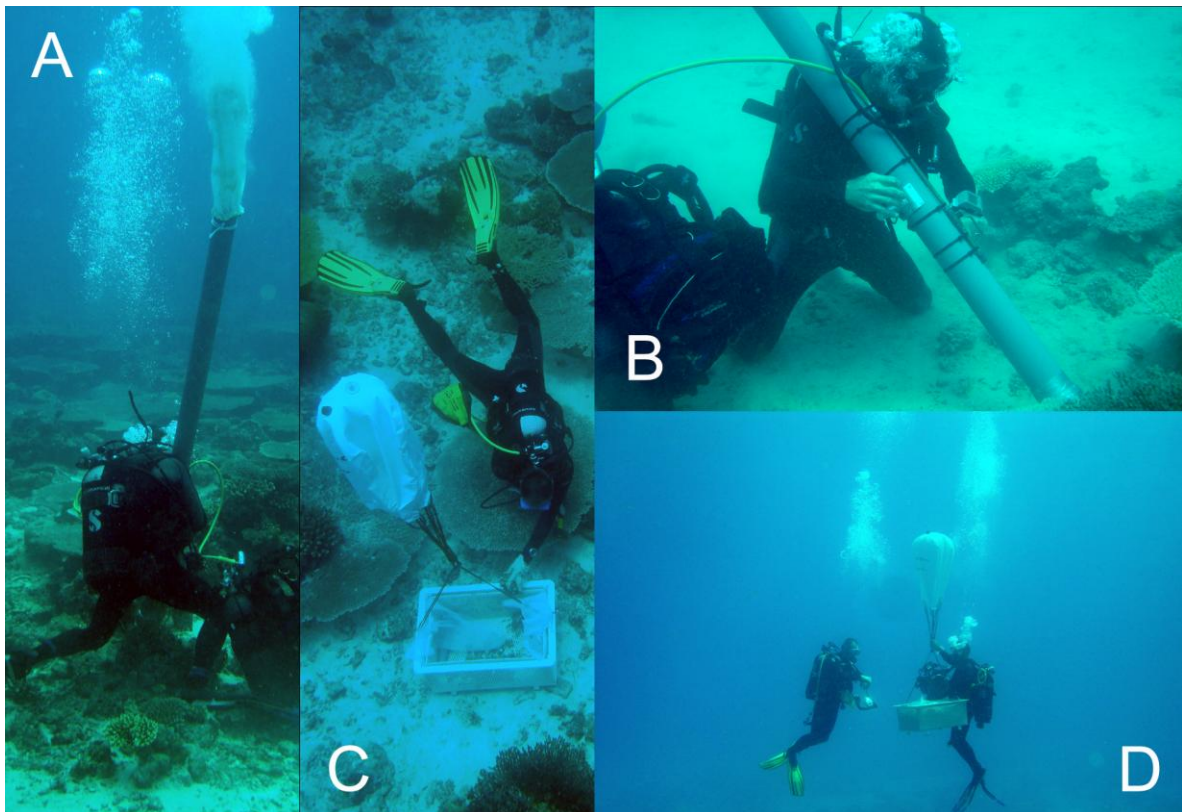


Figure 4. Sampling techniques used during K UW 2009 fieldwork. A-B) suction pump with a 1 mm mesh filter, at St. 12. C-D) collection of corals, coral rubbles, and brushing of coral blocks under water in a bin brought back to the surface using a parachute (C at St. 12, D at St. 17).

SAMPLE PROCESSING

Species identifications were made at the Institut de Recherche de l'École Navale (IRENav) and the Muséum national d'Histoire naturelle, Paris (MNHN). All specimens have been deposited and recorded in MNHN collections.

For the Galatheidae the size is expressed as postorbital carapace length (Lc). For crab-like Anomura of the Porcellanidae the size is the length \times width of the carapace. For the Paguroidea Sl is the shield length, Lc is the length of the cephalothorax (Sl plus posterior soft carapace), and Lt is total length (usually for specimens photographed, including length of extended chelipeds).

All photographs made are available in the online resource developed at IRENav to facilitate the study of this collection after the K UW fieldwork [1]. This database is regularly updated and also includes stations data, map, field observations, previous records of anomurans in the Mayotte region, an relevant references.

HISTORICAL OVERVIEW OF COLLECTIONS

To complement the historical overview made for the land crustaceans (Bouchard *et al.*, 2011), the main episodes for the collections of marine crustaceans in Mayotte region are herein presented, with focus on the anomurans.

Unsurprisingly the first anomuran mentioned from Mayotte region is the common *Coenobita rugosus*, reported by Hoffmann (1874: 29) as '*C. clypeatus*'. The specimens studied by Hoffmann were collected by F.P.L. Pollen and D.C. Van Dam, and are deposited in the Nationaal Natuurhistorisch Museum (ex Rijksmuseum van Natuurlijke Historie), Leiden. A narration of this expedition is given by Pollen (1868) with a sojourn in Mayotte Island in April-May 1864.

In 1882 the British HMS *Alert* stopped in the Glorioso Islands and the surgeon of the expedition, R. W. Coppinger (1884) mentions the presence in these Islands of the coconut crab, *Birgus latro*, a record thereafter confirmed by Miers (1884) in his study of the Crustacea of the expedition and deposited in the Natural History Museum, London. For this study, the coconut crab is again reported from Glorioso Islands (see Bouchard *et al.*, 2011: 11).

In his '*Notes sur la faune intercotidale des Comores*' Pierre Fourmanoir (1955), an ichthyologist at the French ORSTOM Institute, Nosy Be, Madagascar, reported nine common anomurans from Grande Comore, Mohéli, Anjouan and Mayotte: *Aniculus aniculus*, *Calcinus* spp., *Dardanus deformis*, *Galathea mauritiana*, *Pagurus hirtimanus*, *Petrolisthes* spp. and, interestingly, the single mole crab reported up to now from Mayotte region, *Hippa adactyla*.

Between 1958 and 1971, collections of anomurans were obtained in Mayotte and Glorioso Islands by Alain Crosnier, a carcinologist and colleague of Pierre Fourmanoir at Nosy Be ORSTOM Institute. Most of Crosnier's specimens were collected in 1959 in Mayotte, during the geomorphologic campaign of the R/V *ORSTOM II* (see Guilcher *et al.*, 1965). Crosnier's anomurans were subsequently studied by Dechancé (1964), for the Paguroidea, and by Haig (1966) and Haig & Kropp (1987) for the Porcellanidae.

In 1964, during the ninth cruise of the R/V *Anton Bruun*, several stations (red squares on figure 1) were sampled in Mayotte region. The pontoniinid shrimps were studied by Bruce (1967, 1971) and a few Stomatopoda by Manning (1968). No anomurans were reported in the literature from this campaign, but it is possible that some specimens remain unstudied in the USNM collections, where the crustaceans of this campaign are deposited.

In March and April, 1977, anomurans were collected in Mayotte region during the BENTHEDI campaign (Fig. 1). This campaign, conducted by Bernard Thomassin, aboard the IFREMER R/V *Suroît*, sampled stations from the vicinity of Mayotte, the Glorioso Islands, Geyser, Zélée and Leven Banks. The Crustacea are deposited in the MNHN collections. A brief description of this campaign is in Kornicker (1992) and station data is available online in the IFREMER web pages [2]. Forty one decapod species are currently known based on collections from the BENTHEDI campaign with 9 anomurans herein reported: of pylochelids in Forest (1987a) and McLaughlin & Lemaitre (2009) (*Cheiroplatea stenurus*, *Pomatocheles stridulans*, *Trizocheles hoenonae*); of diogenids in Rahayu (2007) (*Areopaguristes micheleae*, *Paguristes palythophilus*, *Pseudopaguristes laurentae*); and of parapagurids in Lemaitre (1994, 2004a, b) (*Paragiopagurus boletifer*, *Strobopagurus sibogae*, *Sympagurus dofleini*).

Between 2006 and 2008, a few color photographs of anomurans have been made on the Geyser bank by one of us (V. Dinhut) and his colleagues, working for the ISURUS Cie. Species recognized on those photographs are *Dardanus guttatus*, *Ciliopagurus tricolor*, and, more interestingly, *Aniculus maximus* the bright yellow giant hermit crab reported here for the first time from Mayotte region (Fig. 13 A).

In 2008 and 2009, three marine biologists working for the Florida Museum of Natural History (UF) made collections in Mayotte region with specimens deposited in UF collections, Gainesville. Their work was part of the sampling effort realized in the area for the 2007-2010 ANR BIOTAS program in the WIO, coordinated by Henrich Bruggemann, Laboratoire d'Ecologie marine, Université de la Réunion (ECOMAR). A lists of stations and species were kindly transmitted by Arthur Anker and Machel Malay, with color photographs of the specimens. Only a few common species recognized with confidence have been integrated to this work, others specimens in UF collections being still unstudied.

