



EVERGLADES NATIONAL PARK



*Floor Plan  
for  
SHARK VALLEY*

*a teacher's guide*



*Martha Aikens*

ENVIRONMENTAL EDUCATION SPECIALIST



## SHARK VALLEY TEACHER'S GUIDE

### INTRODUCTION

April 19, 1971, marked the beginning of a very special pilot program, initiated by the National Park Service, known as Shark Valley Field Day. The program was such a success, the park decided to incorporate it as an integral part of its interpretive efforts. Thousands of students and teachers have been coming to the park ever since.

Our broad goal is to instill in the minds of school groups, as well as visitors, the following principles:

1. Man is a part of nature, not apart from it.
2. Man constantly manipulates the environment, often with good intentions, but not really understanding enough to foresee the far-reaching effects.

Specifically, the objectives of this program are that students will:

1. Experience the job of discovery.
2. Understand their relationship to their natural environment.
3. Develop a sensitivity to natural beauty.
4. Become personally involved with their natural environment.

In a sense, it is a day of reckoning. Students are confronted with a totally new environment; nothing but wilderness for as far as they can see. Hopefully, students will realize that their actions affect the environment; and the reactions of the environment affect them. Out of this, they can achieve a sense of unity with the natural world and a desire to preserve it.

Are you planning to visit us?

Before you arrive, we'd like to express our desires regarding our home:



--Students should be well prepared for the weather. Grubby clothes and old shoes (preferably old tennis shoes) are strongly recommended. The students should bring lunches and drinks only.

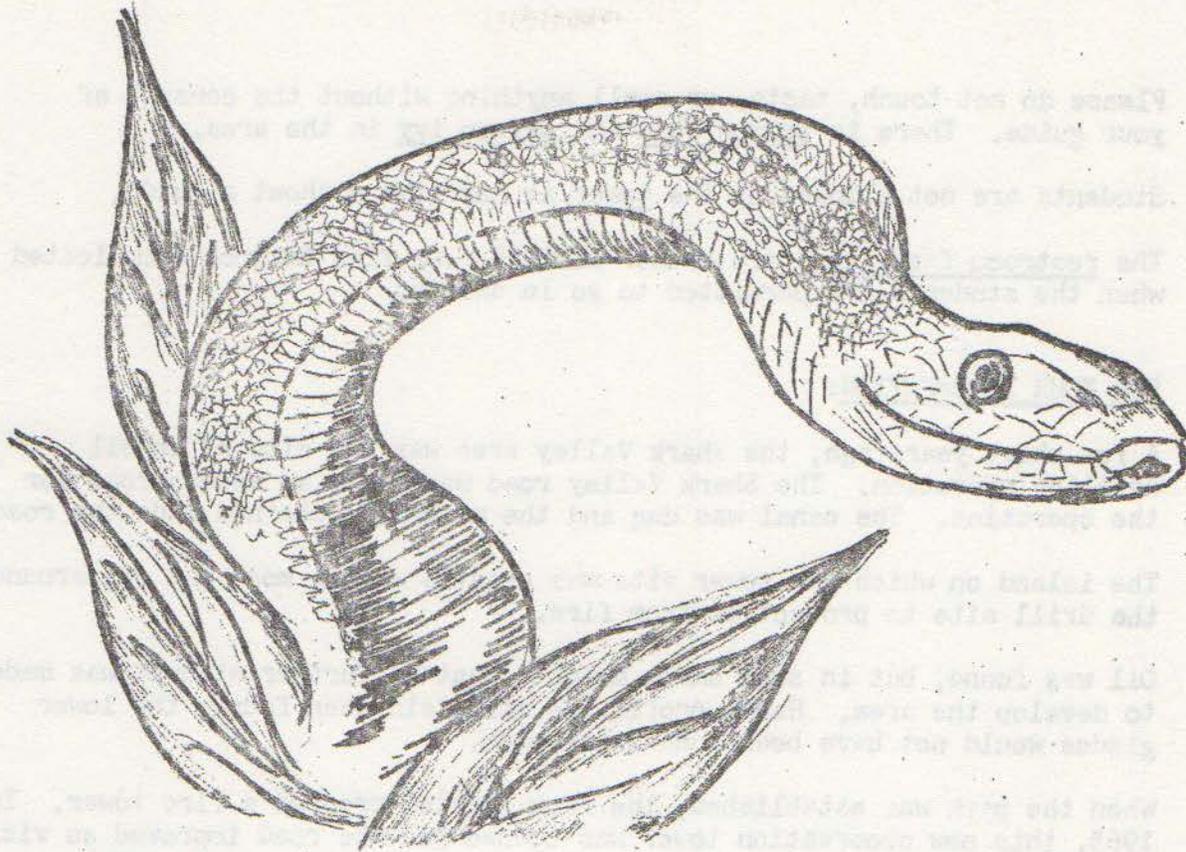
--We feel that we can provide a more meaningful experience if we work with small groups. We prefer to break them up in groups at random. However, if the teacher feels it necessary, please do so prior to reaching the site.

--Shark Valley is a home and if you take something from the park, it will be like strangers coming into your home, taking away the ashtrays, coffee tables, and small ornaments. Many of the things that look unimportant and of no use

to people, may very well be food or shelter to some inhabitant of the park. Taking things can cause a discrepancy in the balance of nature. So, please, No Collecting under any circumstances.

It's a mistaken kindness to feed any wild creatures. If wild creatures learn to depend on kindly gifts of food, soon they will be unable or unwilling to obtain food for themselves. Also, the food from visitors deviates in content from that which the animal eats in the wild. This can result in an upset digestive system or some other sickness.

Everglades' most famous citizen, the alligator, is looked for by all visitors to the park who may, however, be unaware that many other kinds of reptiles live here as well. It's an alluring and captivating experience to see and watch all the animals. But we have to remember that some of the animals, such



as the alligator and some poisonous snakes are dangerous and should be treated as such. If one is noticed, stay back and give it plenty of room. Please do not put your feet in the edges of the water or grassy areas. Some animals have been provided by nature with a deceptive coloring exactly like their surrounding, for the sake of protection from their predators, thus making it hard for the enemy to discover them. The term used to describe or define this particular occurrence is "camouflage".

