BUSH TALK

BOOK 5

NATURAL HABITATS

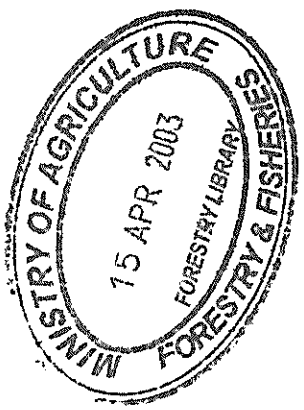
ST. LUCIA FOREST and LANDS DEPARTMENT — ENVIRONMENTAL EDUCATION PROGRAMME

Written and illustrated by Maria Grech
Cartoons by Alwyn St. Omer & Christopher Cox

BUSH TALK

book FIVE

NATURAL HABITATS



About BUSH TALK . . .

Bush Talk is a wildlife and conservation newssheet that was first published by Forestry Department in November 1981. The original paper was designed by Maria Grech and contained a selection of stories about Saint Lucia's wildlife written by her at the request of Paul Butler, Forestry Conservation Officer. Giovanni St. Omer did the illustrations for this first issue and the cartoon featuring St. Lucia's National Bird, `Jacquot', was drawn by his brother Alwyn St. Omer. The newssheet was a great success and it was decided to continue on a monthly basis using a different topic each month and asking an appropriate person to contribute the introduction. All subsequent issues were written and illustrated by Maria Grech who also edited the introductions and did the layout. When Alwyn St. Omer left the island in 1986 to further his studies, Christopher Cox, artist and ornithologist working for Forestry and Lands Department took over as cartoonist.

Copies of each issue were distributed throughout the school system as part of Forestry and Land Department's Environmental Education Programme. In addition, the `Voice', a local newspaper with a weekend circulation of about 5,000, used Bush Talk as a supplement thereby further increasing its readership.

Whatever the topic, care was always taken to stress the importance of conservation, protection of the environment and, preservation of the island's rainforest and watershed areas.

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INTRODUCTION

Saint Lucia is a small island state with a steadily growing population that, like its development is concentrated around a narrow coastal belt. The island's material progress has relied in the past and will continue to rely upon the beauty of its natural resources, its forests, fertile soils and, until now, its plentiful supply of fresh water. Unfortunately, all of these valuable resources have been squandered. Today the island's very survival hangs in the balance.

Although small in size, Saint Lucia possesses a rich assortment of natural habitats, the result of the island's topography and a good distribution of rainfall. These habitats provide us with vital components to our economy and all are threatened. In this booklet we examine some of these ecosystems, among them;

The Forest: The forest itself is a mosaic of different habitats including the dry littoral woodland of the east and west coasts, the rain forest of the interior and the stunted, moss-laden Elfin woodland of our mountain peaks such as Mount Gimie, La Sorciere and the Pitons. The forests provide us with timber for construction, and furniture, with energy in the form of charcoal and firewood, and many indirect benefits, among them soil and water conservation, a place for recreation and a home for our wildlife.

The forest, our most precious resource, is under serious threat as each year more and more forested lands are encroached upon for agricultural purposes.

The Mangroves: Our mangroves provide an essential breeding ground for economically important fish and molluscs, they also protect coastal areas, providing a natural barrier against the erosive action of the sea. Mangroves filter run-off from the land and provide nutrients from their leaf fall, they are also a renewable source of tannin, charcoal and firewood. Sadly, over the past 50 years the majority of Saint Lucia's mangroves have been lost, dredged for marinas and hotel sites and infilled with garbage.

The Reefs: Living marvels of nature, coral reefs provide food and refuge for fish and other forms of marine life. They also act as breakwaters lessening the destructive action of the waves before they reach our fragile coast. This underwater world attracts divers, fishermen and tourists from around the globe and yet it is being destroyed by dynamite, siltation, dredging and the indiscriminate harvesting of slow-growing species like the Black Coral.

Beaches: Saint Lucia prides itself on the beaches that every year lure thousands of tourists and millions of dollars to the island. The hotels that line the beaches are also places of active recreation. This important and beautiful resource is under threat through deforestation and the subsequent run-off, through poor planning and, most important of all, through the unchecked mining of sand for construction.

For some years now, Saint Lucia's Forestry and Lands Department has voiced concern over the plight of our environment and the habitats described here. To encourage Saint Lucians and tourists to visit our natural wonders we have established trails in the Central Forest Reserve, at the Barre de L'Isle, Union and Forestiere. The Department has been at the forefront of the drive for environmental education and the ratification of international legislation, working with local, regional and international agencies toward this end. But ultimately the protection of our natural heritage rests with us, the people of Saint Lucia.

We, the present generation, do not own the land, we only hold it in trust for future generations. It is our duty to hand it on to them unimpaired so that they, like us may benefit from its beauty and its material wealth.

Gabriel L. Charles
Chief Forest Officer

Forest and Lands Department
Ministry of Agriculture
Saint Lucia

BUSH TALK

THE RAIN FOREST

THE VIRGIN LAND

Saint Lucia was once covered with forest. Mangroves hugged the shore. Huge tree ferns grew on the mountain slopes and in the forest, trailing vines hung from the tall trees. Orchids and bromeliads clung to their branches and birds of many different kinds flew all about. The birds sipped nectar from the flowers or searched for insects in the fallen leaves on the forest floor.

There were hundreds of parrots, (*Amazona versicolor*). At dawn when they left their nesting places to feed their noisy calling and quarrelling echoed from one mountain top to the other.

Rain fell constantly. It was soaked up by the ground and channelled into the many sparkling clear rivers that ran down toward the sea. It was a time of peace and beauty. There were no sheep or goats to nibble the plants within an inch of their lives, no pigs to root up the earth, no men to chop down the trees or cut and burn the land.

Amerindians from South America came to the island by canoe. They found it green and lush with forest stretching as far as the eye could see. It did not seem possible that the small patches they cleared or the few trees they cut could make any difference.

But as more people came their needs increased. The towns and villages grew in size and soon people were moving into every part of the forest. They hunted, cut trees, cleared land and burned bush, leaving only waste and destruction behind.

In time the forest became seriously threatened by man's activities. Many of the plants and birds that live or grow there cannot exist anywhere else. Some of them are found nowhere else in the world. If their forest habitat is destroyed they will also vanished, never to be seen on earth again.

The forest is our most important natural resource. Without it our supplies of fresh water would gradually disappear. When topsoil is left exposed on cleared slopes it washes into the rivers carrying chemicals from the land with it. Rivers silt up. Even the waters around the coast become polluted.

Today rainforest covers only 11% of the island (just over one tenth of Saint Lucia's total land area). Most of it is protected and controlled by Government. In the centre of the island, 1600 acres of rainforest have been turned into a Nature Reserve.

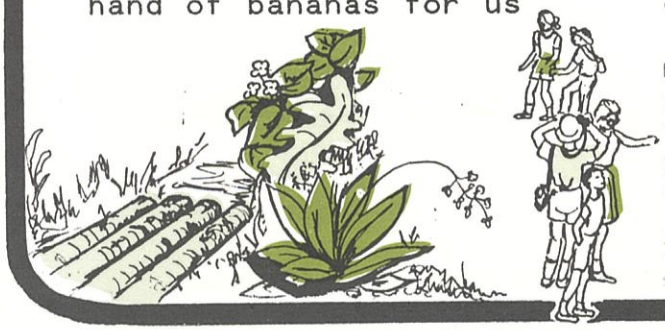
Many visitors to our island take the "Rainforest Walk". Let us also explore it.

THE EDGE OF THE RAINFOREST

No matter which way you choose to go, the road from Castries to the Rainforest is an adventure. From the Morne, it winds down toward the Cul de Sac valley with its endless fields of bananas. On one side is the West Coast Road that dips and climbs and twists its way toward Soufriere. On the other side is the road that runs through Bexon, l'Abbaye and Ravine Poisson to the foot of the Barre de l'Isle.

This is the road we will take, climbing up the wide curves to the top where the view is breathtaking and the cool, damp air is fragrant with the scent of pines. Tree ferns cling to the steep slopes and the earth is as red as a clay pot.

The road continues on to Dennery and then to Micoud and here our bus leaves the main road to begin the six-mile drive to the edge of the rainforest. On our left flow the waters of the Troumassee river. Its banks decorated with blue plastic bags from the bananas that are growing everywhere. Today the boxing shed is deserted but a boy working nearby brings a golden-ripe hand of bananas for us



Soon we reach the end of the road. The bus leaves and we set off on foot along a narrow dirt track that leads into the trees. Our rainforest walk has begun and we are heading into a part of the island that has remained almost unchanged for thousands of years.

The air is warm and still and a heavy cover of grey cloud hangs over the mountains. Overhead, hidden from sight in the leafy branches, we can hear birds twittering away. They sound like children at a party. Underfoot the ground is damp and covered with fallen leaves. On one side of the track grow mosses and ferns and a bushy plant with soft green leaves and purple flowers. On the other side is a plantation of Blue Mahoe,(*Hibiscus elatus*).

As we climb higher, the trees get thicker and many of the species are new to us. We cross a stream picking our way carefully over the logs or mossy boards that have been laid down to make a bridge. Beside a small shed, we see a stack of reddish-brown boards of mahogany. In the distance we hear the sound of a chain saw at work.

Forest and Lands Department have a controlled programme for harvesting timber from the forest. Only specially selected trees are cut and new trees are being planted all the time to replace them.

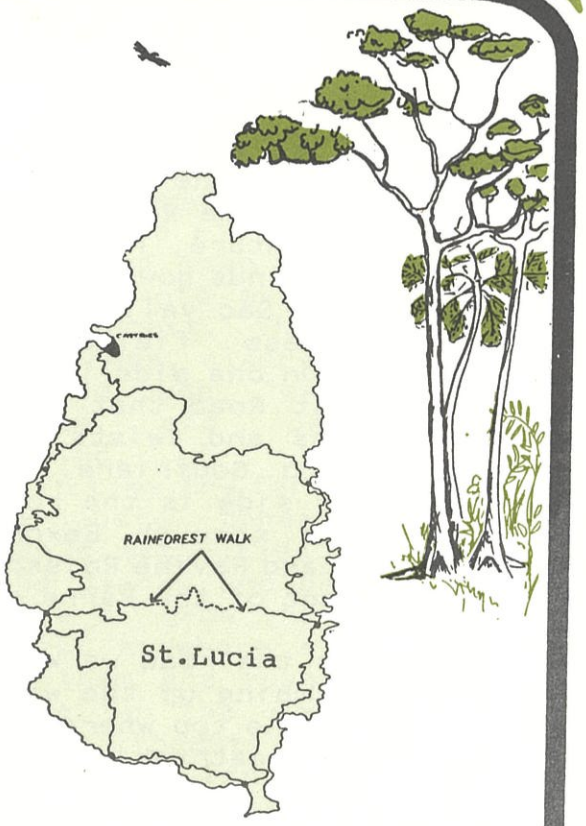
THE TALL TREES

Although the sky is still overcast, no rain falls. We are fortunate. This is one of the highest rainfall areas in the island and a day without rain is rare.

From the damp, dark cover of the bush, we can hear tree frogs calling out to each other in their clear bell-like voices. Here in the forest they are protected from the sunlight by the thick canopy of leaves and do not have to wait until evening to begin their song.

From a gully beside the path rises a tall, majestic stand of bamboo. Looking up to admire it we see the black shape of a hawk flying high above. But there is no sight or sound of Jacquot, the rare Saint Lucia parrot.

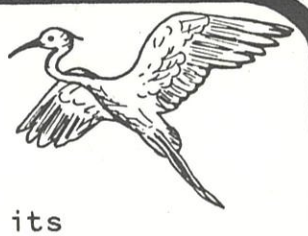
The path is still climbing and in some places where it is fairly steep, steps have been cut into the earth. When we reach a clearing in the forest where there is a small wooden hut and a bench we rest for a while. This is a spot where the parrots from the nearby area of Quilesse are often seen. Everyone looks up at the sky and the tops of the tall trees hoping to spot one. There are no parrots but we do see a pair of hawks circling overhead and finches darting in and out of the bushes close to where we sit.



All around us now are trees so straight and tall that their tops seem to be lost in the clouds. Mahogany, laurier, gommier, eucalyptus...like silent sentinels on guard. After hurricane Allen passed in 1980 many of the trees were left lying on the ground but today very little evidence of this remains.

Around a bend in the path we discover a cascade of pure, clean water tumbling down a rocky shelf. It falls into a bamboo chute wedged between the rocks and runs from the end like water from a tap. A twig has been stuck in the ground with several bamboo cups on it. We fill these from the fountain to quench our thirst before moving on.

PARROTS AND HERONS



After continuing along the path for quite some time we pass through a clump of eucalyptus trees (*Eucalyptus citriodora*) and stop to turn back and admire them. Suddenly the silence is broken by the harsh, loud cries of a parrot. A dozen heads turn this way and that. A dozen pairs of eyes search the sky, the nearby tree tops, the hills. But the bird is nowhere to be seen.

