

marine education

A Bibliography of Educational Materials Available from the Nation's Sea Grant College Programs

January 1994

Foreword

This bibliography was first published as a result of a cooperative education effort of the nation's Sea Grant programs and the staff of The Living Seas pavilion presented by United Technologies at EPCOT Center in Orlando, Florida. A compilation of the textbooks, curricula materials and other marine education resource materials developed by individual Sea Grant programs, the original publication was intended for use with the education program of The Living Seas and in the EPCOT Outreach/Teacher's Center.

This cooperative effort was a natural outgrowth of the intersecting missions of Sea Grant, The Living Seas and the EPCOT Outreach/Teacher's Center. When Congress established the National Sea Grant College Program in 1966, Sea Grant was given the mission of promoting the understanding and wise use of our oceans and Great Lakes through research, education and public service. The materials included in this bibliography are evidence of Sea Grant's meeting that Congressional mandate for formal and public education.

The **Marine Education Bibliography** has proven useful to a wide range of educators, and demand has far exceeded supply. This fourth printing ensures that the bibliography is again available as a tool for teachers and other individuals interested in helping students explore and understand our oceans and Great Lakes.

The materials outlined in this bibliography are available from the Sea Grant program or institution that developed them. Entries include ordering instructions and information about materials available free or at nominal cost.

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Alaska Sea Grant College Program

University of Alaska Fairbanks -
304 Eielson Building
Fairbanks, AK 99775-5040
(907) 474-6707

Sea Week Curriculum Series

The Alaska Sea Week program has been cited for excellence in environmental education by the National Science Teachers' Association. The hundreds of teachers who have used these curriculum guides find Sea Week the highlight of the year - a week of delight and awe, intrigue and excitement. These six books can easily be adapted to several grade levels and even to adult education.

Discovery: An Introduction. Kindergarten. Belle Mickelson. **AK-SG-83-06.** 1983. 106 pp. + worksheets. \$6.50.

This book leads the teacher through more than 30 activities. While children are learning about wetlands, the ocean, marine and shore animals, and seaweed, they discover science, mathematics, language, history, social studies, art, and music.

Animals of the Seas and Wetlands.

Grade 1. Belle Mickelson. **AK-SG-85-11.** 1985. 154 pp. + worksheets. \$12.00.

This book has units on marine and freshwater invertebrates, fish, amphibians, marine and freshwater mammals, and beach field trips. The text includes background information for teachers, suggested classroom activities, and discussion topics.

Shells and Insects. Grade 2. Claudia Kelsey, Mary Beth Parsons, and Margaret Cowan. **AK-SG-84-04.** 1984. 169pp. + worksheets. \$12.50. Activities are paired with worksheets that use language arts, arithmetic, art, and other topics to increase the student awareness of marine and wetland areas in the community. This volume concentrates on mollusks, bivalves, univalves, chitons, cephalopods, shellfish and freshwater field trips, water invertebrates, and insects.

Birds and Wetlands of Alaska.

Grade 4. James G. King and Mary Lou King. **AK-SG-88-01.** 1988. 84 pp. + worksheets and field guide. \$12.00.

Kids will learn about bird habitats, migration, parts of a bird, and how to identify birds. Teachers do not need to be experts to use these materials, and no additional materials are required.

Fish and Fisheries. Grade 5. Belle Mickelson and Nancy Barr. **AK-SG-83-07.** 1983. 172 pp. + worksheets. \$11.50.

This guide has games and activities that help teach youngsters about the biology of fish, and about the fish species that are harvested. Other units take the children out to study the natural habitat. Fishing techniques, fish processing, and the history and future of the fisheries are also introduced to the students through classroom activities, readings, and individual worksheets.

Marine Mammals: Coastal and River Issues.

Grade 6. Belle Mickelson. **AK-SG-84-08.** 1984. 186 pp. + worksheets. \$17.00.

This volume concentrates on marine mammals in Alaska and also introduces a broad range of marine and wetland topics to students, including community planning, weather, pollution, oil development, and the connections among logging, fishing, and wildlife.

Outdoor Survival Training for Alaska's Youth: Instructor Manual. Dolly Garza. **SG-ED-16.** 1993. 108 pp. \$8.00.

Outdoor Survival Training for Alaska's Youth: Student Manual. Dolly Garza. **SG-ED-17.** 1993. 46 pp., free only with purchase of teacher manual.

This well illustrated, two-volume curriculum set has classroom and field activities aimed at teaching

elementary school children how to prepare for and cope with outdoor emergencies. The emphasis is on equipment, skills, and mental outlook needed to survive when lost or stranded in the outdoors. The presentation is based on case studies in Alaska, but the information is relevant to any temperate geographic region. The materials are geared to grades 5-7, and have been used successfully in grades K-12. One free student manual for each participating student will be included with order. Teachers should specify number of youngsters in class.

Lessons of the Exxon Valdez. Rick Steiner and Kurt Byers. **SG-ED-08.** 1990. 32 pp. \$8.00.

This color-illustrated booklet features an essay written on the heels of the *Exxon Valdez* oil spill. The book suggests ways to avoid future spill disasters and discusses cleanup technology and state and federal legislation spurred by the spill. It also describes effects of the Alaska oil spill on wildlife, humans, and local economies, including Native villages. An annotated bibliography lists over fifty articles, books, and videos on various aspects of the spill. Selected by the *Government Publications Review* in 1991 for excellence in government publishing.

After the Exxon Valdez Oil Spill.

In: Alaska's Marine Resources Vol. VII No. 3. October 1992. 16 pp. \$3.00.

This is a report on spill effects on mammals, birds, fish, habitat, subsistence, and other resources. An overview of the settlement and restoration framework is also included.

Guide to Northeast Pacific Rockfishes: Genera *Sebastes* and *Sebastolobus*. **MAB-25.** Revised 1988. 86 pp. \$10.00.

This plastic laminated guide simplifies the identification of 36 species of rockfish found along the Alaska and British Columbia coast, with color photographs for each species. It is particularly useful for fishermen, processors, fisheries managers, and divers.

Guide to Marine Mammals of Alaska. Kate Wynne. **MAB 44.** 1992. 80 pp. \$15.00.

Guide to Marine Mammals of Alaska covers all 29 species of marine mammals of Alaska. Each whale, porpoise, dolphin, seal, sea lion, walrus, sea otter, and polar bear is described and illustrated. Color photos and surface profiles are included, and color range maps show distribution. Descriptions are presented in a format that allows fast, accurate identification at sea. The book is printed on durable waterproof paper to give years of service outdoors and in the office, classroom, and home.

Encountering Marine Mammals in Alaska. Brochure. 1991. No charge for single copies.

If you live in a coastal community, or go to sea, you face a complex maze of marine mammal regulations. This brochure explains what you should do when you come across live or dead marine mammals.

A Guide to Cleaning up Beach Debris in Alaska. **SG-ED-03.** 1989. 16 pp. No charge for up to 10 copies.

This booklet includes everything teachers need to know about how to organize a successful beach cleanup in Alaska. Information

can be applied to coastal areas everywhere.

Tossing Trash. Brochure. 1989. No charge for up to 10 copies.

This 3-fold illustrated brochure summarizes the consequences of tossing trash into the oceans. Published by the Center for Marine Conservation, National Marine Fisheries Service, and the Society of the Plastics Industry.

Marine Animal Life Cycle Posters.

AK-SG-77-03. 1977. \$1.00 each.

A series of three posters, each measuring 24" by 36", depicting life cycles of ocean perch, weathervane scallop, and halibut.

Surviving on the Foods and Water from Alaska's Southern Shores.

Dolly Garza. **MAB-3.** 1989. 23 pp. \$5.00.

This booklet describes wilderness sources of nutritious foods useful in a survival situation. The reader is advised how to make drinking water safe and how to find and prepare intertidal sea animals, land plants, bird eggs, and seaweeds for eating. Information includes identification of poisonous and non-edible plants and animals.

Family Boating: Preparing for the Emergency. Dolly Garza. **ASG-31.** 1991. 4pp. No charge for single copies.

This illustrated fact sheet provides details that boaters should be aware of in preparing for emergencies, especially in the cold waters of Alaska. A list of safety equipment is included, such as personal flotation devices, sur-

vival kit, anchor, and communication radio. Boaters are encouraged to have a plan in case of emergency, and to take family members through regular safety drills.

Fish-Wurst. Doug Coughenower. Brochure. No charge for single copies.

This 2-fold brochure has several recipes for making fish sausage.

VIDEOS

Cold Water Near-Drowning. **MAPV-2.** 1983. 20 minutes. \$15.00.

If an unconscious person is pulled out of cold water, has the person drowned? Not necessarily is the answer, and your awareness and skills could save a life. This program demonstrates how to treat a cold water near-drowning victim, and demonstrates CPR on an adult. Workbook available, **SG-ED-10,** \$4.00.

Hypothermia. **MAPV-1.** 1986. 15 minutes. \$15.00.

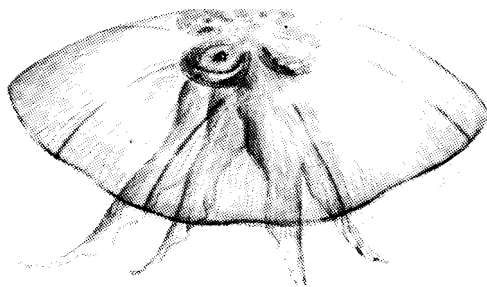
Cold weather can kill as easily as a fall from a cliff. This program demonstrates the danger of hypothermia on a fishing boat, how to recognize hypothermia, what to do about it, and how to prevent it. Workbook available, **SG-ED-15,** \$4.00.

Frostbite and Other Cold Injuries. **MAPV-17.** 1988. 16 minutes. \$15.00.

Cold, wind, rain, water, snow, and ice are conditions that can cause minor to fatal cold injuries to the unprepared person. This program demonstrates the four types of cold injuries and how to treat them. It also shows prevention and situations in which you might get a cold injury. Workbook available, **SG-ED-07,** \$4.00.

Shore Survival. **MAPV-4.** 1983. 22 minutes. \$15.00.

Do you know how to survive on a remote Alaska shore? This program demonstrates the seven steps to survival, how to build an emergency shelter from materials at hand, how to create signal



devices, and how to use your own resourcefulness and ingenuity to stay alive. Workbook available at \$3.50.

Sea Survival. MAPV-3. 1983. 21 minutes. \$15.00.

Your fishing boat is sinking in the Gulf of Alaska. Do you know what to do immediately to save your crew and your own life? This program shows the seven steps to survival; how to use a life raft; how to conserve body heat, energy, and water on a life raft; and how to safely board a rescue helicopter.

It Could Have Been Prevented. MAPV-18. 1990. 17 minutes. \$15.00.

This dramatic video is about small

boat safety in rural Alaska. Issues such as alcohol, weather, and personal flotation devices are demonstrated through a fictional story about a family traveling upriver to a fish camp. It tells how to prevent the tragedy that befalls the boaters.

Ocean Ranching. MAPV-19. 1990. 29 minutes. \$15.00.

This video shows the history of Alaska's hatcheries and describes the present-day procedures and operations. In Prince William Sound and other Alaska fishing areas, the release of healthy young salmon into the ocean has resulted in high returns of adult salmon. Hatcheries are indeed stabilizing the up-and-down cycles of wild salmon runs.

Ordering instructions: Make checks payable to the University of Alaska. Send orders to:

Alaska Sea Grant College Program
University of Alaska Fairbanks
304-MEB Eielson Bldg.
Fairbanks, AK 99775-5040
Phone (907) 474-6707
Fax (907) 474-6285

California Sea Grant College

University of California
9500 Gilman Drive, Department 0232
La Jolla, CA 92093-0232
(619) 534-4444

Directory of Academic Marine Programs in California. Third edition. 1993. Publication No. **E-CSGCP-005.** \$5.00.

A guide for teachers and students to undergraduate and graduate courses of study in the marine sciences at California colleges and universities.

Salt Marsh Vegetation: Examples from the Tijuana Estuary. Joy B. Zedler. 1982. Publication No. **E-CSGCP-0003.** \$1.25.

This 40-page publication describes salt marsh vegetation in southern California using the Tijuana Estuary as an example and explains how marsh plants are able to tolerate the stresses of the environment.

Ordering Instructions: Mail check or money order, payable to UC Regents, to:

California Sea Grant College
University of California
9500 Gilman Drive
Department 0232
La Jolla, CA 92093-0232

Connecticut Sea Grant College Program

University of Connecticut at Avery Point
1084 Shennecossett Road
Groton, CT 06340-6097
(203) 445-3457

Notes on Connecticut's Coastal and Marine Resources. CT-SG-87-09.

16 pp.

Observations from on-the-water workshops in conjunction with Project Oceanology. Topics include Connecticut's estuaries, marine fisheries, shellfisheries and seafood secrets.

Connecticut Currents. Free.

A quarterly newsletter issued by Connecticut's Marine Advisory Program containing upcoming events and timely coastal and marine issues.

Plants and Animals of Long Island Sound. Lisa Whale. **CT-SG-90-11.** Single copies free; bulk 60 cents each plus postage.

Often called the "Urban Sea," Long Island Sound is a large estuary that stretches from New York on the western end to the eastern tip of Long Island with Connecticut making up its entire northern border. This 33-page guide, completed as part of the Long Island Sound Study, introduces the beautiful creatures of the Sound through line drawings.

35mm Slide Show. Available free on loan.

As a supplement to the booklet, the Long Island Sound Study completed a slide program that depicts the flora and fauna of the Sound in vivid color.

Long Island Sound Study Fact Sheets. Free. Please order by number.

The LISS is a bi-state effort between the Connecticut Marine Advisory Program and the New York Sea Grant Extension Program. Since 1987 they have produced 15 fact sheets (2-4 pages each) on a variety of marine-related topics on estuaries in general and LIS in particular. Topics are:

1-Hypoxia and Long Island Sound

2-Modeling LIS

3-Wastewater Treatment

4-The LIS Study

5-Supporting the Sound

6-Priority Action Plan Demonstration Projects

7-Nonpoint-Source Pollution in LIS

S-Floatable Debris

9-Seafood Issues

10-Toxic Contamination in LIS

11-Nutrient Reduction: New Solutions to Old Problems

12-Pathogens

13-The Impact of Septic Systems on the Environment

14-Water Conservation and Marine Water Quality

15-What is the LIS Study?

How Estuaries are Polluted. Poster. \$2.00.

An eye-catching, full-color poster (11" x 17") depicting how industries, farms, residential areas and motor vehicles all contribute to the pollution of estuaries. Adapted from a graphic by U.S. News and World Report and produced by Connecticut Sea Grant in conjunction with The Maritime Center at Norwalk (Norwalk CT).

Environmental Stewardship.

Poster. \$1.50.

A colorful, 18" x 24" message on how citizens can help protect water quality by taking action in their own homes. A collaborative effort between Connecticut Sea Grant Marine Advisory Program and the New York Sea Grant Extension.

Luck Isn't Enough: The Fight for Clean Water. \$10.00.

A 12-minute videotape that describes the causes and effects of nonpoint-source water pollution and offers suggestions on ways citizens and local decision makers can combat it. A joint project between Connecticut Sea Grant Marine Advisory and the New York Sea Grant Extension.

Long Island Sound in a Jar. Heather Crawford. Available June 1994.

Hands-on activities for teachers and students. Learn about water, ecosystems, and human impacts on both. Students can recreate Long Island Sound in a jar-pollute it, and then try to clean it up, or model a watershed and make it rain.

Sound Facts. Peg Van Patten and Milton Moore. Available March 1994.

A collection of graphic features that give fun facts about the biology, ecology, chemistry, physical oceanography, and geology of Long Island Sound. Produced in conjunction with *The Day* newspaper.

Save Our Sound. Available on loan.

A play about Long Island Sound produced by and for middle school students, as a joint project between Connecticut Sea Grant, Eugene O'Neill Theater and the Groton Youth and Family Services. Students wrote the play, created life-size puppets, and videotaped the performance. Characters include a giant sea turtle, fish, octopi, invertebrates, gulls, and Flushy the Talking Toilet.

Long Island Sound: Worth Fighting For. Available on loan after March 1994.

A one-hour documentary produced by Connecticut Sea Grant and Connecticut Public Television. Learn how past and present activities related to Long Island Sound have impacted Connecticut's economy and landscape, and how our futures are tied to this valuable estuary.

Ordering Instructions: Send requests to:

University of Connecticut
Sea Grant Publications
Avery Point
Groton, CT 06340

University of Delaware
Sea Grant Marine Advisory Service
700 Pilottown Road
Lewes, DE 19958
(302) 645-4346

MAS Bulletins. Single copies of up to five different titles at a time are free; additional titles or multiple copies of a single title are 25 cents each. The entire series costs \$2.50.

Jellyfish: Regular Summer Visitors to Delaware Shores. Revised 1987.

Illustrated guide to four species common to the region, with life history, migratory patterns, and how jellyfish can sting.

Weakfish: Catch a Queen for Dinner. Revised 1985.

Illustrated description of the species and its habitat.

Delaware vs. the Sea: Are We Losing the Battle? Revised 1983.

Explains the activity of the sea and how coastal areas are eroded and built up. Brief description of geologists' research methods and engineers' beach protection measures.

Common Seashells of Delaware. Revised 1990.

Diagrams, photographs, and descriptions of most common seashells.

The Horseshoe Crab -A Reminder of Delaware's Past. Revised 1989. Illustrated description, history, habits, medical uses and population trends of this unique sea-shore animal.

Flounder: The Ocean's Platter. Revised 1987.

Illustrated description of various species of flounder common to Delaware coastal waters, explaining appearance, habits, fishing suggestions.

Shark. Revised 1993.

Tells why sharks have been such successful predators of the sea and why their populations are now threatened. Describes sharks common to the mid-Atlantic.

Delaware's Blue Crab. Revised 1984. Describes the life history and

methods for commercial and recreational crabbing. Includes recipes.

The Hard Clam. Revised 1986.

Biology and life cycle of the hard clam; recreational and commercial clamming.

The Delaware Bay Oyster and the MSX Problem.

Reports on recent findings by researchers and looks at the steps being taken by fisheries managers to prevent another outbreak of MSX disease.

The Bottle-Nosed Dolphin: Our Coastal Whale.

Reviews the dolphin's life history, biology and communication/echolocation ability. Includes a detailed list of what you should do if you encounter a stranded dolphin.

Coastal Landscaping with Common Marsh and Dune Plants.

Introduces over a dozen marsh and dune plants, describes how these plants can be used to enhance coastal properties, and provides guidelines for successful planting.

A Consumer Guide to Safe Seafood Handling.

Describes the risks involved in consuming fish and shellfish. Provides tips for selecting quality seafood and guidelines for safe storage, handling, and preparation.

MAS Notes. Single copies of up to five different titles at a time are free; additional titles or multiple copies of a single title are 15 cents each. The entire series costs \$1.50. A series of one- or two-page fact sheets that cover a wide variety of topics. MAS Notes have become a popular way to answer questions concerning Delaware's marine environment. Topics include Beach Seining; Galvanic Corrosion; Marine Careers: The Scien-

tist; Marine Weather Reporting; Plastic Pollution in the Marine Environment; Sharks: A Resource Guide; Guidelines for Spring Boat Refitting; Consumers: Know the Facts about Eating Raw Shellfish; Eating Raw Finfish: What are the Risks, the Benefits; Safety at the Beach; Fisheries Conservation Begins with You: Tips on Releasing a Hooked Fish; Guidelines for Winter Boat Lay-up; Recreational Boaters: Take Charge of Your Discharge; Beach Safety: Protect Yourself from Lightning; Recreational Boaters: Beware of Commercial Drift Gill Nets; Buying Guide for Fresh Delaware Seafood; and Seafood Is Good for You.

Aquaculture Information Series.

Single copies of each title are free; multiple copies are 25 cents each. This new series of four- to eight-page publications provides practical information about aquaculture production and development.

Aquaculture in Delaware: Its Potential, Its Future Prospects.

Introduces various production systems, reviews regulatory and financial barriers to the industry, and highlights the natural areas and aquatic species with the greatest potential for aquaculture in our region.

Delaware Aquaculture Resource Guide.

Lists contacts for technical information and assistance in Delaware; other regional/national programs; newsletters; magazines, and periodicals; reference books and manuals; aquaculture equipment and suppliers; and aquaculture associations.

Interim Guide to Environmental Regulations for Aquaculture Production.

Identifies the federal and state

agencies that regulate aquaculture production and summarizes the environmental regulations and permits you may need before starting into aquaculture.

The Delaware Estuary: Rediscovering a Forgotten Resource. \$25.00.

A full-color, 144-page review of the Delaware Estuary-its history, geology, resources and management. Chapters include History, Geology, Dynamics, Plankton, Fisheries, Tidal Marshes, Migratory Shorebirds, Human Use and Management.

Delaware's Outdoor Wonders: A Guide to Outdoor Recreation. 1986. Free.

Published in cooperation with state and local agencies, this full-color pamphlet includes information on boating, shellfishing and fishing, with a saltwater fishing chart revealing seasons, techniques and baits for popular species.

Delaware Seafood Directory. 24pp. \$1.00.

Published in cooperation with the Delaware Department of Agriculture, this publication is designed to introduce consumers to Delaware's seafood markets-their products and services. Includes Delaware fresh seafood and availability chart.

University of Delaware Sea Grant Reporter. 8-12 pp. Free.

This biannual newsletter reports on the research, education and advisory activities of the University of Delaware Sea Grant College Program. Includes listing of new publications, facts on a wide variety of marine topics, and seasonal seafood recipes.

Seascapes II. 44 pp. 1983. \$2.00.

This booklet contains 18 articles on marine topics, including biting flies, currents, dunes, Bombay Hook, Assateague ponies, seafood, bay and river pilots, sunken treasure, and marine critters.

Delaware Estuary Situation Reports.

This series is devoted to discussion of current issues relevant to conservation, use, and development of Delaware Bay Estuary resources. The reports are geared toward resource managers, decision makers, and the general public.

Coal Transfer. DEL-SG-01-84. 8 pp. 1984. \$1.00.

Can an environmentally safe coal-transfer operation be undertaken in Delaware Bay?

Fisheries Fluctuations. DEL-SG-07-86. 10 pp. 1986. \$1.00.

Why have several Delaware Bay fisheries experienced dramatic shifts in population? This report discusses the effects of man-made

and climatic factors on fisheries populations.

Economic Impacts of the Delaware Estuary. DEL-SG-02-87. 12 pp. 1987. \$1.00.

How important is the Delaware Estuary to Delaware's economy and the state's economic development?

Remote Sensing. DEL-SG-21-89. 8 pp. 1989. \$1.00.

Can the satellite technology called remote sensing contribute to a better understanding of the Delaware Estuary and ultimately help determine the resource's health? This report defines remote sensing and its present and potential applications in estuarine research.

Emergency Response. DEL-SG-03-91. 12 pp. 1991. \$1.00.

This report highlights the agencies that respond to environmental disasters in the Delaware Estuary, reviews their roles, and examines how each agency operated during an actual disaster-an oil spill in the estuary.

Sea-Level Rise. DEL-SG-21-91. 8pp. 1991. \$1.00.

