





Estratto anticipato da:

GALÁPAGOS, STUDI E RICERCHE - SPEDIZIONE "L. MARES - G.R.S.T.S."

Firenze, Gruppo Ricerche Scientifiche e Tecniche Subacquee
Pubblicato il 15 dicembre 1979

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A SMALL COLLECTION OF DECAPOD CRUSTACEA
FROM GALÁPAGOS ISLANDS **

INTRODUCTION

The « Spedizione Lodovico Mares - G.R.S.T.S. »¹ to the Galápagos Islands (December 1971-January 1972) brought together a small but quite interesting collection of Decapod Crustacea. A list of the material collected with remarks on the species is provided here.

The material is preserved in the collection of the Museo Zoologico dell'Università, Florence (M.F.); some duplicates were donated by the Florence Museum to the Rijksmuseum van Natuurlijke Historie, Leiden (R.M.N.H.).

I want to express my thanks to Prof. Benedetto Lanza (Director of the Florence Museum), who placed this material at my disposal and provided useful information.

SUBORDER BRACHYURA

An account of the littoral Brachyura of the Galápagos Islands was published by GARTH (1946); this still is the fundamental work on the crabs of the Archipelago. Two brachyuran families have later been monographed for the East Pacific (including the Galápagos Islands), viz., the Majidae by GARTH (1958) and the Portunidae by GARTH & STEPHENSON (1966).

All species of crabs in the present collection have been reported before from the Galápagos Islands.

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** Received 23 February 1979.

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FAMILY MAJIDAE

Telephrys cristulipes Stimpson, 1860.

Isla Santa Fe (= Barrington Island), a well-sheltered bay on the NE coast of the island, water calm and relatively warm, bottom sandy, depth 5 to 15 m, 27 December 1971, 1 specimen no. D 31949 R.M.N.H.; 10 January 1972, leg. M. L. Azzaroli, 1 specimen no. 183 M.F.

Isla Santa Cruz (= Indefatigable Island), Academy Bay, rocky coast, 23 December 1971, leg. M. L. Azzaroli, 1 ovigerous female no. 179 M.F.

Isla Seymour (= North Seymour Island) north of Isla Baltra (= South Seymour Island), 29 December 1971, leg. M. L. Azzaroli, 3 specimens no. 176 M.F.

Isla Isabela (= Albemarle Island), Tagus Cove, 2 January 1972, leg. M. L. Azzaroli, 1 ovigerous female no. 174 M.F.

Telephrys cristulipes is one of the commonest crabs of the Galápagos Islands and has been reported before from all the above mentioned localities (GARTH, 1946, pp. 396-400, pl. 68 figs 5, 6; see also GARTH, 1958, pp. 379-383, pl. W fig. 1, pl. 42 fig. 3).

The range of the species extends from Baja California (Mexico) to La Plata Island (Ecuador), Clipperton Island and the Galápagos Islands. It inhabits the intertidal and subtidal zones, although records from greater depths (up to 70 m) are known.

FAMILY PORTUNIDAE

Euphylax dovii Stimpson, 1860.

Isla Fernandina (= Narborough Island), Estrecho de Bolivar (= Canal Bolivar, the straits between Isla Fernandina and Isla Isabela), 2 January 1972, 3 males no. 131 M.F.; Punta Espinosa (NE point of the island), 2 January 1972, leg. M. L. Azzaroli, 2 males no. 132 M.F., 3 males no. D 31943 R.M.N.H.

The specimens from Punta Espinosa are accompanied with the following field note on the colour of the living animals: « Il colore originale era violetto ametista chiaro ». LANZA (1974, pp. 882-883, text-fig. and note, 885) reports a few observations on the behaviour of this crab: « Alcuni granchi, a differenza della maggior parte dei loro affini, sono buonissimi nuotatori e menano vita pelagica invece di trattenersi sul fondo o sulle rive del mare. Uno di questi è il Portunide *Euphylax dovii*, viola a riflessi d'oro, proprio del Pacifico orientale dal Messico al Cile. Spesso, di notte, nuota in superficie e viene attratto dalla luce; ma questo esemplare insieme a molti altri, comparve intorno al Beagle III in pieno giorno, durante una fermata in mezzo allo stretto Bolivar, tra Isabela e Fernandina (I.

