

CONTENTS

I. PHYSICAL AND CHEMICAL ENVIRONMENT

Recommendations of the Working Group on the Physical and Chemical Environment	3
<i>R. C. Dugdale</i>	
Recommendations of the Subgroup on Mapping	11
<i>R. H. Backus, J. A. McGowan, J. L. Reid</i>	
Some Thoughts on the Dependence of Sound Speed and the Scattering Layers Upon Ocean Circulation	15
<i>J. L. Reid</i>	
The Chemistry of Plankton Production and Decomposition in Seawater	65
<i>D. Dyrssen</i>	
The Cycling of Labile Organic Compounds: Sterols in the North Atlantic Ocean	85
<i>R. B. Gagosian</i>	
Deep-Sea Metabolism in the Eastern Tropical North Pacific Ocean	101
<i>T. T. Packard, H. J. Minas, T. Owens, A. Devol</i>	
Marine Areas of Anomalous Chemistry Resulting from Oxygen Deficiencies	117
<i>F. A. Richards</i>	
Turbulence as a Factor in Sound Scattering in the Upper Ocean	129
<i>J. D. Woods</i>	
Optical Parameters that may Affect Vertical Movement of Animals in the Ocean	147
<i>J. R. V. Zaneveld</i>	

II. FOOD CHAINS

Recommendations of the Working Group on Food Chains	161
<i>J. Mauchline</i>	
Estimating Production of Midwater Organisms	177
<i>J. Mauchline</i>	
Windows into a Sea of Confusion: Sampling Limitations to the Measurement of Ecological Parameters in Oceanic Mid-Water Environments	217
<i>M. V. Angel</i>	
On the Distribution of Midwater Fishes in the Eastern North Atlantic	249
<i>J. Badcock, N. R. Merrett</i>	
Studies on Pelagic Animal Biomasses	283
<i>M. Blackburn</i>	
Physiological Approaches to the Biology of Midwater Organisms	301
<i>J. J. Childress</i>	
Aspects of the Feeding Ecology of Oceanic Midwater Fishes	325
<i>T. L. Hopkins, R. C. Baird</i>	
The Lanternfish <i>Lobianchia dofleini</i> : An Example of the Importance of Life-History Information in Prediction of Oceanic Sound Scattering	361
<i>C. Karnella, R. H. Gibbs, Jr.</i>	
Observations on Feeding Habits of the Mesopelagic Fish <i>Benthosema glaciale</i> (Myctophidae) off NW Africa . . .	381
<i>J. Kinzer</i>	
Possible Factors Affecting Succession in Plankton Communities	393
<i>A. G. Lewis</i>	
Growth and Moulting of Crustacea, Especially Euphausiids	401
<i>J. Mauchline</i>	
What Regulates Pelagic Community Structure in the Pacific?	423
<i>J. A. McGowan</i>	

The Role of Microorganisms in the Marine Environment	445
<i>R. Y. Morita</i>	

Food and Feeding Structures of Deep-Sea <i>Thysanopoda</i> Euphausiids	457
<i>T. Nemoto</i>	

III. BIOACOUSTICS

Recommendations of the Working Group on Bio-acoustics	483
<i>G. B. Farquhar, D. V. Holliday</i>	

Biological Sound Scattering in the Oceans: A Review	493
<i>G. B. Farquhar</i>	

Pelagic Faunal Provinces and Sound-Scattering Levels in the Atlantic Ocean	529
<i>R. H. Backus, J. E. Craddock</i>	

Sound Scattering and Oceanic Midwater Fishes	549
<i>R. C. Baird, D. F. Wilson</i>	

A Study of the Swimbladders of Selected Mesopelagic Fish Species	565
<i>A. L. Brooks</i>	

The Minox Program: An Example of a Multidisciplinary Oceanic Investigation	591
<i>W. A. Friedl, G. V. Pickwell, R. J. Vent</i>	

Extracting Bio-Physical Information from the Acoustic Signatures of Marine Organisms	619
<i>D. V. Holliday</i>	

Spectral Models for Biological Sound Scattering	625
<i>R. K. Johnson</i>	

Progress in the Correlation of Volume Scattering Strengths to Biological Data	631
<i>R. H. Love</i>	

Variations in Abundance of Sound Scattering Animals Off Oregon	647
<i>W. G. Percy</i>	

Some Comparisons Between Oceanographic Measurements
and High-Frequency Scattering of Underwater Sound . . 667
R. E. Pieper

On the Prediction of Sound Scattering in the Oceans
from Fish Capture Data 679
P. Scully-Power

Acoustic Volume Scattering Measurements with Related
Biological and Chemical Observations in the North-
eastern Tropical Pacific 697
R. J. Vent, G. V. Pickwell

IV. MODELING

Recommendations of the Working Group on Modeling . . . 719
J. J. O'Brien

On the Large Scale Circulation of the Ocean: A Dis-
cussion for the Unfamiliar 723
J. C. McWilliams

On Persistence of Aquatic Ecosystems 749
T. G. Hallam

Mesoscale Oceanic Phytoplankton Patchiness Caused by
Hurricane Effects on Nutrient Distribution in the Gulf
of Mexico 767
R. L. Iverson

How Can the Methodologies of Pattern Recognition Aid
in Modeling Volume Reverberation Processes? 779
P. T. McElroy

Biological Prediction in Pelagic Marine Ecosystems . . 803
T. Platt, K. L. Denman

Daytime Depths of Sound Scattering Layers in the Major
Biogeographic Regions of the Pacific Ocean 811
S. A. Tont

Vertically Migrating Herbivorous Plankton - Their
Possible Role in the Creation of Small Scale Phyto-
plankton Patchiness in the Ocean 817
J. S. Wroblewski

LIST OF CONTRIBUTORS AND PARTICIPANTS 849

INDEX 853