Arthur Anker and François Michonneau have realized their collections in May-June 2008 in Mayotte with the following records: *Calcinus latens*, *Calcinus morgani*, *Ciliopagurus tricolor*, *Coenobita rugosus*, *Dardanus megistos*, *Galathea spinosorostris*, *Galathea mauritiana*.

Machel Malay was the UF member participating to the April-May 2009 BIOTAS campaign in the French 'Iles Eparses' on board the R/V *Marion Dufresne* (Fig. 5 A). The campaign has visited the islands of Europa, Juan de Nova, Glorioso Islands, and Tromelin. The team's objective was to conduct a preliminary survey of the invertebrates of these islands with special focus on coral symbionts. Within Mayotte region, the Glorioso Islands were visited between May 3-7, 2009. In total 22 anomurans were recognized satisfactorily from color photographs and have been integrated to this compilation (*Aniculus retipes*, *Areopaguristes abbreviatus*, *Calcinus* spp., *Ciliopagurus tricolor*, *Clibanarius* spp., *Coenobita* spp., *Dardanus* spp., *Galathea tanegashimae*, *Pagurixus carinimanus*, *Petrolisthes lamarckii*, and *Polyonyx*

triunguiculatus). The most interesting record in this collection is *Aniculus retipes*, a large-sized species widespread in the IWP, recognized for the first time in Mayotte region (Fig. 13 B). Stations prospected by M. Malay and colleagues in Glorioso Islands are in appendix 1.

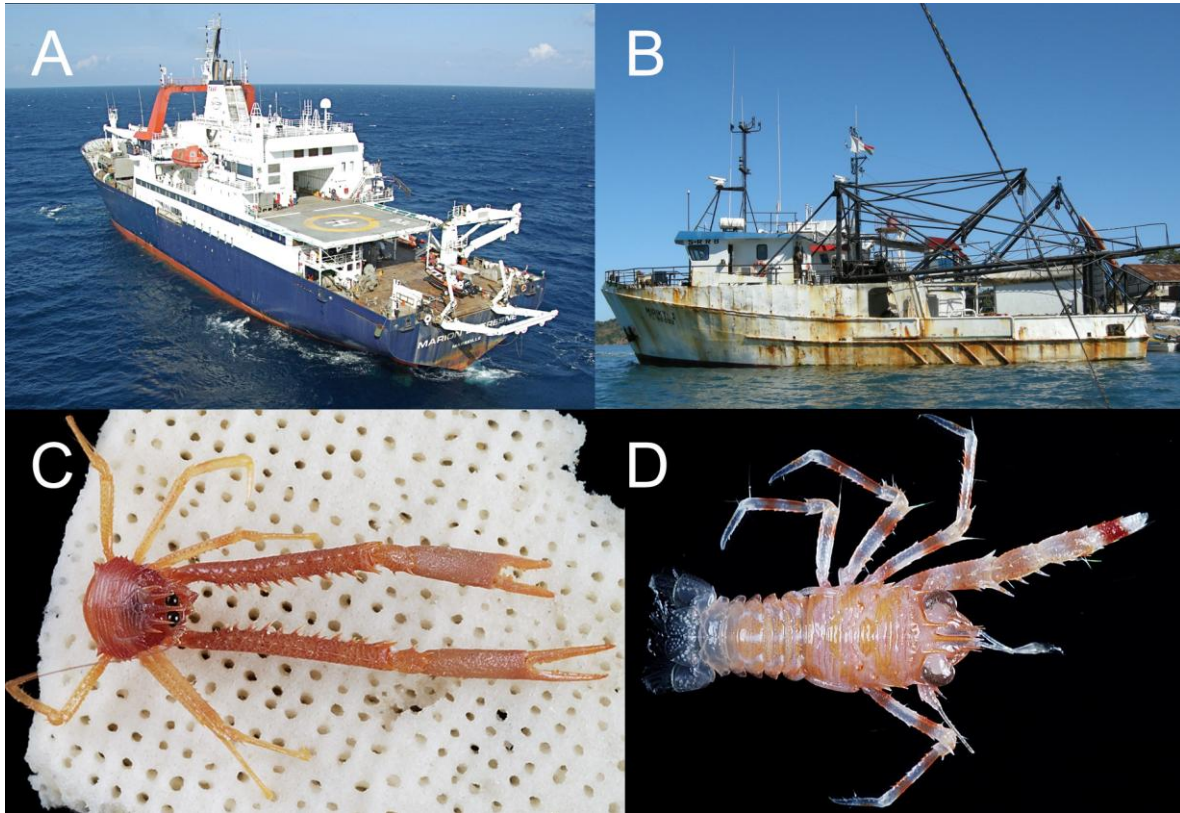


Figure 5. Two R/V that have contributed recently to the study of the anomurans of Mayotte region. A) R/V *Marion Dufresne*, en route to Mayotte Island in the Mozambique channel, 8 April 2011 (photo F. Fromard). This vessel is used to visit the French Iles Eparses, including Glorioso Islands. B) Shrimp trawler *Miriky* (photo A. Barrère) converted in R/V for the 2009 MIRIKY cruise organized by MNHN and PNI. Examples of anomurans dredged on the Leven bank by the R/V *Miriky*, 30 June 2009 (photos C.-W. Lin): C) *Eumunida* sp., St. DW3213, 12°31'S, 47°52'E, 262-269 m; D) *Munida* sp., St. DW3215, 12°32'S, 47°54'E, 316-433 m.

In June-July 2009, the MNHN and PNI organized an expedition to sample the sea floor between 100-1000 m in the extreme north of Madagascar. The expedition, conducted by Philippe Bouchet of the MNHN, took place on board the *Miriky*, a 24 m shrimp trawler belonging to a Nosy Be fisheries Cie (Fig. 5 B). The campaign is described on the MNHN 'Planet revisited' website [3]. Of the 110 dredging and trawling operations, 8 were conducted in Mayotte region on the Leven bank (green triangles in Fig. 1). The *Miriky* collection on the Leven bank includes a few Anomura that are still unstudied in MNHN (e.g., *Eumunida* sp. and *Munida* sp., Fig. 5).

DOCUMENTED CHECKLIST

The classification of the Galatheidae adopted for this work is from Baba *et al.* (2008) with addition of the superfamily Chirostyloidea proposed by Schnabel *et al.* (2011) and the family Munididae proposed by Ahyong *et al.* (2010). Other taxa are listed according to classifications edited by Low & Tan (2010) with a preamble and scope by McLaughlin *et al.* (2010a): Porcellanidae (Osawa & McLaughlin, 2010), Hippoidea (Boyko & McLaughlin, 2010) and Paguroidea (McLaughlin *et al.*, 2010b). This classification is regularly updated in WoRMS Internet database [4].

Several records included herein were published in December 2009 in a report issued just after the KUW fieldwork (Bouchard *et al.*, 2009). A few misidentifications in that report are herein corrected, with this presentation: *Areopaguristes abbreviatus* (Dechancé, 1963), 1 male SI 2.1 mm, Lt about 18 mm, as '*Clibanarius sp.* St. 32' in Bouchard *et al.*, 2009: photo p. 96.

Species reported herein have been used for the inventory of the French overseas territories Poupin (2010) and in the WoRMS database [4] (search 'Checklist' with 'Mayotte Exclusive Economic Zone' and limit to 'Anomura').

ORDER DECAPODA

INFRAORDER ANOMURA

SUPERFAMILY CHIROSTYLOIDEA

FAMILY CHIROSTYLIDAE

Eumunida sp.

Eumunida sp. (Figure 5 C) – Leven bank, coll. MIRIKY campaign, St. DW3213, 30 June 2009, 12°31'S, 47°52'E, 262-269 m, MNHN.

Remarks. – Specimen under study by E. Macpherson, with others specimens collected during the 2009 MIRIKY campaign on the Leven bank (see historical overview of collections).

SUPERFAMILY GALATHEOIDEA

FAMILY GALATHEIDAE

All Galatheidae records from Mayotte KUW fieldwork have been published separately by Macpherson & Cleva (2010), including the description of a new genus and species *Macrothea bouchardi*. Geographic distributions listed below are from Baba *et al.* (2008) and Macpherson & Baba (2010). All specimens were collected in the lagoon between 3-30 m, associated with various corals (e.g., *Acropora*, *Pocillopora*) or in coral heads. Before this inventory only two species were reported from the region, *Galathea mauritiana* (*cf.* Fourmanoir, 1955) and *Galathea spinosorostris* (*cf.* Baba, 1990).

