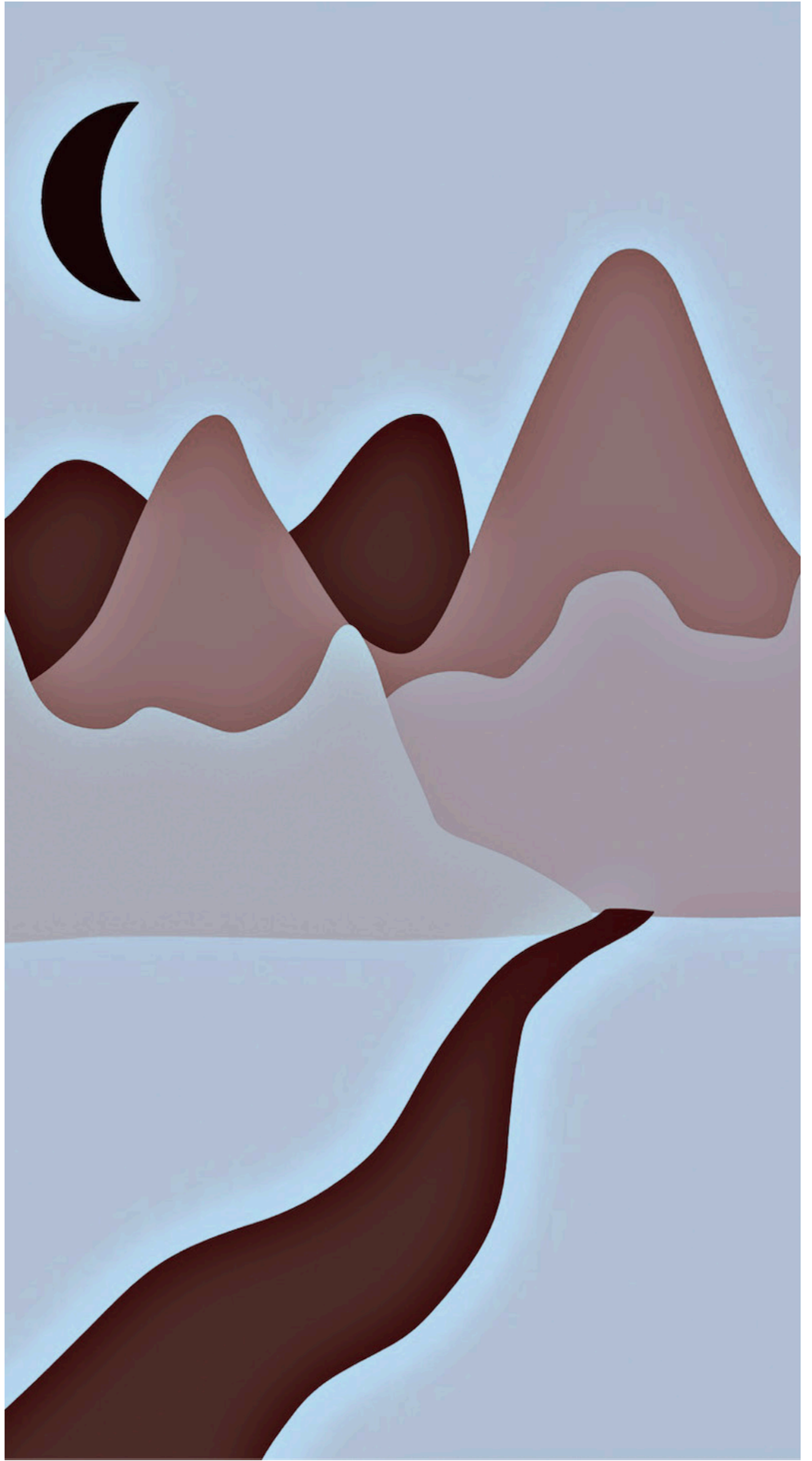


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About the Cahaba River

The Cahaba River is Alabama's longest stretch of free-flowing river that runs through approximately one-third of the state. It is the primary drinking water source for the Birmingham metropolitan area—that's one-fifth of Alabama's population!

