



EVERGLADES NATIONAL PARK

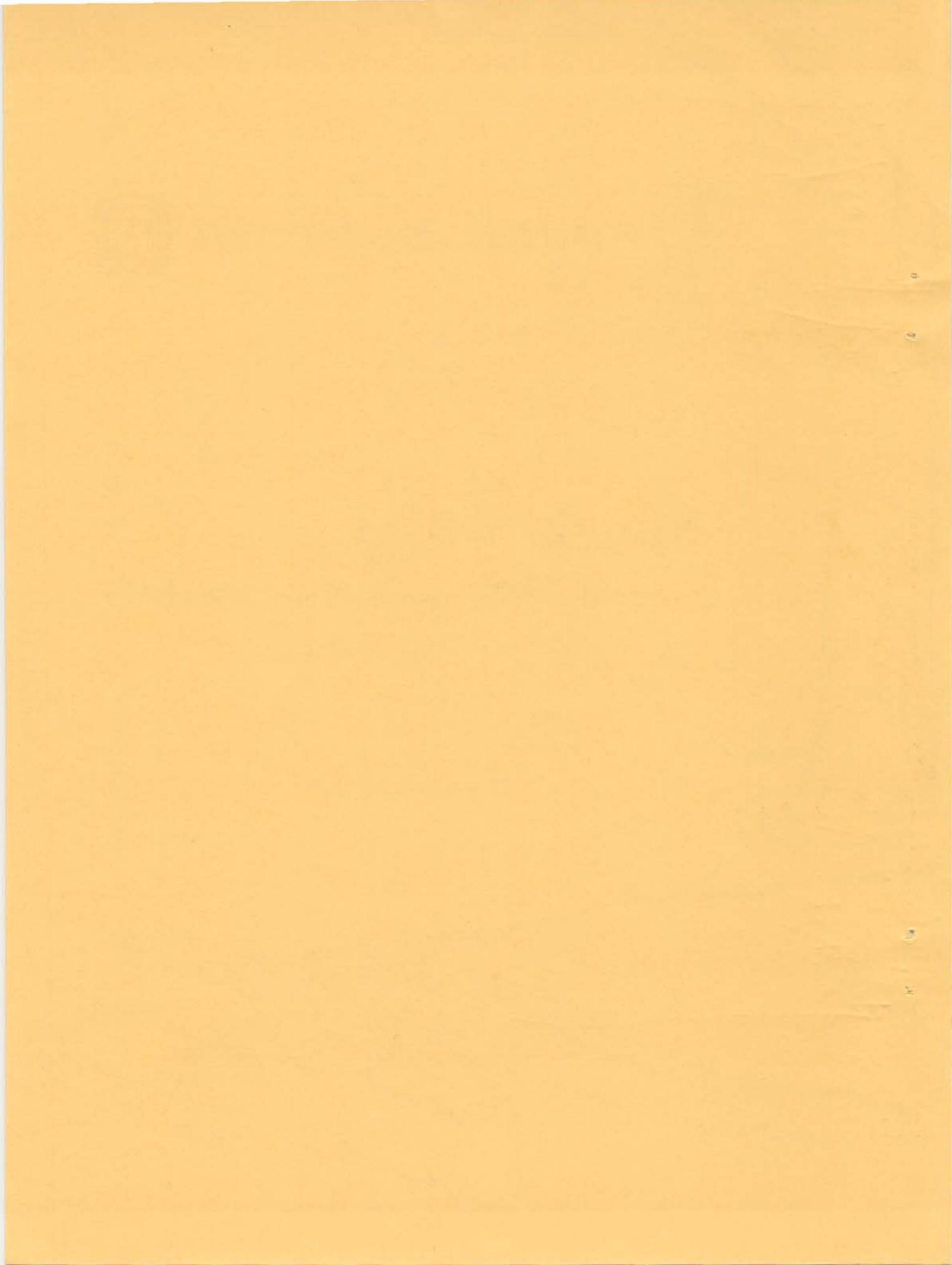


Shark Valley....

a NESAS guide for teachers



by Sandy Dayhoff
Environmental Education Specialist



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The following people contributed greatly
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Martha Aikens

Pat Tolle

Michael D. Watson

Sandi Whitehead

Pictures by:

Diana da Costa

INTRODUCTION

In 1971 the National Park Service started a pilot environmental education program at Shark Valley in Everglades National Park. Improvement and growth came next. Over the years environmental education has proven to be a great success. Each year since 1971 approximately 10,000 Dade, Monroe, and Broward County students have participated in our environmental education program.

We are still growing while trying to maintain the purpose of the program. This purpose is to:

1. ACQUAINT THE CHILDREN OF SOUTH FLORIDA WITH THE EVERGLADES through a pleasant and memorable experience in order to...
2. DEVELOP WITHIN THEM AN UNDERSTANDING OF THE VALUE OF THE EVERGLADES TO THE TOTAL WEB OF LIFE which is a prerequisite we must achieve in order to effectively...
3. DEVELOP WITHIN THEM AN APPRECIATION FOR THE TOTAL ENVIRONMENT which must be accomplished in order to...
4. ACTIVATE THE POPULATION MOST CLOSELY DEPENDENT UPON THE EVERGLADES TO A STATUS OF POSITIVE THINKING, IF NOT ACTIVE PARTICIPATION, IN THE ENVIRONMENTAL PROBLEMS FACED NOT JUST BY EVERGLADES NATIONAL PARK, BUT BY THE TOTAL POPULATION OF SOUTH FLORIDA.

This guide is meant to serve as a reference for you, the teacher. It will hopefully serve you in helping your students to discover Everglades and be a springboard for new ideas. We solicit your input and suggestions for improving the program.

A child's mind is similar to a seed; once planted properly, it will slowly grow and develop into a healthy, beautiful "flower" to reseed new generations to come. We, together (teachers and park rangers), are the caretakers of those very precious seeds. We can only hope that this truly unique wilderness experience will help that seed grow, develop, and spread other seeds of environmental consciousness for future generations.

Welcome to our program--yours and mine. Between this guide and your workshop, we hope you will feel confident to embark on a new and exciting school year in environmental education.



WHAT TO EXPECT WHEN YOU ARRIVE AT SHARK VALLEY

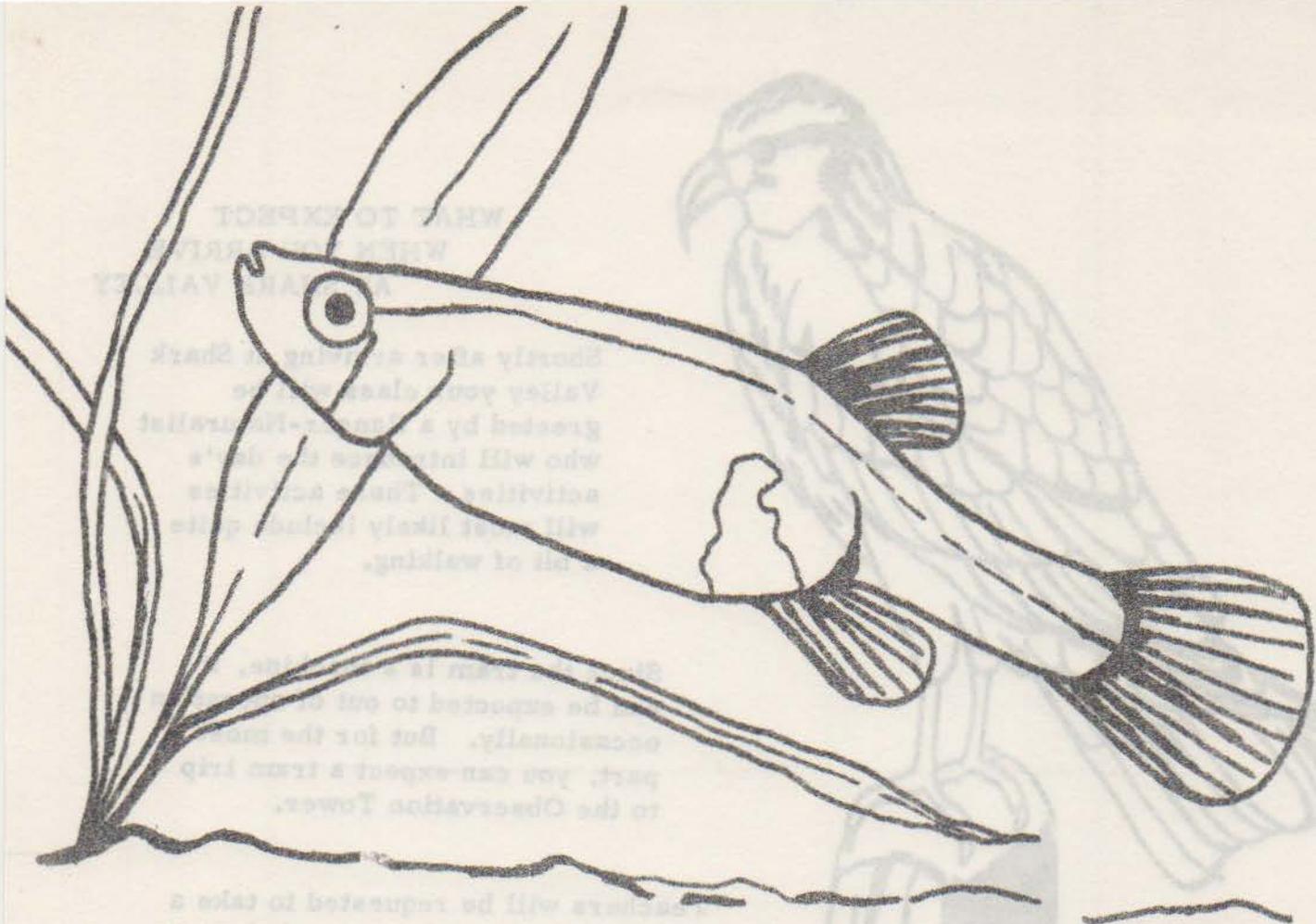
Shortly after arriving at Shark Valley your class will be greeted by a Ranger-Naturalist who will introduce the day's activities. These activities will most likely include quite a bit of walking.

Since the tram is a machine, it can be expected to be out of operation occasionally. But for the most part, you can expect a tram trip to the Observation Tower.

Teachers will be requested to take a small group of students on their own for some of the walking tour. Ooops... you're starting to worry! Don't! Names of trees and plants are not that important to remember. It is the process that is important--shapes, colors, patterns, change, and how things function are where the real lesson lies.

EVERGLADES KITE

After the walk and a trip by tram to the tower, lunch is in order. If lunches are consolidated in one large box, it will make for easy distribution. Names should be on all bag lunches. After lunch it's a leisurely walk up to the Observation Tower. It's over--well, almost. We board the bus and sing and tell stories on the way out, and, alas, say "So long" back at the parking lot. Tales of this field trip will last for weeks. We hope you and your class will review and discuss the impact of man on the Everglades system and maybe, just maybe, you and your class and others like you will contribute in making south Florida a better place to live.



RULES AND REGULATIONS

Remember, we want your field trip to be the best ever, so we must make a few necessary rules. Teachers are expected to be the disciplinarians at all times. In order to help you, may we suggest a brief talk on the following "Do(s)" and "Don't(s)" with your class?

DO

- Wear grubby clothes
- Wear old shoes (may get wet)
- Take home pleasant memories
- Use your sense of wonder
- Remember to go up the tower only with a ranger or teacher
- Ask questions

DON'T

- Feed or molest any wildlife
- Collect souvenirs
- Pick any plants
- Throw rocks

OVERVIEW OF NESAs

Just what is a National Environmental Study Area (NESA)? At the beginning of the 1970's, a growing demand for Environmental Education (EE) programs surfaced in our nation's schools. To help meet this need, the National Park Service helped develop EE materials called the National Environmental Education Development (NEED). Physical sites were designated for using the curriculum materials and philosophy of NEED. These sites are known as NESAs.

Everglades National Park has several NESAs. Two of them are Royal Palm and Long Pine Key, areas only a few miles apart in the southern section of the park. They are designated as NESAs because of their excellent representation of everglades wildlife and plants, and the forces which govern them. In addition, these areas allow easy comparison and contrast with urban environments where most students live. The fact that most urban and agricultural areas in southern Florida were once part of the everglades wilderness is an important relationship which can be explored by students as they travel from their homes to these NESA areas.

By agreeing to be in the NESA program at Everglades National Park, a teacher makes a commitment: he or she will attend a park-sponsored workshop at least once every two years. The Park Service, in turn, makes a commitment: it will do all it can to make the field trip meaningful by providing coordination, resource materials like this guide, and a naturalist to assist the group. Teachers must prepare their students before coming to the park, and conduct follow-up activities on their own. They must also help conduct the field trip while in the park.

Because a half million students attend schools in immediate areas around the park, some controlling factors had to be employed for the NESA program. So, only sixth-grade teachers are permitted to attend the NESA workshops at Royal Palm/Long Pine Key. A similar restriction is placed on the Shark Valley NESA in the northern section of the park--only fourth-grade teachers are permitted there. This gives all students a chance to be in the park program if their fourth and sixth-grade teachers will simply commit themselves to a workshop. Other teachers can bring their students to the NESA areas, but they do so completely on their own.

A NESA, then, is a physical site where environmental education programs take place. This guide explores the two NESAs at the Homestead entrance to the park--Royal Palm and Long Pine Key. The guide is primarily intended for sixth-grade teachers, but anyone who benefits from it is welcome to use it.

The NESAs program has an element of risk, of course. Complete control of a class is impossible in an outdoor classroom. An alligator is exciting to students and they just may feel like shouting their exuberance. A teacher has to be flexible--there is just no way to predict what will happen on a field trip. You might worry that you do not know the name of every animal and plant. So what? Neither does anyone else, including park rangers. It is so much more important to make observations and share them than it is to know a name. Names are nice to know, but they are not necessary to appreciate what happens before your eyes.

Plan to take some risk, then, as you participate in NESAs. Your students will perhaps view you in a new manner, and it is likely to be a positive one.

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THE SPICE STRANDS

There are many productive ways in which to make use of the environment as an educational tool. One approach is strictly classification: everything has a name and a specific way of interacting with the universe. Scientists describing unique objects use this taxonomical method as a principal operational procedure in their investigations. This method, however, has a drawback for the teacher with a limited scientific background, who may not know the multitude of specific names and conditions with which to describe the environment scientifically.

Another way of approaching environmental study is through an investigative, completely open-ended method. The teacher guides students in their attempts to discover what is present in their surroundings and to place their discoveries into some kind of perspective. The advantage of this method is it provides the kind of study that activates sensory awareness and enables the student to develop creative problem-solving techniques. The difficulty rests with the development of research skills. Research skills are another tool of the scientific investigator, and although they would provide a good background in problem-solving for the student, it takes time to develop them.