Animals are very sensitive in their delicate surroundings. Throwing things at them can have very traumatic effects on them. These animals are not in captivity. This is their natural home. Throwing things in the water would be just like throwing a rock in the window of your home--the same principle is involved. Please respect their home as much as you would expect a visitor to respect yours.

The teacher is disciplinarian at all times.

If the students are really distraught or weary from the trip, allow time for them to unwind and settle down before starting on the trail.

Children are little bundles of energy. Being in an open area merely enhances the desire to run. However, the terrain isn't suitable for this type of activity. The trails were designed for quiet observation and leisurely walks. Therefore, any activity of this nature could result in serious injuries.

Please do not touch, taste, or smell anything without the consent of your guide. There is poison wood and poison ivy in the area.

Students are not allowed up the tower at any time without a guide.

The restroom facilities are rather limited. We find it less complicated when the students are permitted to go in shifts.

#### FOR YOUR INFORMATION:

A few short years ago, the Shark Valley area was the site of an oil drilling operation. The Shark Valley road was first an access road for the operation. The canal was dug and the material obtained made the roadbed.

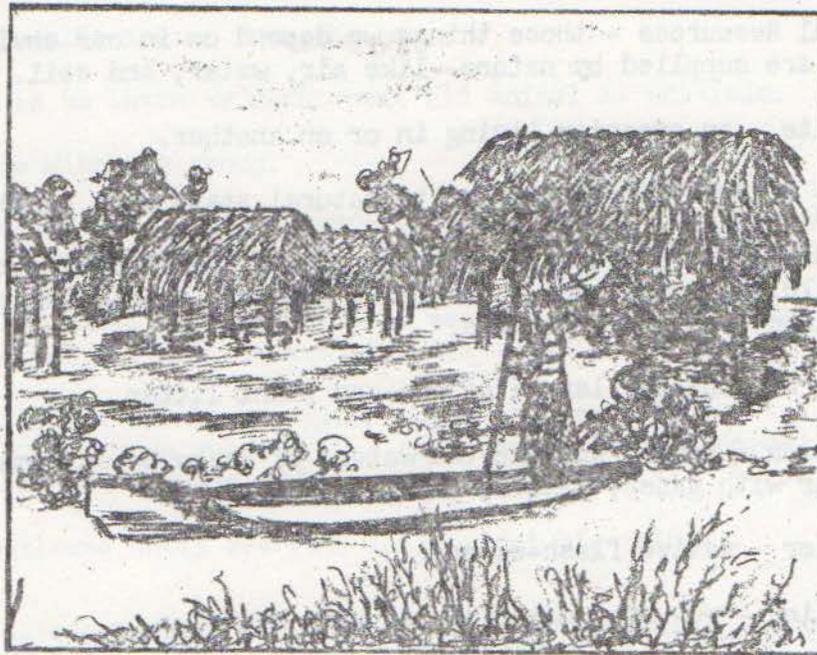
The island on which the tower sits was created when a moat was dug around the drill site to protect it from fire.

Oil was found, but in such small amounts that no further attempt was made to develop the area. Had a profitable oil field been found, the lower glades would not have been a national park.

When the park was established, the Park Service erected a fire tower. In 1965, this new observation tower was opened and the road improved so visitors could enjoy the wildlife. Tram rides were begun in the early 1970's to accomodate the large number of people wishing to visit Shark Valley.

All the Florida Indians are loosely called Seminoles, although this name does not designate a particular tribe. The Miccosukee tribe, which lives locally, is part of the Seminole group. Miccosukee Indians arrived in the Everglades over one hundred years ago. They are related to the Creek Indians of the north. Earlier, Calusa and Tequesta Indians inhabited the coast, but they disappeared. The Miccosukees opened clearings in the hammocks to raise corn, squash, sweet potatoes, melons, and cowpeas. They lived in thatched huts, like the one at the boarding area. These open-sided houses are called "Chickees". Once the Indians used to hunt and fish all over the region of the Everglades, including the area that is now our park. The park displaced only one or two family camps. Of course, it curtailed their hunting. The remains of some of their bone and shell tools may still be found on the hammocks.

Ever since the First World War and the construction of the Tamiami Trail, these still independent Miccosukee Indians, living under conditions very like their own chosen natural ones, made money selling handicrafts to tourists, picking beans in the vegetable fields, selling hundreds of pounds of froglegs to city markets, and providing visitors with an exciting ride by airboat outside the park.



Indian Village

#### USEFUL DEFINITION OF TERMS

1. Adaptation - implies a suiting or fitting by modification.
2. Algae - colonies of tiny green plants, which get energy directly from the sun.
3. Cave - in the everglades, a natural underground chamber open to the surface.
4. Environment - our surroundings.
5. Evolution - a process of continuous change.
6. Food Chain - the relationship of organisms in which each is dependent on another for survival.
7. Fossil - any remains, impression, or trace of an animal or plant of past geological ages that has been preserved in the earth's crust.
8. Fungus - any of a major group of parasitic lower plants that lack chlorophyll (i.e., molds, rust, mildews, mushrooms).
9. Habitat - the home of a certain species.
10. Hammock - scattered islands of hardwood trees and dense undergrowth which thrive on slightly elevated spots in the sawgrass country.
11. Host - a living plant or animal affording subsistence to another.
12. Instinct - a natural impulse.
13. Lichen - first forms of land plants; they prepare the way for larger plants by helping to build soil.

14. Natural Resources - those things we depend on in our environment which are supplied by nature--like air, water, and soil.
15. Parasite - an organism living in or on another.
16. Park - an area maintained in its natural state as a public property.
17. Park Rangers - persons protecting natural formations, native plants, and wildlife creatures of the park, and help people understand and experience the park features.
18. Peat - accumulated layers of decayed plant litter.
19. Pollution - making unclean the waters of lakes or streams or befouling the air with gases, vapors, dust, or noise.
20. Predator - native flesh-eaters.
21. Recycling - re-using materials to save waste.
22. Role-playing - assuming the roles of others.
23. Rookery - the site of birds nesting in large colonies.
24. Sanitary land fill - an area where trash and garbage are buried.
25. Scavengers - feed upon lifeless forms of birds and other animals.
26. Slough - wide drainage channels in the everglades.
27. Smog - air heavily loaded with gases and smoke.
28. Solid wastes - garbage, trash, and other waste materials like glass, metal, rubber, or plastic.
29. Vegetarian - animals which eat plants.
30. Watershed - all the land that drains into a single stream.
31. Wildlife - living creatures (animals, fish, birds, etc.) that are not domesticated (tamed or taken for pets).