With headwaters near Birmingham, the Cahaba River flows a 194-mile-long course through central Alabama until it joins with the Alabama River southwest of Selma. The Cahaba watershed is 1,870 square miles and drains urban and rural areas, farms, and forests on its course from the southern Appalachian Mountains through the coastal plain to the Alabama River.

The Cahaba is internationally recognized for its rich biodiversity, supporting more species of fish than any other river of its size—or larger—in North America. The river is home to more than 120 native fish species and 139 rare or imperiled species, including ten fish and mussel species listed under the US Endangered Species Act.

The protection of this natural asset starts with the community. Cahaba River Society believes that connecting people with the river through hands-on experiences is the best way to inspire care for the Cahaba. Whether you are participating in river clean-up initiatives, enjoying activities like swimming, or canoeing along the Cahaba Blueway water trail, or simply engaging in casual discussions with neighbors about the river, every contribution, no matter how modest, can make an impact.

Algae—a simple, nonflowering, and typically aquatic plant of a large group that includes the seaweeds and many single-celled forms

Anadromous fish—fish that migrate from freshwater where they hatch to the ocean where they spend most of their lives, then back to freshwater.

Anoxic Conditions—conditions in which the aquatic environment does not contain dissolved oxygen.

Boundary Layer—a layer of more or less stationary fluid (such as water or air) immediately surrounding an immersed object in relative motion with the fluid

Benthic Organisms—organisms that live on, in, or near the bottom of a body of water known as the benthic zone.

Best Management Practices—combination of practices that is determined to be an effective means of reducing the amount of pollution generated by various sources.

Bioaccumulation—an increase in the concentration of a chemical in a biological organism over time.

Catadromous Fish—fish that spend most of their lives in fresh water, then migrate to the sea to breed.

Complete Metamorphosis—growth of an animal through four different stages: egg, larva, pupa, and adult

Decomposer—an organism, especially a soil bacterium, fungus, or invertebrate, that decomposes organic material

Detritus—waste or debris of any kind.

Dissolved Oxygen—measure of how much oxygen is dissolved in the water.

Ecology—the study of interrelationships (two or more things that are related to each other) of living things to one another and their environment

Erosion—geological process in which earthen materials are worn away and transported by natural forces such as wind or water

Eutrophication—when a body of water is over-enriched because of excessive nutrient loading. This then often results in consumption of dissolved oxygen.

Extirpate—to destroy; exterminate.

Filter Collectors—use specialized mouth parts to collect FPOM suspended in the water

Gather Collectors—eat FPOM that is no longer suspended in the water and is on the rocks or other surfaces under the water

Food Web—a system of food chains within a biological community

Functional Feeding Groups—a classification approach that is based on behavioral mechanisms of food acquisition rather than taxonomic group

Hydrophobic—the inability to absorb or repel water.

Incomplete Metamorphosis—a type of metamorphosis in which an insect hatches from an egg and then goes through several nymphal stages

Inferior Mouth—the mouth of a fish that is turned downward and is used for bottom feeding.

Lipophilic—a substance that absorbs or is attracted to fatty substances.

Nekton—aquatic organisms that swim freely, such as fish.

Nutrients—chemicals (primarily nitrogen and phosphorous) necessary for organisms to live

Organic Matter—chemical compounds made with carbon, produced by plants and animals

Phytoplankton—the plant form of plankton, most are microscopic. They are important as they are primary producers in aquatic ecosystems.

Photosynthesis—the process by which plants convert sunlight into living tissue by using carbon dioxide, water and nutrients

Plant Zonation—recognizable groupings of plant communities in certain environments

Pollution—natural concentration as a result of human activity that produces a detrimental effect on the environment

Predator—an organism that feeds on other organisms

Runoff—water that collects on land and runs into waterways after rainfall

Secchi Disk—a white plate-sized disk attached to a rope, that when lowered into the water measures turbidity.