***Galathea aegyptiaca* Paul'son, 1875**

Galathea aegyptiaca (Figure 6 A-B) - Macpherson & Cleva 2010: 58, Fig. 3a, b, Mayotte, KUW fieldwork November 2009, St. 12a, reef La Prévoyante, 6-11 m, coral bottom with *Acropora*, 2 ovigerous females 3.1-4.2 mm, MNHN-Ga7329; St. 21b, islet Choizil, 15-20 m, fringing reef and outer slope, 1 female 3.3 mm, MNHN-Ga7330; St. 25, islet M'tzamboro, southern tip 15-20 m, accretions of coral blocks, 1 ovigerous female 3.6 mm, MNHN-Ga7331; St. 30, reef Rani, 3-15 m, 2 males 3.5-4.7 mm, 2 ovigerous females 3.2-4.6 mm, MNHN-Ga7332; St. 32, islet M'tzamboro, north-east, 6-21 m, *Acropora* coral boulder, 1 male 3.8 mm, MNHN-Ga7333; St. 35, reef Surprise, Longoni pass, 4-25 m, reef slope, 1 female 3.6 mm, MNHN-Ga7334.

Distribution. – IWP. Red Sea, Eastern Africa (South Africa), Madagascar, Mayotte (first record), Seychelles (Amirante, Saya de Mala bank), Mauritius (Cargados Carajos), Indonesia, Taiwan, Japan, Australia, Papua New Guinea, Loyalty Islands. Intertidal, between 1-30 m, with a single record at 146 m.

Remarks. – A species commonly collected during the KUW fieldwork, between 3-30 m, on coral bottoms (mostly *Acropora*). Lt of the largest specimens, including chelae, is about 13-15 mm. Color pattern is helpful to recognize this species, specially for a red patch a base of fingers of chelae, a large brown median band on propodi of P2-P4, and an orange dot at tip of meri of P2-P4 (see Fig. 6 A-B).

***Galathea amamiensis* Miyake & Baba, 1966**

Galathea amamiensis - Macpherson & Cleva 2010: 58, Mayotte, KUW fieldwork November 2009, St. 23, Choizil pass, 'Patate à Teddy', 15-30 m, outer reef, collapsed barrier, 1 ovigerous female 2.6 mm, MNHN-Ga7352.

Distribution. – IWP. Madagascar, Mayotte (first record), Indonesia, ?Australia, Japan. Subtidal to 50 m. Between 15-30 m at Mayotte.

Remarks. – No color photograph of this species is available after KUW fieldwork. Live coloration is illustrated in Jones & Morgan (2002: 135)

***Galathea denticulata* Macpherson & Cleva, 2010**

Galathea denticulata (Figure 6 C) - Macpherson & Cleva, 2010: 59, fig. 1, 3e, Mayotte, KUW fieldwork November 2009, St. 9, 'S' pass, 0-20 m, submerged seagrass bed and coral slope of pass, 1 male 2.2 mm, as '*Galathea sp.* St. 9' in Bouchard *et al.*, 2009: photo p. 58, holotype, MNHN-Ga7338; St. 14, La Prudente bank, 15-17 m, coral boulders on sand bottom, 1 ovigerous female 2.3 mm, paratype, MNHN-Ga7339.

Distribution. – Only Mayotte. Coral slope with branching corals and boulders, sand bottoms, between 0-20 m (Fig. 2 D).

Remarks. – New species described from KUW collections. It is related to *Galathea amamiensis* Miyake & Baba, 1966, also collected during the fieldwork (see Macpherson & Cleva, 2010: 61).

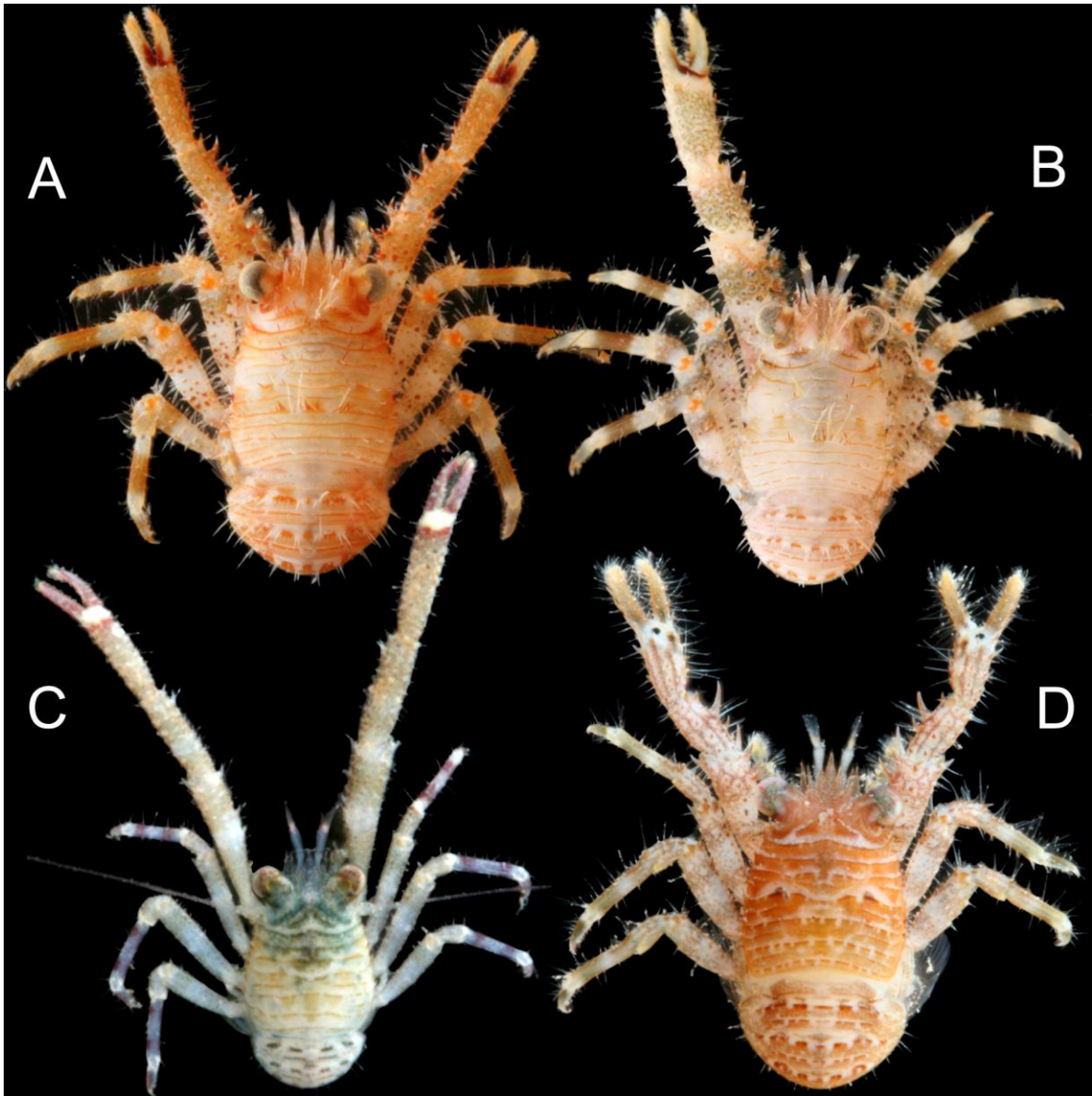


Figure 6. A-B) *Galathea aegyptiaca*. A) ovigerous female Lc 4.2 mm, Lt about 13 mm, Mayotte, St. 12, MNHN-Ga7329; B) 1 male Lc 3.8 mm, Mayotte, St. 32, MNHN-Ga7333. C) *Galathea denticulata*, 1 male holotype, Lc 2.2 mm, Lt about 12 mm, Mayotte, St. 9, MNHN-Ga7338. D) *Galathea mauritiana*, 1 ovigerous female, Lc 3.2 mm, Lt about 12 mm, Mayotte, St. 12, MNHN-Ga7335.