#### PRE-SITE SUGGESTIONS

These are activities which you, the teacher, might use in order to prepare your group for a field trip to Everglades National Park.

### The "It" Game

The aim of the lesson is to familiarize the students with the animals of Everglades National Park.

1. Make a list consisting of animals in the Everglades family, corresponding with the number of students in your class.
2. Cut the list up and put the names in a box.
3. Each student pulls a name from the box.
4. The student is to learn as much about his animal as possible.
5. Form a circle with the group.
6. Choose a student at random, blindfold him, spin him around, and have him point to someone.
7. The person he points to is "it". The person selected "it" has to tell about his animal, as well as act like the animal.
8. The members of the circle are given three chances to guess the name of the animal. If no one guesses, the "it" person is blindfolded and given a chance to select someone. Whoever guesses is the "it" person.
9. The game continues until everyone tells about his animal.

Every organism is a part or a link in the complex array of interconnecting food chains. Each member of the chain is dependent (in part) on the member before it.

Example: Mosquitoes--minnows--garfish--alligators  
Algae--minnows--sunfish--wading birds

Plants make food from nature's raw materials. They must have just the right combination of weather, water conditions, minerals, and topography. Change the combinations and you will alter every link of the chains that depend on them, thus altering the entire web of life itself.

### The Chain Gang

The aim of this game is to illustrate a food chain or food chains, using the food chains above, or a more complex one, involving more animals. Before the game begins, write the names of the plants and animals involved in your food chain on index cards.

1. Start the chain with yourself as one of the four basic elements.

2. Ask for a show of hands, recognizing the one you see first as to what the next link in the chain should be.
3. If the person is correct, he is given the card with the name of that element on it.
4. Once you've completed the elements, the game continues by naming all the plants and animals involved in your food chain.
5. Whenever someone joins the chain, he takes the hand of the person preceding him.
6. The chain gang should result in a circle (linked).
7. Explore the possibilities of what would happen if for some reason one of the links in the chain was destroyed.

The aim of this game is to show man's dependence on nature, and why it is important to preserve and protect our natural resources.

#### The Web of Life Game

We are going to construct a community of string and index cards.

1. Label the first four cards: sun, water, soil, and air.
2. Give a card to each of four students.
3. To each remaining member of the class, distribute a card naming animals or plants, such as cow, tomatoes, milk, articles of clothing, sheep, types of meat, hogs, chickens, cars, grass, man, bread, farmer, rancher, factories, houses, supermarket, etc.
4. Seat students in a circle.
5. Pass out the cards accordingly.
6. As you define the source for each represented item, the string should be extended. (Example: The person representing milk should be holding strings extending from supermarket, milk company or dairy, cow, grass, sun, air, water, and soil.)
7. Talk about the dependence of man-made material on nature. Ask the students to name various man-made materials in the classroom and discuss what natural materials went into their production (i.e., maps, paper, trees, etc.)

For many students, this will be their first venture into a natural area or their first time seeing animals in the wild. Therefore, they will experience

certain uneasiness before the trip, and once on-site, may become too frightened to benefit from the trip unless we make an effort to prepare them in such a way that it leads up to the trip.

The aim of this exercise is to do just that. Explore their fears and joys. Try to put their fears of the area at rest.

#### Reactions to Things

1. Take the children out onto the school grounds.
2. Try to find a spider, insect, frog, or even a garden snake.
3. Discuss how they felt when they saw the object.
4. Find out if they want to touch it and why or why not.
5. Some students will like them and others will be frightened. Why?
6. Find out what things frighten the others.
7. Discuss why things frighten you. (Examples: Your parents might dislike the object; you have had an unpleasant experience with that object, i.e., someone put a frog in your bed; a spider in your shoe; an insect down your clothing, etc.)
8. Discuss fear and joy as reactions. You react to things around you; wild animals react in different ways.
9. Think of ways in which wild animals react to danger.
10. Follow through by having the children write about the feelings they have experienced in which they were frightened.

Aim: To show that there are many kinds of plants; they differ in their color, texture, shape, size, and structured parts.

1. Consider just the plants found on your school ground, such as mosses, ferns, flowering plants, shrubs, trees.
2. Ask the children to bring a plant or part of a plant (no previous discussion).
3. Teacher provides a "whole" plant in which the parts are easily seen.
4. Discuss and label the parts: roots, stems, etc.
5. Look for these parts in the plants found on the school ground. Which parts are easily seen? Which are not?

6. Compare and contrast the sizes of different plants.
7. Make leaf rubbing of different plants (place a clean sheet of paper over the leaf and blacken the area).

FLOOR PLAN  
-OR-  
"YOUR VISIT TO SHARK VALLEY"

The life-sustaining fluid flowing in our bodies is blood. There is also a life-sustaining fluid of the everglades. Do you know what it is?

The Everglades was produced by abundant fresh surface water flowing south from Lake Okeechobee to the Gulf of Mexico.

The plants and animals of the park are extremely sensitive to water levels. A visitor coming into the park during the summer months and again during the winter months would be amazed at the rate that extended changes in the amount of water flow can alter the looks of the land and wildlife activity.

In most homes, the den or the family room is where most of the family spend the greater portion of their time. This is also true of the Everglades family.

The most obvious lounge in the den is the alligator. Have you ever thought about the things you and this lovely creature have in common?

1. What protects our delicate organs by covering our whole body? Skin. Does the alligator have this protection?
2. How is his skin different from yours? Color, texture (smooth vs. rough).
3. Why is his so rough? Does it have to be? Why?



# SHARK VALLEY

Entrance Station

Parking Lot

Tram Chickees

Otter Cave Hammock

Alligator Pond

Borrow Pit

Strangler Fig

## FLOORPLAN KEY

- Entrance Station ~ Gate.
- Parking Lot ~ Front Yard.
- Canal/Alligator Pond/Borrow Pits ~ Dens.
- Loop Road ~ Hallway.
- Otter Cave Hammock ~ Living Room.
- Tower ~ Attic.
- Moat ~ Backyard.
- Nature Trail ~ Patio.
- Shark Valley Slough ~ Bedroom, Kitchen Bathroom.

