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List of the marine Crustacea Decapoda of the Northern Sporades (Aegean Sea) with systematic and zoogeographic remarks.

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Key words: Crustacea, Decapoda, Systematics, Zoogeography, Greece, Aegean Sea.

RESUMEN: LISTA DE CRUSTÁCEOS DECÁPODOS MARINOS DE LAS ESPORADES DEL NORTE CON REFERENCIAS SISTEMÁTICAS Y ZOOGEOGRÁFICAS. 72 especies de crustáceos decápodos marinos han sido citados en Northern Sporades. Sin embargo, el presente trabajo discute con detalle los caracteres de identificación de *Psidia*, *Pilumnus* y *Maja*.

SUMMARY: 72 species of marine Crustacea Decapoda are now known to occur in the Northern Sporades. Of these three are new for the Aegean Sea. The identification characters of European *Pisidia*, *Pilumnus*, and *Maja* are discussed in some detail.

INTRODUCTION

The Northern Sporades have received some interest regarding their terrestrial fauna and flora. There are, however, only few records of the marine fauna and specially of the decapod crustaceans. General descriptions of the islands have been given by PHILIPPSON (1901, 1959) and SAMPSON. SCHMALFUSS (1981) has given short notes on the terrestrial ecology. Of the marine decapod crustaceans only the lobsters *Palinurus elephas* and *Homarus gammarus* were recorded by several authors (THOMPSON 1912, ATHANASSOPOULOS 1926, MOURAITOPOULO-KASSIMATI 1973, 1975). TÜRKAY (1976 b) recorded nine species of decapod crustaceans from west of Skyros, and later (1982 a, b) reported upon trap-catches in the archipelago as well as the finding of *Callianassa acanthura*.

The present paper mainly summarizes the results of two excursions to the archipelago. The first one, effectuated in june/july 1978, was more elaborate. With the help of a rented boat all the larger and some smaller northeastern islands were visited, and dredging operations could be effectuated besides shore-collecting and snorkeling. The second one took place in september 1982 and concentrated mainly on Skiathos and Skyros (this second island was not fauna of the archipelago, so that we present a to our knowledge complete list of the islands' marine decapod fauna. To save space we have numbered the localities, so that under each species we give only the name of the island and locality numbers. These numbers are explained in fig. 1 and table I.

For certain systematic remarks we are referring not only to material of the Senckenberg-Museum's collection (SMF), but also to specimens borrowed from the Musée océanographique Monaco (MOM), and the Zoologisches Museum Kiel (ZMK).

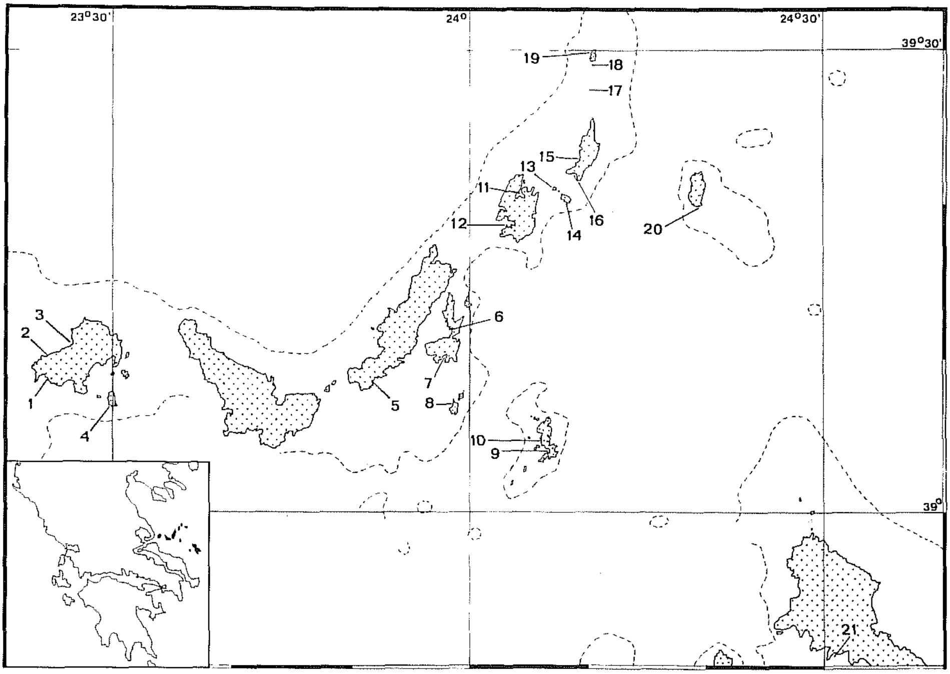


FIG. 1.—The archipelago of the Northern Sporades with indication of the collecting stations: 1-3: Skiathos, 4: Tsoungria, 5: Allonisos, 6-7: Peristera, 8: Adelphi, 9-10: Skantzoura, 11-12: Kyra Panagia, 13: Pappous. 14: Prasso, 15-16: Gioura, 18-19: Psathoura, 20: Piperi, 21: Skyros. For further details see Table I.

TABLE I:

Key to localities mentioned in the species list.

1. Skiathos, Troulos (39°8.4' N 23°25' E). a: sandy bottom, shallow water, 27.vi.1978; b; id., 13.VII.1978; c: id., 20.IX.1982; d: rocky bottom, under stones. 26.VI.1978; e: id., 27.VI.1978; f: id., 20.IX.1982; g: id., 23.IX.1982; h: on rocks and sponges, 1.5-2 m depth, 13.vii.1978; id., 14.VII.1978; j: among *Cistoseira sp.*, 1-1.5 m depth, 27.VI.1978; k: id., 24/25.IX.1982; 1: rocky bottom, traps in shallow water, night 23/24.IX.1982.

2. Skiathos, Ormoz Elias (39°10.25' N 23°24.5' E) sandy bottom with rocks, 0.5 m depth, 28.VI.1978.

3. Skiathos, Ormoz Kechrias (39°10.7' N 23°26.4' E) shallow water, 28.IX.1982.

4. Tsoungria, South-coast (39°06.9' N 23°29.7' E) shallow water, 20.IX.1982.

5. Allonisos, Patitiri (39°08.2' N 23°52.2' E) rocky coast a: rockpools. 29.VI.1978; b: id., 30.VI.1978.

6. Peristera, Vasilikos Ormoz (39°11.5' N 23°58.35' E), sandy bottom. a: shallow water, 7.VII.1978; b: id., about 0.2 m depth, 8.VII.1978; c: *Cymodocea*-meadow, 1 m depth. 8.VII.1978; d: dredge, 11-15 m depth, 8.VII.1978; e: traps in shallow water, night 7/8.VII.1978.

7. Peristera, Ornoma Peristeri (39°10' N 23°58' E) shallow water, 11.VII.1978.

8. Adelphi, West-coast (39°06.5' N 23°58.4' E) shallow water, 10.VII.1978.

9. Skantzoura, Limani (39°04' N 24°07' E). a: shallow water, 9.VII.1978; b: sandy bottom with *Posidonia*, dredge, 20-25 m depth, 9.VII.1978; c: traps in shallow water, night 9/10.VII.1978.

10. Skantzoura, Tarsana Ormoz (39°04.6' N 24°06' E). a: shallow water, 10.VII.1978; b: sandy bottom with *Posidonia*, dredge, 20 m depth, 10.VII.1978.

11. Kyra Panagia, Ormoz Planitis (39°19' N 24°03' E). a: shallow water, 4.VII.1978; b: id., 5.VII.1978, c: id., 6.VII.1978, d: Southwestern part, under stones. 0.3-0.4 m depth. 2-VII.1978; e: traps in shallow water night 4/5.VII.1978; f: dredge, 8-10 m depth, 30.VI.1978; g: id., 3.VII.1978; h: id., 4.VII.1978; i: Northern part, dredge, 10 m depth. 6.VII.1978; j: southern part, dredge. 6-8 m depth. 6.VII.1978.

12. Kyra Panagia, Ormoz Kyra Panagia (39°18.4' N 24°03' E). a: dredge, 3 m depth, 1.VII.1978; b: dredge, 6-8 m depth. 1.VII.1978; c: dredge, 15 m depth. 1.VII.1978.