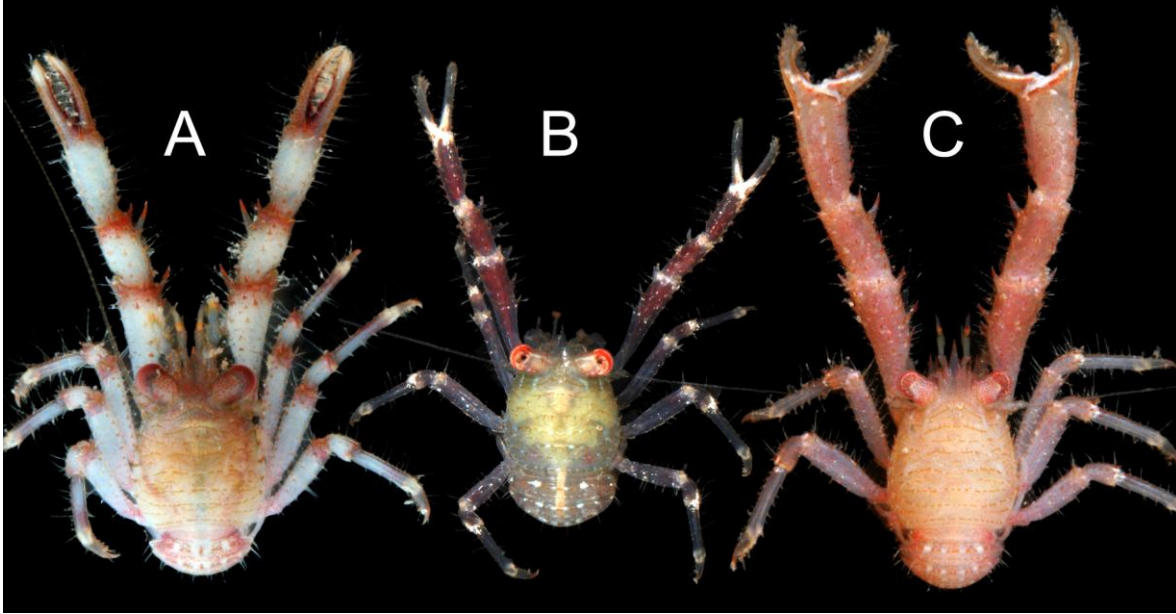


Figure 7. A) *Galathea spinosorostris*, 1 male Lc 3.2 mm, Lt with chelae about 12 mm, Mayotte, St. 23, MNHN-Ga7340. B-C) *Galathea tanegashimae*. B) Glorioso, specimen MEPA 974 (photo BIOTAS team, courtesy M. Malay); C) 1 ovigerous female Lc 3.7 mm, Lt with chelae about 20mm, Mayotte, St. 14, MNHN-Ga7342.

***Galathea mauritiana* Bouvier, 1915**

Galathea mauritiana (Figure 6 D) - Fourmanoir, 1955: 30 (Mayotte, barrier reef). - Coll. Anker & Michonneau, 2008, St. MAY08-St2, Tanaraki reef, UF 13556. - Macpherson & Cleva 2010: 59, Fig. 3c, d, Mayotte, KUW fieldwork November 2009, St. 12a, reef La Prévoyante, 6-11 m, coral bottom with *Acropora*, 1 ovigerous female 3.2 mm, MNHN-Ga7335; St. 14, La Prudente bank, 15-17 m, coral boulders on sand bottom, 1 male 3.8 mm, MNHN-Ga7336; St. 17, North Reef, 22 m, outer reef, coral boulders on sand bottom, 2 ovigerous female 2.2-2.7 mm, MNHN-Ga7337. - *Galathea affinis* - Baba, 1990: 953 (Mayotte, North reef, 20 m, coll. ?Crosnier April 1959, 3 males 4.2-5.3 mm, 1 ovigerous female 4.9 mm, MNHN (*Galathea affinis* Ortmann, 1892 is a junior synonym of *G. mauritiana*).

Distribution. – IWP. Red Sea, Eastern Africa (Tanzania, Zanzibar), Madagascar, Mayotte, Seychelles, Réunion, Mauritius, Chagos, Indonesia, Taiwan, Japan, New Guinea, Loyalty Islands, Fiji, Wallis & Futuna, French Polynesia. Intertidal to 48 m. Collected at Mayotte between 0-22 m.

Remarks. – *Galathea mauritiana* is very common in the intertidal, among rubble. The presence of a black spot on the upper face of its chelae, at base of fingers, is a good mean to recognize it quickly (see. Fig. 6 D).

***Galathea spinosorostris* Dana, 1852**

Galathea spinosorostris (Figure 7 A) - Baba, 1990: 959 (Glorioso, 11°33.4'S, 47°19.7'E, below 20 m, dredge January 1973, coll. C. Jouannic, 6 males 2.9-4.6 mm, MNHN; Mayotte, 30 m, ?coll. A. Crosnier, September 1959, 1 male 3.4 mm, MNHN). - Coll. Anker & Michonneau, 2008, St. MAY08-St2, Tanaraki reef, UF 13580; St. MAY08-St6, 'S' pass, UF 13653. - Macpherson & Cleva, 2010: 62, Fig. 3f, Mayotte, KUW fieldwork November 2009, St. 23, Choizil pass, 'Patate à Teddy', 15-30 m, outer reef, collapsed barrier, 1 male 3.2 mm, 1 ovigerous female 3.4 mm, MNHN-Ga7340.

Distribution. – IWP. Red Sea, Eastern Africa (Zanzibar), Madagascar, Mayotte, Glorioso, Seychelles, Réunion, Mauritius, Indonesia, Singapore, South China Sea, Japan, Philippines, Palau, French Polynesia, Hawaii. Collected at Mayotte from intertidal reef to 30 m.

Remarks. – First attributed to *G. aff. spinosorostris* in KUW fieldwork the specimens were considered to represent *G. spinosorostris* by Macpherson & Cleva (2010). These authors recommend a revision of material from different localities because of the unusual depth range of this species (1.5-772 m).

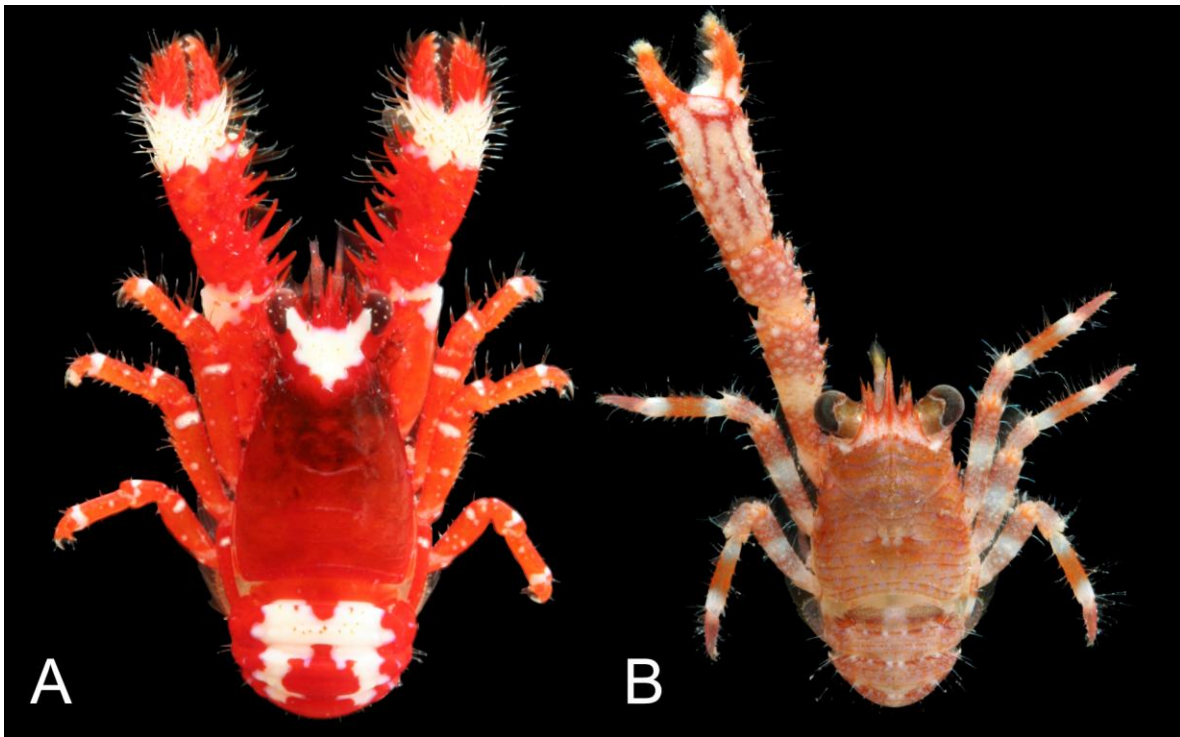


Figure 8. A) *Macrothea bouchardi*, holotype male Lc 3.5 mm, Lt with chelae about 10 mm, Mayotte, St. 23, MNHN-Ga7350. B) *Sadayoshia edwardsii*, right cheliped missing, 1 male Lc 4.6 mm, Lt with chela about 21 mm, Mayotte, St. 23, MNHN-Ga7351.

