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NEW ZEALAND SEA STARS IN TASMANIA

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(With two figures)

SUMMARY

Two species of sea stars, the asterinid *Patiriella regularis* (Verrill), 1867 and the asteriid *Astrostole scabra* (Hutton), 1872, hitherto known only from New Zealand, are recorded from Tasmania.

Attention is drawn to the probable mode of import of *Patiriella regularis* and supporting evidence given. *Patirella mimica* Livingstone, 1933 is regarded as synonomous with *P. regularis*.

A check list of the Tasmanian Asteroidea known to date is appended.

INTRODUCTION

Thirty-four species of Asteroidea are known from around Tasmania. Some fifteen genera and six species are common to the marine faunas of both Tasmania and New Zealand. The two species formally recorded below are new records for Tasmanian waters.

ASTERINIDAE

Patiriella regularis (Verrill), 1867

Patiriella regularis is known as one of the most common Asteroidea of the New Zealand littoral (Fell, 1959; Morton and Miller, 1968).

The discovery that *Patiriella regularis* is also one of the most common littoral and shallow water sea stars in S.E. Tasmania prompted some investigation of its distribution and origin in the area. Although its presence was inferred in a previous paper (Dartnall, in press) no explanation was mooted. *P. regularis* is confined, in Tasmania, to the waters enclosed by the Derwent Estuary; the D'Entrecasteaux Channel in the west and the western shore of the Tasman Peninsula in the east (fig. 1). So far, the animal is not known from the remainder of Tasmania.

Such a limited distribution of an animal which is so successful where it occurs (for example, it is one of the dominant members of the fauna of the Hobart wharves), poses a number of question about its origin.

Other animals of New Zealand origin are known from the area. McNeil and Ward (1930) recorded *Cancer novaezelandiae* (Jacquinot & Lucas), 1853; Lodder (1902) a brachiopod attributed to *Terebratula rubicunda* (≡ *Terebratula inconspicua* (Sowerby)); May (1923) *Amaurochiton glaucus* Gray, 1828 and *Mytilus canaliculus* Martyn, 1784. Greenhill (1965) recorded the presence of three species of molluscs of New Zealand origin in the D'Entrecasteaux Channel, *Maoricolpus roseus* (Quoy & Gaimard), 1834, *Paphirus largillierti* (Philippi), 1849 and *Neilo australis* (G. & G.), 1835. Recent work has also revealed *Halicarcinus inominatus* within the area (Lucas pers comm.).

H. L. Clark, visiting Hobart in 1929, did not record *Patiriella regularis* from the Derwent Estuary and May did not record *Maoricolpus roseus* when he dredged there in the 1920's. These two animals are now far too numerous not to be noticed by the serious collector and it may be assumed that they have been members of the marine fauna of S.E. Tasmania for less than forty years.

Fell (1962) has produced evidence for epiplanktonic dispersal of littoral echinoderms under the influence of the West Wind Drift, an orientation not complementary to the distribution observed. Man is the only agency which regularly opposes the West Wind Drift and the sporadic introduction of New Zealand oysters has been suggested as the source of the animals under consideration (McNeil and Ward 1930, Lodder 1902, May 1923).

Introductions of oysters, *Ostrea angasi* Sowerby, 1871, to bolster a failing industry and satisfy public demand are mentioned in the Fisheries Department Reports (1885, 1887) and the Report of the Sea Fisheries Board (1926-27). New Zealand oysters were imported for sale at the Hobart Fish Market, where they were kept alive in crates in the water, from about 1920 onwards. Commercial import of oysters from the Bluff, South Island, New Zealand continued into the 1930's, the oysters being carried as deck cargo aboard the ships operating the 'Horseshoe Run' which ran regularly between the Bluff and Hobart. Towards the end of the 1930's commercial import of oysters appears to have ceased, but the crews would carry oysters as deck cargo, shucking the oysters as the ship entered the Derwent Estuary and throwing the detritus overboard before the ship docked (Capt. D. I. Buckle, pers. comm.).

The New Zealand animals determined, so far, from the Tasmanian marine fauna are found in habitats ranging from the shore to offshore waters, on mud, on sand and on and amongst rocks. Oyster samples from beds covering or adjacent to all these habitats may have been the source of these animals.