Sediment—particles which accumulate on the bottom of the waterway

Submerged Aquatic Vegetation—rooted vegetation which grows beneath the water's surface

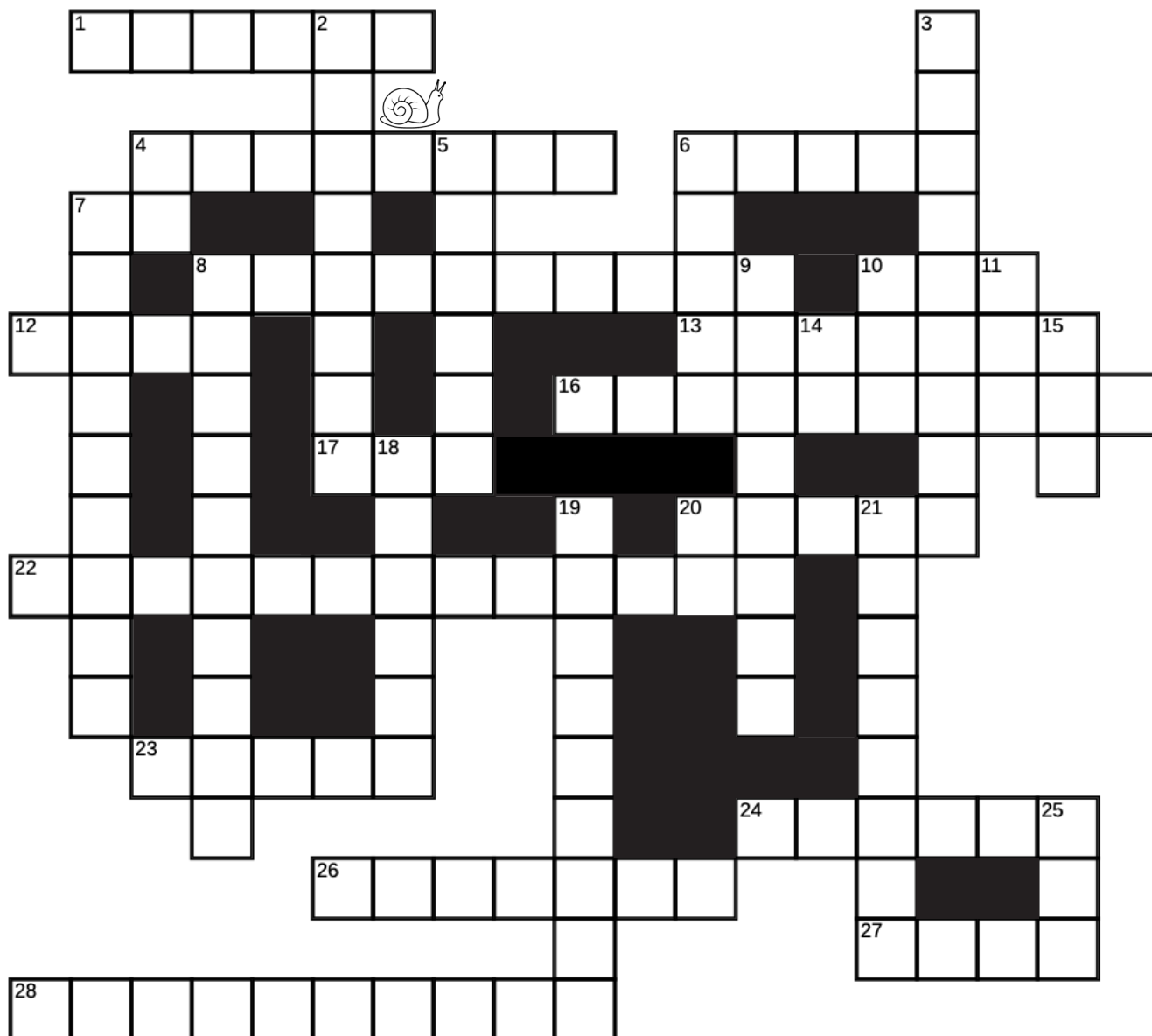
Superior Mouth—fish mouth which is angled upwards; feeds from the water's surface.

Terminal Mouth—fish mouth which is angled straight ahead; feeds from the water column.

Tributaries—streams that supply a larger body of water

Wetland—any area that is occasionally or permanently covered with water

Zooplankton—microscopic animals that live suspended in water.



