4th-6th Grade

YOU AND THE ENVIRONMENT

LSU AgCenter
Research & Extension

Name_____

Age (on Jan. 1) ☐ **Date of Birth** Month _____ Day _____ Year _____

Address _____

City _____ **Zip** _____

School or 4-H Club _____

Name of Parents or Guardian _____

4-H Projects: _____ **Livestock (if enrolled):** _____

_____ _____

_____ _____

I have personally prepared this report and believe it to be correct:

Signed _____ **Date** _____
(Club Member)

We reviewed this report and believe it to be correct:

Signed _____ **Date** _____
(Parent or Guardian)

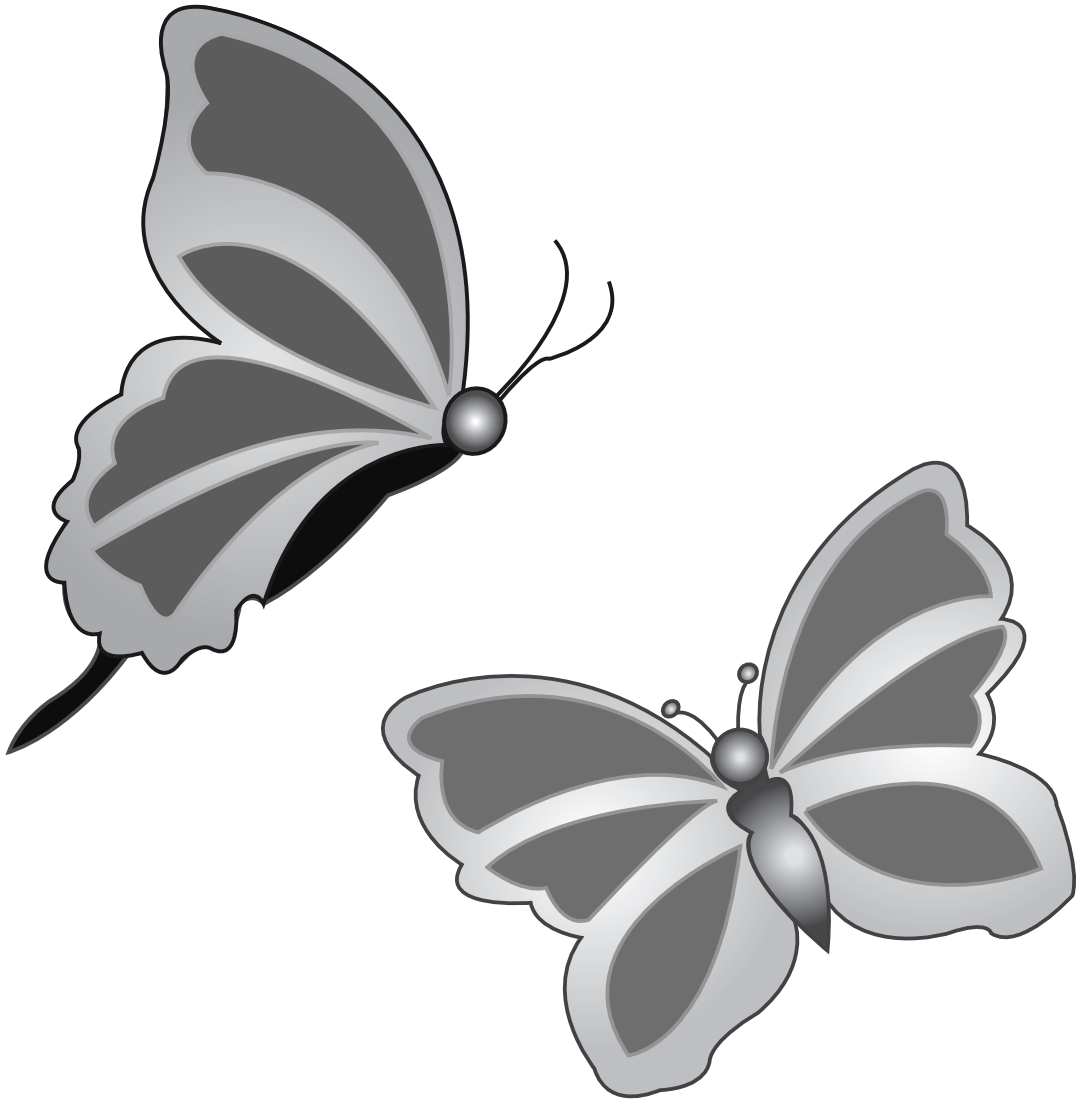
Signed _____ **Date** _____
(Local 4-H Leader)

You and the Environment

Your environment is everything around you — air, water, land, plants and animals. It's your job to take care of these things so our world will always be a beautiful, healthy place to live. The more you learn, the better "steward" or keeper of our earth you'll become. This project book is made up of four sections — (1) wildlife and fisheries, (2) insects, (3) water and (4) wastes.

Complete at least four activities or the number required by your 4-H agent or leader. Fill in the record for those activities in the back of the book. You may choose to do all of the activities in one section or spread out between several sections.

In this project book, you will learn about the ecology (relationship all living things have to each other) of wildlife and fisheries and their management to preserve the balance of this natural relationship. That's important, because Louisiana is a natural treasure and offers many areas for recreation, hunting and fishing. You will learn how to find insects, identify them and make a collection. Hydreaux will tell you how to save (conserve) water and keep it safe. You will find out how to reduce the wastes that end up in landfills and learn to identify hazardous (dangerous) wastes.



Most people today want to help create more places for wildlife to live so they can enjoy them. They do not want to lose any species of wildlife already present. Learning how to manage for wildlife is only part of the complex science known as wildlife management.

If asked how to increase the number of squirrels of Louisiana, what would your answer be? Most people would suggest we do one or more of the following:

(1) restrict hunting,
(2) control predators,
(3) set up preserves or refuges,
(4) artificially restock animals.

These measures have certain values when used in particular situations and for certain animals. They are, however, far from being the answers to this question or any other wildlife management problem.

The most basic method for improving wildlife populations, and the one that comes nearest to being a "cure-all" for dwindling wildlife, is restoring wildlife habitat. By providing a suitable place for wildlife to live, we can do the most to manage wildlife. Wildlife management can be defined as the science and art of making land produce and sustain more wildlife than nature would normally produce.

Knowing where wild birds and animals like to live and what they need to reproduce and survive is necessary before you can manage wildlife. We call this **habitat**. This includes escape cover to hide from predators and winter cover to protect them in cold weather. There must be food and water. Wildlife needs cover to rear young and even to play.

Activity I. Wildlife Study Area

Select a study area of one to three acres of land (a wooded area, vacant lot, field of high grass and weeds, or park). Almost any area will support some wildlife.

1. Go into your study area, and list all the animals you find living there. Be sure to look for signs such as tracks, droppings, hair and feathers, nests and dens. List the animals you find on the chart:

Animal	Where Seen	Other Signs

2. Select one of the animals and list the habitat you can identify that is present and necessary for this animal to live there. _____

_____

_____

_____

3. What could you do to this area to make it a better place to live and reproduce for the animal you selected? _____

_____

_____

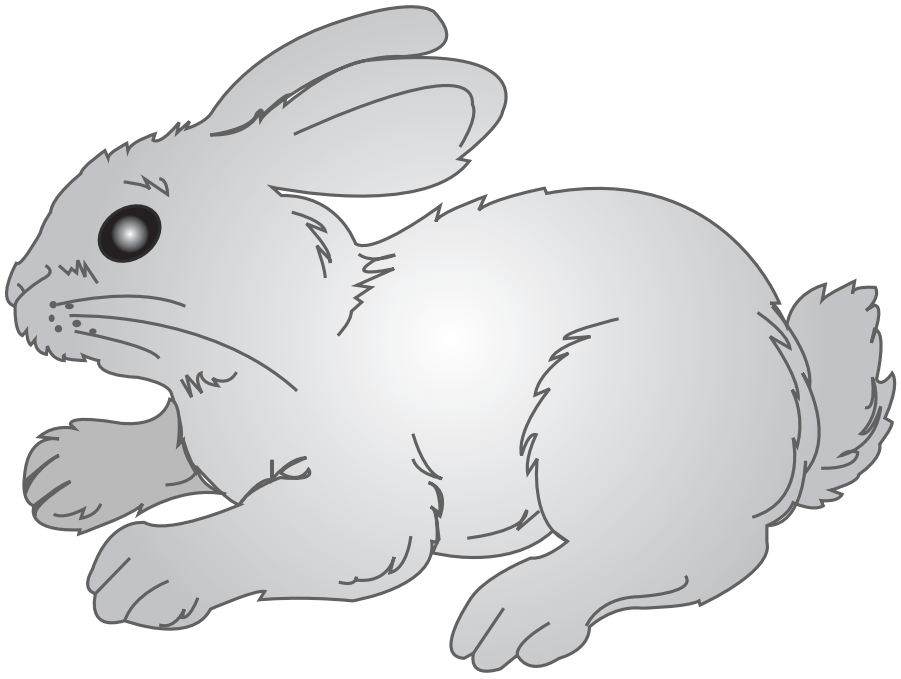
_____

Note: To complete this activity, you may want to look up more information (in a book or on the Internet) about the animal you selected.

Land can support only a certain number of animals. Farmers know their pastures will support only so many cows and calves. Each year they must remove some of these animals to make room for next year's calf crop. Wildlife habitat, like a farmer's pasture, can support only so many wild animals. We call this **carrying capacity**.

Carrying capacity depends on many factors, such as food, cover, water, predators and many others. All of these factors must be present to maintain a high population of any wild animal. Any one that is scarce is called the **limiting factor**. It limits the population on a particular piece of land.

The only way to increase wildlife populations is to increase the carrying capacity of the land. This can be done by improving the habitat in which an animal lives. Habitat improvement may include planting additional food-producing plants or providing more escape cover to protect from predators. It may mean improving conditions for reproduction or proper harvest of surplus animals.



Activity II. Feeding Birds

In this activity, you will learn the importance of food in attracting different birds to your backyard. This activity also will show some of the principles of carrying capacity and will help you understand more about the limiting factor.

1. Build a platform bird feeder using an old garbage can lid, TV tray, piece of plywood or other suitable material. Your feeder need not be fancy, but it should be large enough to support large as well as small birds. Hang your feeder from a tree branch or place it on some type of pedestal at least 4 feet off the ground.

2. Start this activity by placing whole kernel corn in the feeder. Record the species of birds you see using your feeder for one week.

3. Each week add a different bird food to the feeder. The chart suggests foods to use in this activity. You may use other foods if you wish, but be sure to record the different birds you see each week.

Type of Food	Species of Birds Seen	Date
Whole kernel corn		
Corn + Sunflower seed		
Corn + Sunflower + Sesame seed		
Corn + Sunflower + Sesame seed + Bread crumbs		

Note: To complete this activity, you should get a reference book to help you identify the birds you see. The *"Peterson Field Guide Series"* and *"Golden Nature Series"* are excellent references. They are available at local bookstores and school libraries.

4. Move your bird feeder to different areas in your backyard. Place near low shrubbery, a pet's sleeping area, garden area or open space. Also, place where there are no trees or cover. Record the species and number of birds using your feeder at the different locations.

Type of Cover (Habitat)	Number of Birds Seen Using Feeder

5. What are the limiting factors in attracting birds to your backyard feeder? _____

_____

_____

_____

Activity III. Squirrel Den Box

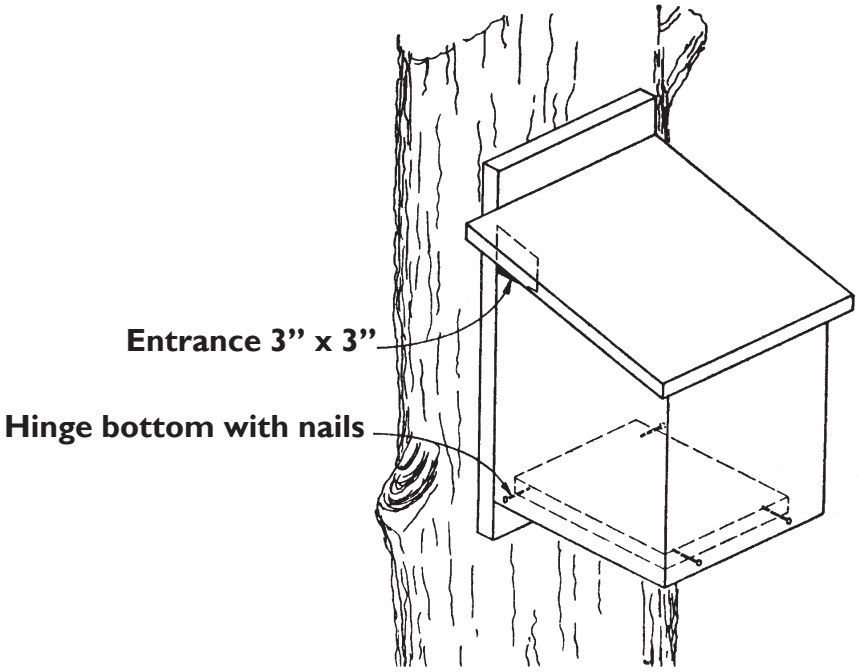
(In some areas, there is a shortage of den trees for squirrels. The placement of den boxes in these areas improves squirrel habitat.)