13. Pappous, West-coast (39°21' N 24°07.1' E). a: rockpools, 1.VII.1978; b: shallow water, 3.VII.1978; c: traps in shallow water, night 2/3.VII.1978; d: id., night 3/4.VII.1978.

14. Prasso, South-coast (39°20' N 24°08.2' E). a: rockpools, 1.VII.1978; b: *Posidonia*-meadow, dredge, 25 m depth. 1.VII.1978.

15. Gioura, West-coast (39°23' N 24°09.2' E) hard bottom, dredge, 30-35 m depth, 5.VII.1978.

16. Gioura, Southern bight (39°21.6' N 24°09' E). a: dredge, about 20 m depth, 6.VII.1978; b: coarse gravel, dredge, 30-35m depth, 5.VII.1978.

17. Between Gioura and Psathoura (39°26.5' N 24°10' E) received from fishermen, about 100 m depth. 3.VII.1978.

18. Psathoura, South-coast (39°25.8' N 24°10.1' E). a: shallow water and splash-zone, 2.VII.1978; b: hard bottom, dredge, 6-8 m depth, 2.VII.1978; c: *Posidonia*-meadow, dredge, 6-8 m depth, 2.VII.1978.

19. Psathoura, West-coast (39°29.5' N 24°10.5' E) below lighthouse, shallow water, 2.VII.1978.

20. Piperi, South-coast (39°19.0' N 24°19.2' E). a: coarse gravel, dredge, about 30-35 m depth, 4.VII.1978; b: coarse gravel, dredge, about 50-60 m depth,

21. Skyros, Ormoz Linarias, North of Linaria (38°50.9' N 24°32' E). a: shallow water, under stones, 1.X.1982; b: id., among seaweeds, 1.X.1982.

METHODS AND GEAR

For the collecting of decapods several pieces of gear were used besides hand-collection both ashore and while snorkeling. As the small dredges designed specially for this excursion proved to be easy to carry and handle even from a boat without winches and because they yielded good results we are describing and figuring them in this paper.

a. The soft-bottom-dredge (fig. 2): This gear was designed for working on sandy and muddy bottoms and was used also in *Posidonia*-fields. The basal part of the frame is made of a piece of strip-iron 5 mm thick, 75 cm broad, and 10 cm deep. Its frontal part has a cutting edge, the rear a series of holes for fixing the net. The upper part of the frame is made of rod-iron of 6 mm

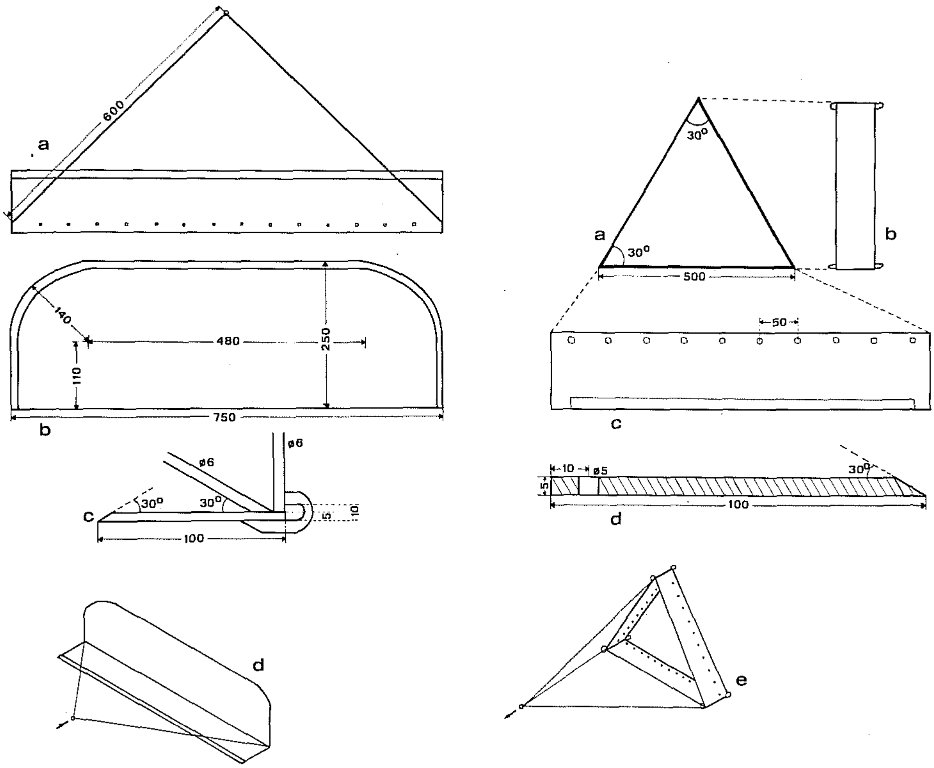


FIG. 2 y 3. — FIG. 2: (left): The soft bottom dredge; a. lower part of frame and clip, b. upper part of frame, c. side view of base, parts of clip, and upper frame, d. total view of frame. — FIG 3 (right): Hard bottom dredge: a. frontal view, b. lateral view, c. lower of frame, upper diameter. The same material is used for the clip by which the gear is dragged on the sea bottom. An angle of 30° between the clip and the basal strip-iron is essential to force the cutting edge a bit into the bottom. The net ist about 1.5 m long and has a mesh-size of 10 mm.

b. The hard-bottom-dredge (fig. 3): This gear is designed as triangle-dredge to be used on moderately hard bottom. The frame is made of three pieces of strip-Iron 5 mm thick, 10 cm deep, and 50 cm broad. The frontal part of all three has a cutting edge enabling the gear to run on either side. Again there are holes in the rear part to fix the net. The frontal corners have eyes to which a crowfoot made of chains is fixed. The net is about 80 cm long and of the same material as described above. This gear is more robust than the former and can therefore be used on rougher bottom.

Besides these dredges small traps were used. These were described by TÜRKAY (1982 a). Also a yabbie-pump helped collecting good series of callianassids and upogebiids (TÜRKAY 1982 b).

SPECIES-LIST

Sicyonia carinata (BRÜNNICH 1768)
Peristera: 6c (2 spec. SMF 12500).

Eualus occultus (LEBOUR 1936)
Skiathos: 1i (2 spec. SMF 12501).

Lysmata seticaudata (RISSO 1816)
Skiathos: 1l (25 spec. SMF 12502). — Skantzoura: 9c (3 ovig. ♀ SMF 8832) [TÜRKAY 1982a]. — Kyra Panagia: 11e (6 spec. SMF 8825);11f (9 spec. SMF 8827) [TÜRKAY 1982a]. — Pappous: 13c (10 spec. SMF 8829); 13d (7 spec. SMF 8826) [TÜRKAY 1982a).

Hippolyte longirostris (CZERNJAWSKY 1968)
Skiathos: 1k (2 spec. SMF 12506). — Peristera: 6c (1 spec. SMF 12508). — Skantzoura: 9a (1 spec. SMF 12504); 10b (7 spec. SMF 12505). — Kyra Panagia: 11c (2 spec. SMF 12503). — Skyros: 21b (17 spec. SMF 12507).

Hippolyte inermis (LEACH 1815)
Peristera: 6c (22 spec. SMF 12509).

Thoralus cranchii (LEACH 1817)
Skiathos: 1h (1 spec. SMF 12514); 1i (1 spec. SMF 12515); 1k (8 spec. 12513). — Skantzoura: 9b (3 spec. SMF 12519); 10a (1 spec. SMF 12517); 10b (2 spec. SMF 12516). — Panagia: 11i (12 spec. SMF 12512, 1 spec. SMF 12518); 11j (5 spec. SMF 12511); 12b (1 spec. SMF 12510). — Pappous: 13c (1 spec. SMF 8830) [TÜRKAY 1982a].

Alpheus dentipes GUERIN 1832
Skiathos: 1h (2 spec. SMF 12520); 1i (11 spec. SMF 12521); 1k (15 spec. SMF 12527). — Skantzoura: 9b (3 spec. SMF 12522). — Kyra Panagia: 11i (2 spec. SMF 12523); 11j (1 spec. SMF 12524); 12b (2 spec. SMF 12525). — Psathoura: 18b (3 spec. SMF 12526).

