



<http://dx.doi.org/10.11646/zootaxa.3947.3.2>

<http://zoobank.org/urn:lsid:zoobank.org:pub:4BEA9B2D-E883-43B5-AE74-1EBBD0D4D684>

Hermit crabs from Brazil: Family Diogenidae (Crustacea: Decapoda: Paguroidea), except *Paguristes*

PAULO RICARDO NUCCI^{1,2} & GUSTAVO AUGUSTO SCHMIDT DE MELO¹

¹Museu de Zoologia, Universidade de São Paulo. Av. Nazareth, 481, 04263-000 São Paulo, SP, Brazil.

E-mail: paulonucci@hotmail.com, gasmelo@usp.br

²Current address: MCTI/Centro de Tecnologia Mineral. Av. Pedro Calmon, 900—Cidade Universitária, 21941-908 Rio de Janeiro, RJ, Brazil

Abstract

We present here the genera and species of the family Diogenidae recorded from Brazil, with the exception of the genus *Paguristes*. We provide a diagnosis, synonymy and illustrations for each species of the nine genera from Brazil and identification keys for genera represented by more than one species.

Key words: Paguroidea, Diogenidae, Brazil

Introduction

According to McLaughlin *et al.* (2010) there are 20 genera and 428 species belonging to the family Diogenidae; certainly this number has been changed due to descriptions of new species. In Brazil, 9 genera and 15 species occur, apart from the genus *Paguristes* and its respective species. Two species treated here previously belonged to the genus *Paguristes* but were transferred to *Areopaguristes* Rahayu & McLaughlin, 2010 and *Pseudopaguristes* McLaughlin, 2002. The other genera covered here are *Calcinus* Dana, 1851; *Cancellus* H. Milne Edwards, 1836; *Clibanarius* Dana, 1852; *Dardanus* Paulson, 1875; *Isocheles* Stimpson, 1858; *Loxopagurus* Forest, 1964 and *Petrochirus* Stimpson, 1858. Thus, continuing the series of articles about the hermit crabs from Brazil, we present here the family Diogenidae, apart from the genus *Paguristes*.

Material and methods

Most of the material examined belongs to the carcinological collection of the Museum of Zoology, University of São Paulo (MZUSP). We also examined some species from the Department of Oceanography, Federal University of Pernambuco (DOUFPE); and one species from the particular collection of Dr Nilton Hebling (PCNH). The identification keys have been prepared and adapted from existing literature and by examination of material. We also present a diagnostic description, synonymy, geographical distribution, material examined and remarks for each species. The diagnoses were based mainly on Melo (1999) and Nucci (2002). Synonymies are based on Nucci (2002) and several articles.

