

Oceans Live

SOUTH CAICOS ISLAND, CARIBBEAN



The World Ocean: A World of Wonders



Atlantic, Pacific, Indian and Southern Oceans. Even though we distinguish between these oceans, they are all connected. The average depth of the world's oceans is 3700 meters, reaching depths of up to 10,000 meters.

The water that composes the ocean is a constantly stirring mix of dissolved elements

and gasses. As anyone who has ever had the pleasure of swallowing seawater knows, the oceans are also very salty. The oceans are constantly mixing, flowing, and moving in a continuous cycle. As a philosopher once said, "No man steps into the same river twice." We also never step into the same ocean twice.

The Turks and Caicos Islands are located in the Caribbean Sea, about 100 miles north of the Dominican Republic. East of South Caicos, the ocean depth drops to 2300 meters at the Caicos Bank. The tropical waters here are host to many habitats including reefs and sea-grass beds. As with all tropical marine systems, the quantity of fish in the water is low, but their diversity is spectacularly high!

*Article by Ann Petersen,
University of Arizona*

produced by Ocean Challenge, Inc.
Boston, Massachusetts, USA



Q: Why is the ocean salty?

A: The salt that you taste in the ocean is primarily made up of sodium and chlorine. Millions of years ago, oceans did not exist; in fact there was no water on the Earth at all. Then our planet cooled and it began to rain. The rain formed puddles, streams and rivers. These rivers then flowed into huge massive bodies of water we now call oceans. The salt is thought to have come from the minerals in the ground that dissolved into the river water as it flowed to the oceans. How much salt is in the oceans of the world? If you were to remove all of the salt in the ocean, dry it, and pile it up on the continents, it would cover the entire land surface of the globe to a depth of 500 feet! Now that's a lot of salt!

*Question answered by
Amber Shawl,
Goucher College*

Throughout time and across the globe, the oceans of the world have been worshipped, praised, and feared, but only vaguely understood. Throughout this century scientists have discovered a vast amount about the oceans, with more learned every day. So what do we know about the seemingly endless blue stretching away from our beaches? First of all, we know that our planet is grossly misnamed, since 71% of the Earth is covered with water!

The world ocean is traditionally divided into four major ocean basins. These are the



Sept. 9 Students arrive at research center and take their swim tests.

Everyone passes!

Sept 14 Students see more than 20 lemon sharks off of Mangrove island while snorkeling. The sharks come within 3 feet of the group!



Look for articles in today's paper about the ocean or 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?

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SOUTH CAICOS ISLAND, CARIBBEAN



Variety of Ocean Zones Benefits South Caicos



is so shallow in the tidal zone, there is always adequate sunlight available.

The pelagic zone includes all of the open water in the ocean. A pelagic animal spends all of its time in the water column (not on the bottom), swimming around to find its food. The amount of sunlight available in the pelagic zone

varies according to depth. Almost all plants or animals that require some form of sunlight will be found in the first 100 meters.

The abyssal zone contains the deepest trenches of the ocean, and it remains mostly unexplored by humans. We do know, however, that the organisms living in the abyssal zone exist without light and with limited supplies of oxygen. The abyssal zone is found in the Turk Island Passage off the east shore of South Caicos Island. The depth of this area reaches down to 3000 meters.

All three main ocean zones can be found close to the island and are of great economic importance to the people living here. The fishermen target the tidal and pelagic zones, using their knowledge of the underwater topography to find the best fishing and lobstering spots.

Article by Sarah McCarthy, a student from Santa Clara University

produced by Ocean Challenge, Inc.
Boston, Massachusetts, USA



Q: What is it like on the island?

A: South Caicos is a small island measuring only three miles wide and eight miles long. It is located 650 miles south of Florida, with the North Atlantic on one side and the Caribbean Sea on the other. This location puts the island in the tropical climate zone, making the weather here very warm. The average temperature during the day is 87°F. South Caicos is surrounded by small, uninhabited islands that are fun to explore.

South Caicos is a small fishing community with a population of only 800. The people here are very nice and love to talk to us. One odd thing about South Caicos though, is the fact that they have wild horses, donkeys, pigs, cows, cats and dogs that just walk down the streets of the town. The neatest things about the island are the beautiful sunsets, the crystal clear water, and the awesome plant and animal life on the land and in the water. It is hard not to fall in love with South Caicos.

Answered by Amanda Cutler, a student from Butler University



The ocean can be divided into three main zones—tidal, pelagic, and abyssal. Each zone can be distinguished according to the organisms living there, the amount of sunlight available, the effects of water movement, and the tides. All three of these ocean zones can be found around South Caicos Island.

