

We kids can do a lot to save the coral reefs. We can talk to our parents and convince them that someday the Earth and the ocean is going to belong to our generation and that we would like to keep them both clean and healthy. We want a clean and healthy environment for us and for our children too when the time comes, however, the time to start protecting and conserving our planet and our ocean is now!

©2012 Reef Relief, a nonprofit membership organization dedicated to improving and protecting our coral reef ecosystems.

Tax deductible membership begins at \$15/year.

For more information, write to

REEF RELIEF®

P.O. Box 430, Key West, FL 33041

Telephone: (305) 294-3100 • Fax: (305) 293-9515

E-mail: reefrelief@gmail.com

Visit our website at

www.reefrelief.org



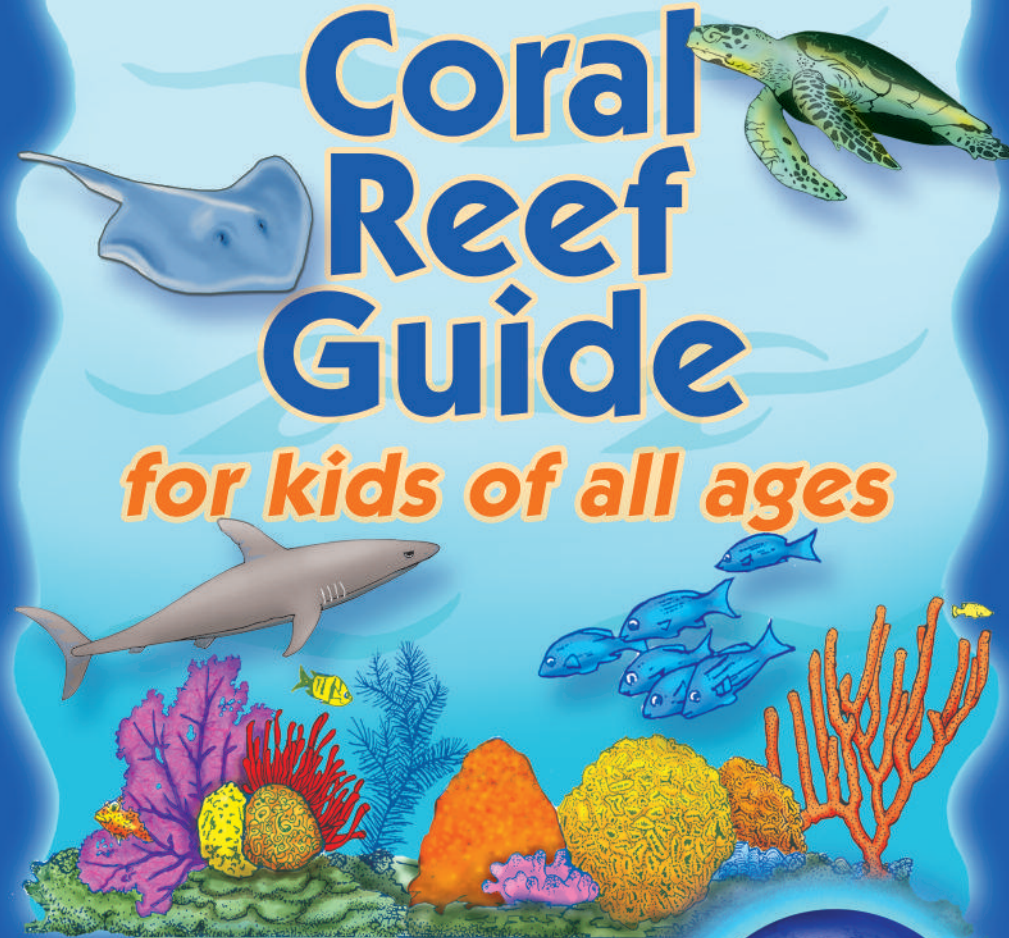
This booklet was funded in part, through a grant agreement from the Florida Department of Environmental Protection, Florida Coastal Management Program, by a grant provided by the Office of Ocean and Coastal Resource Management under the Coastal Zone Management Act of 1972, as amended, National Oceanic and Atmospheric Administration Award NA11NOS4190073. The views, statements, findings, conclusions and recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of the State of Florida, NOAA or any of their subagencies.

