

conservation of the freshwater branchiopod generic name *Disparalona* Fryer, 1968 (Anomopoda, Chydoridae) by the suppression of *Phrixura* Müller, 1867. The latter genus and its type-species *P. rectirostris* Müller, 1867, were based on a single deformed individual now recognized as belonging to *Lynceus rostratus* Koch, 1841, the type-species of *Disparalona*. The name *Phrixura* has been ignored since its original publication but it has been suggested recently that it should displace *Disparalona*, a name in wide use.

The following Opinion dealing with Crustacea was published on pp. 131-132 of the same issue of the Bulletin:

Opinion 1869. *Monstrilla* Dana, 1849 and *Thamaleus* Krøyer, 1849 (Crustacea, Copepoda): conserved.

THE GENUS *PROCESSA* LEACH (DECAPODA, CARIDEA) IN THE AEGEAN SEA

BY

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Koukouras et al. (1992) listed the decapod crustacean fauna of the Aegean Sea. This list included eight of the ten *Processa* species known from the Mediterranean and the Black Sea. The information given in that paper was based partially on the material collected from this area and partially on a thorough review of the relevant literature, which included scattered records of the presence of the various species. Many of these records, however, should be considered doubtful, since they have appeared before the review by Nouvel & Holthuis (1957) or the description of some new species (Al-Adhub & Williamson, 1975; Williamson & Rochanaburanon, 1979).

Recent sampling in the Aegean and reexamination of material collected previously in this area (fig. 1) gave additional information on the distribution and habitats of the species of the genus *Processa*, as follows (Cl = carapace length):

***Processa acutirostris* Nouvel & Holthuis, 1957**

1 ♂; sta. 24, west coast of Calymnos Island, depth 10 m, sandy substratum, 2.i.1974. Cl = 12 mm.

This Mediterranean endemic species is reported for the first time from the Aegean Sea. It was known from various areas of the western Mediterranean (e.g., Nouvel & Holthuis, 1957; Forest, 1965); the central Mediterranean, off E. Tunisia (Đuriš, 1996) and the Gulf of Taranto (Forest, 1967); the Adriatic

