

Checklist of brachyuran crabs (Crustacea: Decapoda) from the Cape Verde Islands, with a biogeographic comparison with the Canary Islands (Eastern Atlantic)

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Abstract: In the current scenario of defaunation and bioinvasion, increasing the knowledge about the composition in marine species and monitoring are an emergency need to control the biodiversity. Nearly 35 years have passed since Türkay (1982) published the decapod crustaceans of the Cape Verde islands. No checklists of decapod fauna specifically covering this area have been published since then, and an update is needed. The current list of Cape Verdean brachyuran crabs comprises 125 species, grouped in 83 genera and 40 accepted families. Additional species have been mainly recorded thanks to intensified research into deep water and description of new taxa. *Anamathia rissoana* and *Macropipus rugosus* are recorded for the first time and the occurrence/absence of some species confirmed in the area. This work summarizes all recent changes in Cape Verdean brachyurans and makes biogeographic remarks, with a comparison with the Canary Islands brachyurans. It presents a literature review and overview about the species previously recorded in the area. It still aims to be a tool to support further monitoring to identify the absence or appearance of invasive species.

Résumé : *Crabes brachyours (Crustacea : Decapoda) des îles du Cap Vert, comparaison biogéographique avec les îles Canaries (Atlantique Est).* Dans les conditions actuelles de disparition d'espèces et d'invasion biologique, la connaissance de la composition en espèces marines et la surveillance représentent une nécessité émergente de contrôler le niveau de la biodiversité. Presque 35 ans se sont écoulés depuis que Türkay (1982) a publié la liste des crustacés décapodes des îles du Cap Vert. Aucune liste équivalente couvrant spécifiquement cette zone n'ayant été publiée depuis, une mise à jour était nécessaire. La liste actuelle des brachyours du Cap Vert comprend 125 espèces regroupées en 83 genres et 40 familles validées. De nouvelles espèces ont été signalées principalement grâce à l'intensification des recherches en eau profonde et à la description de nouveaux taxa. *Anamathia rissoana* et *Macropipus rugosus* ont été signalées pour la première fois et la présence ou l'absence de certaines espèces est confirmée. Ce travail synthétise les récents changements au sein des brachyours du Cap Vert et apporte des remarques biogéographiques par une comparaison avec les brachyours des Îles Canaries. Il présente une revue de la littérature sur le thème et les espèces précédemment signalées dans la région. Il constitue un outil pour de futures observations afin d'identifier l'apparition d'espèces invasives.

Keywords: Checklist • Biogeography • Brachyura • Decapoda • Cape Verde Islands • Canary Islands

Introduction

In the current scenario of defaunation and bioinvasion, increasing the knowledge about the composition of marine species that occur in different regions by using their checklists and support monitoring is an emergency need to control the biodiversity (e.g. Araújo & Wirtz, 2015). For this purpose, the appropriateness of decapod crustaceans is evident because decapods is one of the most diverse taxa in marine and coastal ecosystems, as well as one of the most representative groups of the benthic environment.

Placed in the NE Atlantic, the Cape Verde archipelago has about 965 km of coastline, the islands lying within the 4000 m marine contour. The islands are separated from the coasts of Western Africa by great depths (> 3000 m), being Boa Vista located 570 km from Senegal. Most of the islands arise from great depths, but the windward island chain, and Boa Vista and Maio are linked by relative shallows (< 200 m) (Fig. 1). These characteristics are manifest by the absence of wide shelves, with a bottom depth of 300 m near the coast except around Boa Vista and Maio. The islands show an increase of age from west (< 3 my) to east (8-16 my) (Madeira et al., 2008). Their waters are under the influence of the North Equatorial Counter-Current and the Canary Current (e.g. Lázaro et al., 2005), and sea surface are normally higher than 20°C all year long (Wirtz et al., 2013). This could explain the great diversity in the biogeographic patterns of their biota. The Cape Verde islands eco-region is included within the West African Transition province of the Tropical Atlantic realm (Spalding et al., 2007).

Nearly 35 years have passed since Türkay (1982) published his work on decapod crustaceans of the Cape Verde islands. The systematic research landscape on brachyurans has changed drastically in the last few decades (e.g. Marco-Herrero et al., 2015; González, 2016), and a great number of changes to the species found around the Cape Verde islands have also taken place; so an update is needed for this area.

This work summarizes all changes in Cape Verdean brachyurans since Türkay (1982) and makes biogeographic remarks, with a comparison with the Canary Islands brachyurans. It presents a literature review and overview about the species previously recorded in the area, with two new records and some presence/absence confirmations. It still aims to be a useful tool to support further monitoring to identify the absence or appearance of invasive ones.

Materials and Methods

This list covers all brachyuran crabs present in the Cape Verde islands from intertidal to deep waters. The study area

is bounded by the 14°50'N-17°20'N parallels and the 22°40'W-25°30'W meridians, covering an area of about 800560 km² (Fig. 1).

Families are arranged in taxonomical order, and species alphabetically within each family. This systematic classification follows Ng et al. (2008), but also takes into account the latest changes in particular taxa: Schubart & Reuschel (2009) and Spiridonov et al. (2014) for Cancroidea and Portunoidea; Marco-Herrero et al. (2013) for Majoidea, with larvae and DNA data supporting that *Ergasticus clouei* should be moved from Inachidae to Oregoniidae; Shih et al. (2016) for Ocypodidae. Data from WoRMS database (<http://www.marinespecies.org/>) were also checked.

For each crab species, the publication that (to our knowledge) gives the first record (with its original name) from the study area is listed. When the Cape Verde islands were type-locality, all available data on that type-material is given. Additionally, main references used to check the occurrence of each one of the brachyuran species are listed as follow: A, Monod (1956); B, Manning & Holthuis (1981); C, Türkay (1982); D, Fransen (1991); E, d'Udekem d'Acoz (1999); F, González et al. (2004); G, González et al. (2009); and present work when enlarging the bathymetric range of a species. In some cases, a common synonym used in the literature is given.

For each species, previously reported or unpublished data (from six campaigns with different types of traps) on regional depth range are given, as well as their vertical distribution elsewhere. Each species is classified into the following 12 biogeographic pattern categories adapted from González (2016): cosmopolitan or worldwide; pantropical or circumtropical; amphi-Atlantic of wide distribution; amphi-Atlantic of warm affinity; eastern Atlantic of wide distribution; eastern Atlantic cold-temperate; eastern Atlantic warm-temperate; Atlanto-Mediterranean; Guinean (restricted to tropical and subtropical eastern Atlantic); eastern-central Atlantic islands (from Azores to Cape Verde islands, and southwards even to St. Helena); insular West African (around Cape Verde islands and islands of the Gulf of Guinea); and endemic to Cape Verde islands. Global and regional distribution is given if necessary. A description of different components of this brachyuran fauna is performed, followed by a second approach where both pelagic and deep-water benthic species were excluded, in order to compare the littoral and upper bathyal benthic species (0-300 m) from Cape Verde (Menezes et al., 2015) and Canary Islands (González, 2016).

For newly recorded species from the study area, measurements taken (using callipers, ± 0.1 mm) and abbreviations used were: CL - carapace length; CW - carapace width. Sex and ovigerous condition were also noted.