1. Construct a squirrel den box by following the instructions given in the example.

2. Place the den box in a large tree at least 20 feet off the ground.
3. You may place the den box in a tree in your backyard or in a woodland. To increase carrying capacity for squirrels on a large area, one to four boxes per acre are recommended, depending on the number of natural dens present.

1. Use 1-in. boards.
Back - 1 piece 24 in. x 10 in.
Sides - 2 pieces 10 in. wide (18 in. on back, 15 in. on front. Cut 3-in. entrance in one piece at top edge of back.)
Front - 1 piece 10 in. x 15 in.
Top - 1 piece 12 in. x 15 in. (2-in. eave over entrance).
Bottom - 1 piece 9 3/4 in. x 7 3/4 in.

2. Optional - Roof with tarpaper. Tack to back and extend on to top.



All wildlife receives some protection. Only a few animals considered pests to humans are unprotected in certain situations.

Animals classed as **game** under state or federal laws can be hunted. They can be taken by hunters for food or sport only under regulations that prescribe dates, hunting laws, bag limits and methods of harvest. All game animals are protected by law while they are nesting and raising their young.

Regulated hunting is an important tool of wildlife management. The annual harvest of animals whose populations are near carrying capacity of their habitat lowers the loss from disease and starvation. It prevents the animals from becoming so numerous that they exhaust their food supplies. This may include the food and cover upon which other animals depend.

Ecology and Wildlife Management

Managing wildlife requires knowledge and understanding of ecology, the relationship of all things. Ecology is important in our everyday lives as well. Two important principles of ecology that apply to wildlife management are:

1. Plant succession is the replacement of one group of plants by another. Take, for example, an old abandoned field. Once we stop mowing or plowing this area, it soon will grow up in tall weeds and grass. Within a year or so, small trees will begin to grow. If left alone long enough, the field will grow back into a forest. We call these plant groups communities, and they represent a particular plant stage in succession. Every wildlife species is adapted to a particular plant stage.

2. Edge effect is where forested woodlands and open areas meet. Most wildlife species like to live around edges of fields, woodlands and open areas in the forest. Some species of wildlife prefer only mature forest. Knowing where each animal species prefers to live and how to create this type of habitat is how we apply ecology in wildlife management.

Plant Succession - Bare Ground to Mature Forest

Activity IV. Exploring Wildlife Communities

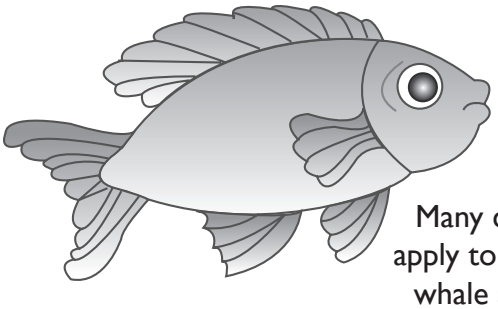
1. Select several different types of wildlife habitat such as pasture, woodland, abandoned field, vacant lot, pond edge, stream bank, or forest edge between woods and agriculture land. Look at the plants and animals living in each area you have selected.

2. Record the stages of growth in each habitat type and list the animals found living there.

Habitat type	Stage of plant growth	Animals present

3. List as many relationships as you can between the plants and animals present in each habitat type. What could be done to improve the habitat for each animal?

Animal	Habitat requirement or relationship	Improvements
(Ex. Rabbit)	Thick briers and weeds in vacant lot	Mow strip for more food



Fisheries Management

Many concepts and principles that apply to wildlife management also apply to fisheries management. Some mammals such as the river otter, whale and porpoise require aquatic or water habitats to survive, just like fish. Fish have special habitat requirements other than water.

Just like mammals, fish need oxygen to live. Instead of breathing it from the air, fish get oxygen from the water as it passes over their gills. Gills contain tiny blood vessels that absorb the oxygen. Some species of fish such as the gar and bowfin can live in very low levels of dissolved oxygen in water. A bass or stream darter requires much higher levels of dissolved oxygen in water to survive.

Fish habitat is divided into several different types. In Louisiana, we classify fish habitat as pond, stream, lake, estuary or marine. Managing fish populations requires a knowledge of these aquatic environments.

Ponds and lakes are relatively free from currents. Ponds provide a natural site to explore the relationships that exist between plants and animals in a water habitat.

Streams are bodies of moving water. The smallest streams are the tiny rivulets that form after a rain and then flow away to join the nearest branch or creek. This kind of stream is temporary. Large rivers, like the mighty Mississippi, are our largest streams.

An **estuary** is a place where streams and rivers meet the sea. This is where fresh water and salt water meet and mix. One reason estuaries are so important to us in Louisiana is because they serve as nursery grounds for many animals. This includes many economically important ones such as fur animals, fish, crabs, oysters and shrimp. Louisiana has more than three million acres of coastal marshland or estuaries.

Activity V. Investigating Aquatic Habitats

In this activity you will investigate the different species of animals and plants living in different types of aquatic habitats. To complete this activity, you must visit as many different types of aquatic habitats as you can. You many do this on a school field trip, vacation to the beach, fishing trip or any other activity that brings you in contact with water environments.

You will need collecting equipment to do the investigation.
This list will be helpful:

Equipment

bucket

small mesh dip net

bait minnow seine 8 ft. (optional) available at sporting goods stores

jars for preserving specimens

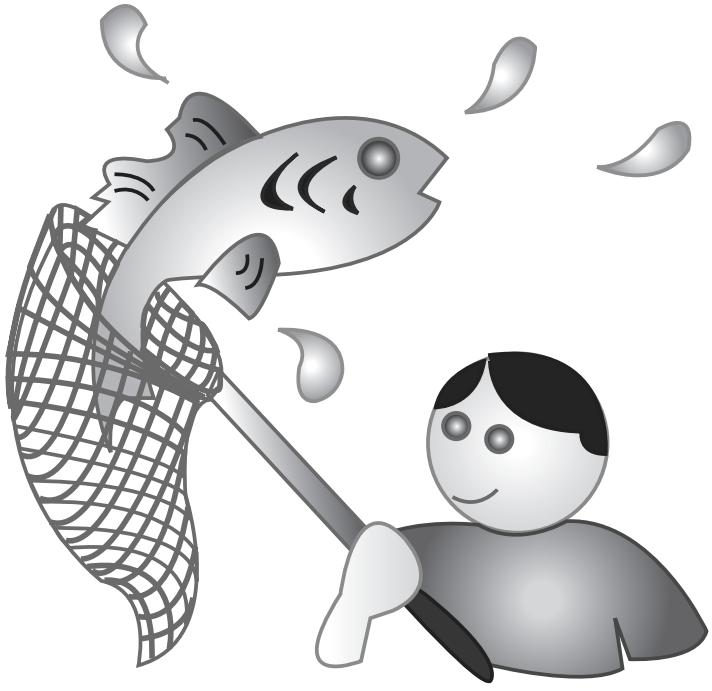
fishing pole and bait

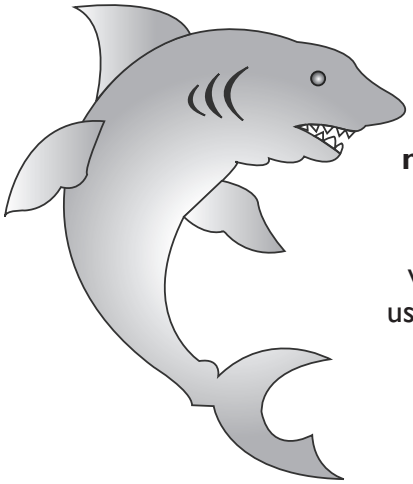
1. Go fishing in as many different types of fish habitat as you can, and collect the fish you catch. A seine or dip net can be useful in catching fish too small to bite a hook. You can preserve small fish in a tightly closed jar of rubbing alcohol. (Warning: Alcohol is highly flammable.) Take pictures of the larger fish with a ruler in the picture to show size relationships. Then you can release the fish or keep it on ice for a family meal later. You may want to make fish prints by painting one side with a tempera paint and gently pressing a piece of white paper over it.

2. Identify each specimen of fish you collect. Information is available on the Internet or in a field guide to freshwater and marine fish you can purchase or find in the library.

3. Prepare a label for each specimen, picture or print. Record the name of the fish and the type of habitat on the label.

4. Give a talk to your 4-H club or school science class. Include information on the types of food and habitat and any special adaptations the fish have made for living in that habitat.





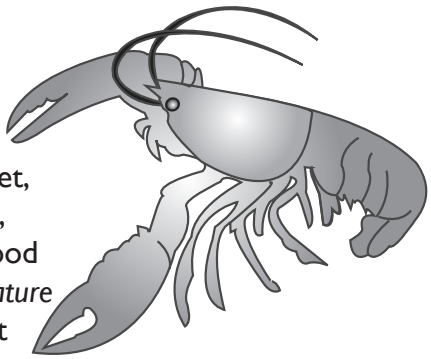
Aquatic Food Chain

Water alone is not enough to support fish life. Food must be available for them to eat so they can grow. The food supply depends on basic **nutrients** (organic material and minerals) in the water. These nutrients stimulate microscopic plants to grow and multiply. **Photosynthesis** is the process by which green plants use sunlight, carbon dioxide and water to produce oxygen and store food. These microscopic plants are used as food by microscopic animals. The microscopic animals and plants in water are called **plankton**. The microscopic animals are eaten by larger animals such as snails and insects. Insects and snails are eaten by small fish, crawfish and salamanders. Large fish are the last living link in the aquatic food chain.

Large fish not eaten by reptiles, fish-eating birds or mammals will eventually die. As they sink to the bottom to decompose, all of the organic matter that went into their making is put back into the aquatic environment to start the cycle over.

Life in any body of water is a complex chain of plants and animals. Although we like to catch large fish, we must remember that, without the tiny plants and animals, there can be no fish life. Without knowledge and understanding of food chains and relationships between plants and animals in aquatic habitats, we cannot manage fish populations correctly.

Activity VI. Life in a Pond (Stream, Lake, Estuary, Gulf)



In this activity, you will learn about life in pond or some other aquatic habitat you choose. You will need collecting equipment such as a bucket, small mesh dip net, small and large glass jars for preserving specimens, and a notebook for recording information. It is helpful if you have a good reference book to guide you while you do this activity. *"The Golden Nature Guide Series,"* available at most bookstores and libraries, is an excellent field guide for studying life in aquatic habitats.

1. Using a collecting net, collect 10 different organisms (insects, fish, crawfish, tadpoles, etc.) from in and around the edge of a pond. Make a sketch of each organism, and identify it using your field guide.

2. Assign each organism to its proper place in the food chain based on your observations and what the organism is like and where you collected. It will be helpful to use a magnify glass on the smaller creatures to see their mouth parts. Many small aquatic organisms will appear almost clear. You can guess what some of these organisms have been eating by the color of their digestive tracts. For examples, a green gut is a good clue you are dealing with a **plant eater (herbivore).**

3. Collect a sample of some of the plants you find growing in and around the pond. Using your field guide, try to identify as many of these as you can. Determine if they provide food or shelter (cover) for any of the organisms you have collected.

4. Record on this chart all of the information you have learned.

Life in a Pond

Organisms Collected	Place in Food Chain	Plants Collected
(Example) Blue gill bream	Eats insects and small animals	alligator weed

Insects live in all parts of the world. Even at the Arctic Circle, mosquitoes pester reindeer during summer. The warmer parts of the world have many more kinds of insects.

Insects are cold-blooded. This means their temperature goes up and down with the temperature of the air around them. At a temperature of 40 degrees, most insects will be too cold to do much moving. When the temperature drops below 20 degrees, many insects will die. Entomology is the study of insects.

