294

NATIONAAL NATUURHISTORISCH MUSEUM | 01-09-1994 | LEIDEN

ZOOLOGISCHE VERHANDELINGEN

A revision of the Genus *Matuta* Weber, 1795 (Crustacea: Brachyura: Calappidae)

B.S. Galil & P.F. Clark

The Zoologische Verhandelingen, Leiden are published
by the Nationaal Natuurhistorisch Museum, Leiden
at irregular intervals, usually five to ten times a year

CIP-gegevens Koninklijke Bibliotheek, Den Haag

Galil, B.S.

A revision of the genus *Matuta* Weber, 1795
(Crustacea: Brachyura: Calappidae)
/ B.S. Galil & P.F. Clark
Leiden: Nationaal Natuurhistorisch Museum
(Zoologische Verhandelingen, ISSN 0024-1652; no. 294)
Ill., ref. - ISBN 90-73239-33-8
Subject headings: Crustacea; Brachyura; Calappidae; *Matuta*

The Zoologische Verhandelingen may be obtained on an exchange basis. For further information please write to the librarian: Mrs C. Pepermans, Nationaal Natuurhistorisch Museum, P.O. Box 9517, 2300 RA Leiden, The Netherlands

For single copies or subscription contact Dr W. Backhuys
Universal Book Services, Warmonderweg 80
2341 KZ Oegstgeest, The Netherlands

Printed in The Netherlands by Ridderprint
P.O. Box 334, 2950 AH Alblasserdam
Cover design: Isabelle Galy

ISSN 0024-1652/ISBN 90-73239-33-8

A revision of the genus *Matuta* Weber, 1795 (Crustacea: Brachyura: Calappidae)

B.S. Galil & P. F. Clark

Galil, B.S. & P.F. Clark. A revision of the genus *Matuta* Weber, 1795 (Crustacea: Brachyura: Calappidae).
Zool. Verh. Leiden 294, 1.ix.1994: 1-55, figs 1-7, pls 1-14.— ISSN 0024-1652/ISBN 90-73239-33-8.
Bella S. Galil, National Institute of Oceanography, Tel Shikmona, P.O. Box 8030, Haifa 31080, Israel.
Paul F. Clark, The Natural History Museum, Cromwell Road, London SW7 5BD, England.

Key words: Crustacea; Decapoda; Brachyura; Calappidae; *Matuta*; taxonomy; new species; new genus.
Matuta Weber, 1795 is revised, three new genera and two new species are established, detailed synonymies are listed, all taxa are described and illustrated and a key is provided.

Introduction

Amid the gaudily-coloured parade of tropical crabs few are more splendidly patterned than the matutine genera. But the patterns decorating these species brought about taxonomic disarray and from the very beginning they baffled their researchers. Already in 1817 Leach remarked: "the characters which distinguish the species are very obscure". MacLeay (1838) wrote in exasperation: "there are many species confounded together under the name *Matuta victor*, I do not consider the above names of the family and genus to possess any authority". Stebbing (1905) concurred: "From the interminable discussion of minute differences, as to the importance of which distinguished authors neither agree one with another nor always with themselves, it seems safe to conclude that most of the specific names which have been coined for this genus may be dispensed with".

Taxonomists, finding "the differences in armature and coloration of the carapace and anterior legs so slight and so numerous" (Miers, 1877), were inclined either to admit a single species (with several varieties) (de Haan, 1841; Ortmann, 1892; Doflein, 1902) or two (A. Milne Edwards, 1874) or, exulting in the variety of the exuberantly colourful specimens, described many new species and varieties (Miers, 1877). Thus, Henderson (1877) found that: "there are few groups of Decapod Crustacea in which authorities have differed more as to the specific or varietal value of forms".

A study of the extensive collections of The Natural History Museum, London (NHM) and Nationaal Natuurhistorische Museum, Leiden (formerly Rijksmuseum van Natuurlijke History (RMNH)), together with material made available by the American Museum of Natural History, New York (AMNH), Firenze University (MF), Muséum National d'Histoire Naturelle, Paris (MNHN), National University, Singapore (NUS), Queensland Museum (QM), Senckenberg Museum, Frankfurt (SM), Tel Aviv University (TAU), National Museum of Natural History, Smithsonian Institution, Washington (USNM), and the Zoologisk Museum, Copenhagen (ZM) have enabled re-examination of most type specimens and much of the published material.

The present study divided the matutine species between *Matuta* Weber, 1795 and three new genera and describes two new species. Descriptive and distributional

A revision of the genus *Matuta* Weber, 1795 (Crustacea: Brachyura: Calappidae)

B.S. Galil & P.F. Clark

ZOOLOGISCHE VERHANDELINGEN

An international series of monographs
on zoological research published by
the Nationaal Natuurhistorisch Museum, Leiden

NATIONAAL NATUURHISTORISCH MUSEUM | 01-09-1994 | LEIDEN

294

information is given here as well as detailed references to literature. All taxa have been illustrated and photographed, and a key is presented for their identification.

Abbreviations used, coll.= collected, pres.= presented, det.= determined by, redet.= redetermined, purch.= purchased by, stn= station, juv.= juvenile, Exped.= Expedition, reg.= registration number. Measurements given refer to carapace length.

Ashtoret gen. nov.

Type species: *Matuta picta* Hess, 1865.