The tidal zone is the area commonly called the "surf zone," and it extends from the high tide mark to the low tide mark on the land. Any plants or animals living in this area must be able to deal with heavy water movement and changing depths. Since the water



Sept. 21:
Students, staff, and faculty begin site preparations for

Hurricane Georges.

Sept. 23:
Thirty mile per hour winds and nine-foot seas give the students their first taste of hurricane weather!



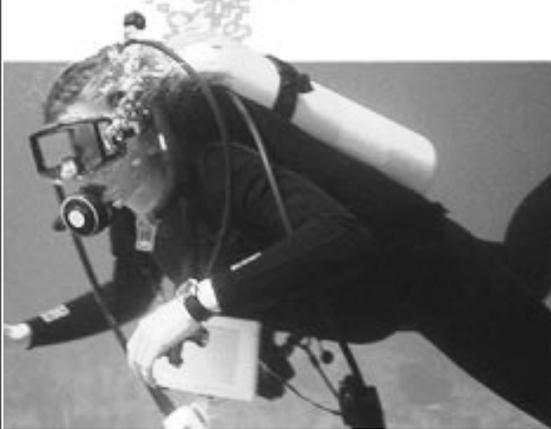
Look in the weather section of the newspaper and find maps or articles about Hurricane Georges. How close did it come to South Caicos? What effects do you think it had on the island?

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Coral Reefs are Beautiful and Fragile



Caribbean coral reefs are made up of a thin layer of coral polyps living on top of the exoskeleton (outer skeleton) of dead coral. Each polyp contributes to the growth of the reef by building its own exoskeleton. As the coral polyps die off and new corals take their place, the reef grows larger. Reefs vary considerably in their shape and appearance. A

reef can grow outwards in a radial fashion, or it can grow in a linear fashion.

Reefs have several environmental factors that effect their growth. The water temperature must range between 18°C and 32°C (degrees Celsius), the reef must get lots of sunlight, the water salinity must be about 35 parts per thousand, there cannot be too much turbidity (cloudiness) or sedimentation in the water, and there must be high wave energy.

By far, the most dangerous organism to affect corals is humans. When humans brush up against a reef while diving, they can kill the living polyps by wiping off the mucous membrane that protects them. Humans also stir up sediments that land on, cover, and smother the coral. Pollutants that humans produce and dump into the ocean also have an impact on the environmental conditions that allow for coral growth.

Article by Jill Carwright, an SFS student from University of Wisconsin-Madison

produced by Ocean Challenge, Inc.
Boston, Massachusetts, USA



Q: Have you been hit by any hurricanes?

A: This is a very appropriate question, as Hurricane Georges skirted by South Caicos on September 22. Georges drilled his path directly across Puerto Rico and Hispaniola, causing massive damage on each island. We made hurricane preparations at the research center just in case Georges came to South Caicos. We boarded up all of the windows, and we beached our boats at Mangrove Island. We also moved our mattresses into the classroom so that we had a secure place to sleep.

On the night of the 22nd we all stayed in the classroom watching movies, talking, and waiting for the hurricane to wreak its havoc. Luckily, the hurricane missed South Caicos! The wind and sea were rough for a few days after, but aside from that there were no real effects. Although we could not swim or snorkel for two days after Georges (because of the strong currents), we are now back in the water at full speed.

Answered by Bliss Dennen, an SFS student from Northwestern University

Corals are animals that live in the warm ocean waters of the Caribbean and Indo-Pacific regions. They form reefs that are home to many different types of fish and underwater organisms. Coral reefs are colonies of polyps (individual coral organisms) that live closely together on a calcium carbonate skeleton that each polyp helps to build. They often live in symbiosis with another organism called *Zooxanthella microdriaticum*. Scientists think that the zooxanthellae provide food and oxygen to the coral through photosynthesis and give coral their bright colors.

**EXTRA!
EXTRA!**

Sept. 25:

Students participate in the island's National Youth Day parade and music performances.

Sept. 29: Students have underwater field exam identifying different fish that live on or around a coral reef.

KIDS' NEWS EXPLORER

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



Underwater Research Is Specialized Research



us to stay underwater for as long a period of time because we do not carry air tanks.

Once we get underwater, we use special equipment to conduct our research. Three of these tools are the quadrat, the belt transect, and the manta tow. A quadrat is a 1-meter by 1-meter

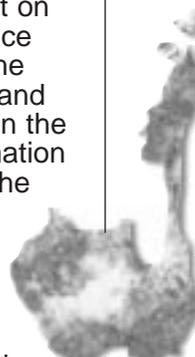
square made of plastic pipe. First we place the quadrat on the ocean bottom in a place that is representative of the habitat. Then we identify and count the organisms within the square meter. This information is then used to estimate the diversity and quantity of organisms in the habitat.