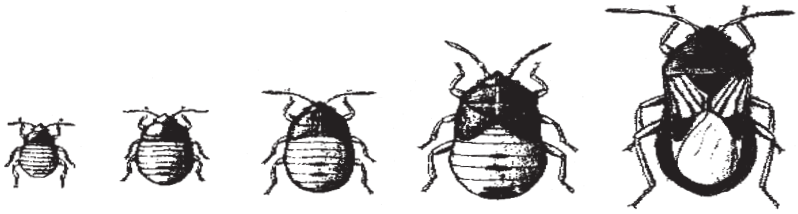
How Insects Grow

Immature (young) insects can shed their skin and then eat and grow to fill the new skin. Different insects shed their skins a different number of times before they become adults. When they reach the adult stage, they can no longer grow.

The life cycle of an insect includes the growth of an insect from the egg stage through the different stages of development (metamorphosis) until it is an adult. The time it takes and the number of stages depend on the species of insect.

Insect Metamorphosis

Metamorphosis, or the changes an insect goes through as it grows from the egg to an adult insect, is very dramatic for some insects. (A caterpillar changes to a butterfly.) In other insects, the changes are minor. (Young grasshoppers look like adult grasshoppers, except that they don't have wings.)



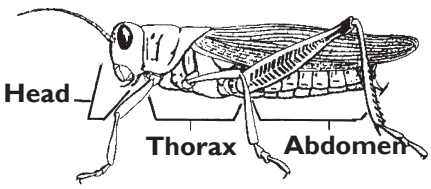
How Insects Differ

Insects have a hard covering (skeleton) over the body. This hard cover helps protect the soft, inside parts of the insect's body. It provides places for its muscles to be attached so the insects can move, too.

Insects' bodies have three main parts, the head, the thorax and the abdomen. The head has eyes, a mouth and **antennae** (feelers). The middle part is the **thorax**. It has the legs and wings attached. The part in the rear is the **abdomen**. It contains the stomach and other digestive organs. Reproductive organs are in the abdomen, too.

Insects have six legs (three pairs). One pair is attached to each segment of the thorax.

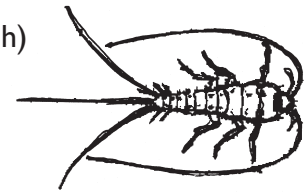
Insects have two (one pair) antennae. The antennae are on the front of the head. They are often called "feelers." Antennae serve as organs of touch, taste, smell and hearing.



Activity I. Identifying Your Insects

Collect as many different insects as you can. Each insect you collect will belong in a particular group called an **order**. This is the system used to group insects. A description is given of the orders and illustrations. Place your insects in the orders in which they belong. All insects in an order look similar in some way. For example, in the order **Diptera** (flies and mosquitoes, etc.), all have only one pair of wings.

Thysanura (Bristletails, Silverfish)



Wings - none
Mouthparts - Chewing
Metamorphosis - None

Added note *- Silver insects with long antennae and two or three long antennae-like appendages at the end of the abdomen. The silverfish feeds on rayons, starched clothes, bookbindings and other materials having starch or glue. Can be found in feed or flour mills where starchy foods are handled or in sinks and bathtubs of homes.*

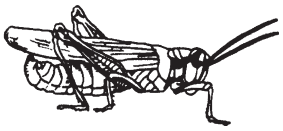
Collembola (Springtails)

Wings - none
Mouthparts - Chewing
Metamorphosis - None

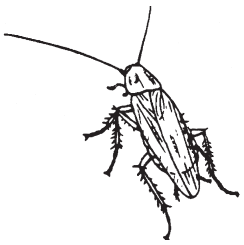
Added note - *Tiny insects less than 1/5-inch long. Flip themselves into the air by a springlike part under the abdomen. Found in damp places, such as under decaying plant materials, stones and boards.*

Orthoptera (Grasshoppers, Crickets, Roaches)

Field Cricket



Red - legged Grasshopper



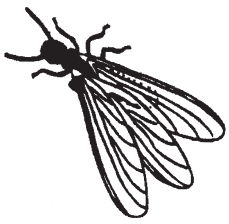
American or German cockroach

Wings - Two pairs (Walking sticks and camel crickets are wingless.)
Top pair - Leathery; Bottom pair - Membranous and folded under top pair.
Mouthparts - Chewing
Metamorphosis - Gradual

Isoptera (Termites)

Wings - Two pairs of the same length (workers are wingless).
Mouthparts - Chewing
Metamorphosis - Gradual

Added note *- Kings and queens may be collected while swarming, and workers may be found infesting wood. Look under wood on the ground.*



Ephemerida (Mayflies)

Wings - Two pairs - First pair much larger than second pair. Held vertically when at rest.
Mouthparts - None
Metamorphosis - Incomplete

Added Note *- Found near water and are attracted to lights. Have two or three long antennae-like appendages at the end of the abdomen.*

Plecoptera (Stone flies)

Wings - Two pairs
Mouthparts - Chewing
Metamorphosis - Incomplete

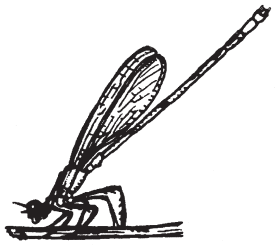
Added note *- Found near running streams*

Odonata (Dragonflies, Damselflies)

Wings - Two pairs
Mouthparts - Chewing
Metamorphosis - Incomplete

Added note *- Feed on other insects. Usually found near water.*

Dragonfly



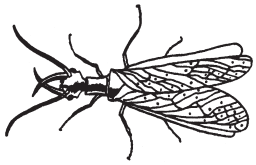
Damselfly

Neuroptera (Dobsonflies, Lacewings, Ant lions)

Wings - Two pairs, many fine netlike veins.
Mouthparts - Chewing
Metamorphosis - Complete

Added note *- Have long antennae. Found near streams, at lights or on trees and plants.*

Green lacewing



Dobsonfly

Thysanoptera (Thrips)

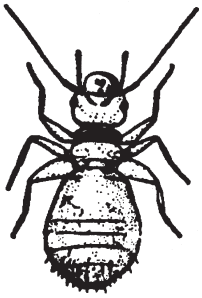
Wings - Two pairs or none
Mouthparts - Rasping, sucking
Metamorphosis - Gradual

Added note *- Tiny insects only 1/8 inch long or less. Feed on many plants.*

Corrodentia (Book and Bark lice)

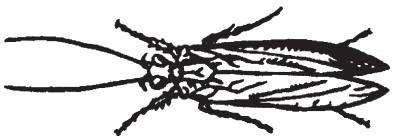
Wings - Some wingless, some with two pairs.
Mouthparts - Chewing
Metamorphosis - Gradual

Added note *- Found in old books and papers, on bark of trees or in damp stored grain.*



Trichoptera (Caddisflies)

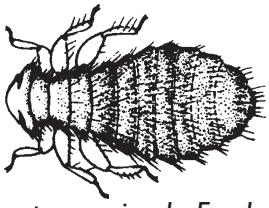
Wings - Two pairs
Mouthparts - Chewing
Metamorphosis - Complete



Added note *- Wings covered with short hairs and held rooflike over body when at rest. Found near water.*

Mallophaga (Chewing Lice)

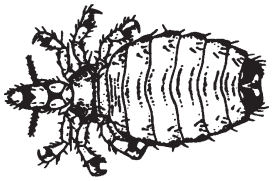
Wings - None
Mouthparts - Chewing
Metamorphosis - Gradual



Added note *- Live on birds and, to some extent, on animals. Feed on hair, feathers, scales and dried blood.*

Anoplura (Sucking Lice)

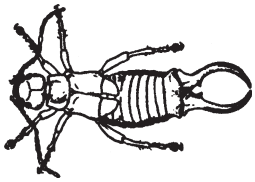
Wings - None
Mouthparts - Piercing, sucking
Metamorphosis - Gradual



Added note *- Head narrow and long. Claws pincerlike. Feed on mammals.*

Dermaptera (Earwigs)

Wings - Two pairs
Mouthparts - Chewing
Metamorphosis - Gradual

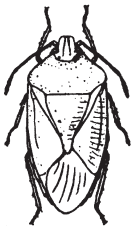


Added note *- Front pair of wings like those of beetles but very short, hind pair membranous. Have a pair of pincers on end of abdomen. Found on plants, decayed matter and sometimes in houses.*

Hemiptera (True Bugs)

Wings - Two pairs - front pair is half leathery and half membranous.
Hind pair is membranous.
Mouthparts - Piercing, sucking
Metamorphosis - Gradual

Added note *- Most live on land, but a few live in the water. Most feed on plant juices, but some feed on animals. Others feed on other insects.*



Green stink bug

Cinch bug

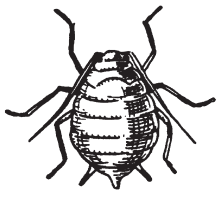
Giant water bug

Homoptera (Aphids, Scales, Leafhoppers, Cicadas)

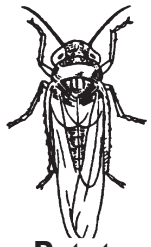
Wings - Two pairs or wingless
Mouthparts - Piercing, sucking
Metamorphosis - Gradual

Added note *- All feed on plants.*


Cicada


Aphid


Buffalo treehopper


Potato leafhopper

Mecoptera (Scorpionflies)

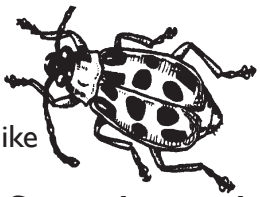
Wings - Two pairs, long and narrow
Mouthparts - Chewing
Metamorphosis - Complete

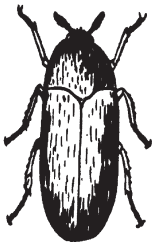
Added note *- Mouthparts at the end of a long snout. Found on low vegetation in dense woods or sometimes in open fields.*

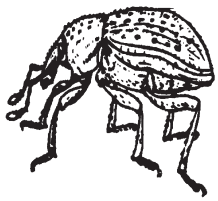
Coleoptera (Beetles)

Wings - Two pairs
Front pair - Hard and shell-like
Hind pair - Membranous
Mouthparts - Chewing
Metamorphosis - Complete

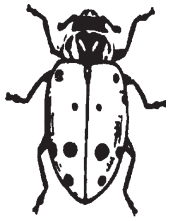
Added note *- This is one of the largest orders of insects in the world. Found almost everywhere.*

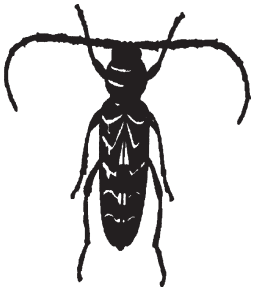

Spotted cucumber beetle


Carpet beetle


Clover leaf weevil

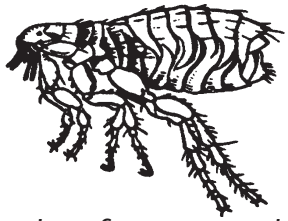

Whirligig beetle


Convergent lady beetle


Locust borer

Siphonaptera (Fleas)

Wings - None
Mouthparts - Piercing, sucking
Metamorphosis - Complete



Added note *- Live on animals. Collect them from a cat or dog.*

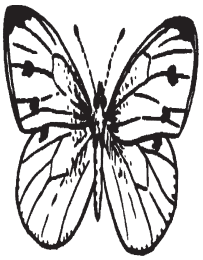
Lepidoptera (Butterflies, Moths, Skippers)

Wings - Two pairs
Mouthparts - Siphoning
Metamorphosis - Complete

Added note *- Moths hide during day and are active at night. Butterflies are active in the day and are usually more brightly colored than the moths. Skippers have the tips of the antennae bent back like the handles of walking canes.*

Clothes moth

Viceroy butterfly

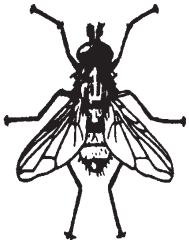


Cabbage butterfly

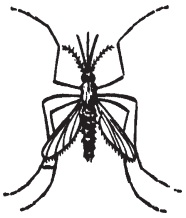
Diptera (Flies, Mosquitoes, Midges)

Wings - One pair
Mouthparts - Piercing, sucking or sponging
Metamorphosis - Complete

Added note *- Found around flowers, decaying vegetation, on animals and in houses and barns.*



House fly



Mosquito

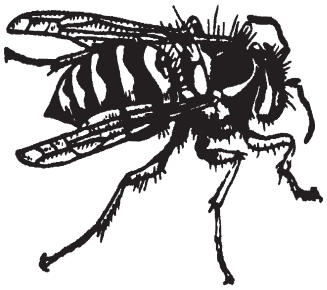
Striped horsefly

Hymenoptera (Bees, Wasps, Ants)

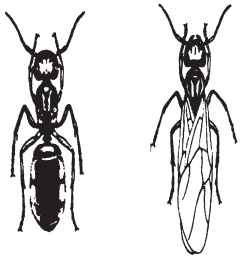
Wings - Two pairs. Worker ants are wingless
Mouthparts - Chewing
Metamorphosis - Complete

Added note *- One of the largest orders of insects. Found almost everywhere.*

Honey bee



Yellow jacket



Black carpenter ant

Activity II. The Study of Insects

Making an Insect Collection Box and Collecting Net

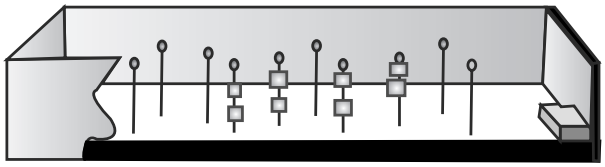
An insect collection box and an insect collecting net are important. You will need the net to collect hard-to-catch insects. The collection box will hold your insects so you may study them later.