Diagnosis.— Carapace subcircular, slightly convex, bearing tubercles centrally, regions undefined. Front wider than orbit, trilobate, median lobe projecting, anteriorly emarginate. Anterolateral margin of carapace arcuate, tuberculate. Posterolateral margin sharply convergent, carinate. Lateral spine acute. Antennae rudimentary, inferior to antennular basal segment. Orbits obliquely cut, communicating with antennular fossa. Eye stalk elongate, densely covered with long plumose setae on inferior surface. Internal orbital tooth rounded, apparent in dorsal view. Outer orbital angle produced. Suborbital margin tuberculate, laterally interrupted by curved inhalant canal with setose margins. Subhepatic and pterygostomial regions minutely granulate, laterally set with plumose setae. Pterygostomial region with several rows of elliptoid tubercles serving as stridulating organ. Outer maxilliped elongate, extending nearly to anterior margin of carapace.

Chelipeds subequal. Merus short, trigonal, lower margin tuberculate, a fringe of long plumose setae on posterior margin, short setae on anterior margin. Carpus with anterior angle produced. Length of palm nearly twice its height, external surface sculptured. Upper margin of palm cut into three teeth, diminishing in size distally, two proximalmost interiorly striate. Upper external surface with two rows of tubercles. Mid-palm, a series of tubercles and spines parallel to lower margin. Lower margin with row of obtuse tubercles on external surface and conical tubercles on margin itself. Lower finger, in male, with three teeth proximally and cusp-like depression distally, in female five teeth. Dactylus basally setose on carinate upper margin, five teeth on cutting margin. External surface of dactylus in male bearing a finely milled ridge distally, absent in female. Ambulatory legs with first propodus bearing triangular tooth on inferior margin, penultimate carpus bicarinate, ultimate propodus greatly extended posteriorly.

Sternum anteriorly ogival. Male abdomen tapering, five-segmented, telson one and half as long as wide at base, prominently tuberculate carina on third abdominal tergite. Inner surface of first male pleopod with tuft of long setae subdistally, bearing funnel-shaped appendage.

Remarks.— *Ashtoret* gen. nov. comprises eight species - *A. granulosa*, *A. lunaris*, *A. maculata*, *A. miersii*, *A. picta*, *A. obtusifrons* and two new species. These species are characterized by bicarinate penultimate carpus, mid palmar ridge parallel with lower margin, and dactylar ridge distally milled or smooth whereas the closely related *Matuta* spp. possess unicarinate penultimate carpus, oblique mid palmar ridge and dactylar ridge strongly milled throughout.

Etymology.-- Ashtoret, Phoenician great mother, goddess of fertility and water, also represented as moon goddess. Gender feminine.

Ashtoret lunaris (Forskål, 1775) comb. nov.
(fig. 1a-b, pl. 1a-b)

Cancer lunaris Rumphius, 1741: 11, pl. 7(s). (pre-Linnaean); Forskål, 1775: 91 (part).

Matuta banksii Leach, 1817: 14; Miers, 1877: 245, pl. 40(1, 2); 1880: 315; de Man, 1881: 115; Miers, 1886: 295; Walker, 1887: 111; de Man, 1888: 389; Zehntner, 1894: 183, pl. 8(15); Alcock, 1896: 158 (part); de Man, 1896: 363; Nobili, 1899: 250 (part); Lanchester, 1900: 762; 1901: 552 (part); Nobili, 1906: 149; Rathbun, 1907: 68; 1910: 15; Parisi, 1914: 291; Balss, 1922: 125; Buitendijk, 1939: 231; Ward, 1941: 1; Romimohtarto, 1967: 5, figs 1a, 2a; 1972: 13, figs 7,10,27-32, pls 1c, 3c (part); Takeda & Nunomura, 1976: 65; Miyake, 1983: 200 (list); Dai et al., 1986: 99, textfig. 56.1 pl. 12(6).

Matuta victor; Desmarest, 1825: 101, pl. 7(2); White, 1847: 46 (part).

Matuta lessueri; Rüppell, 1830: 7 (part).

Matuta lunaris; White, 1847: 46 (part).

Matuta banksi; Ortmann, 1892: 573; Ihle, 1918: 185 (part); Tyndale-Biscoe & George, 1962: 71, fig. 4.1; Sakai, 1976: 141, pl. 44(3), pl. 45(1) (part); Takeda, 1982: 110, fig. 322; Nagai & Nomura, 1988: 21.

Material.— **Australian seas**. Banks' coll., det. Leach, as *M. banksii* syntypes (part); redet. *M. victor* White, 1847, ♂ 55 mm lectotype, ♀ 51 mm paralectotype (NHM 1993.26). **Red Sea**. coll. Hartnoll, ♀ 39 mm (NHM 1962.9.12.1). **Aden**. pres. Capt. Shoplaced, 2 juv. 27 mm, 35 mm (NHM 1894.2.23.1/2). **Indian Ocean**. pres. General Th. Hardwicke, det. A. White, ♂ 44 mm (NHM 1993.71); ♀ 35 mm (NHM 1993.24). **Malaysia**. Melaka, pres. Bedford & Lanchester, 4 ♂♂ 42-52 mm (NHM 1900.10.22.328-331); Sabah, Kota Kinabalu, 30.x.1986, coll. L. Nyanti, ♀ 20.9 mm (NUS 1987.22); Pasir Panjang, -.xi.1934, ♀ 24.6 mm (NUS 1965.10.13.1). **Singapore**. Siglap, -.xii.1933, ♂ 36.3 mm, ♀ 31.9 mm (NUS 1965.10.13.2-3). **Indonesia**. Molucca Id., Amboina. purch. E. Gerrard, ♀ 32 mm (NHM 1880.6); vii-ix.1885, coll. Brock, 6 ♂♂ 23.1-34.5 mm, 2 ♀♀ 24.2 mm, 25.1 mm (SM 637a); Borneo, -.viii.1894, coll. Ch. Hose, ♂ 42 mm (NHM 1895.7.30.3); Bali, purch. E. Gerrard, ♀ 41 mm (NHM 1880.6); Celebes, purch. E. Gerrard, ♂ 43 mm (NHM 1880.6). **Philippines**. purch. H.J. Veitch, ♀ 41 mm (NHM 1872.7); Mindanao, Zamboanga, coll. P.W. Bassett-Smith, ♂ 40 mm, ♀ 42 mm (NHM 1892.4.18.186-7); 18 m, HMS "Challenger", ♂ 37 mm, ♀ 36 mm (NHM 1884.31). **New Guinea**. purch. E. Gerrard, ♂ 46 mm (NHM 1880.6). **Australia**. coll. Godeffroy, Bros, ♂ 42 mm (NHM 1955.1.5.96).