The SPICE Strand approach draws upon the advantages of both of these methods while eliminating the disadvantages. It incorporates both the specific and the investigative approaches into a third approach with which both student and teacher can feel more comfortable. It requires identification and classification, but on a modified basis. It also requires open-ended investigation leading to problem-solving. Yet all of its requirements can be taught by a teacher and fulfilled by a student who has little of the rigorous scientific training demanded by the other approaches.

The Strand approach makes necessary a reorganization of thinking into unfamiliar patterns, which may at first be difficult. The valuable, unifying characteristic of the Strand approach, however, makes whatever initial effort may be necessary unquestionably worthwhile.

The Strand approach uses five broad, universal concepts as a way of drawing the environment under a total, integrated "umbrella". They are known as the SPICE Strands because the first letter of each concept makes up one of the letters of the word SPICE. These concepts, or Strands, are:

SIMILARITIES AND VARIETY: Many likenesses and differences occur among living and nonliving things. A variety of functions, sizes, and structures exist in plants and stars, rocks and animals,

processes and people. Yet there are sufficient similarities to permit their classification into orderly patterns. These classifications increase one's understanding of this world.

PATTERNS: Organizational patterns are kinds of structures that may be found in rock formations as well as in social groups of people and animals. Functional patterns include traffic movements and classroom schedules. Spatial arrangements are patterns that often please us. Such patterns occur in both nature and in artistic design.

INTERACTION AND INTERDEPENDENCE: Nothing exists in isolation. Each individual is constantly interacting with living and nonliving things: his family, his belongings, his friends, his world. These people and things also depend on the individual in order to function properly. The process is continuous (as part of the life cycle) even after death, for dead life-forms nourish the living.

CONTINUITY AND CHANGE: Both living and nonliving things are constantly changing--whether among galaxies and planets or within body cells and body systems. Some things remain the same in spite of change. Matter and energy may change in form, but they can never be created or destroyed.

EVOLUTION AND ADAPTATION: Over centuries and centuries, living and nonliving things alter and develop in the process called evolution. Probably the greatest number of changes over the longest periods of time come about in order to enable an organism to adapt to the environment. Hereditary factors then preserve the continuing elements. The characteristics that enable the organism to adapt best (for example, the best food finder) are apt to be the traits passed on from generation to generation, thus ensuring survival of the species.

Similarities and variety means the simple recognition of each organic and inorganic thing. A classification is derived by noting similar characteristics in distinct objects. Once a classification is made, an object's Patterns can be identified. What is the nature of its design? Of its function (what does it do)? Of its organization? The functional pattern leads directly to Interaction and Interdependence. How does the specific variety interact with air, water, earth, (other) populations? As it Continues to Change, it is constantly undergoing Evolution and Adaptation, according to how it fits into the Pattern of existence. If a substance does not adapt in its present form, it Evolves, through Continuity and Change, into a new Variety, with a new Pattern of Interaction and Interdependence.

Using these large concepts, or Strands, teachers who have had no particular scientific or ecological training can instruct or guide students toward open-ended, purposeful activities. The scope of the Strands can be focused on the specific at almost any level of detail or sophistication. Within the Strands there is a synthesis of environmental relationships. This synthesis makes the Strands applicable to the wide range of disciplines within the school program, yet the Strands provide a tool for study that can be specifically related to the most widely differing ecological situations. For example, Patterns can be applied to the arrangements of beach fauna (biology), mountain ecology (natural history), or people living in an urban area (social sciences).

Teachers should think of themselves as catalysts--permitting the students to develop the answers themselves whenever possible, which will result in a greater retention of the basic understandings. Once the basic Strand understandings are established with the students, they will continue to seek new examples in new environments, leading to a keen awareness of man's interactions with the world.

The Strands can be disastrously misused. The danger inherent with any methodology is that the methodology can be used as a thing in itself, for its own sake. There have been unfortunate examples where the Strands were taught as a subject, instead of used to integrate discipline or to understand processes. Other times, students were told to memorize and parrot them like multiplication tables. Avoid these dangers. The Strands are a framework. You may never have to mention them at all. Like the girders in a building, they are hidden from view, but keep everything from collapsing.

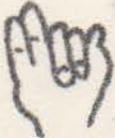
Perhaps the best thing about the Strands is that students can use them as a reference point to interrelate the things they know, see, and feel, in their own lives with all their future experience and education. It is fairly clear that the only way people achieve higher levels of understanding is by understanding new ideas in terms of old ones. Otherwise, people are reduced to learning information and facts without new awareness.

There is one thing about the Strands never to be forgotten: the Strands exist simultaneously in all things at all times. You will find that while using the Strands, one irresistably leads into the others. Often one becomes indistinguishable from another. The Strands always reinforce one another.

This is as it should be. In a world of process, it is inevitable that an honest framework is as dynamic as the world it views.



Similarity and Variety -- There are five projections on your hand that are so similar to each other, they are called fingers. But there is so much variety in them that no two are exactly alike. In fact, no two fingers in the world are exactly alike. Once this similarity and variety is observed, we can identify patterns.



Patterns -- There is a pattern on the end of every finger called finger prints. There is an endless variety of finger prints, though they all follow a similar pattern. There is a pattern in the way the blood flows through your hand, from the heart to arteries to tiny capillaries in the hand, and back to the heart through veins. These patterns lead directly to interaction and interdependence.



Interaction and Interdependence -- There is interaction when the blood in your hand delivers sugar to every tiny cell in exchange for waste material. Your fingers interact, though independently, when they are playing a guitar or holding a hamburger. Your hand interacts when it is cold and by perspiring when it is hot. Interaction and interdependence subjects our hands to continuity and change.



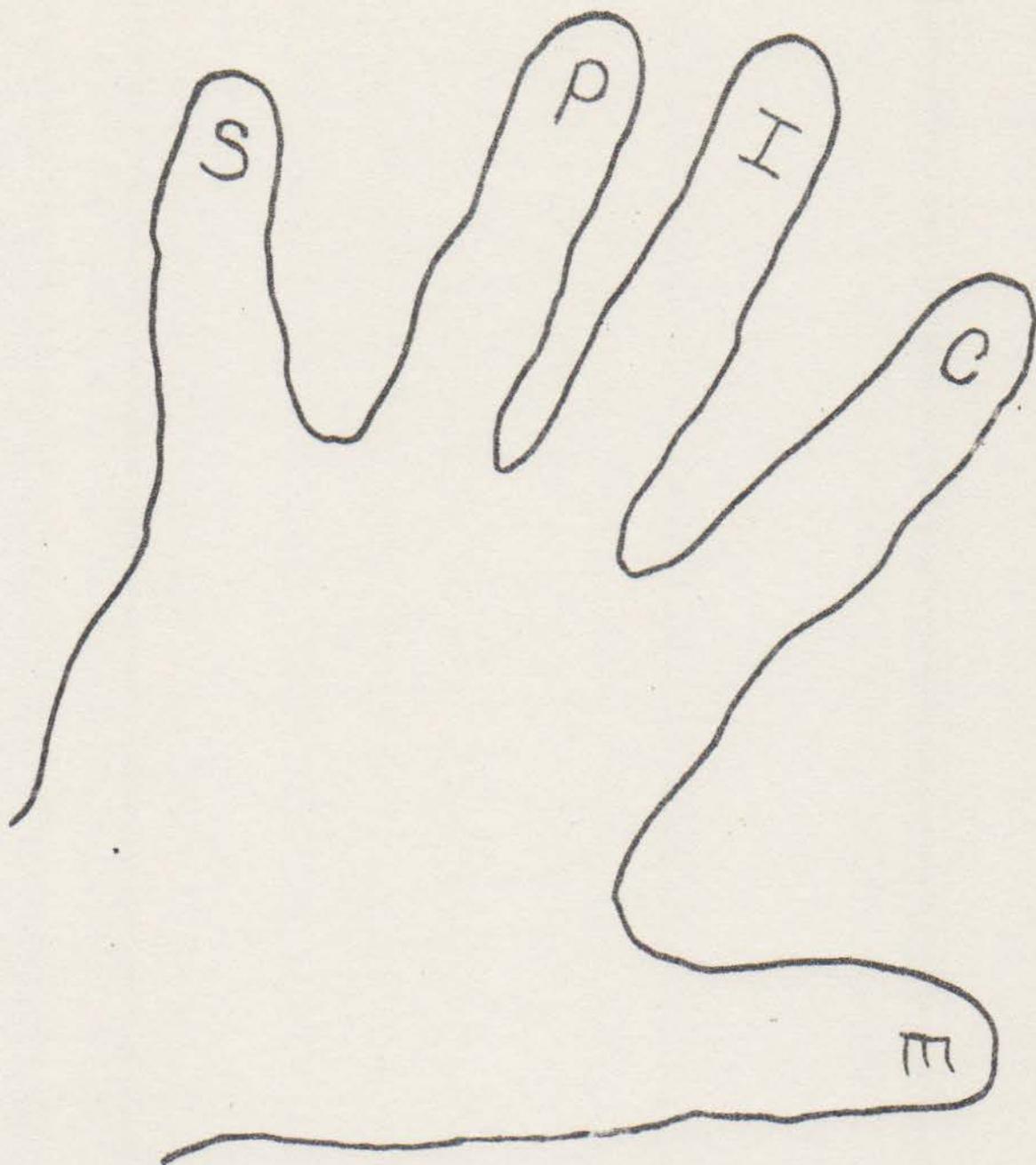
Continuity and Change -- The veins and arteries in your hand change as the temperature changes. The cells in your hand are constantly dying and being replaced by new cells. In fact, the hands you put in your pocket today are not the same hands you had six weeks ago. As your hands continue to change, they constantly undergo evolution and adaptation.



Evolution and Adaptation -- Over long periods of time, the human hand has adapted to new situations. The opposable thumb allows us to do marvelous things with our hands that most other animals cannot. Evolution is change over long periods of time. The hands of man a million years from today will look and function much different than these of today.

So, watch for the Strands in everything natural and man-made, and think of them as the "SPICE of Life." And when you cannot remember what they are, you can find them all in your pocket.

Now that you are familiar with the Strands, you can apply them to everything you and your class will experience when you visit the Royal Palm and Long Pine Key NESA's. Following is an orientation to the NESA Trails in terms of SPICE.



One easy way to remember the SPICE Strand framework is to examine the Strands Pocket Model. There are five fingers on your pocket model, one for each Strand:

This section of the booklet has activities for you to do with your class before your field trip. These activities can easily be removed from the booklet. Run off copies and distribute to your class. The vocabulary list will help your class understand the terms used by the rangers on the field trip.

**P
R
E
P**

**S
H
I
E**



**A
C
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V
I
T
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E
S**

PRE-SITE ACTIVITIES PACK

Vocabulary List -- all of the enclosed activities use these words.
Go over them with the children before starting the following activities.

1. Guess what? Pass out 1 copy to each child. Give them 15 minutes to work on it.
2. Bingo -- There is a question and answer sheet for the teacher only. There are 3 different Bingo cards on 1 page. Cut them out and make copies of each; then give 1 to each child. Give out paper clips or small pieces of paper (colored) to use as chips. Teacher calls out questions. After "Bingo" is called, check to see if the answers are right. Next game start asking questions from the bottom of the answer sheet. This activity reinforces vocabulary.
3. Crossword Puzzle -- Teacher calls out questions; children fill in the blanks. This activity reinforces the vocabulary.
4. Food Chain Game -- playground activity. Need 1 tub or large container of water ('gator hole). Use the pictures in the Shark Valley Floor Plan - teacher's guide - or have the children draw their own. Each child has a description of what his animal eats and where he lives; etc.

Rules: NO TALKING! You are only allowed to make the noises of your animal.

Start activity by ringing a bell. Everyone starts doing their thing. For instance, if you are a raccoon, you crawl; an alligator, in the water, etc. This reinforces the vocabulary and shows interdependence.

5. Word Sleuth -- Find and circle words given. May be up and down or left to right. Make sure of the spelling!

VOCABULARY LIST

1. Algae - colonies of tiny green plants
2. Adaptation - implies a suiting or fitting by modification
3. Alligator - a reptile; very important in digging water holes during dry season
4. Deer - eastern white-tailed found throughout eastern states; a large, brown, fur-bearing animal; a vegetarian
5. Dragon Fly - a member of the insect family; feeds on mosquitoes; larvae are aquatic and feed on other aquatic animal life
6. Environment - everything around us; our surroundings
7. Everglades - river of grass; a shallow fresh water river in southern Florida
8. Evolution - the development of a species, organism, etc., from its original to its present state
9. Food Chains - a relationship of organisms in which each is dependent on another for survival.
10. Garfish - fresh water fish; has a modified lung system
11. Habitat - the home of any organism
12. Hammock - scattered islands of hardwood trees and dense undergrowth which thrive on slightly elevated spots in the sawgrass country
13. Lake Okeechobee - the large, fresh water lake in central Florida; the Everglades watershed
14. Limestone - rock consisting mainly of calcium carbonate; fossilized shells
15. Mosquito - classified as an insect; female sucks blood to assist in producing eggs
16. Park - an area maintained in its natural state; a public property for the benefit of all

FOCUS ONLY

- 17. Pickerel weed - a water loving plant; has a purple bloom spike
- 18. Pollution - anything that makes the environment unfit for living things
- 19. Predator - flesh eaters
- 20. Sabal Palm - State tree of Florida
- 21. Sawgrass - not a grass at all--a true sedge having three sides to leaf
- 22. Scavenger - an animal which feeds on lifeless forms of bird and other animal life, such as vultures
- 23. Snake - a cold blooded reptile
- 24. Vegetarian - an animal or bird which feeds entirely on plant life
- 25. Water - a basic necessity of life; the lifeblood of the Everglades

GUESS WHAT?

ENVIRONMENT

Can you unscramble this? -----

What is your environment?

- A. The river
- B. Everything around you
- C. A place where baby animals live

I am an island in the Everglades that stays high and dry year round.



Fill in the blanks. _ A _ _ O _ _ K

I am slimy and cling to other plants and rocks. What color am I?

I am the grass growing in the Everglades. Who am I? _____

I am the water source for the Everglades. Who am I? _____

I am a microscopic greenish plant that lives in the water. Who am I?

ENVIRONMENT

I show how the energy from the sun gets passed from plants to plant-eaters to meat-eaters. Who am I?

I am a flesh eater. Who am I? _____

I fall from the sky and everything needs me in order to survive. Who am I?

I am a shallow river that goes dry every year. Who am I?

I eat almost any animal that I can catch, but I like gar fish best. Who am I?