Materials:

1. Shoe box or any other similar sturdy box
2. Piece of corrugated cardboard, soft fiberboard or plastic foam
3. Glue
4. Moth crystals - to keep pests out of collections
5. Match box - to hold moth crystals
6. Insect pins - Number 2 or Number 3
7. Insect labels

Procedure:

1. Cut the cardboard, fiberboard or plastic foam to fit bottom of box.
2. Smear glue on bottom of box, and insert cut piece.
3. Line box with white paper.
4. Fill match box with moth crystals (crushed mothball).
5. Pin the box in a corner of the shoe box.



Collecting Net

Materials needed:

1. Small wood handle, 3 feet long (broom handle or dowel)
2. About 5 feet of heavy wire (No. 9) for hoop.
3. Piece of unbleached muslin or netting, 3 X 5 feet.
4. Soft wire, heavy string or metal sleeve for net handle to hold hoop wire. A small hose clamp can be used.
5. Needle and heavy thread.

How to make:

1. Bend heavy wire into a circle (about 12 inches) to form a hoop. Bend arms 2 ½ inches and 3 ½ inches for fitting in net handle.
2. Drill holes in the net handle for arm hooks. If you want a smooth fit, groove handle as shown.
3. See "Net Bag Construction" for instructions to make a bag.
4. Thread the wire hoop through the hem of the bag and insert wire arms into the handle. Slip the metal sleeve over the net handle to hold the wire arms in place. If preferred, attach hoop arms to the net handle by wrapping with soft wire or heavy string. Use a small hose clamp if you can find one.

Net Bag Construction

To construct the net bag, lay a 20 X 30-inch piece of net material (muslin or netting) on another piece of same size (Figure A) and fold them, making the folded material 10 X 30 inches (Figure B). Cut the material from the bottom folded corner diagonally up and across to a point of 10 inches below the top unfolded corner (Figure C). The net bag after cutting will be in two roughly triangular pieces (Figure D). Stitch the two halves of the net together, making the seam about ½ inch from the cut edge. Leave 10 inches free on one side at the top where the net hoop will be inserted (Figure E). Turn the cut edges inside, and stitch the seam down flat (flat-felt seam). To make a loop for the wire hoop, fold the edge down 5 inches (Figure F). Then turn the folded edge down 2 ½ inches and stitch hem (Figure G).

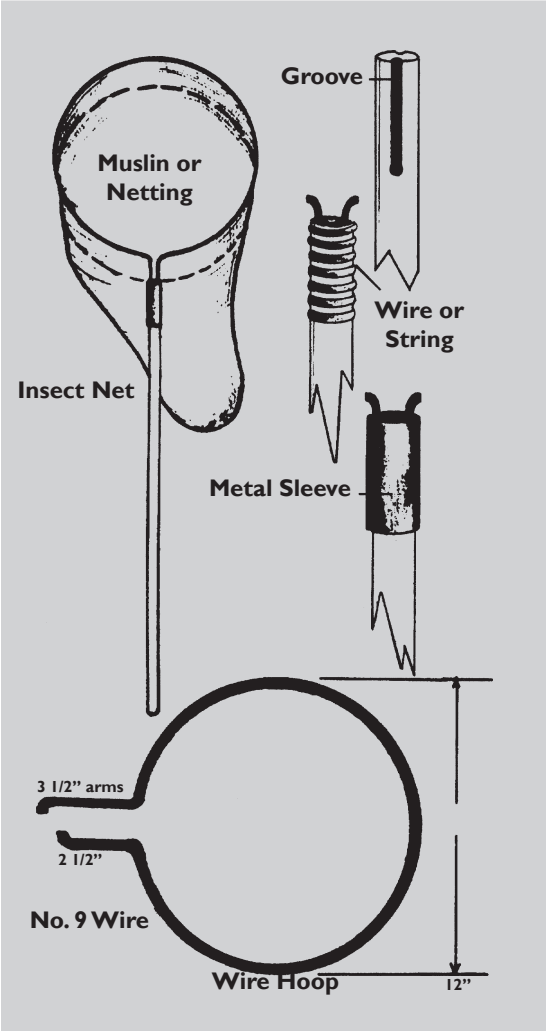


Figure A

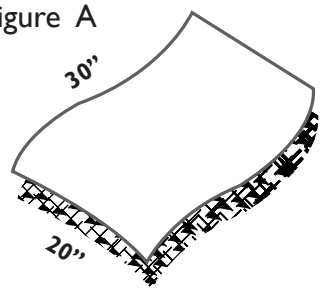


Figure B

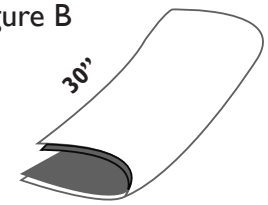


Figure C

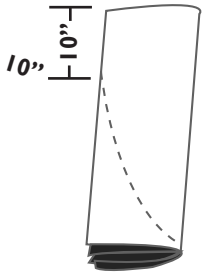


Figure D

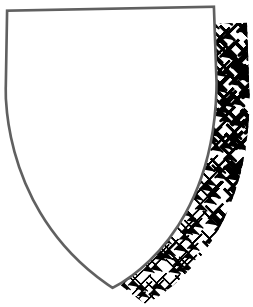


Figure E

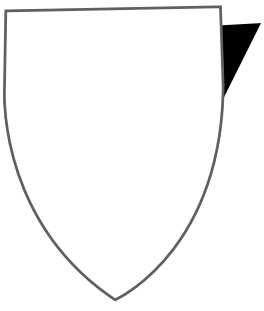


Figure F

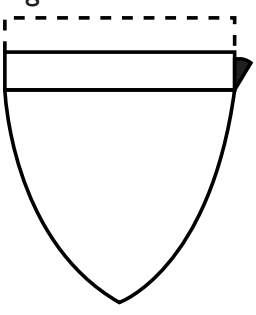
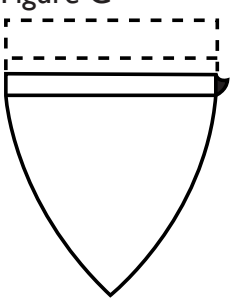


Figure G



Make an Insect Killing Jar

The purpose of an insect killing jar is to kill insects quickly so they do not get broken. The size of jar depends on the size and kind of insects collected. For butterflies and moths, a widemouthed pint mayonnaise or pickle jar with a screw cap is satisfactory. Never mix other insects in the same killing jar with your butterflies and moths. They can be easily damaged by beetles, wasps and other hardier insects. A smaller wide-mouthed jar can be used for collecting other insects. Make several jars at a time so you will always have extras when they get broken.

Preparing the Killing Jar

Materials needed

Several jars of different sizes fitted with a tight lid or cork stopper
Plaster of paris
Water
Ethyl acetate, fingernail polish remover or other material that contains ethyl acetate

Mix 8 heaping teaspoons of plaster of paris with 5 teaspoons of water in a disposable cup. This should make a paste about as thick as a milkshake. Stir the mixture until smooth. Pour or spoon the mixture into the jars 3/4 inch to 1 inch deep. Tap the killing jars against the ground so the plaster of paris makes a smooth surface. With the cap off the jars, let the plaster of paris set for several days, until it is thoroughly dry. When dry, the plaster of paris becomes paper white.

When the plaster of paris is thoroughly set, pour as much killing agent into the killing jar as will be absorbed by the plaster of paris. Pour out any excess liquid, and cap the jar immediately. To reduce the danger of breathing the fumes, go outdoors to fill the killing jar. Always keep the jar tightly covered except when placing insects in the jar or taking them out. If the jar is not tightly covered, the killing agent evaporates rapidly.

Activity III. Pinning Insects

You may get insect pins from college bookstores. Check with your local leader for the nearest source of supply. Do not use sewing pins. They will rust and soon ruin what may be valuable specimens. Pins come in several sizes, but No. 2 and No. 3 are the most useful.

Any insect that is large enough to support a pin without breaking or becoming damaged may be pinned directly through the body. Insert the pin through the part of the body described below. Pin from top to bottom (A). The place of insertion depends on the type of insect. These rules have been set up for pinning different types of insects. Place the pin firmly through the heavier parts of the body.

1. **Bees, wasps, flies, etc.:** Pin the thorax between bases of fore wings and to right of middle line (B).

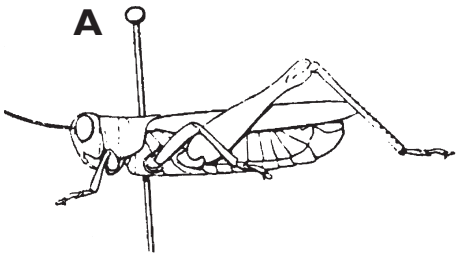
2. **True bugs:** Pin through the scutellum, the triangular area between the bases of the wings (C).

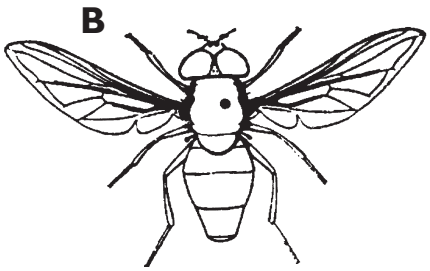
3. **Grasshoppers, crickets, etc.:** Pin through the prothorax or "saddle" to the right of the center line (D).

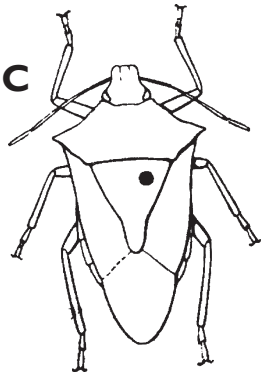
4. **Beetles:** Pin through the fore part of the right wing cover near the center line (E).

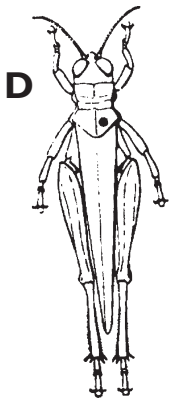
5. **Butterflies, moths, dragonflies, etc.:** Pin through center of thorax between the bases of fore wings (F).

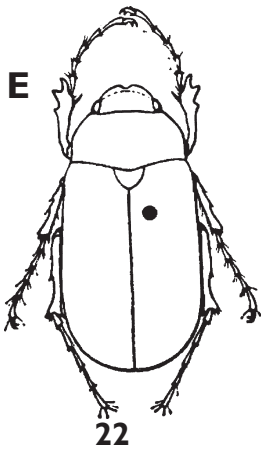
Three-eights of an inch of the pin should extend above the insect. This will allow you to handle the specimen after pinning. Use a pinning block to measure this distance.

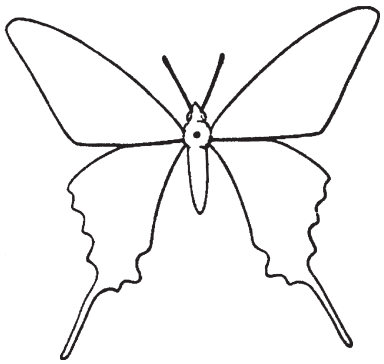






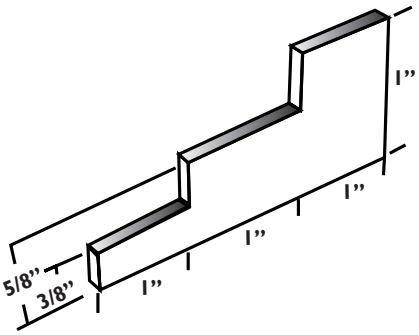


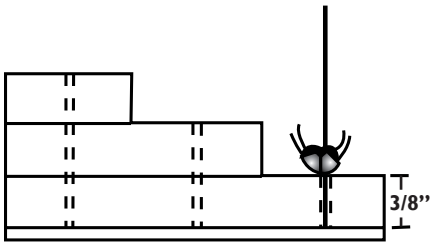




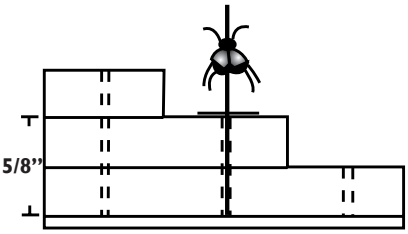
Make a Pinning Block

Medium-sized and larger insects should be pinned vertically through the body, using the pinning block to set the height of the insect on the pin. A simple temporary pinning block may be made of corrugated cardboard. A more permanent pinning block can be made from wood.