Global warming may result in a significant rise in sea level along the Delaware coast. What effects would sea-level rise have on our beaches, wetlands, waters supplies, and communities?

Audiovisuals-may be rented for up

to seven days for \$5.00. A refundable \$25.00 deposit is also required (Sale price in parentheses).

Marine Careers. 18 minutes (VHS or Beta, \$15.00).

Narrated show that describes career opportunities in marine-related professions.

Beach Safety on the Delmarva Peninsula. 20 minutes. 35 mm slide/tape presentation (\$50.00). Provides the unfamiliar beachgoer with an overview of natural conditions and marine life at the ocean's edge.

The Blue Crab. 15 minutes (VHS or Beta, \$15.00).

Covers the natural history of the area's most famous crustacean with simple language, colorful pictures and cartoons. Targeted for elementary students, the package also includes a classroom activities booklet designed to reinforce concepts depicted in the slide show.

Beachwalk: Exploring the Living Coast. 15 minutes (VHS or Beta, \$15.00).

Introduces young students (K-3) to the marine life easily found while walking on Delaware's beaches. The basic concepts of waves, tides, salinity and sedimentation are interwoven to illustrate the uniqueness of living at the water's edge.

Marine Corrosion - The Silent Enemy. 15 minutes (35 mm slide/tape presentation, \$50.00; VHS or Beta, \$15.00).

Explains what marine corrosion is and why it occurs, and offers suggestions and techniques for preventing it.

MAREP: Mariner Reports. 25 minutes (VHS or Beta, \$15.00).

Highlights the Mariner Reports program sponsored by the National Weather Service and the University of Delaware and provides information on how boaters can participate in this valuable self-help approach to improving the accuracy of marine forecasts. Fisherman Ed Davis stars in the segment for commercial boaters; America's Cup yachtsman Gary Jobson stars in the segment for recreational boaters.

Shellfish and Your Microwave-The Perfect Couple. 22 minutes (VHS or Beta, \$15.00).

Introduces viewers to the delicious and convenient alternative of microwave cooking for shellfish. From opening shellfish to defrosting them, the microwave proves a handy tool for shellfish cooks.

Calamari Preparation and Cuisine.

30 minutes (VHS or Beta, \$15.00). Introduces viewers to squid biology and processing for market.

Four recipes are demonstrated: barbecued calamari, calamari salad with champagne dressing, stuffed calamari, and fried calamari rings.

Shark Preparation and Cuisine. 15 minutes. (VHS or Beta, \$15.00).

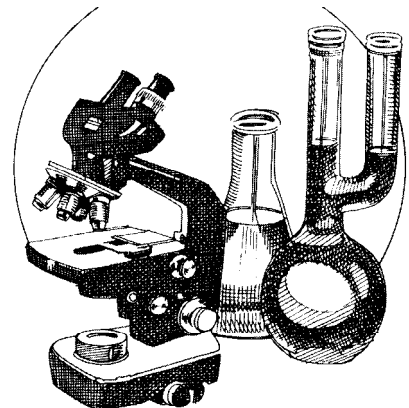
Demonstrates proper handling and cooking of a dogfish shark, a delicious but underutilized species. Recipes include shark nuggets, shark salad, and a shark-and-scallop holiday dish.

Water-Quality Monitoring for Volunteers. 15 minutes. (VHS \$15.00).

Instructs viewers in the proper techniques for monitoring important water-quality parameters-pH, dissolved oxygen, turbidity, nitrates, salinity, and temperature-in Delaware's Inland Bays.

Ordering Instructions: Make checks payable to the University of Delaware. Mail request with check to:

University of Delaware
Marine Communications Office
Newark, DE 19716-3530



State University System of Florida

Sea Grant College Program

Box 110409

Gainesville, FL 32611

(904) 392-2801

Florida Marine Education Resources Bibliography. SGR-51.

March 1983. 115 pp. \$3.00.

Lists nearly 500 documents, all of which are available from the author or publisher. Subject areas include not only marine biology and oceanography, but also literature, the arts, engineering, etc. Each item is annotated with information on subject, grade level and application (e.g., laboratory, field project, etc.). Some materials are specific to unique Florida coastal and marine features, such as mangroves, but others deal with more general topics.

Marine Education K-12. MAP-17.

April 1982. 18 pp.

Provides information on finding funds and opportunities for K-12 marine education resources, courses and activities.

Marine Education and Research Organizations in Florida. SGEB-3.

1991. 86 pp. \$8.00.

A compilation of educational and research organizations in Florida with programs in the marine sciences. Includes addresses, phone numbers and descriptions of facilities and programs.

Florida's Estuaries: A Citizen's Guide to Coastal Living and Conservation. SGEB-23.

Describes the importance of estuaries and the impact of humans on the quality of life in the estuary. Includes statistics on the effects of urban development on Florida's coastal ecosystems. Written in an easy-to-read style that is enhanced by the colorful line drawings used throughout the book.

Man Meets Coast. MAP-11. 32 pages.

An illustrated cartoon booklet concerning man's attraction to the coast, the problems that result and what is being done about them.

Fisheries Biology for Everyone.

SGEB-11. April 1986. 178 pp. \$3.00.

Presents fisheries biology in an enjoyable and readable way, but stresses the management aspects relative to the scientific and ecological. The hand-lettered manuscript, which includes cartoon drawings emphasizing important points, brings to life information vital to any user of the living marine resources, particularly fishermen. Can also be used in senior high school level marine biology courses.

The Beach - A Natural Protection From the Sea. MAP-19.

4 pp. Discusses the principal features of a beach that are effective in protecting the uplands, how the beach "works," the effect of littoral drift, and the function of the sand dunes.

Marine 4H Program Materials (available from Florida 4H Department, University of Florida).

Florida 4H Marine Science Program. 4H-314.

49 pp. Projects in this annual are designed mainly for 4H leaders and members. Each project is a unique study because a simple procedure is all that is needed to fulfill its objective. Projects include both biotic (those that deal with living things) and abiotic (those that are not living such as sand and tides). The biotic factors are arranged from the lowest form of marine organism to the highest form, while the abiotic factors are placed in their respective order so that learning from one project will help in working the next.

Field Study of the Marine Environment (Leader's Guide). 4H-338.

18 pp. Provides the leader with information useful in helping 4H members understand the importance

of one marine ecosystem to another and, in turn, the importance of ecosystems to humans and vice versa.

Starting and Maintaining a Marine Aquarium. 4H-356.

12 pp. Explains all about aquaria to 4H members who are interested in starting a project on saltwater aquaria, including using artificial or natural seawater, setting up the aquarium, filling it, buying the fish, feeding, cleaning, water maintenance, etc.

Starting and Maintaining a Marine Aquarium (Project Record). 4H-357.

7 pp. Accompanies 4H-356 for use of the 4H member in keeping a record of the project.

Life in the Sea (Member's Guide). 4H-358.

47 pp. Contains seven projects that can be started by visiting an oceanarium and finished through 4H Club work or individual research at home or in a library. These projects include dolphins, manatees, seals and sea lions, penguins, mollusks, Caribbean/Atlantic Coast tide pool, and coral reefs.

Life in the Sea (Project Record). 4H-359.

23 pp. Accompanies 4H 358 for use of the member in keeping a record of the projects.

Life in the Sea (Leader's Guide). 4H-360.

Assists leaders in working with members on projects in 4H-358. Contains answers to the questions raised in 4H-358.

Intertidal Zone Project (Guide for Senior 4H Members). 4H-362.

76 pp. Intended for those who live near the ocean or for those who can visit the beach at least once a month. Explains the working of the intertidal zone and contains

six activities to be conducted, including seining, plant and algae collecting, plankton collecting, measuring salinity, measuring temperature, and measuring turbidity.

Wetlands (Project Manual). 4H-365. 19 pp.

Describes the types of wetlands - estuaries, salt marshes, swamps and mangrove wetlands - and discusses their importance to the marine life that use the wetlands as a nursery.

Wetlands (Project Record). 4H-366. 11 pp.

Accompanies 4H-365 for use of the 4H member in maintaining a record of the wetlands projects.

Fins and Scales. 4H-367. 11 pp.

Contains descriptions and line drawings of fish, their fins and their scales.

The Florida 4-H Marine Education Program. 6 pp.

Provides a history and steps taken to establish the 4-H Marine Program in Florida. A statement of objectives, approach and results of the program effort are described.

Florida 4-H Department Marine Booklists. 25 pp.

A list of publications, sources and annotated bibliography of books found useful in the development and implementation of the Florida 4-H Marine Program.

Florida 4-H Marine Ecology Program - Information and Event Guidelines. 11 pp.

A publication describing the Marine Ecology Event with objective program organization, program contact, leader training, youth training, scheduling the event and its activities, event category and format, breaking ties, and the award program.

4-H Marine Resource Program Guide. 4 pp.

This publication describes program resource opportunities and suggests types of individuals that could service a Marine Education Program.

The National 4-H Report Form: An Example for a Marine Science Project. 19 pp.

This publication describes and gives examples on how to adopt the National 4-H Report Form for use in Marine Science Projects.

Ordering Instructions for Sea Grant materials: Mail checks, payable to University of Florida, to:

Publications
Florida Sea Grant College Program
Building 803, University of Florida
Gainesville, FL 32611

To order 4-H Marine Program materials, mail inquiry to:

Craig Miller
111 Rolfs Hall
University of Florida
Gainesville, FL 32611

University of Georgia

Sea Grant College Program
Ecology Building
Athens, GA 30602
(404) 542-7671

A Field Guide to Jekyll Island. Taylor Schoettle, illustrated by Carol Johnson. 47 pp., includes booklists and references. \$5.00.

This is a comprehensive guide to a barrier island typical of many islands along the southeast coast. Physical processes of this dynamic barrier island are discussed and common plants and animals found on the beach and in the salt marsh are illustrated. For adults, teachers, and high school and college classes.

The Blue Crab. Produced and written by Taylor Schoettle. Video, VHS format. \$30.00.

This 30-minute video was produced for high school audiences and the general public. It depicts the life cycle of the blue crab and discusses the economic importance of this resource.

Gray's Reef National Marine Sanctuary: An Educational Handbook.

Dr. Jay Calkins, illustrated by Carol Johnson, Edith Schmidt and Karen Roeder. 33 pp. \$2.50.

This book describes the biological, chemical and geologic processes that make this "live bottom" reef a unique and important resource. The handbook contains informational text, illustrations and classroom activities for high school/advanced middle school students interested in oceanography and marine biology.

The Coast of Georgia: Land, Sea and Marsh.

Produced, directed and written by Dr. Jay Calkins. Video, VHS format. \$30.00.

This 30-minute video program was produced to give high school and middle school students and the general public an overview of the coast of Georgia. Beach processes, hydrographics and food webs of the salt marshes are all revealed in an attractive audiovisual format. Human impact and

the controversial use and abuse of coastal areas is also discussed.

Harvesting Georgia's Shrimp.

Video, VHS format. \$15.00.

This 20-minute video program shows in detail the harvesting of shrimp on the southeast coast. Boats, gear technology and operation of a trawling vessel in search of the delicious white shrimp are all revealed.

How Birds Make a Living on the Coast.

Written and illustrated by Will Hon. \$1.00.

This poster gives students and adults a graphic view of coastal birds. The text and illustrations provide the learner with a look at the anatomical adaptations that coastal birds have developed to feed in a variety of ecological niches.

Gray's Reef (Common Fishes of).

David Miller and Reita Rivers, illustrated by Charlotte Ingram. \$1.00.

This poster illustrates and describes the common fishes found around Gray's Reef National Marine Sanctuary. The fishes found on Gray's Reef are typical of many of the fishes found along the southeast coast, but atypical because many reef fishes of the Caribbean are also found there.

Invertebrates of the Reef.

Artwork by Edith Schmidt, text by Gray's Reef National Marine Sanctuary staff. Full color, 25" x 32" poster printed on recycled paper. \$2.00.

This colorful poster depicts and identifies 31 invertebrates commonly found at scattered limestone reef formations located off the southeastern coast of the United States. General information on reef habitats is also included.

Rivers to Reefs.

Artwork by Karen Roeder, text by Gray's Reef Na-

tional Marine Sanctuary staff. Full color, 26" x 32" poster printed on recycled paper. \$2.00.

This poster represents a journey through ecological zones typical of the southeastern coast of the United States beginning with a tidal river, crossing a barrier island, and continuing offshore to a limestone reef. The interdependence of coastal ecosystems is emphasized.

Tales of Whales, Turtles, Sharks and Snails: An Elementary Level Educational Handbook.

Dr. Jay Calkins, illustrated by Karen Roeder and Edith Schmidt. \$2.50.

This 55-page book has five sections with text, illustrations and activities about whales and dolphins, sea turtles, sharks and invertebrates common to the "live bottom" areas represented by Gray's Reef National Marine Sanctuary located off the Georgia coast. Written for elementary teachers, the book also contains a short story and a section on resources and activities concerning environmental issues.

Ordering Instructions: Mail checks, payable to The University of Georgia, to:

University of Georgia
Marine Extension Service
P.O. Box 13687
Savannah, GA 31416

University of Hawaii

Sea Grant Program
1000 Pope Road, MSB 200
Honolulu, HI 96822
(808) 948-7031

How to Use the Library to Find Marine-Related Information.

Peter J. Rappa. 4 pp. March 1984.
UNIHI-Seagrant-AB-84-02.

Ocean Activity Workbook. 32 pp.
June 1982. **UNIHI-Seagrant-MR-82-01.**

National Survey of Fishery Education in Institutions of Higher Education. Rose T. Pfund. 48 pp.,
3 appendices. May 1985. **UNIHI-Seagrant-MR-85-02.** \$1.00.

Blue Water Marine Laboratory. 27 pp., 11 figures. August 1976.
UNIHI-Seagrant-WP-00-24.

Makahiki Kai Festival of the Sea '78: Teacher's Guide. Jane Torikai.
76 pp. February 1978. **UNIHI-Seagrant-WP-00-30.** \$1.50.

Marine Option Program Data Acquisition Project: Honolulu Bay, Maui. Leonard Torricer, et al. 38 pp., 3 figures, 11 tables, 3 plates.
May 1979. **UNIHI-Seagrant-WP-00-40.**

Survey of Fishery Programs in Colleges and Universities in the United States. Rose T. Pfund.
1986. In *Fisheries* 11(6): 16-21.
UNIHI-Seagrant-JC-87-01.

Ocean Sports Safety, Parts I & II. 1992. **UNIHI-Seagrant-VP-93-01.** \$6.75 (Beginning in 1994, the videos will be packaged with the print materials; the price will be adjusted accordingly. Please write or call (808) 956-7410 for current price information).

These short programs highlight popular ocean sports in Hawaii. Part I features body surfing, body boarding, skim boarding, and surfing. Part II focuses on wind surfing, kayaking, outrigger canoe paddling, and twin-hull sailing. Both programs feature inter-

views with world famous athletes, action footage, and upbeat music. Aimed at junior high and high school students, the programs emphasize the importance of learning to swim before pursuing water sports activities. Because they are less than ten minutes in length, teachers will be able to integrate them easily into their classroom curricula. Print materials, which will expand on ideas presented in the videos, are currently being produced.

Hawaii Boating and Water Safety Program: K-6 Workbook and Teacher's Manual. 25 pp. (workbook), 23 pp. (manual). 1993. **UNIHI-Seagrant-AR-93-02.** Free.

The Hawaii Boating and Water Safety Program K-6 Workbook and the Teacher's Manual were developed in 1991 by the State Harbors Division as part of the Harbor Division's Boating and Water Safety Program, in cooperation with the University of Hawaii Sea Grant Extension Service. The workbook is intended for use by students in elementary schools, both public and private. The Teacher's Manual is a companion to the workbook and offers teachers additional information about the boating and water safety messages in the workbook. This information is intended for use in supervised group discussions. The Teacher's Manual also provides a list of boating and water safety activities that can be practiced in the classroom or on the playground. These activities are intended to reinforce the safety messages in the workbook.

Ordering Instructions: Mail checks, payable to University of Hawaii, to:

University of Hawaii
Sea Grant College Program
Communications Office
1000 Pope Road, MSB 200
Honolulu, HI 96822

Illinois-Indiana Sea Grant Program

University of Illinois
65 Mumford Hall
1301 W. Gregory Drive
Urbana, IL 61801
(217) 333-9448

Appreciating Your Great Lakes.

Christine Pennisi. 96 pp. **IL-IN-SG-E-89-1**. \$5.00.

A 4-H marine science guide containing suggestions for educational activities and an 82-page reference section (audiovisuals, maps/charts, computer software and publications) to assist teachers, 4-H leaders, and youths in grades 6-12. It is divided into four units: recreation, heritage, ecology and economics.

Wetlands are Wonderlands. Christine H. Pennisi, Marvin E. Hubbell, Pam Tazik and Dave Turner. 16 pp. (leader guide), 30 pp. (member guide). **IL-IN-SG-E-92-1**. \$3.50 (leader guide), \$3.00 (member guide).

The guides are intended for use with students in grades 6 through 8. Suggests a variety of fun indoor and outdoor activities, reading material, and discussions through which young people can learn the

importance of wetlands and how to preserve them.

Ordering Instructions: Send requests, with checks payable to the University of Illinois, to the attention of Robin Goettel, at:

Illinois/Indiana Sea Grant Program
University of Illinois
65 Mumford Hall
1301 W. Gregory Drive
Urbana, IL 61801



Louisiana Sea Grant

Louisiana State University
Baton Rouge, LA 70803-7507
(504) 388-6448

Waterborne! Louisiana's Ports and Waterways. J. Schweitzer. **LSU-E-84-001.** 58 pp. with illustrations, maps, index and a bibliography. \$5.00.

Intended as a supplement in eighth-grade Louisiana history courses, this book traces the history and development of ports and water transportation in Louisiana.

Marine Science Teaching Aids (Series). 4-8 pp. Free.

Designed for high school teachers, this series presents marine-related concepts that can be taught in typical high school science classes and includes background information and suggested activities.

Sea Turtles in Louisiana's Coastal Waters. D. Fuller, A. Tappan, M. Hester. **LSU-T-87-004.** 40 pp. \$4.00.

Reviews the biology of the five species of sea turtles found in the Gulf of Mexico, discusses turtle mortality and preservation measures now underway and reports the results of a study of turtles in Louisiana waters.

Restless Ribbons of Sand. J. Wells, C. Peterson. **LSU-T-86-004.** 20pp. with color illustrations. Free.

Describes the formation, structure and ecology of Atlantic and Gulf coastal barrier islands. Discusses

the value of barriers, the impacts of man's activities on them, and management efforts such as the Coastal Barrier Resources Act.

Common Vascular Plants of the Louisiana Coastal Marsh. R. Chabreck, R. Condrey. **LSU-T-79-003.** 120 pp. \$7.00.

Contains physical descriptions and line drawings of Louisiana's common marsh plants. A map plots where they commonly occur. Alphabetized by species, the book also contains a list of plants by families, a glossary and an index.

Wild Louisiana-Aquatic Activities for Environmental Science. L. Soniat. **LSU-E-90-001.** Price listed below.

Combines print materials and videos in a series of activities for high school environmental science classes. Topics are specific to Louisiana but illustrate universal science concepts. Units are entitled Vanishing Wetlands, Gata Data and Redfish: A Culinary Controversy. Free to Louisiana science teachers who participate in training workshop. Otherwise, prices are as follows: Three videos with guide (1/2" VHS), \$25.00; print materials only, set of three with unit plans, \$30.00; complete package, print and videos, \$50.00.

The Fragile Fringe: Coastal Wetlands of the Continental United States. M. Watzin, J. Gosselink.

LSU-T-92-001. 16 pp. with color photographs. Single copies free. Describes the ecology, values, and functions of U.S. coastal wetlands, as well as current management issues, threats to survival, and trends.

Coast and Sea: Marine and Coastal Research in Louisiana's Universities. E. Coleman & M. Barrett, editors. Quarterly magazine free on request.

Contains articles about variety of coastal and marine research in Louisiana universities, including aquaculture, wetland ecology, fisheries, oceanography, and coastal and marine geology. Also contains educational column for science teachers, K-12. Illustrated with photographs, drawings.

Ordering Instructions: If required, make check payable to Louisiana Sea Grant. East Baton Rouge Parish residents add 7% sales tax; other Louisiana residents add 4% tax.

Louisiana Sea Grant
Louisiana State University
Baton Rouge, LA 70803-7507

University of Maine

Sea Grant Communications
30 Coburn Hall
Orono, ME 04469
(207) 581-1440

All About Red Tide. Kathleen Lignell. **MSG-E-85-2.** 1985. Brochure/poster. Single copy free; bulk copies available for a small fee.

Explains how the red tide "blooms"; how it is monitored; how the toxins work; and discusses Paralytic Shellfish Poisoning (PSP) and public health.

Aquaculture in Maine. Kathleen Lignell, editor. **MSG-E-89-11.** 1989. 34 pp. \$5.00. Revised edition available in 1994.

This guide provides information on aquatic species cultured in Maine, how to get started in aquaculture, site selection and leasing regulations, shipping and marketing, and a directory of Maine producers, suppliers, governmental agencies, aquaculture associations and consultants, business development and funding agencies, educational and professional development programs, and where they are located.

Aquarium Aquaculture: An Illustrated Guide for Teachers. Michael J. Brody, B. Patricia Patterson. **MSG-E-89-5.** 1989. 26 pp. \$3.00.

Clean Water: A Guide to Water Quality Monitoring. Esperanza Stancioff. **MSG-E-92-6.** 1992. 73 pp. \$10.50.

A manual designed to facilitate citizen volunteer efforts by providing information needed to effectively monitor coastal waters. Contained in a ring-binder, the manual may be updated as new material is developed.

Everything You Ever Wanted to Know About Clams: Questions and Answers. Brian Beal. **MSG-E-92-2.** 1992. Free brochure.

A Field Guide to Economically Important Seaweeds of Northern New England. Susan White, edi-

tor; MaJo Keleshian, illustrator and designer. **MSG-E-92-4.** 1992. 30 pp. \$3.50.

Includes illustrations and descriptions of selected seaweeds, suggestions on foraging and preparation, and recipes for some of the more commonly used species.

Maine Citizen's Handbook on Coastal Water Quality Enforcement. Tim Eichenberg. **MSG-E-93-2.** 1992. 110 pp. \$5.00 plus \$2.50 shipping and handling.

Soft-Shell Clams: Nutrient Packed Food From the Sea. Susan White. **MSG-RF-91-8.** 1991. Free brochure.

Videotapes - all videotapes are available in 1/2" VHS format.

Catch of Tomorrow. **MSG-VT-89-1.** 1989. 24 minutes, color, sound. \$12.00.

Television documentary highlighting the University of Maine-sponsored, ten-day lobster research cruise. Focuses on current issues affecting the lobster industry as well as the economic health and well-being of the entire northeast region. Includes interviews with researchers and members of the lobster industry.

The Cultured Clam: Raising Soft-Shell Clams Downeast. **MSG-VT-92-1.** 17minutes, color, sound. \$12.00.

Focuses on the Beals Island Regional Shellfish Hatchery, the first shellfish management program in the country using hatchery-reared, soft-shell clam juveniles. The video demonstrates the steps involved in the program-from spawning adult clams to seeding juveniles on clam flats-and presents one management option available to towns to replenish theirdepletednaturalclamstocks.

