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1852; AND A NEW GENUS **AUSTRALOPLAX** OF THE SUBFAMILY
MACROPHTHALMINAE DANA, 1851
(**BRACHYURA: OCYPODIDAE**)

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SUMMARY

The history and status of the genus *Euplax* H. Milne Edwards, 1852 are discussed. *E. leptophthalmus* H. Milne Edwards, 1852, and *E. boscii* (Audouin, 1826) are referred to the genus *Macrophthalmus* Latreille, 1829. *E. tridentata* (A. Milne Edwards, 1873) is referred to the new genus *Australoplax*. Comparison is made between *Australoplax* and *Macrophthalmus*, and a key to the Australian genera of the subfamily Macrophthalminae Dana, 1851 is given.

INTRODUCTION AND STATUS OF THE GENUS *EUPLAX* H. MILNE EDWARDS, 1852

The genus *Euplax* was erected by H. Milne Edwards (1852: 160) to receive the new species *Euplax leptophthalmus* H. Milne Edwards, 1852, collected in Chile, South America. That author, in the same paper, also transferred *Macrophthalmus boscii* of Audouin, 1826 to the new genus. A third species was added to *Euplax* by McCulloch (1913) following suggestions made to him by Rathbun. McCulloch sent material of *Metaplax hirsutimana* Grant and McCulloch, 1906 to Rathbun, and she (quoted by McCulloch, 1913) showed that *M. hirsutimana* was synonymous with *Cleistostoma tridentatum* A. Milne Edwards, 1873 (b), and on comparing McCulloch's specimens with material of *Euplax boscii* (Audouin) suggested transferring *C. tridentatum* to *Euplax*. De Man (1896) had earlier suggested the transference of that species from *Cleistostoma* de Haan, 1835 to *Chaenostoma* Stimpson, 1858 (= *Euplax* H. Milne Edwards). Three species have thus been placed in the genus *Euplax*.

The type species of *Euplax*, *E. leptophthalmus*, is known only from the very brief original description of H. Milne Edwards ("Carapace presque aussi longue que large. Podophthalmites médiocres, ne dépassant guère en longueur la largeur du front. Hectognathes comme chez les Macrophthalmes. Chélopodes courts dans les deux sexes" (referring to the generic characters) and "Podophthalmites très grêles et beaucoup moins longs que les orbites. Front médiocre. Carapace armée de trois dents latérales, large et relevées—Chili" (referring to the specific characters)) and from a male and female specimen deposited in the Muséum National d'Histoire Naturelle, Paris by H. Milne Edwards. No further specimens have been discovered.

In Milne Edwards' generic and specific descriptions no characters are given by which *Euplax* can be distinguished from broad or medium fronted species of *Macrophthalmus*. This, however, is not surprising since the only broad fronted species of *Macrophthalmus* known prior to 1852 was *M. boscii*, which was transferred by Milne Edwards to *Euplax*. Since 1852, however, many broad fronted species of *Macrophthalmus* have been described, e.g. *M. quadratus* A. Milne Edwards, 1873 (a); *M. punctulatus* Miers, 1884; *M. erato* de Man, 1888 and *M. franchettii* Maccagno, 1936. These species have sub-quadrate carapaces, ocular peduncles approximately equal in length to the width of

the front, and short, rather than elongate, chelipeds. Thus no generic characters are given by Milne Edwards differentiating *E. leptophthalmus* from these *Macrophthalmus* species.

Madame Guinot of the Paris Museum has kindly provided a series of photographs of the type male specimen of *E. leptophthalmus* (see pl. XXIV, figs. 3 and 4). This species appears to be closely related to *Macrophthalmus latreillei* (Desmarest, 1817) and *M. gastrodes* Kemp, 1915 in characters of the external maxilliped, epistome, abdomen, front, shape of carapace and surface carapace granulation. It possesses no characters that do not occur in *Macrophthalmus* species, and occupies a position well within the currently recognised range of that genus (see Tesch, 1915; Sakai, 1939; Crosnier, 1965 etc., and the comparison between the genera *Australoplax* and *Macrophthalmus* discussed later).

Many recent authors, including Kemp, 1919, Balss, 1935, Bernard, 1950 and Crosnier, 1965 have transferred *Euplax boscii* back to its original genus, *Macrophthalmus* Latreille, 1829, and after the examination of South African and Australasian material of that species by the author, no characters have been seen which warrant the removal of *M. boscii* from the genus *Macrophthalmus*.

The third species, *Euplax tridentata*, however, exhibits many characters which lie outside the range of variation seen in *Macrophthalmus* (discussed later), and which warrant the placing of that species in a distinct genus, *Australoplax* gen. nov.

SYSTEMATICS

AUSTRALOPLAX, gen. nov.