Athanas nitescens (LEACH 1814)
Skiathos: 1c (7 spec. SMF 12528, 1 spec. SMF 12529); 1k (6 spec. SMF 12535). — Peristera: 6c (1 spec. SMF 12532). — Skantzoura: 9b (2 spec. SMF 12530); 10b (1 spec. SMF 12531). — Kyra Panagia: 11i (2 spec. SMF 12533). — Pappous: 13c (1 spec. 8831) [TÜRKAY 1982a]. — Psatjoura: 18c (1 spec. SMF 12534). — Skyros 21b (2 spec. SMF 12536).

Synalpheus gambarelloides (NARDO 1847)
Kyra Panagia: 11f (12 spec. SMF 12537); 11g (13 spec. SMF 12538).

Processa edulis (RISSO 1816)
Skiathos: 1i (2 spec. SMF 12539).

Palaemon adspersus RATHKE 1837
Peristera: 6e (1 spec. SMF 8824) [TÜRKAY 1982a].

Palaemon elegans RATHKE 1837
Skiathos: 1d (7 spec. SMF 12540); 1e (1 spec. SMF 12541); 1g (8 spec. SMF 12550); 3 (2 spec. SMF 12551). — Allonisos: 5a (2 spec. SMF 12542). — Peristera: 6a (15 spec. SMF 12546); 6c (9 spec. SMF 12547); 6e (26 spec. SMF 8823) [TÜRKAY 1982a]. — Skantzoura: 9a (3 spec. SMF 12543); 10a (1 spec. SMF 12544). — Kyra Panagia: 11c (3 spec. SMF 12549); 11d (3 spec. SMF 12548); 11f (1 spec. SMF 8828). — Skyros: 21a (9 spec. SMF 12552).

Palaemon serratus (PENNANT 1777)
Skiathos: 1d (1 spec. SMF 12553). — Peristera: 6c (1 spec. SMF 12554). — Skantzoura: 9c (9 spec. SMF 8833) [TÜRKAY 1982a).

Palaemon xiphias RISSO 1816
Skiathos: 1l (2 spec. SMF 12557). — Peristera: 6c (3 spec. SMF 12556). — Skantzoura: 10a (2 spec. SMF 12555). — Skyros: 21b (3 spec. SMF 12558).

**Periclimenes scriptus* (RISSO 1822)
Peristera: 6c (1 spec. 12560. — Skantzoura: 9b (2 spec. SMF 12559).

Typton spongicola COSTA 1844
Between Gioura and Psathoura: 17 (1 spec. SMF 12561).

Palinurus elephas (FABRICIUS 1787)
Northern Sporades in general: MORATOPOULO-KASSIMATI 1973, 1975. — Skiathos: THOMPSON 1912. — Kyra Panagia: ATHANASSOPOULOS 1926. — Skyros: ATHANASSOPOULOS 1926.

Scyllarus arctus (LINNAEUS 1758)
Skyros: TÜRKAY 1976b.

Homarus gammarus (LINNAEUS 1758)
Northern Sporades in general: MORATOPOULO-KASSIMATI 1973, 1975. — Skiathos: THOMPSON 1912. — Skyros: ATHANASSOPOULOS 1926.

Callianassa acanthura CAROLI 1946
Peristera: 7 (1♂ SMF 8821) [TÜRKAY 1982b].

Callianassa pestai DE MAN 1928
Peristera 6b (2♂ 1♀ SMF 12562).

Callianassa tyrrhena (PETAGNA 1792)
Peristera: 7 (2♀ SMF 12563) [TÜRKAY 1982a].

Upogebia pusilla (PETAGNA 1792)

Calcinus ornatus (ROUX 1830)
Skiathos: 1h (1♀ SMF 12566); 1i (1♂ 2♀ SMF 12567).

Clibanarius erythropus (LATREILLE 1818)
Skiathos: 1b (11♂ 35♀ SMF 12569); 1d (1♂ 3♀ SMF 12571); 1e (1♀ SMF 12572); 1g (1♂ SMF 12583); 1h (1♂ 1♀ SMF 12568); 1i (2♂ SMF 12570); 1k (2♂ 3♀ SMF 12584); 2 (18♂ 29♀ SMF 12573); 3 (3♂ 2♀ SMF 12585). — Tsoungria: 4 (1♂ SMF 12586). — Peristera: 6a (2♂ 1♀ SMF 12575; 7 (1♂ SMF 12576). — Skantzoura: 9a (1♀ SMF 12574). — Kyra Panagia: 11a (15♂ 13♀ SMF 12579); 11b (2♂ 1♀ SMF 12580); 11d (14♂ 10♀ SMF 12577); 11g (1♂ 2♀ SMF 12578). — Pappous: 13a (1♂ SMF 12581). — Psathoura: 19 (2♂ SMF 12582). — Skyros: 21a (4♂ 2♀ SMF 12587).

Dardanus calidus (RISSO 1827)
Between Gioura and Psathoura: 17 (1♂ SMF 12588).

Diogenes pugilator (ROUX 1829)
Skiathos: 1e (3♂ 1♀ SMF 12589). — Tsuoungria: 4 (5♂ 3♀ SMF 12593). — Peristera: 6a (1♂ SMF 12590); 6c (1♂ SMF 12591); 7 (3♂ 1♀ SMF 12592).

Paguristes oculatus (FABRICIUS 1775)
Peristera: 6c (1♀ SMF 12598); 6d (1♀ SMF 12597). — Skantzoura: 9b (10♂ 7♀ SMF 12594); 10a (3♂ SMF 12595); 10b (2♂ 1♀ SMF 12596). — Kyra Panagia: 11f (1♂ 3♀ SMF 12599); 11g (1♂ 1♀ SMF 12600); 11h (1♂ 1♀ SMF 12601); 11j (3♂ 2♀ SMF 12602); 12b (5♂ 2♀ SMF 12603). — Prasso: 14b (1♀ SMF 12604). — Gioura: 16a (2♂ 2♀ SMF 12606); 16b (3♂ 3♀ SMF 12605). — Piperi 20 a (1♂ 1♀ SMF 12607).

Anapagurus breviaculetaus FENIZIA 1937
Kyra Panagia: 11j (1♂ SMF 12609).

**Anapagurus brevicarpus* A. MILNE-EDWARDS & BOUVIER 1892
Skantzoura: 9b (1♀ SMF 12608). — Gioura 16a (1♀ SMF 12610).

Cestopagurus timidus (ROUX 1830)
Skiathos: 1h (7♂ 5♀ SMF 12611); 1i (14♂ 17♀ SMF 12612); 1k (15♂ 11♀ 6 juv. SMF 12618). — Allonisos: 5a (2♂ 1♀ SMF 12613). — Skantzoura: 9b (2♂ 1♀ SMF 12614); 10b (2♂ 1♀ SMF 12615). — Kyra Panagia: 11i (2♂ 1♀ SMF 12616). — Prasso: 14b (2♂ SMF 12617). — Skyros: 21b (1♂ 1♀ SMF 12619).

Pagurus anachoretus RISSO 1827
Skiathos: 1k (1♀ SMF 12626). — Peristera: 6a (1♂ SMF 12622); 6c (1♀ SMF 12623). — Adelphi: 8 (1♀ SMF 12620). — Skantzoura: 9b (1♀ SMF 12621); 9c (1♂ SMF 8834) [TÜRKAY 1982a]. — Kyra Panagia: 11j (1♂ 1♀ SMF 12624). — Pappous: 13b (1♀ SMF 12625). — Skyros: 21b (1♂ 3♀ SMF 12627).

Pagurus cuanensis BELL 1846
Skantzoura: 10a (1♀ SMF 12628); 10b (1♀ SMF 12629). — Kyra Panagia: 11j (2♀ SMF 12630). — Gioura: 16a (1♂ SMF 12631).

Pagurus forbesii BELL 1846
Kyra Panagia: 12a (1♂ SMF 12632); 12c (2♀ SMF 12633). — Gioura: 16a (1♀ SMF 12634).

Galathea bolivari ZARIQUIEY-ALVAREZ 1950
Skiathos: 1h (1♀ SMF 12635); 1i (2♂ 1♀ SMF 12636); 1k (2♂ SMF 12637).

Galathea intermedia LILLJEBORG 1851
Skantzoura: 9b (2♀ SMF 12638); 10a (1♀ SMF 12639); 10b (3♂ 3♀ SMF 12640).

Galathea nexa EMBLETON 1834
Between Gioura and Psathoura: 17 (1♂ 1♀ SMF 12641).