I am currently using the belt transect in my directed research project on conch, a single-shelled marine animal. This tool, like the quadrat, is used to determine the diversity and quantity of organisms in an area, and it requires a team of four to six scuba divers to use it. The person that leads the underwater group extends a measuring tape in a straight line. Two people swim behind the leader, each one holding a 3-meter plastic pole, horizontally, on either side of the line. The

other people in the group collect the conch found in the area beneath the 3-meter poles. These conch are then studied back on the boat. This method will help us determine how many conch are in the different underwater habitats and how large they are in each habitat.

One research technique that does not require the use of scuba diving gear is the manta tow. A snorkeler is towed behind a boat holding onto a manta board. By angling the board down, the snorkeler is able to quickly dive below the surface, make a rapid assessment (numbers and types of organisms) of a particular area, and then angle the board up to come back up for air.

Underwater research requires a higher level of concentration than does recreational diving, and is sometimes difficult due to strong currents. Although it can be challenging, performing research underwater is interesting because you are literally immersed in your lab.



Underwater research is important because there is so much to study in the vast marine 'laboratory' that surrounds us here on South Caicos. Two ways that we conduct underwater research are by scuba diving and by snorkeling.

Scuba diving is a skill that is essential for some types of underwater research, because it allows us to remain submerged for extended periods of time. This permits us to spend more time collecting data and specimens. Snorkeling, which uses some of the same equipment used while scuba diving, does not allow



Oct. 2 Students take their three-hour mid-term exam. They have

been preparing for it for two days. **Oct. 5** Students take their final field exam for coral identification.

Oct. 6 Students meet local fishermen at the docks to learn about methods of lobstering.

Article by Jonathan Palma, SFS student from Davidson College

produced by Ocean Challenge, Inc. Boston, Massachusetts, USA in cooperation with The School for Field Studies Beverly, Massachusetts, USA



Look through the various sections of today's newspaper. How

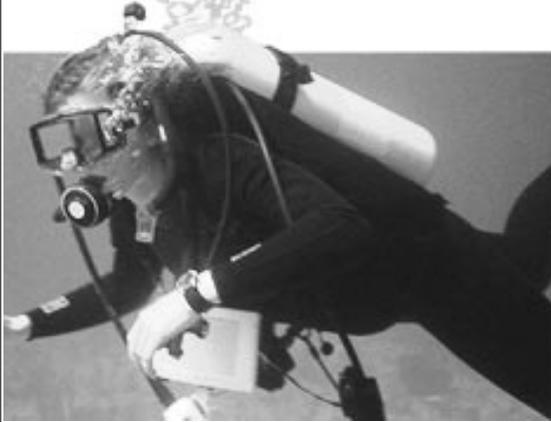
many articles can you find that identify tools used by various professions? Make a list of tools mentioned. Which tools do you use?

Oceans Live

SOUTH CAICOS ISLAND, CARIBBEAN



Taxonomy



When taxonomists try to classify an organism, they study specimens and read available literature about that particular organism. They may write papers with new findings, propose new names for the organism, or even propose a whole new species. In the latter case, they will categorize it under the correct kingdom, phylum, class, order, family and genus, and give it a new species name. This process requires extreme accuracy.

Taxonomy is important to our research on South Caicos Island. We need to know what organisms are present to understand the relationships between them and the environment. We have carefully classified several organisms that are associated with mangrove ecosystems including several types of algae, sea grasses, fish, and coral. We also identified fish that are associated with the coral reef ecosystem to the correct family, and corals to the correct genus and species. Having identified them, we can now study how they interact with each other and the environment.

Taxonomy is the practice of classifying and grouping organisms that are similar in appearance and structure. Small groups with similar traits can be clumped together into larger groups with broader similarities. These larger groups can be further combined to give a hierarchy of organisms. The main groups used for classification are, from least to most specific, kingdom, phylum, class, order, family, genus and species. To classify an organism, it is first placed within one of the five kingdoms (Animal, Plant, Protist, Monera, and Fungi) and then studied to determine which phylum, class, order, family, genus, and species it belongs in.

**EXTRA!
EXTRA!**

Oct. 13 Students work on their directed research projects.

Oct. 14 Students are given the day off from the rigors of research, and the interns and staff take them in the boats to Fish Cay.



Q: Why is the fish called a barracuda?

A: The scientific names of animals are chosen by the person who discovers that particular species. The Great Barracuda is found from Brazil all the way up to South Carolina, and it is very common in the Caribbean. This fish has the scientific name *Sphyaena barracuda*. A British scientist named Walbum named it in 1792.