Type species:— *Cleistostoma tridentatum* A. Milne Edwards, 1873 (see pl. XXIV, figs. 1 and 2).

Description and Diagnosis

Front: Broad, depressed; unconstricted between ocular peduncles; and with obtusely pointed anterior margin.

Orbits: Short, but occupying whole of anterior border of carapace between front and external orbital angles; upper orbital border sinuose, backwardly sloping and without granules; lower orbital border projecting, smooth and with small concavity in central region in males, regularly tuberculated in females.

Interantennular septum: Narrow, but broader than in *Macrophthalmus*.

Epistome: Long and narrow; central region with sharply pointed lobe.

Anterolateral teeth: External orbital angle forms first lateral tooth; first and second lateral teeth large, broad and rectangular; third lateral tooth very small.

Carapace: Subquadrate, but with greatest breadth slightly exceeding length; depressed; with indistinct furrows, excepting circumgastric and circumcardiac; with variable surface "hair"; lateral margins subparallel.

Ocular peduncles: Short and stout.

Chelipeds: Equal or subequal in both sexes. In males well developed; merus triangular in transverse section; palm globose; index deflected upwards at tip; no differentiated teeth on either cutting margin; latter obscured both internally and externally by mat of hair. In females weak.

Ambulatory legs: Second and third pairs largest and subequal, fourth pair smallest. Meri long and with small subterminal spine on upper margins.

Male abdomen: Composed of seven distinct segments, first two small. Fourth and fifth segments with lateral margins strongly divergent towards fifth and sixth segments respectively; sixth segment very large, with lateral margins convergent towards small seventh segment.

External maxilliped: Merus large, subquadrate, subequal to, but slightly smaller than, ischium. Ischium with transverse/oblique rows of hairs across base.

First male pleopod: Slightly curved shaft, but not recurved upon itself.

Discussion

The following table shows characters of *A. tridentata* which differ from those in *Macrophthalmus*.

<i>A. tridentata</i>	<i>Macrophthalmus</i> species
1. Chelae of male globose; with an upwardly deflected index; without any differentiated teeth on the cutting margins of index and dactylus; and with both cutting margins obscured externally by thick 'hair.'	Chelae of male never globose; with straight or downwardly deflected index; with tooth on cutting margin of dactylus, and often on cutting margin of index; cutting margins never obscured externally by 'hair.'
2. Male abdomen broad; with fourth and fifth segmental lateral margins strongly divergent towards fifth and sixth segments; sixth segment very large with lateral margins strongly convergent towards seventh segment.	Male abdomen narrow; with third to sixth (inclusive) segments subequal; lateral margins of fourth to sixth segments (inclusive) straight or regularly convergent towards morphological posterior.
3. Ischium of external maxilliped with transverse/oblique row of 'hairs' across base.	Ischium of external maxilliped without any rows of 'hairs' across base.
4. Anterior margin of front obtusely pointed.	Anterior margin of front straight or bilobed, never pointed.
5. Interantennular septum broader than in <i>Macrophthalmus</i> .	Interantennular septum narrow.
6. Central region of epistome with sharply pointed triangular lobe.	Central region of epistome concave, convex or straight.
7. Lower orbital border of males smooth, without granules or tubercles, and with concavity in central region.	Lower orbital border of males with large pointed tubercles, never smooth, and without central concavity.
8. Upper orbital border without granules.	Upper orbital border usually with rounded granules.

Australoplax, however, shows closer affinities with *Macrophthalmus* than with any other genus in the subfamily, and in particular with the broad-fronted species of *Macrophthalmus*. These species, and *Australoplax*, both show a subquadrate, depressed, carapace with three anterolateral teeth, the first two large, the third small; broad front; short ocular peduncles; pereopod meri with small subterminal spines on the upper margins; second and third pairs of pereopods largest, fourth pair smallest; abdomen consisting of seven distinct segments, the first two small; external maxilliped with subequal merus and ischium; and a slightly curved (or straight) shaft of the first male pleopod.

Australoplax gen. nov. contains only one species, *A. tridentata* (A. Milne Edwards, 1873).

Australoplax tridentata (A. Milne Edwards, 1873).

Synonymy:

Cleistostoma tridentatum A. Milne Edwards, 1873b: 82.

Chaenostoma tridentatum (A. Milne Edwards), de Man, 1896: 93-95, pl. 3, fig. 5 (not fig. 4 as in text).

Metaplax hirsutumana Grant and McCulloch, 1906: 21, pl. 1, fig. 3.

Euplax tridentata (A. Milne Edwards), McCulloch, 1913: 321. Tesch, 1918: 59. Rathbun, 1926: 177. Stephenson *et al.*, 1931: 42. Snelling, 1959: 70.

