

**UNIVERSITA' DI GENOVA**

**ISTITUTO SCIENZE AMBIENTALI MARINE**

**Facoltà di Scienze Matematiche, Fisiche e Naturali**

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**ATACAMA TRENCH INTERNATIONAL EXPEDITION (ATIE)**

**AGOR 60 "VIDAL GORMAZ" (1 – 6 SEPTEMBER 1997)**

**Second Report. Preliminary Results**

## CRUSTACEA DECAPODA

LEMAITRE R.

*Department of Invertebrate Zoology, National Museum of Natural History, Smithsonian Institution, Washington DC.*

PLANES MARINUS RATHBUN, 1914 (\*)

### Common names

Crabs of the genus *Planes* are commonly known as "oceanic crabs" or "Columbus crabs". Less frequently they are called "floating crabs", "ocean-drifting crabs" or "gulf-weed crabs".

### Systematics

#### Order Decapoda

Suborder Pleocyemata

Infraorder Brachyura

Section Brachyrhyncha

Superfamily Grapsidoidea

Family Grapsidae

*Planes marinus* Rathbun, 1914: 120, pl. 3; 1918: 258, pl. 64.-- Tesch, 1918: 83.-- Glassell, 1934: 302.-- Chace, 1966: 646.-- Dell, 1964: 79; 1968: 21.-- Wear, 1970: 9, tab. 2, figs. 10-18.-- Arnaud et al., 1972: 10, pl. 2, figs. 3, 4.-- Konishi & Minagawa, 1990: 17.-- Takeda & Kurata, 1977: 98, figs. 5, 6a.-- Dai & Yang, 1991: 512, pl. 66(1), fig. 263(1).-- Spivak & Bas, 1999: 72.

*Pachygrapsus marinus*: Chace, 1951: 92, tabs. 1-3, figs. 1c, 2c,f,i,p-r, 3o-t.-- Hart, 1959: C31.-- Edmondson, 1959: 169, fig. 8b.-- Dell, 1963a: 179, fig. 1.-- Crosnier, 1965: 28, figs. 28, 33, 34.

*Pachygrapsus* spec.: Holthuis & Sivertsen, 1967: 4, fig. 1.

### Morphological characteristics

Carapace wider than long (length/width ratio ranging from 1.07 to 1.16), subquadrate at all sizes; surface of branchial regions distinctly striate laterally. Male abdomen broadly triangular, length of 4 distal segments about 1.08 times basal width of fourth segment; telson broadly triangular, about 0.9 times as long as basal width, lateral margins nearly straight. Chelae with fixed finger not noticeably bent downward; outer surface of palm with few inconspicuous granules near lower margin. Walking legs rather short, stout, not noticeably flattened; upper margin of propodi of 3 anterior pairs each with distinct natatory fringe of setae. [Based on Chace (1951: 68, Table 1, as *Pachygrapsus marinus*; 1966: 646)].

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(\*) Comments of the Editors:

*The specimen was collected on the polypropylene rope during the recovering of the traps.*

## Geographical distribution

Pacific Ocean: west coast of North America from the Gulf of California and Baja California to British Columbia (Rathbun, 1914, 1918; Chace, 1951; Glassell, 1934; Hart, 1959); off Chile (this report); Hawaii (Edmondson, 1959); Japan (Takeda & Kurata, 1977); New Zealand (Dell, 1963a, 1964, 1968; Wear, 1970); Xisha Island, China (Dai & Yang, 1991).

Indian Ocean: Madagascar (Crosnier, 1965); Amsterdam Island (Arnaud et al., 1972).

