



CONSERVATION CAMP

CLINCH POWELL RC&D

HEALTHY WATER WEALTHY WORLD

CONSERVATION CAMP WORKBOOK



**A companion workbook to a day in nature's classroom for
sixth grade students and teachers in Claiborne, Grainger,
Hancock, Hawkins and Union Counties.**

Sponsored By

The Clinch-Powell RC&D Council



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CLINCH-POWELL RC&D COUNCIL ENVIRONMENTAL EDUCATION PROGRAM

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HEALTHY WATER, WEALTHY WORLD CONSERVATION CAMP WORKBOOK

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FISHY WHO'S WHO

STUDY QUESTIONS AND ANSWERS

- 1. Name 5 species of fish that are important to the rivers in your area.**

Rock bass, Channel catfish, Smallmouth bass, Redbreast sunfish, Darters, Walleye, Crappie, Brook trout, Minnows, etc.

- 2. Why are these fish important?**

They all play important roles in the aquatic ecosystem.

- 3. What dangers are facing the aquatic life in the Clinch and Powell Rivers?**

Point source pollution, nonpoint source pollution, increasing pressures from development, loss of riparian zones, soil erosion, fertilizers, manure, sewage, waste oil, coal mine silt and acids, pesticides and channeling, dredging and dams.

RIPARIAN RETREAT

STUDY QUESTIONS AND ANSWERS

- 2. List 10 things you would expect to find in the riparian areas of the Clinch or Powell River.**

Grass, gravel, trees, nests, scrubs, small animals, flowering plants, leaf litter, soil, water plants, etc.

- 3. What are some other words you know that are used to describe riparian areas?**

Streambank, brush, greenway, forest, thicket, etc.

- 3. Name 4 animals that you would expect to find in a riparian area.**

Song birds, quail, insects, deer, different kinds of burrowing animals.

WATER CHECK-UP

STUDY QUESTIONS AND ANSWERS

1. What is water pollution?

Water pollution comes in many forms. A simple explanation of water pollution is any foreign substance in water that does not naturally occur there. Water pollution can be trash, pesticides, urban runoff, sediment, manure, etc.

2. Name as many kinds of water pollution as you can.

See above.

3. How are aquatic invertebrates indicators of water quality?

Aquatic invertebrates are like any other living organism. They have physiological needs that must be met in order to survive. Many aquatic invertebrates are more tolerant of changes in their environment, making them more tolerant of pollution. Biologists who are familiar with aquatic invertebrates can assess water quality by what lives in a stream or river.

WATER AND WILDLIFE HABITAT

STUDY QUESTIONS AND ANSWERS

1. What are some specific examples of pollutants?

Sewage, industrial waste, construction, solid waste, agriculture, household chemicals.

2. What determines the population of a species of wildlife in a given area?

Food, water and habitat. The most limiting one of these three factors will determine the number of a specific species of animal in a given area.

3. How could a predatory animal be poisoned by contaminates found in the mud at the bottom of a lake?

Fish or other aquatic animals pick up the pollutants from the bottom. If a predatory animal has a diet of contaminated fish, they may be poisoned.

WATCH OUT FOR WILDLIFE

STUDY QUESTIONS AND ANSWERS

1. Can you list 3 avian species that are affected by polluted water?

Great blue heron, Mallard ducks, Osprey

2. How many pollution hazards can you name that harm our avian species?

Trash, industrial dumping, farm run-off, construction, dioxins from paper mills, etc.

3. Why is it important to try to save the threatened and endangered avian species which use wetlands and marshes?

Every creature is important to the entire ecosystem of the earth. Some control overpopulation of others, control sick and diseased prey, help keep water clean, etc.

SOIL AND WATER

STUDY QUESTIONS AND ANSWERS

1. How does soil affect how much water recharges the groundwater supply?

Different types and textures of soil have different porosity and percolation rates. They let water ooze down through them at different rates.

2. How do soils purify water?

They act like filters. Impurities in the water attach to the soil particles as they move through the soil.

3. Which general type of soil do you think will have the most serious erosion problem?

Silt.

WHERE DOES YOUR WATER FLOW?

STUDY QUESTIONS AND ANSWERS

1. What are some of the major and minor watersheds in which you live?

Clinch and Powell River watersheds
Holston River watershed
Any creek or tributary of these watersheds

2. How can a forest store water?

In trees, in the soil, in the leaf litter, in the caves, in the underlying parent (rock) material.