WORD LIST:

- | | | | |
|-------------|------------|----------|-----------|
| ADAPTATION | EVAPORATES | NO | TOXIC |
| ANADROMOUS | EXTIRPATE | OURWATER | TRIBUTARY |
| ANOXIC | FIR | RAD | TROUT |
| BENTHIC | FLY | RED | TURBID |
| BIRD | FRY | RUNOFF | WRITE |
| CATADROMOUS | JUNIPER | SUPERIOR | YET |
| DETRITUS | LILY | TERMINAL | |
| DO | LIPOPHILIC | THUJA | |
| EUTROPHIC | NEKTON | TO | |

Across

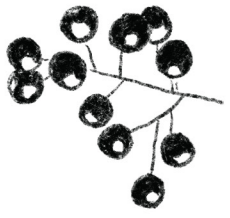
- 1 Free-swimming aquatic organisms, fish
- 4 Twigs, plastic, pizza boxes
- 6 Non-Salmon in genus Salmo
- 7 ... do
- 8 Swims from sea to spawn in rivers
- 10 Fish in hot oil
- 12 Vireo, Grebe, Swift, Killdeer
- 13 Eastern Red Cedar genus
- 16 Water [changes to gas]
- 17 Protecting the Cahaba is ...
- 20 ... to your representatives
- 22 Swims from river to spawn at sea
- 23 Poisonous
- 24 From land to waterways
- 26 Near bottom of body of water
- 27 Famous flower
- 28 Fat-attracted

Down

- 2 Whose water? (2 words)
- 3 Destroy, absolutely
- 4 To ...
- 5 Of water, cloudy
- 6 Cypress genus, false cedar
- 7 Large body of water is supplied by a ...
- 8 Adjustment to environment
- 9 Mouth, feeds from surface
- 10 Alabama tree, Douglas ...
- 11 Nevertheless
- 14 Can anyone buy the river?
- 15 Type of fish; look elsewhere
- 18 Not oxygenated
- 19 Nutrient-rich; oxygen-poor
- 21 Mouth, feeds from column
- 25 12 across might

Seek and Find

Hidden within this workbook are 8 snails.
Try and find them all.



How to Start A NATURE JOURNAL



YOU WILL NEED:

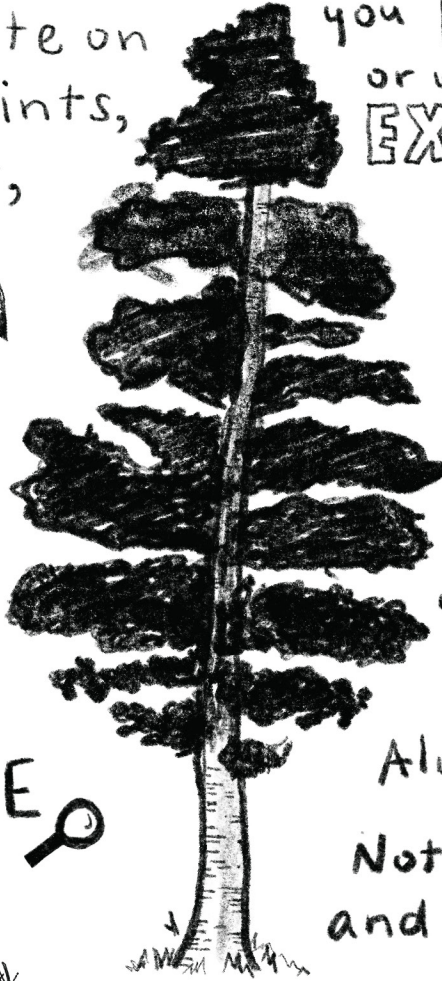
- something to write on
- pens, pencils, paints, crayons, markers, etc...
- glue or tape
- your 5 senses
- IMAGINATION!



Go to a spot in nature that you **LOVE** or want to **EXPLORE**

Record the **DATE, TIME** and **LOCATION** of your journal session

Create a dialogue with your environment. Talk to it.