Sphyaena is the genus and *barracuda* is the species. Scientists refer to all plants and animals by saying or writing their genus first and then their species.

The name barracuda actually comes from Haiti, where the native island terms "bara" and "couta" are combined. Bara means fierce or dangerous, and couta means fish. Note that barracuda can also be spelled barracouta. The legend behind the name comes from numerous instances of barracudas attacking swimmers or fishers without being provoked.

*Question answered by
Jami Doucette, SFS student
from Duke University*

Article by Jennifer Stone, SFS student from Ohio University

produced by Ocean Challenge, Inc.
Boston, Massachusetts, USA
in cooperation with
The School for Field Studies
Beverly, Massachusetts, USA

**KIDS' NEWS
EXPLORER**

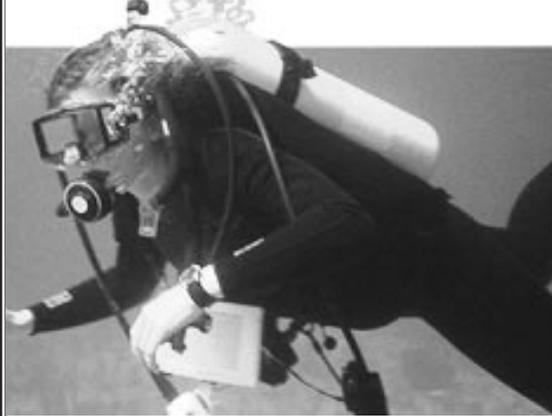
Observe the ways in which your newspaper is organized. How do the editors classify the articles? The sections? The retail and classified advertisements? Make a list.

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SOUTH CAICOS ISLAND, CARIBBEAN



Adaptation Ensures the Survival of Species



An adaptation is a physical or behavioral trait that a plant or animal has developed that permits it to survive and reproduce in its habitat. A species that "fits" nicely into its surroundings has a better chance of surviving and reproducing than one that doesn't fit well.

A good example of a well-adapted tropical animal is the queen parrotfish. Parrotfish avoid being eaten by using their deep green, blue and red colors to blend in with the colorful reef environment (like camouflage), or by swimming along with many

other fish to confuse predators. Since these fish cannot be on-guard while they sleep at night, they have another adaptation to avoid being eaten while they sleep. Each night, the queen parrotfish excretes a mucous material and uses it to form a bubble around

its body. Many night predators hunt in the dark by using their sense of smell to locate prey. Predators cannot smell the parrotfish because of the bubble. They just bump into the mucous sack and continue to seek their prey.

The queen parrotfish has evolved to increase its chances of survival by adapting to certain conditions in its habitat and to nighttime predation. Every plant and animal that exists today has developed special adaptations to fit into its environment and to help ensure its own survival and development. Those organisms that cannot adapt perish.

Article by Jasun Ryder, SFS student from University of Vermont

Produced by Ocean Challenge, Inc.
Boston, Massachusetts, USA
in cooperation with
The School for Field Studies
Beverly, Massachusetts, USA



Q: What is your favorite animal so far?

A: My favorite animal so far is the black durgon fish. I usually see this type of triggerfish when we scuba dive at an old plane wreck off of Long Cay. These fish are predominantly black, but sometimes the area surrounding their eyes is colorful: blue above, and yellow below. They also have the ability to change color and make themselves more pale or dark.

The reason that this fish is my favorite fish is because of the unique way that it swims. Rather than using its tail and pectoral fins to move, it predominantly swims with its top and bottom fins.

The trigger is another unique feature of the black durgon. The trigger is a small retractable front dorsal fin that the fish uses to anchor itself into small cracks in the rocks.

*Question answered by
Jon Palma, SFS student
from Davidson College*

**EXTRA!
EXTRA!**

Oct. 16 The students debate the environmental and social impacts

of development on a small island.

Oct. 19 Tom Knowles and Kim Myers give an oral presentation about habitat mapping using different types of quadrats.

KIDS' NEWS EXPLORER

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.

Oceans Live

SOUTH CAICOS ISLAND, CARIBBEAN



Special Edition!

JOURNAL

Night Snorkel
Sarah McCarthy
Santa Clara Univ.

Earlier this week, we went night snorkeling at Admiral's Reef. We left the research center by boat at 8:15 p.m., and we jumped into the water when we got to the reef. The moon had not yet risen, so the water was very dark. Each of us carried an underwater flashlight, and we kicked around in a tight group so as not to lose anyone. Aside from being dark, the main difference between snorkeling at night and during the day is that the nocturnal animals are out. These animals are usually hiding in the coral reef during the day.

