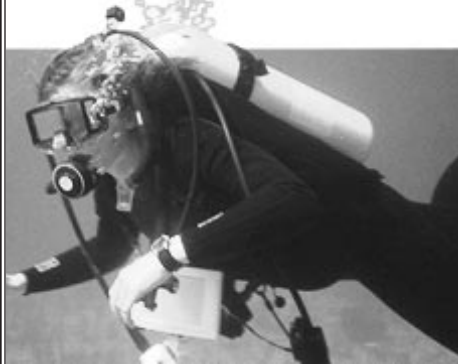


# Oceans Live

SOUTH CAICOS ISLAND, CARIBBEAN



# Oceans



of the ocean is 35 parts per thousand, which means that there are 35 particles of salt for every thousand particles of water. In contrast, the salinity of the fresh water that you drink is less than one part per thousand.

Have you ever noticed that at certain times the waves on the beach come up farther than at other times? This is caused by tides. Tides occur when the gravity of the moon and the sun affects the depth of the ocean. At high tide, the gravity of the moon and sun attracts the ocean water, increasing its depth and drawing it farther up the beach. Low tide is when the ocean is not directly affected by the sun or moon.

Many animals and plants call the ocean home. Some of them live so deep or so far out that they have not yet been discovered. The ocean is an important place to study because we know so little about it.

---

Article by Jennifer M. Kassakian,  
SFS student from  
Colby College

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**Q: Why did you come to South Caicos?**

**A:** From the day I was born, my parents brought me along on all their boating excursions. As I grew older, and my family began boating on the ocean, I was exposed to all the wonderful things that are an integral part of a coastal environment.

I spent my summer days catching jellyfish and hunting for shells and sea glass on the beach. I swam in the surf and went on long cruises in the Atlantic Ocean around New England. As a result of these experiences, I came to realize that the ocean had become an integral part of who I was and I knew that I wanted to spend the rest of my life learning about and protecting the ocean and its valuable resources.

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Answer by Nicole Desjardin,  
SFS student from  
University of Richmond

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Look for articles in today's paper about the ocean or about a body of water in your community. Make a list of people's attitudes and relationships to these bodies of water. Does your behavior affect the world's oceans?

**A**n ocean is a large body of salty water. The three major oceans of the world are the Atlantic, the Pacific, and the Indian. You cannot see where one begins and another ends but scientists have defined boundaries and names for them. Oceans cover about 70 percent of the surface of the Earth. The average depth of the ocean is about 12,000 feet. The deepest part of the ocean is the Marianas Trench in the Pacific Ocean. It is about seven miles (37,800 feet) deep.

You know that the ocean is salty. The "salinity" is a measure of saltiness of the ocean. The average salinity



**Feb. 1** Students arrive on South Caicos to begin their studies.

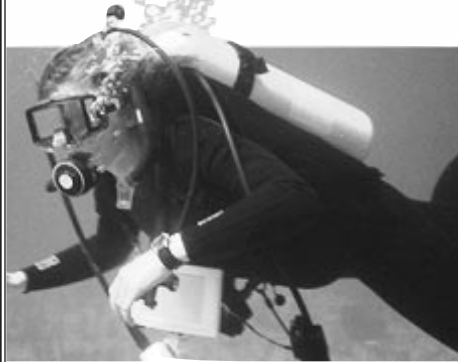
**Feb. 8** Students meet with their advisors about their semester-long directed research projects.

# Oceans Live

SOUTH CAICOS ISLAND, CARIBBEAN



## Ocean Zones



the Caribbean spiny lobster, and for *Strombus gigas*, the queen conch.

The pelagic zone is the second significant ocean zone. Pelagic environments are defined as the open water areas seaward of the continental shelf. In the twenty-two mile stretch between

South Caicos and Grand Turk, pelagic ocean depths reach 2000 meters. The biota in pelagic zones differs significantly from the tidal zone. The developing finfish industry in the Turks and Caicos Islands focuses primarily on the pelagic zone.

The final major ocean zone is the abyssal zone. The abyssal plain is the flat ocean bottom, which has an average depth of 4000 meters. The abyssal zone does not have a major influence on South Caicos fisheries, but it is an area where substantial research is focused and where scientists are accumulating information on the biota of the ocean floor.

**W**hile the ocean is comprised of many distinct environments, there are three major ocean zones which are significantly different from one another.