References

- Alcock, A. (1905) *Catalogue of the Indian decapod Crustacea in the collection of the Indian Museum*. Part II. Anomura. Fascicle I, Pagurides. Calcutta, 197 pp.
- Benedict, J.E. (1901a) Four new symmetrical hermit crabs (Pagurids) from the West Indian region. *Proceedings of the United States National Museum*, 23, 771–778.
<http://dx.doi.org/10.5479/si.00963801.23-1236.771>
- Benedict, J.E. (1901b) The Anomuran Collections made by the “Fish Hawk” Expedition to Porto Rico. *Bulletin of the United States Fish Commission*, 20 (2), 129–148.
- Biffar, T.A. & Provenzano, A.J. (1972) A reexamination of *Dardanus venosus* (H. Milne Edwards) and *D. imperator* (Miers), with a description of a new species of *Dardanus* from the Western Atlantic (Crustacea, Decapoda, Diogenidae). *Bulletin of Marine Science*, 22 (4), 777–805.
- Boone, L. (1927) Crustacea from tropical east American seas. Scientific results of the first oceanographic expedition of the “Pawnee”, 1925. *Bingham Oceanographic Collection*, 1 (2), 1–147.
- Bosc, L.A.G. (1802) *Histoire Naturelle des Crustacés, contenant leur description et leurs meours; avec figures dessinées d'après nature*. 2. De Guilleminet, Paris, 296 pp.
<http://dx.doi.org/10.5962/bhl.title.64025>
- Boschi, E.E. (1979) Geographic distribution of argentinian marine decapod crustaceans. *Bulletin of the Biological Society of Washington*, 3, 134–143.
- Bouvier, E.L. (1918) Sur quelques crustacés décapodes recueillis par M. Guy Babault dans les eaux douces de l'Inde Anglaise. *Bulletin du Muséum National d'Histoire Naturelle*, Paris, 24, 386–393.
- Campos, N.H. & Lemaitre, R. (1994) A new *Calcinus* (Decapoda: Anomura: Diogenidae) from the tropical Western Atlantic and a comparison with other species of the genus from the region. *Proceedings of the Biological Society of Washington*, 107 (1), 137–150.
- Cerame-Vivas, M.J., Williams, A.B. & Gray, I.E. (1963) New decapod crustacean records for the coast of North Carolina. *Crustaceana*, 5 (2), 157–159.
<http://dx.doi.org/10.1163/156854063X00444>
- Coelho, P.A. & Ramos, M.A. (1972) A constituição e a distribuição da fauna de decápodos do litoral leste da América do Sul, entre as latitudes de 5°N e 39°S. *Trabalhos Oceanográficos da Universidade Federal de Pernambuco*, 13, 133–236.
- Coelho, P.A. & Ramos Porto, M. (1986) Sinopse dos crustáceos decápodos brasileiros (famílias Callianassidae, Callianideidae, Upogebiidae, Parapaguridae, Paguridae, Diogenidae). *Trabalhos Oceanográficos da Universidade Federal de Pernambuco*, 19, 27–53. [Dated 1985, published 1986]
- Cutress, C.E. & Ross, D.M. (1969) The sea anemone *Calliactis tricolor* and its association with the hermit crab *Dardanus venosus*. *Journal of Zoology*, 158 (2), 225–241.
<http://dx.doi.org/10.1111/j.1469-7998.1969.tb02143.x>
- Cutress, C.E., Ross, D.M. & Sutton, L. (1970) The association of *Calliactis tricolor* with its pagurid, calappid and majid patterns in the Caribbean. *Canadian Journal of Zoology*, 48 (2), 371–376.
<http://dx.doi.org/10.1139/z70-059>
- Dana, J.D. (1852a) Crustacea. Part I. *United States Exploring Expedition. During the years 1838, 1839, 1840, 1841, 1842. Under the command of Charles Wilkes*, U.S.N. Vol. 13. C. Sherman, Philadelphia, 685 pp.
- Dana, J.D. (1852b) On the classification of the Corystoidea, Paguridea, etc. *American Journal of Science and Arts*, 13, 119–124.
- Forest, J. (1964) Sur un nouveau genre de Diogenidae (Crustacea: Paguridea) de l'Atlantique sud-américain, *Loxopagurus* gen. nov., établi pour *Pagurus loxochelis* Moreira. *Zoologische Mededelingen*, 39, 279–296.
- Forest, J. & Saint Laurent, M. (1968) Campagne de la Calypso au large des cotés atlantiques de L'amerique du Sud (1961-1962). 6. Crustacés décapodes: pagurides. *Annales de l'Institut Océanographique de Monaco*, 45 (2), 47–169.
- Gibbes, L.R. (1850) On the carcinological collections of the cabinets of Natural History in the United States, with an enumeration of the species therein and descriptions of new species. *Proceedings of the American Association for the Advancement of Science*, 3, 167–201.
- Gordan, J. (1956) A bibliography of pagurid crabs, exclusive of Alcock, 1905. *Bulletin of the American Museum of Natural History*, 108 (3), 253–352.
- Hay, W.P. & Shore, C.A. (1918) The decapod crustaceans of Beaufort, N.C. and surrounding region. *Bulletin of the U. S. Fish Commission*, 35, 369–475.
- Hazlett, B.A. (1966) The behavior of some deep-water hermit crabs (Decapoda: Paguridea) from the straits of Florida. *Bulletin of Marine Science*, 16 (1), 76–92.
- Hebling, N.J. (1978) Aspectos biológicos de alguns Crustacea Paguridea do litoral do Estado de São Paulo. *Anais da Academia Brasileira de Ciências*, 50 (3), 424–425.
- Hebling, N.J. & Mansur, C.B. (1995) Desenvolvimento larval de *Dardanus insignis* (Saussure, 1858) (Crustacea: Decapoda: Diogenidae) em laboratório. *Revista Brasileira de Zoologia*, 12 (3), 471–491.
<http://dx.doi.org/10.1590/S0101-81751995000300003>
- Hebling, N.J. & Rieger, P.J. (1986) Os ermitões (Crustacea, Decapoda: Paguridae e Diogenidae) do litoral do Rio Grande do Sul, Brasil. *Atlântica*, 8, 63–77.