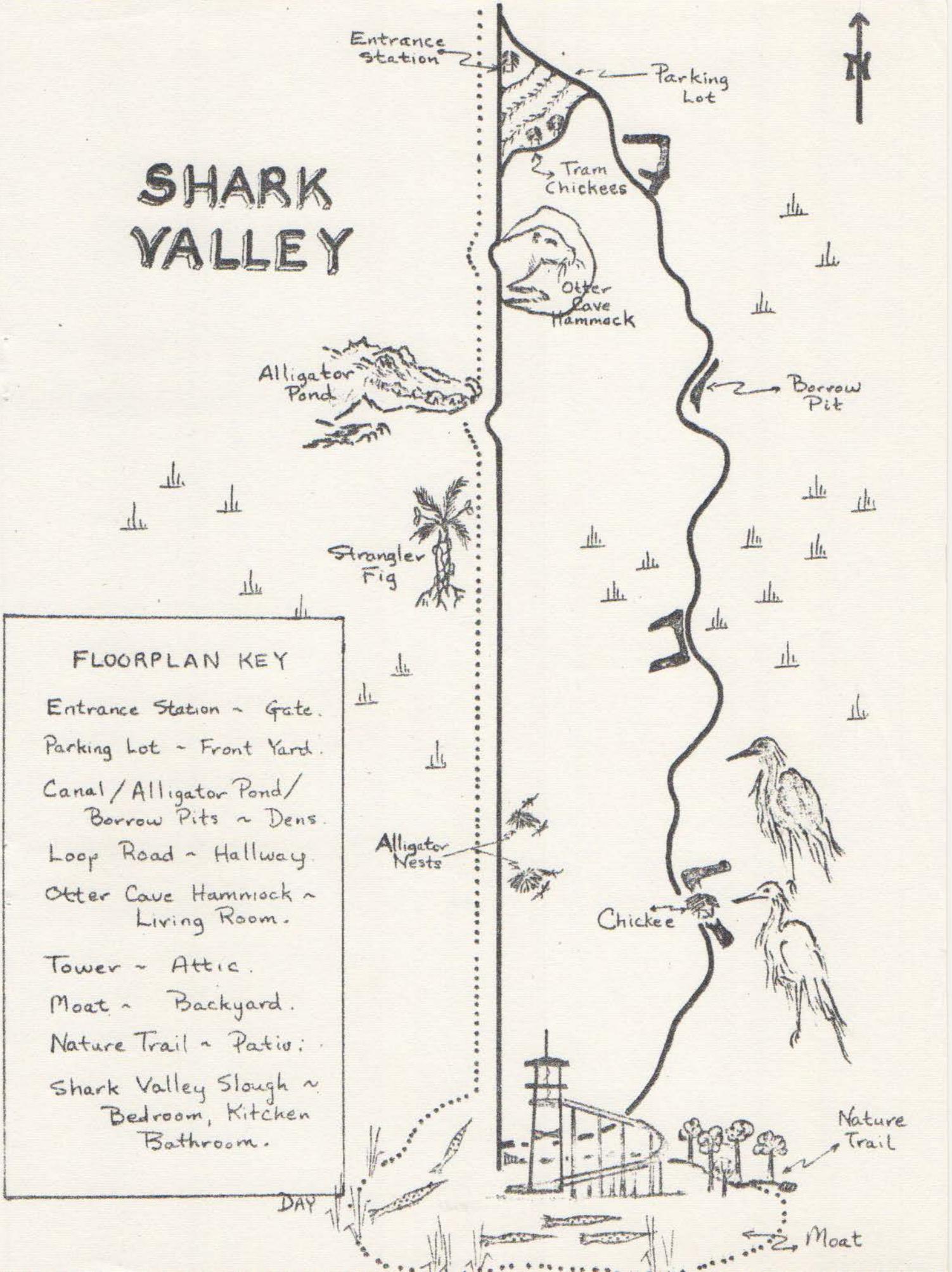
Alligator Nests

Chickee

Nature Trail

Moat

DAY





4. Do you think he can hear or see? Contrary to what people think, he does both very well.
5. Most people think that just because the 'gator' is a great swimmer, he can't run on land. He runs very fast on land for a short distance.
6. How many of you have little sisters and brothers? Did anyone have to teach the little baby to drink milk? Why? Why do you suppose, when baby alligators hatch, they head for the water?
7. Do we take care of our young? Do they?

Are you beginning to feel that somehow you are strangely related to this animal? Enough of the alligator...let's discuss some of the other loungers in the family room.

What's the name of that strange looking bird under-water? I guess it's a bird. Its beak looks like a bird's anyway. He is weird, a neck like a snake and a body like a turkey. That, my friend, is an Anhinga, and in bird talk he just asked you why in the ---- are you staring at him. What is it doing under there? Don't be silly. It's fishing-- they just love sunfish.

