

Watershed Words Minibooklet

WATERSHED VOCABULARY

SKILL: domain-specific vocabulary

COMMON CORE STANDARDS/FLORIDA STANDARDS: L.4.4c; L.5.4c; L.4.6;
L.5.6

NEXT GENERATION SUNSHINE STATE STANDARDS: SC.4.N.1;
SC.5.N.1.1

MATERIALS:

- two 8 ½" x 11" sheets unlined paper for each student
- scissors, pencils and colored pencils
- stapler
- reference books, textbooks, and/or online access to information about watersheds

STEPS:

- 1 Write the word *watershed* on the board. Have students share what they think this word means. Explain that a watershed is a region that drains into a river, river system, or other particular body of water.
- 2 Give each student two sheets of paper. Have her follow the directions on page 2 to make two booklets. Then have her insert one booklet inside the other and staple the left side to make a 16-page minibooklet. Direct students to write "Watershed Words" on the front covers of their booklets.
- 3 Have students write each of the terms from the list on page 3 at the top of its own booklet page. Then have students use science references to add each word's definition and an illustration to their booklets.



For more information about the St. Johns River, check out these resources:

- <http://www.sjrwmd.com/stjohnsriver/>
- <http://www.theriverreturns.org/>
- <http://dep.state.fl.us/Northeast/stjohns/default.htm>

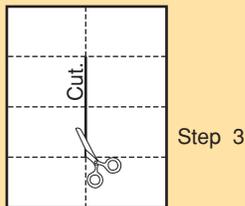
Watershed Words Minibooklet

WATERSHED VOCABULARY

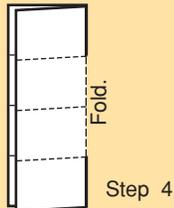
- 4 Have students use their booklets to quiz each other on the terms and definitions.

Booklet-Making Instructions

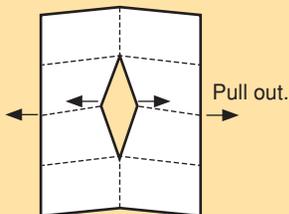
1. Fold the paper once vertically, and then unfold the paper.
2. Fold the paper two times horizontally to create eight sections.
3. Cut the center fold where indicated.



4. Fold the paper again vertically.



5. Pull the cut center edges out. At the same time, push the outside edges together. This will form a four-point star in the center top of the paper. All inside edges should be touching.



6. Push the pages on top of each other to make a booklet.



Watershed Words Minibooklet

WATERSHED VOCABULARY

WATERSHED TERMS AND DEFINITIONS

aquifer	area of rock, gravel, or soil below the ground that holds water
catchment	a reservoir or other basin for catching water
confluence	point where two rivers flow together
divide	boundary between drainage basins
downstream	the direction in which the current of a stream or river flows
drainage basin	area drained by a river and all its tributaries
estuary	area where fresh and salt water meet and mix
flow	volume of water flowing past a point in a stream or river with respect to time
headwaters	source of beginning of a stream or river
groundwater	water located in underground soil and rock layers
lake	large area of water completely surrounded by land
river mouth	point where a smaller body of water enters a larger body of water
river source	point at which a stream or river originates
spring	a place where groundwater flows naturally from the ground onto the land surface or into a body of surface water
tributary	river or stream that flows into a larger stream, river, or body of water



Extensions for Grades 2-3:

Divide the class into seven small groups. Give each group a large sheet of art paper, crayons or markers, and access to dictionaries and science references. Assign each group one of these words: *aquifer*, *downstream*, *estuary*, *groundwater*, *lake*, *drainage area*, or *tributary*. Challenge each group to look up the definition for its word and then create an illustrated poster that will teach the meaning to the rest of the class. Provide time for groups to share their posters. Then display the posters in the classroom. *Common Core Standards/Florida Standards L.2.4e; L.3.4e; L.3.6; Next Generation Sunshine State Standards SC.3.N.3.1*

Extensions for Grades 6-8:

Have each student or student pair write a short narrative story that is related in some way to a watershed. Challenge students to use six or more of the watershed words from the list in their stories. *Common Core Standards/Florida Standards W.6.3; W.7.3; W.8.3; L.6.6; L.7.6; L.8.6*

Wetlands Word Game

WORDS ABOUT TYPES OF WETLANDS

Extensions for Grades 2-3:

