TEXAS PARKS AND WILDLIFE

FIFTH GRADE OUTDOOR LABORATORY AT LOCKHART STATE PARK

SPRING

STUDENT JOURNAL

TEXAS PARKS & WILDLIFE

Texas Master Naturalist

LOCKHART I.S.D.

TEXAS PARKS & WILDLIFE

Lockhart
State Park

Features at Lockhart State Park:

SWIMMING POOL: Open Wednesday through Sunday during the summer pool season. Lifeguard on duty at all times.

GOLF COURSE: Nine hole, 3,000 yards, par 35. Golf cart rental available at park headquarters.

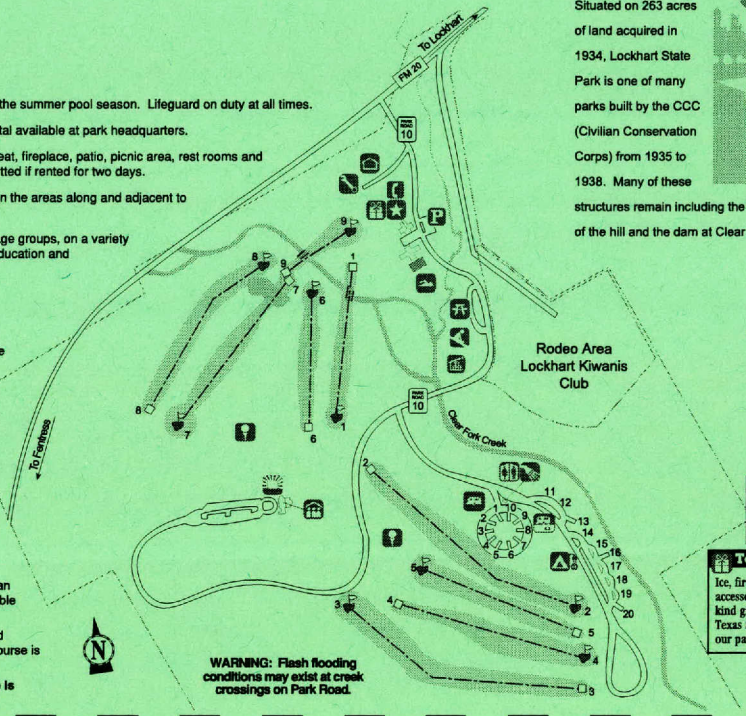
RECREATION HALL: Reservable facility with central air and heat, fireplace, patio, picnic area, rest rooms and kitchen with stove and refrigerator. Overnight occupancy permitted if rented for two days.

FISHING: Fishing is permitted along Clear Fork Creek except in the areas along and adjacent to the golf course. No trotline or throwlines permitted.

INTERPRETIVE PROGRAMS: Conducted year round, for all age groups, on a variety of topics, including the CCC, natural resources, conservation education and regional flora and fauna. Contact the park for information.

Please Note:

- Campsite CHECK OUT time is 2 p.m. Requests to extend reservations should be made by 9 a.m. and are subject to site availability.
- A maximum of eight people are permitted per campsite. Overcrowding damages vegetation, increases soil compaction and often leads to noise problems.
- Quiet hours are from 10 p.m. to 6 a.m. Day use visitors are permitted to remain in the park until 10 p.m.
- Pets should be leashed and not left unattended. This keeps them and other visitors safe while protecting wildlife.
- A valid permit is required on all vehicles in the park. Please keep vehicles on the road to reduce erosion and loss of fragile vegetation.
- Black water and gray water can only be discharged at designated dump stations. This water carries bacteria that can spread serious illness and food particles that attract undesirable animals, including fire ants.
- Hiking, walking and cycling permitted on designated trails and roadways. For your safety, walking and cycling on the golf course is not permitted during golf course hours of operation.
- **Public consumption or display of any alcoholic beverage is prohibited.**



Situated on 263 acres of land acquired in 1934, Lockhart State Park is one of many parks built by the CCC (Civilian Conservation Corps) from 1935 to 1938. Many of these structures remain including the Rec Hall at the top of the hill and the dam at Clear Fork Creek.

Live Oak
Quercus sp.

Park Reservations
(512) 389-8900
www.tpwd.state.tx.us

Texas State Parks Store
Ice, firewood, concession items, golf accessories, T-shirts and one-of-a-kind gift items are available at the Texas State Parks Store located in our park headquarters building.