The neritic zone is the area of ocean closest to shore and is greatly influenced by the vertical rise and fall of the tide as well as by the horizontal currents that result from tide forces and fluctuations. These currents can be strong, transporting oxygen, plankton, nutrients, and larvae throughout the region. The neritic zone is of great importance to South Caicos as it serves as the primary habitat for *Panulirus argus*,



**Q: What types of animals have you seen so far?**

**A:** Small lizards, known as geckos, are very common on the island. They are often seen running up walls and across window screens. Flamingos are also very common; these pink wading birds live on the salt flats.

Fish are the most common animal to see. So far I have seen parrot fish, angelfish, tuna, barracuda, puffer fish and damselfish. I have also seen nurse sharks and three gray reef sharks, the largest of which was five feet long. There are many stingrays, the prettiest of which is the spotted eagle ray—black with white spots on its back. The coolest thing I have seen so far has been a humpback whale.

*Answer by Win Adams,  
SFS student from  
Davidson College*



Search today's newspaper for an article about wildlife. How do people interact with wildlife? What can you tell about people's relationships to animals from the news articles and ads?

**EXTRA!  
EXTRA!**

**Feb. 12** Students work on Field Exercise #1:

Determining the Cost of Living Index on South Caicos.

**Feb. 13** Students see a small school of spotted eagle rays.

*Article by David Joyce,  
SFS student from  
Williams College*

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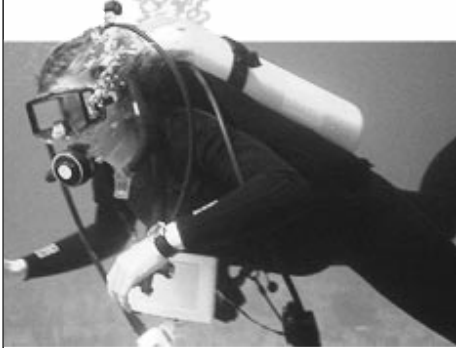
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# Oceans Live

SOUTH CAICOS ISLAND, CARIBBEAN

## Coral Reefs



**C**orals are animals that are dependent on very specific environmental conditions. They only grow in tropical waters where the water is rarely cooler than 23°-25°C, and they only grow in areas of good light where the symbiotic algae, zooxanthellae, can grow in the coral tissue. Generally, coral is found above 25 meters of water, and often just a few feet below the low tide point.

Corals also need to be in areas of high wave energy, which helps to keep the water clear of sediment and provides the coral with nutrients. Corals are also dependent on salinity, and, as a result, they do not grow in estuarine environments or in areas of high run-off from

land.

Even when all of these life conditions are satisfied, coral reefs generally take a long time to form. Once the polyps start growing it may take hundreds of years for a reef to form, and just a little damage can take a lot of time to repair.

Two of the major threats to coral reefs are divers and fishermen. While diving on reefs, a gentle stroke of the fins or a bump of a body can take many years to repair. A conscientious effort needs to be made by divers to preserve the coral by not touching it, as well as by teaching new divers about how not to damage coral.

Some lobster fishermen in the TCI damage coral by using bleach or dish soap to flush the lobsters out of reef crevices. These chemicals damage the coral. Although this fishing technique is illegal, it is difficult to enforce the law.

Hopefully we can all work together to preserve the reefs so all can enjoy!

*Article written by Martha Schoppe,  
SFS student from  
Oberlin College*

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**Q: Have you ever encountered a shark while scuba diving?**

**ing?**

**A:** Yes, I have seen sharks while diving, but not here. Most of the sharks I have seen have been nurse sharks in the Florida Keys. These sharks are very friendly, docile animals.

On a couple of night dives, I saw horn sharks (small enough to hold in your hand) off the coast of California. I also came across an angel shark whose body is shaped like a ray and a shark combined. It was hiding on the ocean floor and we brushed the sand off of its back—it stirred, then gracefully swam away. My encounters with sharks have been friendly, and I expect the same to happen here in the Turks and Caicos Islands.

*Answered by Taylor Carlisle,  
SFS student from  
Smith College*

**EXTRA!  
EXTRA!**

**Feb. 22**

Students have their oral presentation on the dock studies.

**Feb. 21** Everyone has the day off. Some students go to Shark Bay.

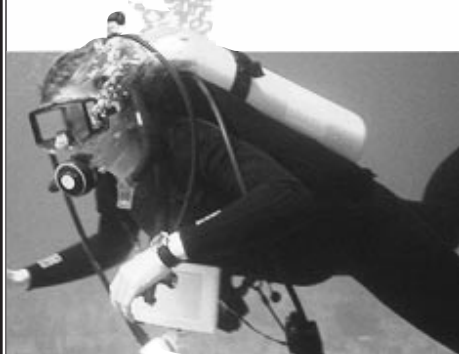


*Find articles in the paper that address environmental problems. Write a 1-page article of your own summarizing these problems and posing possible solutions.*

# Oceans Live

SOUTH CAICOS ISLAND, CARIBBEAN

## Sea Research



**U**nderwater research is our specialty here at SFS in South Caicos, and it is essential that we learn how to conduct ourselves in marine environments.