Printed August 2012.

and special thanks to:

**MONROE COUNTY
SCHOOL DISTRICT**

**GEORGE AND
DOROTHY LEE WITWER**



Coral Reef Guide

for kids of all ages

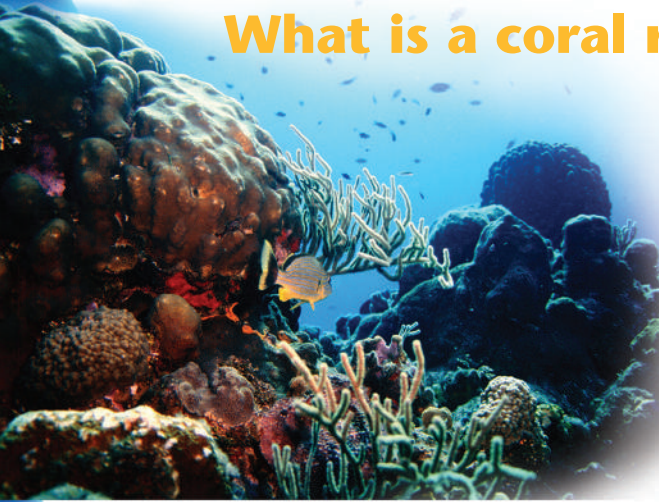
You know something?...
We kids – our generation – will soon be taking over the protection of the Earth's natural resources.

Our planet, called Earth, is the only home we have and our ocean is the only one we have too. In fact, many people prefer to call our home the "Blue Planet" because the ocean covers 71% of its surface and contains 97% of the planet's water. The Earth and the ocean are linked together, connected in ways that we still do not fully understand. It will be our job, when we get a little older, to take great care of the Earth and the ocean—our lives depend on a healthy Earth and a healthy ocean. This booklet tells us about coral reefs, where they are, the reasons why they are so important, and what we can do to help protect and conserve them for not only our generation, but for generations of kids like us, that will come along behind us. So, read this booklet and learn what we can do as individuals and families to help protect and conserve our coral reef ecosystem.



REEF RELIEF®
www.reefrelief.org

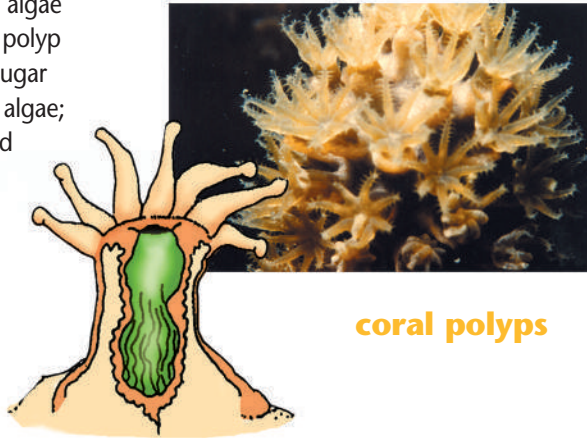
What is a coral reef?



Florida's coral reefs are alive with an abundance of hard and soft corals, fishes, sponges, sea jellies, anemones, snails, crabs, lobsters, rays, sea turtles, dolphins, and other sea life. The reef structure itself is composed of layers of limestone that has been laid down over thousands of years

by many generations of tiny, soft-bodied animals called coral polyps. Coral larvae, called planula, settle onto the tops of older corals and begin to build the coral reef; coral reefs are the largest structures on Earth that are built by living animals — the tiny, coral polyp.

An individual coral polyp resembles a tiny sea anemone and contains within its tissue cells tiny algae known as, zooxanthellae (zo-zan-thel-le). This relationship benefits both the coral and the algae through their interactions. The polyp receives food in the form of a sugar through photosynthesis by the algae; the algae receive protection and nutrients from the wastes produced by the corals—both benefit from the relationship.



coral polyps

Some reef-building corals grow very quickly, especially the branching corals, others grow very slowly, sometimes only a half-inch per year. Coral, for all its sturdy appearance is extremely fragile — even the slightest touch can break their protective skin and allow bacteria and other disease-causing bugs to spread throughout entire colonies killing them in a matter of weeks. Climate change is another challenge that corals are now facing and could turn out to be their toughest opponent yet — warming seas and ocean acidification are two components of climate change causing great concern for coral reef ecosystems worldwide.

The Florida Keys is the number one dive destination in the world; it also hosts the largest charter boat fleet, and is the destination for ten times as many tourists that visit the Great Barrier Reef in Australia—a coral reef system ten times larger! Physical damage from careless divers and snorkelers, marine debris, anchors, boat groundings, overfishing, and harmful fishing are just a few of the threats facing our coral reef ecosystem—human behaviors that can hopefully be changed through education and outreach.



Some scientists believe that if we continue to alter the climate through green-house gas emissions, we could see the loss of coral reefs by the end of the 21st century. This would cause negative effects throughout the ocean and we could see many marine animals simply disappear forever.

Our coral reef ecosystems need protection on a worldwide scale if we are to halt the decline that we are now witnessing and prevent further damage to these important habitats.

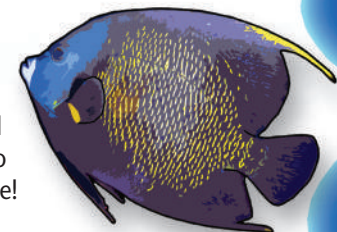
What can we do to save coral reefs?