A - - - - G - - - - R

BINGO

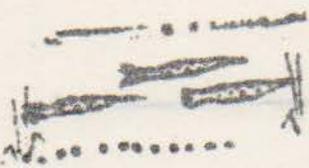
1. What is the alligator's favorite food? _____
Answer: Garfish
2. What is the state tree of Florida? _____
Answer: Sabal Palm (or cabbage palm)
3. High, dry tree islands are called _____.
Answer: Hammock
4. A plant that has an arrow-shaped leaf is _____.
Answer: Pickerel Weed
5. They eat sawgrass - _____.
Answer: Deer
6. Frogs eat me - _____.
Answer: Dragonfly
7. On cold days you can find him on land taking a sunbath _____.
Answer: Alligator
8. He eats dragonflies _____.
Answer: Bull Frog
9. Many of them go north in the summer _____.
Answer: Birds

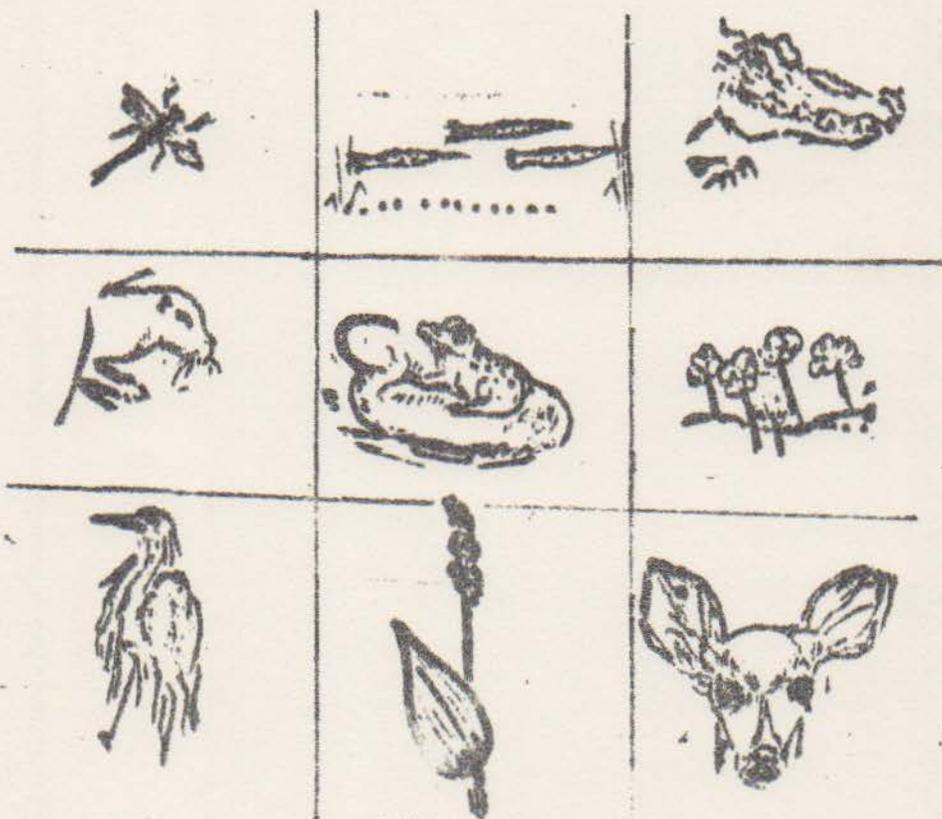
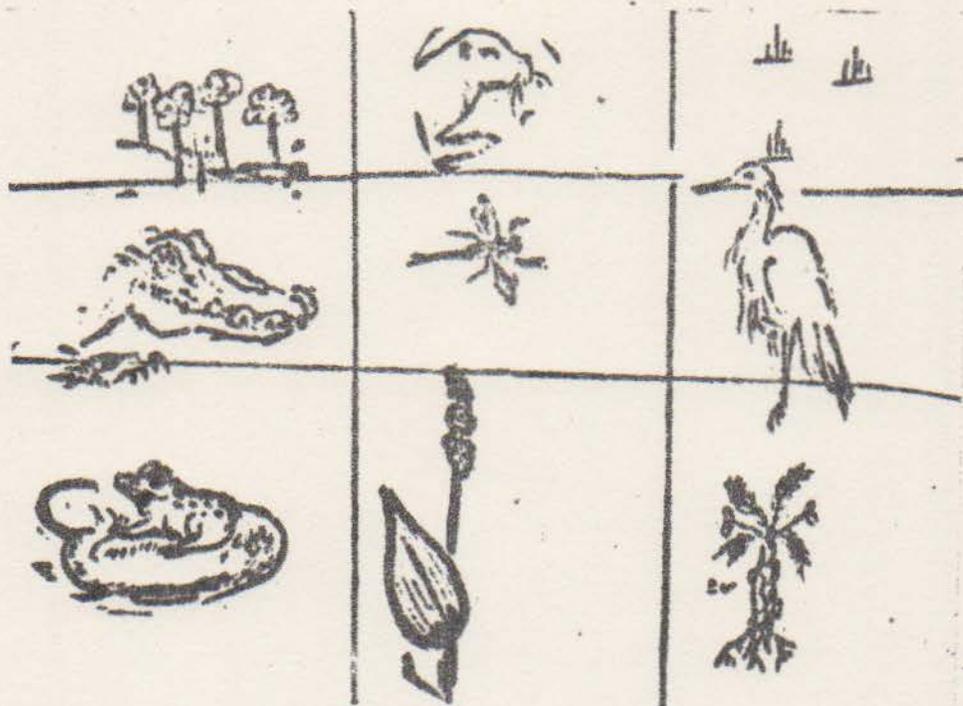
BIRDS

1. What is the alligator's favorite food?
 Answer: Garfish

2. What is the state tree of Florida?
 Answer: Sabal Palm (or cabbage palm)

3. High, dry tree islands are called
 Answer: Keyholes



NAME _____

WORD SLEUTH

E	N	V	I	R	O	N	M	E	N	T	T	L
V	H	E	M	M	K	S	T	Q	X	Z	L	H
E	A	V	E	N	E	V	I	R	O	N	M	A
R	B	E	P	R	E	D	A	T	O	R	S	M
G	I	A	R	P	C	G	O	S	A	W	D	M
L	T	L	O	Q	H	R	O	D	E	E	R	O
A	A	G	D	L	O	Z	C	X	T	A	J	C
D	T	A	O	M	B	T	K	S	R	L	I	K
E	S	E	R	Z	E	L	E	Q	P	L	H	A
S	T	S	T	F	E	M	R	O	N	A	G	B
L	S	A	W	G	R	A	S	S	M	J	F	C
A	G	A	L	L	I	G	A	T	O	R	E	D

Find these words...

1. Environment
2. Okeechobee
3. Sawgrass
4. Hammock
5. Deer
6. Predator
7. Alligator
8. Algae
9. Habitat
10. Everglades

CLASS INVENTORY

(This activity helps the children start looking around them.)

Have children take paper and pencil and write down what is in the classroom--blackboard, books, doors, windows, etc.--20 items or more.

Then have them choose 10 items (from the list) THEY feel are essential to have in the classroom for it to function. Open it up to discussion after they complete the 10 item list.

Ask some key questions--

- What is it made of?
- Where did the material come from?
- Is it recycleable?
- Can we live without it comfortably?

Bus ride to Shark Valley

Have children repeat classroom activity, but on the highway to Shark Valley. What do they see? Write it down--cars, trees, water, everything they see. Have them sign their name.

At the Shark Valley ~~overance~~, have children hand in paper. Later, after lunch or back in the classroom (for the 15 minute activity), hand back the papers and ask them to select 10 items from their list they feel essential to keep the Everglades functioning.

1. Classroom
2. Sawgrass
3. Hammock
4. Dock
5. Paved area
6. Alligator
7. Algae
8. Litter
9. Litter
10. Everglades

THE WEB OF LIFE

Purpose: To illustrate how plants and animals (including man) are dependent upon each other and upon the environment (sun, air, water, and soil) for survival through a "web" of inter-relationships, and what happens if the web is damaged

Materials: ball of string
magic marker
"name" cards (or buttons)

Description: Players form a circle. Each player is given a "name" card which identifies him as some part of the environment, such as the sun, air, water, soil, different types of plants and animals. Be sure to include the four basics (above). The participants should keep their cards face down until the web is made. The leader unwinds the string from player to player, crisscrossing back and forth across the circle. When each player is connected, the leader begins by turning over his card and explaining why his connection with the next person is important. After all the participants have explained their importance in the web, the leader lets his end of the string go, resulting in an unraveled web.

A discussion follows concerning the interrelatedness of all things in the web, and what happens when the web is upset.

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; 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 it, 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 of 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.

What Do You See?

1. Have your class draw what they see from the schoolground or on the school ground.
2. Discuss the following questions:
 - a. Is it beautiful?
 - b. Is it 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. (Example: a clean-up campaign; personal responsibility; window boxes)

Communicating to Art Objects

Have students collect materials from their environment to make art objects. 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.

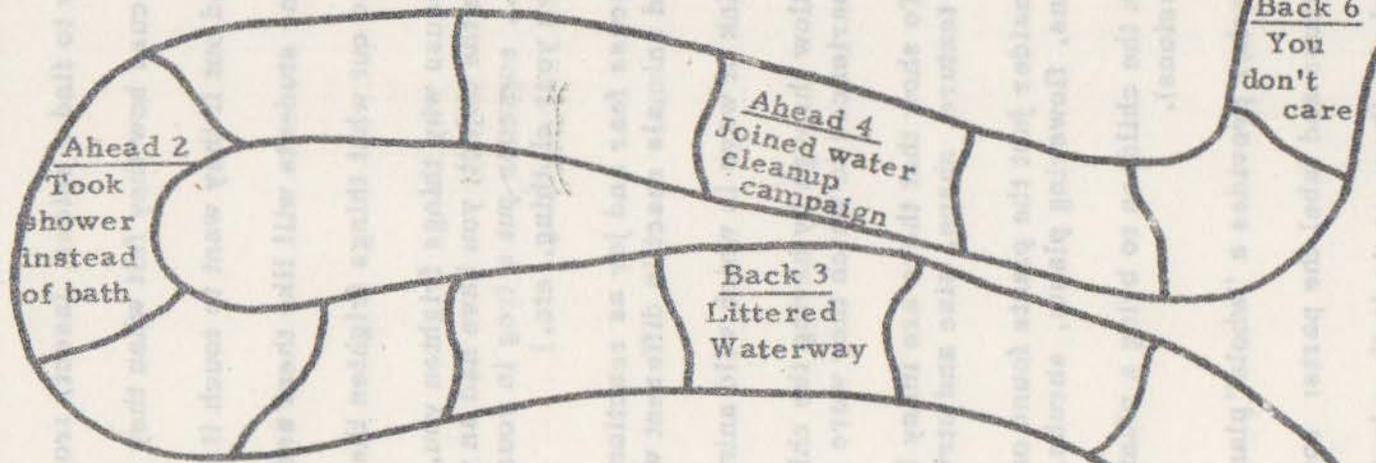
Reactions to Things

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.

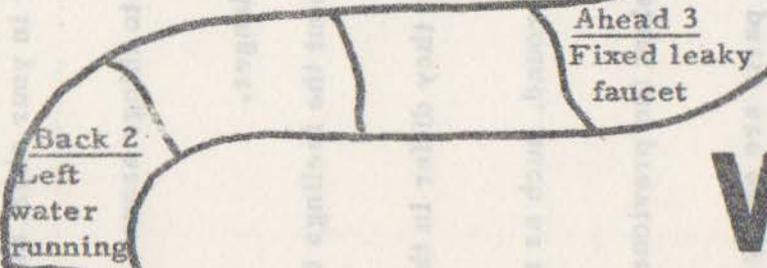
1. Consider just the plants found on your school ground, such as mosses, ferns, flowering plants, shrubs, trees.
2. Ask the children to bring a plant or part of a plant (no previous discussions).
3. Teacher provides a "whole" plant in which the parts are easily seen.
4. Discuss and label the parts: roots, 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).

HELP SNEAKY SNAKE



Back 3
Littered
Waterway

BE A



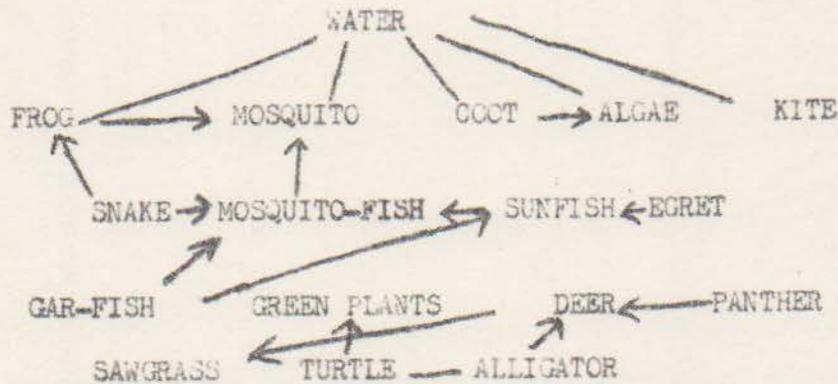
WINNER

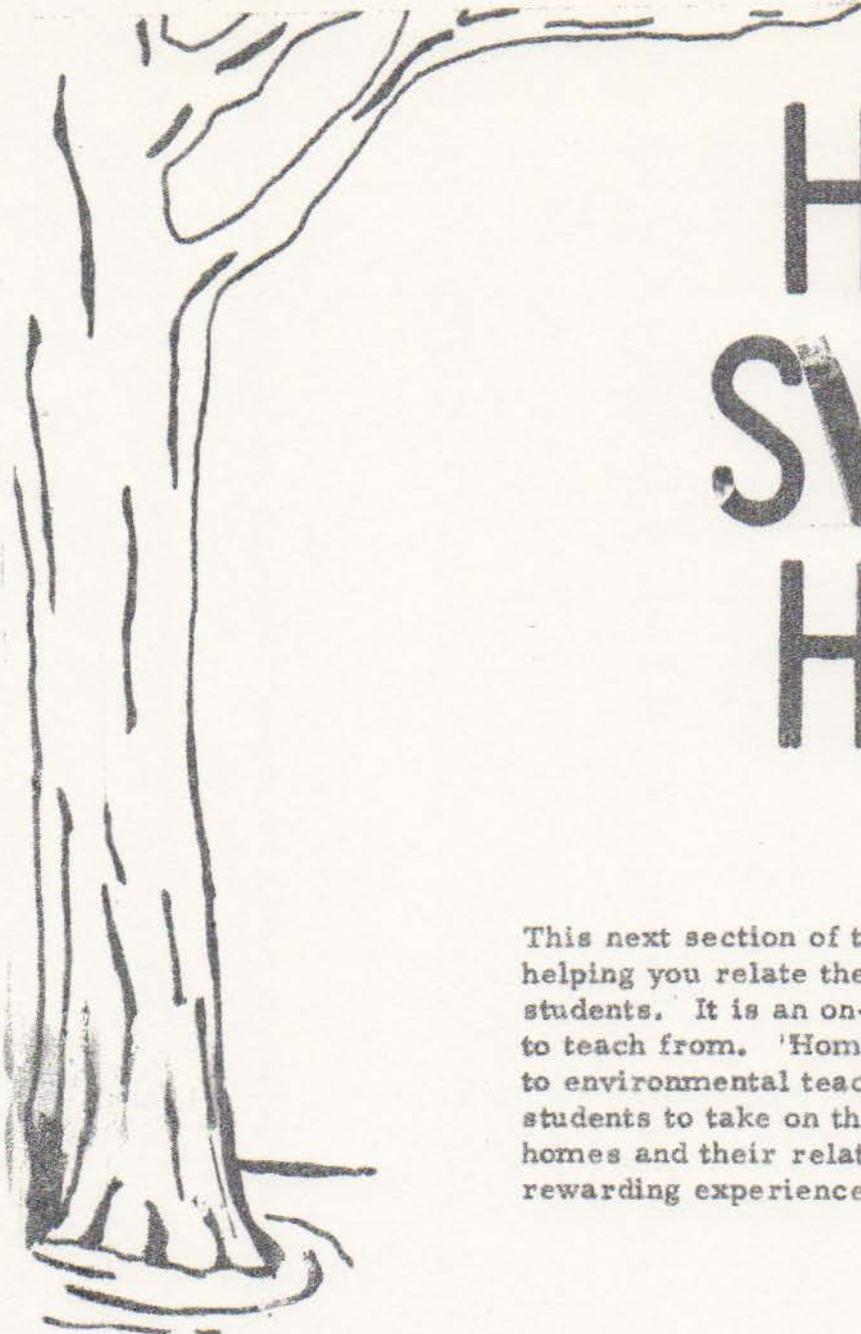
HOW TO PLAY

1. Cut out the numbers.
2. Put all four of them in a cup.
3. Pick one without looking.
4. Move the same number of spaces as the number you chose.
5. First one to reach Sneaky Snake's hat wins.