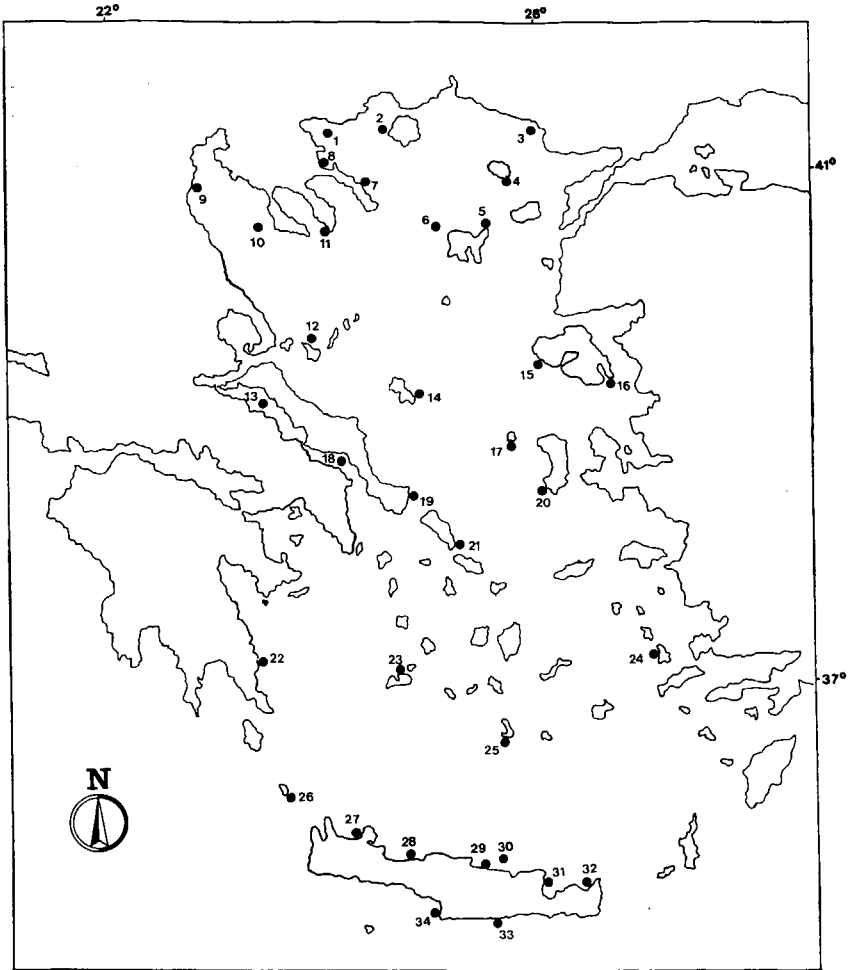


Fig. 1. Map indicating the sampling stations in the Aegean Sea. Every sampling station includes various habitats of different depth. Details are given in the species presentations.

(Holthuis, 1961); and the Levantine Basin, i.e., the Cyprus coast (Lewinsohn & Holthuis, 1986).

***Processa canaliculata* Leach, 1815**

28 ♂♂, 19 ♀♀ (5 ovigerous); stas. 1, 2, 3, 6, 10, 12, 13, 14, 15, 18, 20, 24, 25, 27, 29, 30, 32, and 34 (fig. 1), depths 40-350 m, silty substratum. Max. Cl ♂ = 14 mm; max. Cl ♀ = 16 mm.

Valid records of this species in this area are: South Evoikos Gulf (Koukouras & Kattoulas, 1974, as *P. mediterranea* (Parisi, 1915)) and the Korinthiakos Gulf (Kaspiris, 1990, also as *P. mediterranea*).

An Atlanto-Mediterranean species (Lagardère, 1973; D'Udekem d'Acoz, 1990), known from various sites of the western Mediterranean (e.g., Nouvel & Holthuis, 1957), the central Mediterranean (Đuriš, 1996), the Adriatic (e.g., Froglija, 1972) and the Levantine Basin (Holthuis & Gottlieb, 1958).

***Processa edulis* (Risso, 1816)**

14 ♂♂, 9 ♀♀; stas. 5, 8, 9, 12, 16, 17, 19, 20, 22, and 24 (fig. 1), depths 3-30 m, among algae and meadows of *Posidonia oceanica* (Linnaeus) Delile. Max. Cl ♂ = 10 mm; max. Cl ♀ = 12 mm.

Valid previous records from the Aegean are: the Izmir Gulf (Geldiay & Koçatas, 1968; Koçatas, 1981), the Thermaikos Gulf (Georgiadis & Georgiadis, 1974, as *P. edulis edulis*) and Skiathos Island (Türkay et al., 1987).

An Atlanto-Mediterranean species known from various sites in the western Mediterranean (e.g., Nouvel & Holthuis, 1957), the central Mediterranean (Forest, 1967), the Adriatic (e.g., Manning & Števcíć, 1982) and the Levantine Basin (Holthuis, 1961; Lewinsohn & Holthuis, 1986).

***Processa elegantula* Nouvel & Holthuis, 1957**

3 ♂♂; stas. 11 (coast of Porto-Koufo, Chalkidiki Peninsula) and 7 (Moni Iviron, Athos, Chalkidiki Peninsula), depths 20 and 25 m, in *Posidonia oceanica* meadows. Max. Cl = 6 mm.

In the area, the species has been recorded only from the Messiniakos Gulf (Holthuis & Gottlieb, 1958) and the Izmir Gulf (Koçatas, 1981).

An Atlanto-Mediterranean species, collected from various sites of the western Mediterranean (e.g., Nouvel & Holthuis, 1957), the central Mediterranean (Đuriš, 1996), and Levantine Basin, along the south coast of Turkey (Koçatas, 1981).