Material examined: 107 males (2.7-15.3mm.); 66 females (3.9-14.0 mm.); ovig. females (8.3-13.2 mm.) (dimensions given are those of greatest carapace breadth).

Localities:

(a) *Queensland:* Cooktown, Cairns, Townsville, Yeppoon, Rockhampton, Gladstone, Port Curtis, Bundaberg, Noosa, Moreton Bay (Bribie Island, Sandgate, Cribb Island, Brisbane River, Dunwich, Lota), Gold Coast.

(b) *New South Wales:* Brunswick Heads, Ballina, Trial Bay, Sydney.

Diagnosis and Abbreviated Description

It is not here intended to give a full specific description, since such has already been given by de Man (1896), but it would not be out of place to give a list of characters of this species regarded by the author as being of a specific character.

Front: With smooth surface and wide median furrow.

Anterolateral teeth: External orbital angle large, pointed, directed outwards and forwards; with straight anterior margin; slightly convex outer margin, studded with few very small granules; separated from second lateral tooth by small but distinct V-shaped incision. Second lateral tooth broad, directed outwards, projecting beyond former tooth; with straight outer margin, diverging posteriorly. Third lateral tooth pointed.

Carapace: Surface smooth, without granules, but with sparse, scattered, short 'hairs' on branchial regions. Epigastric, gastric, cardiac and intestinal regions raised. Greatest breadth occurring between bases of second pereopods.

Male cheliped:

(a) Merus

All surfaces without granules, scattered 'hair' on inner surface only. Upper and lower margins with longitudinal series of small granules; inner margin with longitudinal series of large tubercles, distal angle convex and with six or seven large tubercles along crest.

(b) Carpus

Smooth excepting a few granules on inner surface.

(c) Chela

Outer surface of palm smooth; inner surface smooth with mat of 'hair' near base of dactylus and index; upper and lower margins with longitudinal carinae, that of lower margin continuing along index.

Dactylus curved; inner and outer surfaces without granules; upper margin with longitudinal series of granules.

Outer and inner surfaces of index without granules.

Ambulatory legs: Upper margins of meri, carpi and propodi heavily 'haired', with mat or short brownish 'hairs' and sparse longer black 'hairs'.

Male abdomen: Intersegmental margins sinuous; lateral margins with fringe of sparse, long black 'hair'.

External maxilliped: Merus subquadrate; internal margin convex; external margin more or less straight. Internal and external margins of ischium straight.

Habitat: Littoral or supralittoral; in burrows in mud. Frequently estuarine.

Distribution: Eastern Australia (Grant and McCulloch, 1906; Rathbun, 1926; Snelling, 1959), ? Samoa (A. Milne Edwards, 1873).

Discussion

A. Milne Edwards in describing the species gave Upolu, Samoa as the type locality, but de Man (1896) in examining and redescribing the type material states (p. 93) "Das aus Hamburg empfangene Exemplar trägt auken auf der Etikette die Nummer 2429 und soll von Australien stammen, dagegen liegt in dem Gläschen die Nummer 3666a; es bleibt also fraglich, ob es dort oder auf Upolu gesammelt wurde." Thus the type locality of this species is either Samoa or Australia, which of the two, however, being open to doubt.

Key to the Australian genera of the subfamily Macrophthalminae Dana, 1851

- 1a. Pereiopods with transverse/oblique row of large tubercles across lower surfaces of meri *Leipocten* Kemp, 1915
(One Australian species — *L. sordidulum* Kemp, see Snelling, 1959).
- b. Pereiopods without any transverse or oblique rows of tubercles across lower surfaces of meri 2.
- 2a. Merus of external maxilliped larger than ischium; ischium with large triangular antero-internal protuberance 3.
- b. Merus of external maxilliped smaller than, or subequal to, ischium; ischium without large triangular antero-internal protuberance 4.
- 3a. Carapace domed; front without well developed 'horns' at anterolateral angles *Cleistostoma* de Haan, 1835
(One Australian species — *C. wardi* Rathbun, see Rathbun, 1926).
- b. Carapace flattened; front with well developed anterolateral 'horns' *Paracleistostoma* de Man, 1895.
(One Australian species — *P. mcneilli* (Ward) comb. nov., see Ward, 1933).
- 4a. Cutting margins of dactylus and index of male chelae obscured externally by dense hair; dactylus without differentiated tooth on cutting margin *Australoplax*, gen. nov.
- b. Cutting margins of dactylus and index of male chelae not obscured externally by hair; dactylus with differentiated tooth on cutting margin *Macrophthalmus* Latreille, 1829.
(Twelve Australian species at present under revision by the author).

Camptandrium Stimpson, 1858 and *Tyloidiplax* de Man, 1895, the only other genera in the Macrophthalminae, have been excluded from the above key as they are not known from Australia and no species attributed to them have been seen by the author.