At the research center, there are three types of research tools that we use most. The first tool is the manta tow, where a snorkeler is pulled behind a boat to make a rapid habitat assessment of a specific marine ecosystem. The second tool is a transect, which looks like a large tape measure placed on the ocean bottom. It is used to assess the diversity and abundance of fish species or coral habitats. The third tool that is used in a few of our directed research projects is called a

quadrat, which is also used for diversity and abundance research.

Underwater research differs from research on land in that there are many additional things to take into account. Obviously, a person cannot breathe underwater, so the underwater researcher must either take many trips to the surface to breathe, must stay at the top with a snorkel, or must use scuba gear if he or she plans to spend a long time below the surface. In addition, the water can be rough and extremely cold, and a researcher must know when to get out of the water for safety.

Underwater research can be difficult at times. However, all the grueling work and goosebumps do not compare with the excitement of diving through a huge coral reef, viewing a spotted eagle ray, or figuring out how to sustain populations of spiny lobster. It is more than worth it!

*Article written by Annie Birnie,  
SFS student from  
Scripps College*

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**Q: What animals do you see and what is your favorite?**

**A:** The most common types of fish we see during the day include barracuda, snappers, grunts, squirrelfish, damselfish, schoolmasters, parrotfish, and occasionally a spotted eagle ray.

At night, we usually see some turtles resting under ledges, drum fish, soldierfish, stingrays, squid, and porcupine fish. Other things that we see while diving include a variety of corals, seafans, seagrass, shells, and sponges.

I think my favorite thing to see while diving are sharks—especially the Caribbean reef sharks! I saw my first one the other day, and I was amazed at and how peacefully and gracefully it swam through the water. It was thrilling!

*Answered by Chad Gorman,  
SFS student from  
Roger Williams College*

*How many newspaper articles can you find that identify tools used by various professions? Make a list of tools mentioned. Which tools do you use?*



**EXTRA!  
EXTRA!**

**Feb. 27**  
Students have their midterm today.

**Mar. 1** Students gather data for their directed research projects.

# Oceans Live

The Center for Marine Resource Studies, South Caicos Island, Caribbean



## Taxonomy



**T**axonomy is the process used by scientists to classify animals. Classifying animals involves arranging individuals into groups according to distinguishing characteristics. Scientists are interested in classifying animals because it allows them to recognize and describe new species. Classification makes it possible for students and scientists to recognize the diversity and complexity of the animals of the world.

Over 250 years ago, Carolus Linnaeus created the scheme that taxonomists still use today to classify animals. Animals are classified, or organized, into the following groups: Kingdom, Phylum, Class, Order,

Family, Genus, Species. Kingdoms are the highest level in the hierarchy of classification and contain the most organisms. Species are at the lowest level and contain the fewest organisms. The further down the hierarchy you get, the more traits the organisms within each group have in common.

The Caribbean spiny lobster, an animal found in the waters of South Caicos, is a good example of how Linnaeus' naming scheme is used. This lobster is a member of the Kingdom Animalia, Phylum Arthropoda, Class Crustacea, and Order Decapoda. *Panulirus* is its genus name and *argus* is the species name.

This method of classification enables scientists to make sense of the world around them. And since all scientists use the same classification scheme, they are able to communicate more easily amongst each other and share their research.

Article written by  
Susannah Sheldon, Univ. of Cincinnati  
& Evan Cooper, Connecticut College,  
SFS Students at CMRS

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**Q: What is the most important marine resource on SCI?**

**A:** The most important marine resource in South Caicos is the Caribbean spiny lobster, *Panulirus argus*. The entire economy is based on the fishing industry and almost every resident on the island is dependent on the fisheries in some way.

The majority of the lobsters are caught by free-diving fisherman who use a hook, or gaff, to snag the lobsters and pull them out of their dens. Once landed, the fishers bring their catch to one of the two processing plants on the island. The catch is then weighed and the tails are removed from the lobsters. The tails are processed at the plants and shipped out to various destinations including hotels and restaurants on other Caribbean islands and to the USA.