As we go on our way, we imagine our colourful National bird sitting on a branch somewhere close by. We can picture him in our mind's eye. His green and blue feathers ruffled from flight, his heavy curved beak pecking away at the rosy-red fruits of the aralee vine...

Here in the rainforest, a tree is a complete ecosystem. All sorts of plants cling, twist, climb and hang onto it. Creepers, bromeliads, ferns, lichens and of course, orchids. Birds nest in its branches. Some sip nectar from its flowers others will eat its fruit. At night the bats will come to get their share. Insects feed on it and green and brown lizards scamper up and down its trunk.

After walking for about two hours, we reach a place where the land falls away steeply on one side. The forest stretches away to the south as far as we can see. There is a rough wooden bench and so we sit to admire the view. Beside us, a tangled vine with shiny, dark-green leaves twines around a bush. It has sprays of blood-red flowers shaped like little trumpets. They have no perfume but the air all around is full of the smell of grass and damp earth.

An orange butterfly flutters by, bright as a flame against the dark green leaves. And as we look down onto the tightly packed tree tops a little blue heron, (*Florida caerulea*) flies slowly across the valley. Its snowy white plumage tells us that it is an immature bird. Here in this unspoiled place it is a beautiful sight. Everyone is pointing. "Did you see it? Did you see it?"

Then it is gone, and we turn back to the path to continue on our walk.

JOURNEY'S END

At one point, the twisting narrow track winds in a large loop around a steep ravine. Some of the group take a short cut. They scramble down the stony slope to splash through the shallow water at the bottom and climb up to wait for us on the other side.

Here, in the mountainous heart of the island the Vieux Fort River, the River Ger, the Troumassee River and the Canelles River all have their beginning. As long as the forest is there, these rivers will continue to flow. As they make their way to the sea they carry water to the people, the gardens and the fields of the dryer lowlands.

Our own journey is almost over. The path is wider and the trees that we are seeing now have been quite recently introduced. Blue mahoe (*Hibiscus elatus*), Honduras mahogany (*Swietenia macrophylla*), and Caribbean pine (*Pinus caribaea*) shade the path where we walk. Fallen pine cones cover the ground. Each one holds dozens of little seeds within its polished brown case. From the lower branch of one of the trees a flycatcher, (*Contopus latirostris*) watches us pass.

Now we are in a clearing with buildings and billboards and the first people we have seen since we started our walk. We are surrounded on all sides by the beauty and splendour of Nature. Our bus is parked on one side and we pile in hot, sweaty and tired from the hike but happy and content. Our forest walk is over. For three and a half hours we have been in another world. Now we must return to our own.

We drive down the winding road through Fond St. Jacques passing plantations of coconuts and cocoa, citrus and bananas. We reach Soufriere and start the long drive back up the winding West Coast Road to Castries. Back to the noise and the dust and the traffic and to all the places that we have made ugly by our misuse of them. With us we carry the memory of tall trees, a heron's flight, a parrot's cry and tree frogs singing in the middle of the day.

BUSH TALK

THE MANGROVE FOREST

1. The Tree That Walks
2. Mangrove Nurseries
3. Mangroves for Birds
4. Mangroves for People
5. How Mangroves Make Land

THE TREE THAT WALKS

It sounds rather strange to talk about trees walking when they have no legs doesn't it? But mangroves are not like other trees. It is true they have no legs, but they do have long stick-like 'knees'. These 'knees' are really roots that reach out from the trunk of the tree and help to prop it up. In this way the mangrove can stretch further out into the water or marsh where it grows. As well as supporting the tree, these aerial roots also help it to breathe.

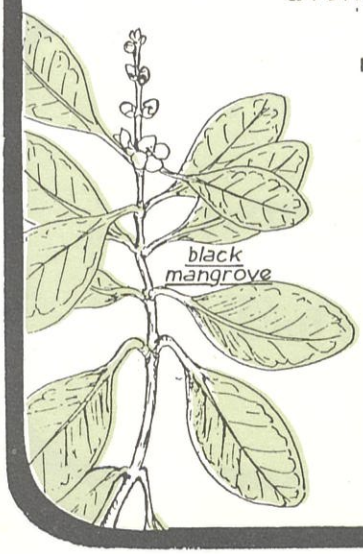
The roots are often embedded in silt or mud where there is little oxygen or even none at all. The parts that stick out above the water help the tree by taking in oxygen from the air through their pores.

Mangroves are usually found in places where there is a mixture of fresh and salt water. This happens along the shore wherever a river flows into the sea.

This **brackish** water would kill most other plants but not the Mangrove. Mangroves grow best in this environment. At one time mangroves grew along most of Saint Lucia's coast. Now so many mangrove areas have been cleared for development that only a few remain.

The three main types of mangrove found in Saint Lucia are the Red Mangrove (*Rhizophora mangle*), the Black Mangrove (*Avicennia nitida*) and the White Mangrove (*Languncularia racemosa*). There is also the Grey or Button Mangrove with its soft, silvery leaves and round, button-like seeds. This variety is not seen as often.

Only the Black and the Red Mangroves have prop roots to help them walk out into the sea. But in all tropical countries mangroves are found wherever there is a mixture of fresh and salt water.



MANGROVE NURSERIES

Imagine that you could dive down and examine the roots of a mangrove forest. You would be amazed at what you would find going on there! First you would see large numbers of small fish. Not brightly coloured like the fishes of the coral reef but tiny grey and brown and silver ones. They are the young ones of large fish like mullet, snook or tarpon.

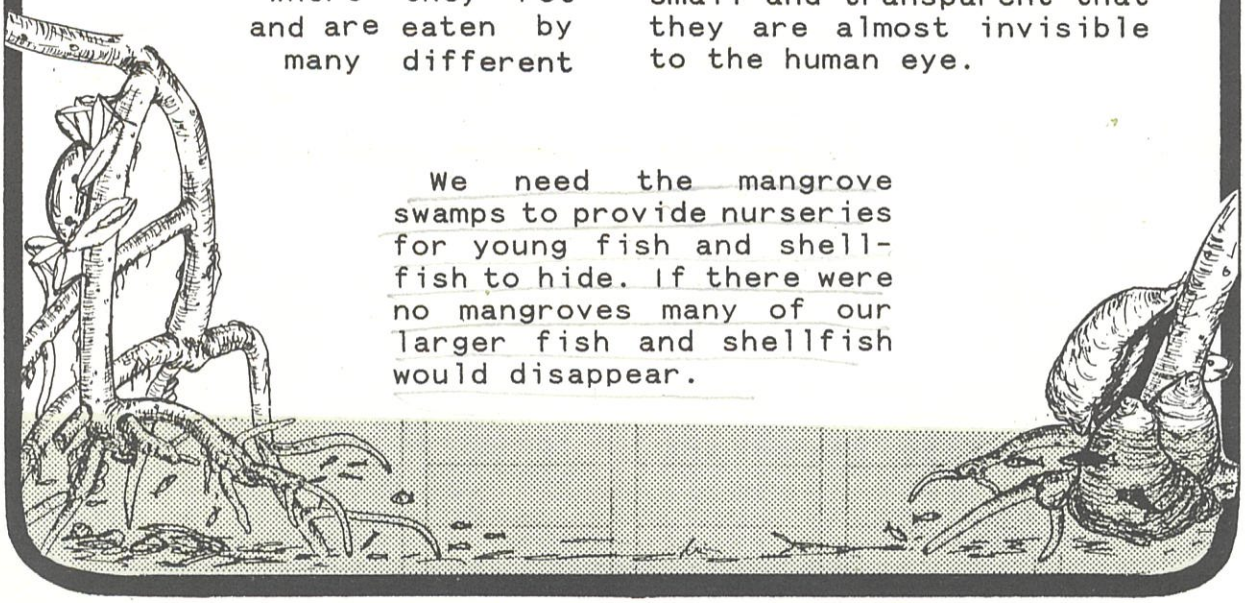
Many large fish come in close to the mangroves to lay their eggs. When the young fish grow big enough they will move out into deeper water like their parents. Until then, they need a safe place to hide away from predators like the barracuda that would quickly eat them up.

The young fish in their mangrove 'nursery' need plenty of good, rich food in order to grow. The mangroves supply this. Their leaves drop into the water where they rot and are eaten by many different kinds of sea creatures. These rotting leaves as well as some of the tiny things that feed on them provide just the right kind of food for the small fish.

If you look closely at the roots of the mangroves you may see clumps of long purple shells clinging to them. These are a type of shellfish called mussels.

You might also see a few tree oysters with their large, flat, grey shells. The Amerindians would paddle around the swamps in their canoes collecting these shellfish to eat. Sometimes they made ornaments from the oyster shells with their beautiful mother-of-pearl lining.

Little crabs scuttle around everywhere. They climb up and down the mangrove roots picking off bits of seaweed with their claws and eating it. In the water are baby lobsters and other shellfish, some so small and transparent that they are almost invisible to the human eye.



We need the mangrove swamps to provide nurseries for young fish and shellfish to hide. If there were no mangroves many of our larger fish and shellfish would disappear.

MANGROVES FOR BIRDS

Mangroves are a perfect place for the kind of birds that find their food in or near water. The little blue heron, (*Florida caerulea*), and the great blue heron, (*Ardea herodia*), can both be seen in the mangroves. The great blue heron can stand as much as four feet high but the little blue is only about two feet tall. Both birds have dark bluish-grey feathers. The little blue heron also has lovely reddish-brown feathers on its neck and head.

You might also see the green heron, (*Butorides virescens*), This is a relative of the blue herons. It is a smaller, darker but much more colourful bird. It is shiny green with a bit of purple on the back and some brown feathers on its head and chest.

Another bird you might see is the great egret, (*Egretta alba*). This is the largest of the egrets. It is over three feet tall with pure white feathers.

All these birds can be seen walking around in the swamp looking for fish or some other creature that can be stabbed and caught with their long sharp beaks. Their nests are usually built in the branches of the mangroves or in one of the taller trees growing behind the swamp.

These days, one of the most common birds to be seen in many marshy places is the cattle egret, (*Bubulcus ibis*). Although this bird nests and feeds in the mangroves it will also go inland to look for food. In patois the cattle egret is called gaday bef because it follows the cattle around. It eats up the spiders and other insects that are disturbed by their feet or picks the ticks off them.

The belted kingfisher, (*Ceryle alcyon*), is another fish-eating bird as you can tell by its name. It is a grey-blue bird with a blue band on its white chest. The female also has a band of reddish-brown on hers. Kingfishers can sometimes be seen hovering just above the water on the look-out for fish.

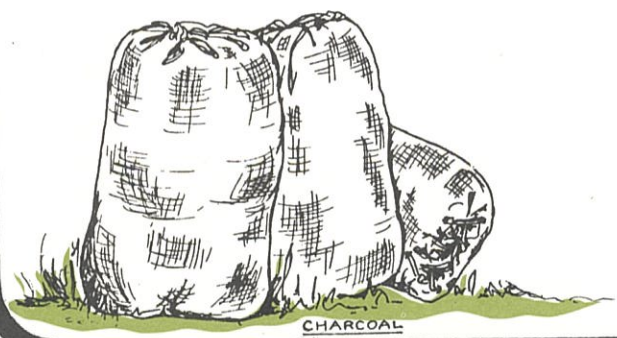
As you can see, the waters of the mangrove swamp provide a safe nursery for young fish. The trees around it provide another sort of nursery, for the many different kinds of birds.

MANGROVES FOR PEOPLE

If someone were to ask how much you know about leather, how would you answer? Did you know that it's made from the skin of an animal, usually a cow? All sorts of useful things can be made from leather: boots, shoes, bags, belts. Perhaps you can think of some others.

Chemicals are used to turn animal skins into leather. One of these chemicals is called **tannin** and it comes from the bark of the mangrove tree. Tannin helps to keep the animal skins soft and supple so that they can be cut and stitched. In order to get tannin from the mangrove tree, the bark must first be stripped off and dried. It is then crushed or pounded into a powder so that it can be shipped to the factories where leather is processed.

In some places, people use the bark and the leaves of the mangrove tree for medicine or to make a dye to colour cloth. The sweet-smelling flowers of the Black Mangrove attract bees who make a delicious honey from their nectar.



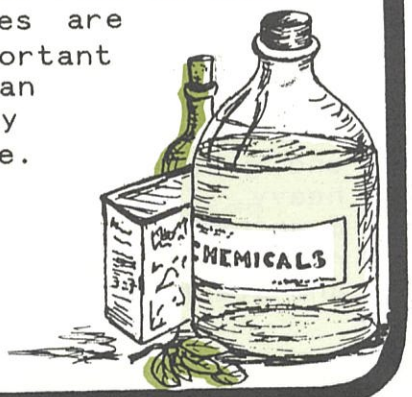
Mangroves have very hard wood. This wood is used for building and to make the piles for piers and jetties. Mangrove wood also makes good charcoal.

The mangrove forest is useful to man in many ways. It should be protected just like any other forest. If the mangroves are cut and cleared faster than they can produce new growth, the mangrove ecosystem will be destroyed. Then, nothing will remain but an empty, smelly swamp. The fish who depend on the mangroves for food will have gone. The birds who eat the fish and find safe nesting places among the trees will also have left.

