

Glossary

ahermatype – soft corals and a few hard corals that do not build reefs.

algae – simple, chiefly aquatic plants, such as seaweed and kelp.

anemone – a marine invertebrate related to corals and jellyfish.

anthropogenic – human-caused changes.

atoll – a ring-shaped series of small coral islands that enclose a central lagoon.

barrier reef – a long narrow ridge of coral parallel to the coastline but separated from it by a lagoon.

budding – a form of asexual reproduction where a new cell is formed from the parent cell.

calcium carbonate – a white chemical compound which occurs naturally as chalk and limestone. This is the material which forms coral skeletons.

camouflage – the act or means of disguising something to deceive a predator.

carnivore – an animal that eats other animals.

cnidarian – members of the phyla Cnidaria which are characterized by a body that only opens at one end, such as corals, jellyfish, and anemones.

colony – a connected, interrelated group of hard coral polyps.

conservation – preservation from loss.

coral – colonial marine animals characterized by limestone skeletons, often forming reefs or islands.

coralline algae – type of red seaweed that encrusts itself with lime which helps to cement the dead coral rock together.

coral bleaching – loss of color by corals which occurs when the corals are stressed and expel their endosymbionts.

coral reef – a stony marine structure formed from joined skeletons of corals cemented together by algae and other organisms.

crepuscular – term used to describe animals that become active at dawn and/or dusk.

crustacean – usually a marine animal that has a hard shell.

decomposition – the process of breaking down into smaller elements; decaying.

diurnal – term used to describe animals that become active during the day.

ecosystem – all of the plants and animals in a community along with the non-living environment.

ecology – the study of the interactions of plants and animals with their environment.

endangered species – a species in danger of extinction.

endosymbionts – refer to zooxanthellae.

environment – everything surrounding an organism.

equator – an imaginary line circumscribing the Earth's surface, dividing the Earth into Northern and Southern hemispheres.

extinct – no longer in existence.

fringing reef – a coral reef that forms adjacent to the shoreline that does not have a lagoon.

food chain – a linear pattern of nutrient and energy transfer among organisms in an ecosystem.

Great Barrier Reef – the largest living organism in the world, stretching over 1,240 miles off the eastern coast of Australia and visible from outer space.

hard corals – reef-building corals that secrete external limestone skeletons and typically have tentacles in multiples of six.

herbivore – an animal that eats plants.

hermaphroditic – containing both male and female sex cells.

hermatype – hard corals that build reefs.

invertebrate – animal without a backbone.

lagoon – a body of shallow water separated from the open sea by a barrier, such as a reef.

mangroves – tropical trees that grow in the transitional zone between land and sea; some mangroves have roots that grow above the ground.

mariculture – the farming of marine plants and animals.

mesenterial filaments – long tubular structures which the coral polyp extends to defend itself from attack.

nematocyst – stinging organ found in corals, jelly-

fish, anemones, and other related organisms, which, when stimulated, ejects a harpoon-like structure that chemically paralyzes the victim.

nocturnal – term used to describe animals that become active during the night.

nudibranch – a marine organism also called a sea slug or marine snail.

octocorals – coral polyps that typically have eight tentacles and secrete flexible skeletons; also called soft corals.

omnivore – an animal that eats both plants and animals.

patch reef – an island of coral usually found growing on the floor of a lagoon.

photosynthesis – process by which the zooxanthellae use sunlight to convert the carbon dioxide and water in the polyp tissue into oxygen and carbohydrates.

phytoplankton – tiny floating or drifting aquatic plants.

plankton – tiny floating or drifting aquatic plants or animals.

planula – free-swimming coral larva.

pollution – that which makes something foul or unclean.

polyp – the tiny cylindrical body of a coral animal which has a mouth opening surrounded by tentacles.

population – all the members of a species that live in the same area and make up a breeding group.

predation – a relation between animals in which one captures and feeds on others.

primary consumer – organisms that get their nutrients from primary producers; typically herbivores that get their nutrients by eating plants.

primary producer -- organisms capable of producing their own food, typically through photosynthesis, using light as an energy source.

propagules – specialized seed pods that grow on the end of mangrove roots which drop down from the canopy of the tree.

protection – the act of defending or guarding from attack.

reef crest – the highest and shallowest part of the reef.

reef face – the seaward facing slope of the reef.

seagrass – simple aquatic plants that grow on the sandy floor of the lagoon.

secondary consumer – organisms that typically obtain their nutrients by eating primary consumers; typically carnivores that get their nutrients by eating herbivores.

sediment – fine particles of solid matter suspended in water or settling to the bottom of it.

soft coral – coral polyps that secrete flexible skeletons; also called octocorals.

