tracer ^{14}C is extremely labile and is expected to disappear very quickly after the productivity programs are discontinued.) The good agreement between the deep samples from Cruises 38 and 39 lends confidence that the contamination problem was successfully avoided. The samples from Cruise 36, which are shown in Fig. 1, were all processed at a time when no productivity studies were in progress, and there is no evidence of ^{14}C contamination in this particular suite of samples either.

In the upper few hundred meters there is evidence of bomb ^{14}C in the water, the variability from place to place presumably reflecting differences in rate of uptake of ^{14}C, owing to differences in wind speed over the sea surface as well as complexities of mixing and advective processes at the different stations. The few data at intermediate depths, 500–1,000 m, near 40°S. are associated with Subantarctic Intermediate Water and are presumably unaffected as yet by bomb ^{14}C. As the surface layers of the sea become increasingly enriched in bomb ^{14}C, it is expected that it will provide a useful tracer for oceanographic studies.

Reference

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Biogeography and Systematics of Southern Ocean Benthic Ostracoda

Roger L. Kaesler *and* H. Meade Cadot

Department of Geology
The University of Kansas

Our study of systematics and biogeography of southern ocean benthic Ostracoda was initiated this year with *Eltanin* Cruise 39 (Boström, 1970) (Fig. 1) and *Hero* Cruise 69–5 (Kaesler, 1970). Forty-five grab and dredge samples were collected on the *Hero* cruise, and 15 samples from 13 stations were collected on the *Eltanin* cruise.

Samples from the Strait of Magellan yielded several species of Ostracoda that are restricted to the abyssal environment in many parts of the world. Initial phases of the research are directed toward the species *Krithe producta* and *Bradleya dictyon,* both of which are abundant in the Strait of Magellan and occur in the abyssal environment in the area of *Eltanin* Cruise 39. *K. producta* is a poorly understood species or species complex that Brady (1880) described as

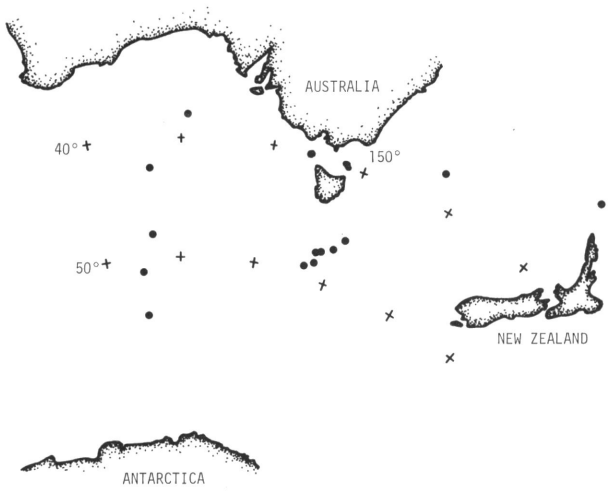

Figure 1. Locations of 13 localities sampled on *Eltanin* Cruise 39.

". . . either a cosmopolitan one, and very variable in shape . . ." or belonging to more than one species. He attributed the variability to differences in age, sex, and race. We have noted apparent trimorphism in populations of *K. producta* in all samples in which it occurs at depths from 25 m to 5,590 m. Study of the ratios of the various morphs and of their intergradation is now under way in an attempt to determine if they represent three different species, two species with one sex of each highly similar, or intraspecific variation such as phenotypic expression of multiple alleles or differences due to one of the causes suggested by Brady (1880).

Furthermore, specimens of *Krithe producta* collected off Punta Arenas, Chile, from depths of 25 to 250 m at intervals of 25 m have shown positive regression of size with depth for a number of characters. If this trend continues into very deep water, the size of *K. producta* could be a useful means of estimating depths at which ancient sediments were deposited.