We should use our mangrove forests sensibly, and allow them the time and space to replace what we have taken. They are a good and renewable source of fuel and building material.

Mangroves are also one of Nature's ways of protecting our coastline and making sure that the fishermen always have fish to catch.

Mangroves are more important to man than almost any other tree.



HOW MANGROVES MAKE LAND

By now you should all be used to hearing the word **ENVIRONMENT**. Our island is made up of many different natural environments, the rainforest, the seashore, the coral reef. But none of them is as complete as the mangrove forest. Within its dense and tangled growth, mammals, fishes, birds, reptiles and shellfish all find a home.

Unlike the other trees that have to compete for living space, the mangrove forests grow by moving further out into the sea. Debris gets trapped among the tree roots and this builds up new land. The mangroves make a barricade that protect the coast from the pounding of the waves and if they are damaged by heavy seas or winds they can repair themselves. No man-made breakwater can do that!

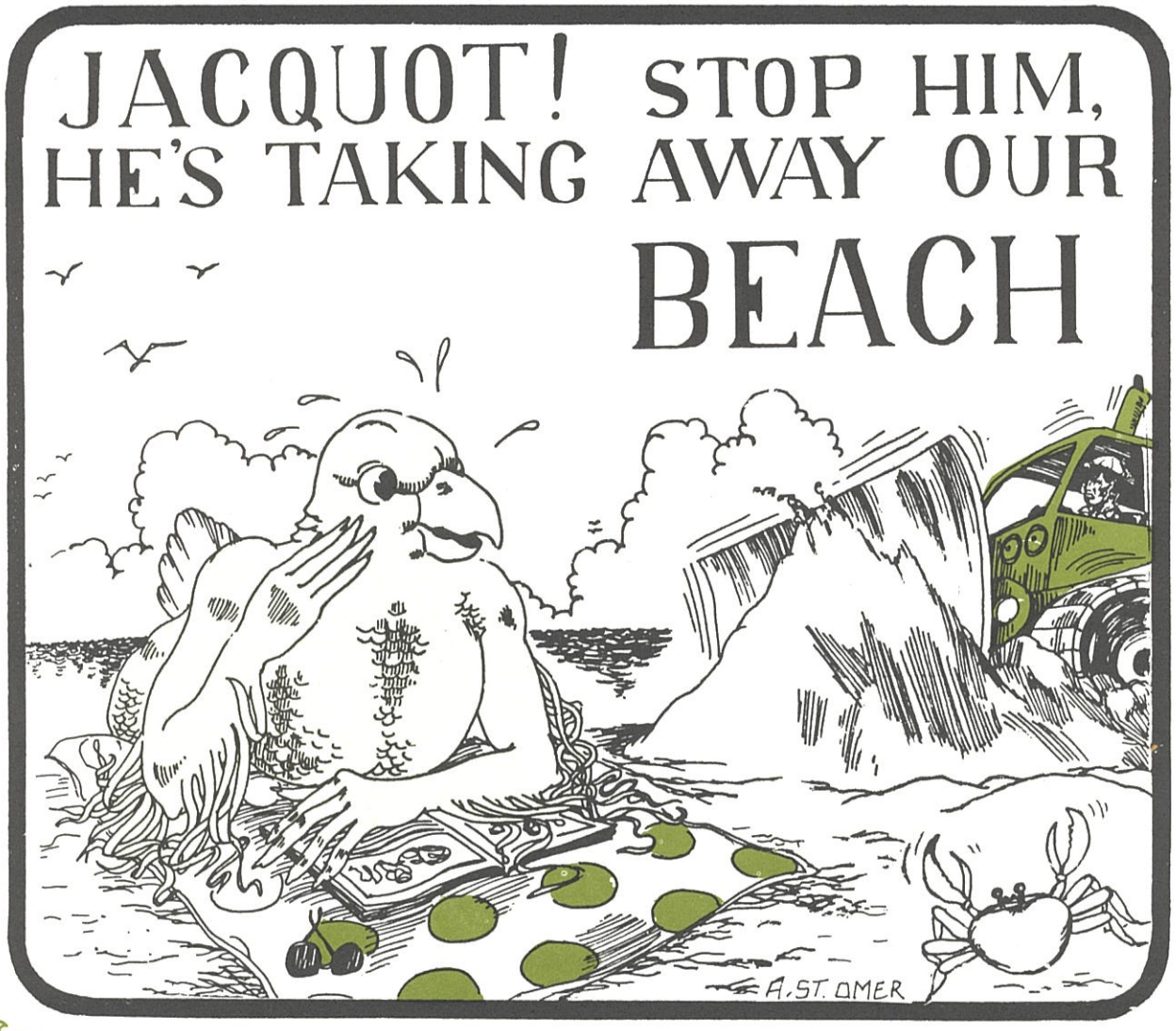
In Saint Lucia, the Red Mangrove is the most common. It bears a small, brown, edible fruit. This fruit starts to grow while it is still on the tree. A pod sprouts from the end of the fruit. This pod can be as much as twelve inches long. After a while, the pod drops off and floats on the water until the root end gets water-logged and heavy. Then it will sink down until it can send its roots into the muddy bottom and start to grow.

These mangrove pods can often be seen bobbing about in the shallow water close to shore. They are looking for a place where they can put their 'feet' down and grow into new trees.

Sometimes. when the branches of the tree are close to the water, the pods may even produce roots before they drop off. The roots will stretch out toward the water and soon a new tree will be growing right beside the parent.

This is the way the mangrove forest 'walks'- one step or one new tree at a time. They protect the coastline, build up new land and create new homes for our wildlife as they 'walk' out into the sea.

BUSH TALK



THE BEACH

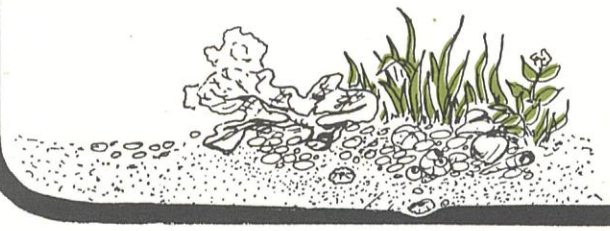
1. Rocks and Reefs
2. No Man's Land
3. The Beach That Went Away
4. No Room for Turtles
5. Beaches or Blocks

ROCKS AND REEFS

'Beach' is a word we use to describe a geographic location. A beach always has water on one side of it and land on the other side. It is the part of the shore that lies between the sea and the high water mark.

In Saint Lucia, most of our beaches are sandy, but beaches can also be covered with boulders or small stones. Some beaches have bits of broken coral and sea shells scattered all over them. Others are beautiful wide stretches of golden sand. Saint Lucia is a volcanic island and so the sand on some of our beaches is black. This is because it is made up of tiny pieces of volcanic rock. The rock often has small clear crystals of quartz in it. The sand is full of little bits of this broken quartz. They sparkle in the sunlight and make the sand look as if it is full of diamonds.

If you walk barefoot on a black sand beach you will discover that it is much hotter than other beaches. A beach with white or golden sand is made up of tiny pieces of broken shell and coral dust. These particles reflect the light of the sun and throw off some of its heat. The black sand absorbs it and becomes almost too hot to walk on.



At one time our rivers brought plenty of sand down to the shore. It was made when the stones in the river knocked and rubbed against each other. This caused small pieces of rock to break off. These small pieces would be picked up by the fast-flowing river and carried along. Where the river widened out before entering the sea, it would slow down, letting these little fragments sink to the bottom. Then they would be washed up at the edge of the river mouth or dropped by the tide along the shore.

Deforestation and bad land use has interfered with this process. Now many of our rivers are so choked with silt and garbage that very little sand comes down.

Coral reefs also make sand. The steady pounding of the sea breaks and grinds the dead shells and coral into fine white particles. The waves pick these particles up and deposit them on the shore. Gradually, a sandy beach is built up. If we allow our reefs to be killed by dynamiting, or smothered by layers of silt, or poisoned by chemicals coming off the land, we will lose this important source of sand.

Some people believe that there is an endless supply of sand under the sea waiting to be thrown up by the waves. That is because they do not understand how sand is made.

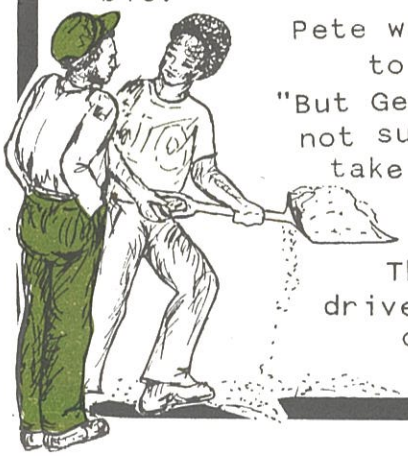
NO MAN'S LAND

It was already late when Pete and his friend George left town, so when the pick-up started to pull off the road after a few miles Pete was surprised.

"What you want to stop here for man?" he asked his friend. "I thought you were in a hurry to get back. You tired or what?"

At first George didn't answer. He kept on driving down the little track that led to the beach, then he laughed. "Man, do I look sleepy to you? I could drive to Vieux Fort self right now. No - there is something I have to pick up."

He parked the vehicle on the sand at the back of the beach and jumped out. Then he took a shovel and some sacks from behind his seat and started to dig. "I got to finish that job I'm doing at the house," he said to Pete, over his shoulder. "And I don't intend to pay no-one any hundred dollars or more to bring me any little half load of sand. I just picking it up myself bit by bit."



Pete walked down to join him. "But George, you not supposed to take sand from the beach like that. Those truck drivers pay the council for a permit to take sand."

George shrugged. "You see me! I taking my sand right here. They say the beaches don't belong to no-one. Like they a sort of no man's land. So, if that's the case then I free to take the sand anywhere."

"Well," said his friend, "it's true that the beaches are for anyone to use. But that's not the same as saying anyone can carry them away just as they please."

"What sort of foolishness you talking?" answered George. "You think these few little bags of sand I taking here going to make any difference?" As he said this he threw another sack full into the back of the pick-up.

"Perhaps not," replied his friend. "But if everyone was thinking like you and doing the same thing, the beach would soon be gone. If the beach really belongs to everyone that is just why you should leave it there - so that everyone can get to enjoy it."

George was beginning to look a bit uncomfortable. "You know something?" he said. "There's a lot of sense in what you say." He threw the shovel on top of the sacks of sand in the back of the pick-up and climbed back in the cab. "Come on, let's go. I'm not bending my arm to put that lot back but I'll check the fellow with the truck who lives close by me. Maybe I can make a deal with him to get me the rest cheap."

THE BEACH THAT WENT AWAY

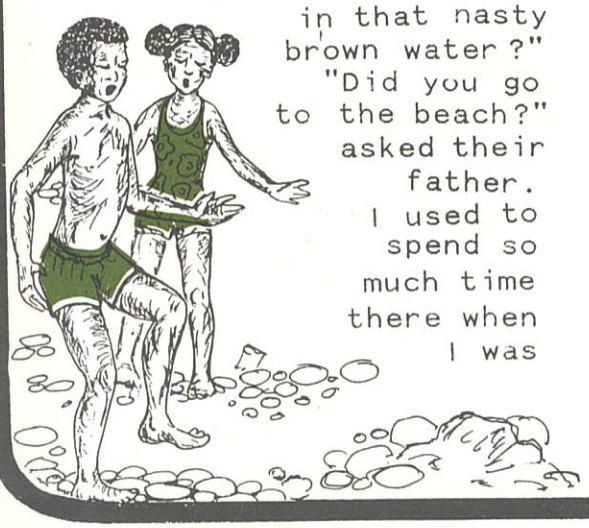
Chester parked his taxi on the side of the road and went quickly up the steps to his house. His children had just come back from a visit to their grandmother and he was anxious to see them.

"Look," his wife called out from the kitchen. "Come and see all the fruit your mother sent for us."

"Yes," said his son, Benny. "We had so much stuff the bus driver asked us if we were bringing it up to the market. The whole time we were there we had fresh fish every day and fresh juice, we even had crayfish from the river."

"And you know what?" said his sister, Angie. Grandma told us how you used to catch the crayfish in the river when you were a boy. The river over by town is just as big, why can't we get crayfish there? They really tasted good."

"Oh, Angie!" said her mother. "Look at all the garbage that is thrown into the river. Do you really think anything could live in that nasty brown water?"



"Did you go to the beach?" asked their father. I used to spend so much time there when I was young like you. Your Grandmother used to tell me I'd grow fins like a fish if I didn't ease off. We had a little dog called Spotty. Spotty used to come with us and nothing he liked better than to steal our ball while we were playing cricket on the beach. He would dig away in the sand and bury it like it was a bone or something."

"But dad!" said Benny. We went to the place where Grandma said you used to go. We walked over a whole lot of rocks to get to the water and even then it was only stones under our feet. We didn't like it at all."

Angie agreed with him. "No," she said. "After the first time we didn't bother to go back. There was so much mess on the beach, garbage, old tires...Benny even saw a dead sheep. I didn't look but I could smell it. That was bad enough!"

Poor Chester looked sad. "I wonder what happened?" he said.