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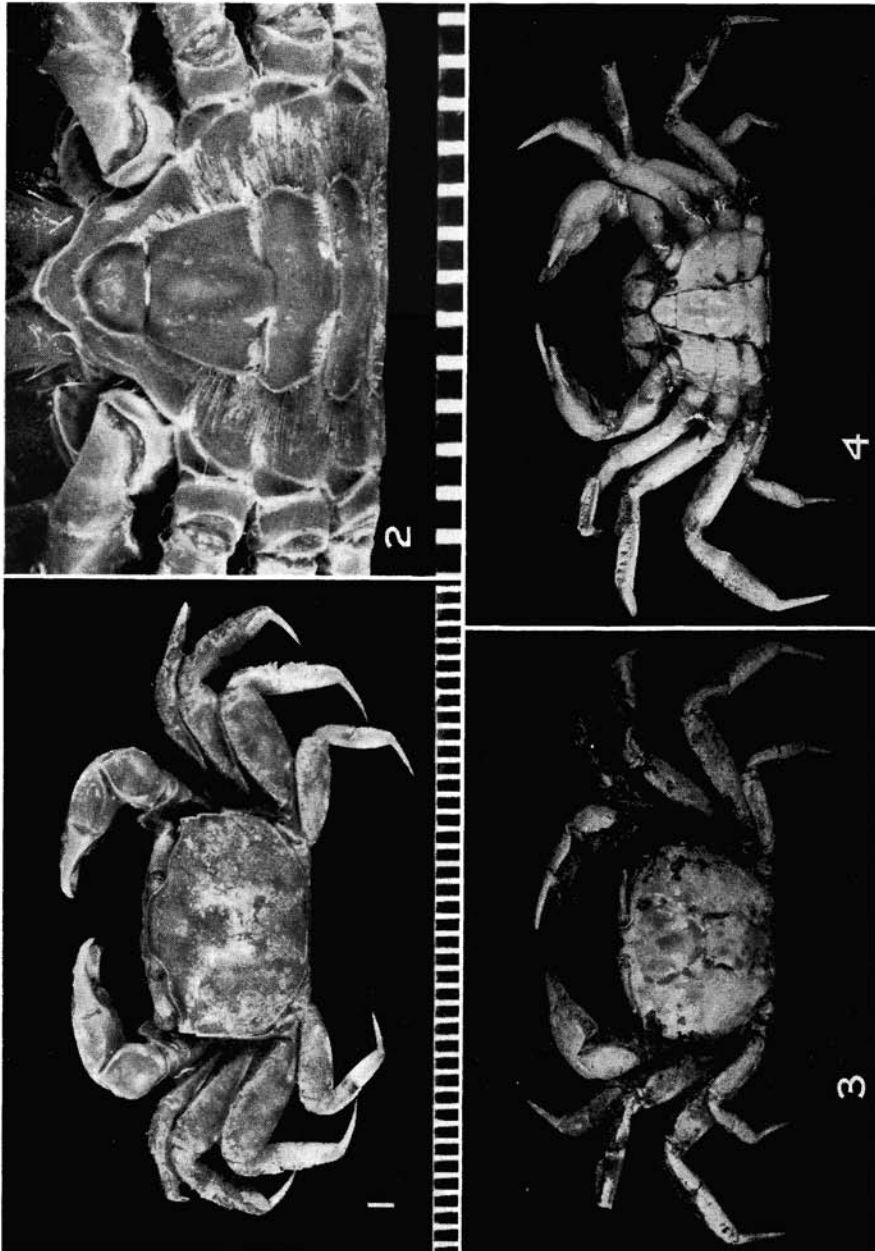
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EXPLANATION OF PLATE XXIV

- Fig. 1. Dorsal surface of male *Australoplax tridentata* (A. Milne Edwards, 1873) from Rockhampton, Queensland.
- Fig. 2. Abdomen of male *Australoplax tridentata* (A. Milne Edwards, 1873) from Rockhampton, Queensland.
- Fig. 3. Dorsal surface of holotype male *Macrophthalmus leptophthalmus* (H. Milne Edwards, 1852).
- Fig. 4. Ventral surface of holotype male *Macrophthalmus leptophthalmus* (H. Milne Edwards, 1852).
- Figs. 1 and 2 by Photography Department, University of Queensland, of specimen with the Australian Museum Registered Number of P 15158. (Scale lines 1 mm. apart).
- Figs. 3 and 4 by courtesy of the Muséum National D'Histoire Naturelle, Paris. (Specimen has dimensions of 19.5 mm. carapace length and 24.0 mm. carapace breadth).
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Australoplax and *Macrophthalmus*

(For explanation, see page 376).