***Galathea tanegashimae* Baba, 1969**

Galathea tanegashimae (Figure 7 B-C) - BIOTAS collections, Glorioso, 3-7 May 2009, det. J. Poupin from photo, St. GLOR-2, reef platform and shallow canyons with dead *Acropora digitifera* head, 7-14 m, specimen MEPA 974. - Macpherson & Cleva, 2010: 62, fig. 3g-h, Mayotte, KUW fieldwork November 2009, St. 12a, reef La Prévoyante, coral bottom with *Acropora*, 1 male 1.8 mm, 1 ovigerous female 2.5 mm, 1 female 2.1 mm, as '*Galathea sp.* St. 12' in Bouchard *et al.*, 2009: photo p. 58, MNHN-Ga7341; St. 14, La Prudente bank, 15-17 m, coral boulders on sand bottom, 5 males 2.0-4.3 mm, 2 ovigerous females 3.0-3.7 mm, 1 female 2.7 mm, as '*Galathea sp.* St. 14' in Bouchard *et al.*, 2009: photo p. 58, MNHN-Ga7342; St. 17, North Reef, 22 m, outer reef, coral boulders on sand bottom, 3 males 2.0-4.2 mm, 7 ovigerous females 2.1-4.0 mm, MNHN-Ga7343; St. 20b, islet M'tzamboro, western reef, 10-15 m, near collapsed reef, steep sand slope, 1 ovigerous female 2.4 mm, MNHN-Ga7344; St. 21b, islet Choizil, east of Malandzamiayatsini, 15-20 m, fringing reef and outer slope, 1 male 3.4 mm, MNHN-Ga7345; St. 23, Choizil pass, 'Patate à Teddy', 15-30 m, outer reef, collapsed barrier, 1 male 2.7 mm, 1 ovigerous female 2.1 mm, MNHN-Ga7346; St. 25, islet M'tzamboro, southern tip, 15-20 m, slope with accretions of coral blocks, 2 males 3.1-3.2 mm, MNHN-Ga7347; St. 28, islet Mbouini, east, 3-20 m, high tide, outer reef and slope, 1 male 2.7 mm, MNHN-Ga7348; St. 32, islet M'tzamboro, north east, 6-21 m, huge *Acropora* coral boulder, 1 ovigerous female 2.9 mm, MNHN-Ga7349.

Distribution. – IWP. Eastern Africa (Somalia, Zanzibar), Mayotte and Glorioso (first record), Taiwan, Japan, Lord Howe. Collected in Mayotte in coral *Acropora* and coral blocks, between 3-30 m, reported between 10-165 m.

Remarks. – Although at the beginning of this study a few lots were suspected to be *G. spinosorostris*, these all proved to represent *G. tanegashimae*. *Galathea tanegashimae* can be recognized by the special 'X' shaped white patch at base of fingers of chelae (see Fig. 7 B-C). This character was used to identify the specimens collected in the Glorioso during the BIOTAS expedition (Fig. 7 B, sp. MEPA 974, probably in UF).

***Macrothea bouchardi* Macpherson & Cleva 2010**

Macrothea bouchardi (Figure 8 A) - Macpherson & Cleva, 2010: 63, fig. 2, 3k, Mayotte, KUW fieldwork November 2009, St. 23, Choizil pass, 'Patate à Teddy', 15-30 m, outer reef, collapsed barrier, 1 male 3.5 mm, as '*Galathea sp.* St. 23' in Bouchard *et al.*, 2009: photo p. 58 (middle, left), holotype, MNHN-Ga7350.

Distribution. – WIO. Mayotte, 15-30 m and Madagascar, 75-77 m.

Remarks. – Live coloration of this new genus and species is available from a photograph taken during the KUW fieldwork (Fig. 8 A).

FAMILY MUNIDIDAE

Munida sp.

Munida sp. (Figure 5 D) – Leven bank, coll. MIRIKY campaign, St. DW3215, 30 June 2009, 12°32'S, 47°54'E, 316-433 m, MNHN.

Remarks. – Specimen under study by E. Macpherson along with others specimens collected during the 2009 MIRIKY campaign on the Leven bank (see historical overview of collections).

***Sadayoshia edwardsii* (Miers, 1884)**

Sadayoshia edwardsii (Figure 8 B) - Macpherson & Cleva, 2010: 67, fig. 3l, Mayotte, KUW fieldwork November 2009, St. 23, Choizil pass, 'Patate à Teddy', 15-30 m, outer reef, collapsed barrier, 1 male 4.6 mm, as '*Galathea sp.* St. 23' in Bouchard *et al.*, 2009: photo p. 58 (bottom, left), MNHN-Ga7351.

Distribution. – IWP. Mozambique channel, Madagascar, Mayotte (first record), Seychelles (Aldabra, Amirante), Réunion, Mauritius, Bay of Bengal, Indonesia, Japan, Philippines, Marianas, Palau, Line Islands, New Caledonia, Loyalty Islands, Vanuatu, French Polynesia. Sublittoral between 3-90 m, Mayotte specimen collected between 15-30 m.

Remarks. – The genus *Sadayoshia* has been revised recently by Macpherson & Baba (2010) with additions of four new species. *Sadayoshia edwardsii* is one of the commonest species with a wide IWP distribution. It is usually associated with corals Pocilloporidae such as *Seriatopora hystrix*. Typical coloration of the species includes purple spots along transverse ridges of the carapace but these are not very clear on the specimen photographed from Mayotte (Fig. 8 B). The cheliped has white patches on merus and carpus, and longitudinal reticulations on upper face of the palm, as visible on Fig. 8B.

FAMILY PORCELLANIDAE

The Porcellanidae of Mayotte region were studied by Haig (1966) based on collections made by researchers working at ORSTOM Madagascar (M. Chavane, A. Crosnier, P. Fourmanoir and J. Millot) between 1955 and 1962 and deposited in MNHN. Haig (1983) has also studied a collection of Porcellanidae from the Seychelles. In addition to the 13 porcelain-like crabs of the present list, Haig (1966: 40) mentioned a *Petrolisthes* sp. from Mayotte (Saziley pass, 10 m, coral, coll. A. Crosnier, September 1959). She indicated that this unique specimen, in poor condition “*appartient vraisemblablement à une espèce nouvelle dont nous avons examiné des échantillons provenant du Pacifique occidental et que nous nous proposons de décrire dans un travail à venir*”. However, it appears that Haig never published the description. A key for determination of WIO porcelain-like crabs can be found in Haig (1966: 46). In addition, Osawa (2007a) published a key to IWP genera and species of Porcellanidae.

***Aliaporcellana pygmaea* (De Man, 1902)**

Aliaporcellana pygmaea (Figure 10 A) - Mayotte, K UW fieldwork November 2009, St. 14, La Prudente bank, 15-17 m, 1 ovigerous female 2.41×2.41 mm, MNHN-Ga7460; St. 21b, islet Choizil, east, 15-20 m, 1 ovigerous female 3.27×3.35 mm, MNHN-Ga7461; St. 23, Choizil pass ‘Patate à Teddy’, 15-30 m, 1 male 2.68×2.55 mm, MNHN-Ga7462.

Distribution. – IWP. Red Sea, Madagascar, Mayotte (first record), Seychelles, Cargados Carajos, Siam Gulf, Indonesia, New Caledonia, Loyalty Islands; between 5-80 m. Mayotte specimens collected between 15-30 m.

Remarks. – A small-sized porcellanid living on coral or sponges. The genus *Aliaporcellana* includes four species. Osawa’s (2007a: 5) key was used to determined the three specimens collected at Mayotte. Live coloration of *Aliaporcellana pygmaea* is available for Taiwan (see Osawa & Chan, 2010: 79, fig. 51-52). *Aliaporcellana pygmaea* can be recognized from *A. suluensis* (Dana, 1852), also in the Indian Ocean, by the presence of an epibranchial spine (absent in *A. suluensis*), 3 branchial spines (four in *A. suluensis*), and by a mobile spine on the ventral margin of the dactyl of the ambulatory legs (missing in *A. suluensis*).

***Neopetrolisthes maculatus* (H. Milne Edwards, 1837)**

Neopetrolisthes maculatus (Figure 9 A) - Mayotte, K UW fieldwork November 2009, St. 5, Great north-eastern reef, seagrass bed, 1 m, 1 male 12.41×10.07 mm, MNHN-Ga7435.

Distribution. – IWP. Red Sea, Eastern Africa, Madagascar, Mayotte (first record), Réunion, Christmas Island, Taiwan, Japan, Australia, New Guinea, Marshall, Fiji. This distribution must be revised when the status of *N. maculatus* and *N. ohshimai* are more clear (see Remarks).