Atlantic Ocean: St. Helena Island (Chace, 1966); Mar Chiquita, Argentina (Spivak & Bas, 1999); Tristan da Cunha (Holthuis & Sivertsen, 1967)

## Present record

One specimen found on propylene rope while recovering instruments during studies of the Atacama Trench, off northern Chile, at Station A1, 23° 15'S, 71°21'W, 4 September 1997. Bottom depth at this station was 7800 m, but the crab probably clung to the rope at or near surface depth. Although widely distributed in the Pacific, Indian, and Atlantic Oceans, this species has not been previously reported from the southeastern Pacific. One male and a female specimens from off Chile, collected on a buoy off Mehuin, near Valdivia, are deposited in the collections of the National Museum of Natural History, Smithsonian, Institution, Washington, D.C., USA (USNM 170719).

## Ecology

*Planes marinus* is one of three species of the genus *Planes* Bowdich, 1825, the others being *P. minutus* (Linnaeus, 1758), and *P. cyaneus* Dana, 1851. They are typically found in the open ocean. These crabs have been found living on drifting objects such as *Sargassum*, the siphonophore *Velella*, and cephalopod shells of *Spirula*; inanimate flotsam objects ranging from buoys and drifting wood to pieces of rope, feathers, tarballs and pumice; and on marine organisms such the turtle *Caretta caretta* (Linnaeus). Occasionally, however, they have been found inshore on beaches or under rocks (Chace, 1951, 1966; Davenport, 1992; Dellinger et al., 1997; Spivak & Bas, 1999).

## Biology

As pointed out by Spivak & Bas (1999), information on the biology of *Planes marinus* is scarce. There is some information on reproduction and early larval development. Females incubate the eggs for about six weeks, and lay more than one batch of eggs each breeding season, or they may breed in all months of the year; only prezoaea and first zoea larva are known (Wear, 1970; Wear & Fielder, 1985). The biology of other species of *Planes* has been studied more. The coloration, ecology, behavior, and larvae of *P. minutus* are better known (Hitchcock, 1941; Butler et al., 1983; Davenport, 1992, 1994; Díaz et al., 1992; Cuesta et al., 1997; Dellinger et al., 1997). Spivak & Bas (1999) found that the population characteristics of *P. marinus* are similar to those of *P. minutus* living on flotsam (Dellinger et al., 1977), consisting on juveniles, and males and females in a 1:1 sex ratio. Spivak & Bas (1999) noted a high incidence of pereopod autotomy in populations of *P. marinus*, measured egg size, and observed a marked sexual dimorphism. They concluded that the life history and behavior of this "pelagic" crab is very similar to its benthic littoral relatives.