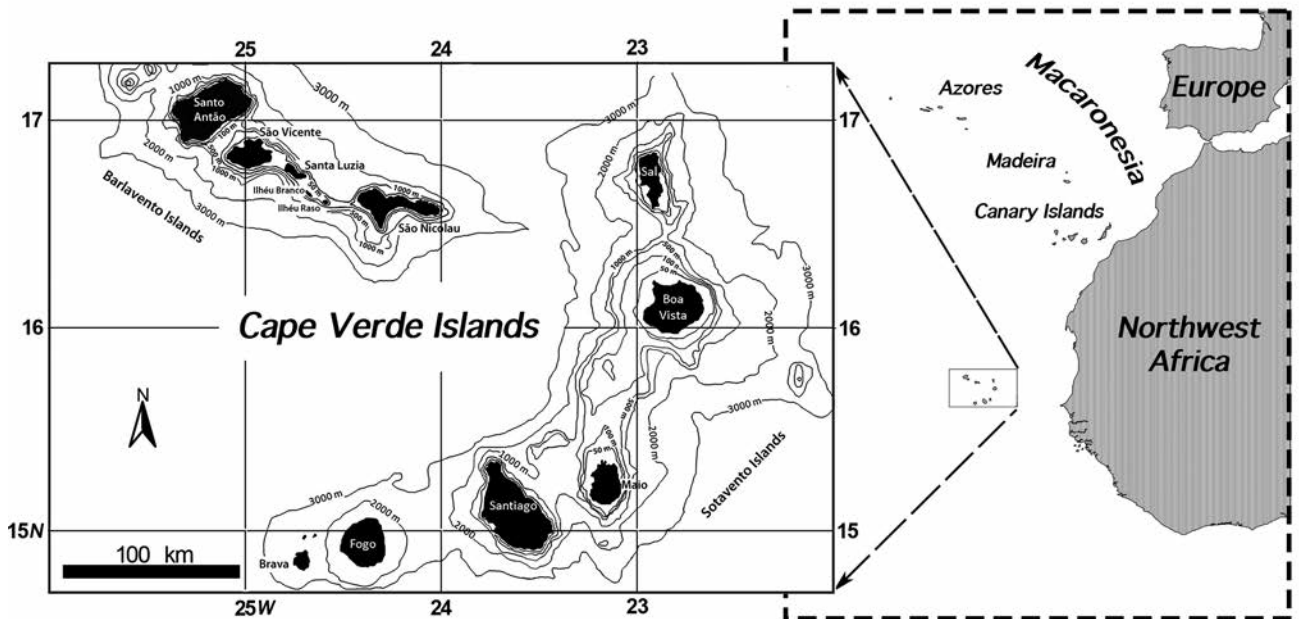


Figure 1. Map of the Cape Verde Islands (eastern Atlantic) showing their geographic situation and bathymetric characteristics.

Results

A total of 125 crab species and subspecies are reported herein around the Cape Verde islands. Of them, *Cardisoma armatum* Herklots, 1851 is terrestrial and 124 species are marine forms; *Planes minutus* (Linnaeus, 1758) is essentially pelagic and 123 species are benthic.

Superfamily DROMIOIDEA de Haan, 1833

Family Dromiidae de Haan, 1833

Dromia marmorea Forest, 1974

First record: A. Milne-Edwards & Bouvier (1899: 15, as *D. vulgaris*). Main references: A, B, C, D, E. Depth range: 10-30 m; elsewhere, 0-76 m. A Guinean species.

Dromia nodosa A. Milne-Edwards & Bouvier, 1898

First record: A. Milne-Edwards & Bouvier (1898: 75; five males; type-locality, Cape Verde islands; 75 m of depth). Main references: A, B, C, D, E. Depth range: 75-90 m; elsewhere, 75-95 m. A Guinean species.

Sternodromia spinirostris (Miers, 1881)

First record: Forest (1974: 101, as *Dromia spinirostris*). Main references: B, C, E, this work. Depth range: 40-122 m; elsewhere, 7.5-108 m. A Guinean species.

Family Dynomenidae Ortmann, 1892

Dynomene filholi Bouvier, 1894

First record: Bouvier (1894: 6; type-locality, Cape Verde islands). Main references: A, B, C, D. Depth range: 58-1477 m; elsewhere, 23-85 m. An insular West African species; also known from Príncipe and Annobon Islands.

Superfamily HOMOLOIDEA de Haan, 1839

Family Homolidae de Haan, 1839

Homola barbata (Fabricius, 1793)

First record: Bouvier (1922: 51). Main references: A, B, C, this work. Depth range: 91-165 m; elsewhere, 2-637 m. An ampho-Atlantic species of wide distribution.

Paromola cuvieri (Risso, 1816)

First record: Manning & Holthuis (1981: 27). Main references: E, F, G, this work. Depth range: 80-700 m; elsewhere, 10-1212 m. An eastern Atlantic species of wide distribution.

Family Latreilliidae Stimpson, 1858

Latreillia elegans Roux, 1830

First record: A. Milne-Edwards & Bouvier (1900: 13-14). Main references: A, B, D, E, F, G, this work. Depth range: 100-475 m; elsewhere, 35-405 m. An Atlanto-Mediterranean species.

Superfamily RANINOIDEA de Haan, 1839

Family Raninidae de Haan, 1839

Ranilia constricta (A. Milne-Edwards, 1880)

First record: Fransen (1991: 46, 180). No further records. Depth range: 76-76 m; elsewhere, 40-481 m. An ampho-Atlantic species of warm affinity.

Superfamily CALAPPOIDEA de Haan, 1833

Family Calappidae de Haan, 1833

Calappa galloides Stimpson, 1859

First record: Miers (1886: 286, as *C. gallus*). Main references: A, B, C, D, E, this work. Depth range: 0-80 m; elsewhere, 15-218 m. An ampho-Atlantic species of warm affinity.

Remarks: Generally referred erroneously as *Calappa gallus* (Herbst, 1803). In WoRMS it is currently noted "between Cape Verde islands and Senegal ...". However, d'Udekem d'Acoz (1999) stated that Indo-Pacific species was misidentified with *C. galloides* for a long time.

Calappa granulata (Linnaeus, 1758)

First record: A. Milne-Edwards & Bouvier (1900: 59-60). Main references: A, B, C, D, E, G, this work. Depth range: 75-233 m; elsewhere, 10-400 m. An Atlanto-Mediterranean species.

***Calappa* sp.** Fransen, 1991

First record: Fransen (1991: 38, 84). No further records. Depth range: 92-92 m; elsewhere, 80-192 m. An eastern-central Atlantic islands species; also known from the Canary and Selvagens Islands (González, 2016).

Cryptosoma cristatum Brullé, 1837

First record: Lucas (1882: 15). Main references: A, B, C, D, E. Depth range: 40-50 m; elsewhere, 2-89 m. An eastern-central Atlantic islands species; also known from Madeira, Canaries and St. Helena (González, 2016).

Superfamily CANCROIDEA Latreille, 1802

Family Atelecyclidae Ortmann, 1893

Atelecyclus rotundatus (Olivi, 1792)

First record: A. Milne-Edwards & Bouvier (1900: 60-61, as *A. septemdentatus*). Main references: A, B, C, D, E, this work. Depth range: 102-275 m; elsewhere, 0-795 m. An eastern Atlantic species of wide distribution.

Atelecyclus undecimdentatus (Herbst, 1783)

First record: A. Milne-Edwards & Bouvier (1900: 61, as *A. rotundatus*). Main references: A, C, E. Depth range: 0-51 m; elsewhere, same range. An Atlanto-Mediterranean species.