Remarks. – A medium-sized porcelain crab always associated with giant sea-anemones (genera *Cryptodendrum*, *Entacmaea*, *Stichodactyla*). It seems common in Mayotte with several *in situ* photographs transmitted by collaborators (e.g. Fig. 9 A) or available on Internet (DORIS [5], photo S. Grilhe). *Neopetrolisthes ohshimai* Miyake, 1937, with fewer and larger spots on the carapace is considered as a distinct sibling species by Poupin & Juncker (2010), but as a junior synonym by Osawa & Chan (2010).

***Pachycheles sculptus* (H. Milne Edwards, 1837)**

Pachycheles sculptus (Figure 9 C-D) - Mayotte, KUW fieldwork November 2009, St. 25, islet M'tzamboro, 15-20 m, 1 female 2.93×3.76 mm, MNHN-Ga7463.

Distribution. – IWP. Mayotte (first record), Seychelles, Mergui archipelago, Malaysia, Indonesia, Hong Kong, Taiwan, Japan, Australia, New Caledonia, French Polynesia (Tuamotu). Littoral to 180 m.

Remarks. – This species has affinities with *Pachycheles natalensis* (Krauss, 1843), distributed in the WIO only. Lewinsohn (1979: 50) has speculated that *P. sculptus* (H. Milne Edwards, 1837) was not present in the Indian Ocean until Haig (1983: 284) recorded it from the Seychelles. The specimens from Mayotte is attributed to *P. sculptus* based on its live coloration (compare Fig. 9 C-D) and by the presence of four tuberculated longitudinal lines on the outer face of the larger chela. In the key of the genus by Osawa (2007a: 19) it is indicated that males of both species can be separated by the presence (*P. sculptus*) or absence (*P. natalensis*) of pleopods.

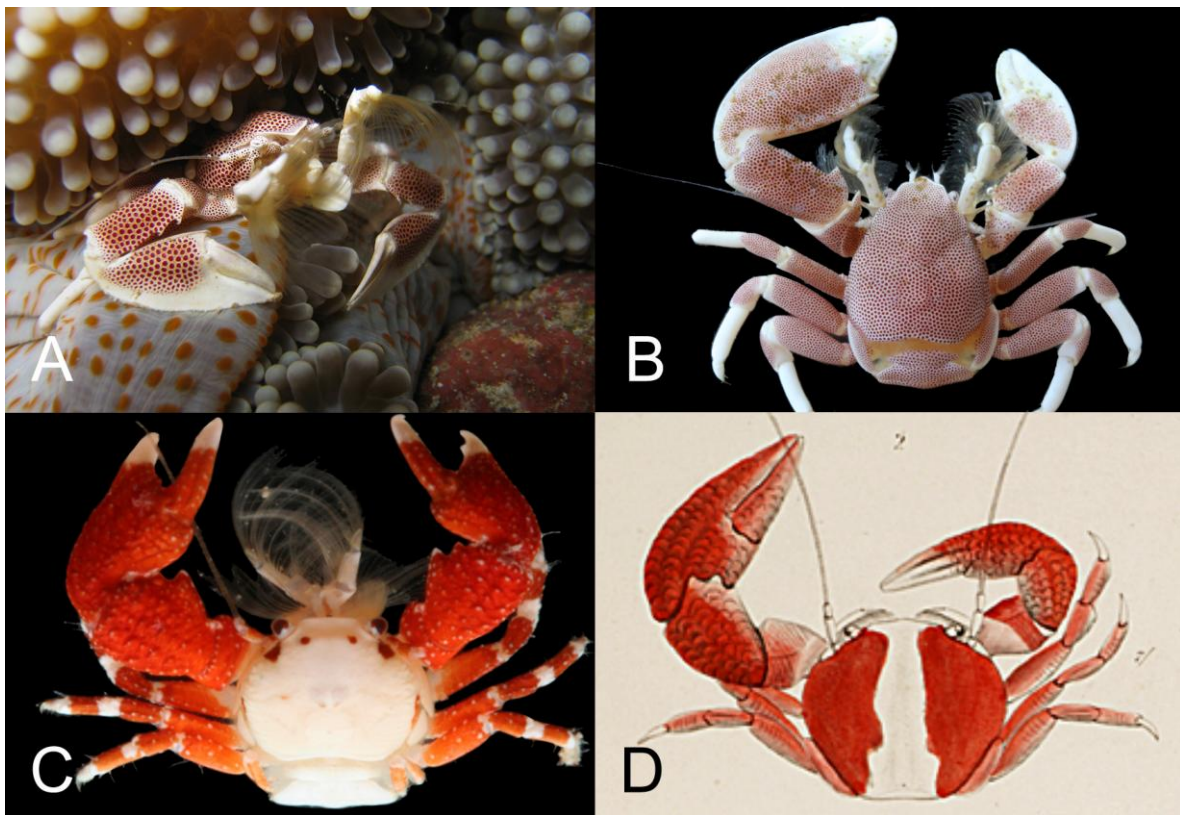


Figure 9. A-B) *Neopetrolisthes maculatus*. A) *In situ* photographs by M. Deuss, Mayotte, Buoy '4' 'S' pass, 15 m. Copyright M. Deuss; B) 1 male 12.41×10.07 mm, Mayotte, St. 5, MNHN-Ga7435. C-D) *Pachycheles sculptus*. C) 1 female 2.93×3.76 mm, Mayotte, St. 25, MNHN-Ga7463; D) color pattern as illustrated by Dana (1855, pl. 26, fig. 2).