## SELECTED BIBLIOGRAPHY ON PLANES SPECIES

- ARNAUD, P. M., J. BEUROIS, & PIERRE NOEL, 1972 - Portunidae et Grapsidae des îles Saint Paul et Amsterdam, Océan Indien (Decapoda, Brachyura). *Beaufortia*, 20(259): 7-14.
- BERDAR, A., MENTO, G., COSTA, F., AMMENDOLIA, G. & A. CAFIERO 1993 - Notizie riguardanti l'associazione fra testuggine marina (*Caretta caretta*) e granchio pelagico (*Planes minutus*). *Rivista di Parassitologia*, 10(1): 159-168.
- BOURDON, R. 1980 - Sur quelques crustacés nouveaux pour la region de Roscoff. *Travaux de la Station Biologique de Roscoff* 26: 1-3.
- BOWDICH, T. E., 1825 - Excursions in Madeira and Porto Santo during the autumn of 1823, while on his third voyage to Africa. i-xii, 278 pp, pls. 1-12, London.
- BUTLER, J. N., B. F. MORRIS, J. CADWALLADER, & A. W. STONER, 1983 – Studies of *Sargassum* and the *Sargassum* community. Bermuda Biological Station, Special Publication No. 22, i-v, 1-306.
- CHACE, F. A., JR., 1951 - The oceanic crabs of the genera *Planes* and *Pachygrapsus*. *Proceedings of the United States National Museum*, 101 (3272): 65-103.
- CHACE, F. A., JR., 1966 - Decapod Crustaceans from St. Helena Island, South Atlantic. *Proceedings of the United States National Museum*, 118 (3536): 623-661.
- CHRISTIANSEN, M.E., 1969 -Crustacea Decapoda Brachyura. *Marine Invertebrates of Scandinavia* (Oslo), 2: 1-143.
- CROSNIER, A., 1965 - Crustacés décapodes Grapsidae et Ocypodidae. *Faune de Madagascar*, 18:1-143, pls. 1-11.
- CROSNIER, A., 1967 - Remarques sur quelques Crustacés Décapodes benthiques ouest - africains: Description de *Heteropanope* et *Medaeus rectifrons* spp. nov. *Bulletin du Muséum national d'Histoire naturelle* (Paris), ser. 2, 39(2): 320-344.
- CROTHERS, J. & M. CROTHERS, 1990 - An amendment to the crab key. *Field Studies*, 7(3):483-484.
- CUESTA, J. A., J. I. GONZÁLEZ-GORDILLO, & A. RODRÍGUEZ, 1997 - First zoeal stages of *Grapsus adscensionis* (Osbeck) and *Planes minutus* (Linnaeus) (Brachyura Grapsidae) described from laboratory hatched material, with notes on larval characters of the Grapsinae. *Journal of Natural History*, 31(6): 887-900.
- DAI, A. & S. YANG, 1990 - Crabs of the China Sea. Springer - Verlag, Berlin & Ocean Press, Beijing, 600 pp.
- DANA, J., 1851 – Crustacea Grapsoidea (Cyclometopa, Edwardsii): Conspectus Crustaceorum quae in orbis terrarum circumnavigatione, Carolo Wilkes e Classe Reipublicae Foederatae Duce, 8. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 5: 247-254 [pages 1-8 on separate].

- DAVENPORT, J., 1992 -Observations on the ecology, behaviour, swimming mechanism and energetics of the neustonic grapsid crab, *Planes minutus*. Journal of the Marine Biological Association the United Kingdom, 72(3): 611-620.
- DAVENPORT, J., 1994 – A cleaning association between the oceanic crab *Planes minutus* and the loggerhead sea turtle *Caretta caretta*. Journal of the Marine Biological Association of the United Kingdom, 74(3): 735-737.
- DELL, R. K., 1963a - *Pachygrapsus marinus* (Rathbun), new crab for New Zealand waters. Transactions of the Royal Society of New Zealand, Zoology, 3: 179-180.
- DELL, R. K., 1963b –Native crabs, nature in New Zealand. Wright & Carman Ltd., Wellington, 64 pp.
- DELL, R. K., 1964 -The oceanic crab, *Pachygrapsus marinus* (Rathbun) in the south-west Pacific. Crustaceana, 7: 79-80.
- DELL, R. K., 1968 –Notes on New Zealand crabs. Records of the Dominion Museum, 6(3): 13-28.
- DELLINGER, T., DAVENPORT, J. & P. WIRTZ, 1997– Comparisons of social structure of Columbus crabs living on loggerhead sea turtles and inanimate flotsam. Journal of the Marine Biological Association of the United Kingdom, 77(1): 185-194.
- DÍAZ, M. M., B. J. GUTIÉRREZ, L. D. JASSO, S. C. LÓPEZ, M. L. SARTI, & A. C. VALLEJO, 1992 - Epibionts and physical status of the *Lepidochelys olivacea* and *Dermodochelys coriacea* on Mexiquillo Beach, Michoacan, during the nesting season 1988-1989. Publicaciones de la Sociedad Herpetológica Mexicana, 1: 19-25.
- GONZÁLEZ PÉREZ, J. A., 1995 - Catálogo de los crustáceos decápodos de las Islas Canarias. Gambas. Langostas. Cangrejos. Publicaciones Turquesa S. L., Santa Cruz de Tenerife: 1-282.
- GUESS, R. C., 1982 -Occurrence of a Pacific loggerhead turtle, *Caretta caretta gigas* Deraniyagala, in the waters off Santa Cruz Island, California. California Fish and Game, 68(2): 122-123.
- HITCHOCK, H.B., 1941 -The coloration and color changes of the gulf-weed crab, *Planes minutus*. Biological Bulletin, 80(1): 26-30.
- HOLMES, J. M. C., MC GRATH, D., PICTON, B. E. & N. MULLIGAN, 1983 – Records of some Interesting crabs from the coast of Ireland. Irish Naturalists' Journal, 21(2): 79-81.
- HOLTHUIS, L. B., & E. SIVERTSEN, 1967 -The Crustacea Decapoda, Mysidacea and Cirripedia of Tristan da Cunha Archipelago, with a revision of the "frontalis" subgroup of the genus *Jasus*. Results of the Norwegian Scientific Expedition to Tristan da Cunha 1937-1938, 52: 1-55.
- HYMAN, O. W., 1924 –Studies on larvae of crabs of the family Grapsidae. Proceedings of the United States National Museum, 65: 1-8.