Adjusting Height of Insect on Pin

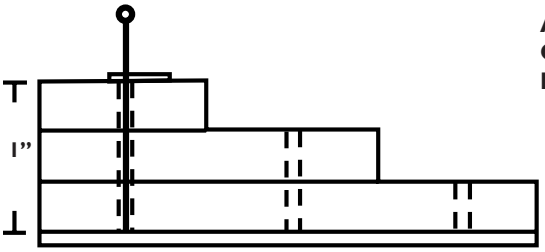


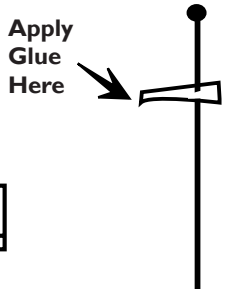
Adjusting Height of Label

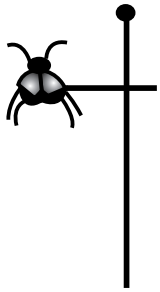
How to Card Point Small Insects

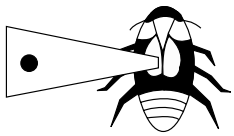
A card point (actual size)

1. Select some heavy paper such as index cards, for cutting out card points.
2. Cut the points in the shape shown. The points should be about 3/8-inch long.
3. Put a pin through the base of the card point and push it up on the pin to about 1/4 inch from the top of the pin. Use a pinning block to get uniform height of the points.
4. With a pair of tweezers, bend the tip of the card point down, as shown in sketch.
5. Put a tiny drop of glue on end of the card point. Press it gently against the underneath right side of the insect. Clear fingernail polish or any clear drying glue may be used. Be sure the insect is not at an angle. This takes practice!

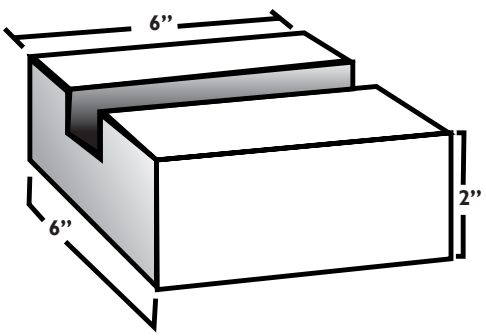








Block Spreading Board



Materials Needed:

Block of soft wood (balsa wood) or plastic foam about 6 X 6 X 2 inches.

A hand saw or a pocket knife.

How to make:

Saw or cut a wide groove across the block. The groove should be about 1/2 -inch wide and 1/2-inch deep. This makes a slot for the body of the insect to rest in when spreading. You may wish to make three or four of these blocks (some with broad and some with narrow slots) for spreading small or large butterflies or moths.

Spreading Butterfly Wings

A. Put an insect pin through the center of the thorax of a freshly killed butterfly. (If the insect has dried, see your leader for instructions for relaxing specimens.) One - fourth inch of the pin should be exposed above the thorax. Make sure the insect does not tip from side to side or from front to back of the pin.

B. Push the pin straight down the center of the slot of your pinning board until the outstretched wings are just level with the surface of the pinning board.

C. Insert the insect pin lightly in each front wing near the front margin and just behind one of the heavy wing veins. Move the front wings forward gently until the hind margins of the front wings are in a straight line, at right angles to the body.

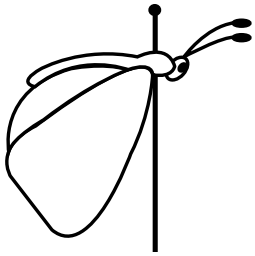
D. With a pin placed behind a heavy vein in the hind wing, move each hind wing forward until the gap between the front wing and hind wing is closed to just a notch, as shown in the right side of D.

E. Cut some narrow strips of paper, and lay them over the wings. Pin them in places as shown. Remove the other pins that are through the wings. Pins holding the paper strips in place should not go through the wings. They should be close to them to keep enough pressure on the wings to prevent their slipping out of place. Some entomologists use transparent paper so they can see if the wings have slipped out of place while the specimen is drying. Paper that is too thin will not give enough pressure on the wings. If the abdomen tends to sag, prop up with pins until it dries.

Pins can also be used to keep the antennae in place while the specimen dries. Depending on the moisture in the air, the specimen should remain on the board from four to eight days.

Note: *As you gain more practice with spreading butterflies, you will want to use a method that does not puncture the wings with pins. This method is shown in some insect books.*

A.



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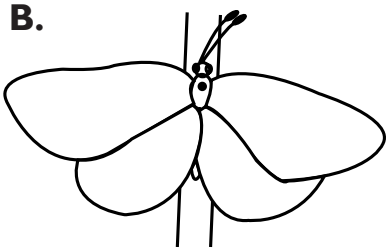
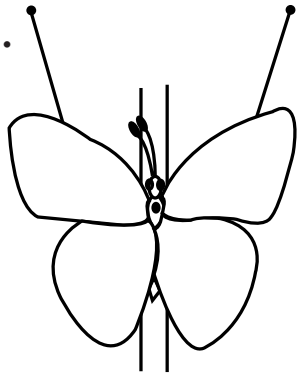
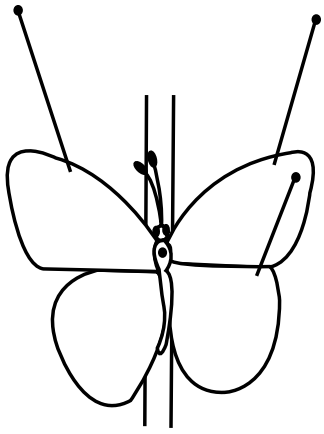


C.



D.



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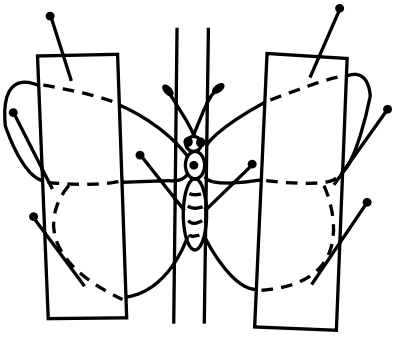
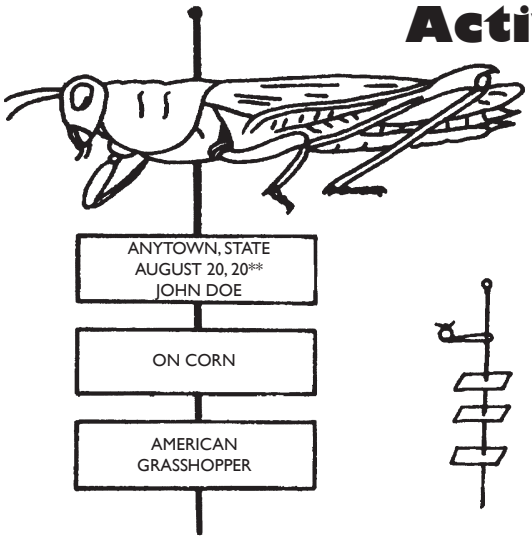


Activity IV. Displaying Insects
Labeling Insects

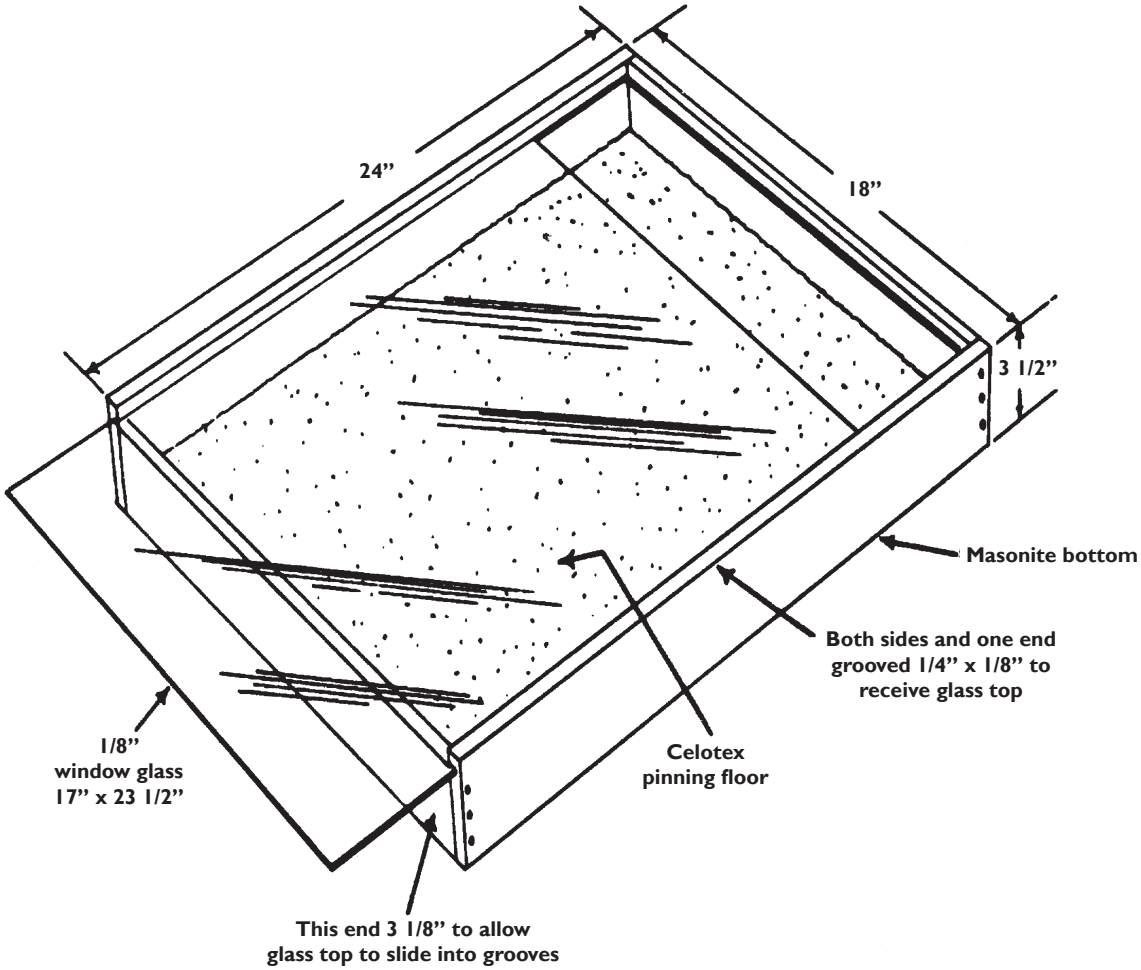


The most important label is one that tells where, when and by whom the insect was collected. Every pinned insect should have this label. Remember, a specimen without a date, place and collector label is practically worthless. The "where found" and "common name" labels may be added if you know this information. Place labels at the desired height on the pin by a pinning block.