The first thing that we must do as a society is to reduce our carbon dioxide and other greenhouse gas emissions that are a contributing factor to Global Warming, Sea Level Rise, and Ocean Acidification. We kids can talk to our parents about what our family can do to reduce our carbon footprints. Things like turning off the lights when leaving a room, keeping air conditioners set at a constant temperature, using bicycles instead of taking the car, using environmentally friendly products and recyclable materials, and you can always use the internet to find more information on how to turn your household "GREEN."

Car pooling, using public transportation systems, and alternative energy sources such as solar, wind, and water power are better than relying on fossil fuels like oil and coal that contribute to climate change, especially global warming.

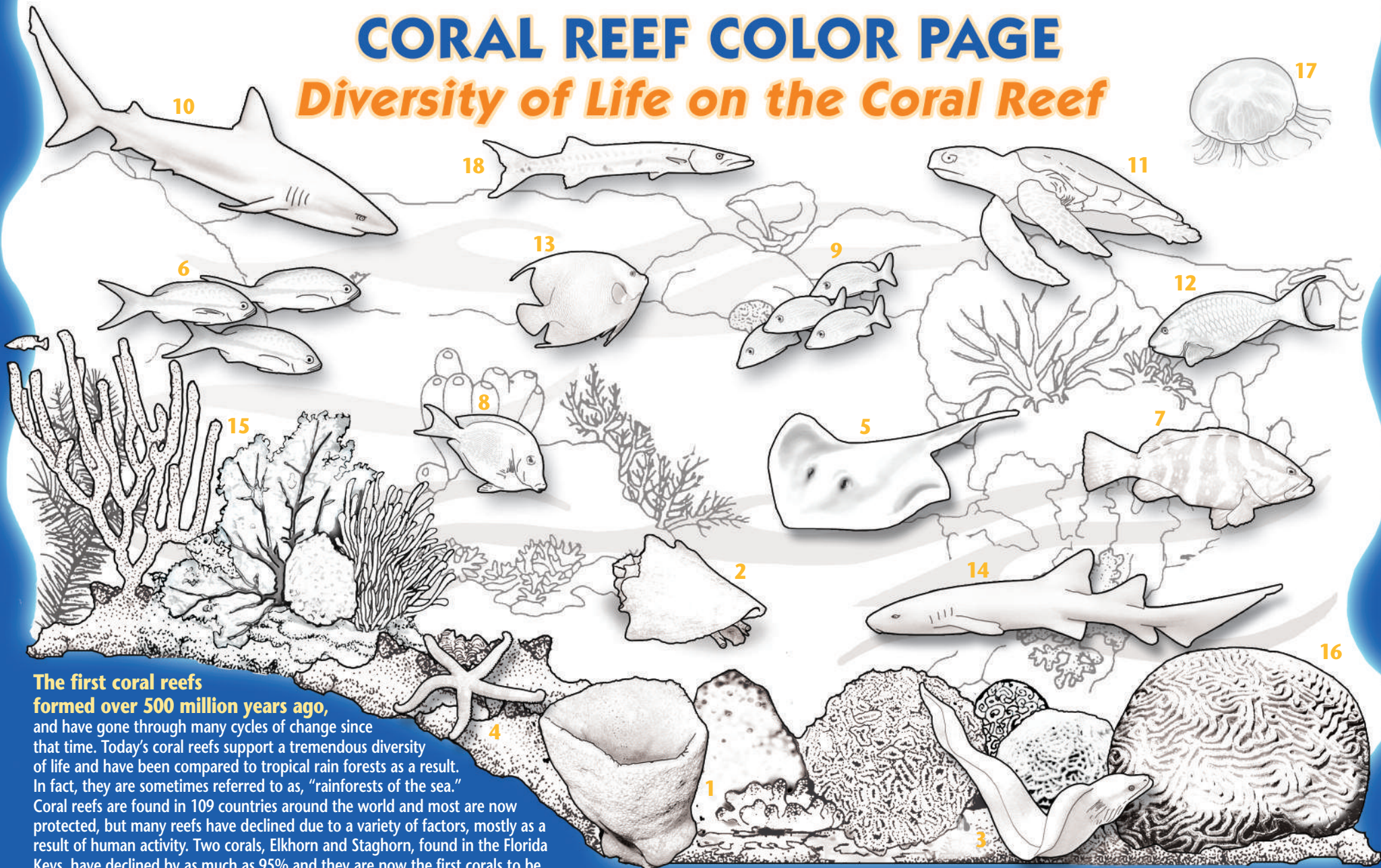
We can help the coral reefs by reducing pollutants in our near-shore waters in order to improve water quality by using environmentally safe products on our lawns and in our gardens; picking up pet waste; using recyclable materials; and remembering to REDUCE, REUSE, and RECYCLE.