1972) ». « Il nostro granchio nuota piuttosto velocemente e solo servendosi di un'esca e di un retino, riusciamo a pescarne qualcuno spenzolandoci da una scaletta calata dal Beagle; è curioso osservare che l'*Euphylax*, all'arrivo di un'otaria, si gira in modo da poter fronteggiare l'avversario, a chela protese ».

GARTH (1946, p. 423, pl. 72 figs. 1, 2) reported the species for the first time from the Galápagos Islands. His material, 12 specimens, was taken in Tagus Cove, Isla Isabela on 6 January 1932. I know of no other records of the species from the Archipelago. GARTH (1946, p. 423) remarked, however: « *E. dovii* undoubtedly occurs in great numbers in the Galápagos Islands during the seasonal invasion of the warmer waters of El Niño current from the Bay of Panama ». The fact that both GARTH's material and the present specimens were taken in January fits in with the theory that the occurrence of the species in the Galápagos Islands may be seasonal.

Euphylax dovii is a mainly pelagic species that has been found from the coast (there often intertidally) to the open ocean as far as 400 miles offshore (JERDE, 1970, p. 86). Its north-south range extends from Mexico to Chile, in the open ocean it has been found as far west as 119°W (at about 9°23'N).

It is interesting that only males are represented in the present collection.

An excellent account of this species is provided by GARTH & STEPHENSON (1966, pp. 64-67, text-fig. 3a; pl. 6 figs A, B; pl. 8 fig. F; pl. 10 figs F, G; pl. 12 fig. G).

FAMILY XANTHIDAE

Platypodia gemmata Rathbun, 1902.

Isla Santa Fe (= Barrington Island), bay on the northeast coast of the island, a sheltered bay with calm, relatively warm water and sandy bottom, depth 5 to 15 m, 10 January 1972, leg. M. L. Azzaroli, 1 male no. 186 M.F.

GARTH (1946, pp. 428-430, pl. 79 fig. 1) dealt extensively with this species of which he examined a great number of specimens from the Galápagos Islands; however, no material from Isla Santa Fe was seen by him. He described the species as living mostly intertidally « in rocks near a sandy shore », which agrees well with what is known about the habitat of the present specimen. GARTH furthermore observed that the specimens are usually found « in circular depressions, particularly in sponges ».

Platypodia gemmata seems to be endemic to the Galápagos Archipelago; there is one record from the Bay of Panama, which should be verified.

Actaea dovii Stimpson, 1871.

Isla Isabela (= Albemarle Island), Tagus Cove, 3 January 1972, leg. M. L. Azzaroli, 1 male n. 182 M.F.

GARTH (1946, pp. 431-433, pl. 79 figs 2, 6) reported upon an extensive series of the present species from the Galápagos Islands, including specimens from Tagus Cove.

The animals live mostly intertidally (among coral and rocks); some have, however, been reported from greater depths (one record from 145 m). The geographic range of *Actaea dovii* extends from El Salvador to the mainland of Ecuador, and includes Clipperton Island and the Galápagos Archipelago.

Glyptoxanthus hancocki Garth, 1939.

Isla Isabela (= Albemarle Island), Tagus Cove, 3 January 1972, leg. M. L. Azzaroli, 1 male no. 170 M.F.

So far the present species was, as far as I can ascertain, only known from the 23 type specimens dealt with by GARTH (1939, pp. 15-17, pl. 4 fig. 1, pl. 5 figs 1a, 2a, 3a; 1946, pp. 437-438, pl. 76 figs 1, 2), which originate from five of the Galápagos Islands, including Isla Isabela. GARTH's Isla Isabela specimens, however, came from Cartago Bay.

The species, which is one of the handsomest of the collection, is usually found under rocks at low tide.

Trapezia ferruginea Latreille, 1825.

Isla Santa Fe (= Barrington Island), bay on the NE coast of the island, a sheltered bay with calm, relatively warm water and sandy bottom, depth 5 to 15 m, 10 January 1972, leg. M. L. Azzaroli, 1 male no. 178 M.F.

