Mean length and width of *Conchoecia serrulata* instars

Instar	1	2	3	4	5	6	7
Length (μ)		307.8	400.6	517.6	681.1	777.3	1,405.8
Width (μ)		202.9	286.9	366.6	465.8	635.9	825.9

indicate that the morphological features of the furcae and antennulae are consistent throughout the genus *Conchoecia*. This fact allows identification of instars even if the species is unknown. It is not known how useful a tool for instar identification the carapace length will be in species other than *C. serrulata*, because carapace lengths may overlap in instars of other species (Fowler, 1909).

References

Claus, C. 1894. Die Halocypriden und ihre Entwicklungsstadien. *Akademie der Wissenschaften, Wien. Mathematisch-naturwissenschaftliche Klasse. Denkschriften*, vol. 61, pt. 3, no. 9, p. 1-10.

Fowler, G. H. 1909. Biscayen plankton collected during a cruise of H.M.S. "Research," 1900; Part 13, the Ostracoda. *Linnean Society of London. Transactions*, 2(10): 219-336.

Kesling, R. V. 1961. Ontogeny of Ostracoda. In: *Treatise on Invertebrate Paleontology*, vol. Q, Ostracoda, p. 19-20.

Müller, G. W. 1908. Die Ostracoden der Deutschen Südpolar Expedition, 1901-1903. *Deutsche Südpolar-Expedition*, 2: 53-101.

Skogsberg, T. 1920. Studies on marine Ostracoda, Part I. *Zoologiska Bidrag fran Uppsala*, Suppl. bd. 1. 784 p.

Polar Faunal Trends Exhibited by Antarctic Isopod Crustacea

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The past four years of research on antarctic Isopoda have yielded significant new data on the general features of polar and deep-sea crustacean biology, and several species and genera new to science have been discovered. Collectively, the results reveal the existence of certain salient faunal features which appear to

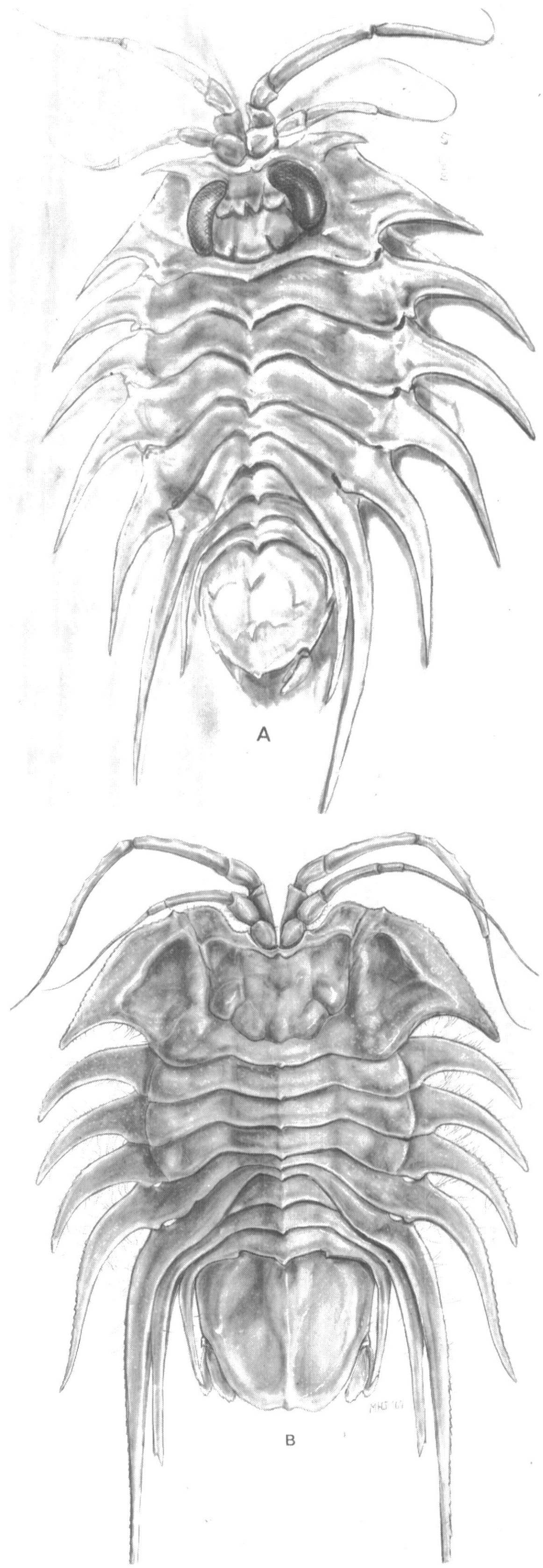

Figure 1. Dorsal view of two antarctic species of the isopod genus *Serolis*. A, Shallow-water species with large eyes; B, Deep-sea species lacking eyes. In appearance, this curiously looking, flat-bodied animal misleads the casual observer as a fossil trilobite. *Serolis* constitutes a classical antarctic faunal component with more than 90 percent of the 62 known species inhabiting the cold antarctic waters. Only two species are hitherto found to occur north of the Equator.