Legend:

- Headquarters
- Parks Store/Pro Shop
- Rest Room
- Showers
- Water/Electric
- Full Hook-ups
- Dump Station
- Residence
- Recreation Hall
- Golf Course
- Pay Phone
- Picnic Area
- Picnic Shelter
- Swimming Pool/ Bathhouse
- Parking
- Playground
- Maintenance
- Scenic Overlook

4179 State Park Road
Lockhart, TX 78644-9716
(512) 398-3479

STUDENT NAME _____

Welcome

to Lockhart State Park!

Hello Students,

This is your student journal for your science outdoor laboratory. Today you will participate in four lab activities. This journal contains information and questions about each lab. You, the student, are expected to answer the questions in your journal as instructed and turn them in to your teacher at the end of the day.

Your teacher will use these journals to evaluate your understanding of the lab exercises. Also, these "hands-on" lab activities are designed to help you understand your classroom lessons. It is great fun to be outdoors, and you are expected to learn the information covered in each lab activity.

Another purpose of these outdoor labs is to introduce you to your state park. For many of you, this is the first time you have been to Lockhart State Park. These labs will help you explore the natural resources in the park, gain an appreciation for wildlife and their habitat, and learn the importance of conservation.

The people who are instructing the labs are volunteers and Texas Parks and Wildlife employees. They are here because they care about you and your education. Their goal is to help you understand your natural environment. Please give your full attention to your lab instructors, follow their directions, participate in the activities, learn the concepts being taught, be courteous to each other, and **HAVE FUN!!!**

ACTIVITY 1

Clear Fork Creek Water Quality Monitoring

What is ***pollution***? Pollution is the introduction of harmful substances or products into the environment. When pollution enters a stream, wetland, bay or lake it can make the water unhealthy and impaired. Pollution sources are divided into two groups: point source and non-point source.

Point source pollution is a single, identifiable source of pollution, like a sewage pipe emptying into a river. ***Nonpoint source pollution*** is caused by rainfall or snowmelt moving over and through the ground. As the rainfall and snowmelt move, they pick up and carry away natural and human-made pollutants, depositing them into streams, wetlands, bays, lakes, and underground sources of drinking water. An example of nonpoint source pollution is when fertilizer on a lawn washes into a stream after it rains.

The area of land that drains into streams, wetlands, bays and lakes is called a ***watershed***. Everyone lives in a watershed, and Lockhart State Park is located in the Plum Creek Watershed.

In this lab activity you conduct a test to determine if the water in Clear Fork Creek is healthy for aquatic life. The Dissolved Oxygen test tells us how much oxygen is available in the water. Aquatic life needs oxygen to survive. Healthy waters generally have a lot of dissolved oxygen.

Several factors influence the level of dissolved oxygen in the water. These include temperature, how much water and how fast it is flowing, the number of plants and algae in the stream, pollution, and the kind of the stream bottom. Gravel stream bottoms stir up the water more than muddy stream bottoms. When water runs over rocks it make the water ripple causing more oxygen to be dissolved into the stream.

ACTIVITY 1, continued

Please complete the following:

I ***hypothesize*** that the percentage of dissolved oxygen in Clear Fork Creek is (circle one):

Excellent Good Fair Poor

because_____

_____

Data Collection Form

Date: _____ **Time:** _____

Location: _____

Air Temperature: _____°C

Weather Conditions: (for example – sunny, windy, humid, etc.)

_____

Water Appearance: (for example – clear, foamy, muddy, oily sheen, scum, etc.)

_____

Field Observations: (for example – trash, leaves, sticks, etc.)

_____

Clear Fork Creek Water Quality Monitoring

Test Factor	Results	Ranking
Water Temperature	°C	
Dissolved Oxygen	ppm	
Dissolved Oxygen % saturation	%	

ACTIVITY 1, continued

Questions:

1. Was your hypothesis correct? **Yes** **No**

2. Based on the results of your test, what is the quality of the water in Clear Fork Creek and name one factor influencing the result of your test?