Galathea strigosa (LINNAEUS 1767)
Skyros: TÜRKAY 1976b.

Munida rugosa (FABRICIUS 1775)
Skyros: TÜRKAY 1976b.

Porcellana platycheles (PENNANT 1777)
Skiathos: 1d (1♂ 1♀ SMF 12642). — Tsoungria: 4 (1♀ SMF 12644). — Skantzoura: 9a (1♂ 1♀ SMF 12643). — Skyros: 21a (3♂ 5♀ SMF 12645).

Pisidia longimana (RISSO 1816)
Skiathos: 1h (2♂ 1♀ SMF 12733); 1i (4♂ 8♀ 4 juv. SMF 12734); 1k (4♂ 8♀ 4 juv. SMF 12735). — Kyra Panagia: 11c (1♂ SMF 12736); 11f (1♀ SMF 12737); 11j (5♂ 1♀ SMF 12738).

Pisidia bluteli (RISSO 1816)
Skiathos: 1i (1♀ SMF 12739); 1k (1♂ 3♀ SMF 12740); 2 (1♀ SMF 12741). — Skyros: 21b (7♂ 8♀ SMF 12742).

Pisidia cf. bluteli (RISSO 1816)
Skiathos: 1i (1♂ 1♀ SMF 12743).

Dromia personnata (LINNAEUS 1758)
Skyros: TÜRKAY 1976b.

Calappa granulata (LINNAEUS 1767)
Skyros: TÜRKAY 1976b.

Ethusa mascarone (HERBST 1785)
Kyra Panagia: 11f (1♂ SMF 12647); 11j (1♀ SMF 12646).

Ebalia edwardsii COSTA 1838
Kyra Panagia: 11j (1 fragmentary spec. SMF 12648).

Bathynectes longipes (RISSO 1816)
Skyros: TÜRKAY 1976b.

Liocarcinus arcuatus (LEACH 1814)
Peristera: 6c (1♂ SMF 12651); 6e (1♂ 4♀ SMF 8822) [TÜRKAY 1982a]. — Skantzoura: 9b (1♂ SMF 12649); 10b (1♀ SMF 12650).

Liocarcinus corrugatus (PENNANT 1777)
Skantzoura: 10b (1 juv. SMF 12652). — Kyra Panagia: 12b (1♂ SMF 12653). — Skyros: TÜRKAY 1976b.

Liocarcinus vernalis (RISSO 1816)
Peristera: 7 (2♂ SMF 12654).

Portumnus latipes (PENNANT 1777)
Skiathos: 1c (1♀ SMF 12655).

Portumnus pestai FOREST 1967
Peristera: 6a (2♀ SMF 12656). — Kyra Panagia: 11a (1♂ SMF 12657).

Eriphia verrucosa (FORSKAL 1775)
Skiathos: 1g (1♂ SMF 12669)

Pilumnus hirtellus (LINNAEUS 1761)
Skiathos: 1h (1♂ SMF 12658); 1i (5♂ SMF 12659); 1k (1♂ 6 juv. SMF 12663). — Kyra Panagia: 11f (1♂ SMF 12660); 11g (2♂ SMF 12661); 11j (1♀ SMF 12662).

Pilumnus spinifer H. MILNE-EDWARDS 1834
Skantzoura: 10b (1♀ SMF 12664). — Kyra Panagia: 11f (1♂ 3♀ SMF 12665).

**Pilumnus villosissimus* (RAFINESQUE 1814)
Skiathos: 1i (1♂ SMF 12666). — Skantzoura: 9b (1♀ SMF 12667). — Kyra Panagia: 11i (1♂ SMF 12668).

Xantho cf. pilipes A. MILNE-EDWARDS 1867
Kyra Panagia: 12b (1♀ SMF 12680).

Xantho poressa (OLIVI 1792)
Skiathos: 1b (9♂ 1♀ SMF 12670); 1e (1♀ SMF 12672); 1i (1♀ SMF 12671); 2 (1♂ SMF 12673); 3 (2♂ SMF 12678). — Peristera: 6a (20♂ SMF 12675). — Skantzoura: 9a (5♂ 1♀ SMF 12674). — Kyra Panagia: 11c (1♂ SMF 12677); 11d (6♂ 5♀ SMF 12676). — Skyros: 21c (5♂ SMF 12679).

Paragalene longicrura (NARDO 1868)
Skyros: Türkay 1976b.

Pachygrapsus marmoratus (FABRICIUS 1787)
Skiathos: 1b (1♂ SMF 12681); 1e (1♂ SMF 12683); 1f (1♂ 1♀ SMF 12688); 1g (1♂ SMF 12689); 1i (1♀ SMF 12682). — Allonissos: 5a (2♂ 2♀ SMF 12685). — Adelphi: 8 (1♀ SMF 12686). — Psathoura: 19 (1♂ SMF 12687). — Skyros: 21a (1♂ SMF 12690).

Achaeus gordonae FOREST & ZARIQUIEY-ALVAREZ 1955
Skantzoura: 10b (2♂ SMF 12696). — Kyra Panagia: 11i (1♀ SMF 12697).

Inachus communissimus RIZZA 1839
Skantzoura: 9b (1♀ SMF 12698).

Macropodia czernjawskii (BRANDT 1880)
Skantzoura: 9b (2♂ 1♀ SMF 12699). — Kyra Panagia: 12b (1♂ SMF 12700).

Macropodia longirostris (FABRICIUS 1775)
Piperi: 20a (1♀ SMF 12701).

Macropodia rostrata (LINNAEUS 1761)
Kyra Panagia: 11j (1♂ 1♀ SMF 12702).

Acanthonyx lunulatus (RISSO 1816)
Skiathos: 1d (1♂ SMF 12691); 1e (1♂ 1♀ SMF 12692); 1k (7♂ 4♀ 2 juv. SMF 12695). — Skantzoura: 10b (6♀ SMF 12693). — Pappous: 13b (1♂ SMF 12694).

Pisa armata (LATREILLE 1803)
Skantzoura: 9b (1♂ SMF 12707)

Pisa corallina (RISSO 1816)
Kyra Panagia: 11j (1♂ SMF 12708).

Pisa muscosa (LINNAEUS 1758)
Skantzoura: 9b (1♀ SMF 12709); 10b (1♂ SMF 12710).

Pisa nodipes (LEACH 1815)
Skantzoura: 9b (1♂ SMF 12711). — Kyra Panagia: 11i (2♂ SMF 12712); 11j (1♂

Pisa tetraodon (PENNANT 1777)
Skiathos: 1k (1♂ 2♀ SMF 12715). — Kyra Panagia: 11i (1♀ SMF 12714).

Maja crispata RISSO 1827
Peristera: 6c (1♀ SMF 12703). — Kyra Panagia: 11c (3♂ 1♀ SMF 12705); 11d (3♀ SMF 12704); 11j (2♂ 1♀ SMF 12706). — Skyros: TÜRKAY 1976b.

The species marked by an asterisk are new records for the Aegean Sea.

REMARKS ON OUR MATERIAL OF *Hippolyte spp.*

The taxonomy of the European *Hippolyte* is far from being settled. The characters drawn from the rostrum are not in all cases typical, so that identification gets a bit formalistic using the existing keys. Recently OCEIDIGH, MURRAY & McGRATH (1982) showed that *H. longirostris* is a variable species and questioned the distinctness of *H. leptoceros*. Confronted with these problems concerning the definition of the species, and as we had not enough material to solve the problems, we decided to identify the species with the keys of ZARIQUIEY-ALVAREZ (1968) and LEDOYER (1969).

Most of our *H. longirostris* are quite homogeneous and fit the published figures quite well. There is some variability regarding the length of the rostrum. The specimen of Kyra Panagia (SMF 12503) han only two teeth on the upper rostral border. Most of our specimens bear plumous setae on carapace and abdomen (fa. fascigera), but there seems to be the whole range towards loosing these setae.

Our specimens of *H. inermis* (SMF 12509) do not belong to the typical form with a straight and dorsally unarmed rostrum, but have a dorsal tooth at its base. In this respect they resemble the specimen figured by PESTA (1918: fig. 32b). However, the rostra of our specimens are slightly upcurved and thus remind of *H. holthuisi*. They have, however, not the dorsal subterminal tooth. Moreover their colour was uniformely green as in *inermis* and not «castaño rojizo pálido» as stated by ZARIQUIEY-ALVAREZ (1968: 123). All this led us to consider our specimens as belonging to *H. inermis*.