Superfamily DORIPPOIDEA MacLeay, 1838

Family Dorippidae MacLeay, 1838

Phyllodorippe armata (Miers, 1881)

First record: A. Milne-Edwards & Bouvier (1900: 32-33, as *Dorippe armata*). No further records. Depth 60 m; elsewhere, 7-105 m. A Guinean species.

Remarks: First recorded for the area based on three 1883 Talisman specimens caught off São Vicente Island and eight specimens from off Branco Islet at 60 m of depth; these records were surprisingly not compiled by none main reference.

Family Ethusidae Guinot, 1977

Ethusa rosacea A. Milne-Edwards & Bouvier, 1897

First record: Bouvier (1922: 53). Main references: A, E. Depth range: 628-660 m; elsewhere, 100-1013 m. A Guinean species.

Ethusa rugulosa A. Milne-Edwards & Bouvier, 1897

First record: A. Milne-Edwards & Bouvier (1897: 297-298; type-locality, Cape Verde islands; 150-275 m). Main references: A, B, C, D. Depth range: 88-275 m; elsewhere, 60-305 m. A Guinean species.

Ethusa vossi Manning & Holthuis, 1981

First record: A. Milne-Edwards & Bouvier (1900: 22-24, as *E. mascarone*). Main references: A, B, D. Depth range: 40-69 m; elsewhere, 6-96 m. A Guinean species.

Ethusina alba Filhol, 1884

First record: A. Milne-Edwards & Bouvier (1900: 29-30, as *E. abyssicola*). Main references: A, B, D, E. Depth range: 3000-3890 m; elsewhere, 2800-4265 m. An eastern Atlantic cold-temperate species.

Superfamily ERIPHOIDEA MacLeay, 1838

Family Menippidae Ortmann, 1893

Menippe nodifrons Stimpson, 1859

First record: A. Milne-Edwards (1878: 264, as *M. rudis*). Main references: A, B, C, this work. Depth range: 3-3 m; elsewhere, 0-20 m. An ampho-Atlantic species of warm affinity.

Family Oziidae Dana, 1851

Epixanthus helleri A. Milne-Edwards, 1867

First record: A. Milne-Edwards & Bouvier (1900: 83-85). Main references: A, B, C, D. Depth range: 0-6 m; elsewhere, 0-10 m. A Guinean species.

Eupilumnus africanus (A. Milne-Edwards, 1867)

First record: Miers (1886: 146, 150, as *Pilumnus*

africanus). Main references: A, B, C, D, E. Depth range: 0-15 m; elsewhere, 0-35 m. A Guinean species.

Eupilumnus* aff. *stridulans (Monod, 1956)

First record: Fransen (1991: 54-55, 101, as *Globopilumnus* aff. *stridulans*). No further records. Depth range: 0-6 m. Likely endemic to the area.

Superfamily GONEPLACOIDEA MacLeay, 1838

Family Acidopsidae Štević, 2005

Acidops cessacii (A. Milne-Edwards, 1878)

First record: A. Milne-Edwards (1878: 227, as *Epimelus Cessaci*; two specimens; type-locality, Cape Verde islands). Main references: A, B, C, D. Depth range: 0.5-61 m; elsewhere, intertidal. A Guinean species.

Family Chasmocarcinidae Serène, 1964

Typhlocarcinodes integrifrons (Miers, 1881)

First record: Fransen (1991: 36, 192). No further records. Depth range: 70-88 m; elsewhere, 12-90 m. A Guinean species.

Family Goneplacidae MacLeay, 1838

Goneplax barnardi (Capart, 1951)

First record: Fransen (1991: 36, 38-39, 50, 85-86, as *Carcinoplax barnardi*). Main references: E. Depth range: 328-590 m; elsewhere, 200-590 m. A Guinean species.

Goneplax rhomboides (Linnaeus, 1758)

First record: Fransen (1991: 36, 102-103). Main references: E. Depth range: 310-310 m; elsewhere, 0-600/700 m. An eastern Atlantic warm-temperate species.

Superfamily LEUCOSIOIDEA Samouelle, 1819

Family Leucosiidae Samouelle, 1819

Atlantocia laevidorsalis (Miers, 1881)

First record: A. Milne-Edwards & Bouvier (1900: 58, as *Philyra laevidorsalis*). Main references: A, B, C. Depth range: neritic littoral; elsewhere, 4-30 m. A Guinean species.

Ebalia affinis Miers, 1881

First record: A. Milne-Edwards & Bouvier (1898: 32-34, as *E. (Phlyxia) atlantica*). Main references: A, C, E. Depth range: 60-60 m; elsewhere, 4-140 m. A Guinean species.

Ebalia nux A. Milne-Edwards, 1883

First record: A. Milne-Edwards & Bouvier (1900: 45-47). Main references: A, B. Depth range: 219-875 m; elsewhere, 80-2983 m. An eastern Atlantic cold-temperate species.

Ebalia tuberculata Miers, 1881

First record: A. Milne-Edwards & Bouvier (1900: 50-51). Main references: A, B, C, E. Depth range: 60-60 m; elsewhere, 12-110 m. A Guinean species.

Ilia nucleus (Linnaeus, 1758)

First record: A. Milne-Edwards & Bouvier (1900: 40-41). Main references: A, B, C, E. Depth range: 60-60 m; elsewhere, 0.5-80 m. An Atlanto-Mediterranean species.

Ilia spinosa Miers, 1881

First record: Guinot & Ribeiro (1962: 30). Main references: B, C, D, E, this work. Depth range: 8-150 m; elsewhere, 5-132 m. A Guinean species.

Merocryptus obsoletus A. Milne-Edwards & Bouvier, 1898

First record: A. Milne-Edwards & Bouvier (1898: 34-35; one male; type-locality, W of the Cape Verde islands; 75 m of depth). Main references: A, B, C, E, this work. Depth range: 75-122 m; elsewhere, 75-132 m. A Guinean species.

Superfamily MAJOIDEA Samouelle, 1819

Family Epialtidae MacLeay, 1838

Subfamily Epialtinae MacLeay, 1838

Acanthonyx brevifrons A. Milne-Edwards, 1869

First record: Miers (1886: 43, as *A. lunulatus*). Main references: A, B, C, E. Depth range: 75-110 m; elsewhere, 0-110 m. An eastern-central Atlantic islands species; also known from Canary, Madeira and Azores archipelagos (González, 2016).

Acanthonyx depressifrons Manning & Holthuis, 1981

First record: Türkay (1982: 98, 111). No further records. Depth range: 5-5 m; elsewhere, 5-10 m. A Guinean species.

Acanthonyx lunulatus (Risso, 1816)

First record: Guinot & Ribeiro (1962: 76). B, C, D, E, this work. Depth range: 0-90 m; elsewhere, same range. An eastern Atlantic warm-temperate species.

Subfamily Pisinae Dana, 1851

Anamathia rissoana (Roux, 1828)

First record: present work; ICCM413, one male, CL/CW 33.5/23.3 mm, Santiago Island, Ponta Água Doce, cruise *CAMARÃO-1*, stn 5, 15°09'N 23°47'W, 220-258 m, rocky bottom, 19 Nov. 2011, semi-floating trap. Elsewhere, 100-730 m. An Atlanto-Mediterranean species.

Apiomithrax violaceus (A. Milne-Edwards, 1868)

First record: A. Milne-Edwards (1868: 50-52, as *Micropisa violacea*). Main references: A, C, D. Depth range: 3-110 m; elsewhere, 3-36 m. A Guinean species.