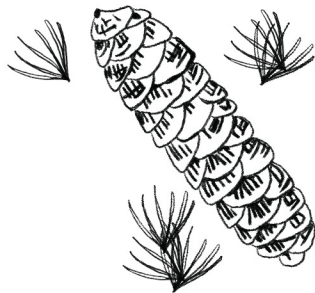
Don't be afraid to **MAKE MISTAKES**

Look UP CLOSE and far away



Always be **LOOKING** Notice **PATTERNS** and make **CONNECTIONS**

Make **OBSERVATIONS** and ask **QUESTIONS**



Trace things back to their origins



by Olivia Hall



Cahaba River Society



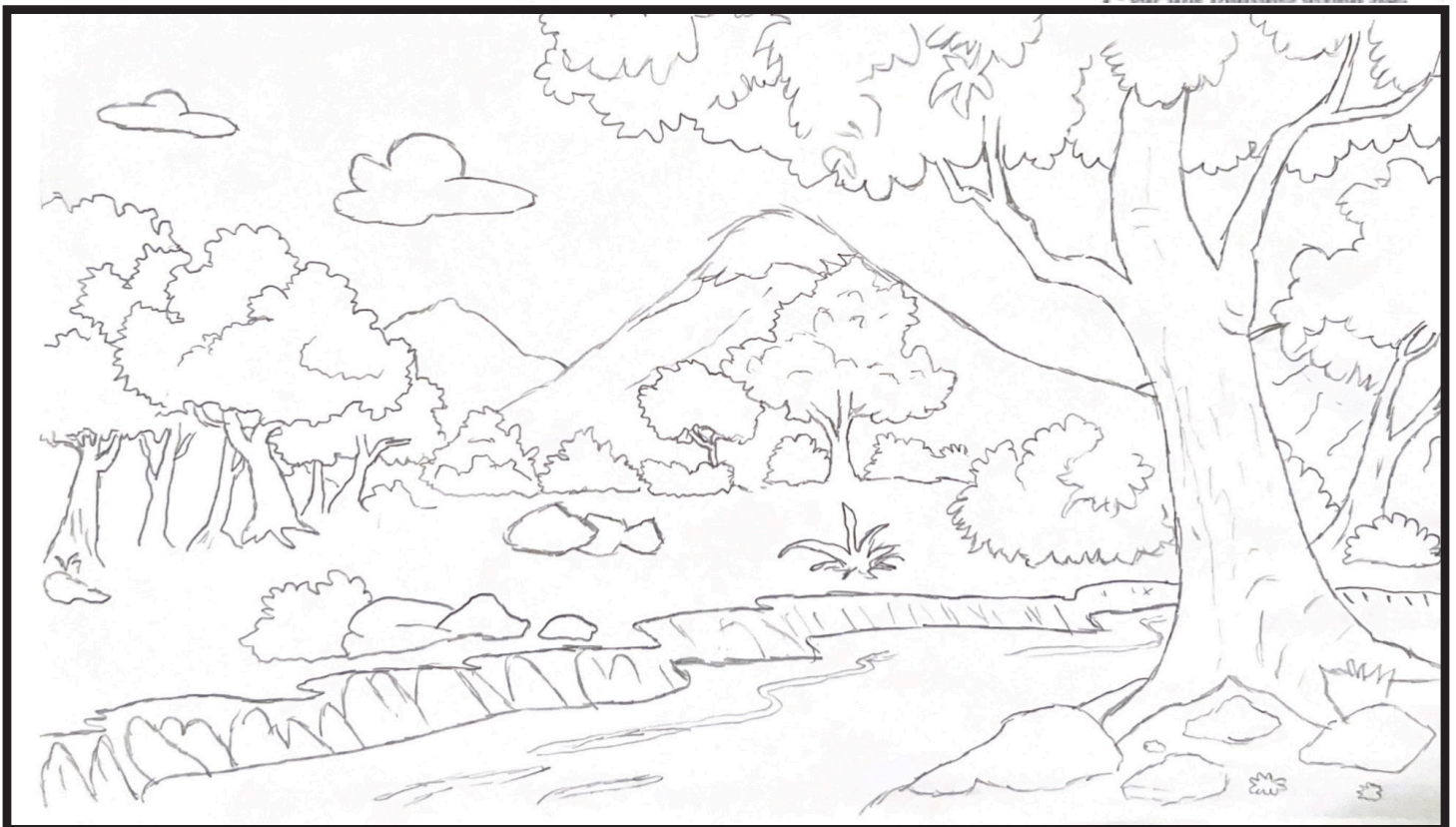
Biotic Index of Water Quality

Group 1 - These benthic macroinvertebrates need good quality water. They are generally pollution intolerant.