The first thing we saw was a big Caribbean spiny lobster walking along the bottom. We also saw a sleeping baby nurse shark, an octopus, a porcupine fish, and many squirrelfish. At the end of the trip, we all turned our lights off to see the bioluminescence, the sparkling light created by certain types of plankton. We waved our hands in the water to make them light up, and it created the illusion that we were floating in space with stars all around us.

Q&A

Q: How many people live on South Caicos Island, and what is their main source of income?

A: Right now about 1000 people live on the island, but the population can range from 800 to 1400 people. About 70% of the people living on the island fish for a living, and they mostly fish for the Caribbean spiny lobster (*Panulirus argus*) and the queen conch (*Strombus gigas*). The fishermen get about \$2.70 US per pound for lobster and about \$0.70 US per pound for conch.

The only other income possibilities on South Caicos are either working for the government or running one of the little grocery shops. Government work is pretty limited, and there are two main grocery stores and a handful of corner shops in town. So as you can imagine, the people here are limited by the fact that there is not much work on the island.

Answer by Jeff Clark, SFS student from Gonzaga University

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Q&A

Q: Are there dangerous animals in the water?

A: Most people probably believe that sharks and barracudas are the most harmful organisms in this environment, but as long as you do not intimidate them, they will not attack you.

One of the most common injuries to divers, however, is from fire coral. When fire coral comes in contact with your skin it causes a burning sensation by injecting nematocysts, or stinging cells, into your skin.

Cassiopeia, a common jellyfish, also injects nematocysts into your skin. Fire worms, another marine animal, have setae (appendages used for movement) that can break off into your skin and create a sting similar to a jellyfish. Sea urchins are frequently found on the bottom, and they have long spines that stick into your skin if you step on them.

So there are a few animals here that might be considered dangerous, but as long as we are aware of them, we can usually avoid getting hurt.

Answer by Jen Stone, SFS student from Ohio University

Oceans Live

SOUTH CAICOS ISLAND, CARIBBEAN



Food Webs



level. Organisms such as plankton, sea grass, and algae are producers, because they use photosynthesis to produce their own food energy. They do not consume other organisms.

Primary consumers, also called herbivores, feed on the producers

and occupy the next trophic level. Some herbivores in the Caribbean include parrotfish, damselfish, and conch.

The next trophic levels include carnivorous animals, and are called secondary, tertiary, and quaternary consumers. These animals only eat other animals. The secondary consumers, such as lobsters, feed on the herbivores. The tertiary consumers, in turn, feed on the secondary consumers, and so on. Sharks are tertiary consumers.

The last group of organisms, that is present throughout the food web, is the scavengers and detritivores. These consumers feed on waste materials and decaying matter. They are the critical and final link in the complex cycle of energy.

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Beverly, Massachusetts, USA

A food chain is a model that shows simple feeding and energy relationships between organisms within an ecosystem. A food web, which is developed by combining several food chains, is a model that best demonstrates the complex interactions and relationships between organisms.

Animals obtain energy to live by eating other organisms. Not all animals eat the same food, however, so they are divided into groups according to what they eat and what eats them. These divisions are called trophic levels.

Producers are organisms that occupy the first trophic

**EXTRA!
EXTRA!**

Nov. 2 The students have returned from their mid-semester break. Most of them went either to the Dominican Republic or to Jamaica.

Q&A

Q: Are there any women fisher folk?

A: No. The fisher folk here are men, but there are a few women involved in the fishing process. There are two fish processing plants on South Caicos, one at Cox Harbor and the other at Martinez Harbor. The fishermen bring their daily catch to these plants where it is loaded onto the dock and weighed, and the plant records the catch amount.

The fish, conch, or lobsters are taken from the dock to the plant where women employees wash and package the meat. This is an important job because if the meat isn't properly prepared, restaurants won't purchase it.

On Middle Caicos Island, there is a woman who can free dive as deep as any man on the island. Apparently her lobster and conch harvesting skills are admired on all eight islands, and she is quite a legend!

*Question answered by
Amber Shawl, SFS student
from Goucher College*

**KIDS
NEWS
EXPLORER**

Many of the articles and ads in the newspaper are related. Select five related articles and/or ads. Write a structured paper summarizing each one, and describe the relationship between them.

Oceans Live

SOUTH CAICOS ISLAND, CARIBBEAN



Underwater Trails



tionary measures they can take to best preserve the resource. At Admiral Cockburn, the nature trail directs visitors through areas in the coral reefs where the least damage will be done and where various marine organisms, such as corals, fish, and invertebrates, can be viewed.