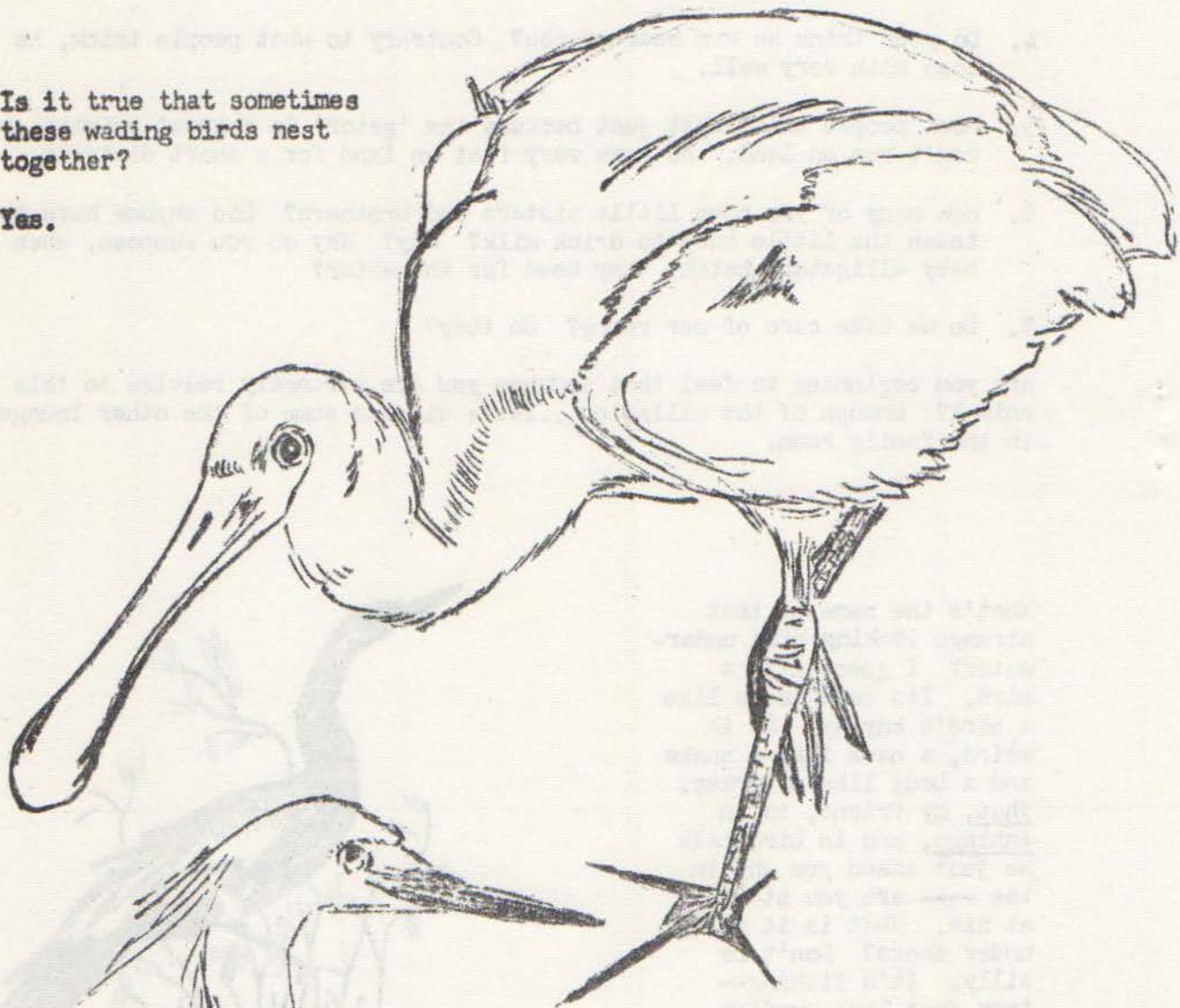


Hey, there's a big white one. That's a Great White Heron. How do you know? It's size, color, and yellowish legs and beak.

Why were certain birds placed on the endangered species list? Because there was a time when the killing of birds was very profitable, and I don't mean just for the meat. Haven't you seen hats with beautiful plumes? Where do you think they came from?

Is it true that sometimes  
these wading birds nest  
together?

Yes.



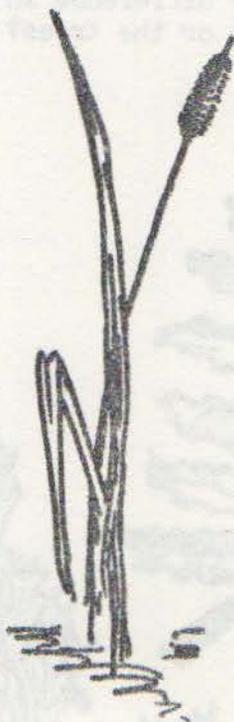
There was a time when hunters raided  
rookeries, killing and scalping  
hundreds of birds in a night,  
leaving the bloody bodies to be fed  
upon by alligators and buzzards.  
The young were prey for the crow.

The water looks inviting, but what's all that green scum? Algae.

Believe it or not, this eerie looking green stuff is probably the most important form of life in the Everglades. These tiny plants are some of the world's greatest converters of raw materials into food. It's the base of the food chain. The smaller creatures feed on the algae and are, in turn, food for the bigger ones.

Name some of the other water plants.

Well, there's the pickerel weed, a rather low-growing plant with broad, arrowhead leaves. Does it always bloom purple? Yes. It's sometimes called the blue flag. Is it edible? Yes. The leaf, when cooked, tastes like spinach. The flower seeds can be used in much the same way as oatmeal.



The brown-stemmed plant is called a cattail. The roots are rich in starch and used as food for muskrats. We could also eat them—they taste very much like potato. The leaves of this plant are used in making cane bottom chairs and mats.

Is that a water lily? Yes, it's a member of the water lily family. It's called spatterdock. It's easily recognized because of its yellow, half-closed flowers on the broad, greenish, round leaves. How does it fit into the food chain? Coots, gallinules, and other water birds feed on tiny aquatic creatures that live on the underside of the lily pads.



There are so many other members of the family that we haven't mentioned.

For instance, listen for a few seconds. What do you hear? Try to identify the sounds and find their place in the web of life. Example: The southern bullfrog--his role: he helps to control the insect population. What would we do without frogs during the summer months? Phew! He, in turn, is fed upon by fish, birds, snakes, raccoons, otters, and bobcats.





Raccoon

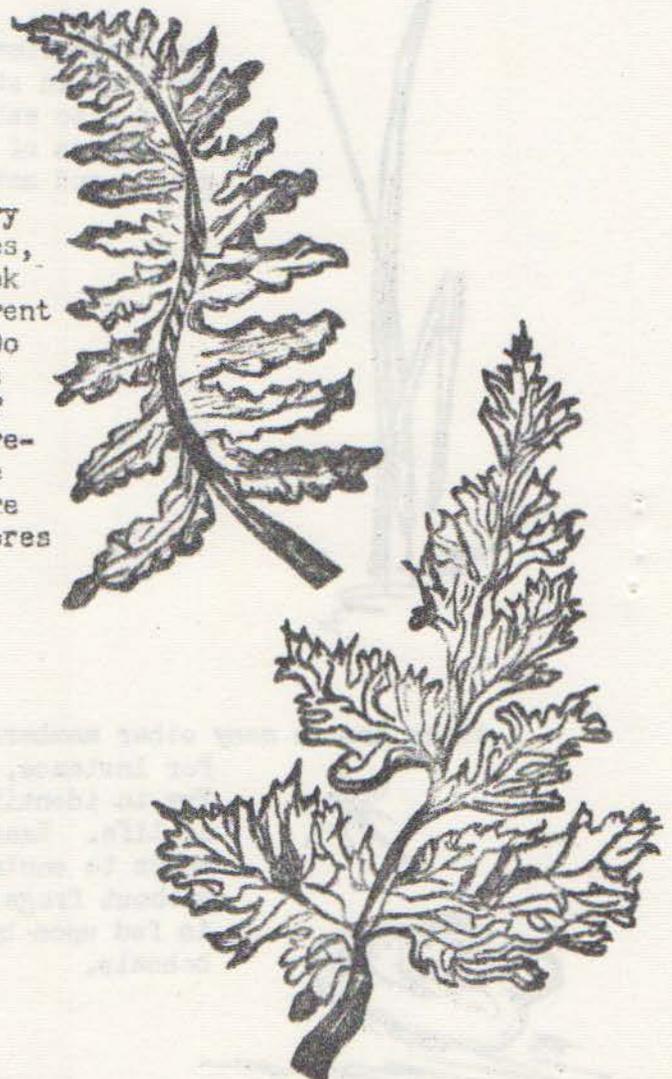
As we venture toward the living room, see if you can find any type of plant or tree that we use in our everyday cooking (tea, bay leaves, etc.)