   _____

3. Pollution influences the level of dissolved oxygen in a creek.

   True **False**

4. Circle the correct answer: The stream bottom of Clear Fork Creek is
   a. gravelly and rocky
   b. muddy
   c. gravelly, rocky and muddy

5. Do you live in a watershed? **Yes** **No**

6. In what watershed (name) is Lockhart State Park located?

   _____

7. Motor oil on roadways is an example of which group of pollutants (circle one):

   Nonpoint Source **Point Source**

8. A pipe dumping sewage in a lake is an example of which group of pollutants (circle one):

   Nonpoint Source **Point Source**

9. How do nonpoint source pollutants end up in our creeks, rivers, wetlands and bays?

   _____

ACTIVITY 2

What's Your Niche?

Everyone and everything has a niche. A niche is the role an organism has in its ecosystem. An ecosystem is an area where living organisms interact with each other and with the nonliving things in the environment such as rocks, air, water and sunlight. There are many factors that make up an organism's niche. These factors include what they eat, what eats them, their habitat, their behavior, and how they interact with other organisms in their ecosystem.

Humans have niches. For example, a park ranger is an organism, and her niche, or role, or job, is to provide outdoor educational activities for fifth-graders in the Lockhart State Park ecosystem. Other examples are a farmer whose niche is to grow food and a teacher whose niche is to help students learn.

In this activity, we will examine organisms living in and around a pond ecosystem. The organisms that we will discuss are green algae, daphnia, crayfish, dragonfly nymph, cattail, spatterdock, duck weed, bluegill sunfish, western mosquitofish, bull frog, diamond-backed water snake, red-eared slider, red-winged blackbird, great blue heron and raccoon. The pond is part of each of these organism's habitat where there is food, shelter and water.

These organisms have their own niche in the pond ecosystem. In this activity you will learn about each one's niche. Each of you will play the role of one of these organisms in a pond ecosystem to experience first-hand how all of these organisms interact with one another. What you will soon learn is that these organisms are dependent on one another to create a healthy pond ecosystem.

ACTIVITY 2, continued

Complete this exercise after the pond activity is over.

Directions: Write the number in the blank in front of the organism that best describes the organism's niche.

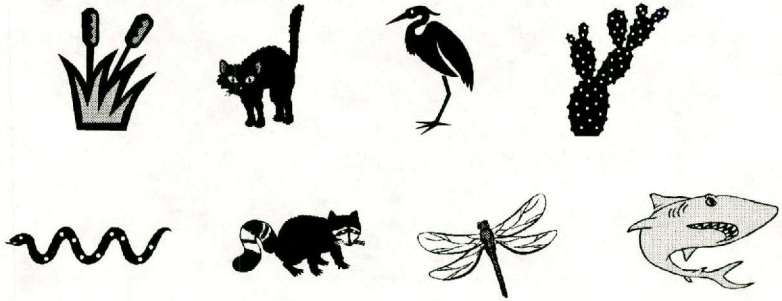
ORGANISM	NICHE
____ Bluegill sunfish	1. hunts for crayfish at night
____ Cattail	2. catches prey with its long beak
____ Daphnia	3. red-winged blackbirds eat the adult
____ Duck weed	4. disperses plant seeds from other ponds
____ Green algae	5. helps decrease the mosquito population
____ Crayfish	6. helps control the mosquitofish population
____ Red-winged blackbird	7. provides a place for frogs to sun
____ Dragonfly Nymph	8. helps control the duck weed
____ Spadderdock	9. food for the dragonfly nymph
____ Western mosquitofish	10. prefers a fish diet
____ Bull frog	11. eats detritus from the bottom of pond
____ Diamond-backed water snake	12. food for the daphnia
____ Red-eared slider	13. shelter for the red-winged black bird
____ Great blue heron	14. will eat just about anything
____ Raccoon	15. shelter for the bluegill sunfish

ACTIVITY 2, continued

Directions: Write the number of the correct definition in the blank in front of the term it defines.

TERM	DEFINITION
____ Organism	1. role of an organism in an ecosystem
____ Ecosystem	2. place where an animal or plant lives
____ Niche	3. an area where living organisms interact
____ Habitat	4. a complete individual living thing

Circle what does not belong in a pond ecosystem.



What's your niche? One role that you have is being a fifth-grade student. What other roles do you play in your life?