spawning – a form of sexual reproduction where eggs and sperm are released, usually in water.

species – a group of organisms that look alike and are capable of producing fertile offspring.

sustainable – use that minimizes negative impacts on the ecosystem or environment while maintaining its contribution to society.

symbiotic – mutually beneficial relationship between two different species.

synergistic – working together.

tentacles – flexible, unsegmented feelers used for feeding, touching, and smelling.

tetraodontoxin – a powerful poison in some fish which can cause serious illness and even death if ingested.

tropics – region of the Earth's surface lying between the tropic of Cancer and the tropic of Capricorn (23 degrees, 27 minutes north and south of the equator).

vertebrate – an animal with a backbone.

zooxanthellae – one-celled algae that live inside the tissue of various animals, such as hard coral polyps, and produce photosynthetic products that the host can use.

zooplankton – tiny floating or drifting aquatic animals.

Bibliography

Alevizon, William S. **Caribbean Reef Ecology**. Houston, Texas: Pisces Books, 1994.

Brower, Kenneth. "State of the Reef". Audubon 91(2), 1989.

Coral and Coral Reefs. Sea World Education Department, 1992.

Coral Reefs. Greenpeace Fact Sheet.

Fujita, Rodney M. "A Guide to Protecting Coral Reefs". New York: Environmental Defense Fund, 1992.

Gross, M. Grant. **Oceanography - A View Of The Earth**. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1977.

Holing, Dwight. **Coral Reefs**. San Luis Obispo, California: Blake Publishing, 1990.

Jacobs, Francine. **The Red Sea**. New York: William Morrow and Company, 1978.

Johnson, Rebecca L. **The Great Barrier Reef, A Living Laboratory**. Minneapolis, Minnesota: Lerner Publications Company, 1991.

Orlandi, Robin. "Reef Relief Goes to Cuba", **Reef Line**, the official newsletter of REEF RELIEF. Vol 10, No. 4, Winter 1998.

Kind Teacher. National Association for Humane and Environmental Education, 1993.

Randall, John E., Gerald R. Allen, and Roger C. Steene. **Fishes of the Great Barrier Reef and Coral Sea**. Bathurst, Australia: Crawford House Press, 1990.

Reader's Digest Visitor's Guide to the Great Barrier Reef. New York: Reader's Digest Books, 1992.

Richmond, Robert H. "Coral Reefs: Present Problems and Future Concerns Resulting from Anthropogenic Disturbance". American Zoology 33, 1993.

Sargent, William. **Night Reef**. New York: New England Aquarium Books, 1991.

Seaborn, Charles. *Coral Reef Conservation and the International Year of the Coral Reef - 1997*, **Current: The Journal of Marine Education**. NOAA Office of Ocean & Coastal Resource Management, Vol 14, No. 2, 1997.

Stafford-Deitsch, Jeremy. **Reef: A Safari Through the Coral World**. San Francisco: Sierra Club Books, 1991.

Tayntor, Elizabeth, Paul Erickson, and Les Kaufman. **Dive to the Coral Reefs**. New York: Crown Publishers, Inc., 1986.

Ward, Fred. "Florida's Coral Reefs Are Imperiled". National Geographic, 178 (1), 1990.

Weber, Pewter. "It Comes Down to the Coasts". World Watch, March/April 1994.

Wells, Sue. **Coral Reefs of the World. Volume 1: Atlantic and Eastern Pacific**. Cambridge, UK: IUCN Conservation Monitoring Centre, United Nations Environmental Programme, International Union for Conservation of Nature and Natural Resources, 1988.

Wells, Sue and Nick Hanna. **The Greenpeace Book of Coral Reefs**. New York: Sterling Publishing Co., Inc., 1992.

Wilson, Roberta and James Q. Wilson. **Watching Fishes - Understanding Coral Reef Fish Behavior**. Houston, Texas: Pisces Books, 1992.

References for Students

BOOKS

The publications listed below provide excellent resource material on coral reef ecosystems. See the following section for educational materials that are available through the REEF RELIEF mail order service.

Amos, William H. **Exploring the Seashore**. The National Geographic Society, 1984.

Alevizon, William. **A Sea Dreams Primer of Coral Reef Fish**. Melbourne Beach, Florida: Sea Dreams Publications, 1989.

Base, Graeme. **The Sign of the Seahorse**. New York: Harry N. Abrams, Inc.

Brown, Philip R. **Exploring Tidepools**. San Luis Obispo, California: EZ Nature Books, 1994.

Cole, Joanna. **The Magic School Bus on the Ocean Floor**. New York: Scholastic Inc., 1992.