Herbstia rubra A. Milne-Edwards, 1869

First record: A. Milne-Edwards (1869: 354; one female; type-locality, Cape Verde islands). Main references: A, B, C, D, E, this work. Depth range: 0.5-75 m; elsewhere, same depth. A Guinean species.

Micropisa ovata Stimpson, 1858

First record: Stimpson (1858: 217). Main references: A, B, C, D, E. Depth range: 0-110 m; elsewhere, same depth. A Guinean species.

Pisa armata (Latreille, 1803)

First record: Studer (1883: 9, as *P. Gibsii*). Main references: A, B, C, D, E. Depth range: 70-110 m; elsewhere, 18-162 m. An eastern Atlantic warm-temperate species.

Pisa nodipes (Leach, 1815)

First record: A. Milne-Edwards & Bouvier (1900: 129-130, as *P. armata*). Main references: A, B, C, E. Depth range: 75-75 m; elsewhere, 0-100 m. An Atlanto-Mediterranean species.

Family Inachidae MacLeay, 1838

Dorhynchus thomsoni Thomson, 1873

First record: A. Milne-Edwards & Bouvier (1900: 148-152, as *Lispognathus Thomsoni*). Main references: A, B, D. Depth range: 225-1200 m; elsewhere, 106-2080 m. A cosmopolitan or worldwide species.

Inachus grallator Manning & Holthuis, 1981

First record: ?A. Milne-Edwards & Bouvier (1900: 143-144, as *I. dorsettensis*). Main references: A, B. Depth range: 90-318 m; elsewhere, 36-325 m. A Guinean species. Remarks: Probably first recorded from the Cape Verde islands by Milne-Edwards & Bouvier (1900), based on collections on sand with shells at São Vicente-Santo Antão channel (75-90 m) and at E of Santo Antão Island (318 m) (Manning & Holthuis, 1981).

Inachus phalangium (Fabricius, 1775)

First record: Studer (1883, as *Stenorhynchus phalangium*). Main references: A, B, C, E. Depth range: unknown; elsewhere, 0.5-160 m. An eastern Atlantic cold-temperate species.

***Inachus* sp.2** Fransen, 1991

First record: Fransen (1991: 40-42, 50-52, 120-121). No further records. Depth range: 50-110 m. Likely endemic to the area.

Macropodia doracis Manning & Holthuis, 1981

First record: A. Milne-Edwards & Bouvier (1900: 155, as *Stenorhynchus aegyptius* [part]). Main references: A, B, C. Depth range: 110-180 m. Endemic to the area.

Macropodia* aff. *doracis Manning & Holthuis, 1981

First record: Fransen (1991: 40, 49, 52, 127). No further records. Depth range: 60-90 m. Likely endemic to the area.

Macropodia longicornis A. Milne-Edwards & Bouvier, 1899

First record: A. Milne-Edwards & Bouvier (1899: 48, as *Stenorhynchus longicornis*; type-locality, Praia, Santiago Island, Cape Verde islands). Main references: A, B, C. Depth range: 150-275 m. Endemic to the area.

Macropodia longipes (A. Milne-Edwards & Bouvier, 1899)

First record: A. Milne-Edwards & Bouvier (1900: 156-157, as *Stenorhynchus longicornis*). Main references: A, B, D. Depth range: 318-318 m; elsewhere, 50-445 m. An Atlanto-Mediterranean species.

Macropodia* aff. *parva van Noort & Adema, 1985

First record: Fransen (1991: 46, 128). Main references: E. Depth range: 30-90 m; elsewhere, 20-90 m. A Guinean species; also known from off Mauritania and the Canary Islands (Fransen, 1991).

Macropodia spinulosa (Miers, 1881)

First record: Studer (1882: 7, as *Stenorhynchus phalangium*). Main references: A, B, C. Depth range: 70-70 m; elsewhere, 1-126 m. A Guinean species.

Macropodia tenuirostris (Leach, 1814)

First record: Fransen (1991: 51, 129-130, as *M. longipes*). Main references: D, E. Depth range: 115-115 m; elsewhere, 9-748 m. An eastern Atlantic cold-temperate species.

***Macropodia* sp.3** Fransen, 1991

First record: Fransen (1991: 41, 46, 48-51, 131-132). No further records. Depth range: 61-1200 m. Likely endemic to the area.

Stenorhynchus lanceolatus (Brullé, 1837)

First record: Miers (1886: 4, as *Leptopodia sagittaria*). Main references: A, B, C, D, E. Depth range: 5-90 m; elsewhere, 5-96 m. A Guinean species.

Family Majidae Samouelle, 1819

Eurynome aspera (Pennant, 1777)

First record: A. Milne-Edwards & Bouvier (1900: 125-127). Main references: A, D, E. Depth range: 61-318 m; elsewhere, 10-1216 m. An eastern Atlantic species of wide distribution.

Maja brachydactyla Balss, 1922

First record: Türkay (1982: 99, as *M. squinado*). No further records. Depth range: unknown; elsewhere, 0-91 m. An eastern Atlantic cold-temperate species.

Maja crispata Risso, 1827

First record: A. Milne-Edwards & Bouvier (1900: 127-128, as *Maia verrucosa*). Main references: A, B, C, E. Depth range: 84-84 m; elsewhere, 0.5-95 m. An Atlanto-Mediterranean species.

Family Mithracidae MacLeay, 1838

Mithrax caboverdianus Türkay, 1986

First record: Türkay (1982: 113, as Majidae gen. sp. indet.). Main references: Türkay (1986) and Fransen (1991: 54, 139-140, one intertidal specimen from Sal Island). Endemic to the area.

Remarks: Described as a new species by Türkay (1986), on the basis of two males with type-locality at Ponta Rodrigo, NE of Boa Vista Island, Cape Verde islands, at 0.5-2 m of depth.

Family Oregoniidae Garth, 1958

Ergasticus clouei A. Milne-Edwards, 1882

First record: Studer (1882: 8). Main references: A, C, D, E. Depth range: 70-400 m; elsewhere, 70-1000 m. An Atlanto-Mediterranean species.

Superfamily PALICOIDEA Bouvier, 1898

Family Palicidae Bouvier, 1898

Palicus caronii (Roux, 1828)

First record: Miers (1886: 334, as *Cymopolia caronii*). Main references: A, B, C, D, E. Depth range: 20-100 m; elsewhere, 18-220 m. An Atlanto-Mediterranean species.

Superfamily PARTHENOPOIDEA MacLeay, 1838

Family Parthenopidae MacLeay, 1838

Subfamily Daldorfiinae Ng & Rodríguez, 1986

Daldorfia bouvieri (A. Milne-Edwards, 1869)

First record: A. Milne-Edwards (1869: 350-351, as *Parthenope bouvieri*; one male; type-locality, São Vicente Island, Cape Verde islands). Main references: A, B, C, D. Depth range: 0.5-91 m; elsewhere, 4-5 m. A Guinean species.

Subfamily Parthenopinae MacLeay, 1838

Distolambrus maltzami (Miers, 1881)

First record: A. Milne-Edwards & Bouvier (1900: 121-122, as *Heterocrypta Maltzani* [sic]). Main references: A, B, C, D. Depth range: 24-347 m; elsewhere, 22-550 m. An eastern Atlantic warm-temperate species.