The Gulf of Maine: A Sea Beside the Sea. **MSG-VT-83-3.** 1983. 29

minutes, color, sound. \$12.00. Provides an overview of the Gulf of Maine from an oceanographic, economic, and cultural perspective; explores issues of resource use; and develops the idea of human impact on and responsibility for coastal and marine resources. An instructional program intended for junior and senior high school audiences and adults.

The Gulf of Maine: Not Just Another Fish Story. **MSG-VT-85-1.** 1985. 28 minutes, color, sound. \$12.00.

Explores the marine fisheries of the Gulf of Maine by showing harvesting, processing, and distribution methods, with an emphasis on the economics of fishing. Includes underwater footage as well as interviews with harvesters, processors, and government officials involved in the fishing industry. Information valuable to junior and senior high school and adult audiences.

Making New Waves: Aquaculture in Maine. **MSG-VT-91-1.** 1991. 24 minutes, color, sound. \$12.00.

Documentary focusing on current issues and opportunities in Maine aquaculture. Includes interviews with aquaculture industry members, representatives of environmental organizations, shorefront landowners, scientists, fisheries managers, state regulators, town officials, state planners, and others involved in aquaculture.

Ordering Instructions: Mail check, payable to University of Maine, to: Sea Grant Communications
University of Maine
5715 Coburn Hall, Room 30
Orono, ME 04469-5715

University of Maryland

Sea Grant College Program
0112 Skinner Hall
College Park, MD 20742
(301) 405-6377

Marine Science Education Workbooks: Tides and Marshes. Jack Greer, ed. **UM-SG-ES-79-01.** 37 pp. \$2.00.

The workbook is aimed at middle school/junior high school students, though teachers and group leaders may find a wider application for the materials. Each workbook contains a Teachers Narrative, a Student Activities Section and a Resource Section. Figures include diagrams of intertidal zones, tidal effects on vegetation and the moon's effect on tides.

Marine Science Education Workbooks: Food Webs in an Estuary. Jack Greer, ed. **UM-SG-ES-79-02.** 26 pp. \$2.00.

The workbook introduces the subject of food chains and food webs, using elementary examples from an estuarine system. Although the focus is on the Chesapeake Bay, the material may be adaptable to any similar estuarine environment. Figures include diagrams of simple food chains.

Marine Science Education Workbooks: The American Oyster. Jack Greer, ed. **UM-SG-ES-79-03.** 57 pp. \$2.00.

The American Oyster, once Maryland's most valuable seafood, serves as the subject of this workbook, a marine science mini-unit aimed at middle school/junior high school students. The workbook includes a number of figures; diagrams of oyster anatomy, salinity charts, harvest graphs and charts showing the location of oyster bars and the range of oyster predators. There are also pictures of harvesting devices and descriptions of the Chesapeake Bay oyster fishery.

Decision Making and the Chesapeake Bay. Emmett L. Wright. **UM-SG-ES-85-01.** 1985. 220 pp. \$14.95. This curriculum unit focuses on

the Chesapeake Bay as both a political and ecological watershed. Aimed primarily at high school science or social studies classes, it provides a significant amount of information about the Chesapeake Bay, while involving students in a simulated decision-making process.

Issues for the Chesapeake. Jack Greer. **UM-SG-ES-91-01.** 24 pp. \$2.00.

This two-color, magazine-style booklet is primarily aimed at high school students. It contains sections on the geological, biological and social history of the Chesapeake Bay and its major commercial species. Two sections address the question "What Is Environmental Health?" and "The Future of the Chesapeake Bay." Each section contains thought-provoking questions, as well as time lines, sidebars and illustrative photographs.

Invisible Seas. Michael W. Fincham. **UM-SG-AV-82-02.** 30 minutes. \$20.00.

This half-hour film describes the exciting world of marine microbiology, with footage of both ocean (off Puerto Rico) and estuarine (Chesapeake Bay) environments. An interesting narration describes why microbes, though invisible to the unaided eye, play such an important role in the ecology of the seas.

Chesapeake: The Twilight Estuary. Michael W. Fincham. **UM-SG-AV-85-02.** 40 minutes. \$20.00.

This award-winning film documents how scientists unlocked the key to the Chesapeake's tragic decline. It provides an excellent example of how scientific research can not only identify a specific problem (in this case the decline of underwater grasses in the Chesapeake Bay) but can also

point toward the need for wide-ranging policies needed to solve it.

Watershed for the Chesapeake. Michael W. Fincham. **UM-SG-AV-92-01.** 60 minutes. \$20.00.

This hour-long documentary follows a waterman, a politician, a scientist and a farmer as they come to grips with the failing water quality of the Chesapeake Bay. The film describes how bold efforts on single rivers-especially the Patuxent-helped to lead to a Baywide effort to better manage the watershed and restore the Bay.

Keeping Score. Michael W. Fincham. **UM-SG-AV-91-01.** 30 minutes. \$20.00.

This video, narrated by the well-known fishing expert Lefty Kreh, encourages anglers to use catch-and-release fishing techniques, and to find a new way to "keep score" when fishing. This video is useful in the teaching of a new environmental ethic, especially in locations where fishing is a part of life, even if just during seasonal vacations.

Fishing for a Future. Michael W. Fincham. **UM-SG-AV-93-01.** 30 minutes. \$20.00.

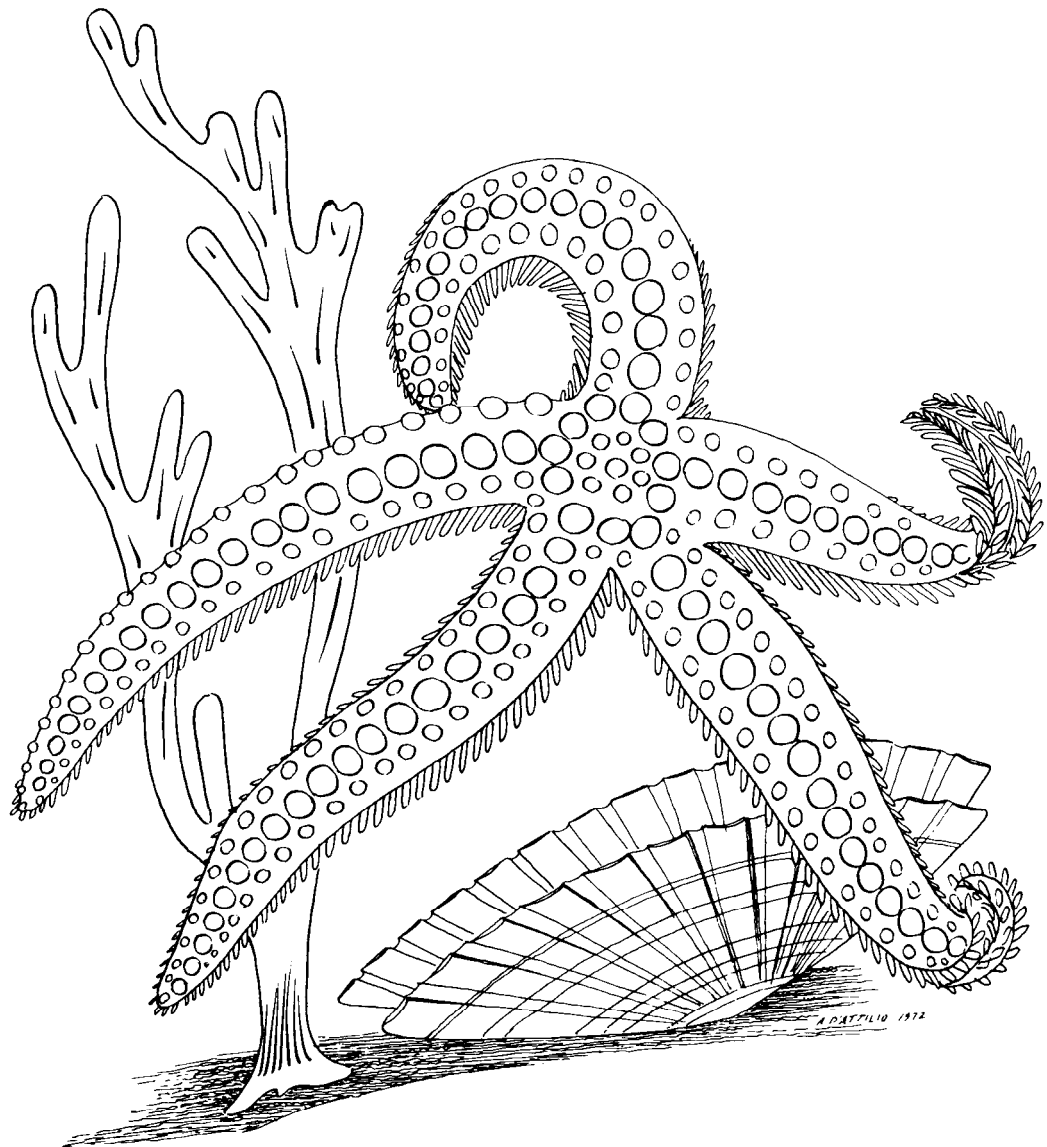
This video describes catch-and-release fishing in coastal waters and includes footage of big game fish, including tuna and shark. Like its companion video, *Keeping Score*, *Fishing for a Future* emphasizes the problem of overfishing and calls for a new environmental ethic.

Striped Bass Aquaculture. Merrill Leffler. 20 minutes. \$20.00 each. There are currently three videos in this series: *Raising Fish in Ponds*, *Net-Pen Culture* and *Striped Bass Hatcheries*. Intended for those who are considering raising fish for profit, the videos are also of use to students and teach-

ers interested in aquaculture and raising fish in varying environments.

Ordering Instructions: Please make checks payable to University of Maryland. Send request with check to:

Communications
University of Maryland
Sea Grant Program
0112 Skinner Hall
College Park, MD 20742



Massachusetts Institute of Technology

Sea Grant College Program
Room E38-302
77 Massachusetts Avenue
Cambridge, MA 02139
(617) 253-7041

Citizen's Guide to Sources for Marine and Coastal Information in Massachusetts. Sixth revised edition. Compiled and edited by Madeleine Hall-Arber. **MITSG 93-26.** 179 pp. \$5.00.

This valuable reference book lists more than 175 Massachusetts agencies, information centers, and organizations concerned with coastal affairs. Each entry includes office hours, address and telephone number, as well as a brief description of the objectives, specialties and services of each organization. A subject index provides easy reference by area of interest.,

No Dumping Plastics in the Ocean: Marpol Annex V and Marine Dangers. Single-sheet flyers. **92-9110.** No charge.

Everyone who uses the rivers, beaches, bays or oceans needs to understand the dangers posed by plastic waste in the water. As significantly, everyone needs to understand their legal responsibility with regards to plastics pollution. These two brochures explain the issues surrounding plastics pollution. *MARPOL Annex V* describes the law prohibiting dumping plastics in the ocean or inland waters, and *Marine Dangers* tells why MARPOL is necessary and what citizens can do to help.

Intermodal Movement of Marine Containers. Henry S. Marcus. **92-21. NTIS: PB93-158244.** 264 pp. \$15.00.

Intermodal Movement of Marine Containers is a textbook for use in college-level transportation courses. It deals with recent developments in the intermodal movement of marine containers. The text is a series of real-life case studies, based on actual problems, and derived from interviews and other sources. Each section identifies a problem in the industry, examines it in depth and provides insight into potential changes in the industry. Profiled are the Ports of Long Beach, Boston, New York and New Jersey, Seattle, and New Orleans, Burlington Northern Railroad, American Automar, Inc., American President Companies, Ltd., and Cast (1983), Ltd.

The Boston Harbor Sewage Stack. Carolyn Levi. **92-13. NTIS: PB93-504835.** 1 disk. \$20.00 (\$5.00 or blank disk and SASE for educators and non-profits).

The Boston Harbor Sewage Stack is an interactive educational computer program about how municipalities deal with sewage, how sewage systems work, nonpoint pollution, and what citizens can do to help—focusing on Boston Harbor and the Boston Harbor

Cleanup. Along the way, users encounter topics for exploration, including storm sewers and combined sewer overflows (CSOs); nonpoint pollution from pets, spilled waste oil, lawn and garden chemicals, and other sources; what not to flush and why; how officials can tell if water is polluted; and why it all matters. Noises and animation are provided. The program is written for middle-school students, but is deep enough for adults. The "Sewage Stack" is implemented on HyperCard for Macintosh computers and comes with a one-page teacher's guide.

Ordering Instructions: Address requests to:

MIT Sea Grant College Program
Publications
292 Main Street /Building E38-300
Cambridge, MA 02139

Michigan Sea Grant College Program

2200 Bonisteel Boulevard
Ann Arbor, MI 48109
(313) 764-1138

Great Lakes Fishing in Transition.

Paul Nowak, Leslie Lin & William Stapp, et al. **MICHU-SG-83-402.** Filmstrip/cassette. \$4.00.

This 21-minute filmstrip examines the historical factors which contributed to the decline of Great Lakes fish populations. These include overfishing; pollution from lumbering, mining, and farming; and the sea lamprey. Reviews the conflict among sport, commercial, and Native American fisheries and the present-day threat of pollution.

Great Lakes Fact Sheets. MSU Bulletin office, 10-B Agriculture Hall, East Lansing, MI 48824. 25 cents each; \$1.00 per set of six. Single copies free to Michigan residents. Map-fold fact sheets, poster map on the back of each sheet. Facts about geography, water use, land and shoreline use, economic importance, points of interest.

Great Lakes Basin	E-1865
Lake Superior	E-1866
Lake Michigan	E-1867
Lake Huron	E-1868
Lake Erie	E-1869
Lake Ontario	E-1870

Superior Today. Michigan Sea Grant Extension, 334 Natural Resources Building, Michigan State University, East Lansing, MI 48824-1222, and WNMU-TV, Northern Michigan University, Marquette, MI 49855. 1985. **MICHU-SG-86-400.** Videotape. 3/4" \$35.00, 1/2" \$25.00.

An award-winning 30-minute documentary that explores the greatest of the Great Lakes-its physical dimensions and characteristics, formation and history, climate and weather, creatures, utilization, pollution, economic development.

The Trouble with Toxics. Michigan Sea Grant Extension, 334 Natural Resources Building, Michigan State University, East Lansing, MI

48824-1222.1987. **MICHU-SG-87-401.** Videotape. 3/4" \$75.00, 1/2" \$35.00.

This 30-minute documentary presents the challenge of dealing with the hundreds of contaminants in the Great Lakes with information about sources of toxic substances, their chronic effects, fate and control, management of fisheries, public policy and prevention strategies.

What You Can Do for Cold Water Near-Drowning. Dive Rescue Inc./International, 2619 Canton Court, Fort Collins, CO 80525. 1979. \$20-minute slide/tape program. \$49.95.

With persistent resuscitation efforts, individuals, particularly children, immersed for up to 45 minutes in cold water have recovered with no after effects. This program explains what happens to the body in cold water that enables it to survive and emphasizes the importance of cardio-pulmonary resuscitation (CPR) when the victim is pulled from the water.

Waterproof Your Family: Survival Strategies Start With You. Dive Rescue Inc./International, 2619 Canton Court, Fort Collins, CO 80525 and Michigan Sea Grant College Program. 1987. 28-page program guide, 20-minute slide/tape show, 75-minute VHS, 10 posters, 100 handouts. \$249.95.

Easy-to-use program focuses on accident survival skills for all ages. In classroom and pool sessions, swimmers and non-swimmers learn how to handle an unexpected immersion. With preparation, practice and a positive attitude, most drownings can be avoided.

Fall Beachcombing SuzanneTainter and Martha L. Walter. **MICHU-SG-91-702.** \$1.00; 10 or more 75 cents.

Describes the natural treasures that can be found on Great Lakes beaches including rocks, plants and animals and shells. Explains how beach sands are formed, the geological stories told by stones and fossils, the plants and animals found in each beach zone, and how plants adapt to harsh beach conditions. Recommends beachcombing clothing and equipment. Includes a list of books for more detailed information. Illustrated. Useful to teachers planning a beach walk or teaching natural history.

Shoreline Erosion: Questions and Answers. **MICHU-SG-85-511.** 1985. 50 cents.

Contains answers to questions frequently asked by shoreline property owners about erosion, structures, permits, laws, costs and contractors.

Diver Education Series: Oceanography for Divers. Lee Somers. **MICHU-SG-92-500.** \$2.50.

To dive safely, the diver must have a working knowledge of waves, tides, currents, and marine life. This two-part paper first explains the physical characteristics common to lakes and oceans and how the diver must adapt diving techniques to the existing conditions of waves, tides and currents. The paper then examines the relatively few marine plants and animals that are hazardous to the diver. The text will help the diver recognize organisms that can inflict injury, advises how to avoid injury, and describes proper first aid procedures.

Lightning and Boats. **MICHU-SG-89-700.** 1989. 50 cents.

Boats are vulnerable to lightning strikes because they are often the highest point in the area and become targets for lightning seeking a path to the ground. This

pamphlet describes a lightning protection system for boats. First aid for victims of lightning strikes and advice on protecting the boat's electronic equipment are included.

Are Great Lakes Fish Safe to Eat?

MICHU-SG-91-700. Single copies free; call for prices on quantity orders.

This fact sheet summarizes the current known status of microcontaminants in Great Lake fish and how fish eaters can minimize their exposure to contaminants. Includes illustrations showing how to clean and cook fish to reduce exposure to microcontaminants.

The Great Lakes Connection. Joan S. Wood and Carol S. Allaire.

MICHU-SG-90-400. \$1.00; 10 or more 75 cents.

This activity helps students understand Michigan geography, the names and locations of the Great Lakes, and which Great Lakes watershed they live in. Teaches map-reading skills, watershed concepts, and how each of us is "connected" to even distant parts of our watershed. For upper elementary grades.

Upwellings. Quarterly newsletter.

Reports on Great Lakes issues of interest, including the latest research and developments regarding the zebra mussel and other exotic species, Great Lakes fisheries research, news about pollution clean up, tourism, economic development, and education, and descriptions of recent publications.

Exotic Species Graphics Library Catalog.

This catalog lists the contents of the Great Lakes Sea Grant Network Exotic Species Graphics Library. The materials in the Graphics Library are available for loan or purchase. The library contains primarily color slides of zebra mussels but also includes illustrations, black-and-white photographs, and a videotape source list. Other species illustrated in

the collection are the goby, the spiny water flea (*Bythotrephes* or B.c.), and the sea lamprey.

Ordering Instructions: Publications with no price given are free. Except where noted, mail check, payable to Michigan Sea Grant, to:

Michigan Sea Grant College Program
2200 Bonisteel Boulevard
Ann Arbor, MI 48109-2099
(313) 764-1138

Minnesota Sea Grant College Program

University of Minnesota
1518 Cleveland Avenue North
St. Paul, MN 55108
(612) 625-1253

The Edge of the Arrowhead. T2 .60
pp. Free.

Thumbnail sketches tell the history of Minnesota's North Shore.

A Family Guide to Minnesota's North Shore. T3. 42 pp. \$5.95.

Makes your family's trip fun and educational. Provides interesting family activities for travelers along Lake Superior. Focuses on history, scenery, and geology of the area.

Lake Game for Adults. S1. Free.

This game is generic and can be used for any inland lake. It is ideal for lake associations and other

groups that are trying to make decisions about lake management.

Lake Game for Youth. S2. Free.

This game uses roles from adult game with additional instructions for young people. It works well with other parts of a school curriculum, including geography, economics, and civics.

Lake Superior Game: Use vs. Abuse. S3. Free.

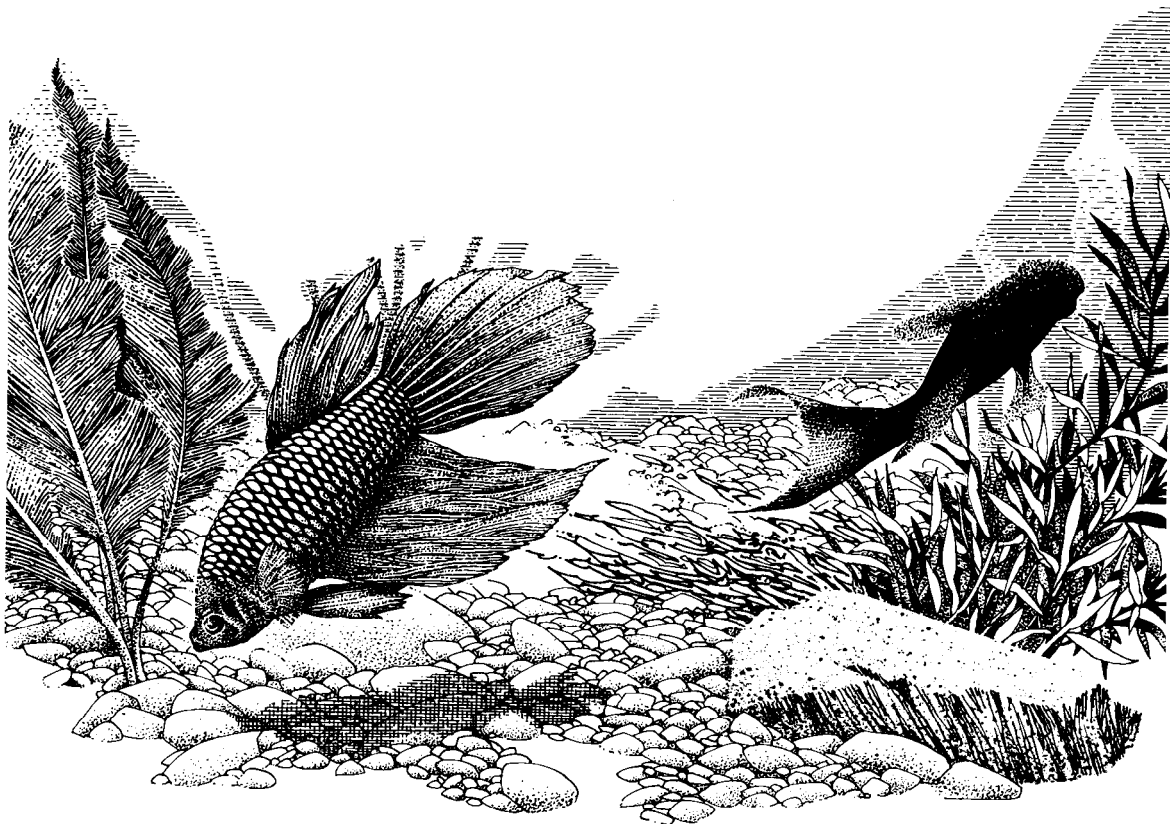
This game is best for upper elementary and secondary students. It is specific to Lake Superior.

Superior Pursuit: Facts About the Greatest Great Lake. S4. Free.

All about the big lake: geology, water quality and fish.

Ordering Instructions: All orders must be prepaid. Mail check, payable to University of Minnesota, to:

Minnesota Sea Grant
University of Minnesota
1518 Cleveland Avenue North
St. Paul, MN 55108



Mississippi-Alabama Sea Grant Consortium

703 East Beach Drive
P. O. Box 7000
Ocean Springs, Mississippi 39566-7000
(601) 875-9341

Birds and Birding on the Mississippi Coast. MASGP-86-031.