The view has often been expressed that assemblages of Ostracoda from deep water are ". . . mainly thin shelled, translucent, mostly unornamented species . . ." (Van Morkhoven, 1962, p. 149). In the area south of Australia where samples were collected, smooth or pitted forms showed a somewhat greater species diversity than either spinose or ribbed forms, but the ratios of diversities of the three types remained nearly constant at all depths from 1,500 to 5,590 m. Moreover, populations of *Bradleya dictyon* from the area comprise larger, much more robust individuals than do populations from the Strait of Magellan. These tentative results suggest not only that abyssal faunas are not by any means limited to smooth forms, but also that heavily ornamented species may actually become more robust with depth.

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Invertebrates from the Davis Strait and Labrador Sea*

JOHN H. DEARBORN *and* DAVID DEAN

Department of Zoology and Ira C. Darling Center
University of Maine

Investigations of the phytoplankton, zooplankton, and selected invertebrates collected during *Hero* Cruise 3 (shakedown) to the David Strait and Labrador Sea in August, 1968, are nearly completed. A brief account of the cruise and our biological studies was reported earlier (Dearborn *and* Dean, 1969).

Qualitative phytoplankton data from 8 stations and quantitative data from 2 stations are being studied by Bernard J. McAlice of the Darling Center staff. To date, 45 species of phytoplankton have been identified. Eleven species of zooplankton have been identified from 8 stations, and the remaining material has been sorted to major group, such as ostracods, various invertebrate larvae, and fish eggs. Some quantitative data on the morphometrics and population structure of two species of copepods, *Oithona similis* and *Microsetella norvegica,* are being analyzed.

Three groups of invertebrates—the polychaetes, mollusks, and echinoderms—are being studied by individuals who took part in the cruise. The other invertebrate groups were not retained.

Systematic analysis of the polychaete collections has been completed by James A. Blake, University of the Pacific. The 70 species identified are distributed in 27 families. The Sabellidae and Polynoidae are best represented with 8 and 7 species, respectively. Included in the collections are two new species in the families Scalibregmidae and Sabellidae.

*Research supported by NSF grant GA–1405. Contribution No. 26 of the Ira C. Darling Center, University of Maine.

The polychaete fauna off Baffin Island is poorly known as compared to that off west Greenland. The present collection, though sparse, suggests that polychaetes in shallow waters off Baffin Island have remarkable affinities to similar areas in the western Pacific. No less than 89% of the species taken off Baffin Island occur also in the western Pacific. This is a greater percentage of shared species than occurs off west Greenland (70% shared with the Baffin Island region).

Tentative identifications have been made by Robert C. Bullock, Harvard University, for nearly all Mollusca collected. Included are 1 species of aplacophoran, 1 polyplacophoran, 29 gastropods, 34 bivalves, and 2 scaphopods, for a total of 67 species. The collection of a single specimen of the turrid gastropod *Pleurotomella packardi* Verrill extends the range of this species to the Davis Strait region. It was previously known only from Massachusetts. Histological preparations are being made for an anatomical report on a bivalve, *Bathyarca petunculoides* Scacchi.

A total of 18 species of echinoderms have been identified to date, none of them new. They include 1 species of crinoid, 8 asteroids, 5 ophiuroids, 2 echinoids, and 2 holothurians. The most abundant asteroid in the collections is *Stephanasterias albula* (Stimpson). *Ophiacantha bidentata* (Retzius) and the genus *Ophiura* account for over 85% of the ophiuroid specimens obtained. The collection of large numbers of individuals of three species of ophiuroids has made possible an analysis of intraspecific morphological variation in these forms.

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Echinoderm Studies in Southern Chile

DAVID L. PAWSON

Department of Invertebrate Zoology
Smithsonian Institution

During the southern Chile Cruise 69–5 of R/V *Hero* in October-November 1969 (see Kaesler, 1970), the opportunity was taken to investigate some aspects of the morphology and breeding biology of the common small sea-urchin *Pseudechinus magellanicus* (Philippi), to sample the fauna, particularly echinoderms, associated with the fronds and holdfasts of the ubiquitous brown seaweed *Macrocystis pyrifera,* and to make general collections of echinoderms.