Parthenopoides massena (Roux, 1830)

First record: Stimpson (1858: 220, as *Lambrus rugosus*). Main references: A, C, D, E. Depth range: 20-110 m; elsewhere, 3-141 m. An Atlanto-Mediterranean species.

Spinolambrus macrochelos (Herbst, 1790)

First record: Bouvier (1922: 76, as *Lambrus Miersi*). Main references: A, B, D, E. Depth range: 91-91 m; elsewhere, 5-1478 m. An Atlanto-Mediterranean species.

Spinolambrus notialis (Manning & Holthuis, 1981)

First record: Fransen (1991: 40, 158, as *Parthenope notialis/miersi*). No further records. Depth range: 55-80 m; elsewhere, 18-162 m. A Guinean species; known from the Western Sahara to Angola (Manning & Holthuis, 1981). Remarks: Its presence in the area is based on the report by Fransen (1991) of specimens (one from the Cape Verde islands, and 15 from Mauritania) showing intermediate features between *S. notialis* and *S. macrochelos*. Then, it was erroneously compiled by d'Udekem d'Acoz (1999) as a Cape Verdean species on the basis of the Manning & Holthuis (1981) citation from Cap Vert, Senegal.

Velolambrus expansus (Miers, 1879)

First record: A. Milne-Edwards & Bouvier (1900: 117, as *Parthenolambrus expansus*). Main references: A, B, C, D, E. Depth range: 69-90 m; elsewhere, 30-170 m. An Atlanto-Mediterranean species.

Remarks: Also reported as *Parthenope expansa* (Miers, 1879), as accepted taxonomic status (Marco-Herrero et al., 2015; González, 2016).

Superfamily PILUMNOIDEA Samouelle, 1819

Family Pilumnidae Samouelle, 1819

Pilumnus hirtellus (Linnaeus, 1761)

First record: Manning & Holthuis (1981: 152). Main references: B, C, E. Depth range: unknown; elsewhere, 0-90 m. An eastern Atlantic cold-temperate species.

Pilumnus inermis A. Milne-Edwards & Bouvier, 1894

First record: A. Milne-Edwards & Bouvier (1900: 73, as *P. hirtellus* var. *inermis*). Main references: A, B, C, D, E, this work. Depth range: 3-225 m; elsewhere, 5-400 m. An Atlanto-Mediterranean species.

Pilumnus perrieri A. Milne-Edwards & Bouvier, 1898

First record: A. Milne-Edwards & Bouvier (1898: 183-185; type-locality, Cape Verde islands; 75 m). Main references: A, B, C, D, E. Depth range: 40-91 m; elsewhere, 20-91 m. A Guinean species.

Pilumnus spinifer H. Milne Edwards, 1834

First record: Bouvier (1922: 61, as *P. hirtellus* var. *spinifer*). Main references: A. Depth range: 61-91 m; elsewhere, 1-179 m. An Atlanto-Mediterranean species. Remarks: The first record for the area by Bouvier (1922) was based on specimens caught in the SW of Boa Vista Island at 61 m depth. That record was compiled by Monod (1956), but not in subsequent publications.

Superfamily PORTUNOIDEA Rafinesque, 1815

Family Carcinidae MacLeay, 1838

Xaiva biguttata (Risso, 1816)

First record: A. Milne-Edwards & Bouvier (1900: 61-62, as *Portumnus biguttatus*). Main references: A, B, C, E. Depth range: unknown; elsewhere, 1-10 m. An eastern Atlantic warm-temperate species.

Family Geryonidae Colosi, 1923

Chaceon affinis (A. Milne-Edwards & Bouvier, 1894)

First record: Bouvier (1922: 70-71, as *Geryon affinis*). Main references: B, E, F, G, this work. Depth range: 692-1300 m; elsewhere, 130-2047 m. An eastern Atlantic cold-temperate species.

Chaceon gordonae (Ingle, 1985)

First record: Ingle (1985: 95-97, as *Geryon gordonae* [in part], not as part of type-material). Main references: E. Depth range: 628-628 m; elsewhere, 1183-1183 m. A Guinean species.

Chaceon maritae (Manning & Holthuis, 1981)

First record: González et al. (2004: 1-76). Main references: F, G. Depth range: 301-1000 m; elsewhere, 100-1000 m. A Guinean species.

Family Pirimelidae Alcock, 1899

Pirimela denticulata (Montagu, 1808)

First record: Cunningham (1871: 492). Main references: A, C, E. Depth range: unknown; elsewhere, 0-250 m. An eastern Atlantic cold-temperate species.

Family Polybiidae Ortmann, 1893

Bathynectes maravigna (Prestandrea, 1839)

First record: González et al. (2004: 1-76). Main references: F, G. Depth range: 301-700 m; elsewhere, 60-1410 m. An eastern Atlantic cold-temperate species.

Remarks: First recorded for the area on the basis of 19 specimens from off Boa Vista Island and 23 from off Santiago Island (cruise *TALIARTE 2003-08*, R/V "Taliarte", Aug. 2003). A total of 107 specimens (accumulate) of this species were reported by González et al. (2009, same islands, 301-700 m, cruise *CABO VERDE 2005-06*, R/V "Pixape II", Jun. 2005).

Bathynectes piperitus Manning & Holthuis, 1981

First record: Filhol (1885, as *Bathynectes*). Main references: A, B, D, this work. Depth range: 108-628 m; elsewhere, 200-546 m. A Guinean species.

Remarks: Of minor interest, it is probably the unique brachyuran species regularly exploited in the area, as by-catch in the specialised trap fishery for the Cape Verde spiny lobster, *Palinurus charlestoni* Forest & Postel, 1964.

Liocarcinus corrugatus (Pennant, 1777)

First record: Miers (1881: 200-201, as *Portunus corrugatus*). Main references: A, B, C, D, E. Depth range: 35-68 m; elsewhere, 1-147 m. An eastern Atlantic warm-temperate species.

Macropipus rugosus (Doflein, 1904)

First record: present work; ICCM410, one male, CL/CW 16.3/20.2 mm, Boa Vista Island, Ponta Lacacão, cruise *CAMARÃO-2*, stn 15-D4, 15°55'N 22°57'W, 113-133 m, rocky bottom, 14 Mar. 2012, bottom trap; ICCM411, one male, CL/CW 22.6/28.8 mm, ICCM412, one non-ovigerous female, CL/CW 20.1/25.7 mm, both specimens from cruise *CAMARÃO-3*, stn 22, 16°47'N 22°53'W, Sal Island, Calheta, 125-130 m, rocky bottom, 18 Jul. 2012, bottom trap. Elsewhere, 5-400 m. A Guinean species.

Family Portunidae Rafinesque, 1815

Subfamily Portuninae Rafinesque, 1815

Callinectes amnicola (De Rochebrune, 1883)

First record: Guinot & Ribeiro (1962: 50, as *C. latimanus*). Main references: B, C. Depth range: inshore estuarine; elsewhere, 0-30 m. A Guinean species.

Callinectes marginatus (A. Milne-Edwards, 1861)

First record: A. Milne-Edwards (1878: 229, as *C. africanus* [var. de *diacanthus*]). Main references: A, B, C. Depth range: shallow waters; elsewhere, similar range. A Guinean species.

Cronius ruber (Lamarck, 1818)

First record: A. Milne-Edwards (1869: 54, as *Goniosoma Milleri*). Main references: A, B, C, D. Depth range: 2.5-20 m; elsewhere, 5-69 m. A pantropical or circumtropical species.