Glass Top Display Case

Materials needed for a glass top display case, 18 X 24 inches

One piece of Masonite or 1/4-inch plywood for bottom - 18 X 24 inches
Two side pieces of pine - 3/4 X 3 X 24 inches
One end piece of pine - 3/4 X 3 X 16 inches
One end piece of pine 3/4 X 3 1/8 X 16 inches
One piece of plastic foam for pinning floor - 16 X 22 inches

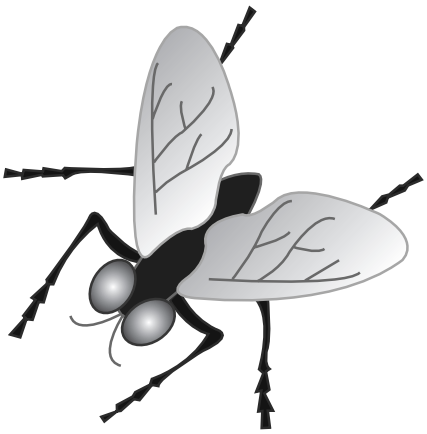


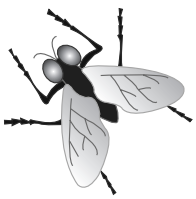
Insect Display

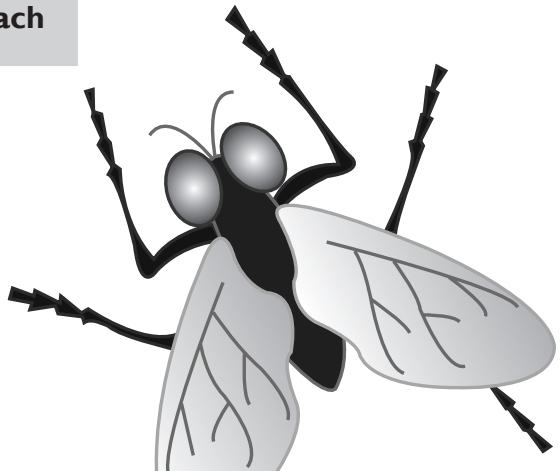
1. All insects displayed must have been collected within the past 12 months.
2. Exhibits shall be enclosed in a wooden case 18 inches wide by 24 inches long by 3 1/2 inches deep with a glass top.
3. Each insect specimen shall have a collector's label showing the place collected (town, city, etc.), the date collected and name of collector. This label shall be centered on the pin 1/2 inch from the bottom of the case and read from the left side of the specimen.
4. Specimens also shall be labeled as to common name (if specimen has a common name). This label shall be placed beneath the specimen flat on the bottom of the case with the pin through the center and read from the left side of the specimen.
5. Specimens shall be grouped by Orders.
6. Specimens shall be positioned where they will face forward when the case is horizontal.
7. The name, address, parish, age and the 4-H Club of the exhibitor shall be displayed on the outside of the glass in the lower right-hand corner of the case on a 1- by 3-inch card.
8. Collections for boys and girls under 14 years of age shall consist of exactly 50 specimens. Six shall be moths or butterflies. These will be judged on the basis of proper mounting rather than economic importance.
9. Collections for boys and girls more than 14 years of age shall consist of exactly 75 specimens. Ten must be moths or butterflies. These will be judged on the basis of proper mounting rather than economic importance.
10. Insect collections can be exhibited at many fairs and achievement days. Ask your 4-H leader or agent when yours can be exhibited.

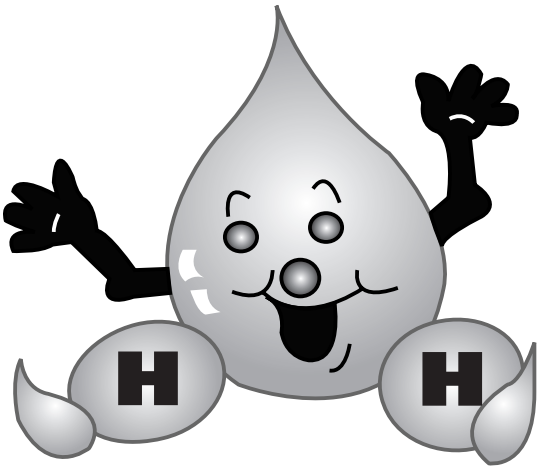
Exhibits will be judged as follows:

	Points
Proper identification as to Order	**1 each**
Orders represented	**3 each**
Proper identification as to common name	**1 each**
Economic importance of specimens	**2 each**
Condition of specimens	**1 each**
Proper mounting	**1 each**
Proper labeling	**1 each**
Butterflies and moths properly mounted	**2 each**
Neatness and arrangement	**20 each**
Correctness of size of case	**20 each**









Bon Jour, mes amis! My name is Hydreaux, and I live in a Louisiana Bayou. I would like to spend the next few pages telling you about one of the most important natural resources, water.

Water is found everywhere - in the air, on and under the ground and in living things. Covering nearly three-fourths of the earth's surface, water supports all life on earth. Water determines the climate, helps to form soils and is used to generate hydroelectric power.

You use water every day for drinking, cooking, washing and recreation. Have you ever stopped to think about what water is, and why it is such a unique substance?

Nothing else has the same properties as water. Some of these properties include:

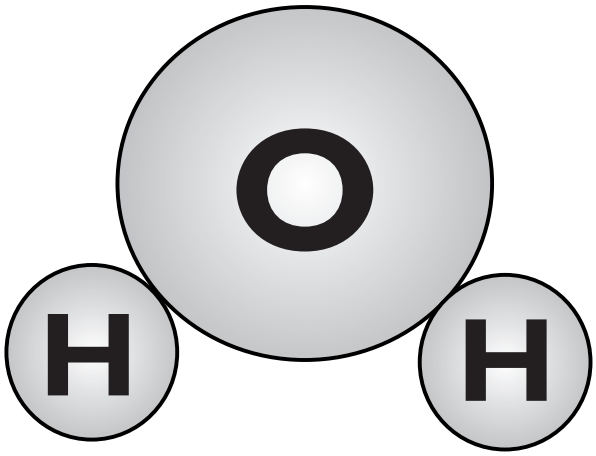
- **Strong attraction between water particles**
- **Almost universal dissolving ability**
- **Large heat-holding capacity**
- **Great expansion when frozen**

If you dip your finger into a cup of water, you will notice that a drop of water clings to your finger. This single drop contains millions of water particles called molecules (two or more atoms).

Water is also called **H_2O** because it has one **atom** (smallest particle of an element) of oxygen (O) and two atoms of hydrogen (H). Water molecules are tiny. In fact, there are about 900 sextillion in one ounce of water. That's 900,000,000,000,000,000,000,000.

Water molecules act like small magnets. The bond that holds different molecules together is called the **hydrogen bond.**

Water may take on different forms, depending on the arrangement of the molecules. We are most familiar with water in its liquid form. Water may also be in a gas or solid form. Water vapor, steam and clouds are gaseous forms of water. Ice, snow, sleet and hail are solid forms.

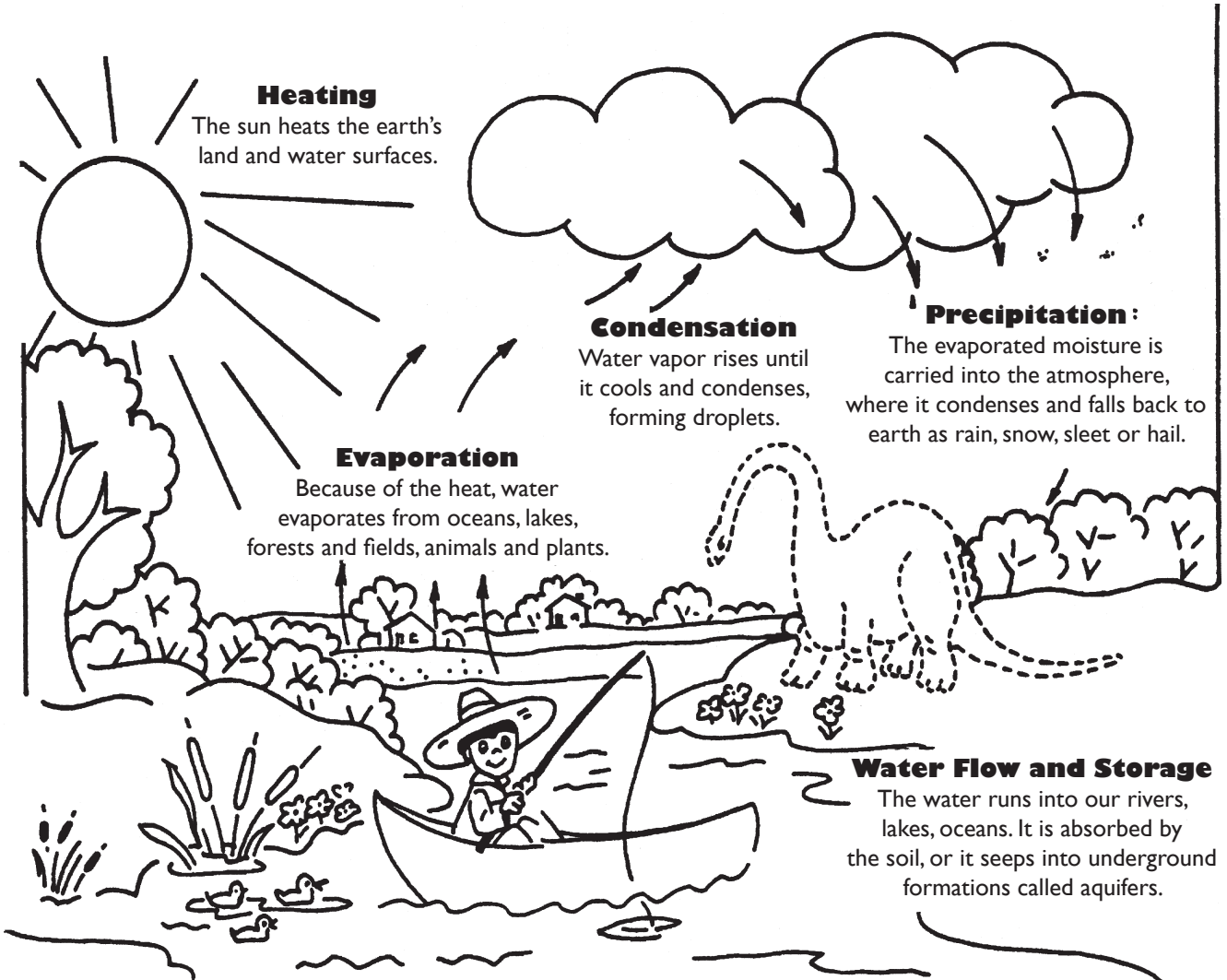


The Water Cycle

Some important water facts:

3/4 of the earth's surface is covered with water
97% of the water on earth is salt water
2% of the water on earth is fresh water, either frozen in glaciers at the North and South Poles or locked in rock formations deep within the earth
1% of the water on earth is fresh water available for our uses

The cycle of moving water is called the **hydrologic or water cycle.** It is nature's way of renewing the earth's freshwater supply. The sun is the source of energy that keeps the water moving.



About every 12 days, atmospheric water is fully recycled from air to land and oceans back to the air. It is important to remember that, although the form of water is always changing, the amount on earth has been about the same throughout the years. Imagine, the water you use to wash your face today has been recycled since long before humans ever lived on earth. It's possible that dinosaurs drank our water!

Activity 1
Make a Terrarium: A Water Cycle Model

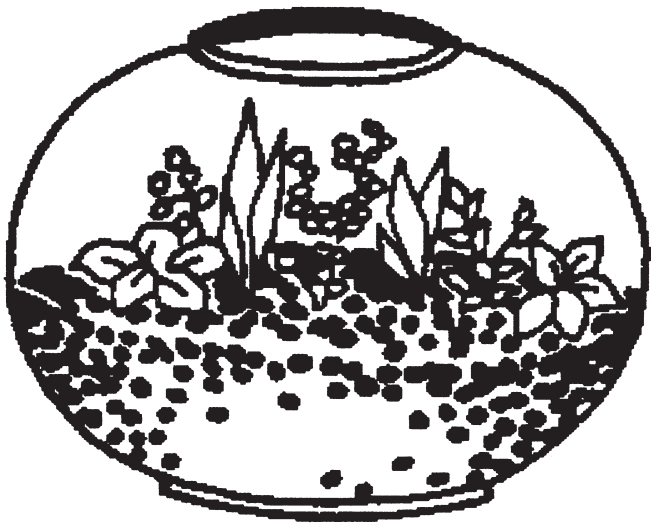
You will need:

1. A clear container, any size. Glass jars, aquariums and fish bowls that can be closed with a clear material make good containers.
2. Gravel
3. Peat moss
4. Potting soil
5. Two types of plants such as: maidenhair fern, English ivy (small type), fig vine

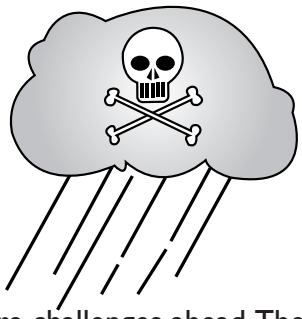
Procedure:

1. Cover the bottom of the container 1 inch deep with gravel for drainage.
2. Put a layer of peat moss in the jar, covering the gravel.
3. Put a layer of soil over the gravel and peat moss.
4. Make two small holes in the soil, and place plants so roots can be covered. Pack the soil around the plants, and press firmly. Do not crowd your plants.
5. A small decoration (colored rock, shell or piece of bark) may be added to your terrarium to make it more attractive.
6. Water terrarium lightly, and cover it with a lid or plastic wrap. Your terrarium will need only one or two teaspoons of water a month.
   Place your terrarium in a well-lit place, and enjoy!