Is sawgrass really a grass? No, it's really a sedge. Have you ever noticed the teeth or the ridges in the blade of a hand saw? Well, the leaves of sawgrass are very similar. Is this nature's way of saying, "Keep Out"?

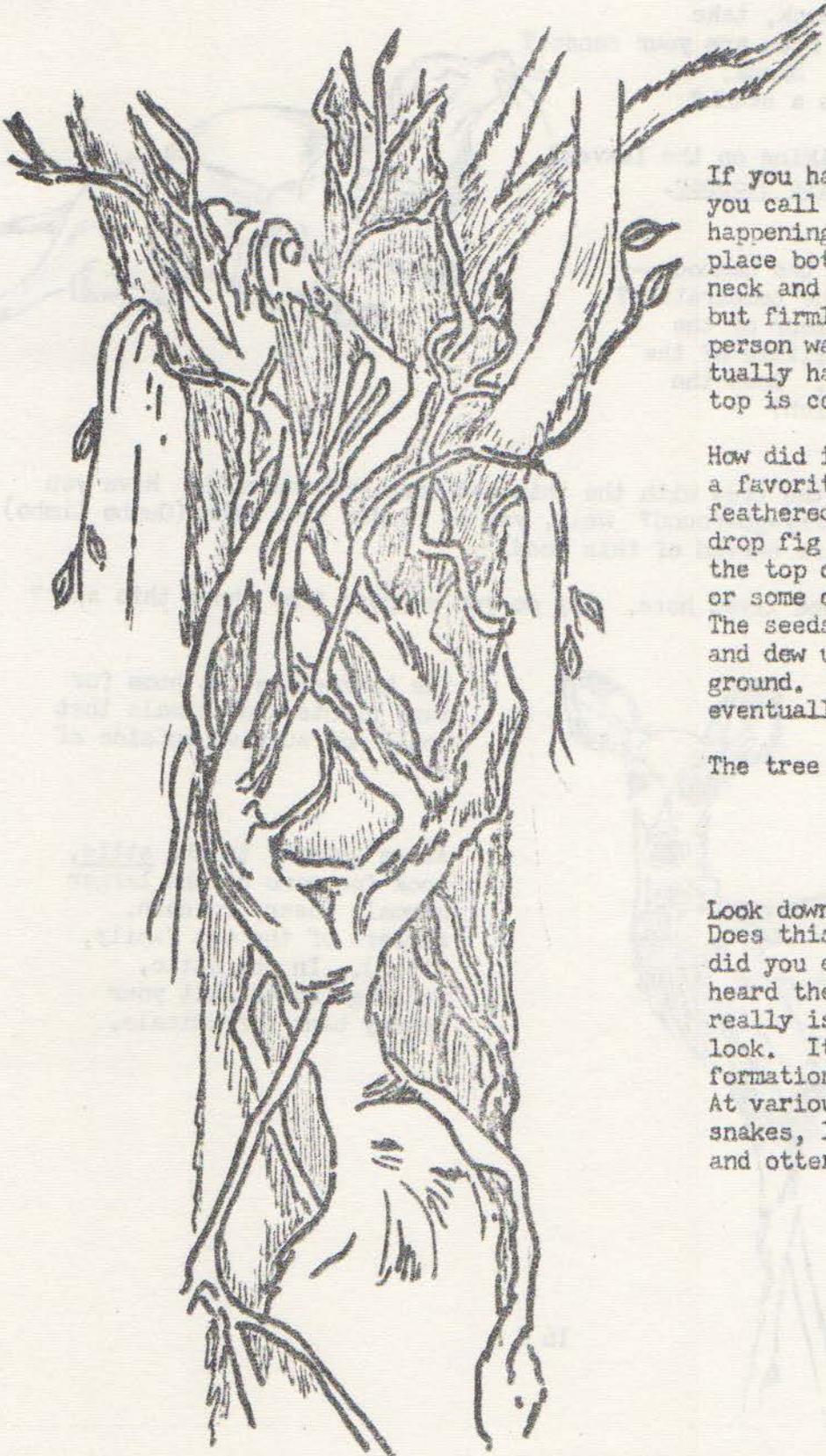
As you walked through the doorway of the living room, did you notice any difference in the vegetation or the trees?



Just as people vary in shapes and sizes, so do plants. Look at the many different types of ferns. Do ferns have flowers like other plants? No. How do they reproduce? Turn the leaf over--what are the tiny brown spores on the underside? This is how they reproduce.



Some members of the household seem a bit strange to the average visitor. Take this tree for example.



If you had to name it, what would you call it? What appears to be happening? If someone were to place both their hands around your neck and begin to squeeze slowly but firmly, what would you say the person was doing? What would eventually happen to you? The tree on top is committing the same act.

How did it get started? Figs are a favorite food of many birds. Our feathered little friends sometimes drop fig seeds, undigested, into the top of a live oak, mahogany, or some other rough-barked tree. The seeds sprout and live on dust and dew until the roots reach the ground. What do you think will eventually happen?

The tree is called a Strangler Fig.

Look down at your feet. Does this look like a cave? What did you expect to see when you heard the word cave? Well, it really is a cave. Take a closer look. It's a flat, limestone formation, but notice the holes. At various seasons, fish, turtles, snakes, lizards, insects, spiders, and otters live in there.