Laleonectes vocans (A. Milne-Edwards, 1878)

First record: A. Milne-Edwards (1878: 225-226, as *Neptunus vocans*; one carapace; type-locality, Cape Verde islands). Main references: A, B, C, E. Depth range: 5-6 m; elsewhere, 6-37 m. An amphi-Atlantic species of warm affinity.

Portunus (Portunus) hastatus (Linnaeus, 1767)

First record: Fransen (1991: 37, 41-42, 46, 56, 178-179). Main references: D, E. Depth range: 20-40 m; elsewhere, 2-32 m. A Guinean species.

Portunus (Portunus) inaequalis (Miers, 1881)

First record: Monod (1956: 201, as *Neptunus inaequalis*). Main references: A, B, C. Depth range: 4-15 m; elsewhere, 4-73 m. A Guinean species.

?*Sanquerus validus* (Herklots, 1851)

First record: González et al. (2004: 28, 35, as *Portunus validus*). Main references: B. Depth range: 150-280 m; elsewhere, 3-55 m. A Guinean species, known from Mauritania to Angola (Manning & Holthuis, 1981).
Remarks: The citation by González et al. (2004) was based on two specimens from Santiago Island (Ponta Covinha, and Ponta do Lobo, both at 140-150 m), and another specimen from Boa Vista Island (Ponta Taráfe, 280-300 m). This record was then reported by González et al. (2004: 53, 58: as *Portunus* cf. *validus*). The species' original name of *Portunus (Posidon) validus* Herklots, 1851 was reassigned to the currently valid name of *Sanquerus validus*. Unfortunately this material was lost during the sinking of R/V "Taliarte" and its preliminary on-board identification not corroborated at laboratory. Moreover, these specimens were caught well out of the known depth range for this species. So authors have decided to consider as doubtful the presence of this species in the study area.

Subfamily Thalamitinae Paul'son, 1875

Thalamita poissonii (Audouin, 1826)

First record: Guinot & Ribeiro (1962: 46, as *T. africana*). Main references: C, E. Depth range: 2-8 m; elsewhere, 0.5-20 m. A pantropical or circumtropical species.

Superfamily PSEUDOZIOIDEA MacLeay, 1838

Family Pseudoziidae MacLeay, 1838

Euryzius bouvieri (A. Milne-Edwards, 1869)

First record: A. Milne-Edwards (1869: 377-378, as *Xantho Bouvieri*; type-locality, Cape Verde islands). Main references: A, B, C, D, E. Depth range: 0-30 m; elsewhere, 6-23 m. An eastern-central Atlantic islands species; also known from the Canary, Madeira and Azores archipelagos (González, 2016).

Superfamily TRAPEZIOIDEA Miers, 1886

Family Domeciidae Ortmann, 1893

Domecia acanthophora africana Guinot, 1964

First record: Bouvier (1922: 273, as *D. hispida*). Main references: A, B, C, D, E. Depth range: 2.5-22 m; elsewhere, 0-35 m. An insular West African species.

Superfamily XANTHOIDEA MacLeay, 1838

Family Panopeidae Ortmann, 1893

Eurypanopeus blanchardi (A. Milne-Edwards, 1881)

First record: Dana (1852: 170, as *Xanthus (Xantho) parvulus*). Main references: A, B, C, D, this work. Depth range: 0-22 m; elsewhere, 0-6 m. A Guinean species.

Panopeus africanus A. Milne-Edwards, 1867

First record: Fransen (1991: 55, 153). Main references: D. Depth range: 0-8 m; elsewhere, 0-140 m. A Guinean species.

Family Xanthidae MacLeay, 1838

***Xanthidae* sp.** Fransen, 1991

First record: Fransen (1991: 40, 48, 53-54, 193). Main references: D. Depth range: 0-312 m; elsewhere, 0-0.5 m. A Guinean species; also known from Senegal (Fransen, 1991).

Subfamily Actaeinae Alcock, 1898

Paractaea margaritaria (A. Milne-Edwards, 1867)

First record: A. Milne-Edwards (1867: 41-42, as *Actaea margaritaria*; type-locality, São Vicente, Cape Verde islands). Main references: A, B, C, D, this work. Depth range: 3-91 m; elsewhere, 4/5-45 m. A Guinean species.

Paractaea monodi Guinot, 1969

First record: A. Milne-Edwards & Bouvier (1900: 100-101, as *Actaea margaritaria*). Main references: A, B, C, D, E.

Depth range: 0.5-91 m; elsewhere, 0.5-200 m. An Atlanto-Mediterranean species.

Paractaea rufopunctata (H. Milne Edwards, 1834)

First record: A. Milne-Edwards (1868: 63, as *Actaea rufopunctata*). Main references: A. Depth range: 30-91 m; elsewhere, 0-69 m. A pantropical or circumtropical species.

Subfamily Euxanthinae Alcock, 1898

Glyptoxanthus cavernosus (A. Milne-Edwards, 1878)

First record: A. Milne-Edwards (1878: 226-227, as *Actaea cavernosa*; type-locality, Cape Verde islands). Main references: A, B, C, D, E. Depth range: 0-17 m; elsewhere, same range. An eastern-central Atlantic islands species; also known from the Canaries (González, 2016).

Glyptoxanthus corrosus (A. Milne-Edwards, 1869)

First record: A. Milne-Edwards (1869: 376-377, as *Xantho corrosus*; type-locality, Cape Verde islands). Main references: A, B, C. Depth range: neritic littoral. Endemic to the area.

Monodaeus couchii (Couch, 1851)

First record: A. Milne-Edwards & Bouvier (1900: 95, as *Xantho tuberculatus*). Main references: A, D, E. Depth range: 110-594 m; elsewhere, 0-1415 m. An eastern Atlantic warm-temperate species.

Subfamily Xanthinae MacLeay, 1838

Coralliope parvula (A. Milne-Edwards, 1869)

First record: A. Milne-Edwards (1869: 412, as *Actumnus parvulus*; type-locality, Cape Verde islands). Main references: A, B, C, D, E. Depth range: 5-110 m; elsewhere, 0-355 m. A Guinean species.

Cycloxanthops occidentalis (A. Milne-Edwards, 1867)

First record: A. Milne-Edwards (1867: 36-38, as *Xantho occidentalis*; type-locality, Cape Verde islands). Main references: A, B, C. Depth range: 0-3 m; elsewhere, 0-23 m. A Guinean species.

Microcassiope minor (Dana, 1852)

First record: A. Milne-Edwards (1869: 409-410, as *Xanthodes rufopunctatus*). Main references: A, B, C, D, E. Depth range: 0.5-61 m; elsewhere, 0-220 m. An amphiatlantic species of warm affinity.

Nanocassiope melanodactyla (A. Milne-Edwards, 1867)

First record: Dana (1852: vol I, 170, as *Xantho parvulus*). Main references: A, B, D, E. Depth range: 4-225 m;

elsewhere, 5-200 m. A Guinean species.

Paraxanthias eriphioides (A. Milne-Edwards, 1867)

First record: A. Milne-Edwards (1867: 38-39, as *Xanthodes eriphioides*; type-locality, São Vicente, Cape Verde islands). Main references: A, B, C, D, E. Depth range: 0.5-85 m; elsewhere, unknown. An eastern-central Atlantic islands species; also known from the Azores (cf. d'Udekem d'Acoz, 1999).