operate uniquely at high latitudes. One striking pattern is a tendency of shallow-water genera to penetrate deep into the abyss, and a simultaneous tendency of the abyssal genera to emerge into shallow water. These two phenomena—polar submergence and polar emergence—remain clearly distinguishable from the standpoint of taxonomic perception of the genera involved. Contrary to the situation in tropical seas, the eye-bearing, shallow genera such as *Munna, Gnathia, Antarcturus, Cirolana, Serolis,* etc. descend along the antarctic continental slope into the abyss. Most often, the deep-sea species of these genera lack eyes or bear degenerate eyes. A scanning-microscope examination of *Serolis* eye structure has provided crucial data on the minute details of retinula and lens of antarctic species from different depths (mss. in preparation). The accompanying figure illustrates a shallow-water species with very prominent eyes and a deep-sea blind species (Fig. 1A and B). This predominantly antarctic genus, *Serolis,* was subject to a monographic study (Moreira *and* Menzies, submitted to the *Antarctic Research Series*).

Polar emergence is exhibited by several blind Asellote isopod genera such as *Macrostylis, Haploniscus, Desmosoma, Eurycope, Eugerda, Munnopsis, Ilyarachna,* and *Storthyngura,* all exclusively deep-sea genera in middle and lower latitudes that emerge to moderate depths both in the Antarctic and in the high Arctic. A significant correlation is evident in the coincidence between the upper limits of these emerging abyssal genera in high latitudes and the start of the Abyssal Faunal Province, identified by a new method: the abyssal boundary determined on the basis of rate of faunal change showed tropical submergence or, in other words, polar emergence. The aspects of vertical faunal zonation in the Antarctic in comparison with other parts of the World Ocean are elucidated in a manuscript now in progress. A generic catalogue illustrating all isopod genera known within the Antarctic Convergence is being prepared with maps of distribution of antarctic species.

Data from the Scotia Sea offer evidence of a seasonal breeding cycle in the deep sea (George *and* Menzies, 1967). Further investigations of the breeding behavior of abyssal isopods provide new information confirming this cyclic reproductive activity in the physically uniform deep sea. The peak breeding period for abyssal isopods in both antarctic and North Atlantic deep-sea regions seems to be limited to four months of the year—July-November (George *and* Menzies, 1968).

References

George, R. Y. *and* R. J. Menzies. 1967. Indication of cyclic reproductive activity in abyssal organisms. *Nature,* 215 (5103): 878.

George, R. Y. *and* R. J. Menzies. 1968. Further evidence for seasonal breeding cycles in deep sea. *Nature,* 220 (5162): 80-81.

Antarctic and Subantarctic Brachiopods

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During the past year, I have been engaged in the concluding phases of my research on the brachiopods of the far South. My material consists of undescribed specimens from many earlier expeditions; however, the majority of the specimens were taken on cruises of USNS *Eltanin.* Some of my findings are summarized below.

At least 21 genera and 38 species are present in the material; two new genera are recognized. Ten new species are recognized in the genera *Compsothyris, Hispanirhynchia*(?), *Liothyrella, Eucalathis, Amphithyris, Dallina, Fallax,* and *Magellania*(?). Six other specimens which may represent new species have been described in *Compsothyris, Liothyrella,* and *Dyscolia.* Analysis of character variation in large samples has led to the placement of one genus and nine species in synonymy. This is the first time that *Amphithyris, Dallina, Fallax,* and *Dyscolia* have been reported from the far South. New subspecies have been described in *Neorhynchia, Liothyrella,* and *Gyrothyris.*

The majority of the Recent species and genera within the family Terebratellidae have been restudied. It has been concluded that the admittedly polyphyletic, but practical, genera *Terebratella* and *Magellania* should be retained in the broad sense. I also favor retaining the genera *Gyrothyris* and *Neothyris.*

The majority of antarctic brachiopod species show reduction in punctae density, shell thickness and spiculation, as well as coarsening of shell mosaic as compared with related taxa from farther north. These same changes are seen within the wide-ranging species *Liothyrella uva.* Similar trends as well as reduction in shell porosity are observed in deep-water species at various latitudes. These changes are believed to reflect the greater difficulty of maintaining and depositing calcite skeletons at locations with greater $CaCO_3$ solubility. The changes in punctae density lend support to Campbell's (1965) suggestion that Australian Permian terebratuline brachiopods with low punctae densities inhabited cool water.

Multivariate analyses suggest negative associations of foramen diameter, hinge-plate width, and beak height of the terebratellid shell with depth. I believe these associations reflect adaptations for stability in the varying current velocities at different depths.

Dissections of *Macandrevia vanhoffeni* reveal muscle arrangements quite different from those known in other genera in the same family. It is suggested that this genus be placed in a different family.