- Heller, C. (1865) Crustaceen. In: *Reisen der Osterreichischen Fregatte Novara um die Erde in den Jahren 1857, 1858, 1859, unter den Befehlen des Commodors B. von Wullerstorff-Urbair*. Zoologische. Wien, H.K. von Scherzer, 2 (3), 1–280.
- Herbst, J.F.W. (1782–1804) Versuch einer Naturgeschichte der Krabben und Krebse nebst einer systematischen Beschreibung ihrer verschiedenen Arten, 1 (1782–1790), 1–274, 2 (1791–1796), 1–225, 3 (1799–1804), 1–66.
- Holthuis, L.B. (1959) The Crustacea Decapoda of Suriname (Dutch Guiana). *Zoologische Verhandelingen*, 44, 1–296.
- Ives, J.E. (1891) Crustacea from the northern coast of Yucatan, the harbor of Vera Cruz, the west coast of Florida and the Bermuda Islands. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 43, 167–207.
- Linnaeus, C. (1758) *Systema naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis*. 10 ed. 824 pp.
- Mantelatto, F.L., Robles, R. Biagi, R. & Felder, D.L. (2006) Molecular analysis of the taxonomic and distributional status for the crab genera *Loxopagurus* Forest, 1964 and *Isocheles* Stimpson, 1858 (Decapoda, Anomura, Diogenidae). *Zoosystema*, 28 (2), 495–506.
- Mayo, B.S. (1973) A review of the genus *Cancellus* (Crustacea: Diogenidae) with the description of a new species from the Caribbean sea. *Smithsonian Contributions to Zoology*, 150, 1–63.
<http://dx.doi.org/10.5479/si.00810282.150>
- McLaughlin, P.A. (2002) *Pseudopaguristes*, a new and aberrant genus of hermit crabs (Anomura: Paguridea: Diogenidae). *Micronesica*, 34 (2), 185–199.
- McLaughlin, P.A., Komai, T., Lemaitre, R. & Rahayu, D.L. (2010) Annotated checklist of anomuran decapod crustaceans of the World (exclusive of the Kiwaoidea and families Chirostylidae and Galatheidae of the Galatheoidea) part I—Lithoidea, Lomisoidea and Paguroidea. *The Raffles Bulletin of Zoology*, Supplement 23, 5–107.
- Melo, G.A.S. (1999) *Manual de Identificação dos Crustacea Decapoda do Litoral Brasileiro*. Editora Plêiade. Fundação de Amparo à Pesquisa do Estado de São Paulo, 551 pp.
- Miers, E.J. (1877) On a Collection of Crustacea Decapoda and Isopoda, chiefly from South America, with descriptions of new genera and species. *Proceedings of the Zoological Society of London*, 1877, 653–679.
- Milne-Edwards, A. & Bouvier, E.L. (1893) Reports on the results of dredging under the supervision of Alexander Agassiz, in the Gulf of Mexico (1877–78), in the Caribbean sea (1878–79), and along the Atlantic coast of the United States (1880), by the U. S. Coast Survey Steamer “Blake”, Lieut-Com. S. D. Sigsbee, U. S. N., and Commander J. R. Bartlett, U. S. N. Commanding. XXXIII. Description des Crustacés de la Famille des Paguriens recueillis pendant l’Expedition. *Memoirs of the Museum of Comparative Zoology*, 14 (3), 1–172.
- Milne Edwards, H. (1836) Observations zoologiques sur les Pagures et description d’un nouveau genre de la tribu des Paguriens. *Annales des Sciences Naturelles, 2e série* 6, 257–288. [plates 13–14]