One of the previous case studies conducted at the School for Field Studies was the creation of an underwater nature trail for the Admiral Cockburn National Park on South Caicos Island. The site was chosen based on the recognition of the valuable resources within the park and on the predicted increase in its use by tourists.

The goal of underwater nature trails is to increase awareness and care of the underwater resource by users and to expose them to its benefits. Trails are also created to provide guests with a "hands-on" experience.

The nature trails help to minimize damage to fragile habitats, such as the reefs at Admiral Cockburn, because information included along the trail informs visitors of precau-

The procedure for constructing an underwater nature trail includes initial visual and mapping observations. Important habitats and water currents are also assessed to determine the optimal design of the trail. Several plaques are made by attaching pertinent written information to cement pedestals. The purpose of the plaques is to provide information about the habitat and to guide the diver along the trail. Continuous algal growth and erosion due to salt water present challenges to the maintenance of the plaques. For these reasons, it is necessary to clean the plaques once a week.

Underwater nature trails can be a creative, entertaining, and educational addition to a national park.

Article written by Ashley Davis, SFS student from Washington and Lee University

Produced by Ocean Challenge, Inc.
Boston, Massachusetts, USA
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Beverly, Massachusetts, USA



Q: Do any of you have cabin fever? How do you deal with it?

A: Seeing the same people and staying in the same place nearly everyday makes everyone experience cabin fever. Because of this, we have many ways of releasing tension so that we can maintain a steady level of harmony at the Center.

Some of the best ways to cure cabin fever is to go on fun snorkeling trips or to go swimming off the Center's docks or in the salt water pool. It is also fun to spend time in town. This significantly increases the number of people we see. Both students and staff often go out dancing at night, which is a fun way visit with the locals. While sometimes we do feel a little scrunched on South Caicos, we are all learning to be very cooperative in a group living situation.

*Question answered by
Kimberlee Myers, SFS student
from Caremont McKenna College*

**EXTRA!
EXTRA!**

Nov. 10
Students participate in Field Exercise 8, learning methods of assessing tourism and its impacts on coastal systems.

KIDS' NEWS EXPLORER

Cooperating with other people is an important part of life. In today's paper, find articles that show people working cooperatively. Why is it so important for people to work together?

Oceans Live

SOUTH CAICOS ISLAND, CARIBBEAN



The Water Cycle



tive to these changes, and too much runoff can kill coral. However, because South Caicos Island is small and arid, there are no rivers, and there is not much runoff. As a result, the waters around the island maintain a relatively stable salinity and temperature.

Water on the Earth moves through a process called the water cycle. Liquid water evaporates from oceans and lakes due to the heat of the sun. This water vapor goes into the atmosphere where it remains until it cools and condenses into cloud formations, and then it returns to the land in the form of precipitation (rain, snow, etc.). The precipitation is either absorbed into the ground or runs off the land back into lakes and oceans, thus completing the water cycle.

Sometimes runoff is considered pollution because it causes salinity and temperature changes in coastal waters. Coral reefs are sensi-

Runoff can also carry fertilizer and chemical contaminants to the ocean. If reefs get too many nutrients from fertilizers, algae blooms can occur, take over a reef area, and kill the coral. Chemicals leaching from the town dump, and domestic waste leaching from septic tanks can also harm coral reefs. These are not causing a big problem on South Caicos right now, because the island population is relatively small. If we had a lot of tourists here, this type of pollution could become a larger problem.

South Caicos is lucky, however, because it does not have many pollution problems, making its coral reefs some of the nicest in the world.

*Article written by Summer Collier,
SFS student from
Occidental College*

Produced by Ocean Challenge, Inc.
Boston, Massachusetts, USA
in cooperation with
The School for Field Studies
Beverly, Massachusetts, USA



Q: Have you seen the effects of El Nino?

A: El Nino occurred last year and the year before, so we are not feeling the effects now. Last year, South Caicos received massive amounts of rainfall due to El Nino. In fact, all of North and South America experienced more rainfall than usual.

Here on South Caicos, the surplus rain was welcomed. There is not much fresh water here, and the rainfall enabled island residents to take a few more showers and do a little more laundry. El Nino also caused there to be fewer hurricanes here than usual.

Right now, we may be feeling the effects of a phenomenon called La Nina, a weather pattern that is the opposite of El Nino. La Nina will cause less rain to fall on South Caicos. But La Nina does not always happen, and its effects are very mild. We might not even know that it's happening.

*Question answered by
Thomas Knowles, SFS student from
Davidson College*

**EXTRA!
EXTRA!**

Nov. 16
Andrew Gude, the Center director, had a radio interview in Provo about the research center and its goals.