Isla Santa Cruz (= Indefatigable Island), Academy Bay, rocky coast, 23 December 1971, leg. M. L. Azzaroli, 2 specimens no. 31946 R.M.N.H.

Isla Seymour (= North Seymour Island), 29 December 1971, leg. M. L. Azzaroli, 1 specimen n. 175 M.F.

Isla Baltra (= South Seymour Island), 29 December 1971, leg. M. L. Azzaroli, 3 specimens no. D 31947 R.M.N.H.

Trapezia ferruginea is a well-known coral commensal with an exceedingly wide range of distribution throughout the Indo-West Pacific and East Pacific regions: Red Sea (the type locality) and East Africa to the west coast of America (Mexico to Ecuador, Clipperton Island, Galápagos Islands).

The species has been reported from numerous islands of the Galápagos Archipelago, including Isla Santa Cruz and Isla Santa Fe, but so far not from Isla Seymour

(see GARTH, 1946, pp. 491-492, pl. 81 fig. 4). The species is always associated with corals, usually of the genus *Pocillopora*. It is often found together with the next species, from which, even in preserved material, it can easily be distinguished by the bright reddish, instead of dark brown, colour.

Trapezia digitalis Latreille, 1825.

Isla Santa Cruz (= Indefatigable Island), Academy Bay, rocky coast, 23 December 1971, leg. M. L. Azzaroli, 2 specimens no. D 31945 R.M.N.H.

Isla Seymour (= North Seymour Island) north of Isla Baltra (= South Seymour Island), 29 December 1971, M. L. Azzaroli, 1 specimen no. 185 M.F.

Trapezia digitalis, like the previous species is a coral commensal and has the same wide distribution throughout the Indo-West Pacific and East Pacific areas.

GARTH (1946, pp. 493-494, pl. 81 fig. 6) reported it from 18 stations within the Galápagos Islands, including Academy Bay, Isla Santa Cruz; it had not been reported before from Isla Seymour.

The brown colour of this species immediately distinguishes it from *T. ferruginea*.

FAMILY GRAPSIDAE

Grapsus grapsus (Linnaeus, 1758).

Isla Isabela (= Albemarle Island), Villamil, 31 December 1971, leg. L. Pardi, 1 female no. 130 F.M. and 1 juvenile no. 129 M.F.

This is perhaps the best known and most spectacular crab of the Galápagos Islands. Its large size (carapace up to 75 mm wide), its bright red colour, its extreme agility and speed, the fact that it occurs in great numbers on the dark rocks out of the water, make that this species is mentioned or figured in numerous descriptions of the Galápagos Islands.

The range of *Grapsus grapsus* as at present understood includes both sides of the Atlantic (tropical West Africa and tropical Atlantic America), as well as the west coast of America (Baja California, Mexico to Peru, including Clipperton Island and the Galápagos Archipelago). It is possible that a closer examination of large series will show that more than one species actually are involved here.

FAMILY OCYPODIDAE

Ocypode gaudichaudii H. Milne Edwards & Lucas, 1843.

Isla San Salvador (= James Island), 4 January 1972, leg. M. L. Azzaroli, 1 male no. 187 M.F. and 1 male no. D 31944 R.M.N.H.

All the species of the genus *Ocypode* (Ghost Crabs) are inhabitants of sandy beaches, having their burrows above the high tide line.

Ocypode gaudichaudii has been previously reported from many of the Galápagos Islands, including Isla San Salvador (GARTH, 1946, pp. 514-515, pl. 87 fig. 7). The range of the species extends along the west coast of America from El Salvador to Chile.

SUBORDER ANOMURA
FAMILY DIOGENIDAE

Aniculus elegans Stimpson, 1859.

Isla Santa Cruz (= Indefatigable Island), 23 December 1971, leg. M. L. Azzaroli, 1 female no. 188 M.F.

The present specimen, a well developed female, agrees well with the published descriptions of this East Pacific species. The only published figure is the one by BOONE (1931, p. 141, fig. 1). A good account of the species was given by WALTON (1950, pp. 192, 193).