- Milne Edwards, H. (1848) Note sur quelques nouvelles espèces du genre *Pagure*. *Annales des Sciences Naturelles, 3e série* 10, 59–64.
- Moreira, C. (1901) Contribuições para o conhecimento da fauna brasileira. Crustáceos do Brazil. *Archivos do Museu Nacional do Rio de Janeiro*, 11, 1–151.
- Moreira, C. (1903) Campanhas de pesca do hiate “Annie”, dos Srs. Bandeira e Bravo. Estudos preliminares. Crustáceos. *Lavoura, Boletim da Sociedade Nacional de Agricultura*, 7 (1–3), 1–14.
- Moreira, C. (1906) Campanhas de pesca do “Annie”. Crustáceos. *Archivos do Museu Nacional do Rio de Janeiro*, 13, 1–25.
- Narchi, W. & Hebling, N.J. (1972) *Calcinus tibicen* (Herbst, 1791) in Brazilian littoral (Decapoda: Paguridea). *Papéis Avulsos Zoologia*, 26 (6), 67–71.
- Negreiros-Fransozo, M.L. & Hebling, N.J. (1983) Desenvolvimento pós-embrionário de *Isocheles sawayai* Forest & Saint Laurent, 1967 (Decapoda: Diogenidae) em laboratório. *Papéis Avulsos de Zoologia*, 35 (4), 41–53.
- Nobili, G. (1897) Decapodi i Stomatopodi raccolti dal Dr. Enrico Festa nel Darien, Curaçao, la Guayra, Porto Cabello, Colon, Panama. *Bollettino del Museo di Zoologia ed Anatomia comparata della R. Università di Torino*, 12 (280), 1–8.
- Nucci, P.R. (2002) *Taxonomia e biogeografia da Superfamília Paguroidea Latreille (Crustacea, Decapoda, Anomura) no litoral brasileiro*. Ph.D. Thesis, UNESP, Rio Claro, Brazil, 218 pp.
- Olivier, G.A. (1811) Histoire Naturelle. Insectes. In: *Encyclopédie Méthodique, Histoire naturelle. Insectes*, 8, 1–722.
- Paulson, O. (1875) *Isledovaniya rakoobraznykh krasnago morya s zametkami otositel’no rakoobraznykh drugikh morei. Chast’ I. Podophthalmata i Edriophthalmata (Cumacea)*. S.V. Kul’zhenko, Kiev, 144 pp.
- Provenzano, A.J. (1959) The shallow-water hermit crabs of Florida. *Bulletin of Marine Science of the Gulf and Caribbean*, 9 (4), 349–420.
- Provenzano, A.J. (1960) Notes on Bermuda hermit-crabs (Crustacea: Anomura). *Bulletin of Marine Science of the Gulf and Caribbean*, 10 (1), 117–124.
- Provenzano, A.J. (1961) Pagurid crabs (Decapoda: Anomura) from St. John, Virgin Islands, with descriptions of three new species. *Crustaceana*, 3, 151–166.
<http://dx.doi.org/10.1163/156854061X00644>
- Provenzano, A.J. (1963c) The Glaucotohes of *Petrochirus diogenes* (L.) and two species of *Dardamus* (Decapoda: Diogenidae). *Bulletin of Marine Science of the Gulf and Caribbean*, 13, 242–261.
- Provenzano, A.J. (1968) The complete larval development of the West Indian hermit crab *Petrochirus diogenes* (L.) (Decapoda, Diogenidae) reared in the laboratory. *Bulletin of Marine Science*, 18 (1), 143–181.
- Rahayu, D.L. (2005) Additions to the Indonesian fauna of the hermit crab genus *Pseudopaguristes* McLaughlin and a further division of the genus *Paguristes* Dana (Crustacea: Decapoda: Paguroidea: Diogenidae). *Zootaxa*, 831, 1–42.
- Rahayu, D.L. & McLaughlin, P.A. (2010) *Areopaguristes*, a generic replacement name for *Stratiotes* Thomson, 1899