Find an article about pollution in today's paper.

What is the source of the pollution? Discuss with your class whether your community has this kind of pollution. If not, what kind does it have, if any?

**KIDS' NEWS
EXPLORER**

Oceans Live

SOUTH CAICOS ISLAND, CARIBBEAN



Resources



resources are very important to the South Caicos economy because most people here rely on fishing for these animals for their income. When managed correctly, which is what The School for Field Studies is trying to help accomplish, lobster and conch can support the fishing

industry of South Caicos for a long time.

South Caicos is also blessed with unlimited wind and sun, both of which are considered renewable resources. These are potential energy resources for South Caicos.

A non-renewable resource is an element that is present in a limited amount on the earth. Examples are oil and minerals. These resources take so long to create naturally, that rapid consumption depletes and uses up the resource. South Caicos does not have a natural supply of oil or mineral resources, so it must import what it needs.

*Article written by Melissa Kowalczyk,
SFS student from
Muhlenberg College*

Produced by Ocean Challenge, Inc.
Boston, Massachusetts, USA
in cooperation with
The School for Field Studies
Beverly, Massachusetts, USA

A resource is any element that can be used to satisfy human needs or desires. There are two types of resources—renewable and non-renewable. Renewable resources are elements that, if managed properly, will be accessible to humans for a long time. Non-renewable resources, once they are used up, are gone.

Renewable resources such as conch and lobster, both of which are present in the waters around South Caicos, are considered to be renewable resources because they can reproduce. If, however, they are not managed correctly for sustainable use, they could be fished into extinction. These

**EXTRA!
EXTRA!**

Nov. 20
The Lobster
Landing Directed
Research Project
participants met with local lobster fishermen at the docks to collect its last set of data.

Q&A

Q: What are some examples of ocean scavengers?

A: A scavenger is an animal that feeds on dead or decaying animal flesh or organic matter. Most animals that live in the ocean are scavengers.

Sharks and rays are scavengers, and around South Caicos these include Caribbean reef sharks, nurse sharks, lemon sharks, mako sharks, spotted eagle rays, and southern stingrays.

Some of the more common fish scavengers around South Caicos are yellowtail snappers, black jacks, bar jacks, barracudas, yellow and spotted goatfish, bluehead wrasses, and French grunts.

Crustaceans such as the Caribbean spiny lobster, crabs, and shrimp are known to scavenge. Most invertebrates such as sea urchins, sea stars, sea cucumbers, and sea anemones can be considered scavengers.

*Question answered by
Sarah McCarthy, SFS student from
Santa Clara University*

The newspaper is made from both renewable and perhaps some non-renewable resources. Figure out what resources are used in newspaper production process. Which are renewable? Non-renewable?

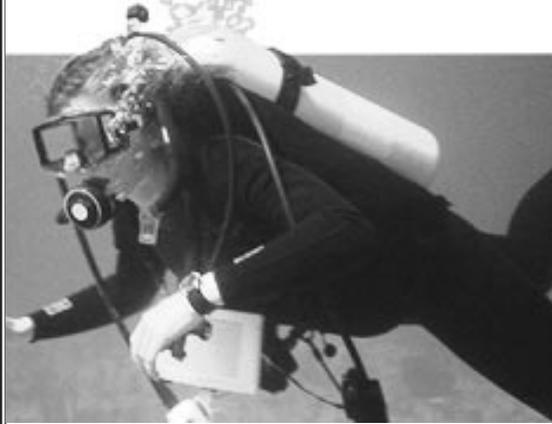
**KIDS
NEWS
EXPLORER**

Oceans Live

SOUTH CAICOS ISLAND, CARIBBEAN



Conservation



why they have to do conserve resources, they will be less likely to do it.

In addition to education, laws and regulations need to be set up to govern the policies made. They will help provide people with a framework for understanding the environ-

mental policies. The enforcement of laws also helps to prevent people from abusing available resources.

The establishment of conservation areas such as national parks can also help care for our resources. The Turks and Caicos Islands have many national parks, and they are designed to provide people with access to beautiful resources (coral reefs) while helping to keep them in good health.

These techniques are a few of the better-known methods of environmental conservation and protection. By using these methods, we can help conserve and protect the environment for future generations.

*Article written by Jennifer Jacobsen,
SFS student from
Macalester College*

Produced by Ocean Challenge, Inc.
Boston, Massachusetts, USA
in cooperation with
The School for Field Studies
Beverly, Massachusetts, USA

Environmental protection and conservation are key concepts we need to think about when trying to maintain and optimize our lifestyles. Protecting and conserving the environment can be thought of as ways to make sure that we continue to use the world's resources without depleting or destroying them. Steps need to be taken to ensure that future generations will have the resources they need to survive and to meet the needs of the time.