INGLE, R. W., 1983 - Shallow-water crabs, keys and notes for the identification of the species. Synopses of the British Fauna (New Series), D. M. Kermack and R. S. K. Barnes (eds.), no. 25. Published by The Linnean Society of London, and The Estuarine and Brackish - Water Sciences Association. Cambridge University Press, London, 206 pp.

JUANICO, M., 1976 – Sobre la distribución geográfica de *Planes minutus* (L., 1758) y *Planes cyaneus* Dana, 1852 (Crustacea-Decapoda). Dusenía (Curitiba), 9: 145-150.

KONISHI, K., & M. MINAGAWA, 1990 – The first zoeal larva of the gulfweed crab *Planes cyaneus* Dana, 1851 (Crustacea: Brachyura: Grapsidae). Proceedings of the Japanese Society of Systematic Zoology, 42: 14-20.

LEBOUR, M. V., 1944 - Larval crabs from Bermuda. Zoologica, 29: 113-128.

LEMOS, DE C. A. & L. I. M. BRASIL, 1980 -Crustaceos isopodes epicarídeos do Brasil. 10. Descrição de *Hemicepon mulleri* g.n., sp.n. e ocorrência de *Grapsicepon edwardsi* Giard & Bonnier, em águas Brasileiras. Revista Brasileira de Biologia, 40(1): 115-119.

LEWINSOHN, C., & L. B. HOLTHUIS, 1964 –New records of decapod Crustacea from the Mediterranean coast of Israel and the eastern Mediterranean. Zoologische Mededelingen, 40:454-63.

LEWINSOHN, C., & L. B. HOLTHUIS, 1986 - The Crustacea Decapoda of Cyprus. Zoologische Verhandlungen, 230: 1-64.

MANNING, R. B., & L. B. HOLTHUIS, 1981 -West African brachyuran crabs (Crustacea: Decapoda). Smithsonian Contributions to Zoology, 306: i-xii, 1-379.

MELO, G. A. S. de, 1996 -Manual de identificação dos Brachyura (caranguejos e siris) do litoral Brasileiro. Museu de Zoologia, Universidade de São Paulo. Editora Pléiade Ltda, São Paulo, 603 pp.

MIYAKE, S., 1983 - Japanese crustacean decapods and stomatopods in color. 2. Brachyura. Hoikusha, Osaka. 261 pp., 56 pls. [In Japanese].

Monod, Th., 1956 - Hippidea et Brachyura ouest-africains. Mémoires de l'Institut Français d'Afrique Noire, 45: 1-674.

RATHBUN, M. J., 1914 - New genera and species of American brachyrhynchous crabs. Proceedings of the United States National Museum, 47 (2047):117-129, pl. 3.

RATHBUN, M. J., 1918 –The grapsoid crabs of America. United States National Museum Bulletin, 97: i-xxii, 1-461.