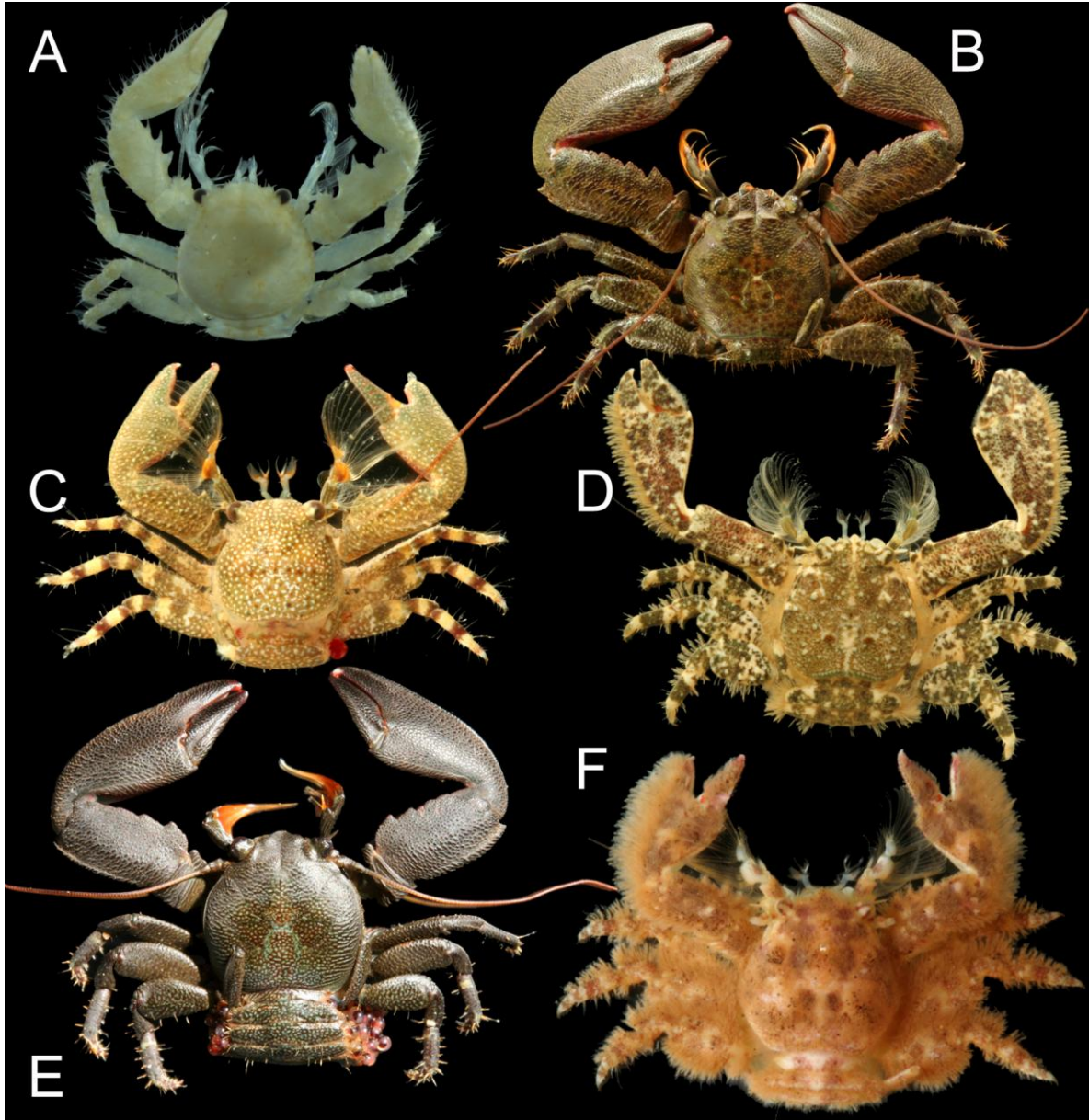


Figure 10. A) *Aliaporcellana pygmaea*, 1 ovigerous female 2.41×2.41 mm, Mayotte, St. 14, MNHN-Ga7460, coloration altered by preservative. B-C) *Petrolisthes lamarckii*. B) 1 male 12.6×11.75 mm, Mayotte, St. 29, MNHN-Ga7457; C) 1 ovigerous female 3.65×3.5 mm, Mayotte, St. 29, MNHN-Ga7458. D) *Petrolisthes ornatus*, 1 female 7.0×6.69 mm, Mayotte, St. 29, MNHN-Ga7444. E) *Petrolisthes rufescens*, 1 ovigerous female 7.14×7.33 mm, Mayotte, St. 6, MNHN-Ga7447. F) *Petrolisthes tomentosus*, 1 female 6.2×6.0 mm, Mayotte, St. 26, MNHN-Ga7510.

***Petrolisthes decacanthus* Ortmann, 1897**

Petrolisthes decacanthus - Haig & Kropp, 1987: 179, Glorioso Islands, Grande Glorieuse, intertidal, coll. A. Crosnier 30 January 1971, 2 females (AHF 2734-01).

Distribution. – IWP. Glorioso, Seychelles, Maldives, Taiwan, Mariana, Caroline, Palau, Marshall, Samoa, Society Islands.

Remarks. – Living coloration of this species is available in Osawa & Chan (2010: 127, fig. 94).

***Petrolisthes lamarckii* (Leach, 1820)**

Petrolisthes lamarckii (Figure 10 B-C) - Fourmanoir, 1955: 30 (Comoros: Mayotte, Mohéli, Grande Comore, 1.5-2.5 m). - Haig, 1966: 41 (Mayotte, Bandéli, coll. A. Crosnier, September 1959, intertidal, 1 ovigerous female 7.2 mm, 1 female 4.4 mm; Glorioso, intertidal, coll. Millot and Crosnier, 16 September 1958, intertidal, 1 female 7.6 mm, 2 ovigerous females 7.2 and 11.2 mm, MNHN). - BIOTAS collections, Glorioso, 3-7 May 2009, det. J. Poupin from photo, St. GLOR-13, in front of Military camp, 'Îlot aux crabes', intertidal, MEPA 1345. - Mayotte, KUW fieldwork November 2009, St. 2, intertidal, from Trévani to Kangani mangrove, 1 male 8.74×8.37 mm, as '*Porcellana* sp. St. 2' in Bouchard *et al.*, 2009: photo p. 59, MNHN-Ga7450, 7 males 6.77×6.43 to 8.35×7.94 mm, 1 ovigerous female 7.19×6.77 mm, MNHN-Ga7451; St. 6, Petite Terre, Badamiens spillway, intertidal, 1 ovigerous female 7.63×7.21 mm, MNHN-Ga7452, 2 males 7.0×6.5 and 8.08×7.67 mm, 1 ovigerous female 7.89×7.66 mm as '*Porcellana* sp. St. 6' in Bouchard *et al.*, 2009: photo p. 59, MNHN-Ga7453; St. 10, islet Quatre Frères, intertidal, 1 male, 2 ovigerous females, MNHN-Ga7454; St. 26, Mutsumbatsou reef flat, intertidal, 1 male 3.61×3.30 mm, MNHN-Ga7455, 4 males 3.9×3.53 to 7.32×7.08 mm, 2 ovigerous females 5.33×5.48 and 6.14×5.69 mm, as '*Porcellanidae* indéterminé St. 26' in Bouchard *et al.*, 2009: photo p. 60 (top, right), MNHN-Ga7456; St. 29, Ngouja hotel, Mboianatsa beach, intertidal, 1 ovigerous female 3.65×3.50 mm as '*Porcellanidae* indéterminé St. 29' in Bouchard *et al.*, 2009: photo p. 60, MNHN-Ga7458, 6 males 6.66×6.11 to 12.60×11.75, as '*Porcellana* sp. St. 29' in Bouchard *et al.*, 2009: photo p. 59, MNHN-Ga7457.

Distribution. – Widespread in the IWP. Red Sea, eastern Africa (Kenya, Somalia, Natal, Tanzania), Comoros (Mayotte, Mohéli, Grande Comore), Glorioso, Madagascar, Seychelles, Mauritius, Chagos, Nicobar, Malaysia, Indonesia, Taiwan, Japan, Australia, New Caledonia, Wallis & Futuna, French Polynesia.

Remarks. – *Petrolisthes lamarckii* is very common in the intertidal area at Mayotte. It can be collected and confused with *Petrolisthes rufescens* (compare Fig. 10 B-C, E). *Petrolisthes lamarckii* is distinct by: a) a more variable color, with patches on the carapace and a transverse median red-maroon band on propodi of ambulatory legs (color variations illustrated on Fig. 10 B-C and also in Osawa & Chan, 2010: 142-143); b) distal outer margin of carpus of cheliped with 2-3 spines (absent in *P. rufescens*); c) presence of an epibranchial spine on the carapace (absent in *P. rufescens*).

***Petrolisthes ornatus* (Paul'son, 1875)**

Petrolisthes ornatus (Figure 10 D) - Fourmanoir, 1955: 30 (Mayotte, Bandéli, 1.5 m). - Haig, 1966: 41 (Mayotte, Bandéli, coll. A. Crosnier, September 1959, intertidal, 3 males 6.0 to 7.2 mm, 7 females 5.5 to 6.3 mm, MNHN). - Mayotte, KUW fieldwork November 2009, St. 6, Petite Terre, Badamiens spillway, intertidal, 1 male 6.07×5.62 mm, MNHN-Ga7442; St. 26, Mutsumbatsou reef flat, intertidal, 1 ovigerous female 6.61×6.33 mm, MNHN-Ga7443; St. 29, Ngouja hotel, Mboianatsa beach, intertidal, 1 female 7.0×6.69 mm, as '*Porcellanidae* indéterminé St. 29' in Bouchard *et al.*, 2009: photo p. 60, MNHN-Ga7444; St. 31, Brandélé 'Musical beach', intertidal, 1 male 2.93×2.52 mm, MNHN-Ga7445.

Distribution. – WIO. Red Sea, eastern Africa (Tanzania), Comoros, Mayotte, Madagascar, Sri Lanka.

Remarks. – In this species the inner face of fingers of chelae is setiferous, forming a brush of setae, and the outer margin of the chelae is fringed with long setae (*cf.* Fig. 10 D). Carapace and ambulatory legs are covered with tubercles, reduced on the smallest specimens.

***Petrolisthes rufescens* (Heller, 1861)**

Petrolisthes rufescens (Figure 10 E) - Haig, 1966: 41 (Mayotte, Bandéli, coll. A. Crosnier, intertidal, 1 female 5.2 mm, MNHN). - Mayotte, KUW fieldwork November 2009, St. 2, from Trévani to Kangani mangrove, intertidal, 2 males 6.31×6.31 and 8.80×9.07 mm, 1 ovigerous female 8.63×8.98 mm, MNHN-Ga7446; St. 6, Petite Terre, Badamiers spillway, 0-1 m, 2 males 6.46×6.34 and 7.39×7.39 mm, 3 ovigerous females 6.74×6.79 to 7.14×7.33 mm, as '*Porcellana* sp. St. 6' in Bouchard *et al.*, 2009: photo p. 59, 1 female 6.57×6.73, MNHN-Ga7447; St. 10, islet Quatre Frères, intertidal, 4 males and 1 ovigerous female, MNHN-Ga7448; St. 26, Mutsumbatsou reef flat, intertidal, 4 males 3.66×3.49 to 6.38×6.27 mm, 2 ovigerous females 3.94×3.88 and 5.64×5.83 mm, MNHN-Ga7449.

Distribution. – WIO. Red Sea, Gulf of Aden, eastern Africa (Kenya, Mozambique, Somalia, Tanzania, Zanzibar), Mayotte, Madagascar, Mauritius.