Answered by Jen Kassakian,  
SFS student from  
Colby College

**EXTRA!  
EXTRA!**

**Mar. 9** Students have their coral reef identification exam.

**Mar. 6** Students work on their Directed Research projects.

**KIDS  
NEWS  
EXPLORER**

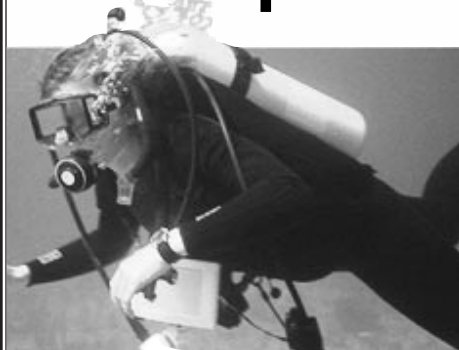
How is today's newspaper organized? How do editors classify the articles? The sections? How are the ads organized? Make a chart showing the newspaper classification scheme.

# Oceans Live

The Center for Marine Resource Studies, South Caicos Island, Caribbean



## Adaptations



An adaptation is a physiological, morphological, or ecological change that allows species to adjust to their surrounding habitats. For example, the scorpion fish has adapted to its environment in order to catch food and hide from predators. This fish has the ability to change its body color and patterns to blend into the surrounding environment. This camouflage allows the fish to remain unseen by both its predators and its prey.

An example of a plant that has adapted to its environment is the mangrove. Mangroves are one of the only terrestrial plants that have the ability

to use salt water to grow. These plants are found along saltwater shorelines. They are able to live here because they have adapted to converting salt water to fresh water for hydration, reproduction, and growth.

All species of mangroves take salt water up through their roots, but they rid themselves of the salt in different ways. The white mangroves use little nodules that are located on the base of the leaves to excrete any salt in the water before it enters the leaves of the plant. The black mangroves use a system of excreting salt from the back of the leaf so it can use only the fresh water. The red mangrove uses a form of exclusion to rid its system of salt. It sends all the excess salt to particular leaves that then die, while providing fresh water to other parts of the plant.

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*Article written by Chad Gorman,  
SFS student from  
Roger Williams College*

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**Q: What makes the water so clear and blue where you are?**

**A:** The water here is clear and blue because there are few nutrients and little suspended sediment in it. These waters are considered to be an "oceanic desert" because of the lack of nutrients.

Two habitats of ecological importance in the Caribbean are seagrass beds and mangrove swamps. Both of these areas are considered to be sediment stabilizers, because they trap the sediments within their root systems. This makes the water a lot clearer by preventing the free flowing of particles. Also, since there are few nutrients floating around in the waters, the sunlight can penetrate to greater depths, creating hues unimaginable.

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*Answered by Lacey Russell,  
SFS student from  
Trinity College*

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*Animals in the wild are not the only things that are adapted to their environment. In today's paper find out how people adapt to different environmental and political conditions.*

**EXTRA!  
EXTRA!**

**Mar. 12** Students use quadrats to do habitat mapping in East Bay.

**Mar. 11** Andrew went out fishing and caught a wahoo—well, a tiger shark ate two thirds of it!

# Oceans Live

The Center for Marine Resource Studies, South Caicos Island, Caribbean



## Special Q & A Edition



**Q: What is the weather like on South Caicos?**

*Jan, Florida, USA*

**A:** In general, the temperature varies only slightly. The average yearly temperature is 80°F. The dry season in South Caicos lasts from February until September, and the wet season from October to January, with an average annual rainfall of about 14 inches.

The interior of our island contains an area called the "salinas." Historically, the salinas were built to evaporate salt, which was used for food preservation and flavoring. Today the industry is gone but the salinas remain.

The salinas affect the island weather by creating an area of very hot temperatures. This hot air is pumped into the atmosphere. When rainstorms come from the east, they cannot go over this area of high temperature so they go around the island, leaving us with little or no rain. Thankfully, we can usually rely on the trade winds that blow across the islands to keep us cool during the day.

*Answered by Amit Lee Hazra,  
SFS student from  
Denison University*

**Q: How are the lobsters down there different from those in the northeastern United States?**

*Karen, Florida, USA*

**A:** In the Northeast, *Homarus americanus*—the Maine lobster, is usually dark brown but can sometimes be blue! It is found in the cold waters of the Atlantic Ocean from Newfoundland, Canada to Cape Hatteras, North Carolina. This lobster has a smooth shell, lives alone, is a carnivore, occasionally practices cannibalism (eating one of its own species), and has two big claws.