\$21.95 (Order from University Press of Mississippi, 3825 Ridgewood Road, Jackson, MS 39211.)

This book contains three primary sections. Section one contains general information on the Mississippi coastal zone, including the barrier islands. Section two provides specific information on approximately 360 species of birds to include breeding, abundance, distribution, dates of occurrence, and the best areas for observation. Section three contains site guides.

Buying and Preparing Blue Crabs. MASGP-85-015.

Free.
This brochure gives step-by-step instructions for purchasing and preparing blue crabs. Illustrations are included.

Buying and Preparing Fish. MASGP-86-006.

Free.
This handy guide on buying and preparing fish includes a health and nutrition chart, quality and freshness table, and illustrated directions for filleting.

Buying and Preparing Oysters. MASGP-84-003.

Free.
This brochure provides laymen with advice on handling oysters, characteristics to look for when purchasing oysters, as well as a discussion on preparation.

First Aid for Damaged Beaches and Dunes. MASGP-81-011.

Free.
This brochure contains a four-step plan for Mississippi and Alabama shoreline-property owners to aid in the restoration of damaged beaches and dunes.

Flounders and Floundering. MASGP-74-023.

Free.
This pamphlet reveals tips concerning the "right" equipment to use in landing a flounder.

Guide to Common Tidal Marsh Invertebrates of the Northeastern Gulf of Mexico. MASGP-79-004.

\$8.
This 82-page book fulfills a need in literature by providing a well-illustrated, up-to-date identification guide for marine macroinvertebrates that live or occur in the salt marshes along the Mississippi-Alabama coast and immediately adjacent areas of Florida and Louisiana.

How to Find Marine Information in Public and School Libraries. MASGP-77-013.

(Reprinted with permission from Marine Advisory Service, University of Rhode Island.) Free.

This five-page booklet provides ten basic steps for the reader to use in finding information from various types of libraries.

Hypothermia. MASGP-86-015.

Free.
Illustrated directions outline steps to take if an individual is unfortunate enough to fall overboard and experience a rapid and life-threatening loss of body heat.

The Jubilee Phenomenon. MASGP-88-017.

Free.
This pamphlet gives an overview of the basic cause of jubilees, the conditions that favor their occurrence, and observations associated with them.

Man and the Gulf of Mexico Educational Series. MASGP-82-007.

\$7.50 each. (Order from University Press of Mississippi, 3825 Ridgewood Road, Jackson, MS 39211.)

This series is composed of four paperback books that can be used individually or as a set. Each is a textbook-workbook with general and specific objectives for each unit, vocabulary exercises, diagrams, many illustrations, and instructions for experiments. The

series can be used as textbooks for marine science courses, as supplements for introductory biology courses, or as library reference books.

Marine and Estuarine Ecology, Volume 1, 88 pages, illustrated. \$7.50.

An introduction for fundamental concepts and the vocabulary needed for understanding the ecology of marine environments, this volume emphasizes the diversity and dynamics and demonstrates the interdependency of living organisms. Plankton, nekton, intertidal and coastal organisms, and coastal habitats are given careful examination. Special attention is given to instructing students in recording data accurately and logically and in making sound generalizations. This volume also acquaints students with basic equipment for studying marine life.

Marine Habitats, Volume 2, 88 pages, illustrated. \$7.50.

This text introduces five marine habitats-salt marsh, mud flat, sound, beach and the barrier island-and presents general information about the organisms that live in each. It emphasizes the interdependency of plants and animals and compares and contrasts the manner in which these organisms adapt themselves to their habitats.

Diversity of Marine Plants, Volume 3, 135 pages, illustrated. \$7.50.

This volume explains the biological classification system and the process of photosynthesis. Eleven experiments investigate seven types of algae, marine bacteria, sea grasses, and salt marsh plants.

Marine Animals, Volume 4, 126 pages, illustrated. \$7.50.

This book introduces the physical characteristics, the behavior, and

the natural environment of a variety of marine animals. Included are protozoans, sponges, coelenterates, ctenophores, polychaetes (marine annelids), mollusks, echinoderms, marine crustaceans (barnacles, blue crabs, hermit crabs, shrimp and horseshoe crabs), sea squirts and tunicates, sharks and stingrays (cartilaginous fish), seashore birds, marine turtles, and marine mammals. This volume includes extensive illustrations and offers students fifteen activities for identifying and learning about marine animals and their adaptive behavior.

Mississippi Marine Resources-Pilot Manual. MASGP-81-002. Free.

This 16-page, illustrated manual provides an overview of both marine and fresh water including planktonic forms, dunes and vegetation. There are ten concepts and/or activities that would be applicable for middle and secondary students.

Oysters in Alabama. MASGP-85-011. Free.

This brochure reviews the biology, environment and management of the commercially important species, *Crassostrea virginica*.

A Pictorial Guide to Common Demersal Fishes in the Gulf of Mexico. MASGP-86-009. \$3.50.

(Order from Alabama Sea Grant Extension Program, 4170 Commanders Drive, Mobile, Alabama, 36615. Make checks payable to the Alabama Cooperative Extension Service.)

Since fishery biologists along with commercial and recreational fishermen are exploring and exploiting the deeper waters of the Gulf of Mexico more than ever, this 96-page pictorial guide is a "first step" in making these deepwater fish better known. This guide identifies fish from 100 to 600 fathoms.

Shrimp in Alabama. MASGP-86-012. Free.

This pamphlet gives a summary of the penaeid shrimp landed in

coastal Alabama waters from a commercial, biological and management viewpoint.

Speckled Seatrout in Alabama. MASGP-86-013. Free.

This brochure provides an overview of the biology, fishing success and management of the speckled seatrout in coastal Alabama.

Starting and Maintaining a Marine Aquarium. MASGP-81-001. Free.

This 23-page booklet outlines the basic steps in establishing a salt-water aquarium. Detailed instructions are given on the materials needed, food preferences, artificial seawater, filter systems, suggested animal combinations, water maintenance and potential problems.

Newsletters-The following are available, free of charge at the present time. Please order from the addresses listed.

Force Five-Mississippi-Alabama Sea Grant Consortium, P.O. Box 7000, Ocean Springs, MS 39566-7000.

Gulf Coast Fisherman-Mississippi Sea Grant Advisory Service, 2710 Beach Blvd., Suite 1-E, Biloxi, MS 39531.

Sea Harvest News-Seafood Report-Alabama Sea Grant Extension Program, 4170 Commanders Drive, Mobile, AL 36615.

Water Log-The University of Mississippi, Mississippi-Alabama Sea Grant Legal Program, University of Mississippi Law Center, University, MS 38677.

Blue Crabs in Alabama. MASGP-86-004. Free.

This brief, easy-to-read brochure provides information on identification, biology and management of blue crabs in Alabama. Soft shell blue crab production is also described.

Coastal Wetlands of Alabama. MASGP-88-012. Free.

This brochure includes explanations about what constitutes wetlands, the extent of Alabama wetlands, their value and measures to protect them.

Red Drum in Alabama. MASGP-87-015. Free.

This brochure provides information on the biology, management and value of the popular "red-fish" or red drum.

Royal Red Shrimp. MASGP-87-017. Free.

This pamphlet describes the deepwater royal red shrimp and tips for storing and preparing this seasonal marine species.

Saving Your Catch. MASGP-87-001. Free.

This brochure is a guide to handling and preserving seafood from the water to the table.

Soft Shell Blue Crabs. MASGP-88-006. Free.

This brochure explains what a soft shell is, what to look for when buying soft shells and how to clean and prepare them.

Alabama's Artificial Reefs. MASGP-89-019. Free.

This brochure describes how artificial reefs work, reviews the history of Alabama's artificial reef program and lists Loran-C readings of public reefs.

Blue Crabs in Alabama. MASGP-92-008. Free.

Brochure briefly outlines the identification, biology, management and culinary characteristics of the blue crab, the only commercially harvested crab among the 60 or more species of crabs found in Alabama waters.

Deep Sea Fishing Off the Coast of Alabama. MASGP-91-019. Free.

This brochure briefly describes commonly caught finfish off the coast of Alabama and provides an illustrated list. Also included is information on ethical angling.

Grilling Alabama Seafood. MASGP-92-004. Free.

This brochure provides a list of "grill-able" Alabama fish, mollusks and crustaceans and outlines how to choose and prepare seafood for the grill.

Guide to Dauphin Island Bridge Rubble. MASGP-91-015. Free.

This brochure provides a brief

history of the fate of Dauphin Island bridge after its destruction by a hurricane and lists Loran-C coordinates of rubble.

Flatfish in Alabama. MASGP-91-020. Free.

This brochure describes what is known about the life cycles of a variety of Northern Gulf flounders and other flatfish.

An Illustrated Guide with Key to Selected Benthic Invertebrate Fauna of the Northern Gulf of Mexico. MASGP-87-010. \$20.00

(Order from Marine Environmental Sciences Consortium, Dauphin Island Sea Lab, 101 Bienville Boulevard, Dauphin Island, AL 36528.)

This 162-page guide was designed primarily as an instructional manual for students of marine science and is also useful for individuals with a vocational or avocational interest in coastal ecology. The guide includes representatives of the major phyla which generally occur in bays, sounds and nearshore in a variety of subtidal habitats.

Marine Environmental Science Education for the 90s and Beyond: Proceedings of a Workshop for Marine Educators of the Northern Gulf, Gulf Shores, Alabama, December 6-8, 1991. In Press.

This proceedings volume includes presentations and conclusions from small group sessions on issues of concern in marine environmental education.

Marine Fishery Management: The Biological Process. MASGP-89-021. 4 pages. Free.

This report outlines how biological data is used in establishing policy regarding fisheries regulations.

Marine Fishery Management: The Regulatory Process. MASGP-91-016. Free.

This brochure outlines the process through which state and federal fisheries regulations are created and put into effect in Alabama.

Mississippi Ocean Policy Study. MASGP-91-010. Free.

This 132-page volume introduces the physical and cultural setting of the Mississippi coastal region and examines the social, economic and environmental aspects of 11 major policy issues. Discussion of each issue also includes information about the management framework in the state, federal and international context. Methods for initiating a comprehensive state management program are outlined with model legislation provided.

Publications of the Mississippi-Alabama Sea Grant Consortium: 1986-1993. In Press.

This volume is a directory of general interest and technical publications and journal reprints published as a result of MASGC research, education and advisory service activities.

Public Education: What You Don't Know Could Hurt You! MASGP-90-034. Free.

This reprint outlines five successful marine science programs for a variety of ages and makes a case for "hands-on" science.

Shaping the Future Sea Grant, Science, and Society: The Role of Marine Education. MASGP-92-012. Free.

This report briefly explores the status of marine science education in the United States today and sets forth the unique capability of the national Sea Grant education network to contribute to solutions for the science education dilemma.

Smoking Alabama Seafood. MASGP-92-005. Free.

This 12-page brochure provides details on preparing and smoking seafood.

Ordering Instructions: Except where otherwise noted, order publications from:

Mississippi-Alabama Sea Grant Consortium
P.O. Box 7000
Ocean Springs, MS 39566-7000

University of New Hampshire Sea Grant Extension Program

Kingman Farm
Durham, NH 03824-3512
(603) 749-1565

Day of the Coast Celebration.

Sharon Meeker. 15 pp. \$1.00.

How to plan a stimulating all-school day of marine activities involving volunteers, people from the community and the teachers and students.

UNH Floating Lab Resource Manual.

Michael Brody and Sharon Meeker. **UNHMP-AR-SG-83-3.** Revised 1988. 207 pp. \$19.00.

An oceanographic curriculum focused on the New England coast, but readily adaptable to other regions.

Coastal Issues: A Wave of Concern.

Trial edition. B. Sharon Meeker. 107 pp. \$15.00.

An interactive curriculum on issues affecting coastal areas, with a variety of activities for high school students.

Waves Across New Hampshire: Evaluation of 10 Years of Sea Grant Sponsored Marine Education. Sharon Meeker. **UNHMP-AR-SG-87-14.** 20 pp. \$3.00.

A survey of three marine education programs, and a comparison between teaching of marine science in 1976 and 1987.

Anadromous Fish of the Northeast.

UNHMP-P-SG-90-14. \$5.00.

This five-color poster provides basic information on anadromous fish as well as specific information on and illustrations of five species.

Stop the Zebra Mussel. Northern New England Zebra Mussel Watch. **UNHMP-B-SG-93-15.** Sea Grant Extension Staff. July 1993. Free brochure.

Free brochure.

Stop the Zebra Mussel. **UNHMP-P-SG-93-13.** Sea Grant Extension Staff. July 1993. 17" x 22" poster. \$3.00.

Clean Water from the Mountains to the Sea. **UNHMP-B-SG-92-15.** M. Cerullo and M. Lewis. December 1992. Free brochure.

Clean Water from the Mountains to the Sea. **UNHMP-P-SG-92-16.** M. Cerullo and M. Lewis. December 1992. Poster. \$5.00 (\$1.00 for each additional copy with same order.)

Options for the Future: A Guide to Coastal Resource Management. **UNHMP-VT-89-20.** \$20.00.

This 26-minute videotape covers a range of coastal issues, explains that change is inevitable and suggests that everyone with an inter-

est in the coastal zone needs to be involved in the process. Accompanied by a 22-page booklet, *Coastal Issues: Options for the Future. A Discussion Guide.*

The Great Bay, A Living Laboratory.

UNHMP-AR-SG-91-2. Trial edition. Sharon Meeker. 1990. \$19.00. A field-based curriculum featuring onshore and offshore components for grades 7-12.

The Great Bay Watch: A Citizen Monitoring Program Manual. S. Meeker, A. Reid, J. Schloss and A. Hayden. **UNHMP-AR-SG-92-7.**

Revised February 1992. 63 pp. \$10.00.

A manual for citizen water monitoring groups.

Three and one-half-hour slide script programs. \$75.00 each.

The Great Bay: New Hampshire's Treasure

Salt Marshes: Nurseries of the Sea

The Great Bay Research Reserve Ordering Instructions: Mail check or money order, payable to University of New Hampshire, to:

Sea Grant Communications Office
Kingman Farm
University of New Hampshire
Durham, NH 03824-3512

New Jersey Sea Grant College Program

New Jersey Marine Sciences Consortium
Building 22
Fort Hancock, NJ 07732
(201) 872-1300

Where the Land Meets the Sea: Exploring a Coast Activity Book and Teacher's Guide 3-4 Grade. A. Galli and S. Levine. **NJSG-83-103.**

Where the Land Meets the Sea: Exploring a Coast Activity Book and Teacher's Guide 5-6 Grade. A. Galli. **NJSG-83-104.**

Marine Cuisine Series. G. Flimlin, K. Kosko and C. Teller. **NJSG-MC-No.1-7.** Free.

Single-page seafood fact sheets,

highlighting local species finfish and shellfish facts and locally developed recipes.

Sea Note Series. J.A. Tiedemann. **NJSG-SN-No.1-11.** Free.

One-page recreational bulletins featuring a diversity of topics on boating, birding, fishing and environmental conservation activities related to marine recreation.

Ordering Instructions: For informa-

tion regarding *Where the Land Meets the Sea*, contact:

Karen Barge
The Wetlands Institute
Stone Harbor Boulevard
Stone Harbor, NJ 08247

For all other publications, mail requests to:

New Jersey Marine Science Consortium
Building 22
Fort Hancock, NJ 07732

New York Sea Grant Institute
State University of New York and Cornell University
115 Nassau Hall
SUNY at Stony Brook
Stony Brook, NY 11794
(516) 632-6905

Marine Network News. Written and edited by Bob Kent.

Quarterly newsletter for formal and informal educators.

Long Island Sound Study Fact Sheets

Modeling Long Island Sound.

Long Island Sound Study Fact Sheet #2. Chester L. Arnold. Connecticut Sea Grant Marine Advisory Program. **CT-SG-88-08.** November 1988. 2 pp.

The LISS: A Profile. Long Island Sound Study Fact Sheet #4.

Kathleen Rhodes. Connecticut Sea Grant Marine Advisory Program and New York Sea Grant Extension Program. **CT-SG-89-03.** July 1989. 4 pp.

Nonpoint Source Pollution in Long Island Sound. Long Island Sound Study Fact Sheet #7. Melissa Beristain. New York Sea Grant Extension Program and Connecticut Sea Grant Marine Advisory Program. June 1989. 4 pp.

Floatable Debris. Long Island Sound Study Fact Sheet #8.

Chester L. Arnold. Connecticut Sea Grant Marine Advisory Program and New York Sea Grant Extension Program. August 1989. 4 pp.

Seafood Issues. Long Island Sound Study Fact Sheet #9.

Ken Gail and Melissa Beristain. New York Sea Grant Extension Program and Connecticut Sea Grant Marine Advisory Program. February 1990. 4 pp.

Toxic Contamination in Long Island Sound. Long Island Sound Study Fact Sheet #10.

Paul Stacey and Melissa Beristain. June 1990. 4 pp.

Nutrient Reduction: New Solutions to Old Problems. Long Island Sound Study Fact Sheet #11.

Melissa Beristain. August 1990. 2 pp.

Impact of Septic Systems on the Environment. Long Island Sound Study Fact Sheet #13.

Trent Schneider. September 1991. 2 pp.

Water Conservation and Marine Water Quality. Long Island Sound Study Fact Sheet #14.

Trent Schneider. November 1991. 2 pp.

What is the Long Island Sound Study. Long Island Sound Study Fact Sheet #15.

Melissa Beristain. October 1992. 4 pp.

Environmental Stewardship.

Poster. January 1993.

Plants and Animals of Long Island Sound.

Lisa Wahle. Connecticut Sea Grant College Program. **CT-SG-91-03.** 1991. 34 pp.

Earth Guide 88: Action Tips for Cleaner Water.

Ed Kiernan, WCBS News 88 and Melissa Beristain. 1990. 22 pp.

Sound Gardening.

April 1991. Ten fact sheets produced by Nassau, Suffolk and Westchester County Cooperative Extension and Connecticut and New York Sea Grant Programs.

Help Save Our Waters: A Storm Drain Painting Projecting.

November 1992.

Clean Water Shopping Guide.

New York Sea Grant.

Coastlines Newsletter.

Quarterly newsletter produced by New York Sea Grant Institute.

Ordering Instructions: Order material listed above from:

New York Sea Grant Extension
125 Nassau Hall
SUNY at Stony Brook
Stony Brook, NY 11794

Aquatic Activities for Youth.

Educational materials consisting of eight units. Subjects include saltwater world in a jar, raising

earthworms, fish aquarium, and entomology and water.

Aquatic Plants: Another World.

David H. Greene and Michael Duttweiler. 1993.

A study guide with educational projects that investigates aquatic plants and their impact on their environment, recreation and business.

Coastal Educator's Newsletter.

Written and edited by H. David Greene.

Newsletter with Great Lakes emphasis, produced bimonthly during the school year.

Great Lakes: Great Gardening. \$2.00 per packet.

Series of 10 fact sheets based on the Sound Gardening fact sheet series but revised for Great Lakes.

Ordering Instructions: Order material listed above from:

New York Sea Grant
21 South Grove Street
East Aurora, NY 14052-2398
(716) 652-7874

University of North Carolina Sea Grant College Program

Box 8605

North Carolina State University

Raleigh, NC 27695-8605

(919) 737-2454

Coastal Capers: A Marine Education Primer. UNC-SG-84-05. 80 pp., illustrated. \$3.50.

An activity book that primary grade teachers can use to introduce and explain the marine environment. The activities sharpen students' skills in science, math, language arts, social studies and art.

Ripples: A Big Sweep Elementary Activity Guide. UNC-SG-90-02. 40pp. \$3.00 postage/handling fee. Designed for the 9- to 11-year-old child, this manual teaches children about litter in our waterways and the problems it causes for wildlife and the environment. Addresses wildlife entanglement and recycling. Contains 16 illustrated activities, including active games, puzzles and projects. Available from the North Carolina Big Sweep office, P.O. Box 550, Raleigh, NC 27602 (919/856-6686).

Splish Splash: A Big Sweep Aquatic Primer. UNC-SG-92-07. 44 pp., illustrated. \$3.00 postage/handling fee.

Designed to teach K-2 children about the hazards of litter in aquatic and marine environments. This teacher's manual includes activities on recycling, animal entanglement, plastics and other throwaways, and keeping our waterways clean. Available from the North Carolina Big Sweep office, P.O. Box 550, Raleigh, NC 27602 (919/856-6686).

North Carolina Coastal Plain: A Geologic and Environmental Perspective Video Series. UNC-SG-89-2. \$30.00.

Correlates with the eighth grade science objectives-to integrate geological, ecological and environmental science concepts. The program also complements eighth grade social studies curriculum. The materials in this program are

also appropriate for informal educational settings. The video, approximately 1 3/4 hours, is divided into eight presentations ranging from 8 1/2 minutes to 17 minutes. The activity guide offers hands-on activities to enhance the students' grasp of major concepts. A script with supplementary background is included. Purchasers may copy all materials as needed.

North Carolina Marine Education Manuals.

Manuals to assist educators, particularly middle-grade science and social studies teachers, in presenting the coast as a setting and subject for study. Each manual has a similar format. Activities and laboratory exercises provide students with hands-on experience. Additional resources, films and references are listed.

Unit One, Coastal Geology. UNC-SG-78-14-A. 108 pp., illustrated. \$3.50.

Unit Two, Seawater. UNC-SG-78-14-B. 76 pp., illustrated. \$2.00.

Unit Three, Coastal Ecology. UNC-SG-78-14-C. 100 pp., illustrated. \$2.00.

Unit Four, Coastal Beginnings. UNC-SG-78-14-D. 175 pp., illustrated. \$2.00.

S.E.A. Lab: Science Experiments and Activities. UNC-SG-90-1. \$10.00 plus \$2.00 postage. Discounts available on orders of more than 10 copies.

Marine Science for high school students in chemistry, biology and physics, physical science and oceanography. This 208-page curriculum reflects research findings in basic science concepts.

Undersea Oases: The Science of Hardbottoms. VHS cassette. 14 minutes, 45 seconds. \$19.95. Order from Environmental Media, 1-800-ENV-EDUC.

This video, for ages 12 and up, plunges viewers to the continental shelf between North Carolina and Florida for a view of the perplexing rocky outcrops called hardbottoms. Surrounded by sandy flats, the crumbling ledges of these rocky cliffs are topped by algal meadows that attract an array of marine life. Through footage taken from submersibles and by SCUBA divers, Sea Grant scientists guide viewers through the hardbottom ecosystem and outline their ongoing research.

Coastwatch: North Carolina's First Inhabitants. UNC-SG-92-13. Illustrated. \$2.50.

Includes information about the earliest history of North Carolina's first coastal inhabitants, about archaeologists unearthing clues to Native American history, about key excavation sites of prehistoric settlements and about one group of Indians' present-day struggle to reclaim its past.

Seashells Common to North Carolina. UNC-SG-72-09. 36pp. \$2.00. An illustrated guide to the state's shells.

The Hardbottom Distribution Fishing Map. UNC-SG-86-25. Map. \$5.00.