Group 2 - These are benthic macroinvertebrates who can live in a wide range of water quality conditions.

Group 3 - These benthic macroinvertebrates can tolerate pollution and survive in poor quality water.

I - bar line indicates actual size.



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

Find the following words in the puzzle. 
 Words are hidden ↑ ↓ → ← and ↘ .

BIOACCUMULATION
 BIODIVERSITY
 CARNIVORE
 CONSUMER
 DECOMPOSER
 ECOLOGY

EROSION
 FILTERER
 HYDROPHOBIC
 INFERIORMOUTH
 NITROGEN
 PHYTOPLANKTON

SECCHIDISK
 SHREDDERS
 WETLAND
 ZOOPLANKTON

Did you know?

Human development is the biggest threat to the Cahaba's natural flow, water quality, and wildlife. Sedimentation, excessive nutrients, stormwater toxins, and hydrological alterations (e.g., dams) are all results of increased urban and suburban developments that actively harm the river. Damage to the river also affects the people living in the watershed through problems like drinking water accessibility issues and increased flooding.



Help Save the Cahaba

There are multiple ways to get involved in helping the Cahaba River such as spreading the word about the river, recycling, actively discovering ways to conserve water, and keeping our water source clean!

Recycling: Reduce, Reuse, and Recycle. We can help the Cahaba River by reducing our use of water by turning the water off while brushing our teeth and reducing our time in the shower. We can get reuseable water bottles and grocery bags to help our environment. We can also create new things out of our old things by recycling!

Litter Walk: We can get involved by cleaning the area around us! Walk around your neighborhood or local park and use gloves to pick up and throw away any litter that you see! How much can you get?

Newsletter: We can get involved in helping the Cahaba River by spreading the word about our water source! Write a newsletter informing people about the Cahaba River. Include facts about the Cahaba and what they can do to help the Cahaba!

Volunteer Work: Get involved in helping the Cahaba River by organizing a volunteer group to visit the river and participating in a river cleanup. You can do this amongst your group or through the Cahaba River Society Website through volunteer events.

Writing to Lawmakers: You can also help the Cahaba River by writing to local lawmakers concerning issues regarding the Cahaba River.

River Defender Pledge

As a River Defender, I pledge to protect my watershed by celebrating the Cahaba River. I will collaborate with others to conserve water and help to restore the river to its original level of purity and biodiversity. Through communication, I will educate my peers about the river and its qualities to make a difference!


About Shane Hulsey

Shane Harper Hulsey served as Education Director for Cahaba River Society, leading the CLEAN Environmental Education Program and guiding over 10,000 children and adults into the Cahaba for hands-on lessons about the environment. Children and teachers frequently called to say that Shane's canoe trips had been their best field trip ever, and even biologists and scientists would report that they'd learned on their excursions with him.

Cahaba River Society Mission Statement

Our mission is to protect and restore the Cahaba River watershed and its rich biodiversity by building an impact, uniting the community, inspiring river stewardship, and ensuring all people have accessibility to clean water and the benefits of nature. Through the ideas of celebration, collaboration, education, communication, and recreation, we work towards protecting and restoring the Cahaba River Watershed and the people it benefits.

Credits

This workbook has been produced for the Cahaba River Society in partnership with a UAB class under the leadership of  La'Tanya Scott and Halley Cotton. Special thanks to our students whose creativity, skill, and talent brought this project to life:

Isaac Griffin-Layne
Jessie Hall
Olivia Hall
Grace Hartley
Samariya LaMont
Harnoor Sandhu
Thomas Vanek
Desiree Willis

Additional Resources

gaspgroup.org/
energyalabama.org/
alabamarivers.org/
ruffnermountain.org/
www.outdooralabama.com/
www.sierraclub.org/
fishwildlife.org/projectwild
alaudubon.org/
alabamabonsai.org/
bccofficial205.wixsite.com/bhmcanoeclub
bbgardens.org
www.aces.edu/blog/category/counties/jefferson/