Cooper, Jason. **Coral Reefs, The Sea**. Vero Beach, Florida: The Rourke Corporation, Inc., 1992.

DeCelles, K. M. "Coral". **Ranger Rick**, February 1995.

George, Michael. **Coral Reef**. Mankato, Minnesota: Creative Editions, Inc., 1992.

Heller, Ruth. **How to Hide an Octopus and Other Sea Creatures**. New York: Grossett & Dunlap.

Holing, Dwight. **Coral Reefs**. San Luis Obispo, California: Blake Publishing, 1990.

Jacobs, Francine. **Coral**. New York: G. P. Putnam's Sons, 1980.

Jacobs, Francine. **The Red Sea**. New York: William Morrow and Company, 1978.

Johnson, Sylvia A. **Coral Reefs**. Minneapolis, Minnesota: Lerner Publications Co., 1984.

Johnson, Rebecca B. **The Great Barrier Reef: A Living Laboratory**. Minneapolis, Minnesota: Lerner Publications Co., 1991.

Johnston, Damiar. **Make Your Own Coral Reef – Concept & Design**. New York: Lodestar Books.

Krinking, Kathy Walsh. "Coral Reefs and Islands." **Ranger Rick**, January 1995.

Maddern, Eric. **Curious Clownfish**. Boston, Massachusetts: Little Brown and Company, 1990.

Mallory, Kenneth. **The Red Sea**. Boston, Massachusetts: New England Aquarium Books, 1991.

Sargent, William. **Night Reef**. New York: New England Aquarium Books, 1991.

Silcott, Phillip B. **Strange Animals of the Sea, A National Geographic Action Book**. National Geographic Society, 1987.

Soloff-Levy, Barbara. **How To Draw Sea Creatures**. Mahwah, New Jersey: Watermill Press, 1987.

Stec, RuthEllen. **Rescue the Reef: A Coloring Activities Book**. Birmingham, Michigan: RMS Publishers, 1993.

Tate, Suzanne. **Mary Manatee: A Tale of Sea Cows, and Tammy Turtle: A Tale of Saving Sea Turtles**. Nags Head Art, P.O. Box 88, Nags Head, NC 27959 (tel: 919-441-7480).

Tayntor, Elizabeth, Paul Erickson, and Les Kaufman. **Dive to the Coral Reefs**. New York: Crown Publishers, Inc., 1986.

Taylor, Barbara. **Coral Reef**. New York: Dorling Kindersley, Inc., 1992.

Wright, Alexandra. **At Home in the Tide Pool**. Watertown, Massachusetts: Charlesbridge Publishing, 1992.

PUZZLES AND STAMPS

Life In the Coral Reefs. New York: Judy/Instructo, Simon & Shuster. 50 piece floor puzzle.

Life On a Coral Reef. National Geographic Society, (800-647-5463, Product no. 81154) 1994. 33 rubber stamps depicting marine life on a coral reef, sticker labels, and a washable blue ink pad.

Ocean World Puzzle. Hope, Arkansas: Fink & Co./EDUCA. 100 large size pieces with an illustrated guide to identify marine life.

VIDEOS, SLIDES AND CD-ROMS

Cities of Coral. Stamford, Connecticut: NOVA Video Library, 1975. Video footage of Caribbean coral reefs, available for rental at Blockbuster Videos.

Coral Sea Dreaming—An Evolving Balance on Australia's Great Barrier Reef. Nashville, Tennessee: Small World Music (800-757-2277), 1993. 55 mins. Excellent video footage of the Great Barrier Reef without narrative. Outstanding for bilingual/multilingual classrooms.

Cousteau's World: Cities Under the Sea, Coral Reefs. CD-ROM, Volume 1. Jean-Michel Cousteau. New York: Enteractive, Inc., 1995.

Life on the Reef. Nashville, Tennessee: Small World Music (800-757-2277), 1994. 53 mins. Excellent narrated video footage of life on the Great Barrier Reef, with incredible coverage of coral spawning.

Educational Merchandise

The following lists books, childrens books, videos, cassettes, CD-ROMs and other educational merchandise that is available through Reef Relief. To order, please see the order form at the end of this section.