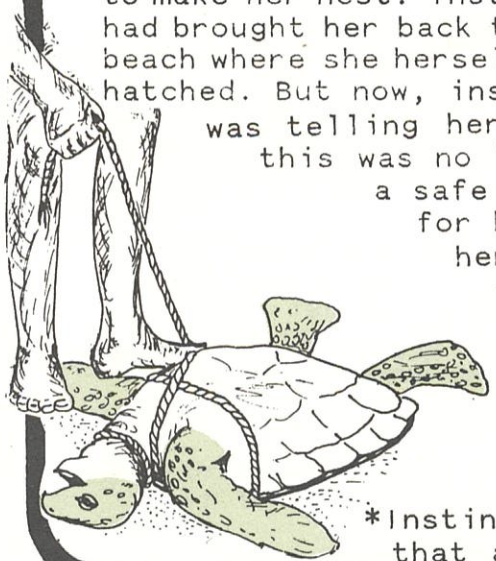
His wife looked at him in surprise. "But Chester what did you expect? They've been carrying sand away from there for so long now. They were even digging the sand from under the water! Now the beach is gone. If the children want a place to play they have to go some place else. You think it's only that beach that's suffering! If things don't change soon there won't be any more beaches anywhere."

NO ROOM FOR TURTLES

There were lights on in many of the hotel rooms and the guests inside were dressing for dinner. There were also lights on around the pool where the band was getting ready to play. Behind the hotel the headlights of cars could be seen as they drove onto the concrete ramp at the back of the beach. There were already quite a few people moving around there, setting up loudspeakers and preparing the fire for their Bar-B-Que.

Soon the little sounds of crickets and tree frogs were blasted away by the loud, harsh music coming from the bandstand. The wind blowing out to sea from the land carried with it the smell of cooking.

The turtle swimming out in the bay was confused by the noise and the smells. She was heavy with eggs and knew that sooner or later she would have to go ashore to make her nest. Instinct* had brought her back to the beach where she herself was hatched. But now, instinct was telling her that this was no longer a safe place for her or her eggs to be.



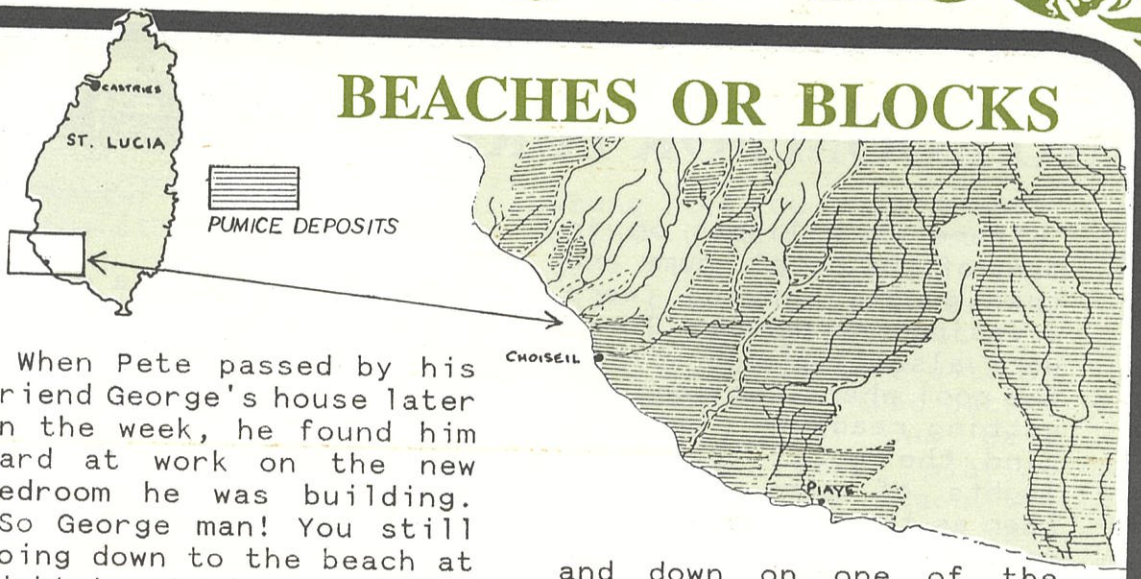
She had travelled a great distance to get to this place and her journey had taken many weeks. She had no choice but to go ashore.

The old turtle lumbered up the beach and started to make her nest. She knew the danger she was in. Within a few minutes she was surrounded by the people from the party. They heaved and pushed until she was lying helpless on her back and then ran for ropes to tie her up. The eggs that she had already laid were crushed beneath their feet.

The poor turtle bellowed with pain and fear and soon her cries brought people from the hotel running to see what was happening. They were angry. They the men who were dragging the turtle up the beach that they were breaking the law. They made such a fuss that the men finally let the turtle go. Her neck was raw and bleeding where the rope had cut it. Someone had stepped on one of her flippers and broken it. In spite of her injuries she managed to crawl back to the sea. She was free but she still had to find a safe spot to lay her eggs. This was the only beach that she knew. Perhaps if she waited for a while the people would go away.

*Instinct - a strong desire to do something that a person or an animal is born with.

BEACHES OR BLOCKS



When Pete passed by his friend George's house later in the week, he found him hard at work on the new bedroom he was building. "So George man! You still going down to the beach at night to steal sand eh?"

"No man. I done finish with that. I paid the fellow up the road to bring me a half load in his truck. But here, let me show you something" He waved over at a pile of blocks. "You see this? What do you think they are?"

Pete looked at them. "What do you mean? What do I think they are? I can see can't I? Blocks is blocks."

"Yes," said his friend, "But these are special blocks. They don't have no sand in them."

"If they don't have sand what they have?" asked Pete. "the cement has to mix with something."

"I know that," explained George. "What they has is something called **pumice**. You get it all around Choiseul and them place. They say it has so much in the ground that you could make endless blocks. I got these from a fellow who been using it instead of sand and they strong. Man, they don't break up and crack like the ones I used before. Look!" He jumped up and down on one of the blocks just to show Pete how strong they were. "And you know what? They costing just the same as the other kind."

"So if they so good why isn't everyone buying them?" asked Pete.

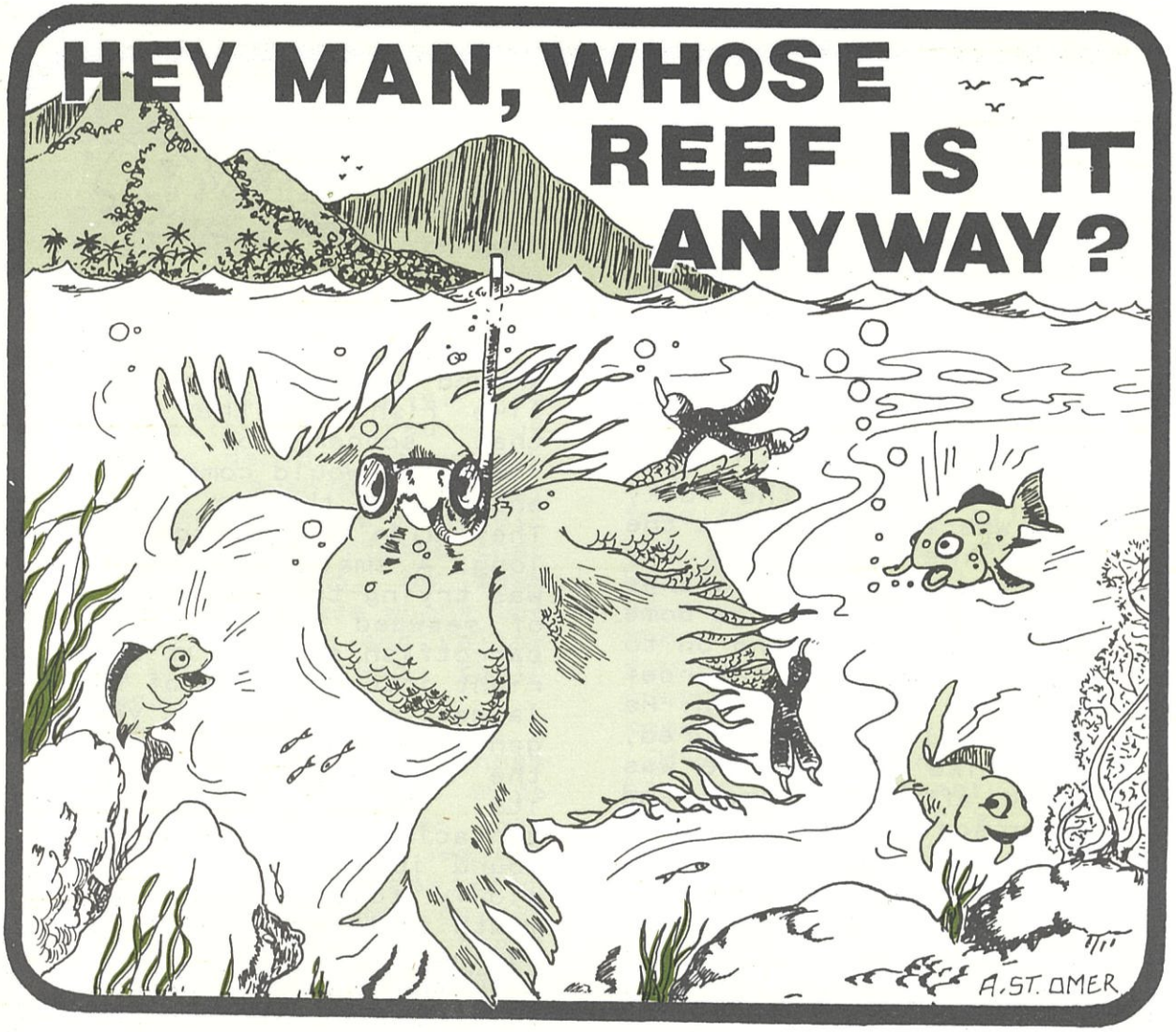
George shrugged. "I don't know. Maybe they haven't heard about them. Maybe they don't know you can use that pumice stuff to make blocks."

"Well, George man, you telling me something I didn't know. I been puzzling and puzzling how they going to stop people from taking sand from the beaches, now you telling me Saint Lucia full of this pumice. There is so much building going on, I just hope that plenty of people will give this thing a try."

"Man, you won't hear me complain," said George. "So long as I can get blocks as good as these, the beaches can stay where they are."

"Right on!" agreed Pete. The children and the tourists **and** the turtles will all be glad of that."

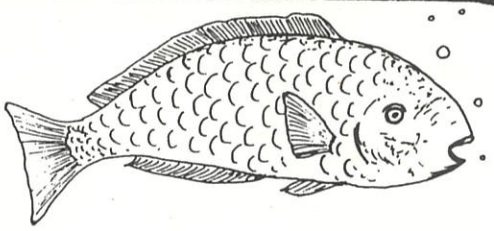
BUSH TALK



THE CORAL REEF

1. The Parrotfish
2. Sunrise
3. The Middle of the Day
4. The Afternoon
5. At Sunset

THE PARROTFISH



It was still very early and the beach was deserted. In the pale morning light, the coral reef that lay just offshore was only a brown smudge under the clear, green water.

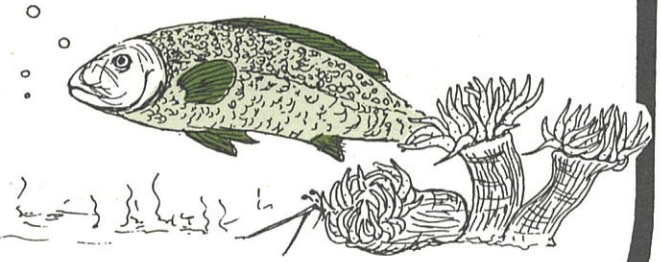
A parrotfish swam lazily out from the rocky cave where he had spent the night. He finned his way past a group of tall orange sponges, past the huge dome of a brain coral and on to the far corner of the reef where he liked to feed. He was brilliantly coloured, just like the bird he was named after. His red and green scales were as big as ten-cent pieces and his mouth was a hard beak that he used to crunch and bite away at the coral. Of all the fish that lived on the coral reef the parrotfish was one of the biggest.

All around him swam big-eyed, red-scaled squirrel fish, beautiful butterfly fish, angel fish, and sergeant majors with their black and yellow stripes. They were not afraid of the parrotfish. They knew he would not harm them. Above, clinging to the reef, a family of sea anemones opened up their petal-like tentacles and started to brush the water looking for breakfast.

Anemones can't swim around looking for food like fish but they knew that sooner or later something would come close enough for them to catch. They didn't have to wait long. A small shrimp that was trying to grab a piece of seaweed shot past the parrotfish's head. It swam right into the arms of the largest anemone. Very, very gently the anemone stroked the careless shrimp with its deadly, poisonous tentacles. Soon the shrimp found itself being pushed slowly toward the hungry mouth in the middle of the waving arms.

By the time the parrotfish stopped munching long enough to see what was happening, the shrimp was gone! All that could be seen was a couple of legs and the end of a feeler. After a while even they disappeared.

"Too bad", muttered the parrotfish smugly as he turned back to finish his meal. "That'll teach him to look where he's going!"