_____

_____

_____

_____

ACTIVITY 3

Flora Galore
Discussion and Questions

In the ***life cycle*** of a plant there are several stages of development. The beginning stage of the life cycle of a flowering plant is the ***seed.*** The seed is made up of an embryo and its food supply, and both are wrapped in a protective covering. The second stage is ***germination.*** With water, the right temperature and good soil, the seed germinates and begins to make a new plant. The third stage is ***maturation,*** the growth of stems, roots and leaves. When the plant matures it will produce flowers. After the plant flowers, the fourth stage is called ***fertilization.*** This occurs when male sex cells in the pollen join with female sex cells. Another name for this stage is pollination. Plants are fertilized by pollen being carried in the wind and by animals, like bees and butterflies. When fertilization is complete, a seed forms at the base of the flower. When the seed is fully developed it is ***dispersed,*** or scattered. Seed dispersal is the fifth stage in the flowering plant's life cycle. Their seeds are scattered by the wind, water or animals.

List the three parts of a seed.

_____

_____

List the five stages of development in the life cycle of a flowering plant.

_____

_____

How are seeds dispersed?

_____

How are plants fertilized?

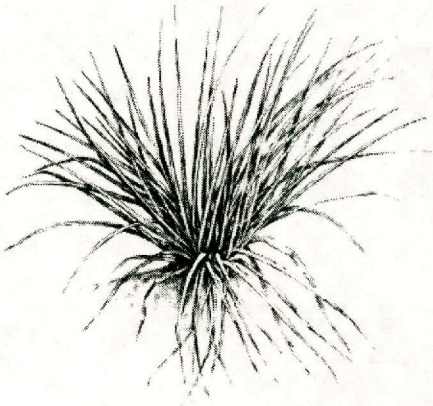
_____

Flora Galore

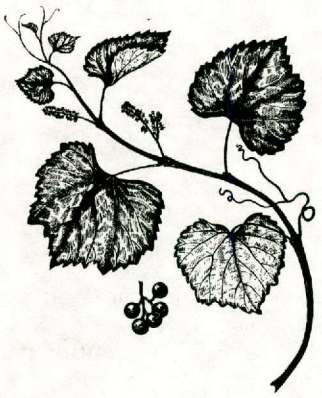
During this lab activity you will identify flora along the hiking trail. You will have identification booklets to use. It is important to look at different parts of the plant when trying to identify it. You will identify plants that will not have a bloom. Some of the plants are trees, shrubs, vines, grasses and forbs. Forbs are leafy, non-woody plants like wildflowers and herbs. For example, take notice of the leaves. What shape are they? How do they grow on the stem?

LEAF SHAPE

Narrow, entire (not toothed or lobed)

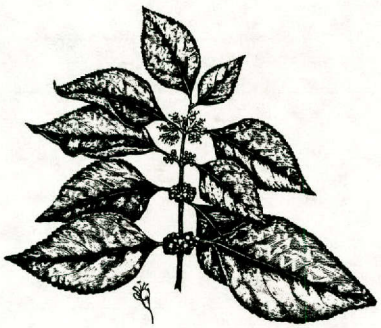


Heart-shaped

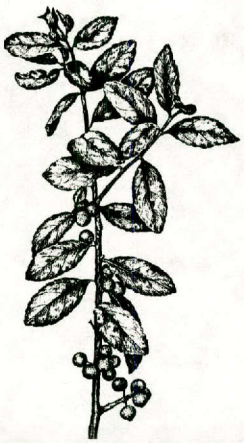


LEAF ARRANGEMENT

Leaves growing in opposite pairs on the stem



Leaves growing alternately on the stem



Flora Galore Plant ID Data Sheet

FLAG #1

Common name: _____

Scientific name: _____

Leaf shape: _____

FLAG #2

Common name: _____

Scientific name: _____

Leaf shape: _____

FLAG #3

Common name: _____

Scientific name: _____

Leaf shape: _____

FLAG #4

Common name: _____

Scientific name: _____

Leaf shape: _____

FLAG #5

Common name: _____

Scientific name: _____

Leaf shape: _____

FLAG #6

Common name: _____

Scientific name: _____

Leaf shape: _____

ACTIVITY 4

White-tailed Deer Census

One of the many activities that a wildlife biologist working for Texas Parks and Wildlife will conduct is a wildlife census. A census is the counting of the population of a particular species. In this lab activity you will conduct a simulated white-tailed deer census.

The purpose of conducting a census is to monitor the health of the white-tailed deer and manage their ***habitat*** and population size. During years of drought, it is expected that there is less food and water for the white-tailed deer. These are two of the four habitat requirements for all animals. The other two requirements are shelter and space. When any part of an animal's habitat is lacking, the animal's population is affected.