Description.— Surface of carapace minutely granulate, coarser granules laterally and around six dorsal tubercles, largest granules sorrounding mesogastric tubercle. Front with straight lobes laterally and a slightly emarginate rostrum medially. Exognath and ischium of third maxilliped tuberculate.

Anterolateral margins of carapace crenulate with five small tubercles followed by three large triangular tubercles, middle tubercle smallest. Lateral spine 0.2 carapace width. Posterolateral margin oblique, with granulate carina not quite reaching base of lateral spine. Tubercle at mid posterolateral margin strongly marked.

Upper external surface of palm with two rows of granulate tubercles, proximalmost in lower row largest. Mid palm a five-lobed ridge, second and fourth lobes acuminate, second lobe largest. At lower proximal angle of palm conical tubercle. A row of molariform tubercles extending from lower proximal angle of palm to base of immobile finger. Lower margin with row of triangular tubercles terminating at base of dactylus, distalmost largest. A finely milled ridge on outer surface of dactylus in male, absent in female. Plastron coarsely granular. First male pleopod with pronounced angle between shaft and apical lobe.

Colour (in alcohol).— Small red spots cover carapace, more crowded anteriorly. Propodus and dactylus of ambulatory legs marked with large red patches. For colour illustrations see Takeda 1982, fig. 322; Nagai & Nomura, 1988: 21.