We can change our behaviors that cause harm to natural systems in both the ocean and on land. DO NOT POLLUTE! Much of what we discard on land will eventually find its way to the ocean—Everything has to go somewhere and everything is connected to everything else!



CORAL REEF COLOR PAGE

Diversity of Life on the Coral Reef



The first coral reefs formed over 500 million years ago, and have gone through many cycles of change since that time. Today's coral reefs support a tremendous diversity of life and have been compared to tropical rain forests as a result. In fact, they are sometimes referred to as, "rainforests of the sea." Coral reefs are found in 109 countries around the world and most are now protected, but many reefs have declined due to a variety of factors, mostly as a result of human activity. Two corals, Elkhorn and Staghorn, found in the Florida Keys, have declined by as much as 95% and they are now the first corals to be protected by federal law.

Coral reef ecosystems, including mangrove shorelines and sea grass meadows, form an interdependent balanced system that supports the biodiversity of species that reside there; they provide protection to shorelines from wind and wave damage, and supply millions of people all over the world with food and medicines. They also provide us with a wilderness experience that is unlike any other. So, jump in the ocean and see for yourself, and learn about the importance of protecting and conserving coral reef ecosystems for generations of kids to come that will want to see a healthy and beautiful coral reef too!

- | | | | |
|----------------|----------------|-----------------|----------------|
| 1. Sponge | 6. Snapper | 11. Sea Turtle | 16. Hard Coral |
| 2. Queen Conch | 7. Grouper | 12. Parrotfish | 17. Moon Jelly |
| 3. Moray Eel | 8. Blue Tang | 13. Angelfish | 18. Barracuda |
| 4. Seastar | 9. Grunt | 14. Nurse Shark | |
| 5. Stingray | 10. Reef Shark | 15. Soft Coral | |

Why are coral reefs important?

The coral reef is home to more kinds of life than any other ecosystem on Earth. The coral reefs of Florida include more than 500 species of fishes, more than 60 species of hard corals, greater than 40 species of soft corals, and two species of hydrocorals commonly referred to as "fire coral." This represents 80% of all corals found in the tropical Western Atlantic.



Florida's coral reefs also attract millions of tourists every year and are the primary source of dollars in the Florida Keys—billions of dollars are added to the economies of South Florida as a result of the tourism trade.

Coral reefs also act as a barrier to high waves and storm surges generated by tropical weather systems; they provide food to over 500 million people worldwide; they provide recreational opportunities like snorkeling and scuba diving, and they provide us with one of the most beautiful wilderness places on Earth.

Are coral reefs threatened?

Florida's reefs are typically "spur and groove" formations—a series of coral ridges separated by sand channels found in nutrient-free, warm, and clear shallow waters. Nutrient free waters reefs need to prevent alga blooms which could smother the corals; temperatures between 64 and 84 degrees; and clear waters that allow sunlight to penetrate enabling the algae to conduct photosynthesis.

Coral reef ecosystems provide habitat for 25% of all marine species during some stage of their life cycle and yet occupy only 1% of the world ocean.

The greatest threats to Florida's coral reefs are water quality decline due to storm water runoff and agricultural runoff from the Everglades via Florida Bay and inadequate sewage treatment in some locations. Warming sea temperatures and ocean acidification due to climate change are also major threats. Stronger storms and hurricanes, also linked to climate change, are capable of causing wide-spread destruction to the reefs of the Florida Keys.

Where is the coral reef?

North America's living coral barrier reef lies approximately six miles out to sea off the Florida Keys in water from 15 to 30 feet deep. The reef tract starts near Miami and extends southwest to the Dry Tortugas, about 67 miles west of Key West. Patch reefs continue up through the Palm Beaches.



What is the coral reef ecosystem?

The coral reef ecosystem is a complex interdependent system of habitats that includes mangrove forests, sea grass meadows, and the coral reef. Each of these systems plays an important role in the health of our near-shore waters and our coral reef.

Mangroves provide important breeding grounds for an abundance of reef creatures. In fact, they are sometimes called, "ocean nurseries," due to the amount of ocean creatures that are born there, and stay there while feeding and growing before going to the ocean. Mangroves also filter pollutants from the land; they trap sediments from the shore, and form a fence that protects shores from storm damage.

Seagrasses are flowering marine plants that provide protection and food for many forms of marine life, especially those in their younger stage. Seagrass meadows are important habitat for conch, manatees, sea turtles, and other protected species.

These interdependent, connected systems together form the Coral Reef Ecosystem—with more kinds of plants and animals than any other place on the Earth. Coral Reefs have been described as "Rainforests of the Sea" as a result of the large amount of life found there.