SUNRISE

As the sun rose, more light shone down through the water. Now the beautiful colours of the creatures living on and around the reef could be seen quite clearly. The parrotfish, tired of eating, decided to go for a swim. Pushing his way through the cloud of jewel-bright little fishes that surrounded him, he swam toward the place where the elegant purple and yellow sea fans spread their branches.

On the way, he passed a clump of sea whips whose bare brown branches made them look like trees that had lost their leaves. Flamingo tongues crawled on them, their creamy orange shells hidden by their spotted mantles. Beneath him, a small flatfish sent up a flurry of sand as it moved along the sea bed. A little further on he saw a fat purplish-brown sea slug with velvety soft spines crawling over the waving sea grass. And from a tiny hole at the bottom of a rock the cold, unfriendly eye of a moray eel glared at him as he passed.

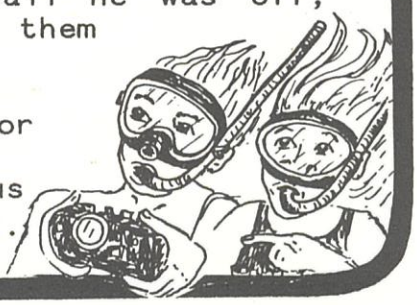
Then, as the parrotfish swam around the slender branches of a finger coral he nearly shed all his scales with fright. Two strange things with glass-covered faces were pointing excitedly in his direction.

They were so close that he could see the fine hairs on their pale bodies. Black tubes went from their pink mouths to the air above and their feet were large and blue like the fins of some weird fish.

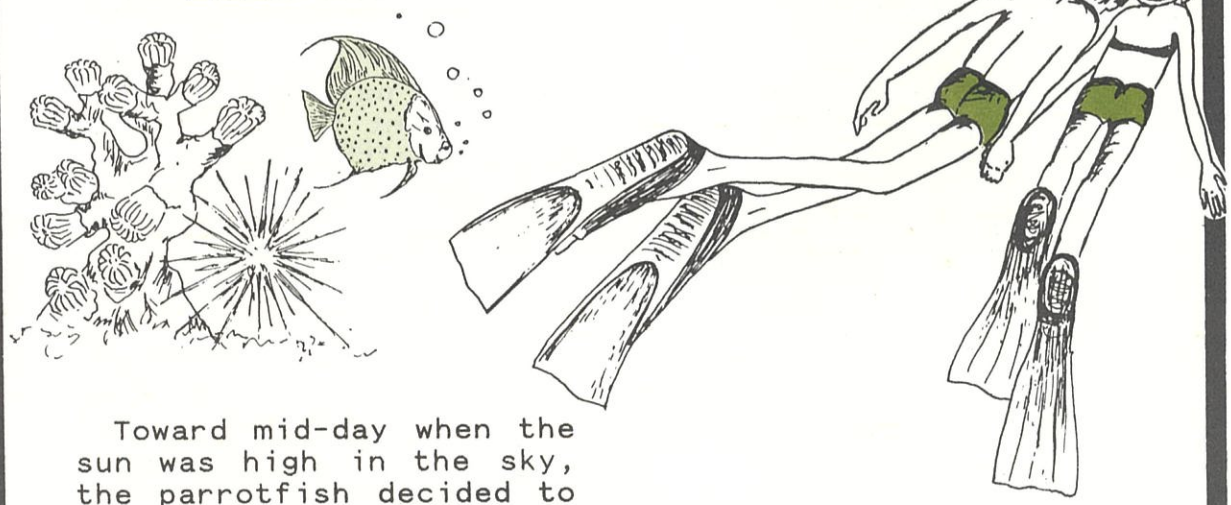
The parrotfish remembered his first meeting with these strange land animals. He had been young and care-free then and had allowed his curiosity to get the better of him. As a result he almost ended up on the end of the sharp stick that jumped from one of the creature's hands and came speeding through the water.

His narrow escape taught him to be more careful and so now he looked at the waving hands to make sure they carried no weapons. The larger of the two grabbed at an odd-looking box that hung around its neck but the parrotfish had seen boxes like that before. He knew that these strange creatures liked to point them at things as they swam around. They had even aimed the box at him once or twice but it had never harmed him.

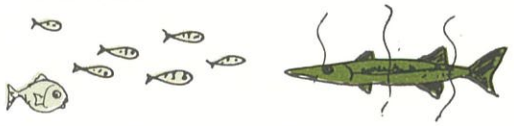
He turned sideways so that the two intruders could appreciate the full beauty of his coloured scales. Then with a flick of his tail he was off, leaving them to find another target for their mysterious black box.



THE MIDDLE OF THE DAY



Toward mid-day when the sun was high in the sky, the parrotfish decided to swim out to a spot where the water was deeper and he felt safer. The swimmers who had been following him with their box had got tired and gone away. Not long after their bright blue feet disappeared toward the shore, a whole bunch of funny looking creatures fell off something floating on the surface of the sea. They bubbled their way down to where he was resting staring at him through the round glass windows that covered their eyes. He could see that these were a different species because they were larger and much more brightly coloured. They could also stay down much deeper under the water and although the parrotfish looked he could see no pipe connecting them back to the surface.



Trails of tiny bubbles streamed out from their heads and they had hard, long shells of black or silver on their backs. The parrotfish hid under a coral ledge until they passed then he swam away in the other direction.

He knew that the divers (for of course that's what they were) would not take or harm anything but he was tired of being stared at. Anyway, there were plenty of other things they could point their strange boxes at.

In the past he had sometimes seen another kind of land creature swim down to the reef. Small and dark without any pipes or shells. They used to come with rocks or sticks and break off pieces of the coral to take away with them. But they didn't come anymore. Even the ones with the sharp, pointed sticks that flew through the water had become quite rare. Perhaps they were hunting somewhere else, or maybe they were a disappearing species.

THE AFTERNOON

Later that afternoon a boatload of tourists came into the bay. The parrotfish turned around when he heard the heavy throbbing sound of the boat's engine. Very soon there was the hard, rattling noise of an anchor being thrown overboard and then the heavy throbbing noise stopped.

The sharp toothed metal anchors that tied the boats to the sea bed often dragged over the coral reef breaking off large chunks as they went. They also crushed and killed many of the soft, delicate coral creatures that lived on the reef. This time though, the point of the anchor caught right away behind a large rock and no harm was done.

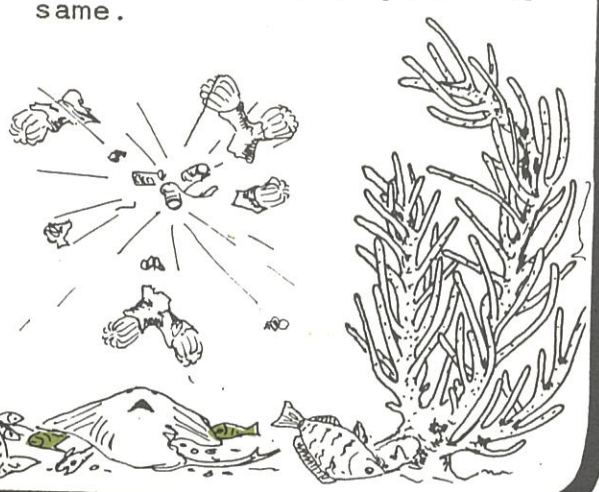
The parrotfish drifted back to his feeding place for a few last nibbles. The light was beginning to fade and in the murky water beyond the reef he had seen the silvery flash of a slim barracuda on the prowl. There might be other even bigger fish following him. The parrotfish didn't want to end up playing hide-and-seek for his life. Breaking off a last mouthful of coral he turned to swim back to the rocks where he usually spent the night.

The rocks were really a part of the reef that had been killed by fishermen throwing dynamite into the sea to get an easy catch.

The parrotfish remembered how hundreds of small fish had died on the spot and dropped lifeless to the ocean floor. The polyps at the end of the reef had been crushed to death in their coral caves by the blast. And the larger fish that were stunned or killed had floated up to the surface where they were quickly gathered up by the waiting men.

The parrotfish had been down at the other end of the reef, but even so he thought he would burst from the pressure. The dead coral remained. A house without any occupants to remind everyone how easily the fragile reef habitat could be destroyed.

No-one had used dynamite on the reef for quite some time but it was still dying. The water that washed down from the hills after a heavy rain was full of mud and chemicals. These things took longer to kill the little coral polyps but they killed them just the same.



AT SUNSET

All day long, the coral polyps rested quietly in their homes but when the sun went down they woke up and began to move about. From each tiny hole in every coral branch their delicate, star-like tentacles stretched out into the water. Now it was easy to see that the reef was really a huge colony of millions of living things, not a lifeless lump of rock as some people believed.

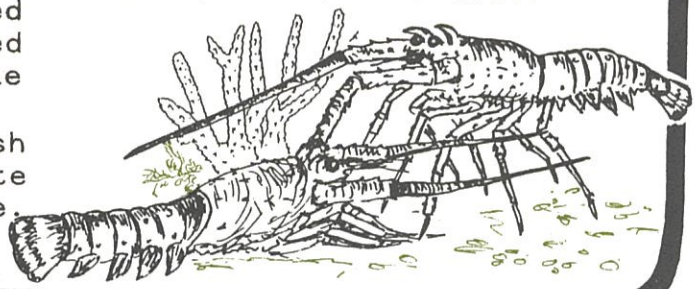
The polyps sifted the water searching for the small organisms on which they feed and their movements made the surface of the reef change in a never-ending pattern. Unlike the fish that darted all around it, the reef could not move. The soft bodies of the polyps were its mouths. Only through them was it able to feed itself and grow.

In his hiding place, the parrotfish lay suspended on a watery bed. His gills opened and closed very gently as he took in the oxygen he needed from the water. His fins moved just enough to keep him floating in one place. Below him a group of young lobsters moved around making a great amount of clatter and confusion. They rattled their legs on the sea bed and shook their antennae fiercely at each other.

Although the parrotfish was awake he seemed quite unaware of their existence. In fact he was busy trying to make sense of something he had heard earlier in the day.

It seemed that on the land above there was a colourful bird with a name just like his own. This bird was protected and no-one was allowed to catch it, kill it or harm it in any way. The parrotfish had known about this for some time, but today he had heard something else. A few miles away from the reef where he lived were two small bits of land sticking up from the sea called the Maria Islands. Apparently ALL the creatures living on these islands, the birds, the lizards, even the snakes, were protected. And that wasn't all! The reef close to the islands had been made into something called a 'Marine Park' so that all the fish and other forms of marine life living there would also be safe.

The parrotfish couldn't work out who was doing all this protecting but he wanted to know. Tomorrow he would swim across the bay and talk to the old grouper who lived under the rocks. He would ask him how they could arrange to get their reef protected as well.



BUSH TALK

THE EDGE OF THE SEA

1. The Queen Conch
2. The Spiny Lobster
3. The Sea Urchin
4. Sea Moss
5. Protecting Our Marine Resources

THE QUEEN CONCH

Many creatures important to man are found under the sea, close to shore. The Queen Conch or **lambi** is one. The proper name for this large mollusc or sea snail is *Strombus gigas*.

The Queen Conch feeds on the beds of sea grass that grow on the sandy floor of the ocean. It was once common throughout the Caribbean but is now so rare in some places that it has been declared an endangered species.

Conchs were once found quite close to shore, but now fishermen often have to go much further out to find them. The grass they eat can grow in water over 100 feet deep. Divers have to use masks and air tanks to collect them at his depth.

A Queen Conch takes three years to mature. By then it will be eight inches long and weigh about two pounds (the animal itself only weighs about half a pound). At this stage the conchs mate and the female then lays her eggs on the sand. After five days the eggs hatch and the young ones, called **verligers**, swim up to the surface of the sea.

The verligers are only as big as a pin-head but they already have a shell. They float about for a few weeks feeding on tiny marine plants, then go back to the bottom of the sea. Now the 'wings' that helped them stay afloat disappear and they grow a 'foot' instead. This helps them move about.

For the next year, the young conchs stay buried in the sand only coming out at night to feed. Their shell grows larger and stronger. By the time they are one year old it is about three inches long. During the next year it will grow another two inches. By the end of the third year it will have its beautiful pink lip. Now the conch is mature and ready to mate.

A Queen Conch lives for six or seven years. During that time, a female will lay **millions** of eggs. Each egg-cluster has about half a million **embryos***. This is how Nature makes sure that some eggs survive to become adults.

For the first two years the conch's biggest enemies are fish and crabs. At this stage, their shell is too soft to protect them and only about 10 out of every 100 survive. As they get bigger they are attacked by octopus, sharks and rays, but the most dangerous enemy of all is **man**.

Fishermen often take the young conchs before they have had a chance to mate and produce young ones. If this practice continues, the conch population will soon die out completely.

In Saint Lucia it is illegal to export the Queen Conch or to take shells that are not mature.

*embryo - an unborn or undeveloped animal

THE SPINY LOBSTER

There are four species of lobster in the Eastern Caribbean, the Common Spiny Lobster (*Panulirus argus*); the Spotted Spiny Lobster (*Panulirus guttatus*); the Smooth-tailed Lobster (*Panulirus laevicauda*) and the Slipper Lobster (*Scyllarides aequinoctialis*).