1	2
3	4

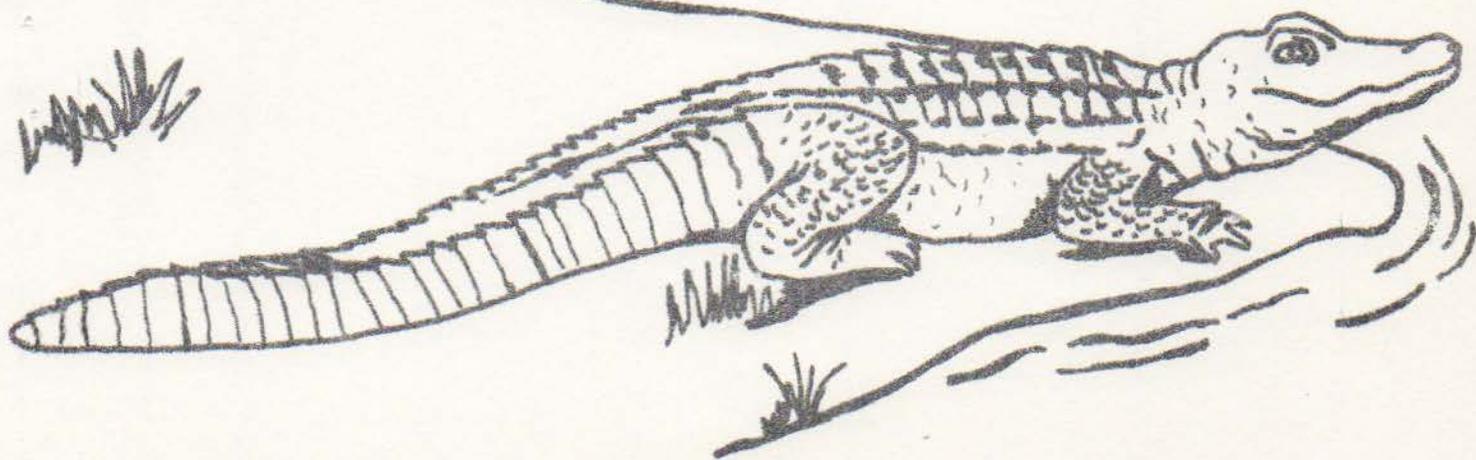
Throughout this teacher's guide booklet are pictures of plants and animals found in the Everglades environment. Give children a copy of one picture, have them color it, and paste it on a piece of cardboard to wear in class. Play a food chain game! See if they can figure out who eats who. Open it up to group discussion. Ask thought provoking questions such as: Why is color important? When do these animals feed--day or night? How often do they eat?





HOME SWEET HOME

This next section of the booklet is devoted to helping you relate the Everglades to your students. It is an on-site resource for you to teach from. "Homes" is a thematic approach to environmental teaching. Encourage your students to take on the challenge of finding homes and their relationships. It can be a rewarding experience.



SHARK VALLEY

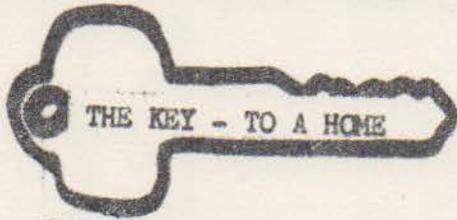
ENTRANCE STATION

PARKING
LOT



OTTER CAVE
HAMMOCK

CANAL



THE KEY - TO A HOME

Entrance Station--Gate

Parking Lot--Front Yard

Canal--Swimming Pool/Kitchen

Loop Road--Hallway

Otter Cave Hammock--Bedroom

Tower--The Attic

Moat--Backyard

Nature Trail--Porch

NATURE
TRAIL

TOWER

MOAT

We all have homes of one kind or another--big, little, old, new, in wood, block, metal, and in many shapes and colors. They are all different in some way, but they are all the same in one respect--they serve as our little world, a minute environment.

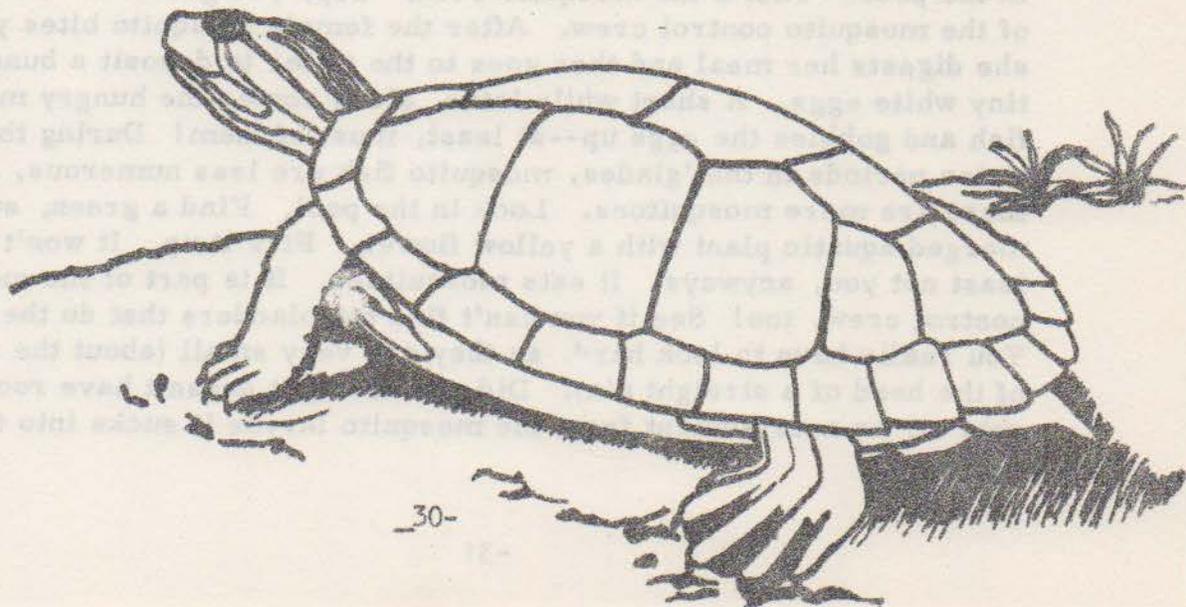
Everglades National Park has a home, too--south Florida. When you visit the park, remember the park is one big home, with some pretty strange and beautiful family members. Let's go on a room-to-room inspection.

1. The Parking Lot at Shark Valley is known as our front yard. There is so much life to discover.
2. The Swimming Pool is a busy place to visit. You say, "Swimming Pool?" Sure enough! Any clear space in the canal free of vegetation is considered a swimming pool. Look around. You might see the biggest lounge chair laying around--the ol' lazy alligator. Does he remind you of another creature from long ago? Maybe a dinosaur? How does it compare with you? If you have a small appetite you have a lot in common--'gators only eat about once a week. When it isn't lounging around the pool, it keeps busy clearing out the pool with its strong tail.

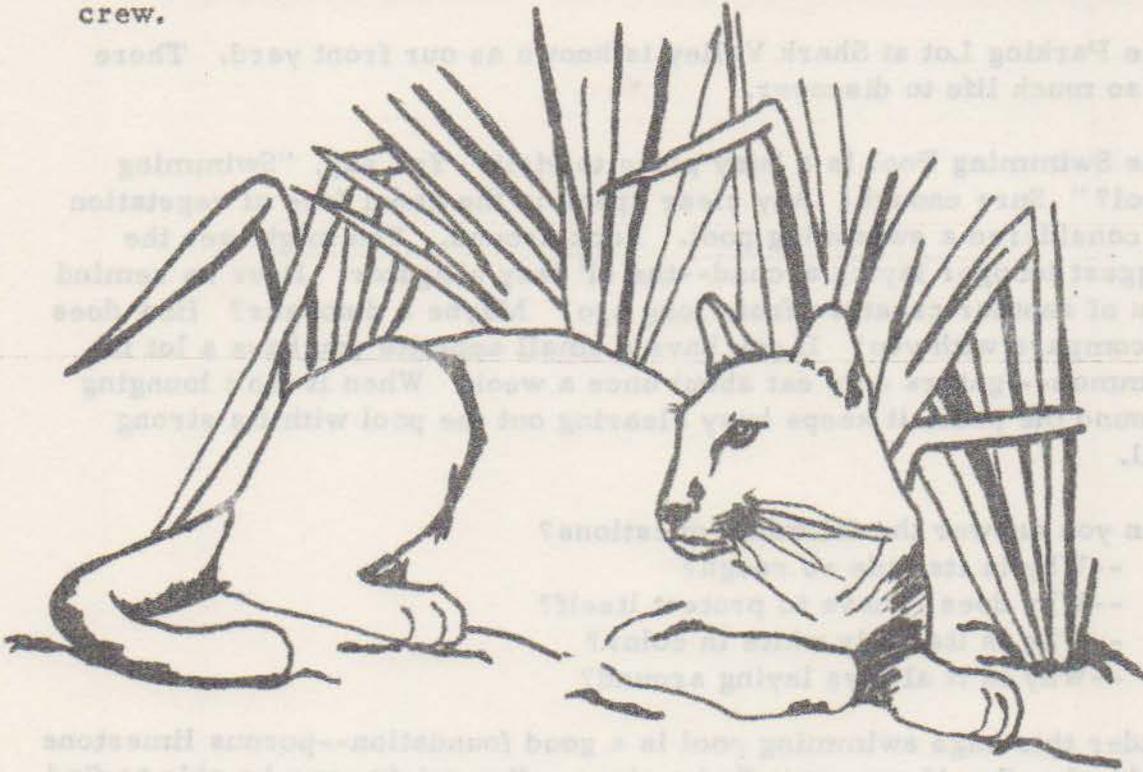
Can you answer the following questions?

- Why is its hide so rough?
- Why does it have to protect itself?
- Why is its belly white in color?
- Why is it always laying around?

3. Under this huge swimming pool is a good foundation--porous limestone bedrock. See if you can't find a piece. You might even be able to find a fossilized shell in it! Some neat foundation, huh? But how did these sea shells get here?



4. As you walk down the hallway (the road), keep looking over your shoulder and keep watching what is going on in the swimming pool. Actually, it's not just a swimming pool--it is also a kitchen. Hey! Bend over and touch that green stuff floating in the water. It's slimy and you might not like it, but the Apple Snail does! It is his job to keep the pool clean of algae. Every once in awhile there are too many pool cleaners. So, a special bird (the Kite) swoops down and eats a couple of snails. The Kite is the foreman on the pool cleaning crew.

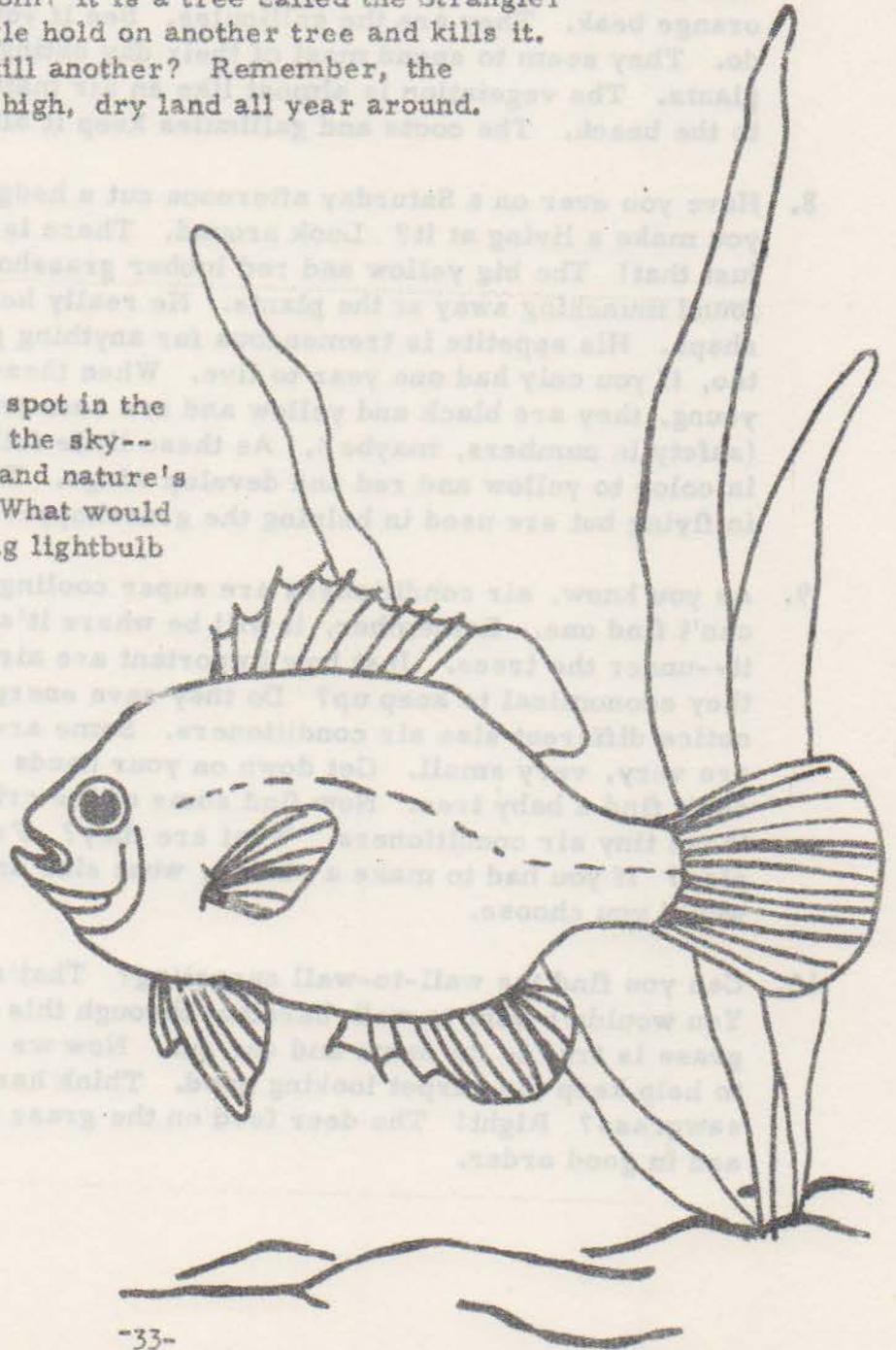


5. Have you noticed any mosquitoes? Well, I hope not. If you do, we will have to fire our mosquito control crew. See those tiny little fish in the pool? That's the Mosquito Fish. Yep, you guess it. He is part of the mosquito control crew. After the female mosquito bites you, she digests her meal and then goes to the water to deposit a bunch of tiny white eggs. A short while later, along comes the hungry mosquito fish and gobbles the eggs up--at least, most of them! During the low water periods in the 'glades, mosquito fish are less numerous, so there are more mosquitoes. Look in the pool. Find a green, submerged aquatic plant with a yellow flower. Pick it up. It won't bite--least not you, anyways. It eats mosquitoes. It is part of the mosquito control crew, too! See if you can't find the bladders that do the eating. You really have to look hard, as they are very small (about the size of the head of a straight pin). Did you notice it doesn't have roots? It gets all its nourishment from the mosquito larvae it sucks into the bladders.