It would appear logical that several waves of introductions took place. The brachiopod was certainly present by 1902, *Cancer novaezelandiae* by 1930 and *Patiriella regularis* not before 1930.

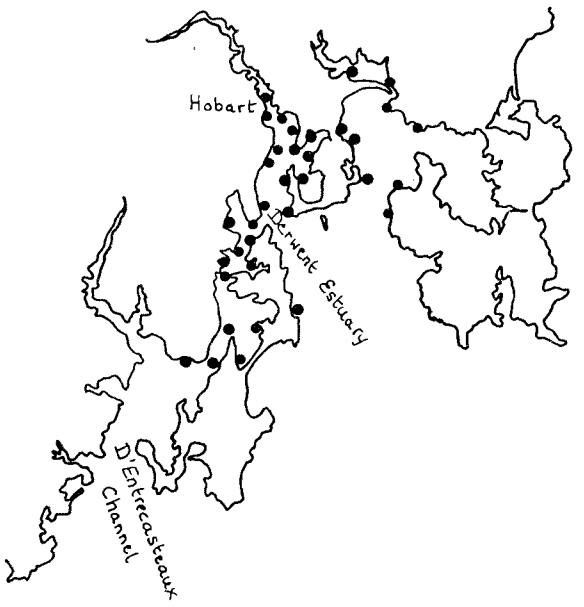

FIG. 1.—Map of S.E. Tasmania showing localities from which *Patiriella regularis* has been collected.

Comments

The asterinid genus *Patiriella* is represented in Australia by seven species. H. L. Clark (1946) expressed his doubts about the validity of *Patiriella mimica* Livingstone, 1933, known from one specimen taken from Newcastle Bight, N.S.W. After examination of the holotype of *P. mimica* (Australian Museum Reg. No. J1696) this author considers that the species should be relegated to the synonomy of *Patiriella regularis* (Verrill), 1867 as the specimen comes within the observed variation of that species.

Within S.E. Tasmania *P. regularis* has become a very successful member of the littoral and shallow water benthos and can be expected to extend its distribution around the coasts of Tasmania if its ubiquitous distribution around New Zealand is considered as a model.

ASTERIIDAE

Astrostole scabra (Hutton), 1872

The genus *Astrostole* is closely related to *Coscinasterias*, differentiation being based on the diplacanthid adambulacral spines of the former (H. L. Clark 1946). Six species are known from the Southern Hemisphere (A. M. Clark 1950) the Australian species being *Astrostole insularis* H. L. Clark, 1938 from Lord Howe Island.

Astrostole scabra is known from the S.E. and east coasts of Tasmania (see map) from the shore to c.30 metres. Reliable eye witness reports indicate that the species is probably also present on the west coast of Tasmania.

The smallest specimens obtained have R c.100 mm and the absence of juveniles throughout the year has led to some comment when compared with *Coscinasterias calamaria* whose juveniles (R = 20 < mm) are locally abundant between September and March of each year.

A. scabra, in Tasmania, has been observed feeding upon *Notohaliotis ruber* Leach, 1814, *Scutus antipodes* Montfort 1810 and *Argobuccinium vexillum* Sowerby, 1834. In aquaria this species captured and ingested *Pleurobranchus maculatus* (Quoy & Gaimard), 1822 and *Paragrapsus gaimardii* (Milne-Edwards), 1853.

CHECKLIST OF TASMANIAN ASTEROIDEA

Abbreviations indicate the source of information used to compile this check list.

A.M.—Collections of the Australian Museum, Sydney
A.M.C.—A. M. Clark 1953
B.—A. M. Clark 1962
H.L.C.—H. L. Clark 1946
K.—Koehler 1920
L.—Livingstone 1933
Q.V.M.—Collections Queen Victoria Museum, Launceston
T.M.—Collections Tasmanian Museum, Hobart

Class STELLEROIDEA

Subclass Asteroidea

Family LUIDIIDAE

1. *Luidia australiae* Doderlein, 1920— H.C.L.

Family ASTROPECTINIDAE

2. *Astropecten pectinatus* Sladen, 1883— B., T.M.

Family RADIASTERIDAE

3. *Radiaster gracilis* (H. L. Clark), 1916— K.