The Caribbean spiny lobster, *Panulirus argus*, is brown, tan and white with a few dark spots. It is found from Florida south to the Bahamas and in the Caribbean Sea. This lobster has a rough shell, lives in groups once it reaches adulthood, and it does not have any large claws (it does have two sharp horns above its eyes).

*Answered by Jennifer Kassakian,  
SFS student from Colby College  
Denison University*

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**Q: Do conchs form pearls? If so, how?**

*Jacki, South Caicos Island*

**A:** A conch pearl is made just like an oyster pearl. A piece of debris gets into the conch's mantle, the part of a mollusk that secretes the shell. When a conch cannot get the debris out, it forms a cyst or protective coating around the debris. This cyst is what eventually becomes a pearl.

Conch pearls are very rare; only one out of 100,000 conches may contain a pearl. Conch pearls are often different shapes and sizes, so finding two alike is very difficult. Conch earrings, for example, are hard to find because you rarely find two pearls that look

*Answered by Andy Herndon,  
SFS student from  
University of Wisconsin*

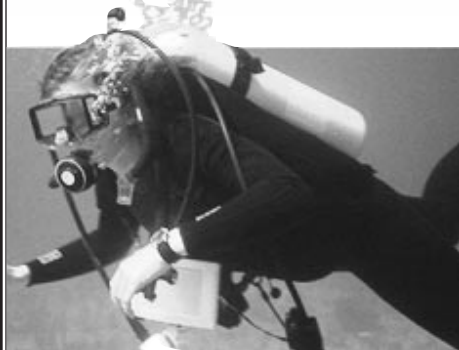


*In today's paper, look in the weather section and see how your local weather compares to the weather on South Caicos Island. Make a list of differences and similarities.*

# Oceans Live

The Center for Marine Resource Studies, South Caicos Island, Caribbean

## Food Webs



**F**ood web is the term used to describe all the complex feeding interactions within a given ecosystem. Basically, a food web just shows who eats what.

A food web starts with primary producers, the organisms that use the sun's energy to create their own food through photosynthesis. Around South Caicos, primary producers consist mainly of plant plankton. Seagrass is also photosynthetic and therefore a primary producer.

These producers are eaten by a variety of fish and larvae. All the animals that eat only primary producers called herbivores,

or primary consumers.

The next link in the food web is comprised of animals that eat the herbivores. These are mainly carnivorous fish that are generally larger than the herbivores. We refer to the organisms on this level of the

web as secondary consumers. These consumers are then eaten by even larger fish such as tuna, billfish, and sharks.

There are also scavengers within the web. They include all the organisms that eat remains of dead fish, rotten grasses, and even fish wastes. Lobsters, which are a huge part of the local economy, are a prime example of scavengers.

Humans are placed at the top of the food web, because we generally are not prey for other animals. We are omnivores, which means that we consume both plants and animals at all levels of the food web.

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*Essay by Chris Malamisura,  
SFS student from  
Davidson College*

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**Q: Why was South Caicos chosen for research?**

**A:** The School for Field Studies set up a marine research program on South Caicos because the island is isolated, and its main income comes from fishing conch and lobster. The fisheries are not well managed, and we are here to find a way to sustain them.

We are also studying how the fishers of South Caicos can exploit other natural resources such as finfish. By setting up alternative means of income, the economy of the island may improve and diversify.

South Caicos is an island that offers us an undeveloped area to study. By taking baseline measurements of the reef and fish stocks, we can assess how a pristine environment will be affected by development.

---

*Answer by Emily Smith,  
SFS student from  
Smith College*

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*Find three ads about food in today's newspaper. Where did the food come from (e.g., a hamburger comes from a cow)? In what part of the food web does this food belong? Is it a producer, an herbivore or a carnivore?*

**EXTRA!  
EXTRA!**

**March 25**

Several students spend the day on a lobster trap boat to see how lobstering is done by local fishermen. This is part of the lobster landing directed research project.



# Oceans Live

The Center for Marine Resource Studies, South Caicos Island, Caribbean



## Underwater...



coral. Breaking off pieces of coral can kill the creatures as well. Therefore, it is wise for divers or snorkelers to be completely aware of their surroundings and ensure that they are not damaging any of the wildlife.

**B**reathing underwater is one of the most exciting things an ocean-lover can do. Colorful corals coat the sea floor while brilliant reef fish glide effortlessly through the water. All of this can be seen when exploring the many dive sites here in the waters around South Caicos Island.