Government agencies and environmental planners need to educate adequately the people who will be affected by established policies. If people do not understand

**EXTRA!
EXTRA!**

Nov. 29
Students continue working on their Directed Research projects after taking the first half of their final exam.

Q&A

Q: Have you caught and eaten conch? What does it taste like?

A: The law on South Caicos is that you must have a fishing license to fish for lobster, conch, and fin fish. Some staff members have paid the annual \$40 fee required to purchase a license.

Sometimes interns, professors, and staff go and collect conch on Sundays.

They return later in the afternoon and "knock" the conch on the dock (they knock a hole in the shell). Then the conch are "juke" (pulled out of the shell).

After cleaning and preparing the meat, we all enjoy a delicious dinner of conch fritters (fried mashed up conch), conch salad (raw conch with vegetables, seasoning and lime juice), or conch soup. There are many different ways to eat conch, and these are just a few.

As far as the taste is concerned it resembles a clam, but it is not as tender.

*Question answered by
Jasun Ryder, SFS student from
University of Vermont*

KIDS' NEWS EXPLORER

Find an article in today's paper

about a resource

(fish, oil, water, etc.).

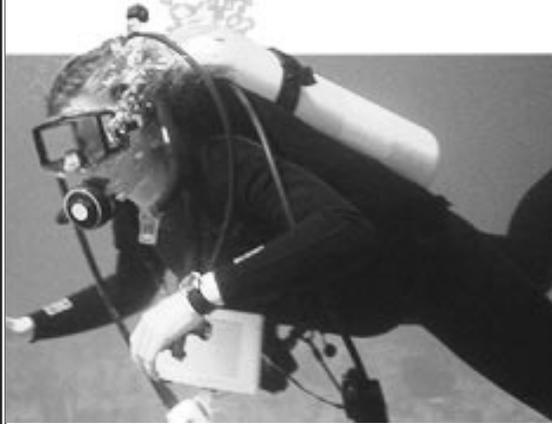
Is the resource in danger of being overused? What is being done to make sure that there is enough of the resource for everyone?

Oceans Live

SOUTH CAICOS ISLAND, CARIBBEAN



Tourism



big, it will take a lot of work to keep it running smoothly. Therefore, many people will need to be hired to accomplish this.

As a result, the economy of the island will improve because of the increased employment opportunities and the increased income of

local fishermen and shops.

Although tourism development may prove to be a positive factor in the economy of the island, there is also the possibility that it could do harm. A development project was attempted once before, but it was never finished. As a result, there is a fear that the High Point Development will meet the same fate. If this happens, it would result in a huge loss of money and trust on the islanders' behalf.

There is also concern that increased tourism could damage the reefs that everyone comes to visit. We at the SFS research center are trying to find ways to maintain the health of the local marine ecosystem while development proceeds.

*Article written by Amie Rennie,
SFS student from
Saint Michael's College*

Produced by Ocean Challenge, Inc.
Boston, Massachusetts, USA
in cooperation with
The School for Field Studies
Beverly, Massachusetts, USA

The economy of South Caicos is mainly based upon the conch and lobster fishery. Most of the islanders are either fishermen or are employed by the two fishing plants. Other types of employment include construction, shopkeeping, and government jobs, but these jobs are limited to a small number of people. Since there are so few alternatives to working in the fishing industry, tourism could create more jobs on South Caicos.

Right now, there is construction going on at the High Point Development site where a hotel with 1,000 rooms is being built. This is the largest project South Caicos has ever seen. Because this hotel will be so



Q: What are you looking forward to when you get back home?

A: The past three months have made me appreciate modern conveniences. I look forward to taking hot showers, having clean laundry without having to hand-wash it in the ocean, and being able to choose what I want to eat when I want to eat it.

I cannot wait to go shopping in a mall instead of at the two all-purpose convenience stores in South Caicos, where prices are 200% higher than in the US. I look forward to being reunited with my friends and parents.

However, I will miss the friends I have made on this tiny tropical island, especially my fellow students at SFS. The unique cultural experience I have had on South Caicos has allowed me to grow as an individual. I will never forget the experiences I have had here.

*Question answered by
Jennifer Stone, Ohio University*



**EXTRA!
EXTRA!**

Dec. 4
Students are presenting the results of their research to Turks and Caicos Islands government officials.

KIDS' NEWS EXPLORER

Find the weather section of the newspaper and look at the maps, domestic and world temperatures, and weather forecasts. Make a chart of this information and predict where you think people would want to go on vacation at this time of year. What attracts people to these places?