Your terrarium is a model of the water cycle. The plants will take up water through their roots and release it through their leaves (transpiration). The water molecules will condense on the glass and fall back into the soil, just like rain. The terrarium demonstrates the water cycle on a small scale just like it occurs on earth.



What is Water Pollution?



When something is added to the environment that isn't desired there, it is called a pollutant. If pollution occurs in freshwater or saltwater environments, it is called water pollution. There are many types and sources of water pollution.

Chemical Pollution

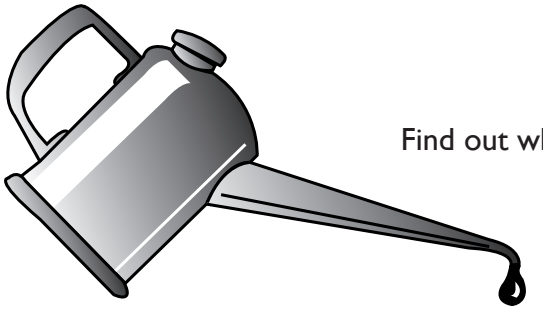
Great progress has been made in the fight for clean water, but we have more challenges ahead. The health and safety of our water supplies are threatened by many toxic and deadly chemicals. These chemicals can be a health risk, even in small doses. Toxic chemicals can enter our drinking water from:

septic tanks
landfill sites
industrial waste landfills
petroleum and mining operations
pesticides and fertilizers
leaking underground storage tanks
saltwater intrusion

Research shows that, in some areas, our groundwater has been contaminated by toxic chemicals. Groundwater moves slowly and can remain polluted for hundreds of years.

Pollutants Harmful to Water

- **Bacteria:** Animal and human waste can carry diseases such as cholera and dysentery.
- **Organic Chemicals:** These chemicals can become part of the food chain and cause serious health problems.
- **Toxic Metals:** Heavy metals such as mercury and lead are poisonous and can enter the water in the form of industrial waste.
- **Phosphorous:** This element is found in nature and in fertilizers and can cause growth of the types of plants that may rob water of oxygen.
- **Radioactivity:** Radioactive substances are found in natural rock formations and can enter our drinking water.
- **Petroleum:** Automotive and petroleum-based products contain organic and heavy metals that should not find their way into the environment.
- **Other Chemicals:** Many inorganic materials undergo chemical changes in water that alter the safety and quality of the water.



Activity II
Oil Spills Are No Thrill

Find out what happens to the **aquifer** (underground water storage where water collects) when pollutants such as oil, paint, etc., are dumped in the back yard.

Materials needed:

Quart jar
1/3 inch topsoil
Paper cup
3/4 of a jar of sand or sand and gravel
Used oil or old paint

Procedure:

1. Pack the jar 3/4 full of sand or sand and gravel (representing the aquifer).
2. Put 1/3 inch of topsoil over the sand.
3. Pour 1/3 to 1/2 paper cup full of old motor oil or paint over the top of the soil close to the glass wall.

What happens? _____

_____

_____

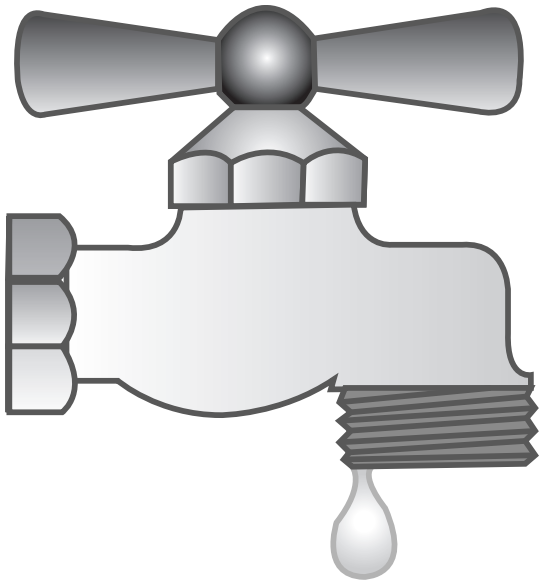
_____

_____

There is no way to remove these pollutants from the aquifer, and it is destroyed as a water source. Once you have completed the activity, cap the jar and place it in a plastic bag. Seal the bag before throwing it in the trash. This way your activity will not pollute our water supply.

Let's Conserve Water

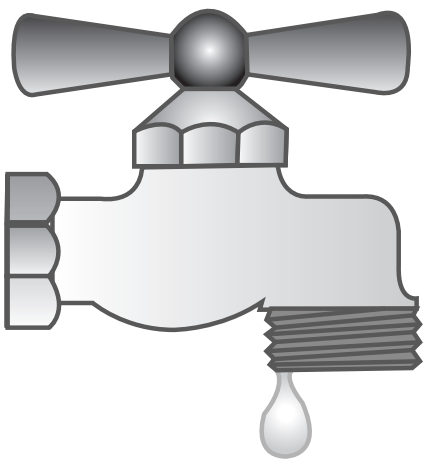
Conservation means using a resource wisely. Conserving water is essential. Humans depend on water more than any other one thing, except oxygen (O_2), for survival. Simple water-saving practices can become part of our everyday lives without changing the way we live.



Activity III
How Much Water Do You Use in One Day?

Pick one day during the month, and see how many times your family does these activities. Calculate the number of gallons of water used.

Water use	How many times or minutes daily	Rate per use	Total gallons used
Toilet flushing		x 5 gallons for each flush=	
Dishwasher		x 13 gallons for each load=	
Washing machine		x 30 gallons for each load=	
Shower	minutes shower is on	x 7 gallons for each minute=	
Bath	minutes faucet is on	x 7 gallons for each minute=	
Open faucet including hose, sink	minutes faucet is on	x 5 gallons per minute=	
		Grand Total:	



To calculate total gallons, multiply the number of times or minutes by the number of gallons per use. Add last column to find the total water use in your house for one day.

Activity IV
Be a Water Watcher

In the bathroom. Try taking a bath with only a half tub of water, or take a shorter shower. When you're brushing your teeth, run only as much water as you need, then turn off the tap until you need more water.

In the kitchen. Always keep a pitcher of cold water in the refrigerator. Instead of running the tap to get cold water, there will always be some on hand. Turn off the tap when you leave to answer the door or the phone.

Outside. Put a nozzle that can be turned on and off on the hose when washing cars, bikes, outdoor tools or dogs. Water lawns and gardens only when needed and in the early morning or late evening. Clean sidewalks and driveways with a broom instead of a hose.

Wastes are the unwanted by-products people produce just by living. Wastes may be in a solid, liquid or gaseous form. Americans throw away 18 billion disposable diapers a year - enough to stretch to the moon and back **seven times!**

We normally dispose of our solid waste on land. Before the machine age, solid wastes were largely organic or natural and therefore **biodegradable,** which means the bacteria in nature could break them down into basic elements - carbon, (C), hydrogen (H) and oxygen (0). Today, much of the solid waste we produce is synthetic or man-made and takes years to decompose. Plastics may take from 200 to 400 years to break down.

Where does the waste go? Most is put in sanitary landfills. Landfills are pits dug in the earth which are specially treated so the waste placed in them cannot harm the environment. The waste is then covered with soil. Because we are producing so much solid waste, we are running out of landfill space.

Activity I
Let's Build a Landfill

You Will Need:

2 identical sets of bread scraps, newspaper, cardboard, cloth, soap chips, paper, glass, aluminum and tin cans, plastics, copper wire
2 cardboard shoe boxes
2 pieces of aluminum foil or plastic, large enough to line the shoe box
8 cups of soil (Don't use potting soil, because it has been sterilized and does not contain the tiny bacteria and micro-organisms that break down natural waste. Clay or garden soil is better than sand.)
Toothpicks
Several pieces of string, cut about 6 inches long.
Masking tape
Several small pieces of cardboard
Glass of water

Procedure:

1. Line the shoe boxes with aluminum foil or plastic.
2. Put one-half of the soil in each shoe box.
3. With tape, attach a piece of string to each toothpick. Attach the toothpick to your waste objects. Write the name of each waste object on a small piece of cardboard. Fasten each piece of cardboard to the other end of a string with masking tape. Bury in each box one set of waste materials, leaving the cardboard labels on top of the soil surface. Write down the date you buried the waste items.
4. Add a little water to one of the boxes. Put both mini-landfills in the sunlight, perhaps on a windowsill. Wait about 30 days.
5. Carefully remove the waste items from each landfill. Examine each item with a magnifying glass.

What did you observe?

1. Which items in the mini-landfill show the most decay? _____

2. Are the decaying items natural or man-made? _____

3. Are the decaying items biodegradable? _____

4. Which items have just started to decay? Why do you suppose they are decaying more slowly than the others? _____

5. Which items show no signs of decaying? Can you tell why? Will they remain unchanged forever? Are they made of materials that should be reused or recycled instead of being buried in landfills?

6. Was there any difference in the items taken from the dry landfill?_____ If so, what made the difference? _____

7. Suppose the landfill wastes had been put in potting soil. Would the biodegradable wastes have decomposed as quickly? Why or why not? _____

8. Did you notice any space around some of the waste items as you dug them out? What do you think caused that space to form? If this happens in a full-sized landfill, might this affect how the land can be used after the landfill is filled with trash? _____

9. If you let water drip through your landfill, would it come out dirty? _____

The Solid Waste Stream

You can help reduce the solid waste produced by your family and community. How?

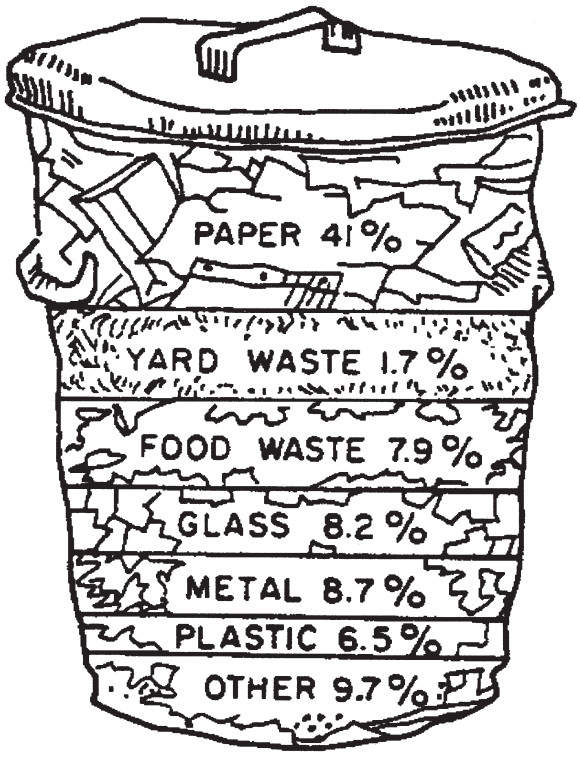
Remember the four R's:

Revise your buying habits by buying products in packages that can be recycled or reused. Buy items in one large package rather than several smaller ones. Choose items with a minimum amount of wrapping.

Reuse items when possible. Compost yard and food waste to enrich your garden and reduce the amount of fertilizer you have to buy.

Recover. Waste can be burned to generate industrial heat or electricity.

Recycle aluminum, glass, newspaper and plastics. This will conserve our natural resources, conserve the energy that would be used to make new cans, bottles and paper, and save landfill space. Recycling one soft drink can save enough energy to run your television for three hours!



T.R.I.C. is No Treat!