BOOKS

A Guide to Angelfishes & Butterflyfishes. Text and Photographs by Gerald R. Allen, Roger Steen and Mark Allen. Hardcover. \$29.95

A Guide to Underwater Florida. Ned DeLoach. Maps and directions for 600 of Florida's best ocean and spring dives. 352 pp. \$18.95

Anemone Fishes and their Host sea Anemones. Photos and text by Daphne G. Fautin & Gerald R. Allen 159 pp. \$29.95

Blue Frontier, Saving America's Living Seas. A comprehensive look at ocean politics in America. David Helvarg. Paperback 299 pp. \$15.00. Hardcover \$25.95

Cetacea. Theresa Foley. An Eco-Thriller based in the Florida Keys. Paperback 220 pp. \$11.95

Collaborative and Community-based management of Coral Reefs. Edited by White, Hale, Renard and Cortesi. Case studies of how various worldwide communities have worked to protect their coral reefs. Includes a chapter on REEF RELIEF. Paperback. 130 pp. \$22.00

Deep Cuba, the Inside Story of an American Oceanographic Expedition. Bill Bellville A captivating look at what an expedition involves. 272 pp. \$27.95

Diving and Snorkeling in the Florida Keys. John Halas, Judy Halas, and Don Kincaid. A handy photo-packed reference of more than 36 diving and snorkeling areas along the Florida Keys. Paperback. \$12.95

Eye Of the Albatross, Visions of Hope and Survival. Carl Safina. A stunning epic about seabirds. Hardcover. 376 pp. \$27.50

Everglades. Edited by Susan Cerulan. Hardcover. 256 pp. \$18.95

Fire in the Turtle House. Osha Grey Davidson. A beautifully written book on coral reefs of the world. Hardcover. 258 pp. \$26.00

Fort Jefferson and the Dry Tortugas National Park. L. Wayne Landrum Produced by the former park manager. Images and text. Hardcover. 71 pp. \$19.95

Kayaking in the Keys. Kathleen Patton. Well written by a local resident. Hardcover. 190 pp. \$199.95

Manatees and Dugongs of the World. Jeff Ripple. Photographs Doug Perrine. 131 pp. \$19.95

Marine Conservation in the 21st Century. Hillary Vidars. An essential guide for citizens, legislators, environmental professionals and aquatic sportfans. Paperback. \$12.95

Marine Plants of the Caribbean. Mark and Diane Littler, Bucher, and Norris. A field guide from Florida to Brazil—the best book to identify algae on the reef. Paperback with 225 color plates, 263 pp. \$25.00.

Marine Reserves, a Guide to Science, Design, and Use. Jack Sobel and Craig Dahlgren 369 pp. \$70.00

Peterson's Guide to Coral Reefs. Eugene Kaplan. Paperback, 256 pp. \$17.00

Peterson's Guide to Atlantic Coast Fishes. Robins/Bay/Douglas. Paperback, 354 pp. \$17.95 Paperback, 256 pp.

Peterson's Guide to Atlantic Sea Shores. Kenneth L. Gosner. Paperback with 329 pp. \$16.95

Pisces Guide to Caribbean Reef Ecology. William Alevizon, PhD and REEF RELIEF Scientific Advisor. Paperback, 116 pp. with color throughout. \$14.95

Protecting Paradise. Peggy Cavanaugh and Marget Spontak. Features 300 ways to protect Florida's environment. Paperbak with 475 color plates, pp. \$39.95

Reef Creature Identification. Paul Humann and Ned DeLoach. The definitive reference on marinelife. Paperback with 475 color plates, 344 pp. \$35.00

Reef Creature. Paul Humann and Ned DeLoach. In-A-Pocket waterproof companion to Reef Creature and Coral Identification for Divers and Snorkelers. 4 3/4" X 6" 23 pp. \$11.92

Reef Coral Identification. Paul Humann and Ned DeLoach. The definitive reference on corals. Paperback with 354 color plates, 288 pp. \$30.00

Reef Fish Identification. Paul Humann and Ned DeLoach. The definitive reference on reef fish. Paperback with with 345 color plates, 288 pp. \$30.00

Reef Fish. Paul Humann and Ned DeLoach. In-A-Pocket waterproof companion to Reef Creature and Coral Identification for Divers and Snorkelers. 4 3/4" X 6" 23 pp. \$11.92

Reef Set. Paul Humann and Ned DeLoach. Set of three hard cover books and a shelf case featuring the three definitive resources to identify reef life: Reef Coral Identification of Florida, Caribbean, Bahamas; Reef Creature Identification of Florida, Caribbean, Bahamas; and Reef Fish Identification of Florida, Caribbean, Bahamas. \$120.00

River of Lakes, a Journey on the St. Johns River. Bill Bellville. A captivating journey that reveals as much about life in Florida as the natural setting it describes. 220 pp. \$17.95

Seashore Life of Florida and the Caribbean. Gilbert L. Voss. With 19 full-color illustrations and 400 identification drawings. Paperback. 299 pp. \$6.95

Sea Stars, Sea Urchins, and Allies. Hendler/Miller/Pawson/Kier. Hardcover. 339 pp. \$39.95