***Processa macrophthalmia* Nouvel & Holthuis, 1957**

13 ♂♂, 10 ♀♀ (2 ovig., 6.v.1995 and 1 ovig., 9.x.1995); stas. 4, 21, 26, 28, 29, 31, and 33 (fig. 1), depths 6-280 m, from sand, sandy silt, and silt substrata. Max. Cl ♂ = 18 mm; max. Cl ♀ = 17 mm (ovig. ♀ = 9 mm).

The only previous records of this species in the area are those from the Turkish coasts of the Aegean (Koçatas, 1981) and south Aegean (Koukouras et al., 1993).

An Atlanto-Mediterranean species, (e.g., Neves, 1973), known from various localities in the western Mediterranean (e.g., Nouvel & Holthuis, 1957), the central Mediterranean (Tursi et al., 1974; Đuriš, 1996), the Adriatic (Števcíć, 1969, 1979, 1990) and the Levantine Basin, south coast of Turkey (Koçatas, 1981) and the Cyprus coast (Lewinsohn & Holthuis, 1986).

Processa modica Williamson, in Williamson & Rochanaburanon, 1979

2 ♂♂, sta. 23, north coast of Milos Island; 1 ovig. ♀, sta. 11, Porto Koufo, Chalkidiki Peninsula, 14.vii.1996; depths 12 and 4 m, sandy substratum. Max. Cl ♂ = 8 mm; Cl ♀ = 9.5 mm.

The species has been recorded in the area only from the Saronikos Gulf (Vamvakas, 1971, as *P. parva* Holthuis, 1951), the Aegean coast of Turkey (Koçatas, 1981, as *P. modica carolii* Williamson, 1979) and the southern Aegean (Koukouras et al., 1993, from material obtained during the cruises of the "Calypso").

An Atlanto-Mediterranean species known from various localities of the western Mediterranean (e.g., García Raso, 1982), the Adriatic (e.g., Manning & Števcíć, 1982) and the Levantine Basin, along the south coast of Turkey (Holthuis, 1961; Koçatas, 1981, as *P. parva*).

Processa nouveli Al-Adhub & Williamson, 1975

37 ♂♂, 30 ♀♀ (16 ovig.); stas. 7, 8, 15, 19, 26, 28, 29, 31, and 32 (fig. 1), depths 10-300 m from sand, sandy silt, and silt substrata. Max. Cl ♂ = 11 mm; max. Cl ♀ (ovig.) = 11 mm.

This species has been previously reported from the N.W. coast of Crete and the coast of Istanbul (Holthuis & Gottlieb, 1958, as *P. canaliculata*), Saronikos Gulf (Vamvakas, 1971, as *P. canaliculata* Leach, 1815), the Evoikos Gulf (Koukouras & Kattoulas, 1974, as *P. canaliculata*), and the Aegean coast of Turkey (Koçatas, 1981).

An Atlanto-Mediterranean species known from the western Mediterranean (Al-Adhub & Williamson, 1975; Falciai, 1981; García Raso, 1982), the Adriatic (Števcíć, 1979) and the Levantine Basin, along the coast of Israel (Holthuis & Gottlieb, 1958, as *P. canaliculata*), the south coast of Turkey (Koçatas, 1981) and the coast of Cyprus (Lewinsohn & Holthuis, 1986).

Processa robusta Nouvel & Holthuis, 1957

1 ovig. ♀; sta. 29, off Iraklio, coast of Crete, depth 6 m, sandy substratum. Cl = 8 mm, carrying about 1000 eggs, with a mean diameter of 0.35 mm.

The species was previously reported in the eastern Mediterranean only from the Strymonikos Gulf, in the northern Aegean Sea (Koukouras et al., 1992).

An endemic Mediterranean species known from the western Mediterranean (Nouvel & Holthuis, 1957; Zariquiey Alvarez, 1968) and the Adriatic Sea (Števcíć, 1969, 1990).

Two more species of this genus which are known from the Mediterranean and the Black Sea have not yet been found in the Aegean. One of these, *P. macro-*

dactyla Holthuis, 1952, known only from the west coast of Africa (Holthuis, 1952; Manning & Chace, 1971; etc.), has been collected once again as a single specimen in the littoral waters of Malaga (García Raso & Salas Casanova, 1985). The second species, *P. pontica* (Sowinsky, 1882) (cf. Băcescu, 1967) is a Black Sea endemic, found exclusively in that area.