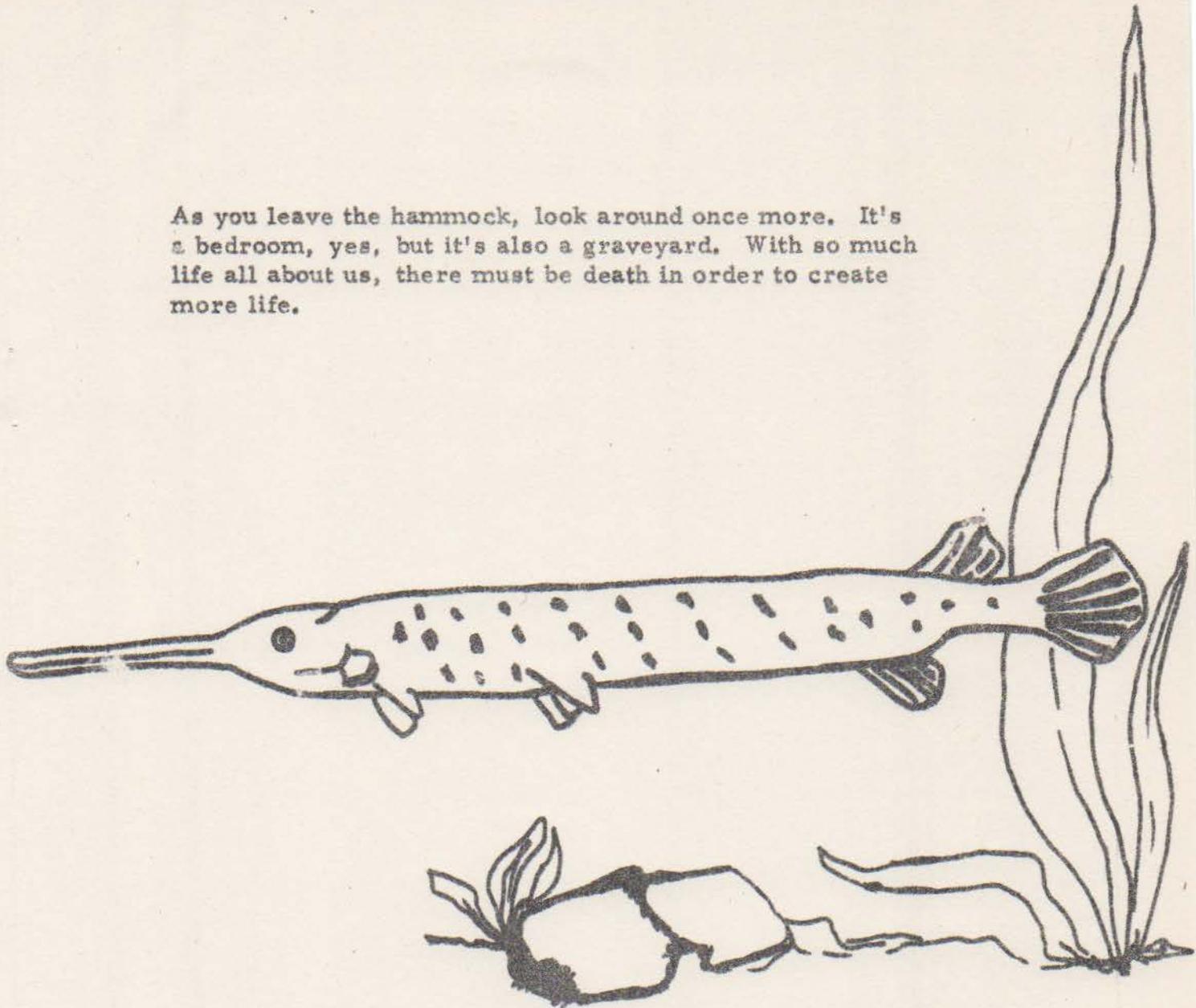
6. Have you ever done a cart-wheel? Well, the garfish is doing just that in the water. He is the long, skinny fish you see doing all the splashing. Not only is he food for the swimming pond builder (the alligator, but he helps in keeping fish populations down by gobbling up any extras. He is often called a scavenger for this very reason.
7. Look for two ducks! Well, they look like ducks, anyway. One is black with a white snoot and is called the coot. The other is black with an orange beak. They are the gallinules. See if you can guess what they do. They seem to spend most of their day eating away at the water plants. The vegetation is almost like an air mattress you might take to the beach. The coots and gallinules keep it all in good working order.
8. Have you ever on a Saturday afternoon cut a hedge in your yard? Could you make a living at it? Look around. There is a critter here who does just that! The big yellow and red lubber grasshopper can usually be found munching away at the plants. He really keeps things in good shape. His appetite is tremendous for anything green. You would, too, if you only had one year to live. When these hedge trimmers are young, they are black and yellow and are seen traveling in large groups (safety in numbers, maybe!). As these little fellows grow, they change in color to yellow and red and develop wings. These wings aren't used in flying but are used in helping the grasshopper keep his balance.
9. As you know, air conditioners are super cooling machines. See if you can't find one. Remember, it will be where it's cool. Yes, you guessed it--under the trees. Just how important are air conditioners? Are they economical to keep up? Do they save energy? How? You may notice different size air conditioners. Some are very large, but others are very, very small. Get down on your hands and knees. See if you can't find a baby tree. Now find some of the critters which prefer these tiny air conditioners. What are they? Frogs and ants? What else? If you had to make a choice, what size and color air conditioner would you choose.
10. Can you find the wall-to-wall carpeting? That's easy--the sawgrass! You wouldn't want to walk barefoot through this carpet, though. Sawgrass is true to its name and car cut. Now we need a vacuum cleaner to help keep the carpet looking good. Think hard! What animal eats sawgrass? Right! The deer feed on the grass and keep it well trimmed and in good order.

11. Obviously, bedrooms are for resting--a quiet place where you can go to get away from it all. The hammock is a type of bedroom. Many of the night critters are found inside the bedroom sleeping away the day. They may be pretty hard to find, so look closely. Oh, by the way! When you are in the hammock, look out for the air conditioner cleaners, the tree snails. They are brightly colored and about the size of a pecan. They are usually found on smooth-barked trees eating tiny lichens from the bark. Maybe you should know there is a killer in this bedroom! It is a tree called the Strangler Fig. It gets a strangle hold on another tree and kills it. Why would one tree kill another? Remember, the hammock is the only high, dry land all year around.

Step out into an open spot in the hammock. Consider the sky--our moving ceiling--and nature's light bulb, the sun. What would happen if the great big lightbulb were to burn out?



As you leave the hammock, look around once more. It's a bedroom, yes, but it's also a graveyard. With so much life all about us, there must be death in order to create more life.



EVERGLADES. . .

A HOME. . .

AN ENVIRONMENT SIMILAR TO YOURS?

FACTS MORE



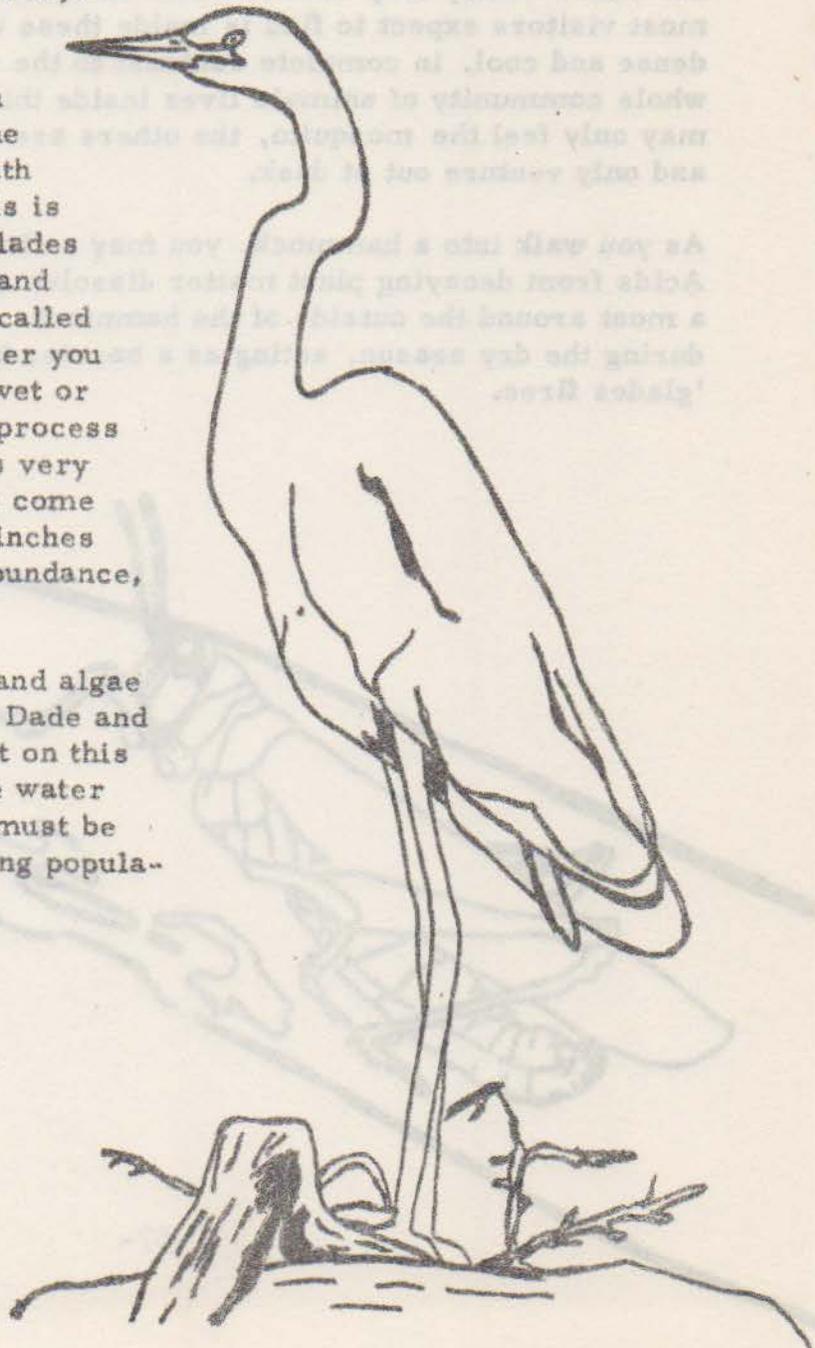
In the following pages you will find resource information about the Everglades. Many of the things described will be encountered on your field trip. These descriptions will help you find and understand each topic.

THE LAND

1. History -- Back in 1945, Shark Valley was the site of an oil drilling operation. The road going in was first an access road for the operation. The canal was dug to obtain roadbed material. Canals are damaging the southern Florida environment because they channelize the water. At the end of this canal stands a modern tower built by the National Park Service in 1965. This is the same site where oil was sought. If oil had been discovered, do you think we would have a park today?

2. Water -- The life-blood of the Everglades flows 100 miles from Lake Okeechobee to Shark Valley, a real river valley. The water doesn't stop here, though. It flows on at about one-quarter mile a day through the sawgrass, and flows into the Shark River about 15 miles south of the Shark Valley tower. This is where the fresh water of the 'glades and salt water of the sea meet and become a brackish water area called an estuary. The amount of water you see depends upon the season--wet or dry. Winter starts the drying process and by March the Everglades is very dry. In June the tropical rains come for three months with 60 to 65 inches of rainfall. Again, life is in abundance, preparing for winter dry.