A guide to the natural offshore reefs (hardbottoms) between Cape Lookout and Cape Fear. These are prime fishing spots. The 39-by-27-inch poster features five four-color paintings of the reefs.

Nontraditional Fish Brochures. \$1.00 per series.

Sixteen colorful pamphlets feature underutilized species from Gulf and South Atlantic waters. The brochures describe how to catch, clean and prepare the fish. Recipes are included.

Series 1: UNC-SG-85-09 to UNC-SG-85-18 (amberjack, sea robin,

skates and rays, triggerfish, panfish, jack crevalle, sharks, sheepshead, bonito and croaker).

Series 2: UNC-SG-86-13 to UNC-SG-86-18 (black drum, bluefish, ladyfish, mullet, pigfish and sea catfish).

Seacoast Plants of the Carolinas for Conservation and Beautification.

UNC-SG-73-06. 206 pp. \$4.50.

A handbook on the use of plants for landscaping and stabilizing coastal soils.

A Guide to Salt Marsh Plants Common to North Carolina.

UNC-SC-81-04. 32pp., illustrated. \$1.50.

A teaching guide to the herbs, vines, grasses, shrubs and trees found in North Carolina marshes.

A Guide to Ocean Dune Plants Common to North Carolina.

UNC-SG-87-01. 80 pp. \$4.50.

Describes and illustrates the herbs, vines, grasses, shrubs and trees found on and near the North Carolina dunes.

Beached Marine Mammals. UNC-SG-BP-84-2. 2 pp. Free.

A step-by-step procedure for handling a stranded or dead sea mammal.

The Death of a Whale. UNC-SC-93-07. VHS cassette. 17 minutes.

\$19.95.

Tells about the stranding and death of a juvenile female sperm whale on Wrightsville Beach, NC, December 1992. This is a documentary of actual footage of the stranding and subsequent necropsy, which reveals the stomach full of plastic debris—the probable direct or indirect cause of death. Produced by Marine Grafics in conjunction with Sea Grant. Order from Environmental Media, 1-800-ENV-EDUC.

Coastwatch. \$12.00 per year.

UNC Sea Grant magazine published six times a year. Provides in-depth information about the issues, problems, personalities and places that make the North Carolina coast unique. It also includes regular departments for children; nature; research and

advisory pages; letters; commentary; publication lists; and updates and events.

Conch Shell. Free.

A newsletter for educators that provides new ideas about marine education and an update of events. Published three times a year.

WaterWise. Free.

Quarterly newsletter that looks in depth at timely water quality issues, giving them perspective and describing related research.

Ordering Instructions: Make check or money order payable to UNC Sea Grant. Send requests to:

UNC Sea Grant College Program
Box 8605

North Carolina State University
Raleigh, NC 27695-8605



Ohio Sea Grant College Program

Ohio State University
1314 Kinnear Road
Columbus, OH 43212-1194
(614) 292-8949

Oceanic Education Activities ,for Great Lakes Schools (OEAGLS)

Results of studies of student knowledge about the oceans and Great Lakes environments indicate a need for greater awareness of those environments and a greater understanding of the impact they have on the lives of people in the Midwest. OEAGLS (pronounced "eagles") are designed to take a concept or idea from the existing school curriculum and develop it in an oceanic and Great Lakes context, using teaching approaches and materials appropriate for children in grades five through nine. OEAGLS materials are designed to be easily integrated into existing curricula. Investigations are characterized by subject matter compatibility with existing curriculum topics; short activities lasting from one to three classes; minimal preparation time; minimal equipment needs; standard page size for easy duplication; student workbook plus teacher guide; suggested extension activities for further information or creative expression; teachability demonstrated by use in middle school classrooms and content accuracy assured by critical reviewers. Each title listed below consists of a student workbook and a teacher guide and costs \$3.00 for the publication, postage and handling. The first five OEAGLS are \$3.00 each; additional OEAGLS are \$2.30 each. However, if EP-026 is ordered, an additional \$4.00 is required to cover the cost of the computer disk.

In publication numbers, S = student workbook, T = teacher guide.

The Effect of The Great Lakes on Temperature.

J.D. Meinke, B.A. Kennedy and R.W. Fortner. Re-

vised 1988. **OHSU-EP-001/S**, 9 pp. and **OHSU-EP-001/T**, 12pp. \$3.00. Differences in heat absorption and release by soil and water show how lakes and oceans moderate land temperatures. Laboratory and map activities. Science, geography.

The Effect of Lake Erie on Climate.

J.D. Meinke, B.A. Kennedy and V.J. Mayer. 1987. **OHSU-EP-002/S**, 3 pp. and **OHSU-EP-002/T**, 9 pp. \$3.00.

Effect of temperature on movement of air; land and sea breezes and how they influence climate and economy near large bodies of water. Demonstration and graphing activities. Science and geography.

Ancient Shores of Lake Erie.

J. Comiensi and V.J. Mayer. Revised 1988. **OHSU-EP-003/S**, 7pp. and **OHSU-EP-003/T**, 12 pp. \$3.00. Beach ridges along the lake are evidence of former lake levels and related to glaciation. Characteristics of ridges make them valuable for human uses. Map study. Science, geography, history.

How to Protect a River.

D.L. Hyatt, B.A. Kennedy and V.J. Mayer. Revised 1988. **OHSU-EP-004/S**, 8 pp. and **OHSU-EP-004/T**, 8 pp. \$3.00. River characteristics are compared with standards for water quality and development. A decision is made about classifying the river as wild, scenic or recreational. Map study, data usage. Science, social studies.

Changing Lake Levels.

C. Farnsworth and V.J. Mayer. Revised 1989. **OHSU-EP-005/S**, 9pp. and **OHSU-EP-005/T**, 9 pp. \$3.00. Causes and effects of lake level fluctuations lead to a study of problems involved in regulating lake levels. Laboratory and graph interpretations. Science, social studies.

Erosion Along The Great Lakes.

B.A. Kennedy and R.W. Fortner. Revised 1985. **OHSU-EP-006/S**, 9 pp. and **OHSU-EP-006/T**, 12 pp. \$3.00.

Determination of recession rate along a shoreline using maps and aerial photos. Effect of coastal erosion on property. Map study, calculations. Mathematics, science, social studies.

Coastal Processes and Erosion.

B.A. Kennedy and R.W. Fortner. Revised 1988. **OHSU-EP-007/S**, 12 pp. and **OHSU-EP-007/T**, 17 pp. \$3.00.

Processes involved in coastal erosion and the effect of erosion on different shore materials. Shore protection devices and how they work. Laboratory. Science.

Pollution in Lake Erie: An Introduction.

C.P. Basehore and R.W. Fortner. Revised 1987. **OHSU-EP-008/S**, 14 pp. and **OHSU-EP-008/T**, 17 pp. \$3.00.

A 1970 essay is used to illustrate how to read skillfully and critically for facts about water quality in the lake. A current (1980) article updates and clarifies. Reading activity. Language arts, science.

Yellow Perch in Lake Erie.

R.W. Fortner, G. Reil and S. Leach. **OHSU-EP-009/S** (revised 1985), 8 pp. and **OHSU-EP-009/T** (revised 1986), 26 pp. \$3.00.

Introduction to fish life cycle and factors affecting population size, used as background for role-play of setting fisheries management policy. Extended to policies for 200-mile limit. Board game and simulation. Science, social studies, mathematics.

Evidence of Ancient Seas in Ohio.

S. Leach and V. J. Mayer. Revised 1985. **OHSU-EP-010/S**, 9 pp. and **OHSU-EP-010/T**, 10 pp. \$3.00.

Ohio rocks and minerals give evidence of the seas that formerly

- covered the state. Locations of economic deposits of minerals are studied. Laboratory and map study. Science, geography.
- To Harvest a Walleye.** S. Leach, G. Reil and R.W. Fortner. Revised 1986. **OHSU-EP-011/S**, 12pp. and **OHSU-EP-011/T**, 20 pp. \$3.00. Basic concepts of food chains, webs and pyramids with environmental factors and energy transfer. Desirability of using lower trophic levels for human food. Board game and extensions. Science, mathematics.
- Oil Spill!** R.W. Fortner and S. Ihle. Revised 1987. **OHSU-EP-012/S**, 17 pp. and **OHSU-EP-012/T**, 16 pp. \$3.00. Sources of oil in water environments and methods for oil spill clean-up. Effect of oil on aquatic life. Laboratory and graphing activities. Science, social studies.
- Shipping on the Great Lakes.** K.N. Schlarp and V.J. Mayer. Revised 1982. **OHSU-EP-013/S**, 10pp. and **OHSU-EP-013/T**, 10 pp. \$3.00. Commerce between lake ports illustrates regional products and needs. Cost and energy efficiency of cargo transport methods. Data analysis. Geography, mathematics.
- Geography of the Great Lakes.** J.L. Timmons and R.W. Fortner. 1980. **OHSU-EP-014/S**, 17 pp. and **OHSU-EP-014/T**, 7 pp. \$3.00. Location and importance of Great Lakes areas. Distance-rate-time problems and area, perimeter, volume determinations. Map study and laboratory. Geography, mathematics, science.
- Ohio Canals.** V.J. Mayer and F. Pigman. Revised 1986. **OHSU-EP-015/S**, 6 pp. and **OHSU-EP-015/T**, 12 pp. \$3.00. Effects of canal building on the population and economy of cities. Canal routes are plotted and life on canal boats is revealed through a song. Map study, data interpretation. Geography, history.
- The Estuary: A Special Place.** R.W. Fortner and R. Mischler. Revised 1985. **OHSU-EP-016/S**, 14pp. and **OHSU-EP-016/T**, 16 pp. \$3.00. Computer map shows land use around estuary. Simulated sampling techniques reveal life forms in and around water. Influence of people's activities considered. "Dry lab" data analysis. Science, social studies, mathematics.
- The Great Lakes Triangle.** R.W. Fortner and D.W. Jax. **OHSU-EP-017/S** (revised 1985), 17 pp. and **OHSU-EP-017/T** (revised 1987), 32 pp. \$3.00. Explores logical explanations for "mysterious" loss of the EDMUND FITZGERALD and other crafts in the Great Lakes. Considers ship construction, storm tracking and uncharted reefs. Map study, weather station models, contour map construction. Geography, science, language arts, music.
- Knowing the Ropes.** R.W. Fortner and V.J. Mayer. Revised 1985. **OHSU-EP-018/S**, 12 pp. and **OHSU-EP-018/T**, 12 pp. \$3.00. How ropes are made, what makes them strong, how they are (and were) used on ships. Influence of the sea on language. Laboratory activities. Science, history, language arts, art.
- Getting to Know Your Local Fish.** S.M. Hartley and R.W. Fortner. Revised 1987. **OHSU-EP-019/S**, 11 pp. and **OHSU-EP-019/T**, 25 pp. \$3.00. Construction and use of a dichotomous key to families of fish in Lake Erie. Creative art and writing about the origin of fish names. Science, art, language arts.
- Shipping: The World Connection.** R.W. Fortner and R. Pauken. Revised 1987. **OHSU-EP-020/S**, 16 pp. and **OHSU-EP-020/T**, 16 pp. \$3.00. Countries represented by ships using the Port of Toledo indicate the Great Lakes' importance in world trade. How locks work to move vessels through the lakes. Laboratory, map study. Geography.
- We Have Met the Enemy.** D. Briss and V.J. Mayer. 1980. **OHSU-EP-021/S**, 13 pp. and **OHSU-EP-021/T**, 58 pp. \$3.00. The War of 1812 in the Northwest, its causes, the role of Lake Erie, and the factors important in winning the war. Board simulation, analysis of original documents. History (high school level).
- It's Everyone's Sea: Or Is It?** V.J. Mayer and S. Ihle. Revised 1988. **OHSU-EP-022/S**, 14 pp. and **OHSU-EP-022/T**, 19 pp. \$3.00. Characteristics of the ocean floor and how international boundaries are determined. Simulation of a Law of the Sea conference. Map study, role-play. Social studies, science, history.
- PCBs in Fish: A Problem?** V.J. Mayer, A.J. White-Predieri, V. Steigerwald and S. Ihle. Revised 1988. **OHSU-EP-023/S**, 10 pp. and **OHSU-EP-023/T**, 25 pp. \$3.00. PCBs in Lakes Erie and Ontario and the degree to which they affect consumption of fish. Simulation of state health policies. Graph construction and laboratory demonstration. Science, social studies.
- A Great Lakes Vacation.** R.W. Fortner and M. Lisowski. 1987. **OHSU-EP-024/S**, 8 pp. and **OHSU-EP-024/T**, 14 pp. \$3.00. Optional computer disk supplement, \$4.00. Students learn how the resources of the Lake region create attractive recreation opportunities. Small groups serve as travel consultants for various types of vacations. This has a computer disk which runs on the Apple computer with one disk drive and color monitor which is for optional use with the activity. Geography, recreation.
- Storm Surges.** J. Keir and V.J. Mayer. 1987. **OHSU-EP-025/S**, 9 pp. and **OHSU-EP-025/T**, 12 pp. \$3.00. Why does lake level rise and fall at the ends of Lake Erie in response to storms? Students study the action of storms over the Lake from charts and learn the causes and effects of storm surges and seiches. Science.

River Trek. R. Eddy and R.W. Fortner. 1987. **OHSU-EP-026/S**, 7 pp. and **OHSU-EP-026/T**, 10 pp. Computer disk. \$7.00.

A computer simulation of a flat-boat trip down the Ohio River in 1791. Students learn about the perils of river travel and the geography of the Ohio River basin. Modern locations along the river are compared with their 18th century counterparts. The computer program runs on Apple with one disk drive and color monitor. Color graphics and sound add excitement to one of our most innovative activities. *River Trek cannot be done* as an activity without the computer program. History.

Waves. 1988. J. Keir and V.J. Mayer. **OHSU-EP-027/S**, 11 pp. and **OHSU-EP-027/T**, 9 pp. \$3.00.

Basic concepts of wave formation and motion. Make a videotape of waves moving along a rope, to show movement of water within a wave. Investigate the concept of "letch" using a stream table. Laboratory. Science.

Lake Layers: Stratification. C. Brothers and R.W. Fortner. 1991. **OHSU-EP-028/S**, 12 pp. and **OHSU-EP-028/T**, 20 pp. \$3.00.

Students use an aquarium to model temperature changes in temperature lakes and observe stratification (layering) of lake waters. Students then relate stratification of Lake Erie water to water quality within the Lake. Science.

Nutrients in the Great Lakes. C. Brothers, D.A. Culver and R.W. Fortner. 1991. **OHSU-EP-029/S**, 12 pp. and **OHSU-EP-029/T**, 20 pp. \$3.00.

Using goldfish and jars of river water, students simulate the effects of nutrients on growth of algae. They then make graphs of a storm event to show how nutrients are filtered out by a wetland before they enter the lake. Science.

Eating Like a Bird. C. Brothers and R.W. Fortner. 1991. **OHSU-EP-**

030/S, 12 pp. and **OHSU-EP-030/T**, 12 pp. \$3.00.

Kitchen and office implements simulate shorebirds beaks and foods, showing how several species can coexist in the same feeding area. A tag game demonstrates the bioaccumulation of toxins through the food chain. Science.

OHSU-EP-74. Disk. \$5.00.

Independent computer programs with instructions for nine marine-related activities; some to accompany OEAGLS EP-011, 019, 021 and 023.

OEAGLets.

Three activities are designed for the primary grade range. All three use Lake Erie information applied to all primary subject areas.

Lake Erie-Take a Bow. M. Canning and M. Dunlevy. Edited by R.W. Fortner. 1987. **OHSU-EP-031.** 69 pp. \$5.00.

A unit on the geography of the Great Lakes and their importance to people. Includes background reading, worksheets, transparency masters, and activity guides. Designed and tested in Lakewood Schools, where it met with great excitement.

Build a Fish to Scale. M. Canning and M. Dunlevy. Edited by R.W. Fortner. 1987. **OHSU-EP-032.** 101 pp. \$5.00.

A unit about the external characteristics of fish and how these characteristics can be used to classify fish. Card games, activities, worksheets, posters and background readings included.

A Day in the Life of a Fish. M. Canning and M. Dunlevy. Edited by R.W. Fortner. **OHSU-EP-033.** 87 pp. \$5.00.

An 87-page unit on fish behavior, functions of body parts, and adaptations for survival. Lab activities, worksheets, background readings and transparency masters included.

Other Educational Publications

Supplemental Curriculum Activities to Accompany C. Holling's Paddle-To-The-Sea. M.L. Seager,

R.W. Fortner and T.A. Taylor. 1988. **OHSU-EP--076.** \$10.00.

One hundred and sixty eight pages of activities for grades 3-6. Science, social studies, other subjects from the children's classic.

Abstracts of Research in Marine and Aquatic Education: 1975-1990. R.W. Fortner. 1992. **OHSU-EP--077.** 24 pp. \$4.00.

Brief review of the topics addressed in marine and aquatic education research during the last 15 years, including knowledge and attitude of testing various groups, models of program evaluation, and comparisons of impact of education techniques.

Global Change Scenarios for the Great Lakes Region. R.W. Fortner, ed. 1992. **OHSU-EP-078.** \$6.00.

Scenarios on global change in the Great Lakes explore water resources, biological diversity, shipping, agriculture, airborne circulation of toxins, estuaries, eutrophication, recreation, fisheries, and forests. The 10 scenarios (each 2 to 4 pages) and an introduction explaining climate models are packaged in a file folder.

The Great Lake Erie. R.W. Fortner and V.J. Mayer. **OHSU-EP-079.** 148 pp. \$10.00.

The Great Lake Erie draws together expertise on the importance of the Great Lakes. Each of the 16 chapters presents a different facet of the Great Lakes from a different perspective. Scientists, historians, resource managers and policy analyzers all provide insight on the scientific, historical, environmental and political value of the Great Lakes. Funded by a grant from The George Gund Foundation in Cleveland.

Fact Sheets

Marine Related Careers. F.R. Lichtkoppiar. Revised 1988. **OHSU-FS-012.** 2 pp.

Global Change in the Great Lakes. **OHSU-FS-057.**

Fact-filled summary of the 11 articles from *Global Change Scenarios*

for the Great Lakes Region (OHSU-EP-078).

Zebra Mussels. The Invasion and its Implications. OHSU-FS-045.

What do we know about zebra mussels? How do they affect other organisms and water-dependent businesses? What can we do about them? This article answers these and other often-asked questions.

Boaters-Slow the Spread of Zebra Mussels, and Protect Your Boat Too. OHSU-FS-054.

When it comes to spreading zebra mussels inland, humans are the worst offenders. This article includes protocol for safe handling and disposal of zebra mussels, as well as specific defense strategies.

The Spiny Water Flea, *Bythotrephes*: A Newcomer to the Great Lakes. OHSU-FS-049.

Answers to some commonly-asked questions about this tiny, exotic crustacean.

A Great Lakes Sea Grant Resource List on Zebra Mussels and Other Nonindigenous Species. OHSU-FS-052.

Descriptions of more than 30 nonindigenous species publications and videotapes. Includes order forms.

Zebra Mussels in Inland Waters. OHSU-FS-058.

Zebra Mussels for Use in Science Fairs. OHSU-FS-059.

Sea Grant's Response to Zebra Mussels. OHSU-FS-060.

Too Much Mussel. 1991. \$15.00.

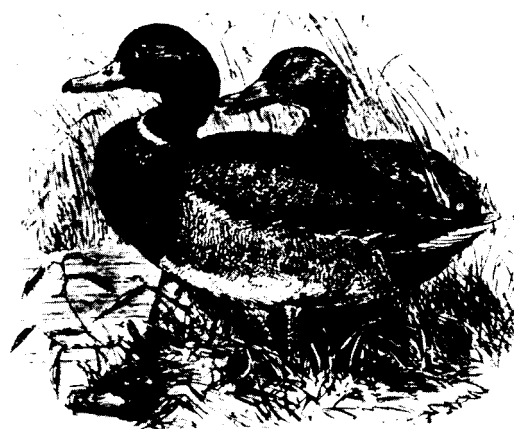
This 5.5 minute video (VHS format) provides an overview of the zebra mussel's impact to Lake Erie.

Ordering Instructions:

All copies of FS-045, FS-052 and FS-054 are free. One to four copies of the other fact sheets are free. Additional copies are \$1.00 for quantities of 4; for example, 5 to 8 copies are \$1.00, 9 to 12 are \$2.00.

Mail checks, payable to Ohio State University, to:

Ohio Sea Grant Publications
Ohio State University
1314 Kinnear Road
Columbus, OH 43212-1194



Oregon State University

Sea Grant College Program
Administrative Services A500G
Corvallis, OR 97331
(503) 737-2714

The following six items should be ordered from:

Vicki Osis
OSU Hatfield Marine Science Center
2030 Marine Science Drive
Newport, OR 97365
(503) 867-0271

The Columbia River: Its Future and You. Teacher's Manual for Grades 5-8. Marcia Frost. EM-8474. Revised 1992. 90 pp. \$10.00 plus postage.

The Columbia River: Its Future and You. Teacher's Manual for Grades 9-12. Gerald Conrath. EM-8475. Revised 1992. 80 pp. \$10.00 plus postage.

This guide, and the one above, study the Columbia River from a multidisciplinary approach. Combining social studies and sciences, they contain units on the history of the Columbia and on the river's use for energy, fisheries, agriculture, recreation and navigation.

Gateway to the Pacific: The Columbia River. Teacher's Resource Book. Grades 5-7. Vicki Osis, et al. ORESU-E-86-001. 1986. 147 pp. \$6.00 plus postage.

Although this curriculum focuses on one port, that of Astoria, Oregon, it serves as a model for the study of ports throughout the Pacific Basin. Indeed, the goal of the Pacific Circle Consortium's Ocean Project, of which this curriculum is a part, is to teach students about the interdependence of the Pacific nations through trade. The curriculum includes lessons in latitude and longitude, ships in the harbor, cargo transfer, harbor careers, natural habitats of the Columbia estuary and a board game, "Cargo," in which students buy and sell commodities traded in countries around the Pacific.

Marine Debris Videotape. Purchase

\$20.00 plus \$3.00 shipping; rental \$5.00 plus \$3.00 shipping.

Focuses on the plastic disposal issue and the effects of plastic debris on fish and wildlife in the oceans.

Marine Debris Kit. \$20.00 loan for two weeks.

Includes a bulletin board display and one video, *Marine Debris Videotape*.

The following five publications must be ordered from:

The South Slough Estuarine Sanctuary
P.O. Box 5417
Charleston, OR 97420
(503) 888-5558

Make checks payable to Friends of South Slough. Postage rates for the South Slough material are as follows:

Order Amount	Charge
1 .00-4.99	3.00
5.00-9.99	4.00
10.00-14.99	5.00
15.00-19.99	6.00
Over 20.00	7.00

Estuary: An Ecosystem and a Resource. A Reading Guide for Grades 9-12. 1984. 56 pp. \$3.50.

Estuary: An Ecosystem and a Resource. Teacher's Manual. 1984. 304 pp. \$7.50.

The reading guide contains a glossary and chapters on the place of estuaries in the water cycle, physical factors in estuaries, estuarine habitats, and uses of estuaries. The teacher's manual suggests laboratory and field activities to reinforce the lessons in the reader.