For a simple center activity, puzzle-cut 12 index cards in half, making sure to vary the cuts. On one half of each cut card, write one of the following terms: *bog*, *swamp*, *marsh*, *mangrove swamp*, *tidal marsh*, and *nontidal marsh*. On the other half, write a grade-appropriate definition or description, using the information on the reproducible chart on page 6. Shuffle the puzzle pieces and place them in a sealed plastic bag at a center. A student removes the puzzle pieces from the bag and puts each puzzle together. Then he copies each term and definition on his paper. If desired, code the backs of the puzzle pieces with matching colored dots to make the center self-checking. *Common Core Standards/Florida Standards L.2.6; L.3.6; Next Generation Sunshine State Standards SC.3.N.3.1*

Extensions for Grades 6-8:

Assign each type of wetland to a pair or small group of students. Have each group use available resources to research their assigned wetland to find out the types of plants and animals found there and where in the United States this wetland can be found. Depending on the level of your students, have them also include information related to the energy transfer in a wetland food web, symbiotic relationships among the plants and animals found there, and/or the carbon cycle in a wetland. Have students present their information using digital slide show presentation software or by making posters showcasing their wetlands. *Common Core Standards/Florida Standards L.6.6; L.7.6; L.8.6; W.6.2; W.7.2; W.8.2; Next Generation Sunshine State Standards SC.7.L.17.1; SC.7.L.17.2; SC.8.L.18.3*



For more information on the types of wetlands, see

- http://water.epa.gov/type/wetlands/types_index.cfm

For more information about the St. Johns River, check out these resources:

- <http://www.sjrwmd.com/stjohnsriver/>
- <http://www.theriverreturns.org/>
- <http://dep.state.fl.us/Northeast/stjohns/default.htm>

TYPES OF WETLANDS

Highlighted rows indicate the four main types of wetlands.

Wetland Type	Subtype 1	Subtype 2	Gets Its Water From...	Other Information
swamp			mainly surface water	can be in freshwater or saltwater floodplains; ground is saturated during the growing season and has standing water at other times
	forested swamp		floodwater from nearby streams and rivers	home to deciduous trees like bald cypress, white oak, red maple
	shrub swamp		floodwater from nearby streams and rivers	like forested swamps but characterized more by shrubby plants instead of trees
marsh			different sources depending on whether it's a tidal marsh or a nontidal marsh	area that is periodically saturated, flooded, or ponded with water; has nonwoody vegetation that can live in wet soil
	tidal (coastal) marsh		high tides of ocean water and frequently freshwater runoff, rivers, and groundwater	found along the coastlines; ground covered daily by the tide; includes saltwater marshes and freshwater coastal marshes
	nontidal (inland) marsh		various sources, including streams, lakes, rivers, ponds, precipitation, runoff	occur in poorly drained basins, floodplains, and shallow water along edges of lakes and rivers
		wet meadow	rainwater and runoff	found in areas with poor drainage; look like grasslands; may be dry in the summer
		wet prairie	groundwater, precipitation, streams	similar to wet meadows except that they remain saturated with water longer
		prairie pothole	melting snow, rain, groundwater	happens when water fills a depression that was left by glaciers
		playa lake	precipitation; a few saltwater playas are fed by water from underground aquifers	round hollows in the ground in southern high plains of US; only present at certain times of year; most fill with water only after spring rainstorms
		vernal pool	surface water, runoff from melting snow and rain	seasonal depressional wetland that is ponded only during wetter parts of the year; can be totally dry for most of summer and fall
bog			rain water	freshwater wetland; wet, spongy soil covered by thick blanket of sphagnum moss
	pocosin		rain water	a type of bog that is found only in the southeastern coastal plain of the United States
	northern bog		rain water	often form on glacial lakes; may have either large amounts of open water surrounded by floating plants or plants may have completely filled the lake
fen			groundwater	a peat-forming wetland similar to bogs; covered by grasses, wildflowers, sedges, and reeds



Wetlands Flora and Fauna Mural

WETLAND WILDLIFE

SKILL: domain-specific vocabulary

COMMON CORE STANDARDS/FLORIDA STANDARDS: L.4.6; L.5.6

NEXT GENERATION SUNSHINE STATE STANDARDS: SC.4.L.16.2; SC.4.L.16.4; SC.5.L.17.1

MATERIALS:

- length of butcher paper labeled “Wetland Wildlife Words”
- class supply of whiteboards and dry-erase markers
- copy of “Wetland Wildlife Word Cards” on page 10, cut apart

MATERIALS FOR EACH GROUP:

- eight sheets of drawing paper
- online or print reference materials
- markers, crayons, or colored pencils
- scissors
- glue

STEPS:

- 1 In advance, have several student volunteers color the butcher paper to illustrate the ground and the blue sky of a wetland area. Post the mural on a wall in your classroom or hallway.
- 2 Give each student a whiteboard and a dry-erase marker. Ask the class to think about what they have learned about wetlands. Then challenge students to list in one minute as many wetland plants and animals as they can.
- 3 After the minute is up, have students share their lists with the group. As they do, have their classmates listen and erase any items they also listed. Continue until each child has shared his list.
- 4 Explain to students that they will explore some wetland vocabulary terms and use what they learn to make a “Wetland Wildlife Words” mural. Divide the class into four groups. Give each group one flora card and one fauna card, as well as the group materials listed above.
- 5 Have each group use the provided reference materials to explore both of its terms. Then have each group illustrate and label each term, cut out the pictures and labels, and glue them to the mural.