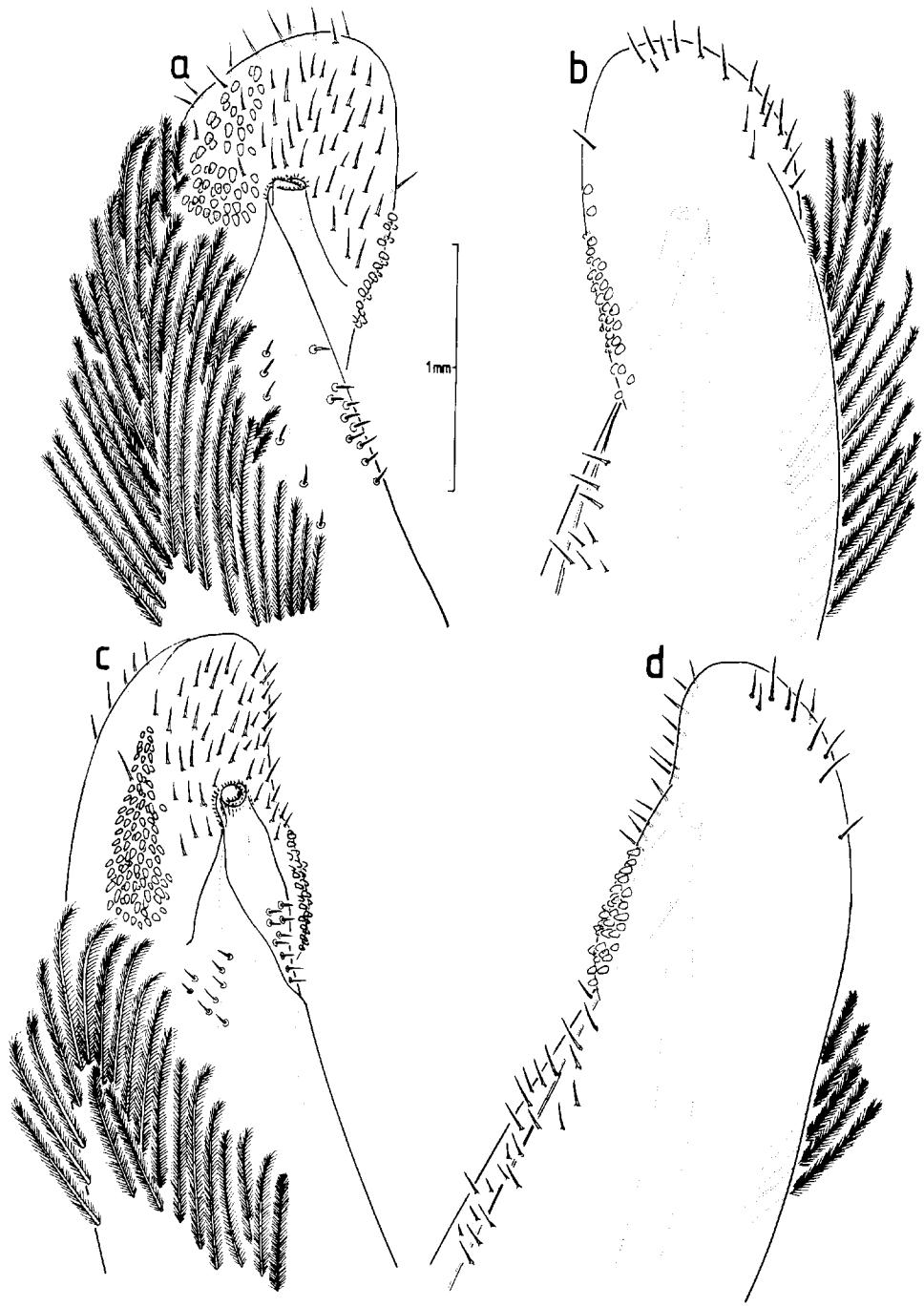
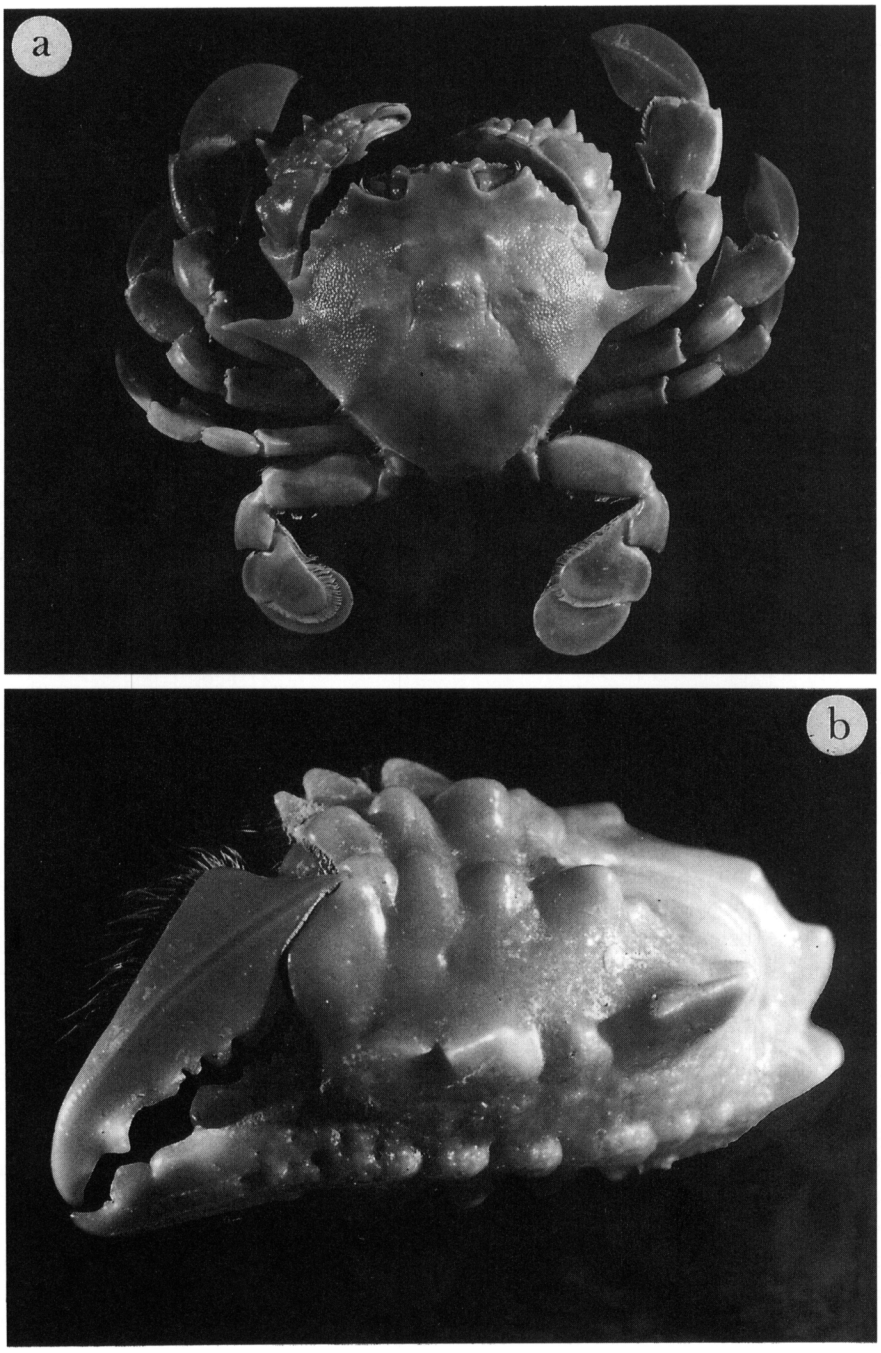


Fig. 1a-d; a & c = dorsal view, b & d = ventral view; a-b *Ashtoret lunaris* (Forskål, 1775) NHM 1900.10.22.328-337; c-d *Ashtoret granulosa* (Miers, 1877) NHM 1931.5.15.40-41.



Pl. 1a-b; *Ashtoret lunaris* (Forskål, 1775) NHM 1900.10.22.328-337; a = dorsal view, b = left chela.