3. Can the unchecked force of water be detrimental to ecosystems and populations of plants or animals?

Yes, but too much or too little water can drastically change the habitat.

PIGTOES AND HEELSPLITTERS

STUDY QUESTIONS AND ANSWERS

1. Why is it a good sign for wildlife and people if there are mussels in the river?

This means that the water is clean.

2. Why is it important to take care of the non-game fish species in the river?

Loosing fish can upset the ecosystem of the river and cause many animals to die or become extinct.

3. What are some of the threats to the mussels and what can we do to protect them?

Silt and sediment in the water, pollution, solid waste, pesticides.

Use conservation farming techniques, do not throw trash into the river, do not dump oil into the water.

THERE ARE NO WEEDS!

STUDY QUESTIONS AND ANSWERS

1. Name 5 wildflowers sometimes considered to be weeds.

Dandelion, Jimsonweed, Chickweed, Asters, Blackberry, etc.

2. What precaution should one take before considering a plant as an herb?

Proper identification and clean, chemical-free habitat.

CONSERVATION FARMING

STUDY QUESTIONS AND ANSWERS

1. Name a good conservation farmer you know.

Individual answers.

2. Which conservation practices does that farmer use?

Individual answers.

3. Name 3 advantages of conservation farming.

Protect natural resources.

Improved water quality.

Can save the farmer money in the long run.

LITTER BUG BLUES

STUDY QUESTIONS AND ANSWERS

- 1. Name 5 things you can start recycling in your home.**

Aluminum cans, paper, glass, newspaper, plastics, cardboard, steel food cans.

- 2. How do we reduce the amount of garbage we produce?**

Do not buy products that have excessive packaging.
Buy only what you need.
Repair things rather than buy new ones.
Recycle.

- 3. How does it help the environment to reuse or recycle things?**

Make less garbage.
Use less of our non-renewable natural resources.

SINKHOLES SHOULDN'T BE STINKHOLES

STUDY QUESTIONS AND ANSWERS

1. Are there sinkholes in your area?

Yes, East Tennessee is in the heart of a limestone and karst topography.

2. What types of wastes are being dumped in them?

Answers will depend on child's experience.

Examples include old cars, appliances, household trash, etc.

3. What diseases can people get from contaminated underground water?

Diarrhea, cholera, poisoning.

LEAF LITTER LEGACY

STUDY QUESTIONS AND ANSWERS

1. What happens to leaf litter after it decomposes?

It turns into organic matter in the soil.

2. Name 10 different uses of forest products.

Pencils, furniture, paper, baseball bats, mulch, medicine, picture frames, houses, bridges, telephone poles, food, wildlife shelter, etc.

3. Why are gullies and erosion problems hard to fix in forested areas?

Because the land is usually very steep and inaccessible.

WHERE DOES THE WASTE GO?

STUDY QUESTIONS AND ANSWERS

- 1. Name 3 specific ways you can personally reduce the amount of trash you dispose of?**

Recycle

Buy products with less packaging

Repair things

- 2. What does rain turn into when it flows through older landfills? Why must it be controlled?**

Leachate. It is toxic.

- 3. Why is it important to protect groundwater?**

To maintain a safe drinking water supply. Because it is the right thing to do.

MONEY TREE

STUDY QUESTIONS AND ANSWERS

1. Why do trees grow straight up even when they are on a mountain?

Gravity.

2. What is the Tennessee state tree?

Tulip poplar.

3. How can we improve our forested land and harvest it at the same time?

Forest management.

SHOPPING GREEN

STUDY QUESTIONS AND ANSWERS

1. What is “shopping green?”

Buying items that are safe for the environment or less damaging to it.

2. What are some things to look for while pre-cycling?

Has the item been recycled before?
Can it be recycled?
Is there excess packaging?
Is it made using polluting processes?

3. Why are these things important?

To save landfill space, to save natural resources, to protect the environment.

ENVIRO IQ

STUDY QUESTIONS AND ANSWERS

1. Name some common household items considered hazardous waste.

Insect sprays, paint, oven cleaner, detergent, oil, weed killers.

2. Name 5 occupations associated with agriculture.

Forestry, trucking, processors, grocery stores, farmer, agricultural extension agent, etc.

3. Name 5 ways trees help the environment.

Shade, oxygen, erosion control, beauty, wildlife, habitat, etc.