SAKAI, T., 1978 -Decapod Crustacea from the Emperor Seamount Chain. Researches of Crustacea, 8 (Suppl.): 1-39.

SHIRLEY, T. C., 1974 -*Planes cyaneus* Dana, 1852 (Decapoda, Grapsidae) from Padre Island, Texas: a new record for the Gulf of Mexico and the North Atlantic. Crustaceana, 26: 107-108.

SPIVAK, E. D., & C. C. BAS, 1999 - First finding of the pelagic crab *Planes marinus* (Decapoda: Grapsidae) in the southwestern Atlantic. *Journal of Crustacean Biology*, 19(1): 72-76.

TACHIKAWA, H., 1994 - Record of *Planes marinus* Rathbun (Decapoda: Grapsidae) from Chichijima, the Ogasawara Islands, Japan. *Nanki Seibutu* 36(1): 60.

TAKEDA, M. & H. HAYASHI, 1990 - Biogeographical notes on the anomuran and brachyuran crustacean from the Pacific coast of eastern Hokkaido, northern Japan. *Bulletin of the Biogeographical Society of Japan* 45(1-22): 51-60.

TESCH, J. J., 1918 - The Decapoda Brachyura of the Siboga Expedition, I. Hymenosomatidae, Retroplumidae, Ocypodidae, Grapsidae, and Gecarcinidae. *Siboga Expedition*, 39(c): 1-148, pls. 1-6.

TIRMIZI, N. M., KAZMI, Q. B. & N. A. GHANI, 1982 - *Planes cyaneus* Dana, a grapsid crab new to the Arabian Sea with note on *Metaplex indica* Milne - Edwards (Decapoda: Brachyura: Grapsidae). *Pakistan Journal of Zoology* 14(2): 169-173.

TRAPNELL, D., KNAP, A. H. & J. N. BUTLER, 1983 - Studies of Sargassum and the Sargassum community. Appendix 8: Hydrocarbons in some fauna of the Sargassum community. *Bermuda Biological Station for Research-Special Publication* 22: 270-296.

TSIKHON -LUKANINA, YE.A., G. G. NIKOLAEVA, & O. G. REZNICHENKO, 1986 - Food spectra of oceanic foulders. *Oceanology*, 26(6): 759-762.

UDEKEM D'ACCOZ, C. d', 1999 - inventaire et distribution des crustacés décapodes de l'Atlantique Nord-oriental, de la Méditerranée et des eaux continentales adjacentes au nord de 25°N. *Patrimoines naturels* (Muséum national d'Histoire naturelle, Service du Patrimoine Naturel, Paris), 40: 1-383.

URGORRI, V., SOLORZANO, M.R., BESTEIRO, C. & F. RAMIL, 1990 - Crustacea Decapoda Brachyura of Galicia from the collections of the Natural History Museum "Luis Iglesias" (Spain). *Boletín de la Real Sociedad Española de Historia Natural (Sección Biología)*, 85(1-4): 5-16.

VANNINI, M. & P. VALMORI, 1981 - Researches on the coast of Somalia. The shore and dune of Sar Uanle. 30. Grapsidae (Decapoda Brachyura). *Monitore Zoologico Italiano Supplemento*, 14(6): 57-101.

WEAR, R. G., 1970 - Life-history studies on New Zealand Brachyura. 4. Zoea larvae Hatched From crabs of the family Grapsidae. *New Zealand Journal of Marine & Freshwater Research*, 4: 3-35.

WEAR, R.G., & D. R. FIELDER, 1985 - The marine fauna of New Zealand: larvae of the Brachyura (Crustacea, Decapoda). *New Zealand Oceanographic Institute Memoir*, 92: 1-90.

ZARIQUIEY ALVAREZ, R., 1968 - Crustáceos decápodos Ibéricos. *Investigación Pesquera*, 32: 1-510.