In Search of the Treasures of South Slough. Level I-Grades 4 and 5. Teacher's Manual. John Garner and Karen Gartland. 1982. 59 pp. \$4.00.

Students are sent on a treasure hunt to discover the "treasures of South Slough." They encounter four different activities, each involving a different "zone" or part

of the estuary: uplands, salt marshes, mudflats, and open water. Each zone's activity helps the students get a little closer to figuring out the treasure: that this part of the estuary has been set aside as a sanctuary, a protected place for the animals and plants, with very little disturbance by people.

The Secret of the Medallion. Level II-Grade 6. Teacher's Manual. John Garner and Karen Gartland. 1982. 67 pp. \$4.00.

Students are sent on an expedition to figure out the meaning of a special medallion that was uncovered in the South Slough area. To do this, students must "unlock" the "truths" about estuaries through scientific investigations. At seven different "outpost stations" they help figure out the Big Secret of the estuary: "that the sun and the moon combine forces to support one of the richest places on earth."

The Lore of South Slough. Level II-Grades 7-8. 1981. 76 pp. \$4.00.

In the morning, students join five different old-timers of the South Slough to investigate the Slough's rich cultural and natural history. These old-timers share stories of the obvious riches they were so dependent on in the South Slough are: timber, farmland, minerals, water transport, and native plants and animals. In addition, surprise visits are made by two characters that stress the hidden riches of the estuary: Dr. Mudflat and the Estuary Soup Chef. After an old-time lunch over an open fire, the science students may conduct scientific investigations in the different zones of the estuary. On the other hand, the social studies students may make mini-investigations of the evidence still remaining of the early activities in the South Slough.

Pacific Science Center/ Washington Sea Grant

Marine Education Project
200 Second Avenue North
Seattle, WA 98109-4895
(206) 443-2870
Fax (206) 443-3627

Elementary Activity Packets

High Tide, Low Tide. Grades 3-4, adaptable for grades 1-2. \$6.00.

This packet introduces students to 12 common rockshore animals: barnacles, mussels, limpets, periwinkles, shore crabs, hermit crabs, sea stars, tidepool sculpins, blennies, seagulls, sea anemones and sea urchins. It describes life on a rocky shore; how the animals move, gather food and behave at high tide and low tide. The packet emphasizes role-playing as a method of helping children understand the situation of living plants and animals.

Life Cycle of a Salmon. Grades 3-5. Revised. \$11.00. Set of 64 slides to accompany unit, \$39.00.

This unit presents important facts regarding the life cycle of salmon in Northwest waters, emphasizing the importance of clean water in our environment. It stresses the unique migration and breeding habits of salmon and relates its constant struggle for survival. This fish is one of our most important natural resources, yet the numbers of natural stock salmon are steadily decreasing in Northwest waters. This activity packet alerts learners to ways in which they can help protect the salmon's natural environment.

Waterbirds. Grades 4-6. \$6.00. Set of 28 slides to accompany unit, \$17.00.

This unit includes information about birds and the ecological factors that affect both birds and people. It stresses the need to understand and appreciate the dependence of birds to their feeding and breeding areas. Lists of resource people, places and reading for students and adults are attached to specific activities.

Whales. Grades 4-6. \$6.00.

This packet consists of six activities; any activity may be done independently of the others. Students are acquainted with Quileute Indian and modern methods of whaling and are invited to compare the two. They investigate the mammalian characteristics of the Cetaceans and learn about some of the aspects of whale biology that suit them to life in the oceans. Students learn techniques and problems of estimating whale populations and finally take part in a simulated television new special, "The Battle Over the Bowhead," which brings together much of what they have learned.

Junior High Activity Packets

Beaches. Grades 7-9. \$6.00. Full set of slides to accompany unit, \$62.00. Partial slide sets available; write for details.

This is an activity packet that introduces students to the physical and biological process of the beach zone. Activities familiarize students with the beach as a habitat for plants and animals. Students will also examine the physical configuration of beaches and learn to identify and label parts of a beach. They will work toward an understanding of the processes that help form beaches. The final activity examines the impact of human use of the beach on the natural beach processes and habitats.

Beach Profiles and Transects. Grades 8-9. \$6.00.

To obtain useful information about beaches or any other study site, careful measurements must be taken. The activity "Profiles" gives directions for measuring and recording the profile of a slope. In the "Transect" activity

students sample populations using a single line transect-quadrant method. This activity is intended to follow up studies of beach zonation in the packet "Beaches." It requires some familiarity with intertidal organisms.

Early Fishing Peoples of Puget Sound. Grades 7-9. \$6.00.

This unit presents the early Puget Sound Indian culture, emphasizing the importance of the water environment of their way of life. It stresses the people's dependence on the natural environment and the outstanding degree to which the Puget Sound region was able to provide for all their needs. As fish were one of the most important natural resources, a study of early fishing technology comprises a major portion of the unit. There are activities comparing fishing now and then, and actually making Indian hooks and lines following authentic methods as closely as possible.

Energy From the Sea. Grades 7-9. \$6.00.

In this unit, students will explore the potential of offshore oil deposits, and proposals for tapping the energy of the tides, winds, currents, and ocean thermal differences. Attention is paid to the economic and environmental impact of exploiting these sources. The energy situation is a complex one with no clean-cut answers; the activities in this unit are correspondingly open-ended.

Literature and the Sea. Grades 7-9. Revised. \$11.00.

This packet includes short stories, poems and excerpts from longer prose selections about the sea and a variety of student activities to accompany them. It is divided into six activities. Ideally,

the students would progress from Activity 1 through Activity 6. However, each activity may be used separately.

Tides. Grades 7-9. Revised. \$11.00. The Tides activity packet is an introduction to the nature of tides. It includes activities designed to examine the relationship between the tides and the position of the sun, moon and earth. Other activities teach students to read tide charts and explain how tide predictions are made. The skills students learn are used in a final activity that examines tidal activity in Puget Sound.

Tools of Oceanography. Grades 7-9. \$6.00. Set of 16 slides to accompany unit, \$10.00. This packet is designed to familiarize the student with tools oceanographers use. It begins with the early tools that sailors developed to help them navigate the seas. It describes the first major scientific expedition and compares the equipment oceanographers use with that used on the Challenger Expedition. Minimum time for the basic activities is four days.

Senior High Activity Packets

American Poetry and the Sea. Grades 10-12. \$6.00. This activity packet presents a variety of poems about the sea, written by American poets. One section deals exclusively with poems by Pacific Northwest poets. Students are exposed to many different poetic responses to the sea and are expected to read, understand and discuss each selection.

Marine Biology Activities. Grades 7-Community College. Revised. \$11.00. This activity packet introduces students to the major themes of marine biology. Through classroom, laboratory and field trip activities, students develop an understanding of structural adaptation, behavioral adaptation, zonation and habitat. This packet includes teacher background in-

formation, student handouts and tests.

Marine Biology Field Trip Sites. Grades K-Community College. \$6.00.

This book provides teachers with the necessary information to select a beach field trip site in the Puget Sound region. A map and an inventory of facilities is given for each location. Checklists and sample letters are provided as models to aid the teachers in planning the field trip.

Marshes, Estuaries and Wetlands. Grades 10-12. Revised. \$11.00. Set of 28 slides to accompany unit, \$17.00.

This activity packet introduces students to the watershed system. Activities help students look at both the salt and fresh water environments. An overview activity provides students with an opportunity to make and express their observations about fresh and salt water habitats. It allows them to view watersheds from a holistic perspective. Other activities focus more closely on field and lab investigations of salt marshes and estuaries. Finally, students are given a working model by which they can inventory fresh water wetlands in and near their communities. The inventory, based on the one used by King County Resource Planning Division for their wetlands survey, focuses on the physical, biological, aesthetic, visual and educational value of wetlands.

Squalls on Nisqually: A Simulation Game. Grades 10-12. \$6.00. This is a simulation game about land use decision making in a coastal zone environment. The simulation is based on a land use proposal submitted by the Weyerhaeuser Company for the development of land near the Nisqually Delta. The students are given the background to the historical development of the Nisqually Delta and relevant information from the Environmental Impact Studies completed for

the Nisqually. Through role-playing, students learn about the socio-political and economic interaction involved in a decision-making process. Students are encouraged to research their roles and determine positions based on the data. This simulation process can be easily adapted for other land-use issues.

Ordering Instructions: Mail checks, payable to Pacific Science Center, to: Pacific Science Center Gift Shop 200 Second Avenue North Seattle, WA 98109

**Shipping charges are extra. include \$2.95 for first item and 75 cents for each additional item.*

**Washington residents add 8.2% sales tax.*

University of Puerto Rico

Sea Grant College Program
UPR-RUM, P.O. Box 5000
Mayagüez, PR 00681-5000
(809) 834-4726
Fax (809) 265-2880

Fishes of Puerto Rico (Bilingual).

Vangie F. Hernández. **UPRSG-E-43**. \$3.00.

This 40-page, black and white guide to the common fish species of Puerto Rico includes Spanish, English and taxonomic names plus information on average size and edibility. Useful to students, libraries, restaurant owners and the general public.

The Manatee: Questions and Answers (Spanish only). UPR Sea Grant and Caribbean Stranding Network. **UPRSG-E-53**.

This free full color, illustrated pamphlet introduces the reader to several aspects of the manatee's life cycle and her need for protection. Presented in a question and answer format, it addresses queries like: What is a manatee? Where are the manatees found? Why is the manatee in danger of extinction? and How can community members help?

Seaweeds and Their Uses (Spanish only). S. Vélez and Communications/Publications. **UPRSG-E-52**. \$2.00.

This volume, an illustrated guide to seaweeds and their uses, includes sections on the different types of seaweeds, how they serve us as food, fertilizer, animal fodder, a source of energy production, components of pharmaceutical products, and much more.

On the Verge: Limericks on the Life and Times of the Queen Conch (English). Dr. Richard Appeldoorn. **UPRSG-36**. \$1.25.

This witty book describes the life history, ecology and lore of the queen conch through limericks. Scientific facts and hypotheses are whimsically presented and illustrated. Educational and fun, this book will appeal to anyone interested in marine biology.

Full Color Posters: Edible Fish of the Caribbean (bilingual), \$4.00; **Fish of the Open Sea** (Spanish only), \$3.00; **Manatees** (Spanish only), \$2.00; **Rip Currents** (bilingual), \$1.00.

Two and Three Color Posters (Free): **Fishing Rods** (Spanish only); **Fishing Reels** (Spanish only); **Clean Roads, Clean Reefs** (English only).

Video: The Unseen Tragedy (English and Spanish versions available. Send a blank tape.)

This 30-minute video illustrates the unseen, submarine effects of Hurricane Hugo on seagrass beds and coral reefs.

Fact Sheets: Seven Coast Notes (English) and 25 **Datos Marinos** (Spanish). Free.

Address marine-related themes ranging from seafood nutrition and safety issues to coral reef protection and ways to effectively protect the environment.

The Sea in Mythology and Literature (mostly Spanish). **UPRSG-W-51**.

UPR Sea Grant recently joined with UPR's Department of Humanities to offer an international Seminar on the Sea in Mythology and Literature. This 150-page bookentitled *El mar en la literatura y la mitología*, includes the essays presented during the week-long conference. Besides the many presentations made in Spanish, English titles include "Nature in Edgar Allan Poe's Sea Stories" and "The Rime of the Ancient Mariner and Coleridge's Vision of Evil."

A Field Guide to the Thalassia fields of Puerto Rico (Spanish only). C. Garcia. **UPRSG-E2-48**. \$1.00.

This is the first in a series of illus-

trated field guides on marine ecosystems of Puerto Rico. Focusing on the underwater fields of marine plants, this guide describes the system's productivity, flora, fauna, and the trophic relationships among its inhabitants. Includes glossary and field identification key.

Seamanship: Rigging and Knots

(Spanish only). J.A. Suárez-Caabro. **UPRSG-E-14**. 50 cents. Commonly used nautical terms and phrases are defined for the fisherman, student, scout, and others. Simple line drawings and instructions for making knots are included.

Chitons of Puerto Rico: A Field Guide (Spanish only). C. Garcia. **UPRSG-EI-33**. \$1.25.

This educational field guide offers simple taxonomic keys for field identification and classification of chitons (Mollusca: Polyplacophora) of Puerto Rico.

Marine Mammals of Puerto Rico (Spanish only). J.A. Suárez-Caabro. **UPRSG-E-20**.

This illustrated guide to marine mammals is based on reports of marine mammal sightings around Puerto Rico. Available through the depository on a loan basis.

The Sea: Medium and Subject in Making Art (Spanish only). Félix Zapata. **UPRSG-E-17**.

This booklet shows ways of using marine vegetation, rocks, sand and shells to make objects ranging from paper to sculpture and ceramic glazes.

Careers in Marine Sciences (Spanish only). Maria Beatriz Riesco. **PRU-E-16**.

This free publication serves as a guide to students who are considering a career in marine sciences. Presented in the form of ques-

tions and answers, it explores preparation for and the responsibilities involved in various careers related to ocean life.

Finding Marine-Related Information in School and Public Libraries (Spanish only). Alida Ortiz. **PRU-E-1.**

This free pamphlet assists students and teachers in using libraries as a source of marine-related information. Includes a list of marine-related periodicals, a compendium of basic scientific names and plant and animal classifications, and points out educational institutions with good library resources concerning the sea.

Let's Learn About the Sea (Spanish only). Vangie F. Hernández. **PRU-E-8.**

This 135-page textbook for junior and senior high school students includes sections on marine inhabitants, marine physics, coastal dynamics, glossary and review exercises. Available through the depository on a loan basis.

Voices of the Sea (Spanish only). Loerina Santos-Silva. **PRU-E-15.** \$2.50.

This 70-page book of poetry is based on conversations with Puerto Rico fishermen. Many legends and local sea stories are preserved in these poems, illustrated with pen and ink drawings by Alicea.

Ordering Instructions: Send requests, with checks payable to University of Puerto Rico, to:

Communications Office
Sea Grant College Program
UPR-RM Box 5000
Mayagüez, PR 00681-5000
(809) 834-4726
Fax (809) 265-2880



Rhode Island Sea Grant

University of Rhode Island Bay Campus
Narragansett, RI 02882-1197
(401) 792-6842

Narragansett Bay Poster. RIU-M-88-001. P1068. \$2.50.

This brilliantly colored 18-by-24-inch poster, showing the contour of the floor of Narragansett Bay, was produced by 3-D computer modeling.

Overview of Narragansett Bay. RIU-G-88-001. P1065. 4 pp. \$1.00.

Everything from what Narragansett Bay looked like 9,000 years ago to the most up-to-date boating and fishing statistics can be found in this fact-filled summary. The report includes three maps; a table listing 16 of the bay's physical characteristics (volume, deepest point, salinity, etc.); and discussions of biology and pollution in the bay.

Pollution Impacts from Recreational Boating: A Bibliography and Summary Review. Andrew S. Milliken and Virginia Lee

RIU-G-90-002. P1134. 26 pp. \$6.00.

This report provides an excellent starting point for anyone studying the growing problem of boat pollution. The first half is a review and summary of available information on the sources and effects of the four main types of pollution associated with recreational boating (sewage, plastic debris, toxic boat paints, and engine-associated pollutants). The second half is a comprehensive 170-entry bibliography, arranged by subject, of relevant research papers, technical reports, government publications, and workshop proceedings.

The Northern Quahog: The Biology of *Mercenaria mercenaria*. Michael A. Rice. **RIU-B-92-001. P1276.** 68 pp. \$7.95.

This comprehensive book offers detailed information on the mollusk's biology and ecology, how it is affected by its environment, fishery issues, and methods of aquaculture.

Safe Alternative to TBT for Wooden Lobster Traps. RIU-G-89-002. P1120. 2 pp. \$1.00.

Rhode Island Sea Grant researchers have developed a new salt-dip technique that protects offshore wooden lobster traps from trap worm damage. This method provides a simple, safe, effective, and economical alternative to dips containing the caustic chemical TBT (tributyltin). Step-by-step instructions for building a dip tank, preparing a saturated salt solution, and dipping traps are given in this fact sheet.

Fish of Narragansett Bay Poster and Brochure. LaVie McDonald.

Poster **RIU-G-90-005. P1144.** \$5.95. Brochure **RIU-G-90-006. P1145.** 8 pp. One copy included free with poster. Additional copies \$1.00 each.

Lushly printed in six colors, this dramatic large-format (39 x 16.25 inch) poster illustrates 16 fish species commonly found in Narragansett Bay. The fish are accurately rendered in bright colors and swim against a vivid blue and green background. Accompanying the poster is a brochure that details the fish size, physical characteristics, where found, how caught, prey, and additional remarks. The brochure is printed on recycled paper.

The Changing Role of Today's Harbormaster. Mark Amaral. **RIU-G-90-004. P1142.** 12pp. \$3.00.

This booklet, based on a survey of all New England harbormasters, assesses the current issues facing today's harbormasters. It includes information on the changing background of harbormasters, organization of the harbormaster office, developing trends in law enforcement and mooring regulations, current training, and training that will be necessary in the future.

Air-Sea Rescue Procedures Video-

tape. The University of Rhode Island and U.S. Coast Guard **RIU-F-90-001. P1141.** 20-minute videotape. \$15.00.

A U.S. Coast Guard air-sea rescue is a tricky maneuver at best. Unfortunately, in many cases the people being rescued compound the difficulty and danger because they do not understand rescue procedures. In this educational video, Coast Guard personnel demonstrate several rescue techniques and give step-by-step instructions for those being rescued. The potentially life-saving information is vitally important for anyone who uses a boat. Procedures covered in the video are: delivery of equipment (such as pumps or medical supplies) or personnel from a helicopter to a vessel; evacuation of people from the water or rafts to a helicopter; and medical evacuation of a sick or injured person from a boat to a helicopter.

Fact Sheets. One-page flyers (order by number). 50 cents or five for \$2.00.

Haddock. P185.

Flounder. P186.

Scallop. P187.

Atlantic Cod. P188.

Atlantic Mackerel. P189.

The American Lobster. P1066.

Barnacle. P597.

Understand Him, He's an Old Timer: Horseshoe Crab. P605.

Waves. P606.

Red Crab. P615.

Phytoplankton. P637.

Beaufort Wind Force Scale. P645.

Zooplankton. P651.

Irish Moss: Seaweed in the Home Garden. P662.

Old Sea Sayings. P800.

The Role of Grass Shrimp in a Tidal Marsh Ecosystem. P833.

Abyss. P858.

Sea Farming. P886.

What Is Oceanography? P915.

Beach Processes in Southern

Rhode Island. P923.
Tunicates: Animals with a Coat. P927.
Brine Shrimp. P931.
Boating Security Tips. P932.
Eelgrass. P934.
Sounds in the Sea. P954.
Salt: In the Oceans and in Humans. P955.
Fish Schooling. P956.
Sand. P976.
Tidepools. P995.
The Trumpet Worm. P996.
Rhode Island Swans: Beauties or Beasts? P1082.
Red Tide in the Northeast. P1099.
Quahog. P1123.
The Fishing Industry in Galilee. P1147.
Hurricanes. P1269.
Dealing With the Aftermath of a Hurricane. P1270.
Hurricane Plan for Boaters. P1266.
The Blackstone River. P1175.
The Pawtuxet River. P1187.
The Moshassuck River. P1188.
The Woonasquatucket River. P1189.
The Pawcatuck River. P1314.
Zebra Mussel: An Unwelcome Visitor. P1326.
Swordfish. P1337.

Field Management for Scuba-Related Injuries. Thomas Platt, Kathleen Castro, Richard Moon, Phillip Sharkey, Malia Schwartz, Carole Jaworski. **RIU-H-92-003. P1293.** 20 pp. \$4.95.
 Scuba-related injuries are often difficult to diagnose. This handy, easy-to-follow guide directs the general public, pre-hospital and hospital personnel on how to provide on-site treatment and collect necessary information, regardless of expertise.

Harbormaster Reference Series. Mark Amaral and Virginia Lee, eds.
 Designed to assist harbormasters in meeting their expanding job roles, this series, comprising six modules, provides a comprehensive reference guide for area harbormasters. The four modules now available are listed below:

Public Rights to Coastal Waters: Applying the Public Trust Doctrine. RIU-E-92-001. P1285. 23pp. \$3.50.

Federal Regulations: Coastal Structures, Environmental Protection, and Boating Safety. RIU-E-92-002. P1286. 42 pp. \$3.50.

Rhode Island State Regulations: Environmental Protection and Boating Safety. RIU-E-92-003. P1287. 153 pp. \$9.00.

Municipal Mooring Area Management. RIU-E-92-004. P1288. 19 pp. \$3.50.

Practical Twinework for Fishermen and Gear Technologists. Joseph T. DeAlteris and Kathleen M. Castro. **RIU-H-90-001. P1178.** 160 pp. \$12.00.

Beginning with twine characteristics, this manual assists in developing the skills necessary to construct three different types of small-scale fishing gears: trawl net, gill net, and fyke net. Net plans and construction of gears are described in simple easy-to-understand language, with illustrations used to clarify descriptions. The manual is designed not only for the neophyte who has never handled a needle, but also as a teaching tool for professionals and a reference source for fishermen.

Plastics are Forever Poster. LaVie McDonald **RIU-G-90-015. P1190.** \$1.00.

Plastics last indefinitely in the environment. This 11-by-17-inch, three-color poster reminds us to conserve resources and protect the planet. Printed on recycled paper.

Marine Career Series: Marine-Related Occupations-A Primer for High School Students. Prentice K. Stout and Rhode Island Sea Grant Information Office. **RIU-E-76-001. P486.** 19 pp. \$4.00.

The high school student looking for marine-related career direction will find this booklet especially useful. The booklet, revised and updated in 1990, offers job descriptions, contact agencies,

and resource information on marine technical, professional, and academic and scientific careers. Also included is a state-by-state listing of Sea Grant programs nationwide to assist the student with additional information.

How to Find Marine Information in Public and School Libraries. Mary Grady, ed. **RIU-H-91-003. P1205.** 8 pp. 50 cents.

Students writing term papers or doing science projects on marine topics may not realize that relevant information is available in local libraries. This brief, but thorough, brochure explains how to get around in the library, select a topic, search the card catalog, and more.

Coastal Birds of the Northeast Poster. Roberta Furgalack. **RIU-G-92-018. P1312.** \$5.95.

First in a series of Rhode Island Sea Grant "Birds of the Northeast" posters (later posters will cover shorebirds, waterfowl, and marsh birds). Meticulously drawn to detail. Accompanied by an informative brochure (below) with useful information on each of the birds illustrated. A brochure comes free with the poster. Additional copies of the brochure may be ordered for \$1.00 each. Poster 18 by 24 inches.

Coastal Birds of the Northeast Brochure. Rhode Island Sea Grant Information Office. **RIU-G-92-019. P1313.** \$1.00.

This brochure, the first in a series of "Birds of the Northeast" brochures, provides detailed information on the 16 coastal birds of the Northeast. It details the birds' habitat, physical characteristics, nesting sites, and provides additional comments. Can be easily photocopied for classroom use.

Global Change Posters. 11" x 17". \$1.00 each. **Poster Packet** (all 14 posters) **P1308,** \$10.00.

