

Marine Habitat Mapping Technology for Alaska

Edited by

Jennifer R. Reynolds
University of Alaska Fairbanks
School of Fisheries and Ocean Sciences, and

H. Gary Greene
Moss Landing Marine Laboratories
Center for Habitat Studies

*Published by Alaska Sea Grant
for North Pacific Research Board*

AK-SG-08-03

Elmer E. Rasmuson Library Cataloging in Publication Data:

Marine habitat mapping : what is it, and why do managers need it? / edited by Jennifer R. Reynolds, H. Gary Greene.— Fairbanks, Alaska : Alaska Sea Grant College Program, University of Alaska Fairbanks, 2008.

CD-ROM. (Alaska Sea Grant College Program, University of Alaska Fairbanks)

Notes: Proceedings of the workshop Marine Habitat Mapping Technology Workshop for Alaska, April 2-4, 2007, Anchorage, Alaska.

Includes bibliographical references.

ISBN 978-1-56612-131-6

doi:10.4027/mhmta.2008.00

1. Marine animals—Habitat—Alaska—Remote sensing. 2. Marine ecology—Alaska—Remote sensing. 3. Marine resources—Alaska—Remote sensing. 4. Marine resources—Alaska—Management. I. Reynolds, Jennifer R. II. Greene, H.G. III. Series: Alaska Sea Grant College Program report; AK-SG-08-03.

GC1021.A4 M37 2008

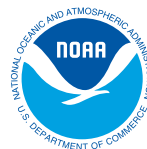
Credits

Published by the Alaska Sea Grant College Program, supported by the U.S. Department of Commerce, NOAA National Sea Grant Office, grant NA06OAR4170013, project A/151-01; and by the University of Alaska Fairbanks with state funds. The University of Alaska is an affirmative action/equal opportunity employer and educational institution. Funding for the publication is provided by the North Pacific Research Board, award no. 615 to the University of Alaska Fairbanks. This is NPRB publication no. 190.

Sea Grant is a unique partnership with public and private sectors combining research, education, and technology transfer for public service. This national network of universities meets changing environmental and economic needs of people in our coastal, ocean, and Great Lakes regions.

Page layout and cover design by Jen Gunderson, and editing by Sue Keller, of Alaska Sea Grant. Cover image: Seafloor bathymetry on the northeast slope of Bobrof Volcano, central Aleutian Islands. Image from J.R. Reynolds and H.G. Greene.

Alaska Sea Grant College Program
University of Alaska Fairbanks
P.O. Box 755040
Fairbanks, Alaska 99775-5040
Toll free (888) 789-0090
(907) 474-6707 fax (907) 474-6285



www.alaskaseagrant.org
www.nprb.org

Contents

Overview: Marine Habitat Mapping Technology for Alaska <i>Jennifer R. Reynolds, H. Gary Greene, Doug Woodby, Jon Kurland, and Brian Allee</i>	1
What Is Marine Habitat Mapping and Why Do Managers Need It? <i>Jon Kurland and Doug Woodby</i>	13
REMOTE SENSING TECHNOLOGIES	
Acoustic Remote Sensing as a Tool for Habitat Mapping in Alaska Waters <i>Lloyd C. Huff</i>	29
High-Resolution Multibeam, Sidescan, and Subbottom Surveys Using the MBARI AUV <i>D. Allan B.</i> <i>David W. Caress, Hans Thomas, William J. Kirkwood, Rob McEwen, Richard Henthorn, David A. Clague, Charles K. Paull, Jenny Paduan, and Katherine L. Maier</i>	47
Small-Boat Surveys in Shallow Water <i>Robert Mason Hare</i>	71
Surficial Geology: The Third Dimension in Habitat Mapping <i>J. Vaughn Barrie and Kim W. Conway</i>	91
VISUAL-SCALE TECHNOLOGIES	
Underwater Video Sleds: Versatile and Cost Effective Tools for Habitat Mapping <i>Christopher N. Rooper</i>	99
Conducting Visual Surveys with a Small ROV in Shallow Water <i>Robert E. Pacunski, Wayne A. Palsson, H. Gary Greene, and Don Gunderson</i>	109
Evaluating the <i>SeaBED</i> AUV for Monitoring Groundfish in Untrawlable Habitat <i>Nick Tolimieri, M. Elizabeth Clarke, Hanumant Singh, and Chris Goldfinger</i>	129
Twenty Years of Research on Demersal Communities Using the <i>Delta</i> Submersible in the Northeast Pacific <i>Mary M. Yoklavich and Victoria O'Connell</i>	143
Video Analysis, Experimental Design, and Database Management of Submersible-Based Habitat Studies <i>Brian N. Tissot</i>	157
HABITAT CLASSIFICATION PROCEDURES	
Marine Benthic Habitat Classification: What's Best for Alaska? <i>H. Gary Greene, Victoria O'Connell, Cleo K. Brylinsky, and Jennifer R. Reynolds</i>	169
Video-Supervised Classification of Sonar Data for Mapping Seafloor Habitat <i>Guy R. Cochrane</i>	185
Systematic Acoustic Seafloor Habitat Mapping of the British Columbia Coast <i>James L. Galloway</i>	195

CASE HISTORIES

Twenty Years of Fish-Habitat Studies on Heceta Bank, Oregon
Brian N. Tissot, W. Waldo Wakefield, Mark A. Hixon, and Julia E.R. Clemons..... 203

Applications of Geoscience to Australia’s Representative
Marine Protected Area Program
Peter T. Harris, Andrew Heap, Tanya Whiteway, and Alix Post 219

WORKSHOP REPORT

Workshop Report: Marine Habitat Mapping Technology Workshop for Alaska
Jennifer R. Reynolds, H. Gary Greene, Doug Woodby, Jon Kurland, and Brian Allee..... 237

Index.....267