Remarks.— The description of *Cancer lunaris* Forskål (1775) is a mixture of two species, mentioning both the prominent tubercule posteriorly on anterolateral margin indicative of *A. lunaris* and the transversely serrate carina on cheliped dactylus of the *M. victor*. De Man (1881) in describing *M. banksii* wrote, "Except its different coloration, this form of *Matuta* is most closely allied to *Mat. picta* Hess (Miers). The males however may be distinguished by the acute, triangular, fourth spine on the outer ridge of the hand, it being obtuse and truncate in *Mat. picta*". This distinctive character was disregarded by later authors who erroneously synonymized *M. picta* with *M. banksii* (Alcock, 1896; Lanchester, 1901; Klunzinger, 1906; Ihle, 1918; Balss, 1935; Estampador, 1937; Romimohtarto, 1967; Takeda, 1973; Sakai, 1976).

Type locality.— Red Sea (Forskål, 1775).

Distribution.— Red Sea and East Africa to Australia.

Ashtoret granulosa (Miers, 1877) comb. nov.
(fig. 1c-d, pl. 2a-b)

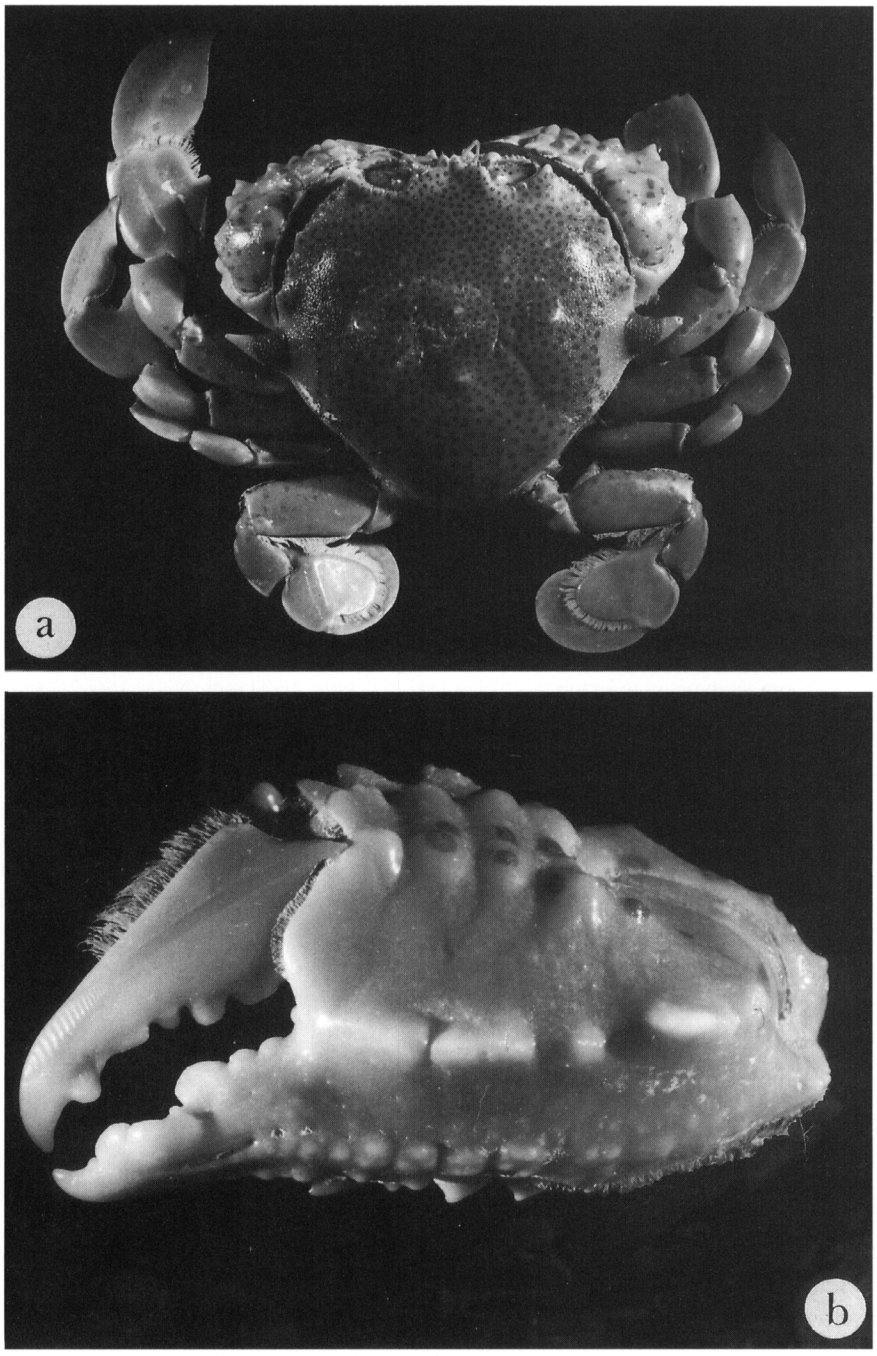
Matuta granulosa Miers, 1877: 245, pl. 39(8, 9); de Man, 1881: 114; Haswell, 1882: 134; Miers, 1886: 295; Ortmann, 1892: 572; Nobili, 1899: 251; Ihle, 1918: 308; Hale, 1927: 189, fig. 189; Tyndale-Biscoe & George, 1962: 71, fig. 4.2.

Material.— **Eastern Seas**. coll. Rayner, H.M.S. "Herald", purch. Warwick, det. Miers, ♂ 47 mm lectotype, ♂ 31 mm, ♀ 47 mm paralectotypes (NHM 1862.53), originally designated syntypes by Miers. **Indonesia**. Molucca Id., Amboina, 1864, coll. E.W.A. Ludeking, ♀ (RMNH D). **Australia**. N.W. Australia, coll. Mrs. Grey, 2 ♂♂ 42 mm, 58 mm (NHM 1931.5.15.40-41); Torres Strait, coll. MacFarlane, ♂ 61 mm, 3 ♀♀ 42-55 mm (NHM 1877.12); Gulf of Carpentaria, 24.i.1983, 17 m, ♂ 34 mm, ♀ 51 mm (QM W12649).