With so many divers exploring the marine ecosystem, it is inevitable that there will be some sort of impact on the environment. Often a swimmer will accidentally kick up some of the sand and cause sediment clouds that not only impair the vision of others, but may also cause significant damage to coral reef organisms. Even the slightest touch can damage

An underwater nature trail can create this awareness. These trails are marked paths that are monitored and maintained. Plaques are often posted along the trail to educate divers about the local flora and fauna and to promote conscientious diving. The plaques also prevent divers from straying from the trail and possibly damaging sensitive areas.

Near the SFS center on South Caicos, there is an underwater nature trail at a snorkel site called Admiral's Aquarium. Many students visit this site to study reef fish and coral species or to just enjoy the natural diversity. Admiral's Aquarium is equipped with informational plaques to educate curious divers.

*Essay written by Nicole Desjardin,  
SFS student from the  
University of Richmond*

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**Q: How do starfish eat?**

**A:** Most sea stars, commonly called starfish, are predators. They move pretty slowly, but have no problem overtaking their prey of clams or oysters, which move even more slowly, if at all. When the sea star finds one, it covers the clam with its body. It then attaches the little tube feet beneath its arms to the two shells of the clam or oyster, and it slowly and steadily pulls the clam apart.

Now comes the crazy part! Once the shells are apart, the sea star turns its stomach (on the under side of the central disk) inside out and extends it through the mouth, into the clam shell! Then digestive enzymes go to work, and the sea star sucks the soft clam out like soup. Sometimes, if the clam is small, the sea star takes the whole animal into its stomach, spitting out the shell later.

*Answered by Jennifer Ninneman,  
SFS student from  
Regis University*



*The SFS students need to work in teams on their directed research projects. Find an article that shows people working together for a common goal. Why do people work together? What are the benefits of cooperation?*

**EXTRA!  
EXTRA!**

**Apr. 5** Students analyze data collected during the dive site assessment field exercise.

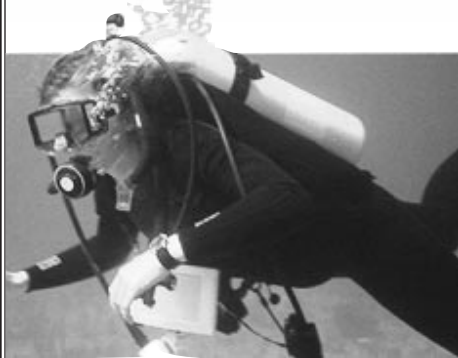
**Apr. 4** Students celebrate Easter with an Easter egg hunt!

# Oceans Live

The Center for Marine Resource Studies, South Caicos Island, Caribbean



## Water Pollution



**W**hen learning about marine pollution, one of the important things we must know about is the water cycle and how it works. The water cycle is the process that happens when the sun's radiation evaporates water into the atmosphere where it forms clouds. The clouds condense into rain, which drops the water back onto the earth where it flows to streams and rivers that lead it back to the ocean once more. Why is this cycle important to know when learning about and trying to prevent marine pollution?

When gasses and contaminants are discharged into the air from vehicle exhaust or industrial processes, contaminants get mixed with the water vapor in the atmos-

phere. The contaminants then fall to earth with precipitation. The contaminated rainwater then runs back to the oceans.

Another source of water pollution is the runoff from the land into rivers. Contaminants like pesticides and fertilizers wash off the land and

into the ocean. Luckily, since South Caicos is not very developed and has no major industries, water pollution from atmospheric and runoff sources are not a big problem.

Pollution threats here come mostly from local sources such as domestic sewage, car batteries that are dumped into the water, or organic waste from the fishery plant on the island. There is also the threat of oil or other contaminants that come from big ships that pass through the area.

As tourism increases on the island, water pollution threats will increase as well because there will be more humans on the island to create wastes and discharges that may end up in the ocean.

---

*Essay written by Sarah Simon,  
SFS student from  
Washington University*

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**Q: Do you have white or black sand on the beach?**

**A:** The beaches on South Caicos and on the other Turks and Caicos Islands have white sand. The sand here is known scientifically as calcium carbonate. It is formed when shells and dead coral are broken down into smaller particles by the constant movement of ocean water. These particles are carried by waves and currents until they are deposited on the beach. Instead of having fine sand grains, the beaches here are made of coarse particles of sand. If you look closely, these particles are found in various colors, including pink, yellow, and even black. Although the individual sand particles are many different colors, they mix together to form white beaches.