Sea Turtles of the World. Text and photographs by Doug Perrine. 144 pp. \$29.95

Sharks and Rays of the World. Text and photographs by Doug Perrine 128 pp. \$19.95

Snorkeling Guide To Marine Life. Paul Humann and Ned DeLoach. Paperback with 250 color plates, 80 pp. \$13.00

The Florida Keys: The Natural Wonders of an Island Paradise. Jeff Ripple with photos by Bill Keogh and Jeff Ripple. Explore the islands from their formation to the impact of humans on the Keys today. Paperback. 128 pp. \$19.95

The Everglades, Florida Bay, and Coral Reefs, an Ecosystem Sourcebook. Edited by James Porter and Karen Porter. A comprehensive college level resource with papers by leading researchers, managers and ecologists. 1,000 pp. \$125.00

To the Deep and Beyond. Charles Messing. A great introduction to the coral reef. Paperback, 30 pp. \$1.00

Wildlife of the Florida Keys. James Lazell, Jr. Details of the different species of animals living in the unique ecosystem of the Florida Keys. Paperback, 250 pp. \$19.95

CHILDREN'S BOOKS

Angel Fish. Lian Smith. A pull and lift book. Hardcover. \$10.95

Alligator Crossing – Marjory Stoneman Douglas. Hardcover. 199 pp. \$16.95

At Home in the Coral Reef. Katy Muzik. Illustrations, Katherine Brown-Wing. Travel on an amazing journey through the sea, an early reader with wonderful illustrations. 32 pp. \$6.95

Baru Bay: Australia. Bob Weir and Wendy Weir. A beautifully illustrated tale for children about a young girl on her first visit to a coral reef in Australia and her encounter with Aboriginal people, dolphins, and many sea creatures. An audio cassette features Bob Weir of the Grateful Dead narrating the story, with original music inspired by aboriginal musicians. Hardcover. 40 pp. with cassette tape \$20.00

Danny and Daisy. Suzanne Tate. A tale of a Dolphin Duo. Illustrations, James Melvin. 28 pp. \$4.95

Dover Books series of Stickers, Etc.:

Shark Sticker Book. 24 stickers. \$1.00

Tropical Fish Sticker Book. 24 Stickers. \$1.00

Sea Life Tattoos. 10 tattoos. \$1.00

Sea Life Mazes. 45 mazes. \$1.00

Families of the Deep Blue Sea. Kenneth Mallory. Illustrations, Marshall Peck III. 22 pp \$7.95

Fish Counting. Arthur David Zoller. 10 pp. \$6.95

Hello Ocean. Pam Munoz Ryan. 32 pp. \$7.95

I Wonder Why The Sea Is Salty and Other Questions about the Oceans. Text and illustrations by Anita Ganepri. Hardcover. 32 pp. \$11.98

Mary Manatee. Suzanne Tate. Tales of sea cows. Illustrations, James Melvin 20 pp. \$4.99

Old Turtle. Douglas Wood. Award Winning fable for children. Hardcover. \$17.95

Our Wet World. Sneed B. Collard. Illustrations, James B. Needham. 32 pp. \$6.95

Oozy Octopus. Susan Tate. Illustrations, James Melvin. A tale of a clever critter. 26 pp. \$4.94

Peterson's Field Guide Coloring Book: Fishes. Sarah Landry. With descriptions of each fish and small color illustrations to serve as a guide for color. Paperback. 64 pp. \$5.95

Rosie Ray. Suzanne Tate. Illustrations James Melvin. A tale of watery wings. 12 pp. \$4.95

Secrets Of The Deep Revealed. Dr. Frances Dipper. 34 pp. \$12.99

Shockers of the Sea. Caroline Arnold, Illustrations by Crista Forest. 28 pp. \$6.95

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The Deep-Sea Floor – Sneed Collard III, Illustrations Gregory Wenzel. 31 pp. \$6.95

The Kingfisher Young People's Book of the Oceans. Over 250 spectacular photographs and illustrations. Hardcover. 92 pp. \$21.95

The Ocean Alphabet Book by Jerry Pallotta. Illustrations, Frank Mazzola, Jr. 28 pp. \$10.95

The Rainbow Fish. Marcus Pfister. Award winning, simple story about the joy of sharing. Hardcover. \$18.95

The Reef Relief Book of Coral Reef Fish. Bill Alevizon, Ph.D., Illustrations, Ruth Rasche. An excellent learning and coloring book for classroom use, K-3. 22pp. \$5.00

Underwater Alphabet Book. Jerry Pallotta. Illustrations, Edgar Stewart. 28 pp. \$6.95