Ah, fresh air is great. As you walk toward the hammock, take a deep breath. How keen are your senses? What did you smell? Skunk. How do you know it's a skunk? Did you see him? Did you hear him walking on the leaves? It's a tree--the white stopper.



Is it any cooler in the hammock--a noted change in the temperature? Why? Look at the floor of the hammock--shuffle a little of the soil with your foot. Does the soil look poor or rich?

You have ridden on the tree with the thin red bark--you haven't? Have you ever ridden on a merry-go-round? Well, you've ridden this tree (Gumbo Limbo). The wooden horses are carved of this wood.

Seminole Indians once lived here. Why do you suppose they chose this spot?



The hammock is the home for many plants and animals that could not survive outside of it.

As we journey to the attic, look for some of the larger mammals (deer, raccoon, members of the cat family, otter). In the attic, we're going to jolt your memory bank for animals.

Do the questions justify the statement?

1. Alligators are adapted to their environment.

- a. Why is his skin so tough?
- b. Why is it so dark?
- c. Why is his stomach white?
- d. Why is it often mistaken for a log?

2. If we kill the alligator, many birds, fish, and other animals will die as well.

- a. What happens to the fish during the dry season?
- b. How do the birds eat?
- c. How do the small aquatic creatures survive?
- d. Can the alligator and his 'gator hole be compared to Noah and his ark?

3. Tree snails are intimately adapted to life in the tropical hammocks.

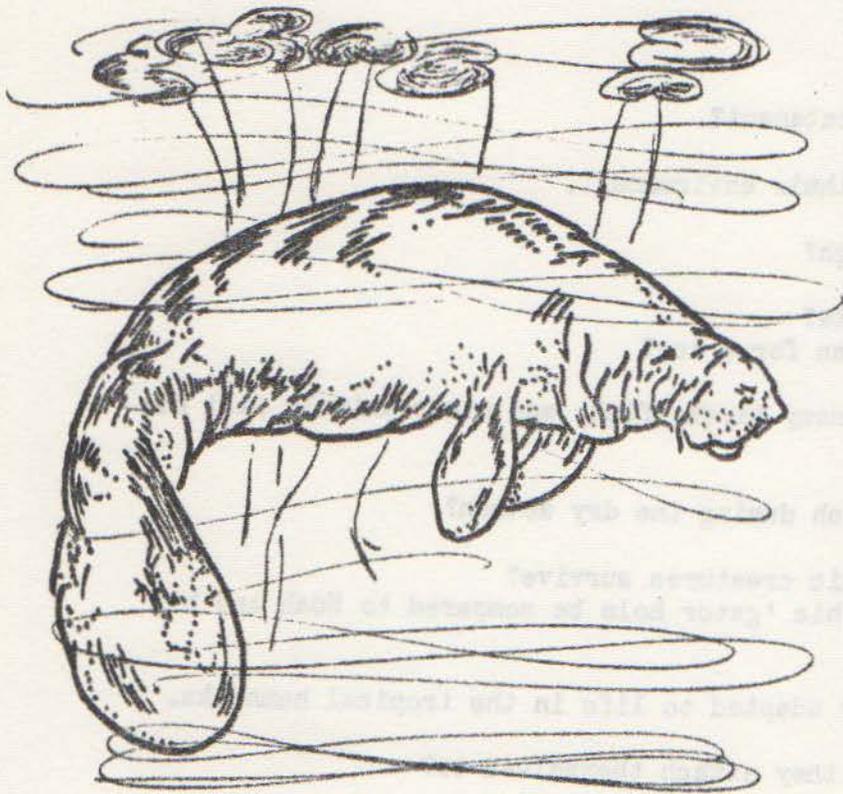
- a. What kind of trees do they attach themselves to?
- b. What do they eat?
- c. Where do they lay their eggs?--and under what conditions?
- d. Where are they during the winter season?

4. Snakes are beneficial to man.

- a. What composes his diet?
- b. When the snake's venom is extracted, how can we use it? (medically)
- c. Can you think of any examples?