Description.— Surface of carapace minutely granulate, coarser granules near lateral spines, small granules clustering around four posterior dorsal tubercles. Two anterior dorsal tubercles nearly obsolete. Front with straight horizontal lobes laterally and a bilobed rostrum medially. On pterygostomial region three parallel rows of elongate tubercles diminishing in size laterally, serving as stridulating organ. Exognath and ischium of third maxilliped granulate.

Anterolateral margins of carapace nearly evenly crenulate with two somewhat larger triangular tubercles at mid margin and prior to lateral spine. Lateral spine short, 0.15 carapace width. Posterolateral margin oblique, with granulate carina extending to base of lateral spine, bearing mid posterolateral tubercle.

Cheliped carpus coarsely granulate distally on outer surface, its upper margin carinate, granulate. Palm coarsely granulate proximally on external surface. Upper external surface of palm with two rows of granulate obtuse tubercles, second tubercle in lower row largest. Mid palm, in both male and female, a five-toothed ridge parallel to lower margin, second tooth prominent, acuminate, fourth tooth somewhat larger than third and fifth. At lower proximal angle of palm a small granulate tubercle. A row of molariform tubercles extending from lower proximal angle of palm to base of immobile finger distally parallel to a short row of rounded tubercules. Lower margin with row of sharply triangular tubercles terminating at base of dactylus, distalmost largest. Dactylus in male with distally milled ridge on outer surface, obsolete in female.



Pl. 2a-b; *Ashtoret granulosa* (Miers, 1877) QM W12649; a = dorsal view, b = left chela.

Plastron coarsely granular. Apical lobe of first male pleopod kidney-shaped.

Colour (in alcohol).— numerous brownish-red spots with pale centers cover carapace except area adjacent to lateral spine, which basal half bears a large brownish-red patch, legs spotted.

Remarks.— Miers' (1877) description and drawings being very clear, there has never been any confusion over the identity of this handsome species. Miers (1877: 245) gives the type locality of *A. granulosa* as "Eastern seas" and the jar containing the syntypes (NHM 1862.53) is labelled accordingly. However, in the Annulosa register entry reads "New Caledonia, N.E. Australia, Timor, Ovolau Is., Fiji, Norfolk". Miers must have abbreviated it to "Eastern Seas". A jar registered as 1866.16 in the NHM and containing 3 specimens is labelled *M. granulosa* China Seas ?Syntypes. However, none of the specimens belongs to *M. granulosa*.

Type locality.— Eastern seas (Miers, 1877: 245).

Distribution.— Indonesia, Australia, Tahiti.

Ashtoret maculata (Miers, 1877) comb. nov.
(fig. 2a-b, pl. 3a-b)

Matuta maculata Miers, 1877: 246, pl. 40(3, 4); de Man, 1881: 116; de Man, 1896: 363.

Material.— **Philippines**. Panagatan Shoal, coll. A. Adams, pres. E. Belcher, HMS "Samarang", det. E.J. Miers, ♂ 45 mm syntype, now lectotype (NHM 1847.21), 3 juv. 16-30 mm (NHM 1847.21) syntypes, now paralectotypes. **China Seas**. purch. Swindhoe, det. E.J. Miers, *M. granulosa* ?syntype, now paralectotype, ♀ 37 mm (NHM 1866.16). **Eastern seas**. det. E.J. Miers, 3 juv. 16-30 mm (NHM 1847.21). **Fiji Is**. 1975, coll. D. Popper, ♂ 45 mm (TAU NS 21341).

Description.— Surface of carapace granulate, coarser granules near lateral spines and around nearly obsolete dorsal tubercles. Front with slightly arcuate lobes laterally and an emarginate rostrum medially. Exognath and ischium of third maxilliped tuberculate.

Anterolateral margins of carapace nearly evenly crenulate with two somewhat larger triangular tubercles at mid margin and prior to lateral spine. Lateral spine 0.3 carapace width. Posterolateral margin oblique, with granulate carina extending to base of lateral spine, bearing no mid posterolateral tubercle.

External surface of palm densely granulate. Upper external surface with two rows of granulate tubercles, second in lower row largest. Mid palm, in both male and female, a five-toothed ridge parallel to lower margin. Second tooth most prominent, acuminate; fourth tooth triangular, larger than third and fifth. At lower proximal angle of palm a prominent, granulate tubercle. Parallel with lower margin two rows of small granules. Lower margin with row of sharply triangular tubercles terminating at base of dactylus, distalmost largest. Dactylus in male with distally milled ridge on outer surface, obsolete in female.

Plastron coarsely granular. First male pleopod curved distally.

Colour (in alcohol).— Small, rounded reddish spots anteriorly on carapace, growing larger and coalescing to form broken rings posteriorly. Lateral spines red-margined. Legs coarsely spotted.