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*Answered by Carleigh Trappe,  
SFS Student from  
Vanderbilt University*

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*Look in the weather section of today's newspaper and make a list of towns and cities where it is raining. Into what major rivers and oceans might this rainwater eventually be deposited?*

**EXTRA!  
EXTRA!**

**Apr. 12**

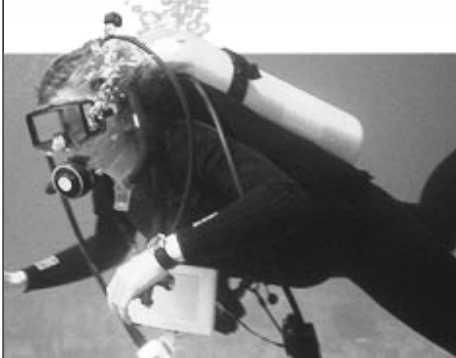
Students have a field exercise on coral reef species abundance.

**Apr. 10** Students continue to collect data on their directed research projects.

# Oceans Live

The Center for Marine Resource Studies, South Caicos Island, Caribbean

## Resources



**T**here are three types of resources upon which all life depends. The first type of resource is called "inexhaustible." An example of this is the sun's energy—no matter how much we use, there will always be enough for all. The second category of resources is "renewable." Renewable resources are actually only truly renewable if we manage them carefully. Fish are a good example of a renewable resource—as long as we are careful not to take too many each year, there will be enough left to replenish the stocks. The third and final category of resources is known as "non-renewable." A non-renewable resource will run out eventually, no matter how responsibly we use it. Oil and gas are non-renewable resources; they took

hundreds of thousands of years to form and once they are gone, they are gone forever.

The waters surrounding South Caicos support a multitude of renewable resources such as conch, lobster, finfish, and bonefish. Currently, there are disputes concerning the true nature of these resources. Some people believe that fish and other creatures of the sea are an inexhaustible resource; they do not realize how important it is to catch only a certain amount of fish each year in order to ensure successful restocking of the fishable population. If managed properly, these renewable resources could continue almost indefinitely; however, they are not limitless and their continued enjoyment depends on responsible management. We at SFS are trying to help the local fishers and people of the island understand and implement a successful management plan to make sure their conch, lobster, and fish remain renewable resources for years to come.

*Essay written by Amy Dietterich,  
SFS student from  
Bucknell University*

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**Q: What do the fishermen do after lobster season ends?**

**A:** After lobster season ends, South Caicos becomes a much quieter island. Lobster fishing is the main source of income for people here, so after the season they have a lot less money to spend. Because of this people spend more time at home. Some of the fishermen from other islands go back to their families after the season. The island seems a lot emptier now.

After lobster season ends, it is still legal to fish conch. Conch fishing is limited by a quota system rather than seasonally. This means there is a certain amount of conch that can be legally caught all year. Until the quota is reached, conch fishing provides income for the fishermen.

*Answered by Hillary Stainthorpe,  
SFS Student from  
Oberlin College*

**EXTRA!  
EXTRA!**

**Apr. 19**

Students have a field exercise on waste management practices on South Caicos.

**Apr. 17** Students give oral presentations on their Fish Assessment Surveys.



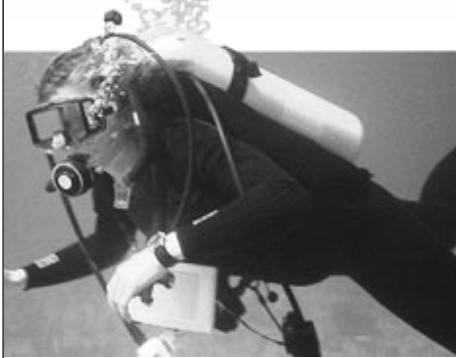
*Many resources are used to make newspapers. Which resources are renewable? Non-renewable? Contact your local newspaper to find out from where the resources originate.*

# Oceans Live

The Center for Marine Resource Studies, South Caicos Island, Caribbean



## Conservation



**H**umans and the environment are inseparable—each is a necessary part of a whole. In every choice we make we have the opportunity to respect and conserve the environment, which, after all, is the one thing that gives us our quality of life and is solely responsible for sustaining humanity.

We are a part our environment. And as surely as we are degrading the environment with our cars, our nuclear waste, and our skyrocketing consumption levels, we are degrading our lives. Natural things cannot be replaced by anything we can manufacture. A healthy environment is a necessary condition for a healthy, happy humanity.