Remarks. – This species is distributed in WIO only. It has been sometimes considered as a junior synonym of *Petrolisthes lamarckii*, widely distributed in the IWP, but both species are clearly separated by Haig (1966, 1983). In addition to the characters mentioned under *P. lamarckii* to tell both species apart, it has been observed, in specimens of *P. rufescens* from KUW St. 2, that the inner face of the chela bears a low tomentum, not observed in *P. lamarckii*.

***Petrolisthes tomentosus* (Dana, 1852)**

Petrolisthes penicillatus - Haig, 1966: 42 (Comoros: Anjouan, coll. A. Crosnier, November 1961, intertidal, 1 male 6.5 mm, 2 ovigerous females 4.5 et 6.3 mm; Glorioso intertidal, 16 September 1958, coll. Millot, 4 males 2.7 to 6.6 mm, 2 females 5.8 and 8.5 mm, 4 ovigerous females 4.6 to 6.5 mm, MNHN). - *Petrolisthes tomentosus* (Fig. 10 F) - Mayotte, KUW fieldwork November 2009, St. 26, Mutsumbatsou reef flat, intertidal, 1 female 6.2×6.0 mm, as '*Porcellanidae indeterniné* St. 26' in Bouchard *et al.*, 2009: photo p. 60 (bottom, left), MNHN-Ga7510, 3 males 5.05×4.73 to 6.18×5.67 mm, 4 ovigerous females 5.04×4.63 to 5.62×5.92 mm, 2 females 4.22×4.18 and 5.59×5.23 mm, MNHN-Ga7511.

Distribution. – IWP. Eastern Africa (Somalia), Comoros (Anjouan), Mayotte, Glorioso, Madagascar, Seychelles, Mauritius, Nicobar, western Australia, Palau, Japan, Marianas, Guam, Fiji, French Polynesia (Tahiti).

Remarks. – Following Kropp (1986: 453) *Petrolisthes penicillatus* (Heller, 1861) is now considered as a junior synonym of *Petrolisthes tomentosus* (Dana, 1852). This synonymy is accepted here with some hesitation because Mayotte specimens differ slightly from western Pacific specimens as defined by Osawa (2007a: 22, key). In Mayotte specimens the armature of extensor (dorsal) margin of meri of P2 and P3 is limited to 1-2 distal spines and spines are absent on P4 margin. In western Pacific specimens there is a 'row of spines' on extensor margins of meri of P2, P3, and P4. The reduction in number of spines on extensor margin of meri of ambulatory legs in Mayotte specimens is in accordance with that of the types specimens of *P. penicillatus* from Nicobar Islands: 2, 2, and 1 spine, respectively on P2, P3, and P4, as reported by Lewinsohn (1979: 48). Lewinsohn (1979) mentions that additional specimens examined from Somalia are similar to types specimens of *P. penicillatus*. Therefore, the possibility exists that *P. tomentosus* as accepted nowadays includes in fact two distinct species, one in the Indian Ocean, corresponding to *P. penicillatus* Heller, and one in the Pacific for *P. tomentosus*.

Observations made for this study show that the specimen attributed with hesitation to *P. tomentosus* from la Réunion by Poupin (2009: 124; with photograph in Internet database [6]) is more probably *Petrolisthes pubescens* Stimpson, 1858, a species that has affinities with *P. tomentosus*, distributed from Red Sea, Mauritius to New Caledonia and the Marquesas. A good color photograph of *P. pubescens* is in Osawa & Chan (2010: 155, fig. 121) with live coloration similar to la Réunion' specimen.

***Pisidia delagoae* (Barnard, 1955)**

Pisidia delagoae - Haig, 1966: 43, fig. 1 (Glorioso, coll. Millot, intertidal, 16 September 1958, 1 ovigerous female 2.6 mm).

Distribution. – WIO. Eastern Africa (Somalia, Mozambique), Glorioso.

***Polyonyx biunguiculatus* (Dana, 1852)**

Polyonyx biunguiculatus (Figure 11 A) - BIOTAS collections, Glorioso, 3-7 May 2009, det. J. Poupin from photo, St. GLOR-4, patch reef, near anchorage, 3-6 m, specimen MEPA 1899. - Mayotte, KUW fieldwork November 2009, St. 23, Choizil pass 'Patate à Teddy' 15-30 m, 1 male 2.68×3.23, 1 female 1.50×1.83 mm, MNHN-Ga7459.

Distribution. – IWP. Red Sea, eastern Africa (Mozambique), Madagascar, Mayotte and Glorioso (first record), Seychelles, Réunion, Australia. Hard bottoms, collected to 110 m.

Remarks. – This species is illustrated in color for the first time. It has affinities with *Polyonyx triunguiculatus* and its live coloration appears as a good character to recognize it (compare Fig. 11 A, C). Other characters that can be used to separate *P. biunguiculatus* and *P. triunguiculatus* are indicated under *P. triunguiculatus*. *Polyonyx biunguiculatus* is also very similar, for its live coloration, to *P. obesulus* Miers, 1884 illustrated in color from Taiwan by Osawa & Chan (2010: 170, fig. 134). The two are distinguished by dactyls of ambulatory legs, with 2 corneous spines on flexor margin for *P. biunguiculatus* instead of only 1 in *P. obesulus* (see Osawa, 2007a: 31, key). Osawa (2007a: 35) indicates that *P. biunguiculatus* is a species complex and has some doubt on record of this species in the Indian Ocean. However based on the characters that he mentions (smooth larger chela and presence of pleopods in male) our specimens confirm the presence of typical *P. biunguiculatus* in the region.

***Polyonyx* aff. *boucheti* Osawa, 2007a**

Polyonyx aff. *boucheti* (Figure 11 D) - Mayotte, KUW fieldwork November 2009, St. 12, La Prévoyante reef, 6-11 m, 1 ovigerous female 2.20×3.24 mm, MNHN-Ga7465; St. 25, islet M'tzamboro, 15-20 m, 1 ovigerous female 1.90×2.89 mm (broken), MNHN-Ga7466.

Distribution. – Indian Ocean. Mayotte.

Remarks. – Despite their small size, these two specimens are ovigerous indicating that they are adults. They are similar to *Polyonyx boucheti* Osawa, 2007a, from Loyalty Islands, 5-40 m, but are distinct by several characters: a) dorsal surface of carapace smooth, without transverse striae; b) front straight, lacking the low median rostral lobe illustrated for *P. boucheti* by Osawa (2007a, fig. 13 B); outer face of chelae smooth, without short transverse oblique striae; d) carpus of the cheliped lacking distal tuff of setae. Live coloration of *P. boucheti* is not known but is perhaps distinct as Osawa (2007a) mentions 'Carapace with narrow, transverse and oblique, brown lines' and no patches as illustrated for *P. aff. boucheti* on figure 11 D. The specimens from Mayotte are also similar to the Japanese *Polyonyx utinomii* Miyake, 1943 but are distinct by their smooth carapace (instead of having transverse striae in *P. utinomii*). Osawa (2001: 513) has reported *P. utinomii* in the Indian Ocean (Maldives) but, based on location, this record could perhaps belong to *P. aff. boucheti* from Mayotte⁵.

***Polyonyx pedalis* Nobili, 1905**

Polyonyx pedalis (Figure 11 B) - Mayotte, KUW fieldwork November 2009, St. 19, islet Handrema, north, 6-10 m, 1 female 4.56×4.73 mm, MNHN-Ga7464.

Distribution. – IWP. Red Sea, Mayotte (first record), Indonesia (Kei Islands), New Caledonia. Subtidal to 65 m.

Remarks. – *Polyonyx pedalis* has been redescribed by Osawa (2007b: 26, fig. 3) for comparison with *Polyonyx spina* Osawa, 2007b, a similar species from Loyalty Islands and Philippines. The two species are remarkable by being the only one among the IWP species to bear spines on posterior (flexor) margin of meri of ambulatory legs (P2-P4). *Polyonyx pedalis* is distinct from *P. spina* by sub-parallel lateral margins of the carapace, instead of convex in *P. spina*. It can be easily distinguished from other *Polyonyx* from Mayotte by its pilosity, including setae on ventral margin of the chelae, on inner faces of ischia, meri and carpi of chelipeds and ambulatory legs.

⁵ When this study was in press, a careful re-examination of the specimens of *Polyonyx* aff. *boucheti* from Mayotte, by M. Osawa (October 2012), shows that they can be attributed to *Polyonyx boucheti*, typical. A separate note is in preparation for that issue (Osawa & Poupin, 2013 in Marine Biodiversity Records).