Xantho hydrophilus (Herbst, 1790)

First record: A. Milne-Edwards & Bouvier (1900: 95-96, as *X. floridus*). Main references: A, B, C, D, E. Depth range: 0-30 m; elsewhere, 0-37 m. An Atlanto-Mediterranean species.

Xantho sexdentatus (Miers, 1881)

First record: Fransen (1991: 53, 199-200). Main references: D, this work. Depth range: 0-15 m; elsewhere, 0-35 m. A Guinean species.

***Xantho* sp.** Fransen, 1991

First record: Fransen (1991: 52, 200). Main references: D. Depth range: 0-15 m (likely); elsewhere, 0-15 m. A Guinean species.

Xanthodius inaequalis faba (Dana, 1852)

First record: ?Dana (1852: 195-196 as *Actaeodes faba*); A. Milne-Edwards (1869: 410-412, as *Chlorodius (Leptodius) convexus*). Main references: A, B, C, this work. Depth range: 0.5-10 m. Endemic to the area.

Subfamily Zosiminae Alcock, 1898

Platypodiella picta (A. Milne-Edwards, 1869)

First record: A. Milne-Edwards (1869: 410, as *Lophactaea picta*; type-locality, Santa Luzia and Salamança, São Vicente, Cape Verde islands). Main references: A, B, C, D, E. Depth range: 0.5-28 m; elsewhere, 0-30 m. A Guinean species.

Superfamily GRAPSOIDEA MacLeay, 1838

Family Gecarcinidae MacLeay, 1838

Cardisoma armatum Herklotz, 1851

First record: Stimpson (1858: 100, as *C. Guanhumu*). Main references: A, B, C. Terrestrial. A Guinean species.

Family Grapsidae MacLeay, 1838

Geograpsus lividus (H. Milne Edwards, 1837)

First record: A. Milne-Edwards & Bouvier (1900: 110).

Main references: A, B, C. Depth range: 10-10 m; elsewhere, shallow waters. A pantropical or circuntropical species.

Subfamily Grapsinae MacLeay, 1838

Grapsus adscensionis (Osbeck, 1765)

First record: Dana (1852: 336-337 (Atlas, 1855), as *G. pictus*). Main references: A, B, C, D, E, this work. Depth range: 0-10 m; elsewhere, 0-4 m. A Guinean species.

Pachygrapsus maurus (Lucas, 1846)

First record: ?Monod (1956: 422, as *Goniograpsus simplex*; Fransen, 1991: 44, 149-150). Main references: ?A, D. Depth range: 0-0 m; elsewhere, 0-6 m. An Atlanto-Mediterranean species.

Pachygrapsus transversus (Gibbes, 1850)

First record: Miers (1886: 259-260). Main references: A, B, C, D, E. Depth range: 0-6 m; elsewhere, 0-7 m. A pantropical or circuntropical species.

Planes minutus (Linnaeus, 1758)

First record: Fransen (1991: 49, 170-171). Main references: D. Depth range: 0-31 m; elsewhere, same range. A pantropical or circuntropical species.

Family Percnidae Števcíć, 2005

Percnon gibbesi (H. Milne Edwards, 1853)

First record: A. Milne-Edwards & Bouvier (1900: 114-115, as *Leiolophus planissimus*). Main references: A, B, C, D, E, this work. Depth range: 0.5-29 m; elsewhere, same range. A pantropical or circuntropical species.

Family Plagusiiidae Dana, 1851

Euchirograpsus liguricus H. Milne Edwards, 1853

First record: A. Milne-Edwards & Bouvier (1900: 107-108, as *E. americanus*). Main references: A, B, C, E. Depth range: 110-180 m; elsewhere, 10-359 m. An eastern Atlantic cold-temperate species.

Plagusia depressa (Fabricius, 1775)

First record: Miers (1886: 272). Main references: A, B, C, D, E, this work. Depth range: 0-5 m; elsewhere, same range. An ampho-Atlantic species of warm affinity.

Family Varunidae H. Milne-Edwards, 1853

Subfamily Cyclograpsinae H. Milne Edwards, 1853

Cyclograpsus integer H. Milne Edwards, 1837

First record: A. Milne-Edwards (1878: 228, as *C. occidentalis*). Main references: A, B, this work. Depth

range: 0-10 m; elsewhere, 2-5 m. An ampho-Atlantic species of warm affinity.

Superfamily OCYPODOIDEA Rafinesque, 1815

Family Ocypodidae Rafinesque, 1815

Subfamily Ocypodinae Rafinesque, 1815

Ocypode africana de Man, 1881

First record: Bouvier (1922: 74). Main references: A, C. Depth range: 0-3 m; elsewhere, same range. A Guinean species; known from Mauritania to SW Africa (Manning & Holthuis, 1981).

Remarks: According to Monod (1956) and Türkay (1982), this species was first recorded from the study area by Bouvier (1922), based on material collected at Branco Islet. Ribeiro (1964) reported on *Ocypoda* (sic) sp. from Santo Antão Island (Bay of Monte do Trigo) and from Boa Vista Island (Bay of Sal Rei, and Currealinho). However, it was not compiled by Manning and Holthuis (1981), and there are no further records for the area.

Ocypode cursor (Linnaeus, 1758)

First record: Stimpson (1858: 100). Main references: A, B, C, D, E, this work. Depth range: 0-3 m; elsewhere, same range. An eastern Atlantic warm-temperate species.

Subfamily Ucinidae Dana, 1851

Afruca tangeri (Eydoux, 1835)

First record: Monod (1956: 403). Main references: A, C, E. Depth range: 0-2 m; elsewhere, same range. A Guinean species.

Superfamily PINNOTHEROIDEA de Haan, 1833

Family Pinnotheridae de Haan, 1833

Viridotheres marionae Manning, 1996

First record: Manning (1996: 271-273; one specimen; type-locality, Boa Vista Island, Cape Verde islands, 91 m). Main references: Manning (1996). Depth range: 91-91 m. Endemic to the area.

Viridotheres viridis (Manning, 1993)

First record: Fransen (1991: 54, 166, as *Pinnotheres* sp.; one specimen, type-locality, Branco Islet, Cape Verde islands, 12-15 m). Main references: Manning (1993) and Wirtz (2009). Depth range: 3-15 m. Endemic to the area.

Remarks: After this species was first recorded for the area, it was assigned to *Nepinnotheres viridis* by Manning (1993), but currently reassigned to genus *Viridotheres* Manning, 1996 by Manning (1996).

Discussion

The 125 crab species and subspecies reported herein around the Cape Verde islands are grouped in 40 accepted families and 83 genera. This represents a number of species very close to the 132 brachyuran species recently reported from the Canary Islands, grouped in 39 families and 77 genera (González, 2016).

Seven benthic species seem to occur in waters of the Cape Verde islands at the shallowest depth ever recorded elsewhere: *D. bouvieri*, *P. inermis*, *C. gordonae*, *B. piperitus*, *C. ruber*, *P. margaritaria* and *N. melanodactyla*; sixteen benthic species seem to occur at the greatest depth ever recorded elsewhere: *S. spinostris*, *D. filholi*, *L. elegans*, *A. cessacii*, *I. spinosa*, *A. violaceus*, *C. maritae*, *B. piperitus*, *P. (P.) hastatus*, *E. bouvieri*, *E. blanchardi*, *P. margaritaria*, *P. rufopunctata*, *N. melanodactyla*, *G. adscensionis* and *C. integer*. This work enlarges the known depth lower limit in the area for *H. barbata*, *P. cuvieri*, *C. granulata* and *M. obsoletus*, and newly provides vertical ranges for *M. nodifrons* and *X. inaequalis faba*.