Much of the solid waste we produce is hazardous because it is dangerous to human health or the environment. These are four categories of hazardous waste:

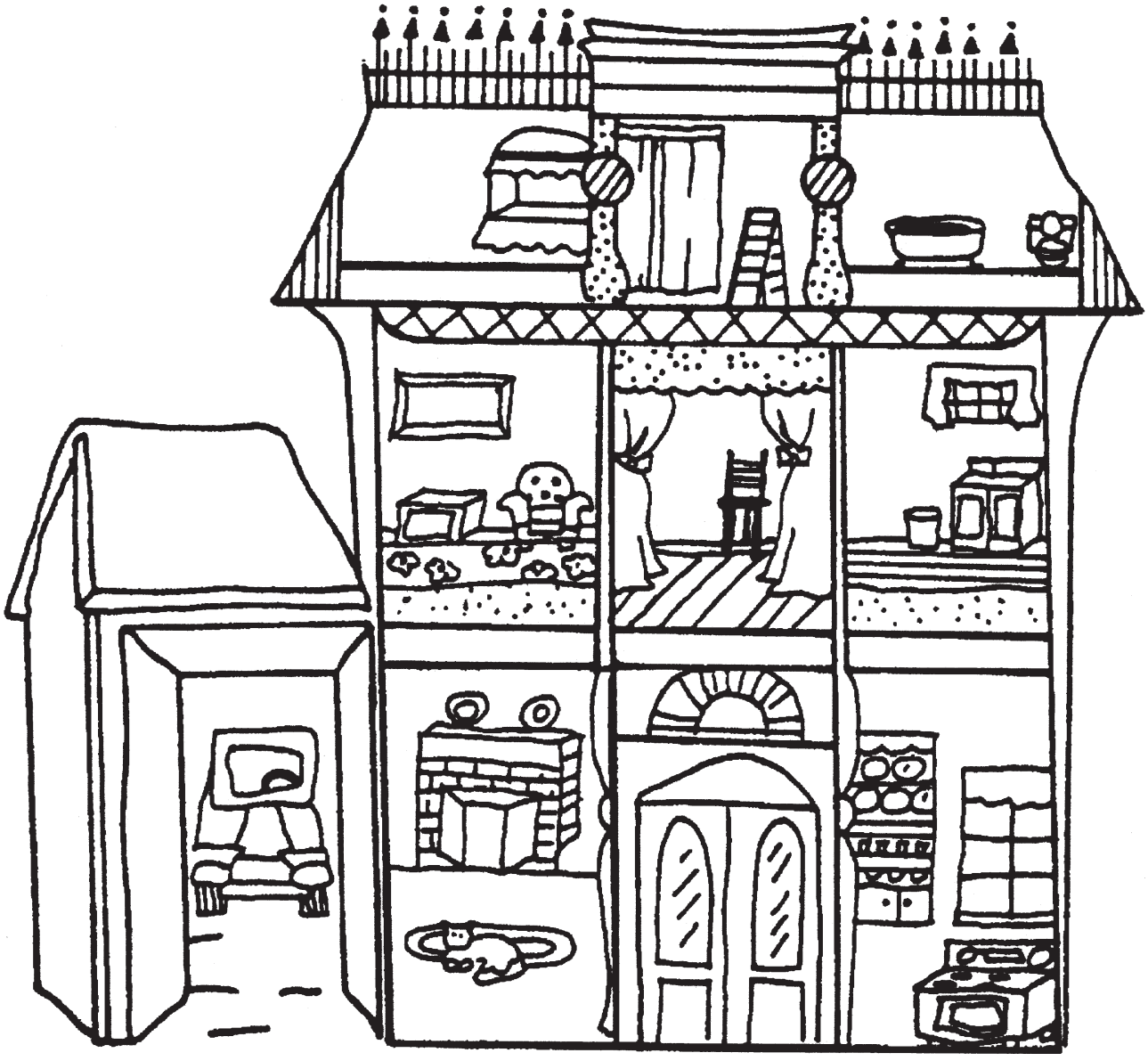
Toxic waste is poisonous to humans or animals.
Reactive waste may cause an explosion.
Ignitable waste may catch fire easily.
Corrosive waste may burn the skin or damage materials such as metals.

Hazardous household products may be found in many places in the home.

Activity II

Circle the places where hazardous household products are used that can eventually end up in our environment.

Read the labels on household products to find out if they are harmful. The symbols you find on these labels have special meaning. Be sure to use and dispose of hazardous household products properly. We want to be sure that what we pour down the drain and put in the trash will not cause problems for the sanitation crew that picks up garbage, the crew at the landfill, for the environment or for future generations of Louisianians.



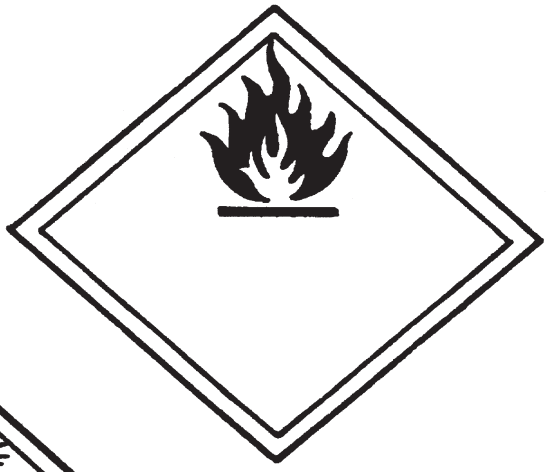
Activity III

Identify these hazardous symbols:

Source - Waste:
A Hidden Resource:
Keep America
Beautiful in 1989

A. Corrosive
B. Infectious
C. Toxic
D. Radioactive
E. Reactive (Explosive)
F. Ignitable (Flammable)

1. _____



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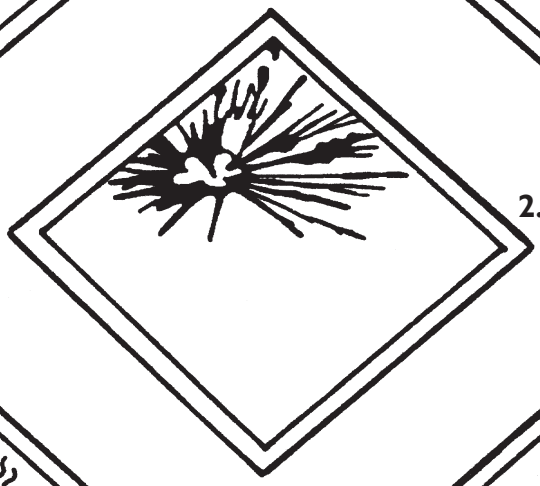

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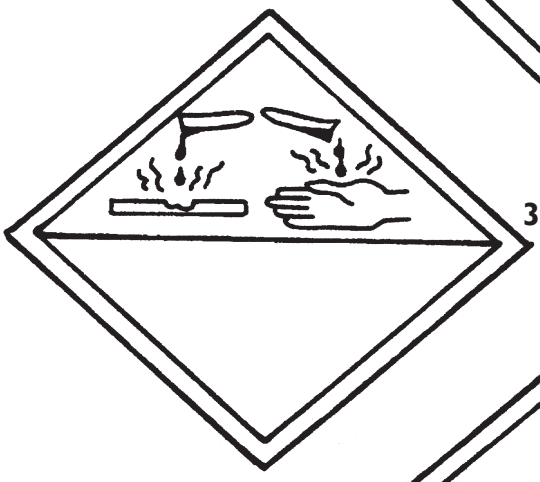
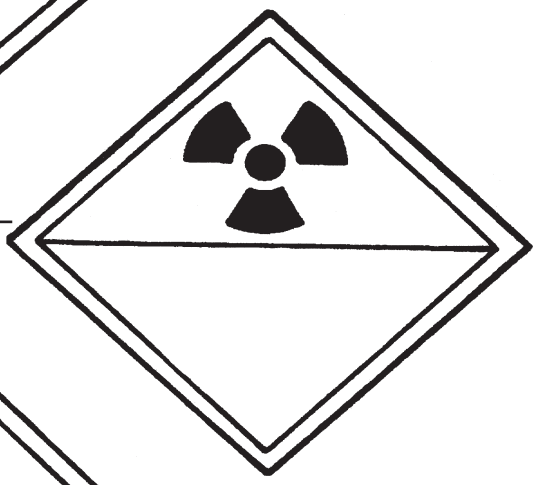
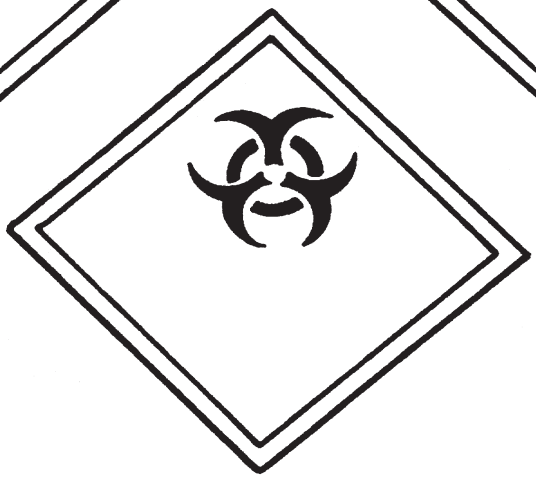


4. _____



5. _____



6. _____

Answers:
1. C 2. F 3. E 4. A 5. D 6. B

As 4-H club members, we pledge to improve our club, community, country and world. We do this through community service projects. Through these projects we learn about the needs of our community and how we can work together to make it a better place. What have you learned in this project that you could use? Just think about it.

Community Service

You could:

- Build bird feeders for nursing homes and visit regularly with the residents about the birds that feed there.
- Help make a nature trail at school or in the park.
- Organize a poster contest or create a bulletin board at school on recycling.
- Participate in a cleanup campaign. (Take before and after pictures!)
- Write a club or school newsletter article about how litter affects wildlife and fisheries.
- Make an exhibit for a parents' meeting about the importance of reading and following instructions on home and garden pesticides.
- Help build or replace habitats for local wildlife.
- Start a campaign to properly dispose of hazardous wastes like used motor oil and batteries

Leadership

To share what you have learned you could:

Volunteer to give a talk or demonstration at your 4-H club meeting on:

Building a Bird Feeder
Building a Landfill
Collecting Insects
The Four R's

Give a speech or demonstration at a parish contest or project day on:

The Importance of a Clean Water Supply
Save Our Natural Resources: Recycle
Good Citizens Don't Pollute the Environment
Protecting Wildlife Habitats

Section 1
Wildlife and Fisheries Project Activities

Activity 1 Wildlife Study Area

1. Briefly describe your wildlife study area.

2. Make a wildlife record of all the animals you find on your study area. Do not overlook signs of animals present.

Wildlife Record

Animal	Where Seen	Signs

3. List habitat requirements for one of the animals found on your study area.

Name of Animal	Habitat Requirements

4. What could you do to manage this area so as to make it a better area to live and reproduce for the animals you observed? _____

Activity II Feeding Birds

1. Make a chart of your bird feeding project.

	Type of Food	Species of Birds Using Feeder	Date
Week 1			
Week 2			
Week 3			
Week 4			

2. List the factors that you think limit birds from using your backyard bird feeder.

Activity III Squirrel Dens

1. How many dens did you build and place?

2. How often did you observe them? _____

3. How many showed signs of being used by squirrels?

Activity IV Exploring Wildlife Communities

1. Briefly describe each wildlife community you observed in this activity.

2. Record the stages of plant growth in each habitat type and list the animals found living there.

Habitat Type	Stages of Plant Growth	Animals Present

3. Make a list of relationships between the plants and animals present in each habitat type. What would you do to improve the habitat for each animal?

Animal	Habitat Requirement or Relationship	Improvements
(Example) Rabbit	*Thick Briers and Weeds in Vacant Lot*	*Mow Strip for More Food*

Activity V Collecting Fish

1. List all the fish you collected in this activity, and record the type of habitat in which you found them.

Name of Fish	Where Found (Habitat)

2. What did you learn about these animals and their special adaptations for living in a particular type of water habitat? _____

Activity VI Life in a Pond

1. On the draft below, list the organisms and plants you collected in and around the edge of a pond. Record where you think each fits in the aquatic food chain.

Organism or Plant	Place in Food Chain

Section 2
Insect (Entomology) Project Activities

If you have difficulty or need help completing this project, ask a brother, sister or parents to help you. Your 4-H leader and local LSU AgCenter Extension agent can give you valuable help, too.

No. 1: Answer questions completely.

(1) Did you make a killing jar? _____

(2) Did you make a collection box? _____

(3) Did you make an insect collection net? _____

(4) Did you make a spreading board? _____

(5) Did you make a pinning block? _____

No. 2: Each specimen should be labeled listing the date of collection, collector and where the specimen was found. Add pages if needed.

No.	Common Name of Insect	Where Found *(plant, at light, ground, etc.)*	Crop or animal damaged
Example	*Colorado potato beetle*	*In garden*	*Potato*

Activity I Make a Terrarium

1. What types of plants did you use? _____

2. How is the terrarium a model of the water cycle? _____

Activity II Oil Spills Are No Thrill

1. Did you use oil or paint? _____

2. What happened? _____

Activity III How Much Water Do You Use in One Day?

1. Which use of water totals the most gallons? _____

2. Which totals the least? _____

Activity IV Be a Water Watcher

How did you save water? _____

Section 4
Away With Wastes

Activity I Let's Build a Landfill

What did you observe? _____

_____

_____

_____

_____

Activity II T.R.I.C. is No Treat

Room	Possible Hazardous Product

Activity III Hazardous Symbol

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

What did you do?

What happened as a result?

Why was it important to do it?

How did it make you feel?

What will you do next?

Leadership

How did you share what you learned in this project? Describe the talks or demonstrations you gave.

You and the Environment was developed by subject matter specialists and a 4-H agent review team.
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