**Apr. 24** Students are giving oral presentations tonight.

**Apr. 23** Students are analyzing data and writing the results sections for their directed research projects.

We must learn to appreciate nature in and of itself, rather than valuing it for what it can give us. Before this can happen, we need to rethink our perception of human-environmental interactions. The problem is that we want it all; we want our air conditioner and we want clean air. We must accept that we cannot have it all. Our priority must be environmental conservation, for the environment is the beginning and the end of our happiness.

In recent decades there has been growing recognition of our impact on the environment and how to minimize damage. Laws, organizations, parks, and education are all tools we can use to teach people about the importance of the environment. Ultimately the driving force in environmental conservation will be human recognition of both the intrinsic value of nature and its irreplaceable value to us.

*Essay written by Ellie Goldberg,  
SFS Student from the  
University of Colorado, Boulder*

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**Q: How has your SFS experience prepared you for the future?**

*Jenn M., Rhode Island, USA*

**A:** I've learned how to live and work with thirty other students in very close quarters. Almost everything we do here is in groups, from field exercises to site clean up. We have had to learn to cooperate, to listen to each other, and to work out our own problems. We have also had to take on a lot of responsibility and learn to manage our time so that everything gets done. Employers often look for these qualities in a person, and I feel that this experience has helped me to develop them. I also believe that I am better prepared for a scientific career after having the opportunity to collect data and to prepare a scientific paper. Even if I decide not to pursue a career in science, I believe that this experience has fostered qualities necessary for success at any job.

*Answered by Carleigh Trappe,  
SFS student from  
Vanderbilt University*



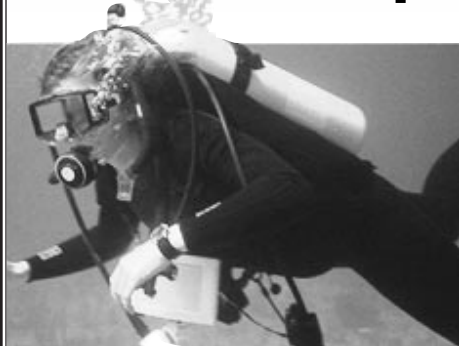
*Find and read an article in today's paper about a natural resource (fish, oil, water, trees, etc.). Is the resource in danger of being overused? Should it be conserved? Explain.*

# Oceans Live

The Center for Marine Resource Studies, South Caicos Island, TCI



## Development



Land runoff carries sediment into the ocean, causing the sedimentation of coral reefs. Sedimentation, which is one result of development, is the process of sand particles falling on corals. When these sand particles stick to the coral's mucus coating,

the coral exerts more energy to produce more mucus to flush off the particles. If these particles are not flushed they will prevent the coral from receiving adequate sunlight. Sedimentation affects nutrition, growth, and reproduction as well as the dispersal and abundance of corals.

What is SFS doing to help South Caicos prepare for the impact of economic development and tourism? We have conducted scientific research this semester that will help the Turks and Caicos Islands government make sensible decisions about how to develop the South Caicos area in a sustainable fashion that will have minimal impact on coral reefs.

*Essay written by Destiny Smith,  
SFS student from  
Wofford College*

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**D**evelopment plans for South Caicos are focused on promoting tourism on the island. In anticipation of this increase in tourism we are studying the possible effects of development on coral reefs.

Any increase in development will bring an automatic increase in population. A larger population leads to a greater consumption of resources and increased production of waste. With increased tourism, the surrounding coral reefs will probably suffer from sewage and pool runoff. These types of runoff create a situation known as eutrophication, which is simply an overload of nutrients in the water. This overload causes large algal blooms, which can choke out the coral reefs.



**Q: Has South Caicos changed you at all?**

**A:** South Caicos is a very intimate little island. When I first arrived here, I felt like I would never get to know this place. Thirteen weeks later, I've hiked to every end of the island and have seen everything there is to see.

I have snorkeled and dived in waters all around the island and have seen many wonderful sights and animals underwater. The local people have become great friends to all of us and have taught us so much about their lifestyle and culture. The experiences that we as students, professors, and interns have all shared together at the school will never be forgotten.

So has South Caicos changed me at all? Absolutely. Not a day goes by that I do not think about how much I've learned about myself and about other people.

*Answered by Amit Lee Hazra  
SFS student from  
Denison University*



Look in the business section of today's paper. How are companies having an effect on the communities, cities and countries in which they are located? Are these effects good or bad? Make a list.

**EXTRA!  
EXTRA!**

**May 7** Students' last day at the Center for Marine Resource Studies.

They are happy to return home but sad to be leaving good friends and a beautiful island.