



Anacostia Watershed

Junior Ranger Activity Booklet



This booklet belongs to _____

Welcome to National Capital Parks-East!

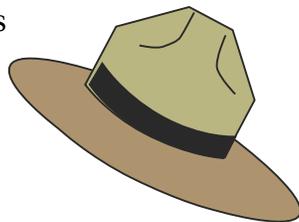
Welcome Junior Ranger!

National Capital Parks-East (NACE) welcomes you as a Junior Park Ranger. NACE is one of the many jewels of the National Park System dedicated to preserving resources and providing safe and enjoyable experiences for this and future generations. NACE consists of 16 major park sites, parkways and statues of more than 8,000 acres of natural, cultural, historical and recreational parklands located in Washington, D.C. and Maryland. For more information, visit www.nps.gov/nace.

NACE Jr. Ranger books and programs are stepping stones to learn more about the National Park Service, while making a difference for years to come. Any comments or questions about this booklet or Jr. Ranger programs are welcomed and should be sent to:

Ms. Lori M. Spillman
National Capital Parks-East
1900 Anacostia Drive, SE
Washington, DC 20020
202-692-6036
lori_M_spillman@nps.gov

We thank you for your interest in National Capital Parks-East and hope that this booklet sparks an interest for you to explore, learn and protect your national parks.



Be Safe

Avoid poison ivy

Wash with soap and cold water if you touch it.

Dress properly

Wear a hat, and apply sunscreen.

Drink plenty of water

Hydrate when being active and on hot days.

Stay on marked trails and paths

Don't go on unmarked paths.

Tell an adult

Let someone know where you will be in case of an emergency.

A handwritten signature in black ink that reads "Alexcy Romeo".

Alexcy Romeo

Superintendent



Getting Started



Beginning Jr. Rangers
Look for a raindrop

Complete *any* activities in this booklet to earn your Junior Ranger badge!

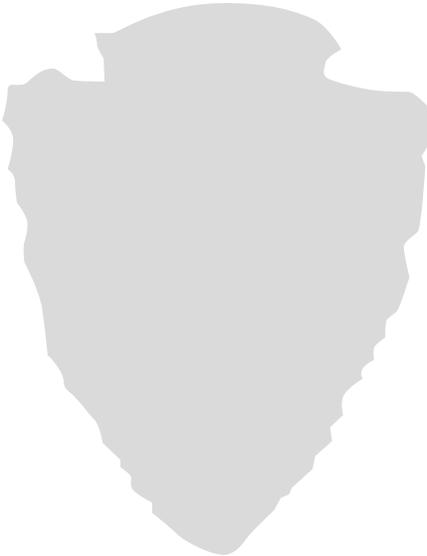
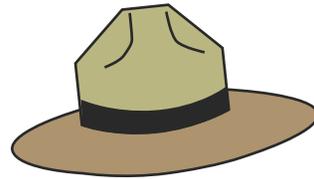
When you are done have a parent or a ranger sign the certificate in the back.



Advanced Jr. Rangers
Look for a group of drops

Mail in the checklist to receive your badge!

Junior Rangers...



The landscape and important places within the Anacostia River Watershed.

About the history and *ecology* of the Anacostia River.

and

Our *natural resources* for future generations to cherish and enjoy.

Junior Ranger

Junior Rangers are always looking around at their surroundings.

Can you reveal this hidden word using the red letters above?

(Hint: Another word for “protect”.)

C _ _ S _ _ V E



Ways of a Watershed

Everyone lives in a *watershed*, an area where water flows on and through the land. This draining away of water is part of the water cycle, where rain and other kinds of *precipitation* replaces the water that has drained away. There are two kinds of water in our watersheds, *surface water* and *groundwater*. Surface water is the water we see flowing in streams, rivers, lakes, and wetlands.

Groundwater flows unseen underground and also it flows into our streams and rivers.

The watershed that many families in both Maryland (Prince George's and Montgomery Counties) and Washington, D. C. live in is the Anacostia River Watershed.

*Can you trace the path of a rain drop?
Start at the cloud where the precipitation
comes from.*

The Anacostia Watershed has 14 watersheds inside it, called subwatersheds, that drain into the approximately 9 mile long Anacostia River.