Winners of a New England Global Change Poster Contest in which artists share their vision of the global change issue. Ideal for a classroom unit on global change.

Order individually or save \$4.00 by ordering the complete packet. The winning black-and-white posters, printed on recycled paper, include:

- | | |
|--------------------------------------|--------------|
| Stop Global Warming | P1294 |
| Stop the Cutting | P1295 |
| Save Mother Earth | P1296 |
| Homeless Shelters for Animals | P1297 |
| Please Don't Hurt Me | P1298 |
| Earth in Pollution Matrix | P1299 |
| Closed Due to Carelessness | P1300 |
| Stop Forest Destruction | P1301 |
| Sea Level Rise | P1302 |
| Acid Rain | P1303 |
| Delicate Relationship | P1304 |
| It's In Our Hands | P1305 |
| Use Energy to Turn Down Heat | P1306 |
| Earth Could Fry Like an Egg | P1307 |

Ordering Instructions: Send request, along with payment, to:

Communications Office
Rhode Island Sea Grant
University of Rhode Island Bay
Campus
Narragansett, RI 02882-1197



South Carolina Sea Grant Consortium

287 Meeting Street
Charleston, SC 29401
(803) 727-2078

Sea Sampler: Aquatic Activities for the Field and Classroom (Secondary). Wendy B. Allen and Patty O. McLaughlin. **SCSG-TR-85-2.** 114 pp. \$4.00.

A guide for grades 7-12 to successfully tested aquatic activities for the field and classroom, including how to set up a marine aquarium; how to conduct a beach study, salt marsh study and freshwater marsh study; classroom projects on food chain connections, brine shrimp and more.

Sea Sampler: Aquatic Activities for the Field and Classroom (Elementary). Wendy B. Allen and Patty O. McLaughlin. **SCSG-TR-85-1.** 118 pp. \$4.00.

A guide for grades K-6 to successfully tested aquatic activities for the field and classroom, including how to explore a pond community, a beach, a marsh; discovering how a clam's siphons work; classifying beings and things; investigating osmoregulation and more.

A Guide to Common Jellyfishes of South Carolina. Dale R. Calder and Margaret C. Pridgen. 12 pp. \$1.00.

An illustrated guide to these misunderstood inhabitants of our coastal waters with information on their life history, identification, and what to do if you are stung.

Red Tide: The Facts. Mel Goodwin and Virginia Beach. 11" x 17" poster. Free.

A handy poster for dispelling the myths and promoting the facts concerning red tide.

Coastal Heritage Newsletter. John Tibbetts, editor. Free.

The quarterly newsletter of the South Carolina Sea Grant Consortium featuring a wide range of topics, including aquaculture, water safety, storm water pollu-

tion, wetlands and climate change. Also includes a listing of new publications and current programs.

Reuse or Recycle: Don't Throw It All Away. Free.

A checklist of innovative ways to reduce waste at home, at work and school, at the store, on weekends and in your car and yard.

Hurricane Preparation Checklists. Free.

A handout listing basic preparations, supplies, and recommendations in the event of a hurricane.

Cleaning Up Our Act; Our Valuable Wetland Resources; How to Plant a Dune.

Three 20-minute slide presentations with script and accompanying handouts which can be borrowed without charge for presentation to schools, civic and church groups, and other community organizations.

A Guide to Aquatic Field Study Sites in South Carolina. Wendy Allen and Patricia S. McLaren. Illustrations by Maura Hannon Kenny. 55 pp. \$6.00.

Designed to help people locate and more effectively use the state's aquatic resources for educational purposes. Is primarily designed for educators, but can be used by anyone interested in exploring and learning more about aquatic ecosystems.

Watershed Poster. Leigh Handal. Free.

Full-color poster illustrating the common uses impacting upon a watershed in South Carolina. Also includes rain cycle and map of major South Carolina watersheds. Designed for 5th, 6th and 7th graders.

Ordering Instructions: Make checks payable to the SC Sea Grant Consortium and send with order to:

Publications
South Carolina Sea Grant
Consortium
287 Meeting Street
Charleston, SC 29401

University of Southern California Sea Grant Institutional Program

Hancock Institute for Marine Studies
University of Southern California
Los Angeles, CA 90089-1231
(213) 743-6068

Wet and Wild: Six Bilingual Supplementary Marine Curriculum Guides for Teachers, K-6.

Six units, each in English and Spanish, contain introduction of background information for teachers, approximately 25 multidisciplinary lesson plans in each unit and a list of reference books and films. Published by USC Sea Grant and the Evaluation, Dissemination and Assessment Center for Bilingual Education, California State University, Los Angeles.

Unit 1: The Physical Ocean. USCSG-ME-01-83. 171 pp. \$10.00.

Unit 2: Ocean Management. USCSG-ME-02-83. 66 pp. \$8.00.

Unit 3: Research. USCSG-ME-03-83. 146 pp. \$10.00.

Unit 4: The Biological Ocean. USCSG-ME-04-83. 180 pp. \$20.00.

Unit 5: The Economic Sea. USCSG-ME-05-83. 150 pp. \$18.00.

Unit 6: Marine Ecology. USCSG-ME-06-83. 188 pp. \$23.00.

Cross Reference for the California State Science Addendum. \$1.00 (no charge with complete set).

Complete Set (Units 1-6). \$85.00.

Tuga the Turtle. Dorothy M. Bjur. USCSG-ME-03-82. \$6.00.

This children's book is in Grade Two Braille and large letters. It tells the story of a sea turtle who ends up in a tide pool and learns about tidal animals.

Mini-Information Booklets:

Tidepool animals/Los animales que viven in las pozas de la marea; Sharks and Other Sea Creatures/Los tiburones y otros animales marinos; Fantastic Marine Animals/Fantasticos animales marinos. USCSG-ME-02-82. \$12.00.

Three booklet set with each booklet containing approximately 50 mini articles, in both English and

Spanish, about marine animals, their characteristics and behavior.

Marine Studies Idea Book: For Teachers, Grades K-6. English or Spanish (please specify). USCSG-ME-01-82. \$8.00.

A resource book of ideas and activities for the development of lesson plans by teachers, available in either English or Spanish for use in bilingual and international programs.

Dimensions of the Sea. Marine education slide sets with narrative for Grades K-graduate level.

Each set contains 35 mm color slides on the marine community and environment, accompanied by a written narrative that can be adapted by teachers to the appropriate grade level. The narrative is available in either English or Spanish. Sets (USCSG-ME-04-82) include:

The Physical Ocean (13 slides). \$11.00.

Ocean Management (15 slides). \$12.00.

Ocean Research (15 slides). \$12.00.

The Biological Ocean (22 slides). \$16.50.

The Economic Sea (27 slides). \$20.00.

Marine Ecology (44 slides). \$33.00.

Complete Set (136 slides). \$95.00.

**On the Waterfront: Teaching Sea-
port Management** Jenny Cashman. Reprinted from *Sea Grant Today* 12(1):12-13, 1982. USCSG-R-09-82. \$1.00.

Gamming with Dorothy Bjur. Stephanie Yoder. Reprinted from *Current, The Journal of Marine Education* 2(4):16-17, 1981. USCSG-R-09-81. \$2.00.

Marine Education in Spanish. Shirley J. Hudgins. Reprinted

from *Sea Grant Today* 10(3):12-13, 1980. USCSG-R-03-80. \$2.00.

Downtown Aquaculture (Inner-City Marine Education). Dorothy M. Bjur. Reprinted from *Current, The Journal of Marine Education* 1(3):11-12, 1980. USCSG-R-02-80. \$2.00.

Wet and Wild (Marine Studies for the Visually Impaired). Shirley J. Hudgins. Reprinted from *Sea Grant Today* 9(8):3-5, 1979. USCSG-R-12-79. \$2.00.

An Innovative Approach to Teaching Marine Sciences. Dorothy M. Bjur. Reprinted from *Revista de Biologica Tropical* 26 (Suppl. 1):9-13, 1978. Available in English and Spanish USCSG-R-03-79. NTIS# PB-299130/AS. \$2.00.

Teaching Marine Studies When You Don't Know a Snipe From a Sea Cucumber. Gail Ellison. Reprinted from *Sea World*, Fall 1977, pp. 33-35. USCSG-R-05-77. \$2.00.

The Role of Sea Grant Education. Dorothy M. Bjur. Reprinted from the *Journal of Marine Education*, Fall 1976, pp. 10-12. USCSG-R-04-76. \$2.00.

Ordering Instructions: Make checks payable, by a U.S. bank, to USC Sea Grant Program. Mail request with check to:

University of Southern California
Sea Grant
Publications Office
University Park
Los Angeles, CA 90089-0373.

Texas A&M University

Sea Grant College Program

P.O. Box 1675

Galveston, TX 77553-1675

(409) 762-9800

Sea Sources. 192 pp. All levels.

TAMU-SG-79-402 (rev) \$4.00

Selected bibliographic and resource materials on children's literature of the sea are gathered in this useful compendium for teachers and librarians. The 192-page book includes 745 titles in 10 categories: Information; biographies/explorers; fiction; picture books; whales and sea mammals; folk and fairy tales; poetry/songs; activities; short stories and selected chapters; and bibliographies.

Aquatic Science: Marine Fisheries

Biology. 16 pp. Grades 4-12.

TAMU-SG-92-401. Single copies free.

This illustrated booklet focuses on animal life in the marine areas of Texas and can be used as a handbook for the novice beachcomber or as an educational supplement in the classroom. Information is available on waves, tides and currents; shoreline organisms; estuaries; coastal food chains; fish and shellfish identification (including descriptions and line drawings of fish indigenous to Texas waters); and special project ideas related to the life history and management of coastal organisms. A list of related reading materials is included. This is a revised edition of an earlier Sea Grant publication.

Children's Literature-Passage to the Sea. 56 pp., 4 questionnaires. Grades K-7. **TAMU-SG-80-401.** \$2.00.

This marine awareness learning package is based on eight books by nationally recognized authors. At least one book is appropriate for each elementary grade and all have a sea or coastal setting. Each book is related to interest center activities that allow students to

experiment with or express what they have learned. Complete directions for 39 activities are included; related to language arts, music, art, science and social studies.

Marine Organisms in Science

Teaching. 192 pp. Grades 4-12.

TAMU-SG-80-403. \$4.00.

This laboratory-oriented workbook includes 42 activities for using living marine organisms in existing science programs. The workbook is presented in a discovery type format that includes two sections for the teacher, a pre-lab and a post-lab, and a student investigation section. Student sections are formatted to allow easy duplication on school copying equipment. The activities use such organisms as brine shrimp, oysters, ghost, fiddler and hermit crabs, sea anemones, barnacles and sponges.

Fairy Tales of the Sea. 152 pp., 9 original illustrations. Grades K-12. **TAMU-SG-81-402.** \$4.50.

This collection of fairy tales includes tales from every inhabited continent - America, Asia, Australia, Europe and Africa - so that American children (and adults) can enjoy their varied heritage. It is believed that the collection is the only volume of international folk and fairy tales exclusively about the seas. The tales, 25 in all, range from the familiar - such as Hans Christian Andersen's *The Little Mermaid* - to lesser known - such as Pearl Buck's adaptation of *The Flying Ship*. The book is designed in an easy-to-read format to allow even the youngest readers to enjoy the fairy tales. While the collection is complete in itself, there is an accompanying teacher's guide (**TAMU-SG-N-403**) that suggests varied classroom uses.

Fairy Tales of the Sea Teacher's Guide. 28 pp. Grades 4-9. **TAMU-SG-81-403.** \$2.00.

The communication potential of *Fairy Tales of the Sea* lends itself to a language arts curriculum. This guide is written with objectives according to the English Language Arts Curriculum Framework suggested by the Texas Education Agency. Activities cover the language arts of listening, reading, speaking and writing. Although designed for grades four through nine, there are some activities suitable for younger or older students who are particularly motivated toward study of the sea.

Marine Education - A Seagoing Educational Experience. 28 pp., 3 data sheets. Grades 7-12. **TAMU-SG-83-401.** \$1.50.

This workbook was prepared as part of a working cruise program for high school students and teachers that is offered by The University of Texas Marine Science Institute at Port Aransas. The book may also be useful to high school and junior college science students and teachers who have access to a research vessel. Included are descriptions of the Corpus Christi Bay area and the study sites, field equipment, analytical procedures and data collection. Detailed instruction for onboard activities are given.

Life on Board American Clipper Ships. 36 pp., 3 photographs, 2 drawings. Grades 7-12. **TAMU-SG-83-402.** \$1.00.

Author/archivist Charles Schultz has relied on sailor's actual diaries and logs kept by clipper ship captains. The book also includes an introduction that defines the clipper ship era, suggestions for further reading and a glossary. Photographs of American-built

clipper ships, supplied by Mystic Seaport Museum, are included, as is a redrawing of an 1850-era world chart that shows the major routes followed by the clipper ships. In addition to its interest to the general reader, this book is intended to supplement English or American history classes in grades 7 through 12. It also can be used with younger, gifted students.

Bird Island Basin Environmental Study Area. 36 pp. Grades 7-12. **TAMU-SG-86-401.** \$2.00.

The concept of environmental study areas was a direct outgrowth of the 1970s ecology movement. The idea was to designate specific areas where school groups, youth groups or others could enjoy a directed study experience in the field and where specific ecological principles could be demonstrated. The Bird Island Basin Environmental Study Area, located at Padre Island National Seashore, is just such a place. This guide contains a number of exercises that are designed as points of departure for hands-on learning experiences. Most of the activities are presented in a format similar to high school-level laboratory experiments. Although written with the Bird Island Basin area in mind, they can easily be adapted to other environments. Many of the activities can be done on the school lawn, on the playground or in a nearby park.

Annotated Guide to the Barnacles of the Northern Gulf of Mexico. 36 pp. Grades 9-12. **TAMU-SG-86-402.** \$3.00.

The 49 species of thoracican barnacles (the goose and acorn barnacles) that are known to occur in the northern Gulf of Mexico are differentiated by a taxonomic key based on external character, with extensive illustrations and a glossary. The guide also includes an annotated list of these species and three systematically questionable ones, with area range, bathym-

etry, substratum type and other data; a list of 16 species that have been found in the southern Gulf of Mexico but not in the northern Gulf; directions for collecting and examining specimens, and a list of references especially useful for further study of particular groups.

Texas Coast Hurricanes. 24 pp. Grades 4-12. **TAMU-SG-86-505.** Single copies free.

Designed to help coastal residents understand, prepare for and recover from the effects of hurricanes, the book includes tracking charts, probability of hurricane occurrence, guidelines for individual responsibility, checklists to help residents plan for safety, hurricane names through 1991, definitions of hurricane-related terms, and descriptions of Texas' most notable storms of the past 20 years. The checklist, definitions and directions for hurricane tracking are in both English and Spanish. The book includes many of the articles and photographs first published in *Sea Grant's Texas Shores* magazine.

Questions About Careers in Oceanography. 18 pp., 5 photographs. Grades 7-12. **TAMU-SG-87-401r.** Single copies free.

A handy guide to the field of oceanography, this booklet is a response to inquiries by young people considering a career in the discipline. Questions such as "What is an oceanographer?," "Where does one study oceanography?," and "Who hires and supports oceanographers?" are posed and answered. Additional sources of information are cited in the text, and complete addresses for these agencies and organizations are provided.

Vocational-Technical Marine Career Opportunities in Texas. 22 pp., 7 photographs. Grades 7-12. **TAMU-SG-80-402r.** Single copies free.

This booklet is to assist high school counselors, teachers and students better understand the career opportunities available in the Texas

marine industry. It provides background information and descriptions of jobs in the maritime transportation, offshore mineral, oil and gas, commercial diving, commercial fisheries and shipbuilding industries. Information about the training needed to enter particular positions also is included. Organizations and schools, with addresses, are listed at the end of each section for reference.

How to Set Up and Maintain a Saltwater Aquarium. 8 pp., 7 illustrations. Grades 3-12. **TAMU-SG-81-504.** Single copies free.

This pamphlet outlines the basic steps to establishing a saltwater aquarium anywhere in the country. Presented in as simple language as possible, with accompanying cartoon illustrations, the guide is designed for young children, but is equally useful for older students and adults. Detailed instructions are given on the materials needed, food preferences, synthetic saltwater, filter systems and potential problems.

Hurricane Warning! 12 pp. Grades K-7. **TAMU-SG-82-401.** Single copies free.

Owlie Skywarn talks about hurricanes in a style written for elementary students. Printed in large type for easy reading, the brochure tells of Hurricane Camille in a story form and includes a checklist of do's and don'ts when a storm threatens. There also is a safety certificate (to be signed by a teacher or other adult), signifying that the student knows the appropriate safety rules.

Water: How Safe Are You? 8 pp. Grades 4-12. **TAMU-SG-87-402r.** Single copies free.

As the weather turns hot there is nothing so inviting as the thought of cool water and swimming, skiing, boating, fishing, or just lazing away the afternoon. Each year in Texas an average of 650 people get so involved in their activities that the end result is death by drowning. Since most victims are

teenaged males between 15 and 19 years old, this bulletin points out some of the more obvious, but often forgotten, safety practices. Written primarily for a teenaged audience, it covers swimming, river recreation and boating. It includes a list of reference brochures, films, books and courses that can be used to supplement water safety instruction.

Field Trips...Logistics is Key to It All. 4 pp. Grades 7-12. **TAMU-SG-83-403.** Single copies free.

Science field trips provide opportunities for students that can make the teacher's work well worth the effort. The excursion allows students to see and experience things they have never seen or felt before, and creates a hands-on approach to study. To be successful, a field trip must be thoroughly planned. This monograph provides teachers with detailed, step-by-step guidelines to follow in planning a field trip, taking one and following it up in the classroom. Post-trip evaluation guidelines and references also are included.

Freshwater Inflow: Survival in a Sea of Salt. 16pp. Grades 9-12. **TAMU-SG-91-101.** Single copies free.

Thousands of miles of streams and rivers carry freshwater runoff from more than two-thirds of the 48 contiguous states into bays and estuaries bordering the Gulf of Mexico. As a result, some of the most productive ecosystems in the U.S. are found from the Texas/Mexico border to southwest Florida. Intended for a general audience, this full-color booklet uses photographs and a brief text to describe the importance of freshwater inflows along the Gulf of Mexico and serves as an introductory piece for community groups, schools and visitors to the Gulf States.

Flower Garden Banks National Marine Sanctuary. 24 panels, 17 photographs. Grades 7-12. **TAMU-SG-92-101.** Single copies free.

The northern-most living coral

reef on the U.S. continental shelf, the Flower Garden Banks recently attained National Marine Sanctuary status. The East and West Banks were first named by commercial fishermen around the turn of the century when bits of colorful coral and other organisms were brought up in the nets. In recent years, the Banks have been subjected to human pressures, most notably anchor damage caused by both the shipping industry and recreational boats. This brochure gives an overview of the importance of the Flower Garden Banks and describes the protection that will be afforded by Sanctuary status.

Protecting Marine Mammals. 6 panels, 7 color photographs. Grades K-12. **TAMU-SG-93-401.** Single copies free.

The playfulness and beauty of marine mammals in the wild are natural attractions for humans - and are proving to be deadly for some species. This six-panel brochure describes the inherent dangers of humans getting too close to whales, dolphins, porpoise, seals and sea lions and offers tips on how to enjoy the sight of the animals while still protecting them.

Marine Mammals Ashore. A Field Guide for Strandings. 316 pp., 60 black-and-white illustrations, 90 color illustrations. Grades 9-12. **TAMU-SG-93-601.** \$25.00.

The increase in frequency of marine mammal strandings throughout the world and in the numbers of volunteer workers posed a need for more coordinated guidelines and data collection. The National Marine Fisheries Service identified a need to present this information in a practical manual, the result of which is this book. It is intended for the dedicated volunteer, for those who want to recognize various species readily, and for those members of the general public or media who may observe stranding operations. The major mammal groups - pinnipeds, cetaceans, manatees and sea otters -

are described. Color illustrations are included for most species. The 5 1/2X8 1/2-inch format is handy for both field and laboratory use. Extensive references are included for each chapter, as well as indices by both subject and species.

A Guide to Planting Seagrasses in the Gulf of Mexico. 28 pp., 6 color photographs, 9 black and white photographs, 6 illustrations. Grades 10-12. **TAMU-SG-94-601.** Single copies free.

Seagrasses form one of the most productive plant communities on the planet. They provide valuable and virtually irreplaceable habitat for numerous recreational and commercial fishery organisms as well as their prey. Tremendous losses of this habitat have occurred in the Gulf of Mexico as a result of coastal development. Losses to seagrass habitats may be slowed or even reversed through properly planned and executed planting projects. This handbook was developed to guide agency personnel and private consultants involved in wetland permitting, mitigation and restoration through the successful completion of these projects.

Venomous Marine Animals. 25" x 18" poster. Grades K-12. **TAMU-SG-82-403.** \$1.00.

Ten categories of potentially dangerous marine organisms are illustrated on this poster - jellyfish, catfish, rays, sea urchins, toadfish, stargazers, worms, sponges and the octopus. The accompanying descriptions can help people become more aware of how problems with these animals might develop, how they can be avoided and how certain injuries should best be treated if they occur.

Whales and Dolphins Off the Texas Coast. 36" x 23" poster. Grades K-12. **TAMU-SG-84-505.** \$3.00.

This poster depicts the five species of whales and dolphins most frequently stranded along the Texas coast. This is a full-color reproduction of a specially com-

missioned work by artist Lori Grassman. The Atlantic bottlenosed dolphin, spotted dolphin, pygmy sperm whale, beaked whale and great sperm whale are included, along with a brief description of each species.

Texas Rips! 11" x 17" poster. Grades K-12. **TAMU-SG-84-506.** Single copies free.

This water safety poster delivers a warning message about the dangerous rip currents along the Texas coast. A high percentage of drownings occur each year when swimmers or waders are caught in rip currents adjacent to rock groins, jetties or piers. The poster also includes a description of how to escape a rip current should a person be caught.

A Garden in the Gulf: Flower Garden Banks National Marine Sanctuary. 34" x 22" poster, 16 color photographs. Grades 7-12. **TAMU-SG-92-102.** \$3.00.

This poster intended for both the general public and the classroom tells the story of the Flower Garden Banks, the habitats, the problems created by humans, and the protection offered by National Marine Sanctuary status. Each bank includes different biotic zones, which are described and illustrated on the poster. Activities that will now be regulated are itemized on the back of the poster, and a general description of the National Marine Sanctuary Program is included.

Look...From a Distance...But Don't Touch, Feed or Harm in the Wild. 11" x 17" poster, 2 color photographs. Grades K-12. **TAMU-SG-93-402.** Single copies free.

This poster, designed to be displayed at marinas and charter boat docks or in bait houses, is a reminder to the general public to keep a distance between themselves and the naturally sociable dolphins, porpoise, seals, sea lions and whales. The emphasis is on enjoying the sight of the animals while ensuring that they also can return another day.

Texas Shores. Quarterly magazine. Subscriptions \$7.50 per year.

This 28-page thematic magazine examines issues affecting the Texas marine environment in detail. While the focus is one Texas' coastal environment, many of the issues are similar to those facing other regions of the country.