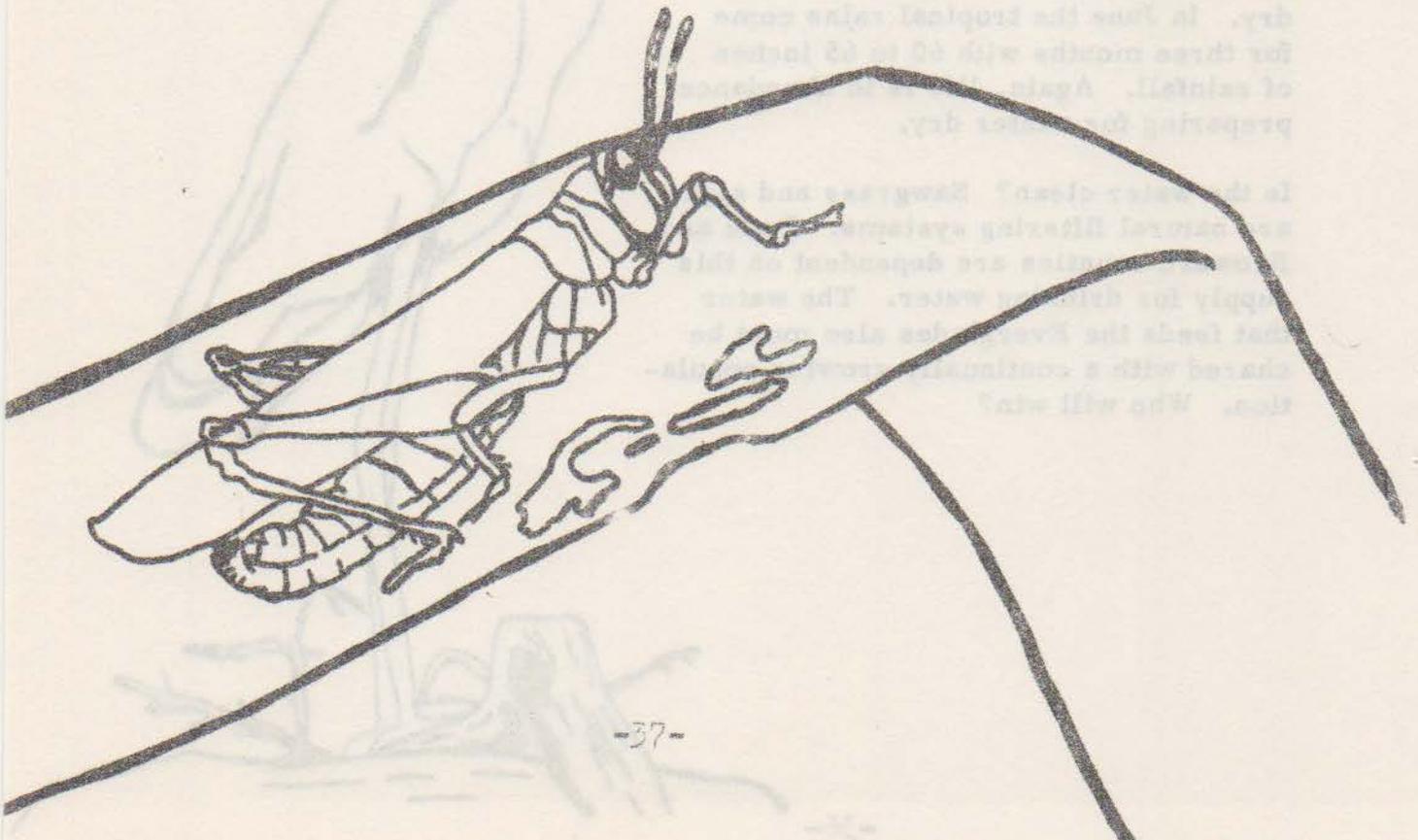
Is the water clean? Sawgrass and algae are natural filtering systems. Dade and Broward counties are dependent on this supply for drinking water. The water that feeds the Everglades also must be shared with a continually growing population. Who will win?



3. Limestone -- is the bedrock of the 'glades. It is two miles thick. What's it made of? Calcium. From what? Shells. The 'glades were once part of a shallow inland sea. Now, many years later, you can still find signs of this sea imbedded in the rock as sea shells. The rock is soft, though, and holes are being formed from years of rain, decaying matter, and calcium from the limestone itself. Solution holes (the calcium and rainwater) is what they are known as.

4. Hammocks -- or tree islands are the dark green clumps of vegetation you see dotted throughout the open sawgrass. These islands sit on limestone ridges (1 to 3 feet high) and stay high and dry year round, even when the Shark Valley loop road is covered with water. The tropical jungle most visitors expect to find is inside these very hammocks. They are dense and cool, in complete contrast to the sunbaked 'glades outside. A whole community of animals lives inside this jungle growth. Although you may only feel the mosquito, the others are there, but most are nocturnal and only venture out at dusk.

As you walk into a hammock, you may notice a definite change in elevation. Acids from decaying plant matter dissolve away the limestone, creating a moat around the outside of the hammock. These moats hold water even during the dry season, acting as a barrier in protecting the hammock from 'glades fires.

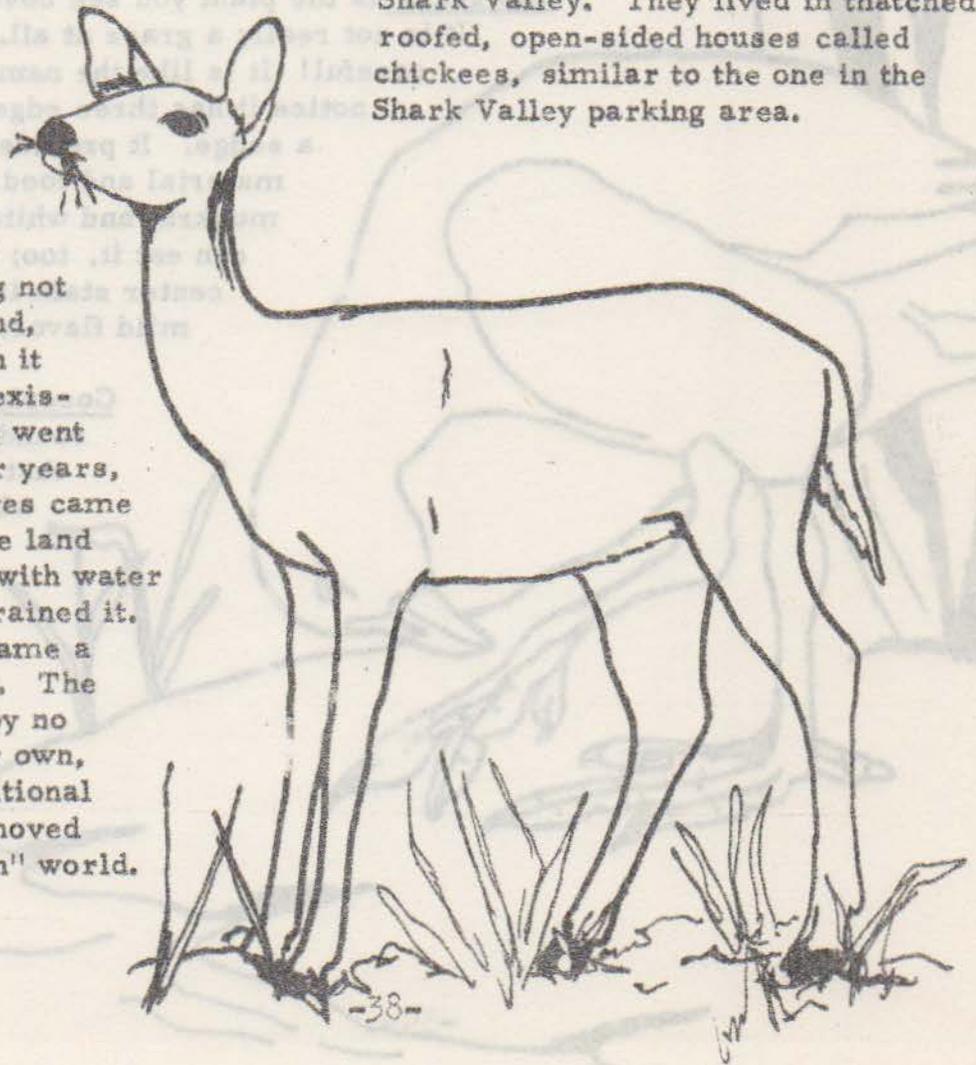


5. Willow heads -- or holes are the lighter green clumps of trees you see scattered throughout the 'glades. They are typically doughnut-shaped or in long strands running with the water flow from the north to the southwest. Willows grow best in solution as they are a water loving plant. In drought times these willow holes are important in sustaining many forms of life. During the dry season, alligators seek these areas and start digging in the soft muck soil. After much work, the alligator transforms the willow hole into a "gator hole" (sometimes called "survival holes"). Many fish, birds, and animals might not survive if it were not for these 'gator holes, for everything needs water for survival. For many years alligators were being killed for the valuable hide. In the past, "gator hunters" found the 'gators just as we, by looking for the light green willow heads. After finding the 'gator, it was shot; then skinned. With alligators disappearing, the 'gator holes soon silted in and dried up. This spelled death for many animals during the dry season. Today, with strict laws protecting this living dinosaur, it is making a strong comeback at last.

6. Seminole -- is what most people call the local native Indians, but Miccosukee is their real name, a branch of the Seminole Tribe.

Traditionally hunters, they also farmed and lived in the hammocks of Shark Valley. They lived in thatched roofed, open-sided houses called chickees, similar to the one in the Shark Valley parking area.

They traveled through this land by dugout canoe, seeking not to tame the land, but to live with it in peaceful coexistence. Things went on like this for years, until non-natives came and decided the land was of no use with water on it. They drained it. The canoe became a museum piece. The Miccosukee, by no choice of their own, left their traditional lifestyle and moved into a "modern" world.



Today, while still trying to maintain some tradition, they have adapted somewhat to life along the Tamiami Trail. It is here, along the Tamiami Trail, where they pursue a new way of life.

Many enterprising individuals run and operate craft shops and offer air-boat tours along a short stretch of the Trail.

PLANTS

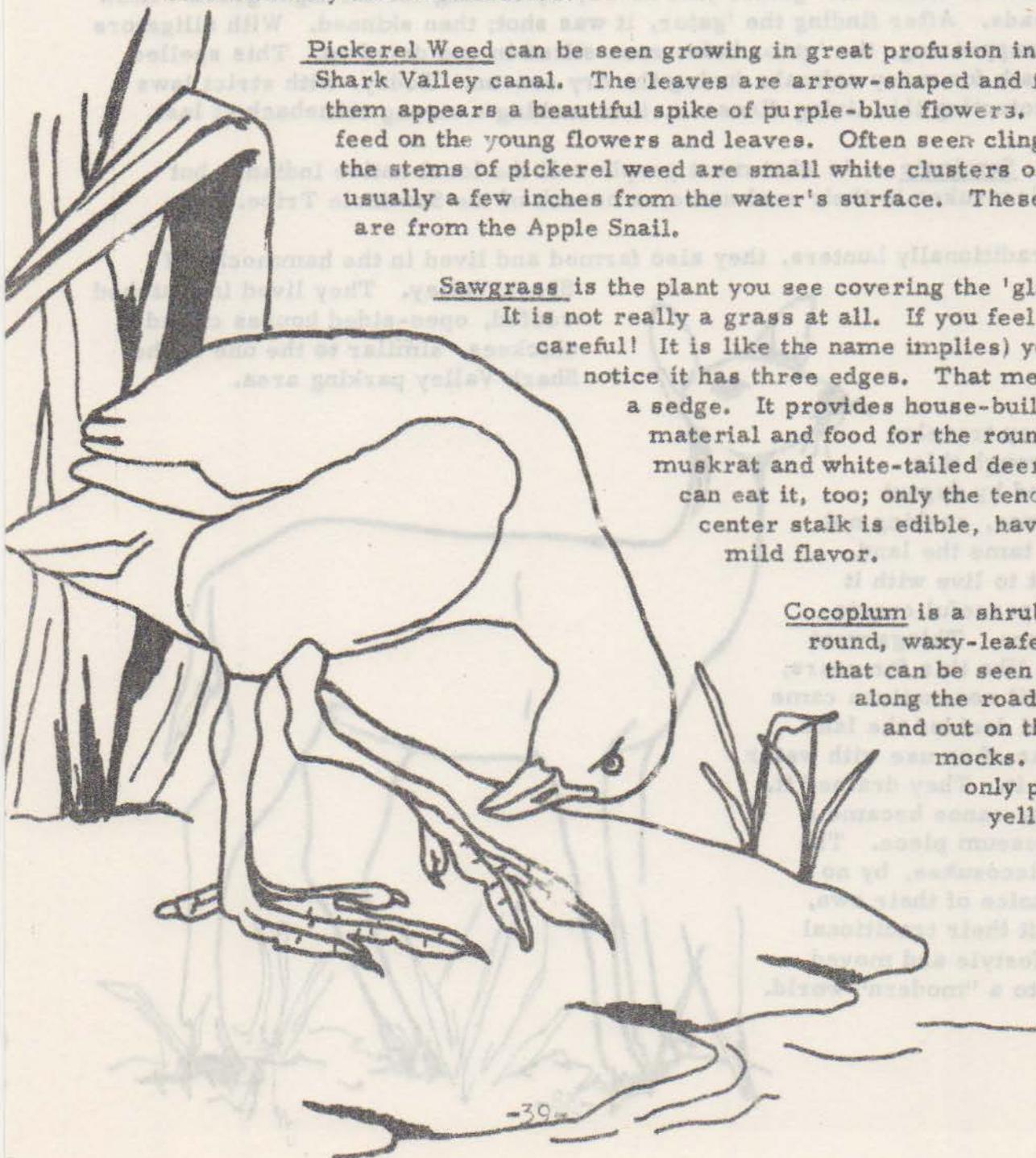
It would take a volume or two to try and name all of the plants, so we will deal with only the most obvious.

Pickrel Weed can be seen growing in great profusion in the Shark Valley canal. The leaves are arrow-shaped and from them appears a beautiful spike of purple-blue flowers. Deer feed on the young flowers and leaves. Often seen clinging to the stems of pickrel weed are small white clusters of eggs, usually a few inches from the water's surface. These eggs are from the Apple Snail.

Sawgrass is the plant you see covering the 'glades.

It is not really a grass at all. If you feel it (be careful! It is like the name implies) you might notice it has three edges. That means it is a sedge. It provides house-building material and food for the round-tailed muskrat and white-tailed deer. Man can eat it, too; only the tender center stalk is edible, having a mild flavor.

Cocoplum is a shrubby, round, waxy-leaved plant that can be seen growing along the road shoulders and out on the hammocks. It is the only plant with yellow-green,



round-shaped leaves. It has a green, round fruit that turns to purple when ripe and is about the size of a black olive. These fruits are food for raccoons, deer, and opossums, as well as some of the birds. They are edible by man, also.

The Gumbo Limbo tree will be easy to identify. Just look for a tree with a shiny, red, peeling bark. It grows on the high, dry ground of the hammocks. Years ago this tree was sought for its wood. Craftsmen found the wood easy to carve and many a merry-go-round horse was made from it.



The Strangler Fig tree is everyone's favorite except for the tree it strangles. It starts its life as a small seed and is often dropped by birds into the top of another tree. Amazingly, it starts to grow up there, slowly sending a thread-like root to the ground. Eventually it will kill its host by shading it too much or by the sheer weight of the strangler crushing it. This is one of the better examples of competition among plants for the scarce, high, dry land of the hammock.

The Sabal Palm is the state tree of Florida. It also goes by the name of Cabbage Palm, named for the heart or leaf bud that tastes like cabbage. Unfortunately, indulging in this delicacy kills the tree. It is the favorite tree for the Strangler Fig. The local Indians use the palm frond for making the thatched roofed huts they call chickees.