So far *Aniculus elegans* had not been reported from the Galápagos Islands. Its type locality is Panama and it has been collected there several times since the publication of the original description. WALTON (1950) showed that its range includes at least Mexico (La Paz, Baja California, Tres Marias Islands and Acapulco), Panama (Islas Secas, Isla Taboga, and Archipiélago de las Perlas), and Ecuador (off Cape San Francisco). HAIG et al. (1970, pp. 16-17) reported several specimens from Bahía Magdalena and Isla de Santa Margarita on the west coast of Baja California. The present record of the species from the Galápagos Islands forms an interesting extension of its known range.

Calcinus explorator Boone, 1932.

Isla Santa Fe (= Barrington Island), in a small bay, among rocks in the littoral zone, 10 January 1972, leg. M. L. Azzaroli, 2 specimens no. 169 M.F. and 3 specimens no. D 31948 R.M.N.H.

Isla Santa Cruz (= Indefatigable Island), January 1972, leg. B. Lanza, 3 specimens no. 173 M.F.

Calcinus explorator was originally described from the Galápagos Islands, the type locality being Bahía de Gardner, Isla Española (= Hood Island). Later it has also been reported from Cocos Island (Costa Rica), Socorro Island (Mexico), and Clipperton Island. CHACE (1962, pp. 624-626, figs 3, 4) gave an excellent, well illustrated account of Clipperton Island material of the species.

Within the Galápagos Islands, apart from the type locality, the species has

been reported from Isla Genovesa (= Tower Island) (BOONE, 1932), Isla San Cristóbal (= Chatham Island) (SCHMITT, 1924 as *C. obscurus* Stimpson), Isla Edén (= Eden Island) off the west coast of Isla Santa Cruz (= Indefatigable Island) (SCHMITT, 1924 as *C. obscurus*; BOONE, 1932), Isla San Salvador (= James Island), Isla Isabela (= Albemarle Island), and Isla Fernandina (= Narborough Island) (SCHMITT, 1939 as *C. obscurus*).

SUBORDER *MACRURA*
FAMILY *PALAEEMONIDAE*
SUBFAMILY *PONTONIINAE*

Harpiliopsis depressa (Stimpson, 1860).

Isla Seymour (= North Seymour Island) north of Isla Baltra (= South Seymour Island), 29 December 1971, leg. M. L. Azzaroli, 1 ovigerous female no. 184 M.F.

This species, a well known coral-commensal, has a very wide distribution, being known from the entire Indo-West Pacific region (Red Sea and East Africa to Polynesia) and from the East Pacific (Mexico to Colombia).

It has been reported from many localities within the Galápagos Islands: Isla Genovesa (= Tower Island), Isla Española (= Hood Island), Isla Santa Fe (= Barrington Island), Isla Santa Cruz (= Indefatigable Island), Isla Pinzón (= Duncan Island) and Isla Isabela (= Albemarle Island) (see HOLTHUIS, 1951, pp. 70-75, pl. 21, pl. 22 figs a-f).

FAMILY *RHYNCHOCINETIDAE*

Rhynchocinetes sp.

Isla Isabela (= Albemarle Island), Tagus Cove, 5 m deep, 3 January 1972, leg. M. L. Azzaroli, 1 juvenile no. 177 M.F.

The specimen is too young to permit a certain specific identification. It is mentioned here, however, as the genus *Rhynchocinetes* so far had not been reported from the Galápagos Archipelago.

FAMILY *ALPHEIDAE*

Alpheus sublucanus (Forskål, 1775).

Isla Santa Cruz (= Indefatigable Island), Academy Bay, rocky coast, 23 December 1971, leg. M. L. Azzaroli, 1 specimen no. 181 M.F.

Alpheus sublucanus is a coral-commensal, and like several Decapoda that live commensally with Madreporaria, it has an extensive range throughout the Indo-West Pacific and East Pacific regions. The locality of the species is Jidda on the Red Sea coast of Saudi Arabia; it is known from the Red Sea and SE Africa to Polynesia and on the west coast of America from at least Baja California to Panama, including Clipperton Island and the Galápagos Islands. The present record is the first from the latter Archipelago.