SEDGES
grass-like bushes with solid triangular stems, three rows of leaves, and little spiky flowers

Wetland sedges include sawgrass and papyrus.

INVERTEBRATES
animals without a backbone, such as insects, crustaceans, arachnids, and mollusks.

Examples of wetland invertebrates include crayfish, mosquitoes, dragonflies, oysters, and crabs.

Wetlands Flora and Fauna Mural

WETLAND WILDLIFE

6 After the students' work is posted, continue exploring terms related to wetland wildlife by doing the activities below. Add the italicized words to the mural if desired.

- Use a marker to write *vegetation* close to two or more plants. Explain that vegetation is the plants that grow in a particular place. Discuss traits of each plant that allow it to thrive in a wetland environment. Also talk about whether each plant is flowering or nonflowering, and how it might reproduce in a wetland environment.
- Ask students what they think a *natural resource* is (*something that is found in nature and is valuable to humans*). Have students identify the natural resources shown in the mural (water, plants, and animals). Discuss how people might use these natural resources in their own lives.
- Discuss the meaning of *habitat* (*a place where an animal or plant lives and grows*). Ask how people's actions affect wetland habitats (*for example, runoff from land polluted by agricultural chemicals can make its way to wetland habitats*).
- Share with students the meaning of *population* (*a group of one or more species of animals living in a particular habitat*). Have students predict how human activity might affect animal populations.
- Ask students what they think the terms *threatened* and *endangered* might mean in terms of wetland wildlife. (*A threatened species is in danger of becoming an endangered species in the future, while an endangered species faces a high risk of becoming extinct because of dwindling numbers.*) Point out that some of the wildlife in Florida's wetlands are categorized as threatened (such as the American alligator) or endangered (such as the Florida panther, the West Indian manatee, and the gray bat).
- Compare the life cycles of the amphibians and insects on the mural. Identify any animals that undergo complete and incomplete metamorphoses.



Extensions for Grades 2-3:

Place at a center pictures of specific wetland plants and animals (check online for great sources of photos). Have a student who visits the center sort the pictures into categories and then write an explanation of why he sorted the cards the way he did. *Common Core Standards/Florida Standards L.2.6; L.3.6; W.2.2, W.3.2; Next Generation Sunshine State Standards SC.3.L.15.1*

Wetlands Flora and Fauna Mural

WETLAND WILDLIFE

Extensions for Grades 6-8:

Have each student research a specific wetland plant or animal (see examples on the cards on page 10). Then have the student take the role of the plant or animal and write a letter to persuade the Board of County Commissioners that her wetland habitat should be preserved and protected by the town. Challenge the student to weave facts about herself (as the plant/animal she researched) into the piece and include at least five wildlife vocabulary terms. *Common Core Standards/Florida Standards L.6.6; L.7.6; L.8.6; W.6.1; W.7.1; W.8.1; W.6.4; W.7.4; W.8.4; W.6.10; W.7.10; W.8.10; Next Generation Sunshine State Standards SC.7.E.6.6; SC.8.N.4.1; SC.8.N.4.2*

For more information on wetland plants and animals, check out these resources:

- <http://water.epa.gov/type/wetlands/nature.cfm>
- <http://bioexpedition.com/wetland-biome/>

For more information on plants and animals that live in Florida's wetlands, see

- <http://myfwc.com/wildlifehabitats/>
- http://www.evergladesplan.org/facts_info/sywtkma_animals.aspx
- <http://soils.ifas.ufl.edu/wetlandextension/wildlife.htm>

For more information about the St. Johns River, check out these resources:

- <http://www.sjrwmd.com/stjohnsriver/>
- <http://www.theriverreturns.org/>
- <http://dep.state.fl.us/Northeast/stjohns/default.htm>

Wetland Wildlife Word Cards

Use with "Wetland Flora and Fauna Mural" on page 7.