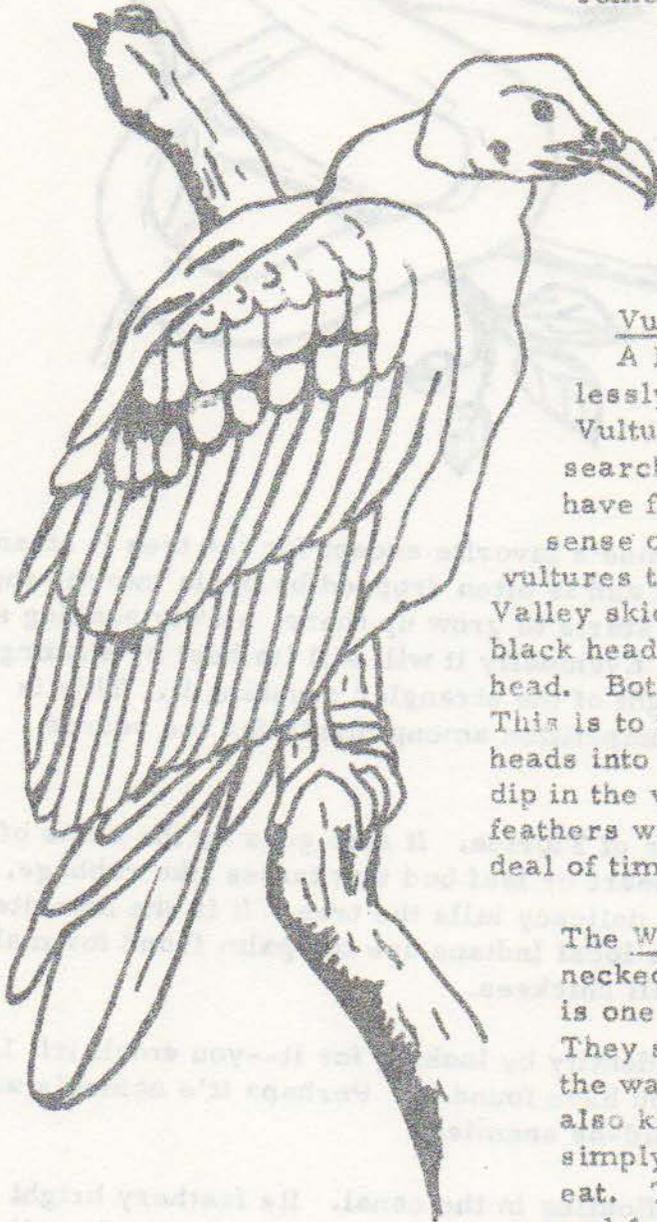
The Stopper tree isn't easy to identify by looking for it--you smell it! If you think you smell a skunk, you have found it. Perhaps it's nature's way of protecting the tree from would-be enemies.

The Bladderwort is seen free-floating in the canal. Its feathery bright green foliage floats on the water's surface, usually with one single yellow flower protruding above the water. It doesn't have roots! It gets its food from "eating" small aquatic critters (mosquito larvae) by means of minute little bladders in the green foliage.

BIRDS, BIRDS, BIRDS

Let's start with the Coot, a medium-sized, black, duck-like bird with a white snoot and red eyes. It's not a duck at all. It doesn't have webbed feet. Migratory in its habits, it spends most of the winter in Florida. It is ordinarily a vegetarian, feeding on aquatic plants growing in the canal.

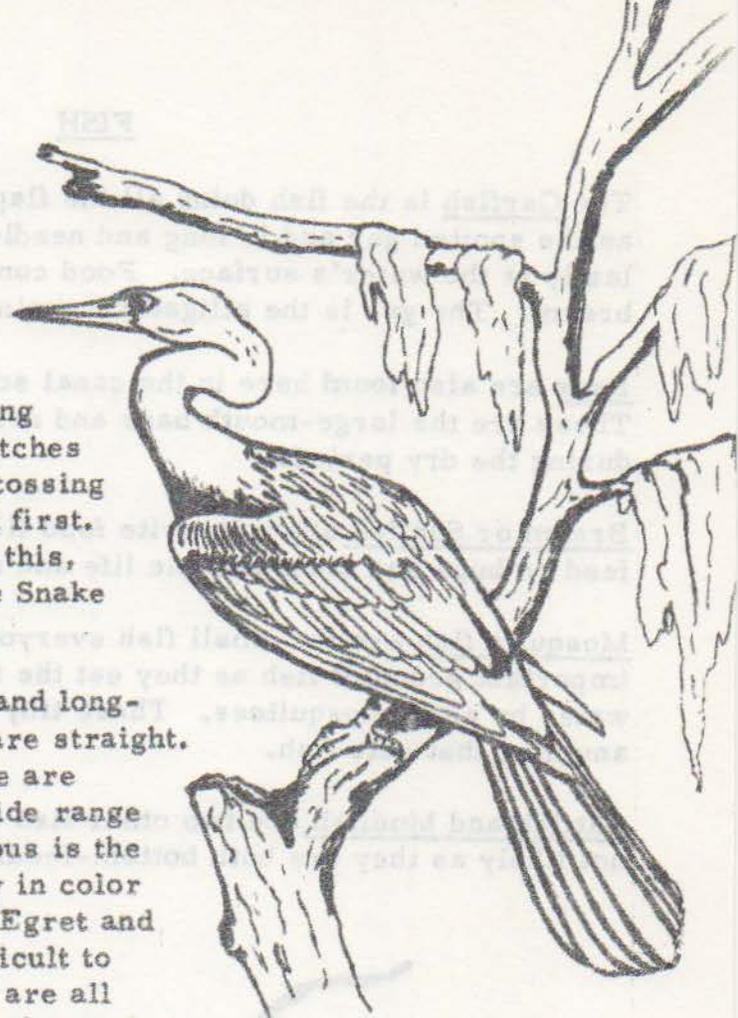
The Gallinule is black in color like his close cousin, the coot. He isn't a duck, either. It's confusing, huh? Just remember he has an orange beak with a yellow dot on the tip. This yellow tip acts as a bullseye target for young birds to tap on, thus getting mom or dad to feed them. They are basically vegetarians in their eating habits.



Vulture -- Look alive and look up. A large black bird circling effortlessly above you in the sky is the Vulture. He spends much of his day searching for dead things to eat. They have fantastic eyesight as well as a good sense of smell. There are two kinds of vultures to be found soaring about Shark Valley skies. The Black Vulture has a solid black head and the Turkey Vulture has a red head. Both birds have featherless heads. This is to their advantage when sticking their heads into the carcass of a dead animal. One dip in the water cleans the skin head. If feathers were there, it would take a good deal of time to clean up after a smelly meal.

The White Ibis is a long-legged, long-necked bird with a pink curved bill. It is one of the birds we often call a wader. They spend most of their day wading in the water searching for food. They are also known as grope feeders. This simply means they can't see what they eat. They move their open bills back and forth in the shallow water until something (a fish, frog, or crayfish) runs into it and then the bird clamps its bill shut on his hopeful meal.

The Anhinga, Snake Bird, or Water Turkey are three different names for a strange looking blackish bird. Easier to identify than most, it usually is found posing with its wings stretched out drying in the sun. The Anhinga catches its food by diving under the water and spearing fish with its sharp beak. After it catches its meal, it returns to the surface, tossing it in the air and gulping it down head first. If, by chance, you see him doing all this, you will see why he is nicknamed the Snake Bird.



Herons and Egrets are long-legged and long-necked like the Ibis, but their bills are straight. They are also called Waders. There are many members of this family in a wide range of colors and sizes. The most obvious is the Great Blue Heron which is blue-gray in color with about a six foot wingspan. The Egret and White Herons are both white and difficult to distinguish from one another. They are all basically fishermen, but also feed on bugs, frogs, and crayfish as well. At night they roost in large flocks over alligator holes in large willow heads. During breeding season (January through March) these birds grow special mating feathers called plumes. In the early 1900's, plume hunters mass slaughtered these birds for those special feathers. Not only were the adults killed, but the young were left to starve in the nest by the thousands. These feathers were used to adorn fashionable ladies hats throughout the world. Today, thanks to strong laws, these birds are protected, but declining water levels once again are threatening the population.

The American Wood Stork is a very large black and white wading bird with a solid black featherless head. There is no other bird like this one around. This bird, with its down-curved bill is also a grope feeder. Wood stork populations have been declining over the years because they need high concentrations of food during nesting season. With man controlling water levels in south Florida, this doesn't happen often. It is the only stork native to North America.

The Everglades Kite is a brown hawk with a white band at the base of its tail. You might not get to see this bird because it is extremely rare. It has a very specialized sharp, hooked beak that is used for catching its only food--the Apple Snail. (Empty shells are often found along the road shoulders. Again, because of fluctuating water tables, the snail is in shorter supply than in the past, and this fantastic bird is the first to feel the effects of the shortage.

FISH

The Garfish is the fish doing all the flapping in the water. It is also known as the spotted gar and is long and needle-shaped in appearance as it lays lazily at the water's surface. Food consists of other fish like bass and bream. The gar is the alligator's main diet.

Bass are also found here in the canal scurrying along the water's surface. These are the large-mouth bass and are usually one of the first fish to die during the dry periods.

Bream or Sunfish are a favorite food fish among Florida fishermen. They feed on bugs and other aquatic life and are eaten by many of the wading birds.

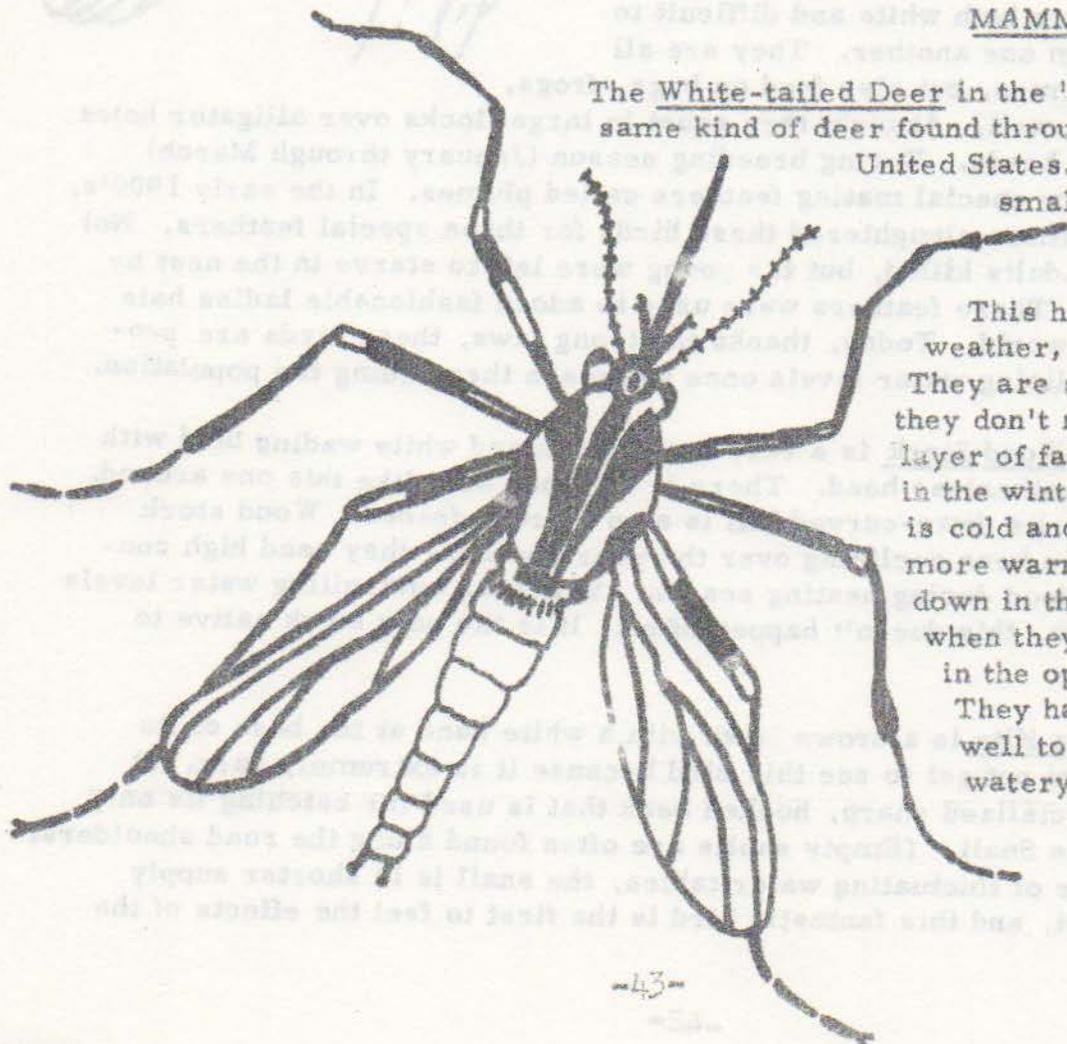
Mosquito fish are the small fish everyone calls minnows. These are a very important group of fish as they eat the mosquito larvae that are laid on the water by adult mosquitoes. These tiny little fellows are food for just about anything that eats fish.

Catfish and Mudfish are two other fish you might chance to see, but it is not likely as they are both bottom-feeding fish.

MAMMALS

The White-tailed Deer in the 'glades are the same kind of deer found throughout the eastern United States. Their size is smaller than their northern counterparts.

This has to do with weather, not lack of food. They are smaller because they don't need an excess layer of fat to protect them in the winter. Up north it is cold and more fat means more warmth. They bed down in the hammocks when they aren't feeding in the open sawgrass. They have adapted quite well to living in this watery environment.



Raccoons are the masked furry bandits of the 'glades, usually only seen in the evening as they are nocturnal. Food consists of about anything from a baby 'gator or bird to fruit and fish. The hammock is home during the day.

The Opossum gives the appearance of an overgrown hairy gray rat! Like the raccoon, it is nocturnal, feeding mostly on fruits and eggs.