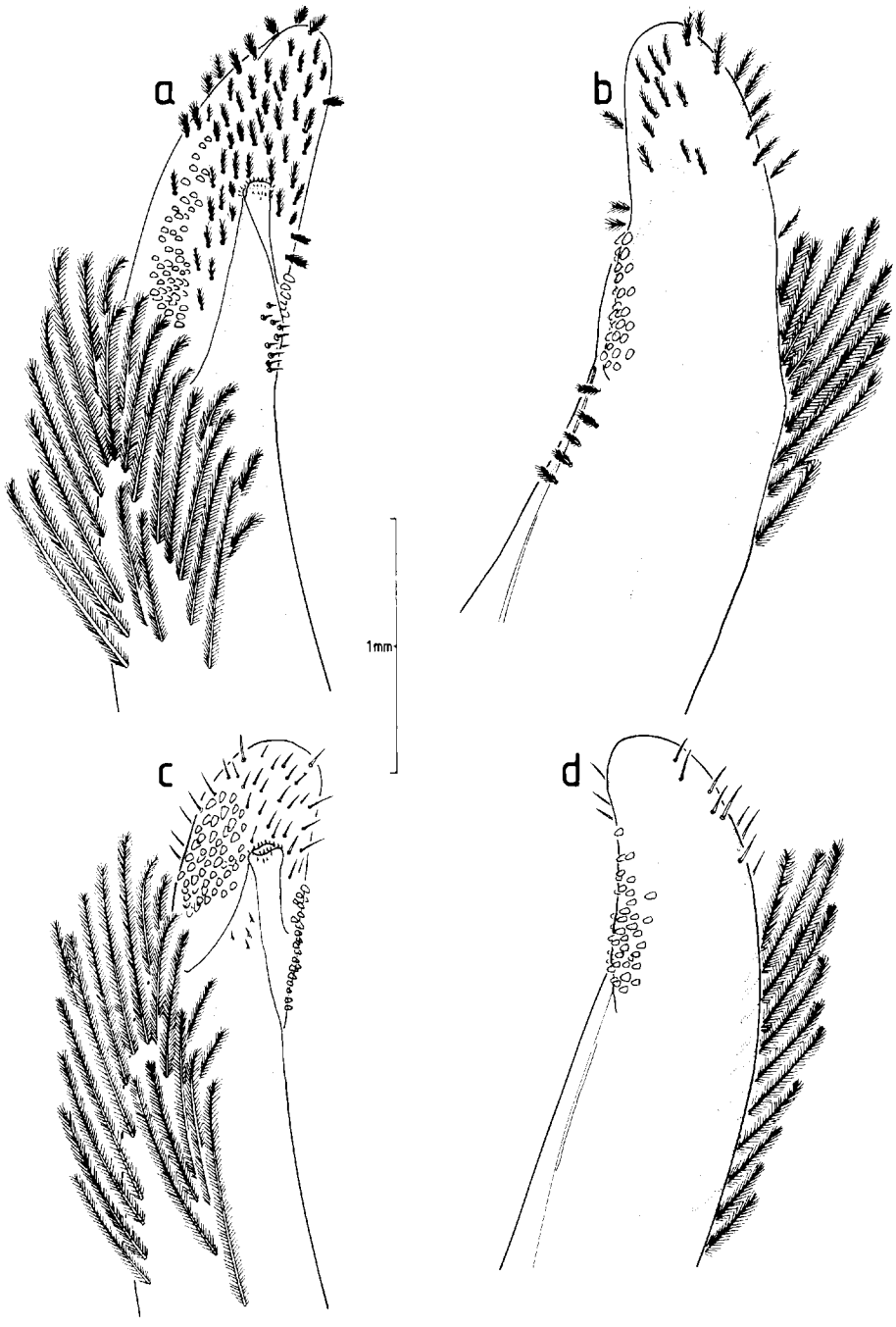
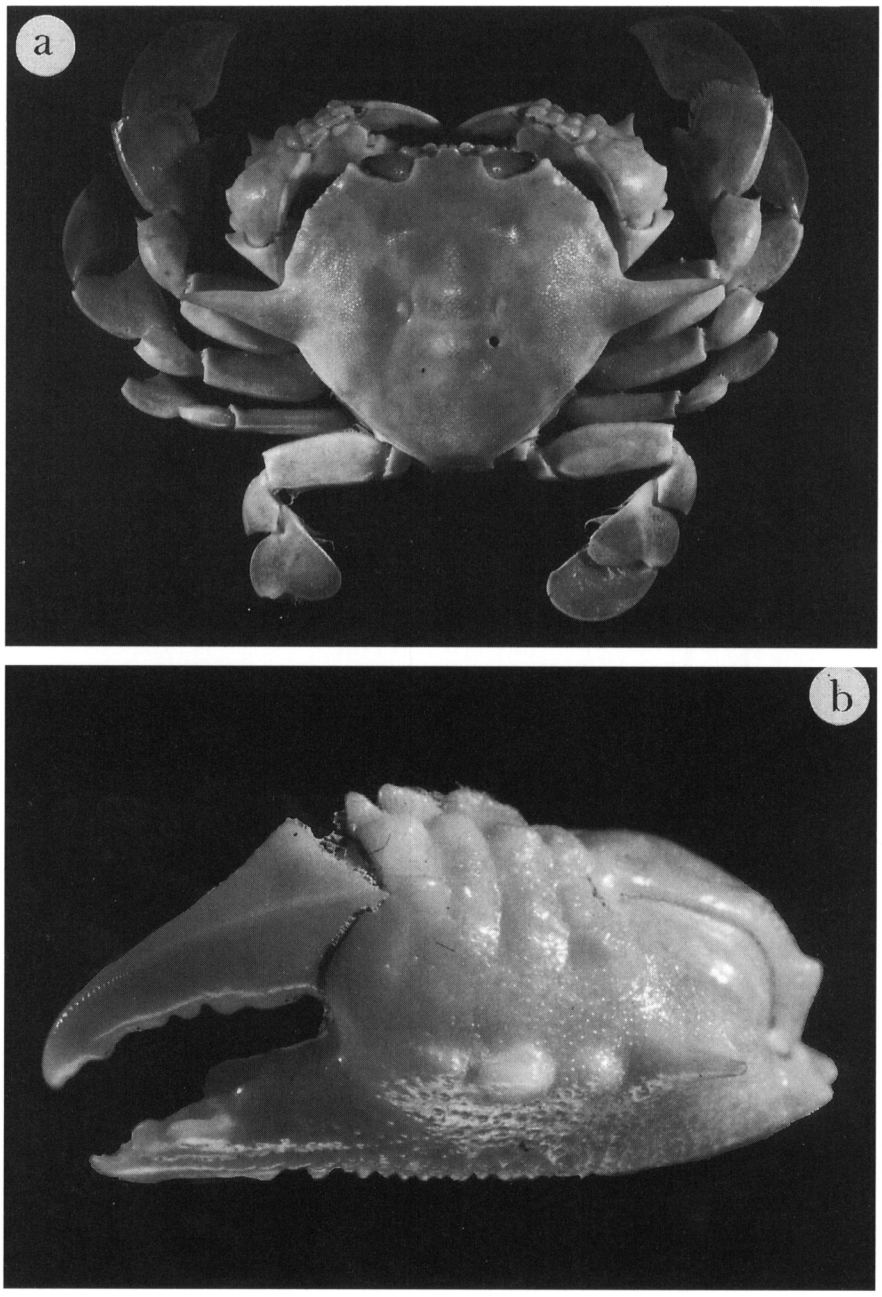