Undersea Adventure Sticker Picture. Steven Petruccio. 2 pp with 24 stickers. \$4.95

Whales, Dolphins, and Porpoises. Lisa Bonfort. 48 full color pressure-sensitive designs. \$3.95

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An Educational Read and Color Book of Sharks with audio cassette tape. Linda Spizzirri with illustrations by Peter Spizzirri. Paperback, 30 pp. Winner of Dr. Toy 1995 100 Best Children's Products. \$8.00

Baru Bay: Australia. Bob Weir and Wendy Weir (our very own REEF RELIEF board members!). A beautifully illustrated children's book about a young girl on her visit to a coral reef in Australia where she encounters the many life-forms that live on and around the reef - a rainforest, Aboriginal people, and crocodiles on land, as well as bright blue sea stars, reef animals, and dolphins in the water. The book features an illustration key with animal names and a glossary. The audio cassette tape features Bob Weir of the Grateful Dead narrating the story with original music that he produced inspired by the ocean and aboriginal musicians. Excellent for use in the classroom and with the Coral Reef Teacher's Guide. Hardcover, 40pp. with cassette tape. \$ 20.00

Old Turtle audio cassette. Engaging stories and lyrical songs. Sing along with author/composer Douglas Wood and his friends as they celebrate Old Turtle's message. \$11.95

VIDEOS

Canary of the Ocean: America's Troubled Reef. Miranda Smith Productions. 56 minute video that portrays the stunning beauty of America's fragile undersea kingdom, investigates the serious threats to its health, and profiles some of the concerned people, including REEF RELIEF representatives, working to preserve it for future generations. \$35.00

Coral Reefs: Rainforests of the Sea. Oceanic Research Group in association with The Video Project. 20 minute video with study guide, 1996. Created especially for middle and high school age, it provides an excellent introduction to the science, ecology, and importance of coral reefs, as well as an overview of the serious environmental problems confronting them. Utilizing underwater footage shot on reefs worldwide, the video describes how reefs are formed, where they can be found, their importance to oceans and the human community, and the major natural and human-caused threats they face. \$35.00

Seascapes III: The Incredible Coral Reef. Tom Jackson (former REEF RELIEF Board Member), narrated by Fisher Stevens. A 30 minute video describing hard and soft corals, fish and other sealife found at the coral reefs of the Florida Keys and Bahamas. \$20.00

The Amazing Coral Reef. Oceanic Research Group in association with The Video Project. 20 minute video

with study guide. Created especially for elementary age children, it provides an introduction to coral reefs. Using extensive underwater footage and age appropriate narration, the program covers: how coral reefs are formed, basic ecological concepts, the importance of reefs to the oceans and humans, and the environmental dangers they face. \$35.00

CD-ROM

Fish With Names Like. P&B Productions, Inc. Bilingual English/Spanish version 2.0. An interactive multimedia program that relates commonly known sealife to the objects that sound like their names. Geared to children 6-14, but a great experience for the entire family! \$34.95

REEF RELIEF EDUCATIONAL PRODUCTS

New! Dive Back in Time -DVD Introduce your students to coral reefs with this 12 minute DVD featuring stunning underwater images taken by Reef Relief founder Craig Quirolo and an original soundtrack written by Craig Quirolo and Joel Biddle, Reef Relief's Educational Director. The educational narrative explores the beauty and diversity of coral reefs and provide easily understandable information on the structure and function of coral reef ecosystems. Ideal for the classroom grades 4 through adult general audience. **Price \$20.00**

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Seascapes III: The Incredible Coral Reef Video A 30 minute video that identifies and describes hard and soft corals, fish and other sea life found at the coral reefs of the Florida Keys and Bahamas by former Reef Relief Board Member Tom Jackson, narrated by Fisher Stevens. Ideal for the classroom grades 4 through adult general audience. **Price \$20.00**

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Coral 2000: Volume 2: Coral Photomonitoring & Coral Nursery Project The sequel in this series describes innovative ways to save coral reefs. Dr. James Porter Un-Ga. is featured documenting change over time by photomonitoring the reef. Harold Hudson of the Florida Keys National Marine Sanctuary teaches volunteers to create a coral nursery by salvaging storm-damaged fragments. Inspiring for science, high school and college level classes. **Price \$25.00**

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Coral Reef-Related Organizations

Conservation, Coral Reefs:

Center for Ecosystem Survival
Department of Biology
San Francisco State University
1600 Holloway Avenue
San Francisco, CA 94132

Coralations
Post Office Box 750
Culebra, Puerto Rico 00775

EarthEcho International–Phillippe Cousteau
1050 Connecticut Avenue, NW, Suite 1000
Washington, D.C. 20036