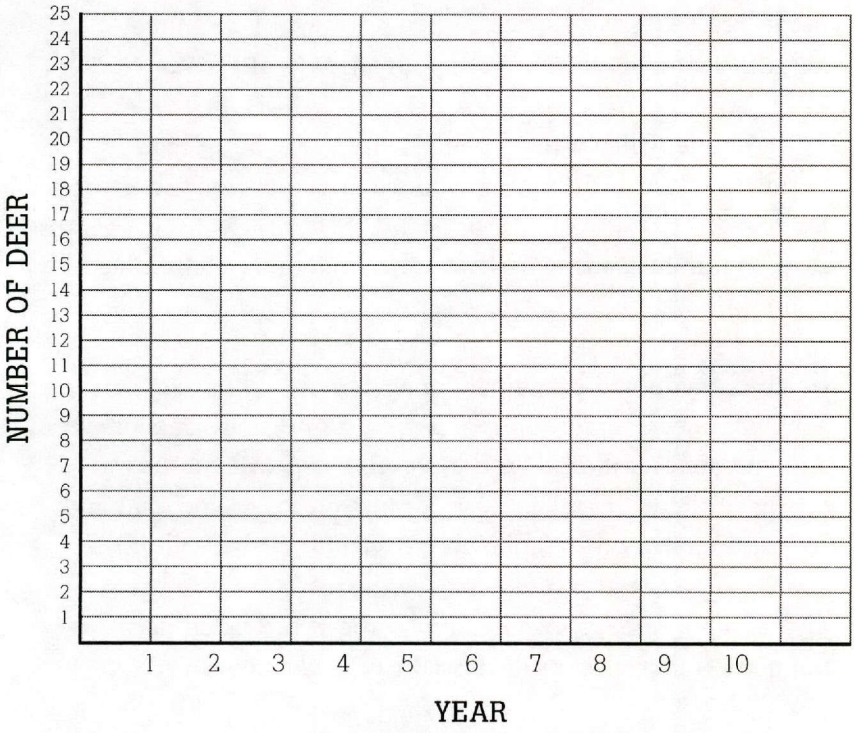
For example, when a town continues to grow in human population, the surrounding wooded areas become subdivisions for homes. This leaves less space and shelter for wildlife. Because there are more roads, wildlife can become injured and killed by automobiles.

In this lab you will participate in an activity called Oh Deer! You will play several rounds and each round represents one year. The instructor will explain the activity. You will conduct a census of the white-tailed deer population for each round and record the ***data*** on the following page. Then you will ***graph*** and ***analyze*** the data and ***interpret*** its meaning. Also, you will discuss your ***conclusions*** about why the white-tailed deer population increased or decreased from year to year.

White-tailed Deer Population

DATA RECORD AND GRAPH

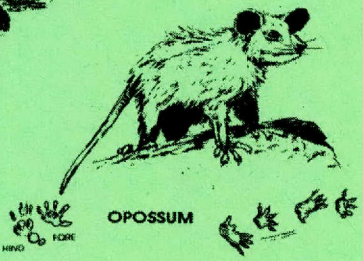
	# of Deer		# of Deer
Year / Round 1	_____	Year / Round 7	_____
Year / Round 2	_____	Year / Round 8	_____
Year / Round 3	_____	Year / Round 9	_____
Year / Round 4	_____	Year / Round 10	_____
Year / Round 5	_____		
Year / Round 6	_____		



Texas Tracks

Do you know them?

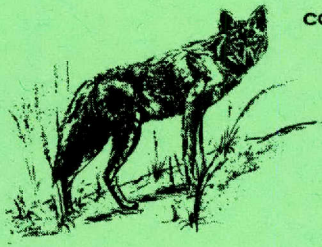
RACCOON



OPOSSUM

SQUIRREL

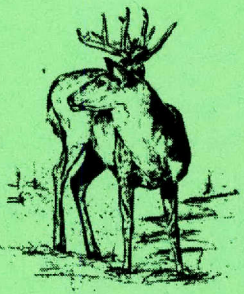
SKUNK



COYOTE

BOBCAT

WHITE-TAILED DEER



Partners in the Fifth-Grade Outdoor Laboratory at Lockhart State Park

Texas Master Naturalist
Lost Pines Chapter

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AgriLIFE EXTENSION
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