ON THE IDENTIFICATION-CHARACTERS OF THE AEGEAN *Pisidia*.

For a long time the European members of *Pisidia* were considered as belonging to one variable species. ZARIQUIEY-ALVAREZ (1951) was the first author to separate *P. bluteli* from *P. longicornis*. HOLTHUIS (1961) not only approved this but revived another species, *P. longimana*, which he stated to occur in the shallow water of the whole Mediterranean. Since this time and after the publication of the key of ZARIQUIEY-ALVAREZ (1968) generally these three species are recognized by most authors.

In identifying our material we met some difficulties as we first used the zing the characters, however, we found that the species are far more variable than thought before and we also found a greater variation range as HOLTHUIS (1961). We agree with this last author that *P. longimana* is an intermediate form between *P. bluteli* and *P. longicornis*, the distinction of the first one from the latter being not always very easy.

The examination of great number of typical *P. longicornis* from the North Sea and the British Channel showed indeed, that the inner margins of the ischium and the merus of the chelipeds are smooth. In some very young specimens we observed the inner corner of the merus to be angular, but these specimens also did not have the inner accessorial merus-spine nor an inner spine on the ischium. In comparison, most of our *P. longimana* are quite typical and their chelipeds exhibit at least two spines an the inner margin of the merus and one on the ischium. Unfortunately these characters do not seem to be totally constant. In our specimens there all intergradations between a sharp ischium-spine and a smooth inner border. Many specimens have only blunt granules. In one large male specimen (SMF 12734) the left cheliped is perfectly smooth while the right one has only an accessory spine on the merus, the inner corner being angular but smooth as in quite a number of *longicornis*. We are figuring this interesting specimen (fig. 4). As we have to date only seen this one specimen showing these characters, we identified it as *P. longimana* and prefer to use *P. longicornis* only for the perfectly smooth specimens. This is of course not completely satisfactory and shows the need of verification of this character by examining a very important *longimana*-material.

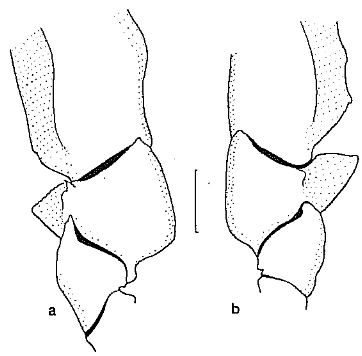


FIG. 4. — Inner face of cheliped ischium, merus, and carpus (part) of *P. longimana* (SMF 12734); a. right cheliped, b. left cheliped. (Scale 1 mm.)

Also our *P. bluteli* do not all show the typical characters of the species. As HOLTHUIS (1961) already pointed out this form is tendencially more spinulous especially when specimens of similar size are compared. It is, however, very difficult to use this character for identification. The same applies to the spine on the penultimate antennal segment where we found all intergradations between a blunt tubercle and a sharp spine. Especially in larger specimens the character that allows the recognition of *bluteli* is the spination of the walking legs. The second pereiopod has numerous and strong spines on the dorsal borders of merus, carpus, and propodus as also pointed out in the key of ZARIQUIEY-ALVAREZ (1968). We have identified our specimens mainly by this character taking it as the decisive one when we were not sure regarding others. Even though there remained two problematic specimens (SMF 12743) that are quite smooth in spite of their neing small but have spines on the dorsal borders of merus and carpus of the second periopods. In one specimen these spines are strong in the other a bit less numerous and weaker. The propodus has minute spines only in both specimens. We are referring to these *Pisidia* cf. *bluteli* as they have some spines at least. This also shows the need for verification of the characters by examining a more abundant material.

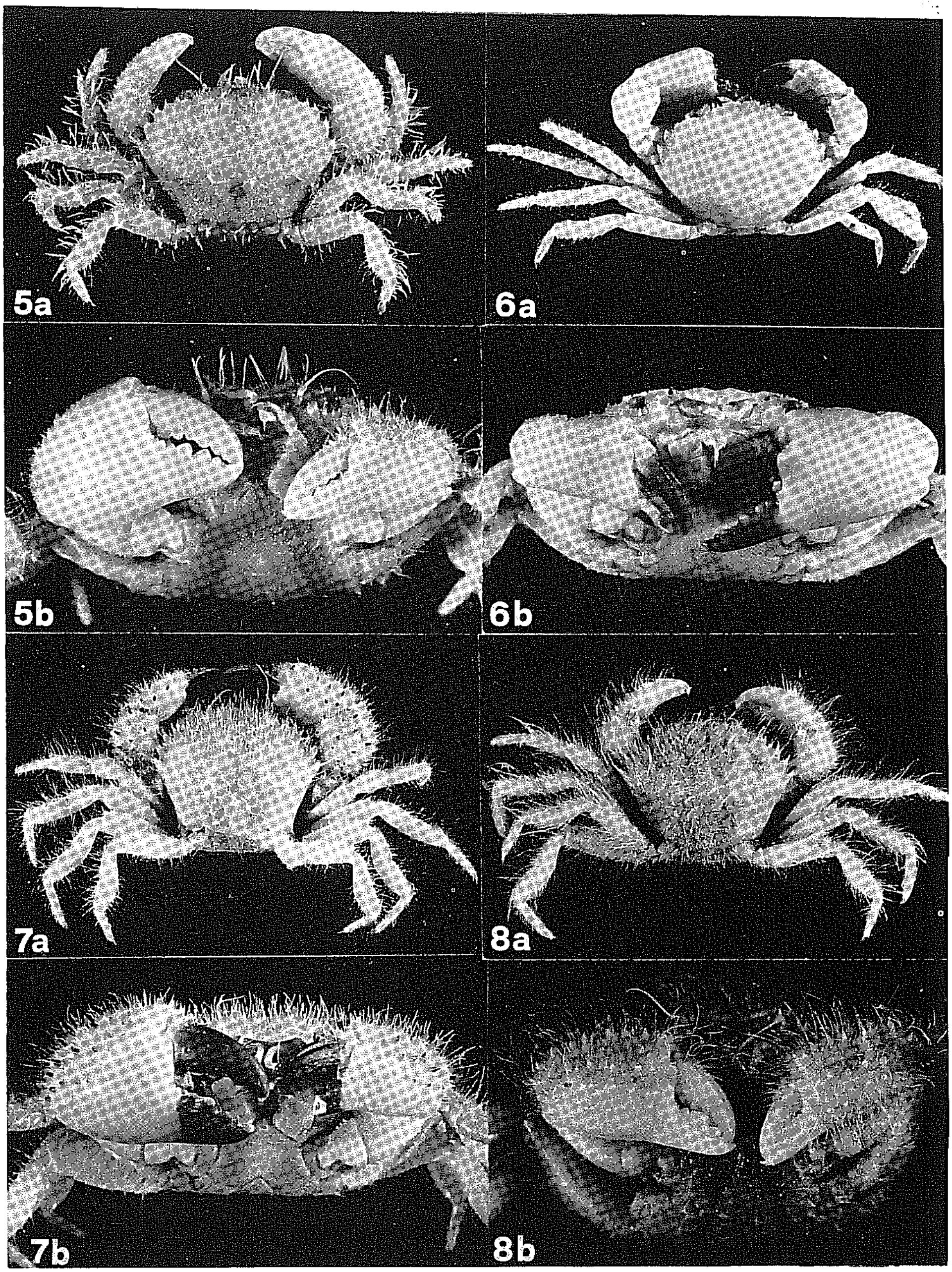
REMARKS ON THE IDENTIFICATION OF THE EUROPEAN *Pilumnus*.

For quite long time the European *Pilumnus* were considered to belong to a single very variable species. It was MONOD (1956) who definitively separated *P. spinifer* and *P. inermis* from *P. hirtellus* and suggested, that other described forms should be checked concerning their validity. While FOREST (1965) still hesitated to split *P. hirtellus* and gave good reasons for not doing so, ZARIQUIEY-ALVAREZ (1968) recognized five species in European waters. While *Pilumnus inermis* is not only separated from the others through its only four anterolateral teeth but also by the morphology of the male first pleopods (see TÜRKAY 1976a), the remaining four forms are very close to each other and sometimes hard to distinguish. It is still an open problem if these are real species. This question can probaly only be solved by experimental work.

