

SPIRORBINAE (POLYCHAETA: SERPULIDAE) FROM SOUTHEASTERN AUSTRALIA.

Notes on their Taxonomy, Ecology, and Distribution

By

E. W. KNIGHT-JONES and PHYLLIS KNIGHT-JONES
University College of Swansea, U.K.

and

L. C. LEWELLYN,
New South Wales State Fisheries,
Sydney, Australia

Figures 1-14

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SUMMARY

Fifteen species belonging to seven genera are described, with pictorial and dichotomous keys to identification and notes on their distribution in other regions. All occur on or adjoining the shore, or on seaweeds cast ashore. Seven species are always attached to algae or *Amphibolis*. The predominant species are: near Sydney, *Eulaeospira convexis*, *Pileolaria pseudomilitaris*, *Janua formosa* and *J. pseudocorrugata*; near Adelaide (on cast weed), *Metalaeospira tenuis* and *Janua steuri*; and on Kangaroo Island, *Romanchella quadricostalis*, *Janua pagenstecheri* and (less commonly found) *Protolaeospira canina* and *Protolaeospira triflabellis*. *Janua lamellosa*, *J. fenestrata* and *J. trifurcata* seem scarcer, whilst only one specimen was found of the remarkable *Amplaria spiculosa*, which is now known from New Zealand.

Of these species, most of the opercular incubators are widespread in warm seas, but those which incubate in their tubes may be endemic and mostly belong to genera centred in the Southern Hemisphere, round which they may perhaps have been distributed by drifting kelp.

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INTRODUCTION

Collections were made by one of us (L. C. Llewellyn) at Brighton and Moanna, near Adelaide; at Kingscote, Sou-West River and Cape du Couedic on Kangaroo Island in January 1967; and at Parsley Bay, Vacluse, Sydney in July 1967 (fig. 1). Seven of the species found were new and have now been described (Knight-Jones, 1973); two had been previously described from Port Hacking near Sydney by Wisely (1962), but the remaining six species are new records for Australia.

We now redescribe these eight previously known forms and offer a key for the identification of all fifteen species. The recent record by Straughan (1967) probably relates to one of these (p. 141). Earlier authors (Lamarck, 1818; Mörch, 1863; Bush, 1904) who have dealt with Australian Spirorbinae have offered a few inadequate descriptions, several based on empty tubes and none including characters sufficiently distinctive for identification.

TECHNIQUES AND DIAGNOSTIC FEATURES

The best preservative is 5% formaldehyde made up with sea water, but plant substrata should not be included because they eventually produce acid conditions which decalcify tubes and opercula. Although 70% alcohol is excellent for observing the general morphology, the setae may thereafter be difficult to see, for specimens which have spent a few years in alcohol do not clear so readily after mounting (p. 112).

Identifications of Spirorbinae cannot be based on tubes alone, for these tend to vary with age, substratum and local conditions. There may be, for instance, only one longitudinal ridge on a young tube and three on an adult (p. 130). On rock the periphery of the tube may spread to form a flange, whereas the same species on algae may lack this. In crowded populations the last whorl may cover the previous whorls or form an ascending spiral instead of coiling flush with the substratum. Such tubes are often seen on filamentous algae where the area for attachment is limited. Some species have characteristically sculptured tubes (e.g., figs 2c and d), but such sculpturing may vary (p. 135). Direction of coiling seems to be constant for each species in the Australian material, but one of these, *Janua (Dexiospira) steueri*, occurs with both dextral and sinistral coiling in certain Red Sea locations (Sterzinger, 1909; Vine, 1972).