CALIFORNIA
COOPERATIVE
OCEANIC
FISHERIES
INVESTIGATIONS



VOLUME XXII
1 January to 31 December 1980

Cooperating Agencies:

CALIFORNIA DEPARTMENT OF FISH AND GAME
UNIVERSITY OF CALIFORNIA, SCRIPPS INSTITUTION OF OCEANOGRAPHY
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, NATIONAL MARINE FISHERIES SERVICE

EDITOR Nance North
SPANISH EDITOR Maria Lorena Cook
MATHEMATICS AND STATISTICS ADVISOR Elizabeth Venrick

This report is not copyrighted and may be reproduced in other publications provided credit is given to the California Cooperative Oceanic Fisheries Investigations and to the Author(s). Inquiries concerning this report should be addressed to CalCOFI Coordinator, A-003, Scripps Institution of Oceanography, La Jolla, CA 92093.

EDITORIAL BOARD

Izadore Barrett John Radovich Joseph Reid

Published October, 1981, La Jolla, California

CONTENTS

	IN MEMORIAM	5
I.	Reports, Review, and Publications	
	Report of the CalCOFI Committee—1981	7
	Estimate of the Spawning Biomass of the Northern Anchovy Central Subpopulation for the	
	1980-81 Fishing Season. Gary D. Stauffer and Susan J. Piquelle	8
	Publications	14
П.	Symposium of the CalCOFI Conference	
	LOW-FREQUENCY EVENTS IN THE CALIFORNIA CURRENT	
	Idyllwild, California, October 20-23, 1980	
	Large-scale Sea-surface Temperature Anomalies in the Northeast Pacific Ocean. L. E. Eber	19
	Interannual Variability of the California Current—Physical Factors Dudley B. Chelton	34
	A Review of the Low-Frequency Response of the Pelagic Ecosystem in the California Current.	
	Patricio A. Bernal	49
ш.	Scientific Contributions	
	The Brown Pelican as a Sampling Instrument of Age Group Structure in the Northern	
	Anchovy Population. John S. Sunada, Paul R. Kelly, Irene S. Yamashita,	
	and Franklin Gress	65
	Seasonal Growth Patterns of California Stocks of Northern Anchovy, Engraulis mordax,	
	Pacific Mackerel, Scomber japonicus, and Jack Mackerel, Trachurus symmetricus.	
	Donna L. Mallicoate and Richard H. Parrish	69
	Age-composition Changes in the Anchovy, Engraulis mordax, Central Population. K. F. Mais	82
	Description of Reared Larvae and Early Juveniles of the Calico Rockfish, Sebastes dallii.	
	H. Geoffrey Moser and John L. Butler	88
	Eddies and Speciation in the California Current. Roger Hewitt	96
	Trophic Structure and the Cesium-Potassium Ratio in Pelagic Ecosystems. Allen J. Mearns,	
	David R. Young, Robert J. Olson, and Henry A. Schafer	99
	A Comparison of Euphausiid Abundances from Bongo and 1-M CalCOFI Nets.	
	E. Brinton and A. W. Townsend	111
	Seasonal and Bathymetric Distribution of Thecate and Nonthecate Dinoflagellates off	
	La Jolla, California. B. Kimor	126
	Euphausiid Distributions in the California Current During the Warm Winter-Spring of 1977-78,	
	in the Context of a 1949-1966 Time Series. E. Brinton	135