To identify our *Pilumnus*-material we looked through quite a number of specimens from different localilties. To explain what we are meaning by the species mentioned in the text we have figured the different forms recognized by us and are giving some short comments:

P. hirtellus (fig. 5): The typical form agrees very well with the definition in ZARIQUIEY-ALVAREZ' key. We have not seen any specimen with a carpus-spine. All of our specimens have a faint cheliped spination and the typical feather-shaped hairs on carapace and pereiopods.

P. aestuarii (fig. 6): This seems to be a brackish-water form, which was originally described from the lagoon of Venice by NARDO (1868). The original figure may be somewhat inaccurate, but shows a large specimen (18 lines=36 mm carapace-breadth). The anterolateral teeth are bifid, which probably is exaggerated. The carapace and the chelae are glabrous and without hairs, although NARDO states that the animals may sometimes have sparce hairs. Similar forms have been figured from the Black Sea by BACESCU (1967: fig. 128B) and MORDUKHAI-BOLTOVSKOI (1969: pl. VII fig. 1). Possibly this is also the form described by KESSLER (1861) as *P. spinulosus*. We have examined a male speci-



FIGS. 5-8. — *Pilumnus* spp., a. dorsal face, b. chelipeds, frontal face. — FIG. 5: *P. hirtellus*, France, Bretagne (SMF 12761). — FIG. 6: *P. aestuarii*, Bulgaria (SMF 12760). — FIG. 7: *P. spi-*

has sparce hairs. These seem to be the most important characters of the brackish-water form. We do not know if the specimens of Cadaques mentioned by ZARIQUIEY-ALVAREZ (1968) and those from Turkey mentioned by KOCATAS (1981) really belong to the same form.

P. spinifer (fig. 7): This is the best known of the four nearly related forms and is easily recognizable by the characters given in the key of ZARIQUIEY-ALVAREZ (1968). The stiff and short hairs are particularly characteristic.

P. villosissimus (fig. 8): The best character for distinguishing this form the former are the long and smooth hairs, that give the animal a «woolly» appearance. In our material the shape of the large chela is variable, it seems, however, to be a bit more elongate in comparison with the one of *spinifer*.

ON THE SYSTEMATICS OF THE EUROPEAN *Maja*

Three species of *Maja* are usually recorded from European waters, viz, *M. crispata* (= *M. verrucosa*), *M. squinado*, and *M. goltziana*, all three also occurring in the Mediterranean (ZARIQUIEY-ALVAREZ 1968, PASTORE 1983). While the distinction of *M. goltziana* poses no problems, there have been such in the cases of *M. crispata* and *M. squinado*. The main argument used for considering the two species as separate has been the fact, that the former gets adult (as shown by ovigerous females) in a much smaller size than the latter.

This argumentation has been given some substantial support by the study of TEISSIER (1935), who drew attention to the growth-discontinuity in several appendages of *Maja squinado* and concluded that for this species the puberty-moult is the last one. CARSLISLE (1957), gave an experimental proof for this fact and showed that the *y*-organ degenerates after this last moult. Thus, adult specimens do not grow further and an ovigerous female is in fact fully grown out. This rule seems to apply to all Majids, at least as far as they are examined (HARTNOLL 1963, 1965).

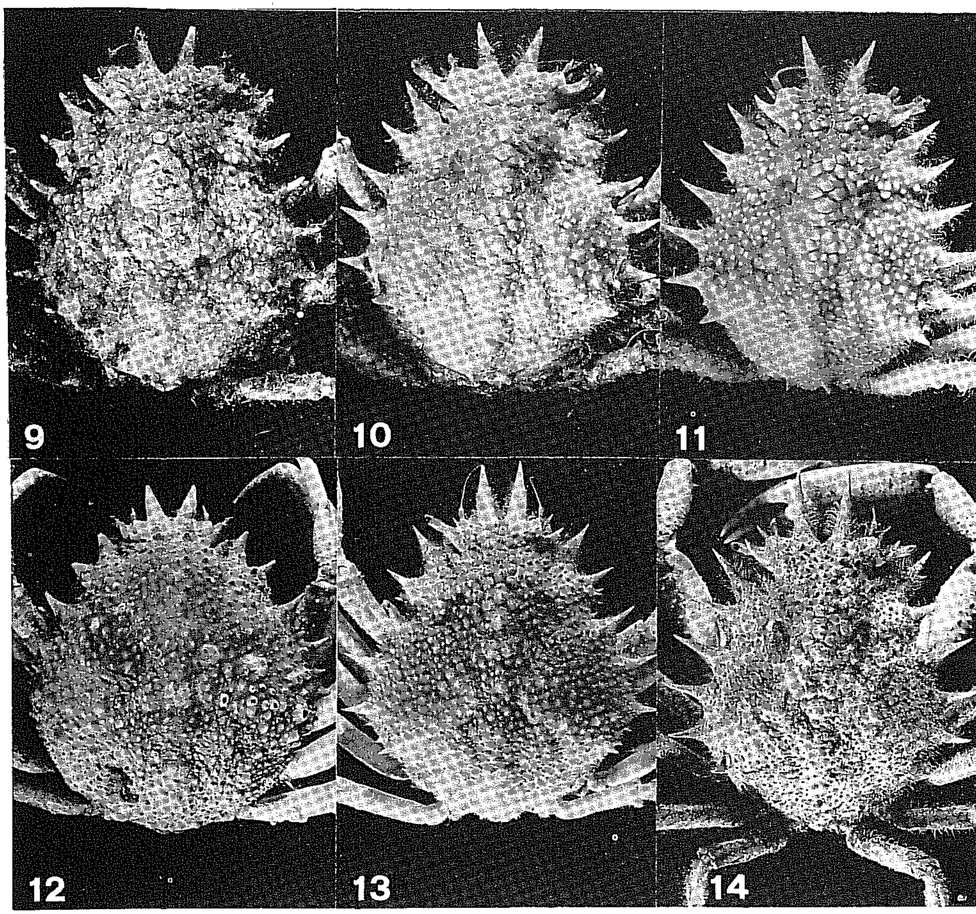
While by these facts it seems to be clear, that the smaller mature specimens are not young forms of the large ones there have always been problems in separating both by morphological characters. Therefore, before the biology of the species was better known, it was a question of belief, whether the large and the smaller forms were separated specifically. HERBST (1788) in his original decription of *Cancer squinado* states the existence of two forms, which, however, he treats as growth stages of one species. The first author having separated the smaller species is RISSO (1827), who introduced the name *Maja crispata* for it (see HOLTHUIS 1977: 72). After H. MILNE-EDWARDS (1834: 328) dealt with the same form under the name *Maja verrucosa* and listed the differences in the shape and armature of the carapace, most authors followed him in separating the smaller *verrucosa* from the larger *squinado*. The still remaining doubts as to the correctness of this separation were very well summarized by PESTA (1918: 366-367). This author pointed out that the characters used because there is a remarkable size-difference between ovigerous females of both. In the following time the treatment by most authors got somewhat schematic. in the Mediterranean small and masked *Maja* were dealt with as *verrucosa*, while large and unmasked ones were indentified as *squinado*. Of course this was not satisfactory, as young *squinado* of a smaller size had to occur somewhere, and there were evidently immature specimens even a bit larger than adult *verrucosa*. So characters for the discrimination of *squinado* and *verrucosa* were looked for and listed by several authors (ZARIQUIEY-ALVAREZ 1968, PASTORE 1983).

As we had some difficulties in identifying our *Maja* from the Northern Sporades we checked the characters in the literature by comparison to the material listed below and are presenting here our results:

1. *squinado*: Rostral horns straight, not very divergent, their length between a 1/7 and 1/8 (=12.5-14.3%) total length of carapace.
   crispata: Rostral horns divergent, their length 1/5 (= 20%) total length of carapace or more.