It is interesting that the few species of Decapoda that inhabit the entire Indo-West Pacific area and whose range extends eastward to include the coast of mainland America, practically without exception are coral commensals, as, e.g., *Trapezia ferruginea*, *T. digitalis*, *Harpiliopsis depressa* and *Alpheus sublucanus* that are represented in the present collection. The very specialized habitat-requirements of these species at first view would seem more a liability than an asset for a wide distribution. This is one of the several zoogeographic problems for which zoologists seem not yet to have found a solution.

The present species has been known in the literature under various names, and its nomenclature has given rise to some controversies. Before 1900 the most commonly used name for the species was *Alpheus laevis* Randall, 1840. In 1897 COUTIÈRE (1897, p. 195) pointed out that the name *Alpheus ventrosus* H. Milne Edwards, 1837, is synonymous with *A. laevis*, and although he himself at first continued to use the name *A. laevis* for the species, after 1900 the name *A. ventrosus* took fully over. In a rough checking of the literature I found that the name *A. laevis* has been used over 40 times before 1900 and only about nine times since; for *A. ventrosus* this is just the reverse, I found seven uses before 1900 and 43 after that year. In 1883 KINGSLEY had already pointed out the synonymy of *Alpheus lottini* and *A. laevis*, having been able to compare the types of the two species (KINGSLEY, 1883, p. 114). STEBBING (1915, p. 82) made a valiant effort to substitute the name *lottini* for *ventrosus*, but was followed in this by few authors only. The description of *Alpheus lottini* Guérin, namely was published in 1838, and the exact date of GUÉRIN's plate on which the species was figured and named, was not known. STEBBING (1915, p. 82) cited that date as 1826-1830, but also the dates 1830, 1830-1831 were used by some authors. The reluctance to use GUÉRIN's name was caused by that (i) his figure was rather poor, and (ii) its date of publication was unknown. KINGSLEY's (1883) comparison of the type of GUÉRIN's species with that of *Alpheus laevis* Randall, took away the last doubt as to the identity of *A. lottini*, while HOLTHUIS (1961, pp. 168-169) proved the date of publication of the plate showing the original figure of *Alpheus lottini* to be 1829. After 1955 more and more authors started to use the name *A. lottini* for the species, but until 1970 the name *A. ventrosus* was also regularly employed. The general picture is that until 1900 *Alpheus laevis* was almost exclusively used, after a short transitional period *A. ventrosus* took over practically completely in 1910, to be seriously

challenged by *A. lottini* after 1955, disappearing almost entirely after 1975 (between 1955 and 1975 I counted 17 uses of *A. lottini* and 10 of *A. ventrosus*).

Recently it was found that a still older name is available for the species in question, and that its use might even do away with the controversy *ventrosus-lottini*. This name is *Cancer sublucanus* Forskål, 1775.

PEHR FORSKÅL's *Descriptiones Animalium* was published posthumously in 1775 and contained the descriptions of numerous animals observed by FORSKÅL during the fateful 1761-1767 Danish expedition to Arabia. During this expedition all but one of the participants succumbed: FORSKÅL himself died in Yemen on 11 July 1762. Only the leader of the expedition, CARSTEN NIEBUHR, managed to return to Denmark. It was NIEBUHR, who took care that FORSKÅL's notes and descriptions were finally published in 1775. These descriptions, however, were mostly in the form of field notes and it clearly was the intention of FORSKÅL to use them as additions to more extensive morphological descriptions to be made after the collected material. Notwithstanding the meagreness of FORSKÅL's published accounts of the species, many of them could be recognized by later authors, and for them FORSKÅL's names were generally accepted. Others, however, were not recognized by contemporary and subsequent zoologists, and for these the names given by FORSKÅL usually disappeared into obscurity. In many instances such descriptions were mainly based on colour, and as in Crustacea the colour usually disappears upon preservation, the museum workers of the 19th century had very little to go by. When in 1962 I had the privilege to take part in the first Israel South Red Sea Expedition to the Dahlak Archipelago in the southern Red Sea, I took a copy of FORSKÅL's Crustacean descriptions along, in the hope to be able to identify some of FORSKÅL's dubious species with the help of living material. In many cases this method proved to be successful, mainly thanks to FORSKÅL's remarkable accurate observations and descriptions. One of the identities that could be solved was that of *Cancer sublucanus*. FORSKÅL's (1775, p. 94) description of this species is as follows:

« 55. CANCER SUBLUCANUS; *macrourus*; *incarnatus*, *dorso nigro*, *thoroce* [error pro *thorace*] *compresso*, *antice spina oculis longiore*. *Djiddae*.