Review of the relevant literature showed, that 7 of the 10 European Processidae have an Atlanto-Mediterranean distribution and 3 are Mediterranean or Black Sea endemics. Summarizing, in the western Mediterranean 9 of these have been recorded, 8 in the Aegean, 7 in the Adriatic and the Levantine, 5 in the central Mediterranean (probably due to reduced sampling effort), and 1 in the Black Sea.

REFERENCES

- AL-ADHUB, A. H. Y. & D. I. WILLIAMSON, 1975. Some European Processidae (Crustacea, Decapoda, Caridea). Journ. nat. Hist, London, **9**: 693-703.
- BĂCESCU, M., 1967. Decapoda. Fauna Republicii Socialiste România, **4** (9): 1-351.
- ĐURIŠ, Z., 1996. Penaeid and caridean shrimps collected during Soviet expeditions 1974-1980, to the Mediterranean Sea. Abstract book of 6th Colloquium Crustacea Decapoda Mediterranea: 34-35. (Florence).
- FALCIAI, L., 1981. Osservazioni su alcuni Crostacei Decapodi nel Mar Tirreno. Atti Soc. Toscana Sci. nat., Mem., (B) **88**: 113-126.
- FOREST, J., 1965. Campagnes du "Professeur Lacaze-Duthiers" aux Baléares: Juin 1953 et Août 1954 Crustacés Décapodes. Vie et Milieu, **16** (B): 325-413.
- —, 1967. Sur une collection de Crustacés Décapodes de la région de Porto Cesareo. Description de *Portumnus pestai* sp. nov. Thalassia Salentina, **2**: 3-29.
- FROGLIA, C., 1972. Preliminary report of the Crustacea Decapoda of Adriatic deep waters. Thalassia Jugoslavica, **8** (1): 75-79.
- GARCÍA RASO, J., 1982. Penaeidea y Caridea de las costas de Malaga (Región sur-Mediterranea Española). Graellsia, **38**: 85-115.
- GARCÍA RASO, J. E. & M. C. SALAS CASANOVA, 1985. New record of the species *Processa macrodactyla* Holthuis, 1952 (Decapoda, Caridea) from Spanish waters. Crustaceana, **49** (1): 88-91.
- GELDIAY, R. & A. KOÇATAS, 1968. Report on a collection of Natantia (Crustacea: Decapoda) from the Bay of Izmir and its neighbourhood. Sci. Rep. Fac. Sci. Ege Univ., **51**: 1-46. [In Turkish.]
- GEORGIADIS, C. & G. GEORGIADIS, 1974. Zur Kenntnis der Crustacea Decapoda des Golfes von Thessaloniki. Crustaceana, **26** (3): 239-248.
- HOLTHUIS, L. B., 1952. Crustacés, Décapodes, Macrures. Résultats scientifiques. Expédition océanographique Belge dans les eaux côtières Africaines de l'Atlantique Sud (1948-1949), **3** (2): 1-88.
- —, 1961. Report on a collection of Crustacea Decapoda and Stomatopoda from Turkey and the Balkans. Zool. Verh., Leiden, **47**: 1-67.
- HOLTHUIS, L. B. & E. GOTTLIEB, 1958. An annotated list of the decapod Crustacea of the Mediterranean coast of Israel with an appendix listing the Decapoda of the eastern Mediterranean. Bull. Res. Council. Israel, **7B**: 1-126.