Greenpeace USA
1436 U Street, NW
Washington, DC 20009

Ocean Watch
8925 Leesburg Pike
P.O. Box 1618
Vienna, VA 22183-1618

Diving, Coral Reefs:

Coral Reef Alliance (CORAL)
64 Shattuck Square, Ste. 220
Berkeley, CA 94704

R.E.E.F. (Reef Environmental Education Foundation)
P.O. Box 246
Key Largo, FL 33037

Reef Ball Foundation
7085 Chappell Circle
Doraville, GA 30360

Education, Coral Reefs:

Smithsonian Institute
Washington, DC 20560

Expeditions:

Earthwatch
680 Mt. Auburn Street
P.O. Box 403
Watertown, MA 02272

General Ocean, Beaches, Sewage:

Blue Frontier
4007 Connecticut Avenue NW Suite 312
Washington, D.C. 20037-1311

Coast Alliance
1536 16th Street, NW
Washington, DC 20036

Izaak Walton League of America
1401 Wilson Blvd, Level B
Arlington, VA 22209

National Resources Defense Council
4 West 20th Street
New York, NY 10011

Oceana
2501 M Street NW Suite 300
Washington, D.C. 20037-1311

Surfrider USA
122 S. El Camino Real, Ste. 67
San Clemente, CA 92672

The Ocean Conservancy
1725 DeSales Street, NW
Washington, DC 20036

The Wilderness Society
900 17th Street, NW
Washington, DC 20006

General Ocean, Coastal Peoples, Aquarium Fish:

Ocean Voice International
Box 37026
3332 McCarthy Road
Ottawa, Ontario K1B 7B2
Canada

General Ocean, Dolphins, Whales, Turtles:

Cousteau Society
2104 Pickwick Lane
Alexandria, VA 22307

Conservation International
2501 M Street, NW
Washington, DC 20037

Defenders of Wildlife
1244 19th Street, NW
Washington, DC 20036

Earth Island Institute
300 Broadway, Ste. 28
San Francisco, CA 94133-3312

Jean-Michel Cousteau Institute
1933 Cliff Drive
Santa Barbara, CA 93109

Marine Conservation Biology Institute
Suite 210
600 Pennsylvania Ave SE
Washington DC 20003004344

National Wildlife Federation
1400 16th Street, NW
Washington, DC 20009

General Ocean, Fisheries:

Environmental Defense Fund
257 Park Avenue South
New York, NY 10010

General Oceans, Government:

Florida Keys National Marine Sanctuary
P.O. Box 500368
Marathon, Florida 33050

National Oceanic and Atmospheric Administration
(NOAA)
National Ocean Service
Public Affairs Department
1305 East-West Hwy.
Station 13519
Silver Spring, MD 20910

South Florida Ecosystem Restoration Task Force
United States Department of the Interior
FIU. OE 165 University Park
Miami, Florida 33199

South Florida Water Management District
3301 Gun Club Road
West Palm Beach, Florida 33406

United States Geological Survey
12201 Sunrise Valley Drive
Reston, VA 22092

U.S. Environmental Protection Agency
Public Information Center
PM-211B
401 M Street, SW
Washington, DC 20460

World Conservation Union (IUCN)
Rue Mauverney 28
CH 1196 Gland, Switzerland

Fisheries, Pollution:

ReefKeeper International
289 Bird Avenue, Ste. 162
Miami, FL 33133

World Wildlife Fund
1250 24th Street, NW
Washington, DC 20037

Mangroves:

Mangrove Action Project
4649 Sunnyside Avenue, N
Ste. 321
Seattle, WA 98103

Marine Activities, Resources, and Education:

MARE Program
Lawrence Hall of Science
University of California
Berkeley, CA 94720

Pollution, Pharmaceuticals:

Coral Reef Research Foundation
270 N. Canon Drive, Ste. 1524
Beverly Hills, CA 90210

Rainforests, Forests, Coastal People:

Rainforest Action Network
221 Pine Street, 5th Floor
San Francisco, CA 94104

Research, Education:

Harbor Branch Oceanographic Institution
5600 US One North
Fort Pierce, Florida 34946

Mote Marine Laboratory
1600 Ken Thompson Parkway
Sarasota, Florida 34236

NCORE National Center for Caribbean
Coral Reef Research
University of Miami
Rosenstiel School of Marine & Atmospheric Science
4600 Rickenbacker Causeway
Miami, Florida 33149

Smithsonian Tropical Research Institute
Smithsonian Institution
900 Jefferson Drive, Ste. 2207
Washington, DC 20560

Woods Hole Oceanographic Institute
Woods Hole, MA 02543

Whales, Coral Reefs, Education:

Pacific Whale Foundation
101 N. Kihei Road, Ste. 21
Kihei, HI 96753



A non profit membership organization dedicated to Preserve & Protect Living Coral Reef Ecosystems through Local, Regional and International Efforts

Reef Relief relies on memberships, contributions and volunteers. Join our grassroots efforts to save coral reefs!

