

CONTENTS

Preface

Contents

Program

Overview of Aquaculture in the US and Japan

1. The Fisheries Agency's policy directions for aquaculture Kazumasa Ikuta (Counselor, Resource Enhancement Promotion Department Japan Fisheries Agency, Ministry of Agriculture Forestry and Fisheries)	19
2. Aquaculture in the US: The first annual national report on aquaculture Marie Fujitani (NOAA Office of Aquaculture)	21
3. The challenge of reconstructing coho salmon aquaculture after the Great East Japan Earthquake and Tsunami in 2011 Ikutaro Shimizu (National Research Institute of Fisheries Science, FRA)	33

Fish Diet and Nutrition

4. Development of a new type of fish diet, non-fish meal extruded-pellet Noriko Ishida (National Research Institute of Fisheries Science, FRA)	39
5. The importance of taurine and n-3 fatty acids in cobia nutrition Aaron Watson (University of Maryland)	51
6. Availability of fisheries by-product materials with cadmium removal treatment as a feed ingredient for fingerling black rockfish <i>Sebastodes schlegeli</i> Nobukazu Satoh (Fisheries Research Department Mariculture Fisheries Research Institute, Hokkaido Research Organization)	61
7. Development and characterization of several open formula reference diets for marine fish larvae Ken Webb (NOAA, Northwest Fisheries Science Center)	67
8. Effect of feed ingredients on digestive enzyme secretion in fish Koji Murashita (National Research Institute of Aquaculture, FRA)	69
9. Cholecystokinin and trypsin responses of larval red drum (<i>Sciaenops ocellatus</i>) in response to algae, live prey, and inert particles Michael B. Rust (NOAA)	75

Management, Social and Economic Issues of the Aquaculture Industry

10. An analysis of the causality between the market price of imported fishmeal and market price of marine farmed fish Yoshifumi Takahashi (Tohoku National Fisheries Research Institute, FRA)	79
11. Good aquaculture practices to reduce the use of chemotherapeutic agents, minimize bacterial resistance, and control product quality Stanley Serfling (Food and Drug Administration Office of Food Safety)	83
12. Modeling intraspecific genetic effects for management of aquaculture programs Jason Volk (ICF International)	89

Techniques of Aquaculture Production

13. Specific monovalent and divalent ion supplementation for culture of marine species Chris Green (Louisiana State University Agricultural Center)	97
14. Genetically modified salmon in aquaculture: well regulated and safe Paul G. Olin (UC San Diego/ Scripps Institution of Oceanography)	109
15. Reproductive dysfunction in cultured sablefish (<i>Anoplopoma fimbria</i>) Jose Guzman (NOAA)	111

Invertebrate Aquaculture I: Echinoderm

16. Induced spawning in the sea cucumber <i>Apostichopus japonicus</i> by neuropeptide, cubifrin Keisuke Yamano (National Research Institute of Aquaculture, FRA)	121
17. Mass production of artificial seed of the Japanese common sea cucumber (<i>Apostichopus japonicus</i>) in Hokkaido, Japan Yuichi Sakai (Fisheries Research Department Mariculture Fisheries Research Institute, Hokkaido Research Organization)	129
18. Fluorochrome marking of out-planted green sea urchins, <i>Strongylocentrotus droebachiensis</i> , for sea ranching and restocking programs in the Gulf of Maine, USA Stephen Eddy (University of Maine, Center for Cooperative Aquaculture Research)	135
19. Improving the food quality of sea urchin gonads by suppressing gametogenesis Tatsuya Unuma (Hokkaido National Fisheries Research Institute, FRA)	145
20. Maturation control of the short-spined sea urchin, <i>Strongylocentrotus intermedius</i> , by low temperature rearing using deep-sea water, with the aim of extending the market season Takaaki Kayaba (Kushiro Fisheries Research Institute, Hokkaido Research Organization)	155

Invertebrate Aquaculture II: Mollusc

21. Long-term outcomes in the tech transfer of scallop spat collection techniques, from Aomori Prefecture, Japan to Maine, USA Dana Morse (Maine Sea Grant)	167
22. Oyster culture in Hokkaido, Japan Natsuki Hasegawa (National Research Institute of Aquaculture, FRA).....	173