READ A MAP YOU'LL NEVER BE LOST FOR LONG!

STUDY QUESTIONS AND ANSWERS

1. Name some common maps you might use everyday.

Road maps, map of school, map of community, house plans, recreation maps, land use, state map, county maps, topographical maps (show land features, etc.)

2. What else can you use a map for?

Property lines, tax maps, land ownership, navigation, public lands, historical maps, tourism maps, geology, etc. A map can show just about anything.

3. Where can you find maps?

A map store or agency that specializes in maps, TVA has map books, gas stations, county government, local agencies have land and property maps, chamber of commerce, etc.

4. How do you find your way around on a map?

Find your way around on a map always by first studying the legend to get the scale and see what symbols are used to represent features. Get your direction straight -- north, south, east or west.

THINK ABOUT IT

STUDY QUESTIONS AND ANSWERS

1. What is an endangered species?

An animal that is in eminent danger of becoming extinct unless someone intervenes.

2. Name 3 sources of nonpoint source pollution.

Sediment from farming and construction.
Household sewage.
Household oil dumped in water.
Pesticides from farming.

NATURE COLLAGE

STUDY QUESTIONS AND ANSWERS

1. Make up a name for each green used in your picture. What are your green names?

Individual answers.

2. Did you use different size leaves to create your art work?

Individual answers.

3. Did you use different size leaves to create your art work?

Individual answers.

4. Name the leaves you used, including their color, shape and size.

Individual answers.

5. What can you do with your leaf art once you have made it?

Stationery, ornaments, placemats, etc.

WETLANDS

STUDY QUESTIONS AND ANSWERS

1. Name 3 plants that grow in wetlands.

Cattails, Rushes, Waterlilies, Willow tree, Sycamore tree, Cranberries.

2. What are 3 names that we give wetlands?

Marsh, bog, swamp

3. Name 3 animals that live in wetlands.

Snakes, Frogs, Salamanders, Turtles, Snails, Crayfish, Insects, Beaver, Song birds, Geese and many others.

PICNICS ARE FUN?

STUDY QUESTIONS AND ANSWERS

- 1. List 5 major problems or negative impacts associated with recreational use of public lands.**

Litter/dumping, overcrowding, pollution, erosion, vandalism.

- 2. What 3 major things do TVA dams provide for the public?**

Electricity, flood control, public lands.

- 3. List 4 activities you can do on public lands.**

Fish, hunt, swim, ski, camp, hike, picnic, boat

- 4. Recreational use of TVA's reservoirs and rivers has contributed to the economic growth of the area.
Name types of businesses that support the recreational needs of people in this area.**

Commercial marinas, bait and tackle shops, campgrounds, boat sales, retail stores that sell fishing and boating supplies, etc.

HOUSEHOLD HAZARDOUS WASTE

STUDY QUESTIONS AND ANSWERS

1. How can I buy products that are least hazardous?

By reading the signal words on the label you can evaluate the potential risk that a product poses. No signal word means that the product is not hazardous. If there are non-hazardous products available you should choose the one that has the lowest risk – that would be Caution, followed by Warning, and Danger and Toxic being the least desirable options.

2. Why is it important to follow the directions on the label?

Following the directions allows you to avoid any unnecessary dangers. A product may be dangerous to your health if the concentrations are very high. Therefore, using the product in a well ventilated area will substantially lower your risk of becoming ill. Other products may be extremely flammable, in which case, excessive heat or open flame may cause the product to ignite spontaneously.

3. Why should these materials be disposed of properly when they are no longer useful?

Hazardous household products can contaminate the air, water, and soil that they touch if they are simply thrown away with your regular household garbage. Products that are toxic, reactive, ignitable, or corrosive should be stored safely until your county hosts a household hazardous waste roundup. The materials will be gathered by a company that can safely dispose of the materials in a way that will not allow the hazardous constituents to reach the environment.

WHAT IS THE BENEFIT OF SURVEYING?

STUDY QUESTIONS AND ANSWERS

- 1. What are three types of distance measuring services?**

- Measuring tape
- Measuring rod
- Odometer

- 2 What type of surveying instrument is to be used when excavating a basement or pond?**

- A manual or laser level

- 3 What conservation practices are done on the farm by surveying?**

- Contour farming
- Fencing
- Stream Crossings
- Ponds
- Animal Waste Systems
- Any conservation practice