Membership/Contribution Form

Yes, I want to be a Sea Fan and join Reef Relief. \$30-99 contribution. Everybody loves a sea fan!

Yes, I want to be a Coral Polyp. \$20 contribution. For students and seniors over age 65. It takes a whole lot of polyps to make a coral!

Yes, I want to be a Sea Turtle. \$100-249 contribution. A powerful and beautiful partner of the coral reef.

Yes, I want to be a Dolphin. \$250-\$499 contribution. Graceful and carefree, these are certainly one of the smartest partners of the coral reef!

Yes, I want to be an Eagle Ray. \$500-\$999 contribution. Majestic, magnificent, silent and strong, surely one of the most memorable members of the coral reef.

Yes, I want to be a Coralhead. \$1000 + contribution. The very foundation of life on this planet.

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My email is:

Yes, I want to volunteer to help Reef Relief. Indicate area of interest: (Reef World docent Key West, Capt. Roberts docent Bahamas, education, marine projects, special events). I have a special skill:

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City/State/Zip Telephone

Mail to Reef Relief, P.O. Box 430, Key West, Fl. 33041. Credit card via telephone (305) 294-3100. Fax (305) 293-9515. Visit our website at www.reefrelief.org

Coral reefs harbor many marine creatures. All manners of creatures inhabit, breed, feed, and avoid enemies in coral reefs, which naturally forms a rich ecosystem. There can be as many as 1,500 types of fish within coral reefs. When the living environment is not optimal, the symbiotic zooxanthellae will gradually leave the corals or be expelled by the coral, and the corals that lose their color sources will gradually bleach. After the symbiotic algae leaves, the corals will not die immediately. If the environment becomes better, the bleached corals can regain the zooxanthellae and slowly recover for survival. NOAA's coral reef observing system uses satellites to monitor the sea surface temperature and marks areas with high water temperatures to alert the risk of coral bleaching. Octocorals, or "soft" corals, include sea fans and sea whips, which grow more like fleshy plants and do not form calcium carbonate skeletal structures. Antipatharians, or black corals, are another type of branching "soft" coral. Some soft corals have zooxanthellae to acquire food and energy, but others, such as black corals, exist without this symbiotic relationship. Where are Coral Reefs Found? Corals can be found throughout the world's oceans, in both shallow and deep water. However, the reef-building corals that rely on a symbiotic relationship with algae need shallow, clear water allowing light penetration for photosynthesis. Stony corals also require tropical or sub-tropical temperatures, which exist in a band 30 degrees north to 30 degrees south of the equator. A few marine organisms have very limited larval dispersal, and there is evidence that populations of polychaetes at CO₂ seeps are genetically distinct¹⁷, and that populations of molluscs that hatch benthic larvae have adapted to chronic ocean acidification over multiple generations through dwarfism¹⁸. A recent study restored the carbonate chemistry saturation state of a coral reef flat to near pre-industrial levels and demonstrated that present-day net community calcification of coral reefs is already impaired by ocean acidification¹⁹. However, since soft corals aren't actually building the reef structure like stony corals, they won't use up calcium in a closed environment at anywhere near the rate of stony coral consumption. This is another feature of soft corals that makes them good for beginners: you won't typically have to start dosing calcium right away. There is some fairly recent research that genus, *Sinularia*, soft coral may be a minute reef builder. Cabbage coral, *Sinularia brassica*. There are many species of soft corals that are popular additions to large and small aquariums. Starter corals such as mushrooms, and some leathers tolerate the parameter shifts in a newly cycled tank and will actually help stabilize it. Alcyoniidae or Leather Corals really show the variety of appearances soft corals can take on. sea urchins. The diversity pattern of reef-building coral observed in today's oceans is related to which of the following? The past positions of the continents. Most reef-building corals receive about 90% of their nutrition from symbiotic zooxanthellae algae. In a tidepools area such as that shown in the video, what is the correct order of intertidal zones, going from the base of the coastal cliffs into deeper water? spray zone, upper intertidal zone, middle intertidal zone, lower intertidal zone. In the spray zone, what is one common adaptation that marine organisms typically exhibit? They have hard shells that prevent organisms from drying out. Which of the following statements regarding corals and algae is/are true? (4). all EXCEPT Corals are photosynthetic.