- (Crustacea: Decapoda: Paguroidea: Diogenidae). *Zootaxa*, 2509, 67–68.
- Randall, J.W. (1840) Catalogue of the crustacea brought by Thomas Nuttal and J.K. Townsend from the west coast of North America and the Sandwich Islands, with descriptions of such species as are apparently new, among which are included several species of different localities, previously existing in the collection of the Academy. *Journal of the Academy of Natural Sciences of Philadelphia*, 8, 106–147.
- Rankin, W.M. (1900) The Crustacea of the Bermuda Islands, with notes on the collection made by the New York University Expeditions in 1897 and 1898. *Annals of the New York Academy of Science*, 12 (12), 521–548.
- Rathbun, M.J. (1897) List of the decapod Crustacea of Jamaica. *Annals of the Institute of Jamaica*, 1(1), 1–46.
- Rathbun, M.J. (1900) Results of the Branner-Agassiz Expedition to Brazil. I. The Decapod and Stomatopod Crustacea. *Proceedings of the Washington Academy of Sciences*, 2, 133–156.
- Rieger, P.J. (1998) Malacostraca—Eucarida. Paguroidea. In: Young, P.S. (Ed.), *Catalogue of Crustacea of Brazil*. Museu Nacional, Rio de Janeiro, pp. 413–429.
- Rodrigues da Costa, H. (1962) Ocorrência do gênero *Isocheles* Stimpson, na costa brasileira. *Centro de Estudos Zoológicos*, avulso, 17, 1–3.
- Ross, D.M. & Sutton, L. (1968) Detachment of sea anemones by commensal hermit crabs and by mechanical and electrical stimuli. *Nature*, 217, 380–381.
<http://dx.doi.org/10.1038/217380a0>
- Russell, E.S. (1962) The diversity of animals, an evolutionary study. *Acta Biotheoretica*, supplement 1, 1–151.
- Saussure, H. de (1858) Mémoire sur divers Crustacés nouveaux de Mexique et des Antilles. *Mémoires, Société Physique et d'Histoire Naturelle de Genève*, 14, 417–496.
- Scelzo, M.A. (1971) Nuevo cangrejo ermitaño *Paguristes foresti* n. sp. para águas argentinas. *Neotropica*, 17 (52), 146–152.
- Scelzo, M.A. (1973) Lista de los crustáceos decápodos Anomura obtenidos en 1955 por la expedición “Walther Herwig” en el Atlántico Sur y depositados en las colecciones del Instituto de Biología Marina. *Physis, section A*, 32 (84), 161–174.
- Scelzo, M.A. (1976) Larvas de los crustáceos decápodos anomuros identificadas en las aguas marinas argentinas. *Physis, section A*, 35 (90), 37–45.
- Scelzo, M.A. & Boschi, E.E. (1973) Aportes al conocimiento de la distribución geográfica de los crustáceos decápodos Anomura del Atlántico sudoccidental, frente a las costas Argentinas. *Actas del V Congreso Latinoamericano de Zoología*, 1, 204–216.
- Schmitt, W.L. (1924) Report on the Macrura, Anomura and Stomatopoda collected by the Barbados-Antigua Expedition from the University of Iowa in 1918. *Studies in Natural History, Iowa University*, 10 (4), 65–99.
- Schmitt, W.L. (1926) The macruran, anomuran and stomatopod crustaceans collected by the American Museum Congo Expedition, 1909–1915. *Bulletin of the American Museum of Natural History*, 53, 1–67.
- Schmitt, W.L. (1935) Crustacea Macrura and Anomura of Porto Rico and the Virgin Islands. Scientific Survey of Porto Rico and the Virgin Islands. *New York Academy of Sciences*, 15 (2), 125–227.
- Schmitt, W.L. (1936) Macruran and Anomuran Crustacea from Bonaire, Curaçao and Aruba. Zoologische Ergebnisse einer Reise nach Bonaire, Curaçao und Aruba im Jahre 1930. *Zoologischer Jahrbücher, Abteilung für Systematik, Geographie und Biologie der Thiere*, 67, 363–378.
- Smith, S.I. (1869) Notice of the Crustacea collected by Prof. C.F. Hart on the coast of Brazil in 1867. *Transactions of the Connecticut Academy of Arts and Sciences*, 2, 1–41.
- Stimpson, W. (1858) Prodomus descriptionis Animalium evertibratorum, quae in Expeditione ad Oceanum Pacificum Septentrionalem, a Republica Federate missa, Cadevaladero Ringgold et Johanne Rodgers ducibus, observavit et descripsit. VII. Crustacea Anomura. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 10, 225–252.
- Stimpson, W. (1859) Notes on North American Crustacea, N^o 1. *Annals of the Lyceum of Natural History in New York*, 7, 49–93.
<http://dx.doi.org/10.1111/j.1749-6632.1862.tb00142.x>
- Verrill, A.E. (1908) Decapoda Crustacea of Bermudas. Part I. Brachyura and Anomura, their distribution, variation and habits. *Transactions of the Connecticut Academy of Sciences*, 13, 299–474.
- Wass, M.L. (1955) The decapod crustaceans of Alligator Harbor and adjacent inshore areas of northwestern Florida. *The Quarterly Journal of the Florida Academy of Sciences*, 18 (3), 129–176.
- Williams, A.B. (1965) Marine decapod crustaceans of the Carolinas. *Fishery Bulletin of the Fish and Wildlife Service*, 65 (1), 1–298.
- Williams, A.B. (1984) *Shrimps, lobsters and crabs of the Atlantic coast of the eastern United States, Maine to Florida*. Smithsonian Institution Press, Washington, D.C. 550 pp.