Fig. 2a-d; a & c = dorsal view, b & d = ventral view; a-b *Ashtoret maculata* (Miers, 1877) NHM 1847.21; c-d *Ashtoret miersii* (Henderson, 1887) NHM 1892.7.15.347-356.



Pl. 3a-b; *Ashtoret maculata* (Miers, 1877) NHM 1847.21; a = dorsal view, b = left chela.

Remarks.— A specimen in the NHM collection assigned to the type series (label reads ?syntype) of *A. granulosa* (NHM 1866.16) is in fact *A. maculata*. Whether the specimen is part of the type series of *A. maculata* cannot be confirmed. *A. maculata* and *A. miersii* alone among their congeners lack a tubercle on posterolateral margin. However, *A. maculata* is distinguished from the latter by its longer lateral spine, granulate lower margin of palm and its colour pattern.

Type locality.— Panagatan Shoal, Philippines; China Seas (Miers, 1877: 246).

Distribution.— China seas, Indonesia, Philippines, Fiji Is.

Ashtoret miersii (Henderson, 1887) comb. nov.
(fig. 2c-d, pl. 4a-b)

Matuta miersii Henderson, 1887: 66, figs 1-4; 1893: 396; Alcock, 1896: 163.
Matuta miersi; Laurie, 1906: 356; Ihle, 1918: 308; Sakai, 1976: 142 pl. 45(2); Miyake, 1983: 200 (list).

Material.— **India.** Madras, det. J.R. Henderson, syntype, now lectotype, ♂ 35 mm (NHM 1892.7.15.347-356); syntypes, now paralectotypes, 3 ♂♂ 23-28 mm, 23 ♀♀ 23-28 mm (NHM 1892.7.15.347-356); Gapalur, purch. R. Winkworth, ♀ 28 mm (NHM 1956.1.14.4). **Ceylon.** coll. W.A. Herdman, ♂ 23 mm (NHM 1907.5.22.20); 2 ♀♀ 23.5 mm, 27 mm (NHM 1907.5.22.21-22). coll. H. Nevill, 2 ♀♀ 31 mm, 33 mm (NHM 1894.8.1.15-16); Gulf of Manaar, coll. W.A. Herdman, det. Laurie, 2 ♂♂ 35 mm (NHM 934.1.16-26).

Description.— Surface of carapace mostly smooth, minutely granulate around six dorsal tubercles and lateral spines. Front with straight horizontal lobes laterally and a distinctly emarginate rostrum medially. Ischium of third maxilliped tuberculate. Anterolateral margins of carapace crenulate with five small tubercles followed by three large triangular, teeth-like, tubercles.

Lateral spine 0.2 carapace width. Posterolateral margin oblique, with granulate carina extending to mid lateral spine. No mid posterolateral tubercle.

Upper external surface of palm with two rows of granulate low tubercles. Mid palm a row of five tubercles, second tubercle most prominent, acuminate. At lower proximal angle of palm a minute granulate tubercle. A row of molariform tubercles extending from lower proximal angle of palm to base of immobile finger. Lower margin with row of tubercles terminating at base of dactylus, distalmost largest. No milled ridge on outer surface of dactylus.

Plastron finely granular. First male pleopod curved distally.

Colour (in alcohol).— Carapace nearly covered with reddish dots interspersed with whitish patches.

Etymology.— This species was named after E.J. Miers.

Remarks.— *A. miersii* differs from its congeners in having no milled ridge on outer surface of male dactylus. From *A. obtusifrons*, which colour pattern is quite similar, it differs in lacking posterolateral tubercle, having a distinctly emarginate rostrum with straight lateral lobes and a nearly obsolete tubercle at lower proximal angle of palm.

Henderson's (1887) description of *A. miersii* is accurate and includes such distinguishing characters as lack of posterolateral tubercles and smooth surface of palmar dactylus. Henderson (1887: 67) accurately assigned the species "to the second section