The Common Spiny Lobster is the one most often caught. It is found in warmer waters all over the world and can live for 15 years. A large adult can weigh from 15 to 20 pounds.

During the day, lobsters stay hidden among the rocks but at night they come out to feed. They are scavengers and will hang around any place where garbage is dumped. They also eat worms and other small marine animals. Spiny lobsters don't have large claws like their cold water cousins but they do have strong mouth parts or **mandibles**. This makes it easy for them to open some types of shellfish to eat the meat inside. They are not usually attacked by other creatures because their head, body and even their feelers are covered with sharp spines.

Female lobsters can lay 800,000 eggs at one time. They protect these eggs by attaching them to the underside of their body. After nine or ten weeks, the eggs hatch and small, flat, transparent creatures called **phylosomes** appear. They float around eating seaweed for the first six months like the Queen Conch **verligers** then change into tiny lobsters. At this stage they need to live in a protected area like a mangrove swamp until they have grown a bit.

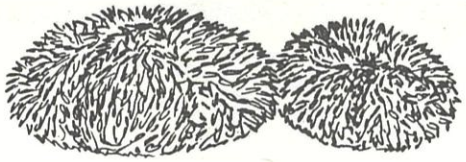
Lobsters grow by getting rid of their hard shell when it gets too tight. This tight shell splits and peels off allowing a new shell to take its place. The new shell is soft at first but it soon hardens.

Lobsters can stay alive out of water for quite some time. Fishermen will sometimes keep them in a wet sack or leave them in a trap in the sea until they are ready to sell them. Although people will buy a dead fish, no-one wants to buy a dead lobster. When a lobster is speared its flesh spoils very quickly and can become poisonous.

The Spiny Lobster takes about three years to mature. Not very many lobsters manage to survive this long.

It is **illegal** to catch ANY lobsters between May 1st and August 31st. It is **illegal** to take a female lobster with eggs at any time. It is **illegal** to catch a lobster that is less than 10 inches long. It is also **illegal** to catch lobsters with spear guns. The main reason for this is that once a lobster is speared, it is too late to put it back if it is under size or carrying eggs.

THE SEA URCHIN



The Sea urchin is a member of the *Echinoidea* family whose ancestors were among the earliest life forms on earth. Their fossils* have been found in rocks that are 400 **million** years old. Members of this family that live in the waters around our coast are the Sand Dollar (*Melita sexiespeorata*), the Sea Biscuit (*Meoma ventricosa*), the Pencil Urchin (*Eucidaris tribuloides*) and the Spiny Black Sea Urchin (*Diadema antillarum*). The one you probably know best is the Edible Sea Urchin or **sea egg** (*Tripneustes esculentes*).

The sea egg or **chadon** to give it its local name, is found in shallow water. It feeds on the grassy beds where the conch was once plentiful. Sea eggs are round, flattened at the top and bottom with short white spines all over them. These spines protect the sea egg and help it move about. But there are two predators that are not bothered by the sea egg's spines. They are the Helmet Shell, (*Cassis tuberosa*) and **Man.**

If you look at the shell or skeleton of the sea egg, you will see that it has a pattern of holes and bumps on it arranged in the shape of a star. The bumps are the joints where the spines were attached. The holes are where its 'feet' poked through. These feet are fine fleshy tubes with suckers on the end. They help the sea egg anchor itself to the bottom while it is feeding. They also circulate water through its body. The sea egg's mouth is on the underside of the shell. It has a ring of hard, shell-like parts around it. Its stomach is a simple tube leading to a hole in the top of the shell through which the sea egg gets rid of any waste.

The part of the sea egg that is eaten is the **roe** or egg sac. This is found in five strips stuck to the inside of the shell. It only appears after the sea eggs have mated. In some places, the roe is eaten raw with lime juice. In Saint Lucia a little stick is put in the middle of an empty shell and the roe from several sea eggs is piled up around it. Then the shell is placed on a fire and roasted.

After hurricane 'Allen', no sea eggs were found for several years. In 1984, they started to return but people gathered them up so quickly that soon they were scarce again. In 1986, the Fisheries Management Unit was forced to ban **ALL** sea egg collecting to give them a proper chance to breed and increase. It is **illegal** to export sea eggs or to take them out of season.

***Fossil** - ancient remains of a plant or animal that have been preserved in stone

SEA MOSS

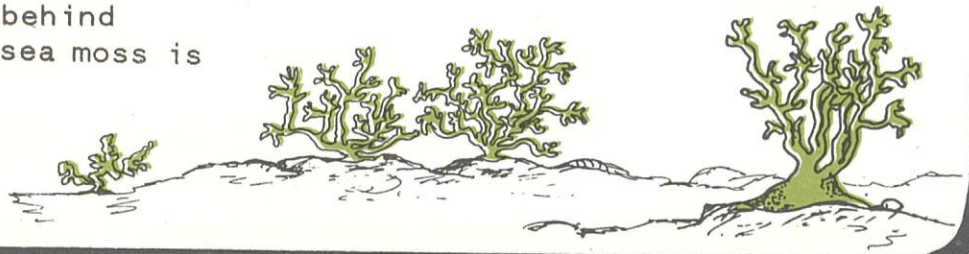
People who live by the sea have always known that certain kinds of seaweed were good to eat. The Japanese, who are an island race, depend on the sea for many things. They fish, dive for pearls and gather seaweed, an important part of their diet. Seaweed can be used fresh or dried and can be added to soups and other dishes. It is rich in iodine as well as being a good source of many other minerals. In some countries cattle are taken down to the beach to feed on the leathery sea kelp that is washed ashore.

Some species of seaweed, like the kelp, can grow 12 to 18 inches a day. Their strands can be 30 or 40 feet long. In the Caribbean we are still learning about this important marine resource. One species however, is already being farmed here. It is the small bushy seaweed known as sea moss or *Gracilaria debilis*. It grows about eight inches high and is found on many of our rocky shores. Sea moss has no roots. It clings to the rock with a little sucker or mat called a holdfast. As long as this mat is left behind when the sea moss is cut, the plant will grow back. In this way it can be harvested again and again without destroying the parent plant. When the holdfast is ripped away from the rock nothing grows back and a good potential food source is lost.

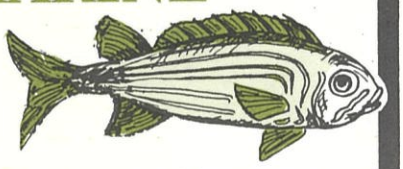
When sea moss is cleaned and boiled it turns into a thick, jelly-like substance that can be made into a tasty drink or used to thicken soups and increase their food value. A product called **agar**, used to make ice cream creamier also comes from sea moss.

In Saint Lucia, fishermen cultivate sea moss just as a farmer on land might cultivate lettuce. The weed is attached to long strings on a bamboo frame floating in the water. After it is harvested the weed is dried in the sun and stored. The dry sea moss sells for about $10 a pound and is sometimes exported to Trinidad where there is a good market for it.

Several different kinds of *Gracilaria* are found in Saint Lucia, but *Gracilaria debilis* is the one most often used.



PROTECTING OUR MARINE RESOURCES



In Saint Lucia, fresh local fish is on the menu of nearly every restaurant and hotel in the island. Many places also offer lobster for those who can afford it. Some, especially those at Gros Islet, serve lambi and sea eggs too. But none of these things are as cheap or as easy to get as they used to be.

Thirty years ago lobster was 50 cents a pound and it was common to see lobsters weighing 10 pounds or more. **Today** the price is $10 a pound and the lobsters are often so small the meat is no more than a mouthful. Turtles were also brought in and slaughtered in the market. **Today** all species of turtle that visit our island are endangered.

Twenty five years ago women were often seen with baskets of freshly roasted sea eggs for 50 or 60 cents each. **Today**, when they are in season, sea eggs are hard to find. Restaurants and hotels take all they can get, even at $4 each .

Twenty years ago it was common to see large piles of mature conch shells on the beaches. The fisherman sometimes gave away the conch with the fish he sold or took it home. **Today** the meat sells for $5 a pound so the fishermen takes all he can get even from shells that are immature.

Fifteen years ago hardly anyone had heard about sea moss or knew what it looked like. **Today** the dried plant sells for $10 a pound and a sea moss drink is served in many restaurants.

When plant and animal species are harvested before they have a chance to reproduce themselves they eventually disappear. **We should not allow that to happen.** As well as being enjoyed by local people, these valuable marine resources are a great attraction to the thousands of tourists who come here.

Here are some ways we can protect them and make sure they are always available;

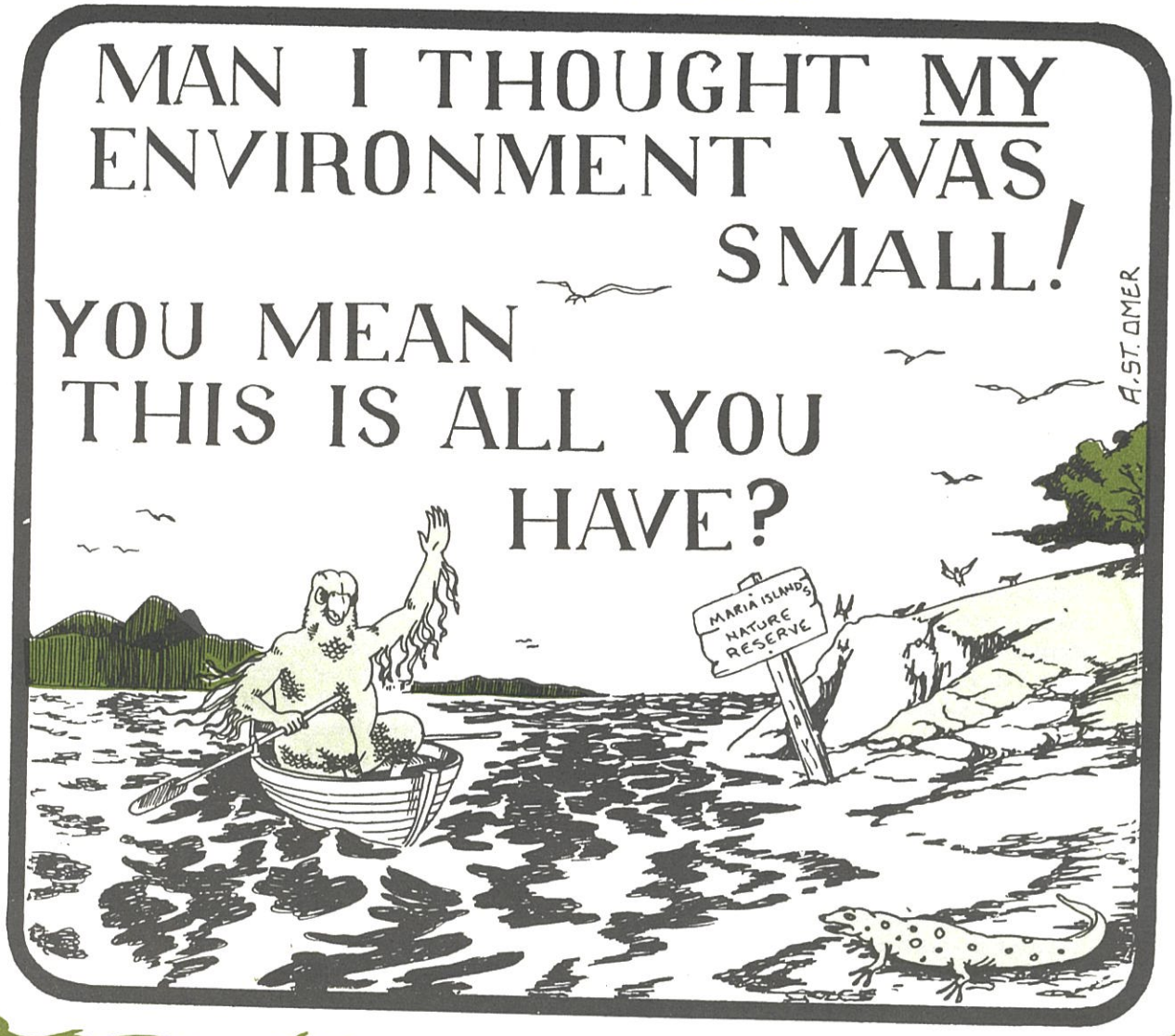
1. The **closed season** must be taken seriously
2. Animals must be left alone at certain times to mate and breed
3. Immature animals should never be taken
4. Seaweed should be carefully farmed to allow plants to grow back

If **ALL** these things are done then these seafoods will always be in good supply.

CLOSED SEASON NO LOBSTERS OR TURTLES MAY BE CAUGHT FROM MAY 1st TO AUGUST 31st

That means that it is illegal to catch lobsters or turtles during this time. It is illegal to interfere with the turtles' nests or to remove the eggs. The fine for breaking this law can be as much as $5,000.00. Any person buying lobsters, turtle meat or eggs during this closed season can also be fined.