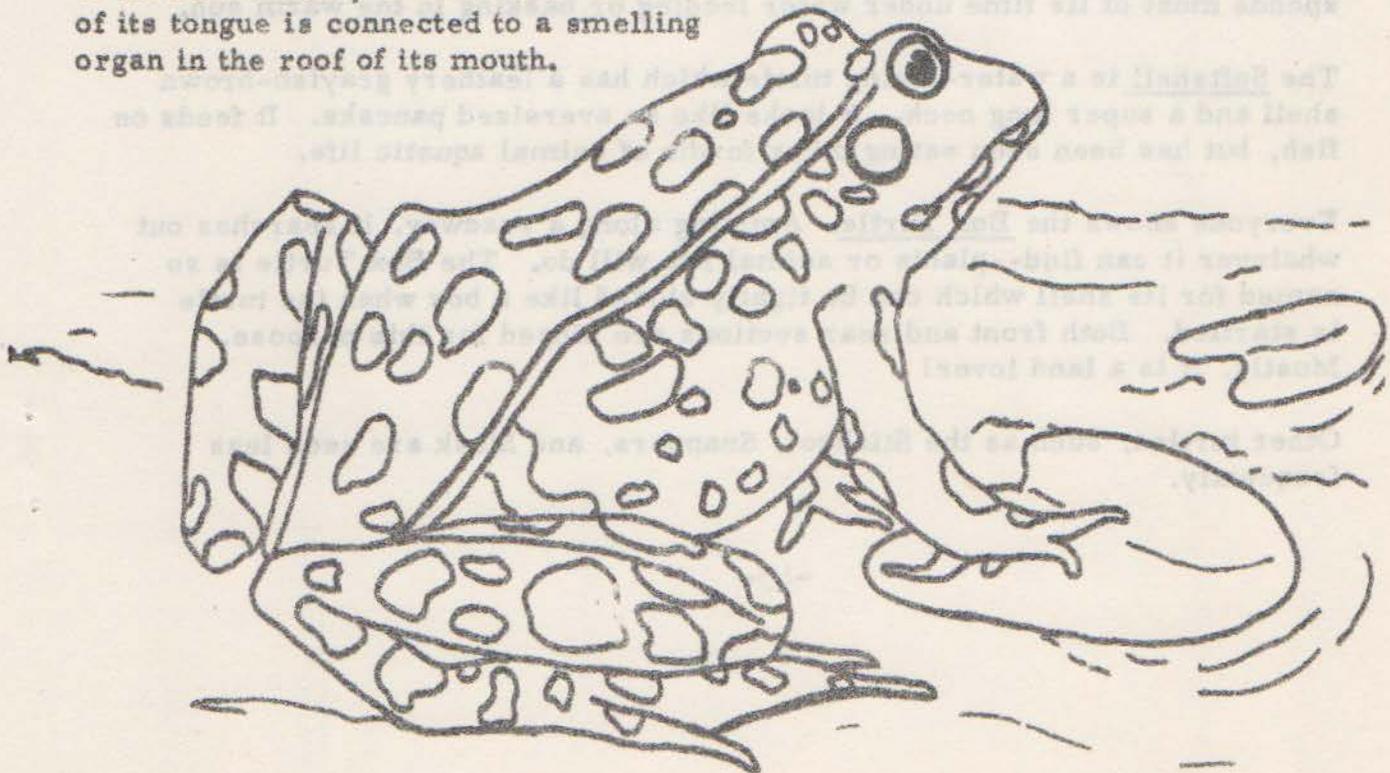
Otter are long, shiny brown seal-like animals which are often called the playboys of the swamp. Seen usually in the water feeding on turtles, fish, and an occasional baby 'gator, they literally play with their food! Otter are still hunted in Florida for their winter hide, used for making coats.

Bobcat, Panther, and Bear are also found in the 'glades, but are rarely seen.

SNAKES

There are some 26 different kinds of snakes found in the park, each having a different habitat--tree, under rocks, on dry land, or near the water edge. It would take too long to describe them all, so let's stick to a few basic facts.

To a snake, man is neither enemy nor food, and a snake only attacks a human being when it does not sense his presence in time to slither away. The forked tongue that gives such a dangerous appearance is a harmless organ. Since snakes have poor eyesight, they must constantly flick their tongue in order to smell what they cannot see. The base of its tongue is connected to a smelling organ in the roof of its mouth.



Snakes are not slimy--they are cool and smooth. Their long bodies are covered with scales that move when muscles contract. This allows the snake to move forward.

When snakes eat, they unhinge their jaws. This allows them to swallow some fairly large prey. They feed by grasping their prey with their teeth and looping their bodies in coils around their victim (constrictors especially). This doesn't necessarily crush the animal but prevents it from breathing.

In Everglades there are four poisonous snakes--the Diamondback Rattlesnake, Pigmy Rattlesnake, Coral Snake, and Cottonmouth Water Moccasin. Although man doesn't think too much of these snakes, they are a friend to man. Certain snake venom is of use in the treatment of certain medical conditions.

But, REMEMBER... don't pick up any snake. View from a safe distance!

TURTLES

Red Bellied Turtle, is as the name implies, although that red is more often orange than not. A hard-shelled turtle, it feeds on vegetation like the bladderwort plant growing in the canal. If you can't see its belly look at its head. If it is yellow and black striped, it is a red-belly, all right. It spends most of its time under water feeding or basking in the warm sun.

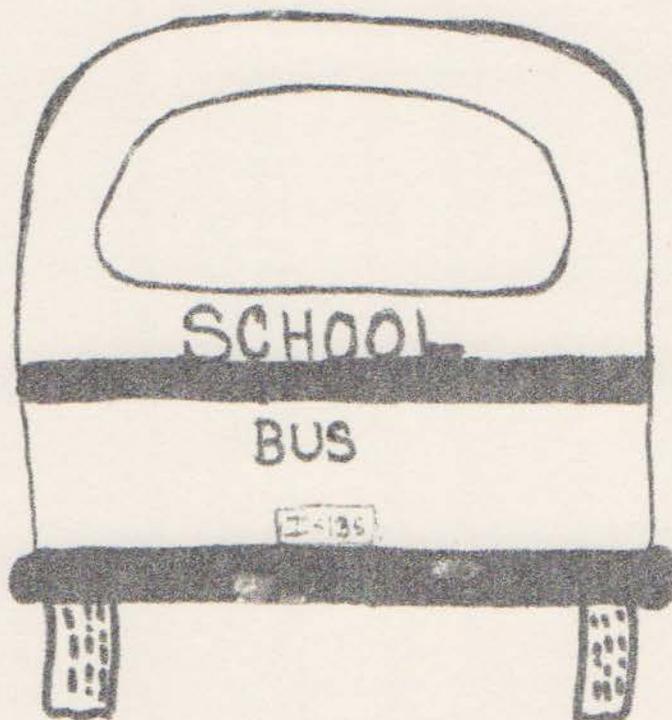
The Softshell is a water-loving turtle which has a leathery grayish-brown shell and a super long neck. It looks like an oversized pancake. It feeds on fish, but has been seen eating other forms of animal aquatic life.

Everyone knows the Box Turtle. Ambling along a roadway, it searches out whatever it can find--plants or animal life will do. The Box Turtle is so named for its shell which can be tightly closed like a box when the turtle is startled. Both front and rear sections are hinged for this purpose. Mostly, it is a land lover!

Other turtles, such as the Stinkpot, Snappers, and Musk are seen less frequently.

POST

SITE



WHEW!!! Your field trip is over. We hope it has been an enjoyable learning experience. The park also hopes that the experience is reinforced throughout the remainder of the school year. In order to help you do this we have prepared a few post-site activities. Happy learning!

ACTIVITIES FOR SELF-EXPRESSION

Haiku and Cinquain Poetry

Poetry forms or other self-expression activities are used most effectively in the middle or near the end of a hike. Ask the participants to write about something they have experienced up that point (a sound, a smell, an object, a thought, a feeling, etc.). Let those who wish to do so share their poetry with the others. (See the formats for Haiku and Cinquain)

Group Story

At a spot that particularly sparks the imagination, let the group make up a story. You could start it off, then let each person add something to the story.

Group Poetry

Group poetry can be done by letting each person write a line or two as part of one whole poem.

Wishful Thinking

Pick a good spot where everyone can sit or lie down and be quiet for a few moments. Then ask each person, "If you could be anything other than a human being, what would you like to be out here and why?"

ACTIVITY #18 "Word" Cinquain

1. _____
2. _____
3. _____
4. _____
5. _____

1. Use 1 word to name the subject you are writing about.
2. Use 2 words to describe #1.
3. Use 3 words about what #1 is doing.
4. Use 4 words to tell how you feel about #1.
5. Use a word that means the same as #1.

In the strict poetic sense, cinquain poetry (pronounced san (d) cano) has few lines with a certain number of syllables per line:

2
4
6
8
2

instead of a number of words. You might try to get fancy as you go on with poetry. Look at Haiku next. Form is not the important factor, the expression of feelings is. Poetic license allowed and encouraged!

Haiku is a three line verse form which originated in thirteenth century Japan. Characteristics of authentic Haiku are:

- Three lines: Line 1 contains 5 syllables; Line 2 contains 7 syllables; Line 3 contains 5--17 syllables in all.
- English translations do not always follow this pattern.
- Each poem includes the season, location, reference to nature.
- No subject matter deals with simple ordinary things.
- No rhyme (Japanese words end in vowels or "n" sounds).
- Few articles or pronouns--syllables can be used for better purpose.
- Thought comes first; then the syllables are adjusted to fit the form.

Examples of Haiku for inspiration and demonstration by the Japanese masters.

Departing spring
Hesitates
In the late cherry blossoms.
--Buson

Simply trust:
Do not the petals flutter down
Just like that?
--Issa

The old pond;
A frog jumps in, --
The sound of the water.
--Basho

Some student expressions--

EARTHQUAKE
A monster trying
To escape from his dungeon
Beneath the earth's crust.
--Bob Thompson

MOTHER TREE
Stretching out her arms
To protect the world from the
Fury of the skies.

THE SEA
The sea is like life --
Mighty, big, and beautiful
At dawn and at dusk.
--Jimmy Farnsworth

SADNESS
The dying of the flowers,
The turning of the grass,
The autumn breeze.
--Jean Gregory

TEN LITTLE INDIANS
(adapted tune)

Who eats who out in the Everglades?
Who eats who out in the Everglades?
Who eats who out in the Everglades?
Bet you can't guess who eats who.

First the mosquitoes eat on you (ouch).
First the mosquitoes eat on you (ouch).
First the mosquitoes eat on you (ouch).
Way down yonder in the Everglades swamp.

Then the skeeter fish eat the skeeter babies (gulp).
Then the skeeter fish eat the skeeter babies (gulp).
Then the skeeter fish eat the skeeter babies (gulp).
Way down yonder in the Everglades swamp.

Great big fish come gobble up the skeeter fish.
Great big fish come gobble up the skeeter fish.
Great big fish come gobble up the skeeter fish.
Way down yonder in the Everglades swamp.

Then the birds and gators eat the big fish (snap).
Then the birds and gators eat the big fish (snap).
Then the birds and gators eat the big fish (snap).
Way down yonder in the Everglades swamp.

Man gets in on the big fun, too.
Man gets in on the big fun, too.
Man gets in on the big fun, too.
Brings his gun and shoots them thru (pow).

Gators ain't king in the Everglades swamp.
Gators ain't king in the Everglades swamp.
Gators ain't king in the Everglades swamp.
Ain't no king in the Everglades swamp.

But there's old man bleeding from the skeeter.
But there's old man bleeding from the skeeter.
But there's old man bleeding from the skeeter.
Ain't no king in the Everglades swamp.

"THE FRIEND"

Once upon a time there was an alligator.

He was an enormously large alligator.

And he had this very special friend. A small boy.

The boy would come every day to the 'gator hole to visit his friend.

This made the alligator very happy.

Each day the boy would come and bring a book to read to his very special friend.

The boy trusted the alligator and the alligator trusted the boy.

Why, the alligator even let the boy take things from his pond.

Things like shells, and flowers growing in the muddy bank.

Things went this way for a long, long time (about two years).

But then the boy went away for a long time, and the alligator was alone much of the time.

It was the dry season and the old alligator decided it was time to spruce up the ol' pond, so he set about his cleaning and digging.

It was hard work, but he didn't mind because he knew that pretty soon his friend would return and when he saw how good things looked, the boy would be proud.

And the 'gator would be happy.

When the boy finally did come back, he somehow looked different--older.

The boy spoke. "Alligator, I'm unhappy. I need some money."

"I have no money," said the alligator. "But you can take some of my food--the garfish--and you can sell them and make money. Then you will be happy."

So the boy did.

The boy went away.

This time he was gone a long time.

When the boy returned, the alligator roared with joy at the sight of his friend.

"Hi, boy. Come sit by the bank and read me a story like long ago," said the alligator.

"I haven't the time," said the boy. "I have a wife and family now, and they want a lot of new things."

"Oh," said the alligator. "I haven't got new things or I would give them to you. Wait a minute! I have an idea. Catch those frogs over there and take them to the city to sell and you will have money to buy those things for your family."

The boy didn't like the idea of getting wet, but he did, grumbling all the way.

And, of course, this all made the alligator happy to help his friend, even if that was his food.

It was a bad dry season, and the alligator suffered. Not much food, especially with no garfish or frogs.

The alligator anxiously awaited his friend.

This time when the boy returned he had a long, gray beard. He was getting old.

"I hear I can make good money from your hide, my friend," said the boy.

"I've heard of such things, but they say it is very painful," said the alligator.

"If you are still my friend," said the boy, "you will let me have it."

"My hide is in poor shape from lack of food. I'm afraid it won't bring much money, but yes, I will always be your friend. You can take my hide."

And so the boy did.

And the 'gator was happy, but not really.

When the boy returned to the alligator hole, his friend was gone.

The hole had dried up and all the birds were gone.

The snakes, frogs, garfish, the cute little mosquitoes, the dragonflies, turtles, raccoons, and deer.

All were gone and the boy left, alone and unhappy.

A child's world is fresh and new and beautiful, full of wonder and excitement. It is our misfortune that for most of us that clear-eyed vision, that true instinct for what is beautiful and awe-inspiring, is dimmed and even lost before we reach adulthood. If I had influence with the good fairy who is supposed to preside over christening of all children I should ask that her gift to each child in the world be a sense of wonder so indestructible that it would last throughout life, as an unfailing antidote against the boredom and disenchantments of later years, the sterile preoccupation with things that are artificial, the alienation from sources of our strength.

If a child is to keep alive his inborn sense of wonder without any such gift from the fairies, he needs the companionship of at least one adult who can share it, rediscovering with him the joy, excitement, and mystery of the world we live in. Parents often have a sense of inadequacy when confronted on the one hand with the eager, sensitive mind of a child and on the other hand with a world of complex physical nature, inhabited by a life so various and unfamiliar that it seems hopeless to reduce it to order and knowledge. In a mood of self defeat, they exclaim, "How can I possibly teach my child about nature--why, I don't even know one bird from another!"

I sincerely believe that for the child, and for the parent seeking to guide him, it is not half so important to know as to feel. If facts are the seeds that later produce knowledge and wisdom, then the emotions and the impressions of the senses are the fertile soil in which the seeds must grow. The years of early childhood are the time to prepare the soil. Once the emotions have been aroused-- a sense of the beautiful, the excitement of the new and the unknown, a feeling of sympathy, pity, admiration or love--then we wish for knowledge about the object of our emotional response. Once found, it has lasting meaning. It is more important to pave the way for the child to know than to put him on a diet of facts he is not ready to assimilate.

--Rachel Carson
A Sense of Wonder



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RESOURCE MATERIALS

Adventure in Environment
National Environmental Education
Development Materials (K-8)
Silver Burdett Company
Box PM-S
Morristown, New Jersey 07960

Brevard County Environmental
Curriculum Materials (K-8)
Center for Environmental Learning
705 Avocado Avenue
Cocoa, Florida 32922

Environmental Studies (all ages)
Addison-Wesley Publishing Company
Menlo Park, California

Martin County Environmental
Curriculum Materials (K-8)
Environmental Studies Center
2900 NE Indian Drive
Jensen Beach, Florida 33457

Outdoor Biology Instructional
Strategies (OBIS) (4-8)
Lawrence Hall of Science
University of California
Berkeley, California 94720

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