Wetland Flora Cards

<p style="text-align: center;">SEDGES</p> <p>grass-like bushes with solid triangular stems, three rows of leaves, and little spiky flowers</p> <p>Wetland sedges include sawgrass and papyrus.</p>	<p style="text-align: center;">TREES</p> <p>tall plants that have woody trunks at the base, thinner branches toward the top, and leaves high off the ground</p> <p>Wetland trees include bald cypress, water tupelo, and swamp blackgum.</p>	<p style="text-align: center;">SHRUBS</p> <p>low woody plants that have several stems</p> <p>Examples of wetland shrubs include the wax myrtle and the buttonbush.</p>
<p style="text-align: center;">SUBMERSED PLANTS</p> <p>plants that grow mainly under the water's surface</p> <p>Examples of submersed plants in wetlands include eel grass and bladderworts.</p>	<p style="text-align: center;">EMERGENT PLANTS</p> <p>plants that grow out of the water (or during low-water times in exposed sediments); they are rooted to the bottom, but their stems, leaves, and flowers are above the water</p> <p>Wetland examples include cattails and bulrushes.</p>	<p style="text-align: center;">FREE-FLOATING AND FLOATING-LEAVED PLANTS</p> <p>plants that may or may not be anchored in sediment; have leaves that float on the water's surface</p> <p>Wetland examples are the water lily and duckweed.</p>

Wetland Fauna Cards

<p style="text-align: center;">AMPHIBIANS</p> <p>cold-blooded, smooth-skinned vertebrates that are born underwater from eggs</p> <p>Examples of wetland amphibians include salamanders, such as the mole salamander, and frogs, such as the green tree frog and the leopard frog.</p>	<p style="text-align: center;">REPTILES</p> <p>cold-blooded vertebrates usually born from eggs on land; can have rough, bumpy, or scaly skin</p> <p>Examples of wetland reptiles include the alligator, water moccasin, snapping turtle, and garter snake.</p>	<p style="text-align: center;">BIRDS</p> <p>feathered, winged vertebrates</p> <p>Examples of wetland birds include cranes, herons, egrets, ospreys, bitterns, limpkins, and black ducks.</p>
<p style="text-align: center;">MAMMALS</p> <p>warm-blooded vertebrates that feed their young on milk produced in mammary glands; most have a covering of hair</p> <p>Examples of wetland mammals include raccoons, deer, marsh or swamp rabbits, black bears, river otters, beavers, and water rats.</p>	<p style="text-align: center;">FISH</p> <p>cold-blooded water vertebrates with gills</p> <p>Examples of wetlands fish include striped bass, croaker, flounder, and menhaden.</p>	<p style="text-align: center;">INVERTEBRATES</p> <p>animals without a backbone, such as insects, crustaceans, arachnids, and mollusks</p> <p>Examples of wetland invertebrates include crayfish, mosquitoes, dragonflies, oysters, and crabs.</p>



WATER AND ME



Each boldfaced word below is related in some way to something everyone needs and uses—water!
Read each sentence. Then shade the letter in front of the boldfaced word's meaning.

1. Because Coach Hill is concerned about our bodies' **hydration**, he told us to bring water bottles to practice.
 - T keeping enough fluids and moisture
 - B ability to swim for a long time
2. Many people are surprised to learn that water, like minerals and vitamins, is a **nutrient**.
 - C type of food group
 - E something living things need to live and grow
3. Did you know that water helps your kidneys cleanse and rid your body of **toxins**?
 - I cells
 - M harmful substances
4. The extreme heat caused a thin line of **perspiration** to form on my brow and upper lip.
 - P sweat
 - G reddish bumps
5. One job of water in the human body is to be a **solvent** for nutrients needed by the cells.
 - E substance that dissolves things
 - T substance that cools things
6. If the water content in your body gets too low, you risk **dehydration**.
 - R loss of water and fluids in the body
 - H breaking down of chemicals in the body
7. The doctor determined that my little brother's illness was caused by **waterborne** bacteria.
 - L freshly washed
 - A carried by water
8. When the body sweats, the **evaporation** of water from the skin's surface cools you off.
 - R process of reheating
 - T process of turning a liquid into a vapor or gas
9. Carl was quick to bring more water bottles over to the players so they could **rehydrate** themselves.
 - U return fluids to the body
 - Y rest
10. Water that is used by some people goes through a **water treatment** plant.
 - E place where water is made safe for people
 - S place where water is put into bottles for people

Write the shaded letters in order in the blanks to complete the sentence.

Water helps to regulate body _____ R _____.