BUSH TALK



THE MARIA ISLANDS

1. The Maria Islands
2. The Sea and the Shore
3. The Cliffs and the Sky
4. The Land in Between
5. Maria Islands Nature Reserve

THE MARIA ISLANDS

Two small islands lie off the southeast coast of Saint Lucia. These two rocks jutting from the sea are swept by the wind and battered by the waves that drive in from the Atlantic Ocean. Once they might have been part of the mainland. But by the time the first settlers arrived in their canoes, they had already been separate islands for more years than anyone could count.

An island is a piece of land surrounded by water. It is also a special habitat where plant and animal life may be very different to that found anywhere else. There is a good reason for this. Plants and animals are affected by the changes that Man makes in their environment. If he cuts down forests, drains swamps or destroys reefs the creatures from these habitats are forced to move elsewhere. In a large country this may be easy, but on a small island they may soon find them-selves with nowhere else to go.

Often the plants or trees that have been cut down provided food for a particular species. These species will die when their food supply runs out unless they can quickly adapt or change to a different diet.

Man often introduces new species of plants and animals into his environment to improve his living conditions. The breadfruit, coconut, mango and banana were all brought to Saint Lucia from other countries. In order to cultivate them land had to be cleared and so changes were made in the environment. New animals were also introduced to provide a good supply of meat, milk and eggs. These animals cleared the land in other ways. They scratched or rooted up young plants and prevented the growth of trees by nibbling away at them.

Then there were other animals like rats, cats, dogs and mongooses. They did not damage the environment but they preyed on the wildlife.

There are very few parts of our island where the natural environment has remained undisturbed. Because their habitats are being destroyed many of our birds, reptiles and insects are disappearing.

People have never lived on the Maria Islands and so few changes have taken place there. The trees and shrubs and the wildlife are the same as those that the Amerindians might have found there. That is why this is such a special place. Some of the creatures living on these two small, uninhabited islands are not found anywhere else in the world.

THE SEA AND THE SHORE

Although the islands are uninhabited, people do go there. The mainland is only about half a mile away and you can cross over by boat in a few minutes. Often the sea is very rough. Then, even the fishermen think twice before they go. Maria Major is the biggest of the two islands, it measures about 23 acres. The other island, Maria Minor is only about four and a half acres. It has a small beach but it is not very sheltered and so the fishermen seldom use it. Instead, they usually land on the sandy beach of Maria Major.

The fishermen go ashore to explore the rocks for whelks and gather hermit crabs for bait. They used to dive on the reef for lobsters and fish but now the four reefs in this area have been declared a Marine Reserve. Sometimes they light a fire to cook themselves a meal, boiling a fish or two with food they have brought with them.

There are four reefs close to the Maria islands. The smallest reef is close to the rocky shore of Maria Minor. The largest reef stretches across the channel between the two islands. Two others lie off the southern end of Maria Major. They are called '**patch**' reefs because they are flat and close to the surface of the sea. At times, when the waves break over them, the tops of the reefs can be seen.

Many different corals grow on these reefs. There is elkhorn, (*Acropora palmata*), with its flat, heavy branches. There are giant brain corals (*Colpophylla natans*) and grooved brain corals (*Diplorialabyrinthiformes*) with their patterns of folds. There are stinging corals like *Millepora complanata* and star coral (*Dichocoenia stokesii*). And there are yellow sea fans (*Gorgonia flabellum*) that wave gracefully back and forth with the movement of the waves. They look like strange and beautiful plants in an underwater garden.

The beds of sea grass that grow everywhere are the feeding grounds of white sea eggs and conch as well as some of the colourful reef fish. Squirrelfish, doctorfish, blue-headed wrasse, grunts and at least four different kinds of parrotfish have all been spotted here. The reefs attract fish into these waters. They also attract tourists. In order to protect the habitat of the reef the divers and the fishermen have to leave their spearguns behind and find other places to set their fishpots.

THE CLIFFS AND THE SKY

There is a track on Maria Major that goes from the beach to the top of the cliffs on the Atlantic side of the island. It winds behind the rocks on the northern shore and then climbs steeply through grass and bush. As it climbs the bush gets thinner and there are many clumps of prickly pear cactus (*Opuntia*) with long sharp spines. They have large yellow flowers rather like hibiscus. When they die, purplish-red fruits appear, full of seeds and sweet juicy pulp. Birds, reptiles and ants love to eat the ripe fruit. They leave behind nothing but the empty juice-stained shells.

Up on the cliff it is windy and the air is full of salt. Not many plants could survive in such an environment. But between the large boulders that are scattered about grow cactus, creeping plants and a tough, spiky kind of grass. Because of the conditions, some varieties have a reddish colour instead of their natural shade of green.

The track continues along a ridge where the land falls away sharply on either side. It finally ends at a point where the land is more than 300 feet above sea level.

There is no shade here at all and even with the wind the air is hot. Birds fly all around, soaring, gliding, diving down to disappear below the top of the cliff. Many of them make their nests on the exposed ledges.

In the nesting season, Brown Noddys (*Anous stolidus*), Terns (*Sterna* spp.) and Tropic Birds (*Phaethon lepturus*) can all be seen swooping in with freshly caught fish for their nestlings.

On the other side of the track is a steep slope covered with woodland. Grackles (*Quiscalus lugubris*), Bullfinches (*Loxigillis noctis*), Grey Kingbirds (*Tyrannus dominicensis*) and Mockingbirds (*Mimus gilvus*) live here. The little Ground Dove (*Columbina passerina*) rustles through the undergrowth, sometimes making her nest in full view on the ground. Her cousin the Zenaida Dove (*Zenaida aurita*) can be heard softly cooing in the bush. Little Blue Herons (*Florida caerulea*) and Cattle Egrets (*Bubulcus ibis*) nest in the white cedar trees.

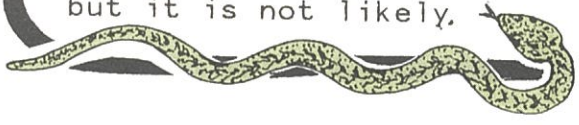
Now that the islands have been made a Nature Reserve it is possible to restrict visitors during the nesting season to protect the many birds that nest there.

THE LAND IN BETWEEN

The trail that we followed has led us from the reefs and the shores of the Maria islands to their highest point. But there are many insects and other creatures, some very rare, that live in between. There are tree lizards (*Anolis luciae*), tree geckos (*Thecadactylus rapicauda*) and even tiny, pygmy geckos (*Sphaerodactylus microlepis*). There are also two reptiles that have disappeared completely from the mainland and are now found only here. The first is the brightly coloured ground lizard, *Cnemidophorus vanzoi*. The second is the shy and seldom seen snake called the '**kouwess**'.

The ground lizard is found on both islands, the snake lives only on Maria Major. In 1982, the islands were declared a Wildlife Reserve under the Forestry Division's Wildlife Act. This was done mainly to protect these two very rare species.

No-one knows very much about the kouwess or *Dromicus ornatus* It is only about 85 centimetres long (less than three feet) and has brown skin with darker brown markings. This would make it difficult to see among the dead leaves even in the daytime. If you are fortunate you may spot one lying on the track where it climbs through the scrub but it is not likely.



The kouwess is thought to be a species that likes cool damp places to hide in. On Maria Major there are no rivers or pools and in the daytime it can be quite hot. Pérhaps this little snake has changed its habits to suit its environment coming out at night when it is cooler. They probably hunt for small lizards or lizards eggs as well as insects.

Nobody knows for certain how many of these snakes are left but we do know that there are not many. In fact the Maria Island's snake might even turn out to be the rarest snake in the world.

The ground lizard, *Cnemidophorus vanzoi* is not shy at all. Any visitor to the island will tell you that. The small, brown females and the young, brown males can often be seen scampering around in the dry leaves under the bush. The adult males with their beautiful blue and yellow colours are even bolder. They will sneak right down to the sand to pick up scraps of fruit or meat left over from some-one's lunch.

At night, the ground lizards disappear into holes or burrows that they dig in the earth.

On Maria Major there may be as many as a thousand ground lizards but on Maria Minor there are probably not even a hundred.

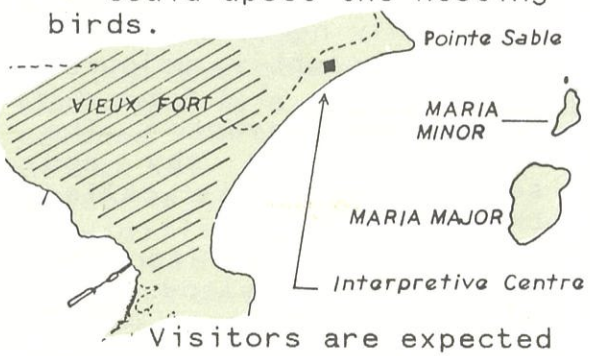
MARIA ISLANDS NATURE RESERVE

The Maria Islands are special in many ways. Although their total land area is less than 30 acres this includes a large variety of different habitats. There are coral reefs with a wide selection of marine life. There are rocky cliffs that provide perfect nesting sites for several species of sea birds. There is natural woodland where doves and other birds have made their homes. There are sandy beaches, there is grassland, there is bush. And as if all this were not sufficient there are also at least two creatures here that cannot be found anywhere else in the world!

What does the future hold for these two small islands and their inhabitants? Surely now that they have become a Nature Reserve, the kouwess and the zandoli te should be safe. But how safe will they really be? When no-one knew about them, they were left undisturbed. A few fishermen used the island. Scientists visited occasionally. Divers sometimes came to snorkel on the reefs or look for lobsters. But that was all. Now, if large groups of people turn up and roam all over the island looking for these rare creatures they might really be in danger.

The environment and its inhabitants could very easily be harmed by any of these things.

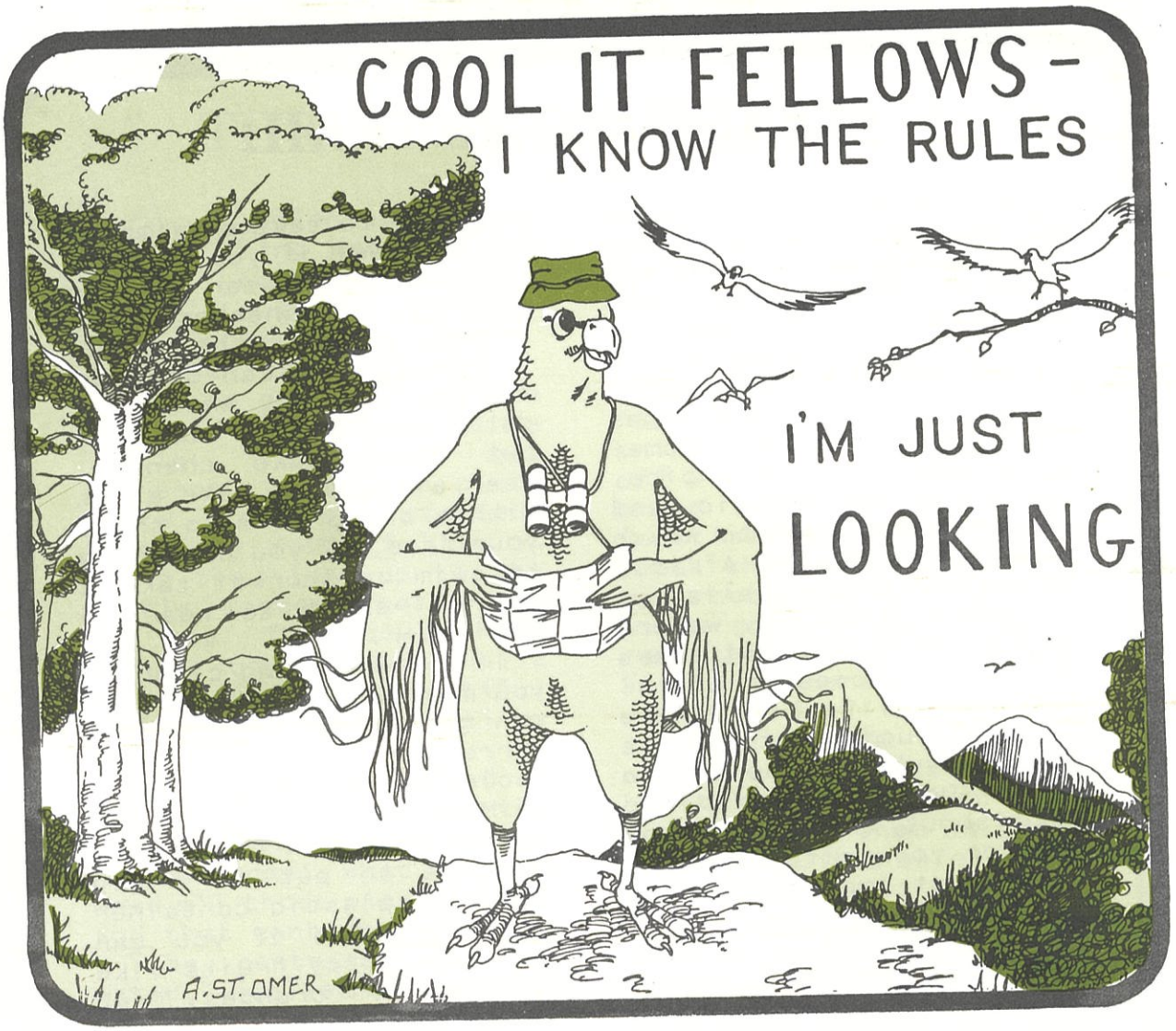
1. A carelessly dropped cigarette or a campfire could start a blaze that would quickly destroy the grass and the bush.
2. Rats or other animals brought over from the mainland could eat the birds eggs and also the lizards,
3. Overfishing on the reefs could upset their delicate balance.
4. Visitors moving around the island at the wrong time of the year could upset the nesting birds.