Family GONIASTERIDAE

4. *Mediaster australiensis* H. L. Clark, 1916— H.L.C.
5. *Nectria ocellata* Perrier, 1876— B., H.L.C., T.M.
6. *Pentagonaster dubeni* Gray, 1840— A.M.C., T.M.
7. *Tosia australis* Gray, 1840— T.M., L., A.M.C.
8. *Tosia australis forma astrologorum*— T.M.
9. *Tosia magnifica* (Müller & Troschel), 1842— L., H.L.C., T.M.
10. *Anthenea acuta* (Perrier), 1869— H.L.C.

Family OREASTERIDAE

11. *Asterodiscus truncatus* Coleman, 1911— T.M. (Dartnall 1968)

Family ASTEROPIDAE

12. *Petricia vernicina* (Lamarck), 1816— T.M.

Family OPHIDIASTERIDAE

13. *Austrofromia polypora* (H. L. Clark), 1916— H.L.C., B., T.M.
14. *Pseudophidiaster rhysus* H. L. Clark, 1916— H.L.C., B.

Family PORANIIDAE

15. *Marginaster* sp.— B.

Family ASTERINIDAE

16. *Asterina atyphoida* H. L. Clark, 1916— Q.V.M.
17. *Asterina inopinata* Livingstone, 1933— L.
18. *Asterina scobinata* Livingstone, 1933— L., H.L.C., T.M., Q.V.M.
19. *Patiriella calcar* (Lamarck), 1816— T.M.
20. *Patiriella regularis* (Verrill), 1867— T.M.
21. *Patiriella exigua* (Lamarck), 1816— T.M.
22. *Patiriella* n. sp. (in press)— T.M.
23. *Patiriella gunnii* (Gray), 1840— T.M.
24. *Patiriella brevispina* H. L. Clark, 1938— Q.V.M., A.M.
25. *Paranepanthia grandis* (H. L. Clark), 1928— L., T.M.

Family ECHINASTERIDAE

26. *Henricia* sp. *obesa* group— H.L.C., B.

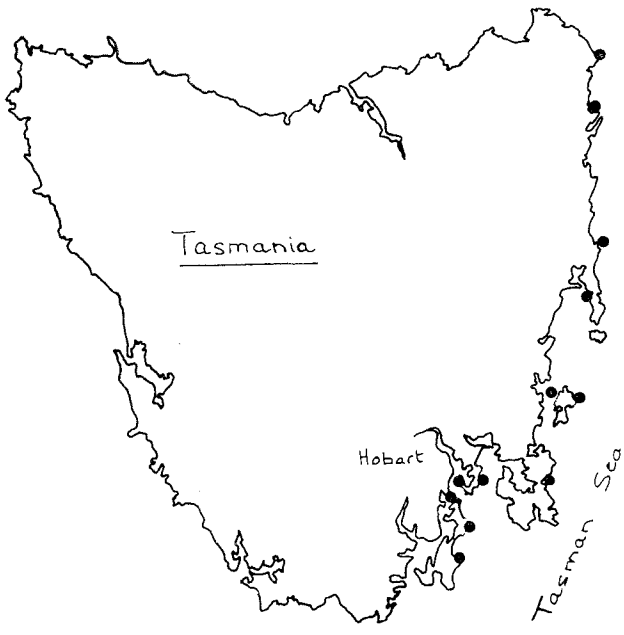

FIG. 2.—Map of Tasmania to show stations at which *Astrostole scabra* has been taken.

Family SOLASTERIDAE

27. *Crossaster multispinus* H. L. Clark, 1916— H.L.C.

Family ASTERIIDAE

28. *Stylasterias reticulata* (H. L. Clark), 1916— H.L.C., B.
29. *Astrostole scabra* (Hutton), 1872— T.M.
30. *Coscinasterias calamaria* (Gray), 1840— T.M.
31. *Australiaster dubius* (H. L. Clark), 1909— H.L.C., B., T.M.
33. *Allostichaster polyplax* Müller & Troschel, 1844— H.L.C., B., T.M.
33. *Allostichaster Polyplax* (Müller & Troschel(, B., T.M.
34. *Uniophora sinusoida* Perrier, 1875— H.L.C., T.M.

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