We measured 15 *maja*-specimens with a total length of more than 10 cm (presumably *squinado*) and 75 under 10 cm. The large size class showed a greater variation in rostral length than stated in the le literature, i.e. 8%-17% of total carapace-length. In the smaller ones we found values varying between 12%-23%, thus, a broad overlap with the larger specimens. The relative length of the rostral horns is not size-dependant and cannot be correlated with other characters. We have examined ovigerous females with a total length of 3.65 cm and 3.32 cm (MOM 38 1502) having a relative rostral length of 13.69% and 14.45%, respectively. Furthermore the total of the measured values does not allow any discrimination within the smaller size class as many be suggested by the characters used formerly. Thus, the only possible statement is, that large specimens can sometimes have relative rostral lengths of less than 12%. Again, there is no size correlation within this group. The largest specimens are not those with the shortest rostra. Also the divergence of the rostral horns does neither show a constancy nor is it clearly correlated with rostral length if all size classes are compared. There is only a tendency towards a more parallel position of the rostral horns in larger specimens (more than 10 cm carapace length), while in smaller specimens they are usually divergent.

2. *squinado*: Carapace-tubercles more or less spiniform, a prominent row of spines in the median line, cardiac tubercle reduced, a suprabranchial thorn present between the cardiacal and posterior branchial thorn, intestinal spines ordinarily much reduced.
   crispata: Carapace-tubercles rounded and not very acute, so are the tubercles in the median line; cardiac tubercle spiniform, suprabran-



FIGS. 9-14.—*Maja* spp., carapace, dorsal face. — FIG. 9: ovig. ♀ (SMF 4482), car-length 59.8 mm, surface-armature like *crispata*, size of rostral and lateral thorns like *squinado*. — FIG. 10: ovig. ♀ (SMF 3685), car-length 66.9 mm, surface-armature like *crispata*, size of rostral and lateral teeth intermediate between 9 and 11. — FIG. 11: immat. ♀ (SMF 6943), car-length 55.9 mm, surface-armature, rostral and lateral thorns like *crispata*, by next moult (maturity moult) the specimen should have grown to *squinado*-size. — FIG. 12: ovig. ♀ (SMF 10438), car-length 147.6 mm. typical *squinado* in all characters, but rostral teeth divergent. — FIG. 13: adult ♂ (SMF 12724), car-length 159.9 mm, typical *squinado* in all characters, lateral thorns longer than in 12. — FIG. 14: adult ♂ (SMF 12718), car-length 88.5 mm, typical *crispa-ta* in all characters.

In our Mediterranean material the mentioned characters are only remarkable, when large largets ones with more than 12 cm carapace-length have the median spine row, which lacks below that size. In these smaller animals the carapace is not spinous at all, except for the intestinal and sometimes also for the cardiacal spines. There is, however, an exception of this rule. We have examined a smaller specimen (carapace-length 6.2 cm) from Guernsey (SMF 10440) and another (carapace-length 1.98 cm) from Arcachon (SMF 11042) having a spinous carapace and a median spine row. Three other Bay of Biscay-specimens (SMF 3687) are of the ordinary Mediterranean *crispata*-type. We have far to few Atlantic material to decide whether the spination is constant in younger northern specimens. In the Mediterranean we have not found this situation.

All the other spination characters seem to be too variable to be used for discrimination of the two forms. In our material we find all intergradations between strong and weak cardiacal, intestinal, and suprabranchial spines.

3. *squinado*: The anterolateral spines are relatively short and straight. There are accesory thorns on the subbranchial regions below the anterolateral spines.
   crispata: The anterolateral spines are relatively long and bent upwards; no accessory thorns.

The length of the anterolateral spines is extremely variable in our specimens with a total carapace-length under 8 cm. The larger specimens have relatively short spines, the ratio carapace-length: lenght of 5th anterolateral tooth ranging from about 7 to 13.8. In the smaller ones this ratio is 4.5-8.5. Thus, there is a broad overlapping. In both size classes the ratio varies independent of the absolute size, so that within one size class smaller specimens may have relatively shorter spines than larger ones. Again there is only a tendency towards relatively shorter spines in large specimens.

The curvature of the anterolateral spines is very variable in our material of all size classes, so that we cannot find any strict correlation. Only a certain tendency is detectable towards more straight spines in large specimens.

The accessory thorns on the subbranchial regions appear in Mediterranean specimens only at sizes of more than 9.3 cm total carapace-length. In smaller ones there can be small tubercles instead, but most of our specimens have none. Again, the smaller specimen from Guernsey (SMF 10440) shows accessory thorns in spite of its small size of 6.19 cm carapace-length, but this is clearly an exception.

4. *squinado*: Basal antennal joint with a spine at its base.
   crispata: Basal antennal joint without basal spine.

This character works well if large specimens are compared with smaller

12.3 cm carapace-length. An exception is again the Guernsey-specimen (SMF 10440), which in spite of its small size has the basal spine.

5. *squinado*: Length/breadth ratio of carapace 0.9-1.3.
   crispata: Length/breadth ratio of carapace 1.5-1.6.

Also in this figure we find a broad overlap in our material. Our specimens with more than 10 cm carapace-length have a ratio of 1.22-1.45 while the smaller ones show a range of 1.31-1.52. This means, that large specimens may be comparatively broader, but there is no strict correlation.

Another observation is also interesting. In the literature we found figures for maximun sized *M. crispata* of 50 mm length and ovigerous females of *M. squinado* from 84 mm on (ZARIQUIEY-ALVAREZ 1968). This suggests a size gap, which in fact does not exists. We have seen ovigerous females of 57.5, 50.9, 59.8, 66.9 and 76.0 mm respectively. All these specimens have a non spinous carapace and could thus be considered as belonging to *crispata*, but there are several other characters that make them *squinado*-like (rostral horns, anterolateral spines etc.).

Its is quite difficult to draw definitive conclusions of these facts. In the Mediterranean the typical *squinado*-characters are only found in large specimens, the smaller ones showing either a mixture or being typical *crispata*. In all cases only the large ones have the more spiny carapace and we have only seen immature animals looking like *crispata* in this respect. One should expect, that young *squinado* are among the immature specimens examined, but it seems impossible to detect them, at least the external morphology does not allow this. As we have stated above, the only small specimen, that looks like *squinado* in many respects is the one from Guernsey (SMF 10440), another from Arcachon (SMF 11042) has the spiny carapace but no accessory thorns on the subbranchial regions.

As a result we agree completely with the opinion of PESTA (1918). We think, that it is impossible to decide on a morphological basis if *Maja crispata* and *squinado* are really distinct or if the earlier maturity of the former is an ecological effect. We believe, that this problem can only be solved in an experimental approach by rearing these animals under different conditions, However, taking into account the fact of a terminal anecdysis in *Maja* (CARLISLE 1957, HARTNOLL 1963) we prefer to keep the two species separate for the time being. After the character-analysis shown above, we will only call the *spinous* specimens *squinado* and all the others *crispata* because all the other characters proved to be inconstant. This results in the Mediterranean in the unsatisfactory situation, that no young *squinado* are known. We see, however, no other solution.

MATERIAL EXAMINED (other than N-Sporades):