Visitors are expected to keep to the paths that are marked. Guides are provided to show them where to go and to tell them about the islands and their wildlife. In this way, although it will still be possible to see the ground lizard and perhaps even the snake, only a small part of their habitat will be disturbed.

The Maria Islands Nature Reserve is a small but very special part of Saint Lucia. For some of the animals that live there it is their only refuge. They cannot afford to lose it. Neither can we!

BUSH TALK



NATURE TRAILS

1. Lets Hit the Trail
2. Through the Forest
3. Into the Bush
4. Up the Mountain
5. Along the Shore

LETS HIT THE TRAIL

In the earlier chapters of this book we explored some of Saint Lucia's natural habitats, from the rainforest right down to the sea. Many people are content to do their exploring only through the pages of a book, are you? Sometimes you have no choice. You would need a magic wand to whisk you away to watch wild elephants in Africa, kangaroos in Australia, or penguins in the icy waters of the Antarctic. But there are some species of animal and plant life right here in Saint Lucia that are not found anywhere else in the world. Don't just sit and read about them - go and see for yourself!

The most important thing to do before you set off is to learn as much as you can about the area you intend to explore. If you want to hunt for orchids you will be wasting your time climbing Moule a Chique. And if you are hoping to see our National Bird in its natural habitat you won't have much luck if you're planning a trip to Pigeon Island National Park!

Once you decide where you want to go, make sure you are properly dressed. For a trip to the rainforest or a hike through the bush you need strong, comfortable shoes and jeans or long pants to protect your legs from razor grass or thorns. Shorts and a loose T-shirt are fine for the beach but remember to take a swimsuit and a towel if you want to have a dip and wear plastic sandals or sneakers for scrambling over the rocks.

Some people can stay in the sun all day and never get a headache or sunburn, **but don't take chances.** Wear a visor or take a hat with a broad brim to shade your face. If you are going to swim or snorkel take a spare T-shirt to wear in the water.

If you are going climbing you may need a sweater. It can get quite cool on the Barre de l'Isle and even cooler on top of the Pitons or Mount Gimie.

When you pack your lunch be sure to put in a big flask or plastic container of water. And if you can get some juicy fruits like mangoes or oranges, put those in as well. Take a notebook and pencil and (if you have space) some books to help you to identify the plants and animals you might see along the way.

Now you are all set. You have decided where you want to go, your bag is packed, so... LET'S HIT THE TRAIL!

THROUGH THE FOREST

Helen was checking her list - notebook, pencil, sweater, extra socks...she and her friend Rose were going to explore the trail on the Barre de l'Isle. They would get transport up to the place where the trail started. Then they would follow it along the ridge up to the little wooden shelter at the top. They could have their lunch there while they enjoyed the beautiful view down into the valley below.

Helen's mother looked at the pile of things on the table. "You're only going for the day! What do you need all those plastic bags and that container for?"

"The container is for water," replied Helen. "And the bags will be useful if I find any seeds or fruits to bring back. I want to plant some of the little seeds from inside the cones to see if they will grow, and Rose wants to collect some pine cones to make decorations."

"I like that idea," said Mrs. Joseph. "You could do that as well. You could use the gold paint that's left from when you made those Christmas decorations."

She went to the kitchen. "I'll boil a couple of eggs for you, so remember to take some salt. And don't forget the plastic cups. And if you take that little knife, make sure you wrap it properly so that you don't cut yourself when you reach into the bag."

"Now Ma! You know I'm always careful about things like that," said Helen. "Don't worry. I need the knife in case I want to cut off a piece of some bush to bring back to show you. Sometimes when you try to break them they come right up, roots and all. That's not a good thing to do. I read that there were about 30,000 different kinds of plants in danger of extinction. I'm sure some of our wild plants must be on that list. I just hope I get to see them in their natural habitat before it's too late."

"You know," her mother said. "I often hear the old folks saying they don't see this plant anymore or they don't see that. I thought maybe they didn't look properly but perhaps some of the things have already disappeared."

"Yes," said Helen."But if we protect the forest then the plants and animals that live there will be saved too."

INTO THE BUSH

People thought Benny was a strange boy. He spent a lot of time alone sitting in the backyard just looking at the ground. He was fascinated by the insects. Ants, beetles, butterflies moths, - he studied them all. If you showed him a caterpillar or a shiny brown chrysalis, he could usually tell you what they would turn into. At first Benny's sister Angie and his mother had screamed every time he tried to show them one of his special finds. But after a while they became almost as interested as he was.

In the holidays, Benny liked to go on expeditions. His mother would pack some food and a bottle of water or juice in his school bag. In the space that was left, Benny would put all sorts of other things. His book on insects, empty matchboxes, a magnifying glass, a notebook, pencils. Then he would head for his favourite spot up near Cas en Bas and they wouldn't see him again until dark.

It was a long, hot walk but Benny didn't mind. He stopped every now and then to check the bushes beside the road.

Once he turned over a rock and a small scorpion scuttled out with about ten babies clinging to her back. He knew that if he left her alone she would not harm him. Carefully, he replaced the stone and the scorpion with her brood quickly ran back to hide beneath it once more.

When Benny came to the beach it was ugly with the remains of people's picnics scattered all about. He didn't stop, instead he climbed the steep path that went up the cliff on the northern side. It was hot but the tall trees and the thick bush gave him plenty of shade. At the top he stopped to take a drink and munch on a sandwich. When he reached the tree with the funny mark cut into it he left the path and started down the narrow, twisty track to the small beach below. This was one of Benny's favourite spots. When he got there, he lay down in the shade of a Mahoe Bord de Mer and pretended that he was all alone on a desert island.

Ants gathered to eat the crumbs from his sandwiches. A dove cooed gently from the bush and an inquisitive mongoose stood up on its back legs to peer at him. There were no empty tins or bottles, no plastic bags or paper plates. Only the blue sky, the golden sand and the sea. It was paradise and Benny wished he could stay there forever.

UP THE MOUNTAIN

There is a mountain close to Castries called Piton Flor, where Saint Lucia's rarest bird the **piay blon** was last seen. Its proper name is Semper's Warbler, or *Leucopeza semperi*.

Although Angie didn't care much for insects she was interested in birds. When she heard about the Semper's Warbler she begged Benny to climb Piton Flor with her to see if they could see it. At first Benny just laughed. "I know all about that bird," he said. "It hasn't been seen for about fifteen years! No-one knows even knows if it still exists. You think you can climb up there and find one - just like that?"

Angie shook her head. "No, I know there isn't much chance of that. But I'd still like to go. There are mahogany trees and orchids and lots of other birds. There must be plenty insects too. Please Benny!"

"Alright," her brother agreed. "But remember. If you expect to get close enough to recognise a bird you have to be quiet. Don't worry with those people who tell you they see piay blon all the time either. Its probably the mwosson piay blon they see, the Saint Lucia Blackfinch. Semper's Warbler is dark grey on top and whitish underneath, it's not black."

"I know," replied Angie. "But when I can't see the birds I sometimes recognise them by their song. This one is a problem though because no-one knows what it sounds like."

"Well," said Benny. "If you hear a bird you don't recognise we'll try to get closer to get a good look."

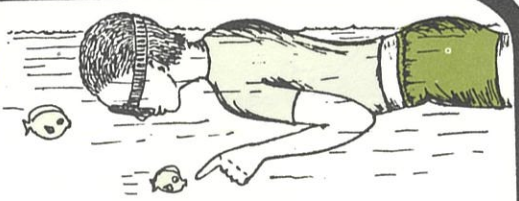
The next day Angie and Benny packed bags with all the things they thought they would need and made an early start. Their father took them as far as the Forestiere road on his way to work so they had to get up even before it was even light. When they reached the school at the end of the road, they found a track that led them to an old brick building. Close by were steps cut into the mountainside.

Soon, with the early morning mist still clinging to the trees, they had started their climb. By the time they got to the top they were both breathless. On one side was the Morne and the banana valleys, on the other, Pigeon Island and the Causeway.

"Well Benny, we didn't see the piay blon this time but it was worth the climb. The view is terrific!"

Benny didn't answer. He had fallen asleep.

ALONG THE SHORE



If you know what to look for, there is more to be seen along the seashore than many other places. Some beaches are sandy, others have lots of rocks or boulders. Sometimes there are mangroves along the shore sometimes high cliffs with the sea pounding at their feet.

The sandy beaches attract tourists who like to swim and sunbathe. They also provide nesting areas for turtles. The mangroves are an important habitat for wading and fish-eating birds. They also act as nurseries for lobsters and many species of fish. Sea birds make their nests on the cliffs and the rocky islands off-shore and sea-shells cling to the rocks at the edge of the sea.

A visit to the seashore can mean many things. It is up to you to decide what interests you most. One thing you should remember is that a playing field is a more appropriate place to play cricket or football than a beach. And if you can't bear to be parted from your transistor, **keep the volume down**. better still - get a 'walkman'. Most people go to the beach to escape from the noise of traffic and radios.

If you can't swim **don't** explore places where you have to climb over rocks and **never** go alone. There is always the risk that you will fall or get knocked over by a wave. If you are with a friend they can help you scramble back up.

Wear shoes that will not slip on wet rocks. Carry a backpack or a bag you can sling over your shoulder to leave your hands free. Remember, the tide in Saint Lucia rises about a foot. On the way back some of the rocks may be wetter and more slippery than they were when you started out.

Perhaps you can swim but "Jaws" has made you afraid to put even your little toe in the water! It's like being afraid of the dark when you were small. Your imagination turned every shadow into a monster. Because you can't see what is in the sea you're afraid of what **might** be there.

Borrow a mask and go out with a friend. You don't have to go far and you don't have to put your head under. Float on the surface with your face in the water and **look**. It's a different world! Our underwater reefs and coral gardens are some of the prettiest Nature Trails you will find anywhere. So pretty that you will want to use a snorkel to dive down and get a closer look. Don't miss the chance to explore them.

WHEREVER YOU GO - TAKE NOTHING BUT PHOTOGRAPHS, LEAVE NOTHING BUT FOOTSTEPS, KILL NOTHING BUT TIME.

QUESTION TIME

THE RAINFOREST

1. How many acres are there in the Forestry and Lands Department Forest Reserve?

2. *Hibiscus elatus* is one of the trees that are cultivated within the Forest Reserve. What is its common name?

3. What happened to the Rainforest in 1980?

4. What creature comes at night to eat the fruits of the trees in the forest?

5. Name three rivers that begin inside of the Government Forest Reserve.

THE MANGROVE FOREST

1. Give the names of the three species of mangrove most commonly found in Saint Lucia.

2. How do mangroves provide a source of food for fish and other marine creatures?

3. Give the common names of four birds that might be seen in the mangrove forest.

4. What do mangroves produce that is important in making leather? What does it do?

5. A mangrove forest is a natural barricade that protects the coast against the damage caused by the sea. Why is it better than a man-made barricade?

THE BEACH

1. Describe two natural processes that produce sand.

2. What was George doing that was against the law?

3. Why didn't the children want to use the beach by their grandmother's home?

4. How does the female turtle choose the place where she will lay her eggs?

5. What is the name of the material that can be used to make blocks instead of sand?

THE CORAL REEF

1. What did the large anemone have for its breakfast?

2. What do you think the strange box was that was pointed at the parrotfish?

3. How do humans manage to 'breath' underwater?

4. What killed part of the reef where the parrotfish lived?

5. A coral reef is made up of creatures called _____.

THE EDGE OF THE SEA

1. Why does the Queen conch lay so many eggs?
2. What do young lobsters or *phylosomes* do when they are six months old?
3. Give the scientific name of the marine animal that preys on sea eggs.
4. What does the sea moss use instead of roots?
5. What time of the year is it legal to catch lobsters?

THE MARIA ISLANDS

1. Where are the Maria Islands?
2. Name three types of coral that can be found on the reefs close to the Maria Islands.
3. Give the names of two sea birds and two land birds that nest on the Maria Islands.
4. Which two reptiles found on Maria Major are found nowhere else in the world?
5. Why is it necessary to restrict visitors to the islands at certain times of the year?

NATURE TRAILS

1. What is the most important thing to do before you hit the trail?
2. How many different species of plants are in danger of extinction?
3. What did Benny find under the rock?
4. Give the proper name of the rare bird that Angie was hoping to see on Piton Flor.
5. No matter which nature trail you choose to explore, what motto should you remember?

BUSH TALK IS WORKING TO KEEP SAINT LUCIA BEAUTIFUL - ARE YOU?

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Now the Canadian International Development Agency has made it possible for Bush Talk to be published in book form with each book containing six or more issues dealing with related topics.

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