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Common Core Standards/Florida Standards L.4.4a; L.4.6; L.5.4a; L.5.6
Next Generation Sunshine State Standards SC.4.E.6.3

Note to the teacher: Have grades 2–3 students focus on learning the meanings of the terms above that relate to their bodies, such as *perspiration*, *nutrient*, *hydration*, and *dehydration*. *Common Core Standards/Florida Standards L.2.6; L.3.6; Next Generation Sunshine State Standards SC.2.L.17.1*. Challenge students in grades 6–8 to use as many of the boldfaced words as possible to write a public service announcement about the benefits of drinking water throughout the day. *Common Core Standards/Florida Standards W.6.2; W.7.2; W.8.2; L.6.6; L.7.6; L.8.6*

WATER AND ME

ANSWER KEY

1. T
2. E
3. M
4. P
5. E
6. R
7. A
8. T
9. U
10. E

Water helps to regulate body TEMPERATURE.

WATER IS ON THE MOVE!

Fill in each blank below with a word from the word bank to complete the story of how water moves through a watershed.

A _____ is an area of land that _____ surface water _____ into a single body of water, such as a lake, a river, or an ocean. The Mississippi River watershed is an example of a huge watershed in the United States. All the _____ to the Mississippi that collect rainwater drain into this enormous river, which eventually drains into the Gulf of Mexico.

Watersheds can be big or small. Small watersheds are usually part of larger watersheds. For example, the St. Johns River watershed in _____ is made up of the Wekiva watershed, the Oklawaha watershed, and the Rice Creek watershed, to name a few. The St. Johns River watershed, which is supplied by these and other watersheds, drains into the _____.

Water doesn't just run into the streams and rivers from the surface of a watershed. It also _____ through the soil. Some of this water drains into the same rivers and streams. This process is called _____.

The movement of water through a watershed affects water _____.

How? The surface water runoff picks up water _____ and "drops" it into the streams and rivers as it drains the watershed. The surface water runoff also picks up _____ as it erodes from farmlands. Water that filters through the soil can also become contaminated with pollutants. As the pollution moves through the watershed, it eventually winds up in the world's _____. This is just one of the many reasons it is important to prevent pollution.

WORD BANK

Atlantic filters	Ocean infiltration	Ocean pollution	drains Florida	oceans quality
runoff	tributaries	watershed		

Did You Know?
The St. Johns River is divided into three basins: upper, middle, and lower. The river in the upper basin is fed by rainwater and some springs. A spring results when an aquifer (an area of rock below the ground that holds water) is so full that the water overflows onto the land.

Bonus: The water cycle is also important to the movement of water. Research and then draw a diagram of the water cycle.

Common Core Standards/Florida Standards RI.4.4; RI.5.4; L.4.4a; L.5.4a, Next Generation Sunshine State Standards SC.5.E.7.2



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Note to the teacher: Read aloud this article (filling in the blanks) to students in grades 2–3 and discuss its main ideas; then have them look at a United States map and identify some of the Mississippi River's tributaries. *Common Core Standards/Florida Standards RI.2.1, RI.3.1, L.2.4, L.3.4. After completing this page, have students in grades 6–8 research to identify major watersheds in your state, marking them on a map. Common Core Standards/Florida Standards RI.6.4; RI.7.4; L.6.4a; L.7.4a; Next Generation Sunshine State Standards SC.6.E.6.2*

WATER IS ON THE MOVE!

ANSWER KEY

A watershed is an area of land that drains surface water runoff into a single body of water, such as a lake, a river, or an ocean. The Mississippi River watershed is an example of a huge watershed in the United States. All the tributaries to the Mississippi that collect rainwater drain into this enormous river, which eventually drains into the Gulf of Mexico.

Watersheds can be big or small. Small watersheds are usually part of larger watersheds. For example, the St. Johns River watershed in Florida is made up of the Wekiva watershed, the Oklawaha watershed, and the Rice Creek watershed, to name a few. The St. Johns River watershed, which is supplied by these and other watersheds, drains into the Atlantic Ocean.

Water doesn't just run into the streams and rivers from the surface of a watershed. It also filters through the soil. Some of this water drains into the same rivers and streams. This process is called infiltration.

The movement of water through a watershed affects water quality. How? The surface water runoff picks up water pollution and "drops" it into the streams and rivers as it drains the watershed. The surface water runoff also picks up soil as it erodes from farm lands. Water that filters through the soil can also become contaminated with pollutants. As the pollution moves through the watershed, it eventually winds up in the world's oceans. This is just one of the many reasons it is important to prevent pollution.

For more information about watersheds, check out these resources:

- <http://water.epa.gov/type/watersheds/whatis.cfm>
- <http://www.swfwmd.state.fl.us/education/watersheds/>
- <http://www.dep.state.fl.us/water/watersheds/index.htm>
- <http://www.enviroliteracy.org/subcategory.php/180.html>