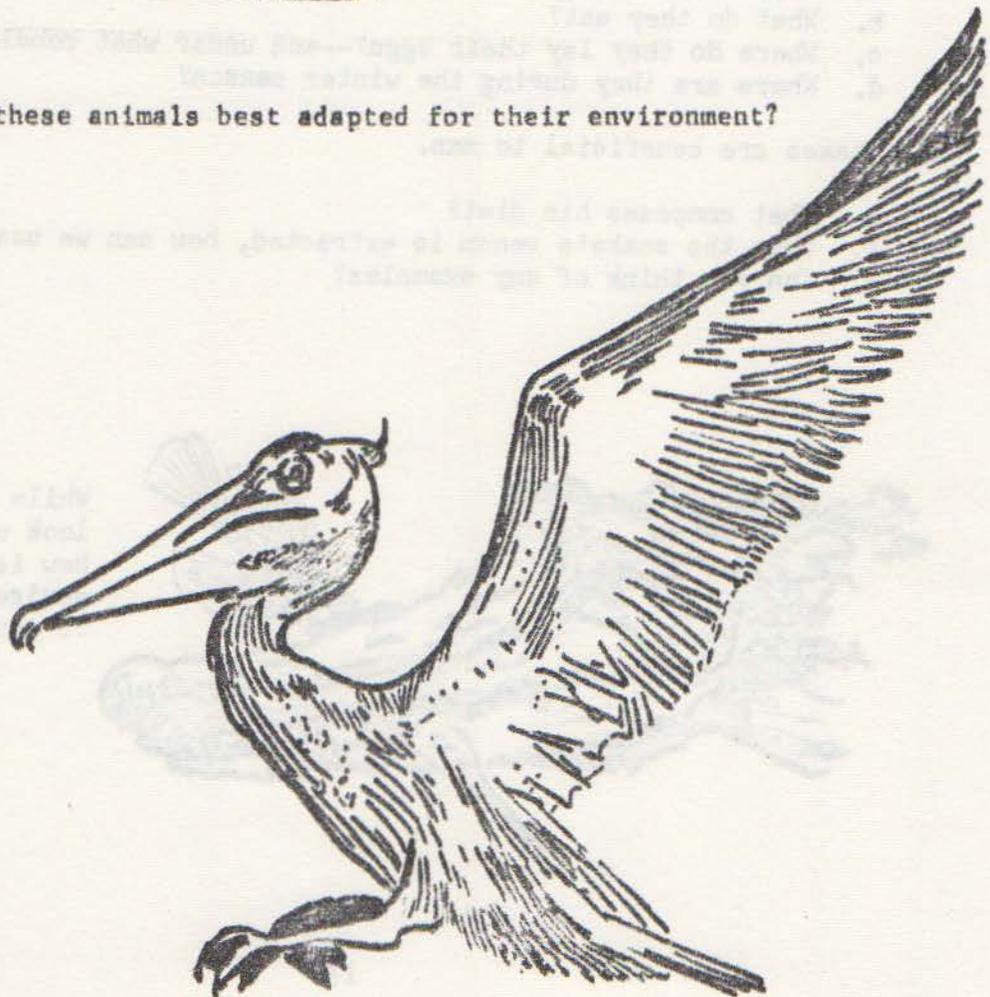


While we're in the attic,  
look out over the glades.  
How is this a useful  
device for the rangers?  
To you?



Why is it necessary to have fires in the glades? Fires, whether started by nature or the rangers, prevent pineland from becoming tropical hardwood jungles. Pines are heat resistant and are usually not destroyed.

How are these animals best adapted for their environment?



In our backyard, you can experience and witness some of the less talked-about members of this extended family.

1. Are those bubbles coming from the bream or the soil? (Note: Everywhere you see a bream and constant bubbles, there's a clearing.)
2. Guess what the mosquito fish does.
3. Feel the algae. What does it feel like? How does it make you feel?
4. Are those fish eggs attached to those plants?

If little snails can keep the water clean, why can't we?

Why don't we look in on some of the other green members of the clan since they made it possible for us to be here. They're in the patio. You know, without plants, the world would be just like the moon--no air, no food, no shade, no birds, no animals, and certainly no people.

What do plants and trees have to do with the environment?

1. In the process of making food, they release oxygen and water into the air.
2. Plants produce the "fossil fuel" known as coal (remains of plants that died millions of years ago).
3. Trees provide lumber and paper. Houses and newspapers are a part of our environment.
4. Plants help make the soil in which they grow (decayed plants).
5. Plants and trees reduce erosion, thereby reducing water pollution.
6. Noise pollution can be cut by 50% with a barrier of trees.
7. If trees were used to shade areas around air conditioning units, it would reduce the amount of energy required to successfully cool the facility.
8. Trees are also homes for many specimens (tree snails, lichen, etc.)

Sometimes remnants of earlier inhabitants are evident. Trying to identify them and discover their function can be a challenge.

Plants and animals have learned to live together. Why can't we?

## POST-SITE SUGGESTIONS

### Developing color images from the outdoor environment.

Discuss orally or written:

1. What is green?
2. What are the sounds of green?
3. How does green feel?
4. What are the tastes of green?
5. How does green smell?

### What do you see?

1. Have your class draw what it sees from the school ground or on the school ground.
2. Discuss the following questions:
  - a. Is it beautiful?
  - b. Worth caring for?
  - c. Could it be improved?
3. Have them draw what might be changed.
4. Let them suggest what activities they could originate (Examples: a clean-up campaign; personal responsibilities; window boxes).

### Communicating to art objects

Have students collect materials from their environment to make art objects with. Each piece of art should show one of the following:

1. How beautiful their environment is.
2. How it makes them feel.
3. How time changes their environment.
4. The ugliness or sadness of their environment.

Recognizing different plants by feeling.

1. Place several different parts of several different plants in a box.
2. Seat the children in a circle with eyes closed and hands behind their backs.
3. Pass the objects around in alternate directions.
4. Encourage the children to identify the part just by feeling.
5. Include specimens like: Pine cones, twigs of various types, flowers, stems, nuts, apples, berries, seeds, seed pods, etc.

Identifying with nature.

1. Ask students if they could be any form of wildlife they wanted, which would it be?
2. Have the students make drawings of their choice; discuss their reasons.
3. Hang the drawings in the classroom.
4. For that day, the student is that form of wildlife.
5. Make name tags for the students.
6. Address them as such for the remainder of the day.

The classroom can be a park (a portion).

1. Construct an enclosed cardboard structure from boxes large enough and tall enough for your average student.
2. You and the students make a project of collecting pictures of your favorite plants and animals.
3. Post the pictures on the walls of the enclosed cardboard structure.
4. There should be an opening for the door as well as small window openings for light.

Make terrariums. Have a garden.

PLANTS LIVING TOGETHER  
(Note air plants on trunks of trees)

BLIND

The Spring blew trumpets of color;  
Her Green sang in my brain.  
I heard a blind man groping  
"Tap-tap" with his cane;

I pitied him in his blindness;  
But can I boast, "I see"??  
Perhaps there walks a spirit  
Close by, who pities me.

A spirit who hears me tapping  
The five-sensed cane of mind  
Amid such unguessed glories  
That I am worse than blind.

--Harry Kemp

The classroom can be a very (a portion)

1. Construct an efficient cardboard structure from boxes large enough and tall enough for your average student.

2. For and the student's make a project of collecting pictures of your favorite plants and animals.

3. Post the pictures on the walls of the window cardboard structure.

4. There should be an opening for the door as well as small window openings for light.

Make terrariums. Have a garden.



\* \* \* \*

The surface has not even been skimmed; if you do not believe it, read:

Dickson, Lura D., Everglades National Park Wonderland for Boys and Girls. Seymour, Indiana: Dickson's Inc., 1970.

Douglas, Marjory Stoneman, The Everglades River of Grass. Coconut Grove, Florida: Hurricane House Publishers, Inc., 1947.

George, Jean Craighead, Everglades Wildguide. Natural History Series. Office of Publications, 1972.

Hawkes, Alex D., Guide to Plants of the Everglades National Park. Coral Gables, Florida: Tropic Isle Publishers, Inc., 1965.

Robertson, William B., Jr., Everglades--The Park Story. Coral Gables, Florida: University of Miami Press, 1959.

Stevenson, George B., Trees of Everglades National Park and the Florida Keys. Everglades Natural History Association, 1969.

Adventure in Environment. National Park Foundation: Silver Burdett Company, Morristown, New Jersey, 1971.