A Second Chance for South Bay. VHS format. 15 minutes. Grades 7-12. \$5.00.

This video addresses the first bay to be designated part of the Texas Coastal Preserve Program. South Bay is one of three hypersaline lagoon systems in the world.

Hooked on Seafood. VHS format. 33 minutes. Grades 7-12. \$20.00.

If fear of failure keeps you from cooking seafood at home, this entertaining and educational video provides a step-by-step guide to success. Designed for home economics classes, the video reveals the secrets to buying and preparing quality fish and shellfish. Quick, easily prepared recipes are also demonstrated in this handy reference for the novice as well as the seasoned pro.

Don't Mess With Texas Beaches. VHS format. 20 minutes. Grades 7-12. \$10.00.

This educational video helps students and teachers alike understand the cost of ocean dumping in terms of marine life and the actual cost of cleaning the state's beaches.

Balancing Act. VHS format. 15 minutes. Grades 7-12. \$5.00.

This documentary explains the purpose of the new Galveston Bay National Estuary Program and illustrates the many uses of the Bay and the need for a comprehensive management plan. By examining the two latest editions to Texas' Coastal Preserve Program, Christmas Bay and Armand Bayou, the viewer learns more about the biological significance of wetlands and water quality and the problems of confronting Galveston Bay as a whole.

Texas Shores - Saving What's Left.

VHS format. 27 minutes. Grades 7-12. \$10.00.

Increasing shoreline erosion has Texas officials and landowners worried about the stability of the land and the coastal economy. This video explains what erosion is, its causes, the effects, and both historic and contemporary solutions. It also shows the environmental and economic aspects of erosion that make it a statewide problem rather than just a coastal one.

Saltwater Aquarium. VHS format. 16 minutes. Grades 5-12. \$5.00.

An instructional video on the creation and care of a saltwater aquarium, the program covers curing the tank, water quality, testing procedures, and the do's and don'ts of home-based aquaculture.

Flower Garden Banks National Marine Sanctuary. VHS format. 9 minutes. Grades 7-12. \$20.00.

The Flower Garden Banks, the northernmost coral reefs on the continental shelf of North America, became a National Marine Sanctuary in 1991. Located more than 100 miles off the coast of Texas and 50 feet below the sea's surface, the East and West Banks serve as a regional reservoir of shallow-water Caribbean reef fishes and invertebrates. This video, co-funded by NOAA's Sanctuaries and Reserve Division and Texas Sea Grant, highlights the location and problems observed at the Banks, and describes what is being done to protect the Sanctuary. A full-color informational brochure accompanies the video, and an educational poster is available.

Reef Romance...The Flower Gardens. VHS format. 12 minutes. Grades 7-12. \$5.00.

The second part of the Flower Gardens video package examines the perpetuation of life at the Banks and highlights many of the types of spawning activities found in the Sanctuary each Fall season.

Environmentality: Learning to

Share Our World. VHS format. 56 minutes. Grades 7-12. \$5.00.

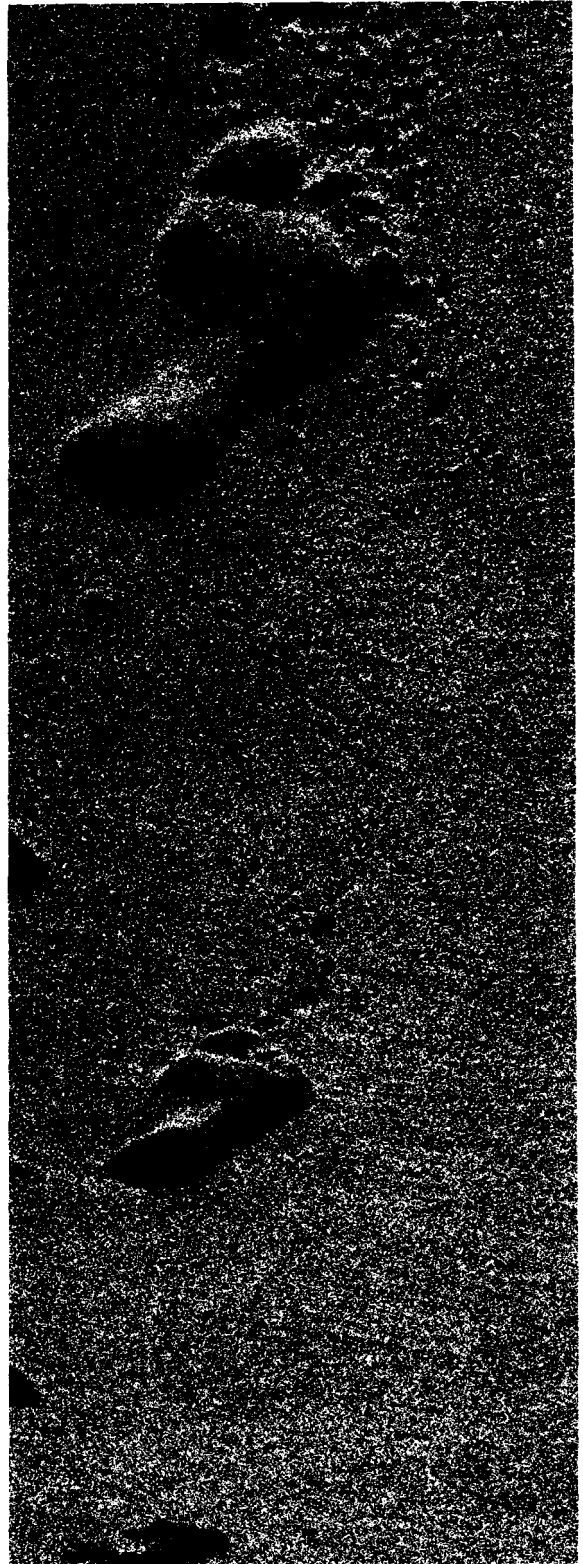
An educational satellite uplink program produced by The Louisiana Educational Resource Network and co-sponsored by Texas Sea Grant, Walt Disney World's EPCOT Center, Sea World of Florida, Southern University, Save the Manatee Foundation and the Louisiana Systematic Initiative Project. The video uses the manatee to exemplify how the planet Earth is a fragile place.

The Year of the Gulf Musical Science Tour Environmental Troubadours. VHS format. 20 minutes. Grades 2-7. \$5.00.

A journey spanning the coast of America's Sea is featured. Listen to the songs of Bill Oliver and Glen Waldeck while viewing the children and scenery of the five states that border the Gulf of Mexico. Songs performed all have an environmental theme as the duo shows some of the problems encountered along with some possible solutions. The video is targeted toward young ages but can be enjoyed by all.

Ordering Instructions: Make checks payable to Texas A&M University. Send check or official purchase order to:

Sea Grant College Program
Texas A&M University
P.O. Box 1675
Galveston, TX 77553-1675



Virginia Sea Grant College Program

Marine Advisory Services
Virginia Institute of Marine Science
Gloucester Point, VA 23062
(804) 642-7170

Biology and Identification of Rays in the Chesapeake Bay. Joseph W. Smith and J.V. Merriner. **Educational Series No. 20.** 22 pp. 50 cents.

Rays, along with sharks and skates, make up a group of fishes known as elasmobranchs. The skeleton of these fishes is composed entirely of cartilage. You can identify rays either by looking at the illustrations accompanying each species description or by following the key. A key is a table of characteristics for a group of organisms arranged in couplets, one of which you choose. At the end of the chosen characteristic, you are directed to another couplet and again make a choice. The species is eventually reached.

Sensing the Sea: A Curriculum Guide for Grades Two-Three. Ellen Odell-Fisher and Ronald N. Giese. **Educational Series No. 21.** 53 pp. \$2.00.

Most education is very land-oriented. Children learn shapes, colors, sizes, and textures from materials, plants, and animals found on land. There is another 70 percent of the earth that many people ignore, the sea. If young children are to develop responsible attitudes through total understanding of the earth, they must be exposed to all of its environments. The overall purpose of this unit is to arouse curiosity and interest in the aquatic divergent questions for which the student proposes possible solutions rather than deciding specific "correct" answers. Throughout these lessons, the process of investigation is most important. Facts about specific content are vehicles for developing interest in the marine environment and for teaching inquiry skills.

Sensing the Sea: A Curriculum Guide for Grades Kindergarten and One. Ellen Odell-Fisher, Ronald N. Giese and Mary E. Sparrow. **Educational Series No. 23.** 44 pp. \$2.00.

In this unit, both you and your students will be working together to establish a saltwater aquarium in your classroom. Setting up and maintaining the aquarium should be carried out with and by your students. Draw up the portals and batten down the hatches! Have your students transform your classroom into a submarine preparing for voyage to "inner space." You may enhance the illusion of a voyage by decorating your classroom windows as portholes and the door as a watertight ship's door.

The Marine Turtles of Virginia. J.A. Musick. **Educational Series No. 24.** 22 pp. \$2.00.

The marine turtles are among the most interesting representatives of Virginia's migratory marine fauna. They include the leatherback (the world's largest living reptile) and four species of hard-shelled sea turtles. The latter are represented by the very large and common loggerhead, the much smaller, less common Atlantic ridley, the rare Atlantic green turtle and the Atlantic hawksbill. This booklet identifies Virginia's marine turtles, describes their habits, habitat, distribution and nesting.

The Chesapeake: A Boating Guide to Weather. John Lucy, Terry Ritter and Jerry LaRue. **Educational Series No. 25.** 22 pp. \$1.00. A more ideal boating area than Chesapeake Bay would be difficult to find along the Atlantic Seaboard. With thousands of miles of sheltered shoreline, good water depth and proximity to major ur-

ban centers, the Bay is a boatman's paradise. However, the Bay's many protected harbors and relatively narrow width (a boatman normally can keep at least one shore in sight at all times) tend to produce a feeling of false security about the need to keep a close watch on weather conditions. The purpose of this publication is to remind boatmen that the Bay has many different weather moods, some of which can change quite rapidly. In addition, it should promote a better understanding of how basic weather features develop on the Bay and enable boatmen to enjoy the Chesapeake's unique waterways with fewer weather surprises.

Handle With Care: Some Mid-Atlantic Marine Animals That Demand Your Respect. John Lucy. **Educational Series No. 26.** 13 pp. \$1.50.

Generally speaking, the marine organisms found along middle Atlantic shores are not considered threatening to people. However, some of these animals can cause problems, either upon simple contact with the skin, as in the case of some jellyfish, or through careless handling. Larger inhabitants of coastal waters, such as stingrays and sharks, must always be treated with great respect because of the danger potential and their unpredictable nature. This description of nuisance and potentially harmful organisms is presented to help coastal residents and visitors become more aware of how problems with such marine animals might develop, how they can be avoided and how certain injuries should best be treated if they occur.

Fishy Activities for Your Small Fry. Mary E. Sparrow, Frances L.

Lawrence and Ronald N. Giese. **Educational Series No. 28.** 36 pp. \$2.00.

This kit is a collection of fishy ideas for use in your classroom. The ideas in this kit are diverse in nature and complexity. Select and adapt objectives and activities to meet the interests, capabilities and grade level of your students.

Shoreline Erosion in Virginia. S. Hardaway and G. Anderson. **Educational Series No. 31.** 25 pp. \$1.00.

This booklet is designed as an introduction to the process of erosion and some of the alternative measures used to combat it. The problem of shoreline erosion is most acute when coastal property with improvements is threatened by a rapidly receding shore bank. Many waterfront properties are bought and developed each year with little or no consideration of the shoreline situation. Consequently, additional money must be spent for erosion protection structures. Virginia's coast is a dynamic and active environment as well as a beautiful place to live. Sound judgement in coastal development is essential to effective control of shoreline erosion.

Nontraditional Marine Education Activities: A Planning Guide. Elizabeth A. Cornell. **Educational Series No. 32.** 10 pp., plus Marine Science Method (MSM) inserts. \$1.50.

To a classroom teacher, the rising cost of gasoline often means few or no field trips. If trips are still permitted, restrictions on distance may be imposed and justification required. Therefore, teachers must make any enrichment trip or alternative experience demonstrably accomplish objectives not readily achieved in the classroom. The information contained in the booklet provides guidelines to getting the most from research field trips, museum visits, resource speakers and other non-traditional experiences.

The Marine Mammals of Virginia. R.A. Blaylock. **Educational Series No. 35.** 34 pp. \$1.00.

To aid citizens in identification, this guide describes the natural history of marine mammals. This guide is organized by taxonomic orders and families; within a sub-family, species are listed by their frequency of appearance in Virginia waters. Space limits descriptions of the species' habitats and distributions to the western North Atlantic.

Virginia's State Parks...Your Backyard Classrooms. Irvine Wilson, Nancy Balcom, Francis Lawrence. **Educational series No. 38.** 200 pp. Available through teacher training workshops sponsored by the Virginia Department of Conservation and Recreation (804) 786-2132.

This publication gives educators easy access to seven field trip sites on the waters of the Chesapeake Bay and its tributaries, and provides a wide selection of Bay-related environmental education lesson plans created specifically for those sites. The guide-book is held in a three-ring binder to facilitate easy duplication of its many assorted hand-outs and worksheets. Each of the 40 teacher-friendly lesson plans includes: A concise background set tion, describing key scientific, historical and environmental concepts; a step-by-step procedure that begins and ends in the classroom; lists of necessary materials, objectives and resources; a description of the most suitable location in each park for the activity; and a cross-reference to the Virginia state instructional objectives for science and social studies.

Rally Round. Jan Hodges and Carol Rideout. 60 pp. Distributed through Sea Grant teacher training workshops.

Teachers and students all over Virginia are getting involved in caring for Virginia's environment. *Rally Round* tells how to do it. Upper elementary and middle school students often feel strongly

about environmental issues, but lack the skills and information necessary to take responsible and appropriate action. *Rally Round* is a tool for teachers and students grades 4-7 to use in channeling this interest and enthusiasm into productive learning experiences which result in positive environmental outcomes. Projects provide a structured approach to open-ended problem solving: Teachers serve as facilitators and advisors, and students have a real world experience in defining and addressing problems. Groups accepted into the program receive a copy of the handbook, a brief, concentrated on-site training seminar, an introductory classroom lesson taught by the Bay Team, and year-round advisory support services. Supplemental extended inservice training sessions are available on request.

Virginia Environmental Education Resources Directory. Jan Hodges. 80 pp.

The directory contains information about 80 environmental education organizations and agencies and over 250 individual entries about the products and services they provide. The directory is organized by topic (e.g., waste management/recycling, global issues, and marine and aquatic resources) and each chapter is introduced by a brief summary of current issues for the topic. The directory is co-sponsored by the Virginia Environmental Endowment, the Department of Environmental Quality, Virginia Sea Grant College Program, the Chesapeake Bay National Estuarine Research Reserve, the Virginia Resource Use Education Council, and the Virginia Department of Education. The database will be on-line searchable on VA-PEN.

Ordering Instructions: Make checks payable to VIMS. Send requests, with remittance if required, to:

Sea Grant Communications
Virginia Institute of Marine Science
Gloucester Point, VA 23062

University of Wisconsin Sea Grant

University of Wisconsin-Madison
1800 University Avenue
Madison, WI 53705
(608) 263-3259

Earthwatching III: An Environmental Reader. Sea Grant Institute and the Institute for Environmental Studies, University of Wisconsin-Madison. 1989. 160 pp., 10 photographs, teacher's guide, indexed. \$3.50, including postage and handling.

The book is designed to complement classroom materials on scientific and environmental topics for students in grades 4-12. It contains 200 half-page stories, an index and a teacher's guide. The stories were originally written for EARTHWATCH/radio, a two-minute public service radio program. The teacher's guide was written by Anne Hallowell. It includes Concept Mapping with Earthwatching III, Infusing Earthwatching II into Your Curriculum, Example Activity Using an Earthwatch Script, Questions for Classroom Use, and Sources of Additional Information.

Fish of Lake Michigan. 32 pp. 50 cents.

A history of the Lake Michigan fishery and illustrated descriptions of 21 important species of fish.

Fish of Lake Superior. 32 pp. 50 cents.

A history of the Lake Superior fishery and illustrated descriptions of 23 important species of fish.

The Coasts of Wisconsin. 34 pp. 50 cents.

Describes the physical characteristics, history and early development, and current uses and problems involving Wisconsin's Lake Michigan and Lake Superior coasts.

The Sea Lamprey: Invader of the Great Lakes. 8 pp. 50 cents.

Describes one of the most devastating ecodisasters in modern history - the invasion of the Great

Lakes by ancient parasitic ocean fish.

Green Bay: Portrait of a Waterway.

21 pp. 50 cents.

A collection of stories on the importance of Green Bay resources that originally appeared in the Green Bay Press-Gazette Newspaper in 1978.

Green Bay's Yellow Perch Fishery.

10 pp. 25 cents.

An illustrated history of this major Green Bay fishery, its recent problems and attempts to improve it.

The Fisheries of the Great Lakes. 19

pp. \$1.00.

This illustrated book profiles the primeval lakes from before the advent of Europeans to the region and traces the history of the fishery.

Eating Lake Michigan Fish. Fact

Sheet. Single copies free; \$4.00 per 100.

Explains in simple terms the problem of PCB contamination involving certain Great Lakes fish and why children shouldn't eat certain fish.

Ordering Instructions: Please add

\$1.00 for postage and handling. Or-

ders under \$20.00 must be prepaid.

Make checks or money orders pay-

able to University of Wisconsin-

Madison and send to:

Communications Office

UW Sea Grant Institute

1800 University Avenue

Madison, WI 53705-4094

Woods Hole Oceanographic Institution

Sea Grant Program
Woods Hole, MA 02543
(508) 457-2000 ext.2398

All About Oceanography: A Fun-Filled Activity Book. Tracey I. Crago, Lee Anne Campbell, and Sheri D. DeRosa, editors. E. Paul Oberlander, illustrator. **WHOI-E-92-002.** 32 pp. \$2.00 (quantity and educator discounts available).

Not just your average coloring book, *All About Oceanography* features factual information and illustrations depicting the various disciplines of oceanography. The book, highlighting research conducted at WHOI, also includes interesting oceanography trivia, crossword and word search puzzles, and a comprehensive glossary. Examples of subject areas covered include: hydrothermal vent communities, marine exploration through the ages, the use of satellites in oceanographic research, the Gulf Stream, erosion, marine mineral deposits, aquaculture, red tide, cetaceans, exploring historic shipwrecks, and much more. Useful for any age, the book can be used as a coloring book, a reference book, or both.

Field Guides for Eastern Shore Marine Environments. Barbara Waters and Carole Eldridge. Set of five \$1.00.

Recently reprinted by popular demand, this set of five field guides includes: "Salt Ponds," "Tidal Flats," "Rocky Shores and Wooden Structures," "Sandy Shore and Dunes," and "Salt Marsh." These oversized, 11-by-17 inch guides describe the characteristics of each environment, illustrate a cross section of each environment, and include the plants and animals that inhabit it, identified by both common and scientific names. Can be laminated for years of use in the classroom or in the field.

International Directory of Marine Science Libraries and Informa-

tion Centers. Carolyn P. Winn. ISBN 0-932939-03-1. \$22.00.

The directory represents a network of cooperating libraries and information centers willing to provide assistance not only to other cooperating members, but to any investigator or interested individual seeking information in the marine sciences. The directory is available from the Office of the Research Librarian, Woods Hole Oceanographic Institution, Woods Hole, MA 02543. Make checks payable to the Woods Hole Oceanographic Institution.

Network for Environmental Science Education in Southeastern Massachusetts. A Resource Book for Educators. Single copies free. This resource booklet lists the members of the Network for Environmental Science Education in Southeastern Massachusetts and provides basic information about their goals and programs. A complete listing of member organizations of the Network and a map showing their locations in southeastern Massachusetts is located in the centerfold of this booklet. The booklet may be of help to teachers and group-leaders who are planning environmental field trips or seeking specific information.

Oceanography Reading List for Adults. 35 pp. Single copies free. This brochure, compiled by the Office of the Research Librarian of the Woods Hole Oceanographic Institution, lists reading materials and information sources in various aspects of oceanography.

Oceanography Reading List for Young Students. 22 pp. Single copies free. This brochure, compiled by the Office of the Research Librarian of the Woods Hole Oceanographic Institution, lists reading materials and information sources in various aspects of oceanography.

Raindrop Journey Poster. John F. Waters and Barbara S. Waters. Single copies free.

This poster follows the journey of a raindrop once it falls from the sky and into a pond on Cape Cod, Massachusetts. The story follows the raindrop through swamps, streams, rivers, wetlands, and finally to an estuary. The reverse side of the poster provides information on the Waquoit Bay Watershed, including a diagram of the area.

Recycling Marine Science. Tracey I. Crago and Lee Anne Campbell. 5 pp. Free.

The community of Woods Hole-Falmouth, Massachusetts, is fortunate to have numerous programs that contribute to the recycling of marine science and education. The article, which originally appeared in the Fall/Winter 1992 issue of *Nor'easter* magazine, highlights various institutions, programs, and organizations in the Falmouth area which are examples of creative linkages and networking among local scientific establishments and the greater community. Similar networks between research and outreach can be set up in virtually any town, and the article features a side-bar featuring a checklist of activities that can be undertaken in your community.

Videos Available for Loan or Purchase.

Video presentations from WHOI Sea Grant's popular lecture series "Oceans Alive: Plain Talk on Current Topics in Marine Science Presented for the General Public," all approximately 60 minutes, are available on a loan basis for a \$3.00 fee or for purchase at \$10.00 each. The 1993 series included the following presentations: "Student Science at Falmouth" featuring science winners from local high

schools; "Clammy Wynette and the Steamers: Clam Farming on Cape Cod" featuring Molly Benjamin, outdoors columnist, *Cape Cod Times*; "Poisons in Your Seafood: The Myths and Realities of Biotoxins and Red Tides" featuring Donald Anderson, senior scientist in the WHOI Biology Department; "Geology of Cape Cod" featuring Robert Oldale of the U.S. Geological Survey; and "The Maritime Muse: Songs and Poetry of the Sea" featuring local musician and maritime historian Tom Goux.

Women in Marine Science: Good Girls Don't? Lee Anne Campbell. 6 pp. Free.

Though women have succeeded in breaking into many previously male-dominated fields in recent years, it is still unusual to find them in science and technology careers; women now earn only 16 percent of the doctorates in physical sciences, 10 percent in computer science, and 7 percent in engineering. This article, which originally appeared in the Fall 1990 issue of *Nor'easter* magazine, describes some of the specific trials faced by women in science, as well as the changes taking place in attitudes and institutions. The article also stresses the need for recruiting more women to the sciences. The personal stories presented here illustrate the wide variety of marine science careers that exist and the uniqueness of the women who pursue them.

Ordering Instructions: Unless stated otherwise, order from:

Sea Grant Program
Woods Hole Oceanographic
Institution
Woods Hole, MA 02543

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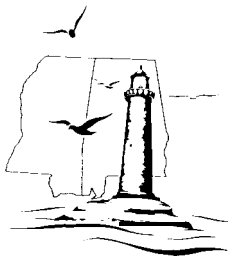
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Single copies \$2.00; contact the Sea Grant Programs in the respective states or

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