DESCR. *Sesquipollicis longitudine*: *compressiusculus totus*. *Antennae nigrae*, *corpore breviores*. *Scuta thoracis & corporis subtus conniventia*, *latera pectoris & caudae tegentia*. *Chelae ovato-oblongae*, *compressiusculae*, *dorso nigrae*, *lateribus fusco-punctatae*: *apice setis appressis*. *Dextra major*. *Cauda supra nigro-fusca*, *ciliis flavicantibus* ».

FORSKÅL's description shows that his *Cancer sublucanus* cannot be anything but *Alpheus lottini*. In the first place the characteristic colour of *A. lottini* is accurately described. The species, namely is orange-red to orange with a broad dark medio-dorsal band of a dark brown to black colour, which extends over

the full length of the body; the palm of the chela shows large and conspicuous dark spots of a brown or blackish colour. The body and the chelae of *A. lottini* are distinctly compressed, as described by FORSKÅL. The carapace ends anteriorly in spined ocular hoods, FORSKÅL's « antice spina oculis longiore ». The length « sesquipollicis » (i.e. 1.5 inch = about 40 mm) also is correct, BANNER (1953, p. 86, under *Crangon ventrosa*) stated « Large females in collection range to 42 mm. in length ». Furthermore FORSKÅL indicated the unequal size of the chelae (« *Dextra major* »).

There can be no doubt therefore that *Cancer sublucanus* Forskål, 1775, is a senior synonym of *Alpheus lottini* Guérin, 1829, of *Alpheus ventrosus* H. Milne Edwards, 1837, and of *Alpheus laevis* Randall, 1840. As shown above, none of these names has been exclusively used for the species, *Alpheus lottini* at present being the best known, but at least until 1975 *A. ventrosus* was also regularly employed for the same species. Furthermore the name *A. sublucanus* has recently started to be used in ecological literature dealing with Red Sea Crustacea. There is therefore no good reason not to accept the Law of Priority here and adopt the name *Alpheus sublucanus* for the present species. With *Astacus malabaricus* Fabricius, 1775, *Cancer sublucanus* Forskål, 1775, is the oldest Alpheid ever described with an available name, and it is therefore most unlikely that the name *sublucanus* ever will have to make place for another specific name. The use of the name *sublucanus* consequently is in the interest of nomenclatural stability.

The spelling FORSKÅL, with one s, is used here for the name of the author of *Cancer sublucanus*, although several modern zoologists adopt the spelling FORSSKÅL, with two s, for it. As shown by CHRISTENSEN (1918, p. 9, footnote) at least 19 different spellings of the name FORSKÅL are known and PEHR FORSKÅL himself was not consistent in spelling his own name. In the 18th century remarkably little importance was generally attached to the spelling of personal names, and it is only in the 19th century that names were spelled more consistently. As in FORSKÅL's printed works his name is spelled with one s, there seems to be no good reason not to adopt this spelling, while much confusion (in citation, etc.) can be avoided by doing so.

RIASSUNTO

Notizie su 14 specie, appartenenti a 13 generi, di Crostacei Decapodi marini delle Galápagos, raccolti durante la Spedizione Lodovico Mares - Gruppo Ricerche Scientifiche Tecniche Subacquee (Dicembre 1971-Gennaio 1972). Nuovi per l'Arcipelago il genere *Rhynchocinetes* e le specie *Aniculus elegans* Stimpson, 1859 e *Alpheus sublucanus* (Forskål, 1775); di questa ultima forma è esaurientemente discussa la complessa nomenclatura.

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Finito di stampare il 15 dicembre 1979