When compared both brachyuran catalogues, the Cape Verde and Canary Islands have divergent composition of species. Taking into account the supra-species taxa, the Cape Verdean superfamily Raninoidea does not currently occur around the Canary archipelago, and the Canarian superfamily Cryptochiroidea has not been found in Cape Verde islands. The Cape Verdean tropical-subtropical Dynomenidae, Raninidae, Menippidae, Acidopsidae, Chasmocarcinidae, Mithracidae and Gecarcinidae do not currently occur around the Canaries; the Canarian cold/warm-temperate Cancridae, Eriphiidae, Euryplacidae, Mathildellidae, Progeryonidae, Thiidae and Cryptochiridae have not been found in the Cape Verde islands.

Regarding the species' biogeographic patterns, a first preliminary description of all components of the Cape Verdean brachyuran fauna (125 species) shows just one main group: 51 tropical and subtropical eastern Atlantic (Guinean) species (40.8%), distantly followed by 18 Atlanto-Mediterranean species (14.4%), 11 species endemic to the area (8.8%), and 10 eastern Atlantic warm-temperate species (8.0%, Table 1). A second description of the Cape Verdean benthic littoral and/or upper-bathyal species (96 species, depth 0-300 m) reveals the same principal group now formed by 42 Guinean species (43.8%), followed far behind by 12 Atlanto-Mediterranean species (12.5%), and 10 endemic to the area (10.4%, Table 1). On the contrary, according to González (2016) the Canarian brachyuran crabs living shallower than the upper slope (123 species, depth 0-300 m) showed three main groups: 39 Atlanto-Mediterranean species (31.7%), 28 Guinean species (22.8%), and 21 eastern Atlantic cold-temperate species (17.1%, Table 2).

The greater number of coastal crabs endemic to the Cape Verde islands than those of the Macaronesian archipelagos has been interpreted as a combined result of the Cape Verde islands' isolation, their generally young geological age, and the shortening of their shallow habitats and oceanographic bottlenecks during the most recent glaciations; on the contrary, the coastal fish communities of the Macaronesian archipelagos are characterized by low endemism rates (e.g. Brito et al., 2007; Wirtz et al., 2008).

In the study area, the fourth biogeographic component in number of species is formed by the amphi-Atlantic species of warm affinity (7.3% versus 4.1% in the Canaries, González, 2016) (Table 2), suggesting according to Spalding et al. (2007) a relatively good bio-connexion between the Cape Verde eco-region and the Guianan and Amazonia eco-regions (both forming the North Brazil Shelf province). Present results seem to corroborate the role played by the Cape Verde islands and nearby seamounts/banks as stepping stones anchored in the middle of the ocean, but connecting the western and eastern Atlantic basins.

Twenty-four brachyuran benthic species (19.5% of the 123 crabs listed) occurring in the Cape Verde islands currently have their southern limit of distribution in this archipelago: *D. nodosa*, *L. elegans*, *E. alba*, *E. nux*, *A. brevifrons*, *A. rissoana*, *P. nodipes*, *I. phalangium*, *M. longipes*, *M. aff. parva*, *M. crispata*, *E. clouei*, *S. macrochelos*, *P. hirtellus*, *P. spinifer*, *C. affinis*, *P. denticulata* (also in Senegal), *B. maravigna*, *E. bouvieri*, *P. monodi*, *G. cavernosus*, *P. eriphioides*, *X. sexdentatus*, *Xantho* spec. (also Senegal) and *P. maurus*. Seventeen benthic species (13.8%) occurring in the Cape Verde islands currently have their northern limit of distribution in this archipelago: *D. filholi*, *R. constricta*, *E. rugulosa* (also Senegal), *M. nodifrons* (also Senegal in the East Atlantic), *E. helleri* (also Senegal), *A. cessacii* (also Senegal), *T. integrifrons* (also Senegal), *I. nucleus*, *A. depressifrons*, *M. spinulosa* (also Senegal), *D. bouvieri*, *P. perrieri* (also Senegal), *C. gordonae*, *B. piperitus*, *P. margaritaria*, *C. occidentalis* (also Senegal) and *G. lividus* (in the East Atlantic). Seventy-two brachyuran benthic species occur in both the Cape Verde and Canary archipelagos, representing 57.6% of species shared with the Canaries. As the Cape Verde Islands belong to its own eco-region, whereas the Canaries to the Macaronesian eco-region (Spalding et al., 2007), the above-mentioned information could be relevant in the context of faunal movements derived from the eastern Atlantic warming.

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Table 1. Composition of the Cape Verdean brachyuran fauna showing the number of species (N) grouped by biogeographic pattern.

Species' biogeographic pattern	All Cape Verdean brachyuran (125 species, depth 0 -> 2000 m)		Littoral and upper bathyal benthic (96 species, depth 0-300 m)	
	Species		Species	
	N	%	N	%
Tropical and subtropical eastern Atlantic (TSEA)	51	40.8	42	43.8
Atlanto-Mediterranean (ATLM)	18	14.4	12	12.5
Endemic to the Cape Verde Islands (ECVI)	11	8.8	10	10.4
Eastern Atlantic warm-temperate (EAWT)	10	8.0	7	7.3
Eastern Atlantic cold-temperate (EACT)	8	6.4	3	3.1
Amphi-Atlantic of warm affinity (AAWA)	7	5.6	7	7.3
Pantropical or circumtropical (PANT)	7	5.6	7	7.3
Eastern-central Atlantic islands (ECAI)	6	4.8	6	6.3
Eastern Atlantic of wide distribution (EAWD)	3	2.4	1	1.0
Insular West African (IWAF)	2	1.6	1	1.0
Amphi-Atlantic of wide distribution (AAWD)	1	0.8	0	0.0
Cosmopolitan or worldwide (COSM)	1	0.8	0	0.0

Table 2. Comparison between components of the Cape Verdean and Canarian littoral and upper bathyal benthic brachyurans, showing the number of species (N) grouped by biogeographic pattern.

Species' biogeographic pattern	Littoral and upper bathyal benthic (depth, 0-300 m)			
	This work Cape Verde Islands 96 species		González (2016) Canary Islands 123 species	
	N	%	N	%
Tropical and subtropical eastern Atlantic (TSEA)	42	43.8	28	22.8
Atlanto-Mediterranean (ATLM)	12	12.5	39	31.7
Endemic to the Cape Verde Islands (ECVI)	10	10.4	-	-
Amphi-Atlantic of warm affinity (AAWA)	7	7.3	5	4.1
Eastern Atlantic warm-temperate (EAWT)	7	7.3	10	8.1
Pantropical or circumtropical (PANT)	7	7.3	4	3.3
Eastern-central Atlantic islands (ECAI)	6	6.3	5	4.1
Eastern Atlantic cold-temperature	3	3.1	21	17.1
Eastern Atlantic of wide distribution (EAWD)	1	1.0	6	4.9
Insular West African (IWAF)	1	1.0	-	-
Amphi-Atlantic of wide distribution (AAWD)	0	0.0	1	0.8
Cosmopolitan or worldwide (COSM)	0	0.0	1	0.8
Macaronesian (MAC)	-	-	3	2.4

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