

SEA FISHERIES RESEARCH INSTITUTE
DEPARTMENT OF ENVIRONMENT AFFAIRS

PROGRESS REPORT TO THE PROTEIN ADVISORY COMMITTEE
ON MESOPELAGIC FISH RESOURCES

SUMMARY OF OBJECTIVES AND PREVIOUS FINDINGS

Results of the Mesopelagic Survey carried out aboard R/S *Africana* were reported on at the end of 1988.

The main objectives stated were to elucidate the composition of the fauna and to identify the dominant species of the deep water regions adjacent to the traditional West Coast fishing grounds. The purpose was to determine whether any of the species warranted further investigation as commercially viable alternative resources.

The most important findings were that the myctophids *Symbolophorus boops* and *Diaphus hudsoni* were relatively abundant near the shelf-break and showed potential as alternative resources, that lanternfish did not occur beyond the shelf-break as previously thought, and that the pelagic prawn *Funchalia woodwardi* also showed some potential. There was also some potential for demersal species such as Orange Roughy.

It was recommended that the research be continued to investigate other areas along the shelf-edge, that sampling be extended to both summer and winter, and that future emphasis be directed mainly to the species mentioned above.

It was also recommended that funds be made available for a further 21 days of research during 1990 and that the nature of the work would be subject to further analysis of the results.

CURRENT STATUS OF RESEARCH

The following reports/papers have been prepared or are in the process of preparation:

1. The main findings of the survey were published in *S.A. Shipping News and Fishing Industry Review* at the end of 1988 (Augustyn and Hulley).
2. Deep-water cephalopod species and the abundance and fisheries potential of major squid species (Roeleveld, Augustyn and Lipinski, in preparation)
3. The systematics of southern African squids of the genus *Todarodes*, to be published in *S.A. Journal of Science* (Roeleveld, in press).
4. The vertical distribution of chokker squid, hake and pelagic fish (Augustyn, Rose and Robertson, in preparation).
5. The abundance and fisheries potential of deep-water demersal fish (Augustyn, in preparation).

6. A distributional analysis of epibenthic myctophid species, to be published in *Marine Biology* (Hulley, in press).
7. Density estimates of shelf-edge myctophids, to be presented at *Oceans 90* Symposium (Prosch and Hulley, in preparation).
8. Deep-sea epipelagic fish. Some specimens have been sent overseas for identification by specialists in the USA, Denmark and West Germany and the results will appear in joint publications in due course.
9. Contributions to a field-guide on cartilaginous fish of southern Africa, published in September 1989 (Compagno, Ebert and Smale).
10. Contributions to knowledge of batoid skates of the West Coast (Ebert) and distribution of West Coast cartilaginous fishes (Compagno), presented to the American Society of Ichthyologists and Herpetologists at a symposium during 1989 (to be published).

The collection of otoliths and statoliths from the survey have been curated and added to the collection at the PE Museum.

From the above, it is obvious that the first survey has provided a vast quantity of information from both the resource and scientific points of view. As far as alternative resources are concerned, the main areas of future potential were those relating to mesopelagic fish and crustaceans at or near the shelf-break, as well as possible demersal species in deeper waters. Concentrations of up to 32 t/km² of *Symbolophorus* and *Diaphus* in a relatively narrow band near the shelf-break were found, but the extent of these concentrations in space and over time are unknown and require further investigation. Similar comments apply to demersal species identified during the first survey.

RECOMMENDATIONS

To investigate the above-mentioned aspects further, it is recommended that two short (7-10 days duration) research cruises be undertaken, one in summer and another in winter, on R.S. *Africana*. These should be structured as acoustic surveys of the shelf-break area along the West Coast, from the Cape Canyon region to offshore of the Orange River, aimed mainly at determining the distribution and abundance of shelf-edge myctophids and crustaceans. During daylight, bottom transects and/or aimed midwater trawls should be carried out at depths between 600 and 1 500m to investigate other deep-water resources. It will be necessary to acquire a new 4 000m trawl warp to carry out this work.