No locality ded. C. VALENTIN, 20.III.1894 (1♂ SMF 12721, 1♂ SMF 12722). — British Channel: 49°22.4'N-06°06.4'W or 49°42.35' N - 02°51' N-06°06.4' W, 113 m depth, 9./10.VIII.1980, R.V. «Senckenberg»-Station K 23 or K 24, (1♀ SMF 10439); Guernsey (49°26.01' N 02°30.2' W - 49° 25.33' N 02°29.55' W), 36.3 m depth, 10.VIII.1980, R.V. «Senckenberg»-Station K 27 SD (2♀ SMF 10440). — France: Bay of Biscay, Bassin d'Arcachon, IX. 1964, leg. B. SCHMITT (1♂ SMF 11042). — NE-Atlantic between Portugal and the Canary Islands, 1871, leg. GRENACHER & NOLL (1♂ 2♀ SMF 12720). — Gibraltar, 1871, leg. GRENACHER (1♂ SMF 3686). — Spain: Costa Brava, Cadaques, Oliguera, 3 m depth, VIII.1984, leg. V. NEUMANN (1♀ SMF 12716). — France: Baie de la Garonne, 22-40 m depth, 14.IV.1915, «Prince ALBERT»-Station 3671 (1♂ 2♀ MOM 38 1502); Surroundings of Monaco, 26.X.1906 (1♂ MOM 38 1605), 26.XI.1906 (1♀ MOM 38 1606), 15 m depth, 15.I.1907 (1♀ MOM 38 1608), Port of Monaco, 14.XII.1910 (1♂ MOM 38 1610), id. 28.VI.1905 (1♀ MOM 38 1603), id. (2♂ MOM 38 1613), Cap Martin, 4.III.1909 (1♂ MOM 38 1609), Cap d'Ail, 17-27 m depth, 22.V.1905 (1♂ MOM 38 1602), id., 24 m depth, 11.I.1907 (3♂ MOM 38 1607), Baie de Canton, 22.IX.1906 (1♂ MOM 38 1604), Baie de Beaulieu, 30 m depth, *Posidonia*-meadow, 21.V.1907 (1♂ MOM 38 1600), Baie de Roquebrune, 4.II.1908, 37-17 m depth, *Posidonia*-meadow (1 juv. ♀ MOM 38 1601); Nice (1♂ 1♀ MOM 38 1614). — Italy: Porto Conte, 3.IX.1893, «Prince ALBERT»-Station 356 (1♀ MOM 38 0244); Portofino, 21.III.1914, leg. NICK (1♀ SMF 3682), id. 20.X.1913, leg. NICK (1♂ SMF 3683), id. 13.III.1914, leg. NICK (1♂ SMF 3688); Napoli, 2.IV.1912, leg. NICK (2♀ SMF 3685), id., 21.VII.1959, leg. R. BOTT (2♀ SMF 2552); Sorrento, leg. O. SEMPER (1♂ ZMK Cr 1601); Sicily, Ustica N of Palermo, 11.VIII.1974, leg. RAUSCH (1♀ SMF 6873); Trieste, 1906, Zool. Station (1♀ SMF 3684, 1♀ SMF 3689). — Jugoslavia: Rovinj, 1907 (1♂ SMF 3691), id., 1902, leg. RÖMER, *(1♀ SMF 3710), id., VIII.1968, leg. R. BOTT (2♂ 2♀ SMF 4542, 2♂ 1♀ SMF 4548), id., VI.-VII.1982, leg. U. PETTKE (2♂ SMF 12717), id. 1984, leg. STEVCIC (1♂ SMF 12723, 1♂ 3 Car SMF 12724), surroundings of Rovinj, Kap Barabyga, 1.XI.1974, leg. M. TÜRKAY (2♀ SMF 6943), Island Banjole, 2-2.5 m depth, 6.IX.1974, leg. M TÜRKAY (1♂ SMF 6964), Katarina Otok, 1-1.5 m depth, 5.IX.1974, leg. M. TÜRKAY (1♂ SMF 6978), Dve Sestrice, 3-4 , depth, VIII.1981, Zool. Inst. Univ. Frankfurt (1♂ SMF 11088), Bay of Bale, 28 m depth, gillnet, VI.1983, leg. U. PETTKE (2♂ SMF 12718, 2♂ 1♀ SMF 12719); Primosten, N of Rijeka, 27.IX.1964 (1♀ SMF 3681). — Greece: Gulf of Evvoia, 4.VI.1971, leg. A. KOUKOURAS (1♂ SMF 7455). — Tunisia: Gulf of Gabés, 10 m depth, 15.VIII.1892 (1♂ MOM 38 1611, 3♂ 2♀ MOM 38 1612). — Turkey: Istanbul, Summer 1962-1964 (2 Car SMF 10978); id., Florya, shallow water, VIII.1965, leg. M. TÜRKAY (3♂ SMF 4446); id., Princes Islands, Kinaliada, shallow water, VI.1964, leg. M. TÜRKAY (1♂ SMF 4453); Büyükada, shallow water, VII/VIII.1966, leg. M. TÜRKAY (1♀ SMF 4482).

Remark: Of this material only the following catalogue numbers are typically spiny and large *squinado*: SMF 3691, 4548, 10438, 10439, 10440, 12719, 12720. All others have (more or less clearly) the characters of *crispata*, some only in the armature of the carapace.

ZOOGEOGRAPHIC REMARKS ON THE DECAPOD FAUNA OF THE NORTHERN SPORADES AND OF THE AEGEAN SEA.

The Northern Sporades are situated at about 39°N and thus in the Northern part of the Aegean Sea. The marine Decapod fauna of these islands comprises now 72 species, some of them even being new for the Aegean Sea. The le the holomediterranean elements were diverse and rich we could neither collect any Indopacific immigrants nor any eastern warmwater forms of Atlantic origin. Such elements have been recorder from the Aegean: KOUKOURAS & KATTOULAS (1974) reported the Indopacific immigrant *Synalpheus hululensis* from the island of Evvoia, a supplementary Aegean record of which is given by KOCATAS (1981) from Turkish waters. In this last publication also another Indopacific immigrant, *Thalamita poissoni*, is stated to occur in Turkish waters of the Aegean Sea, besides two warmwater elements of Atlantic origin, viz. *Athanas amazone* and *Microcassiope minor*. As KOCATAS'S publication is a summary of his faunistic researches, there is no indication how far North these last three species were found. In all cases such forms seem to be at theis distributional limit between 38°N-39°N which explains their rareness. Out of this reason it is impossible to tell wether they really lack the Northern Sporades fauna or are only very rare there. Otherwise the Northern Sporades Decapod fauna is very well comparable with the fauna of the Island of Evvoia, and with that of the region of Izmir. These two regions are now quite well known through the publications of GELDIAY & KOCATAS (1968, 1970), KATTOULAS & KOUKOURAS (1974, 1975), KOCATAS (1971), and KOUKOURAS & KATTOULAS (1974, 1975). The mentioned authors list a total of 106 species, including about 15 deepwater forms and several species which can only be collected by using special gear. Taking into account all these there is a nearly perfect agreement between the faunas discussed.

Unfortunately the remaining regions of the Aegean Sea are not as well known, so that it is quite difficult to give comparative remarks. One should await a decrease in the number of species from south to north with dropping minimum mean temperatures (see fig. 15), but this conclusion cannot be proved as long as there are no detailed studies in the southern and northern Aegean. To evaluate the knowledge of Aegean Decapods we have extracted the

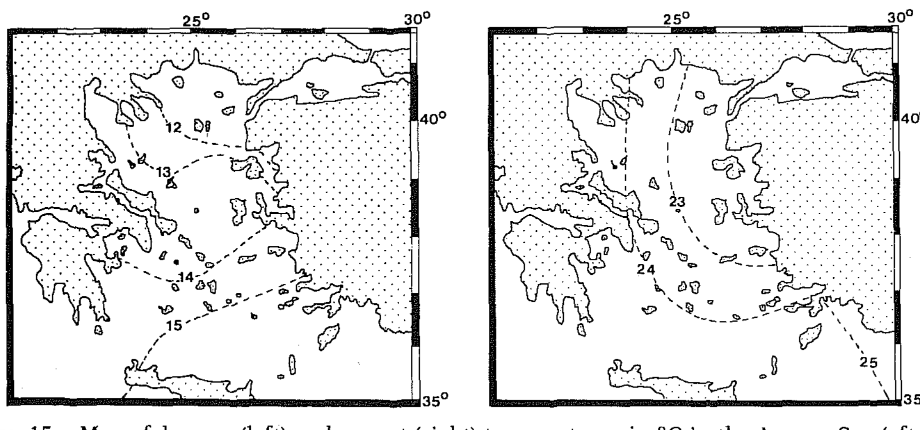


FIG. 15.—Mean february (left) and august (right) temperatures in °C in the Aegean Sea (after Deutsches Hydrographisches Institut: Mittelmeer-Handbuch. V. Teil. Die Levante. Hamburg 1978)

published information from: HOLTHUIS & GOTTLIEB (1958), PERES & PICARD (1958), HOLTHUIS (1961), MAKKAVIEVA (1963), KINZELBACH (1964), GEORGIADIS & GEORGIADIS (1974), LEWINSOHN (1976), TÜRKAY (1976b, 1982a, b), KOCATAS (1981), and the authors mentioned above. Of the 302 Mediterranean species 118 do not occur in the Aegean Sea. Of these 29 are Indopacific immigrants, 3 warmwater species of Atlantic origin, and about 19 Atlantic-Ocean forms. which only enter the western Mediterranean. Thus, there is a remainder of about 67 species that are not recorded from the Aegean but could occur there (about 20 deep —and 47 shallow— water species). These are still to discover through a systematic search. It is only after such systematic work in different parts of the Aegean that an idea can be gathered about the regional diversities.

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