- KASPIRIS, P., 1990. Deep-water Crustacea (Decapoda, Natantia) from the Korinthiakos Gulf, Greece. *Ann. Musei Goulandris*, **8**: 263-267.
- KOÇATAS, A., 1981. Liste préliminaire et répartition des Crustacés Décapodes des eaux Turques. *Rapp. Comm. int. Mer Médit.*, **27** (2): 161-162.
- KOUKOURAS, A., C. DOUNAS & A. ELEFThERIOU, 1993. Crustacea Decapoda from the cruises of "Calypso" 1955, 1960, in the Greek waters. *Bios*, **1** (1): 193-200.
- KOUKOURAS, A., C. DOUNAS, M. TÜRKAY & E. VOULTSIADOU-KOUKOURA, 1992. Decapod crustacean fauna of the Aegean Sea: new information check list, affinities. *Senckenbergiana marit.*, **22** (3/6): 217-244.
- KOUKOURAS, A. & M. KATTOULAS, 1974. Benthic fauna of the Evvoia coast and Evvoia Gulf. III. Natantia (Crustacea: Decapoda). *Sci. Ann. Fac. Phys. Mathem. Univ. Thessaloniki*, **14**: 369-382.
- LAGARDÈRE, J.-P., 1973. Distribution des Décapodes dans le Sud du Golfe de Gascogne. *Rev. Trav. Inst. Pêches Maritimes France*, **37** (1): 77-95.
- LEWINSOHN, G. & L. B. HOLTHUIS, 1986. The Crustacea Decapoda of Cyprus. *Zool. Verh., Leiden*, **230**: 1-64.
- MANNING, R. B. & F. A. CHACE, 1971. Shrimps of the family Processidae from the northwestern Atlantic Ocean (Crustacea: Decapoda: Caridea). *Smithsonian Contr. Zool.*, **89**: 1-41.
- MANNING, R. B. & Z. ŠTEVČIĆ, 1982. Decapod fauna of the Piran Gulf. *Quad. Lab. Tecnol. Pesca, Ancona*, **3** (2-5): 285-304.
- NEVES, A. M., 1973. Crustaceos decapodos marinhos de Portugal continental existentes no Museum Bocage. I. Natantia. *Arq. Mus. Bocage*, (2a) **4** (3): 71-112.
- NOUVEL, H. & L. B. HOLTHUIS, 1957. Les Processidae (Crustacea Decapoda Natantia) des eaux européennes. *Zool. Verh., Leiden*, **32**: 1-53.
- ŠTEVČIĆ, Z., 1969. Lista desetonožnih rakova Jadrana. *Biološki Vestnik*, **17**: 125-134.
- —, 1979. Cruises of the research vessel "Vila Velebita" in the Kvarner region of the Adriatic Sea. *Thalassia Jugoslavica*, **15** (3/4): 279-287.
- —, 1990. Check-list of the Adriatic decapod Crustacea. *Acta Adriatica*, **31** (1/2): 183-274.
- TÜRKAY, M., G. FISCHER & V. NEUMANN, 1987. List of the marine Crustacea Decapoda of the Northern Sporades (Aegean Sea) with systematic and zoogeographic remarks. *Investigación Pesquera, Barcelona*, **51** (Suppl. 1): 87-109.
- TURSI, A., M. PASTORE & P. PANETTA, 1974. Aspetti ecologici del Mar Piccolo di Taranto: ascidie, crostacei decapodi e molluschi. *Atti, IV Simposio Naz., Conserv. Natura, Bari 23-28 Apr.*, **2**: 93-117.
- UDEKEM D'ACQZ, C. D', 1990. *Processa canaliculata* Leach, 1815, une crevette nouvelle pour la faune belge et pour la baie sud de la Mer du Nord. *De Strandvlo*, **10** (1): 8-11.
- VAMVAKAS, C., 1971. Contribution to the study of soft substrata benthic biocoenoses of Greek seas. Area W. Saronikos Gulf. *Hellenic Oceanol. Limnol.*, **10**: 1-152. [In Greek.]
- WILLIAMSON, D. I. & T. ROCHANABURANON, 1979. A new species of Processidae (Crustacea, Decapoda, Caridea) and the larvae of the north European species. *Journ. nat. Hist., London*, **13**: 11-33.
- ZARIQUIEY ALVAREZ, R., 1968. Crustáceos Decápodos Ibéricos. *Investigación Pesquera, Barcelona*, **32**: 1-510.