The Anacostia River and all of its subwatershed *tributaries* drain about 176 square miles of land. This heavily urbanized watershed is home to more than 860,000 people. Around 4,000 acres of land within the watershed is federal land that is managed by the National Park Service.



Water Words

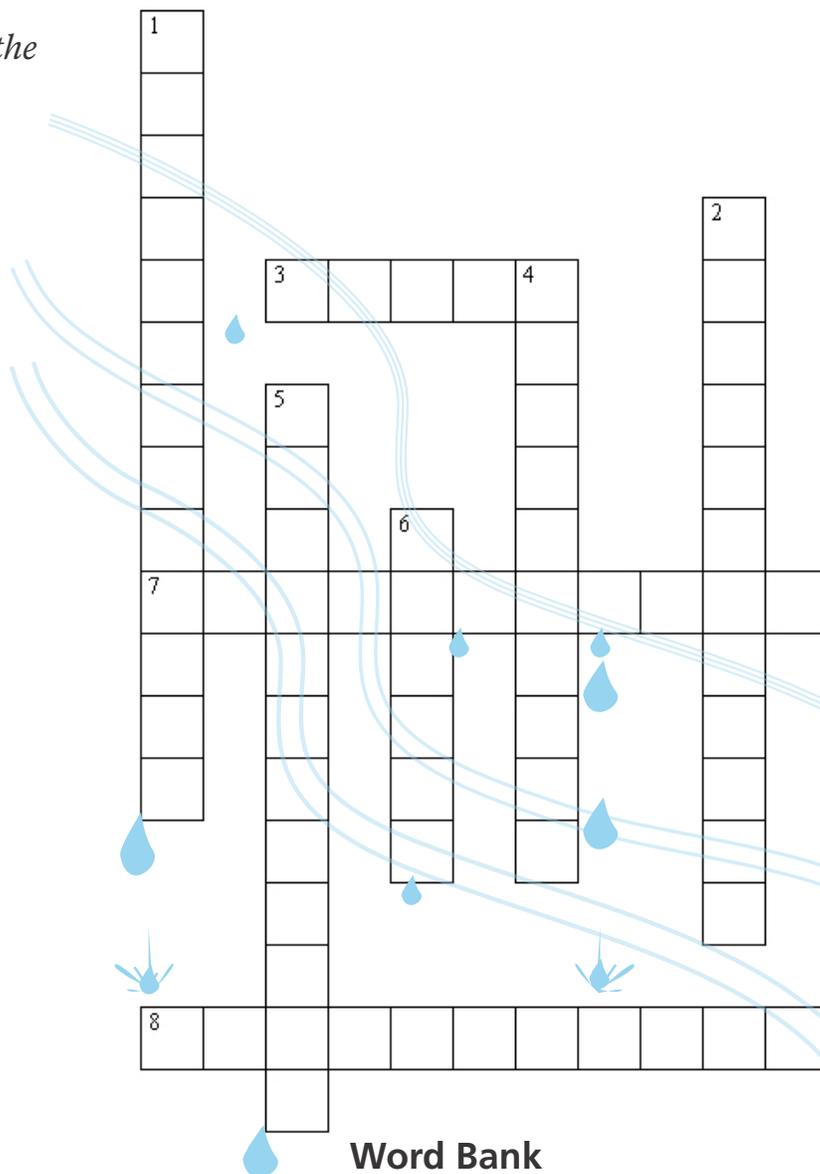
Complete the crossword by matching the word clues to the correct word in the word bank.

DOWN

1. Water, snow, or ice falling from the sky.
2. Flowing water in streams, rivers, lakes, or wetlands.
4. The higher part of a watershed where the river begins.
5. When water on the ground soaks into the soil.
6. Excess water that flows over the ground when it rains.

ACROSS

3. Where a river ends, usually in a lake, bay or ocean.
7. A stream or small river that drains into when it joins another stream or river.
8. Water stored in the tiny spaces in the ground



Word Bank

groundwater	precipitation
infiltration	headwaters
surface water	runoff
mouth	tributaries

*Can you find some water in the park or outside where you live?
What kind of water is it? Where did you find it?*

Kind of water _____

I found it _____



Trace the Watershed Maze

The watershed is a place where water drains into streams and rivers. Can you find your way around our watershed?

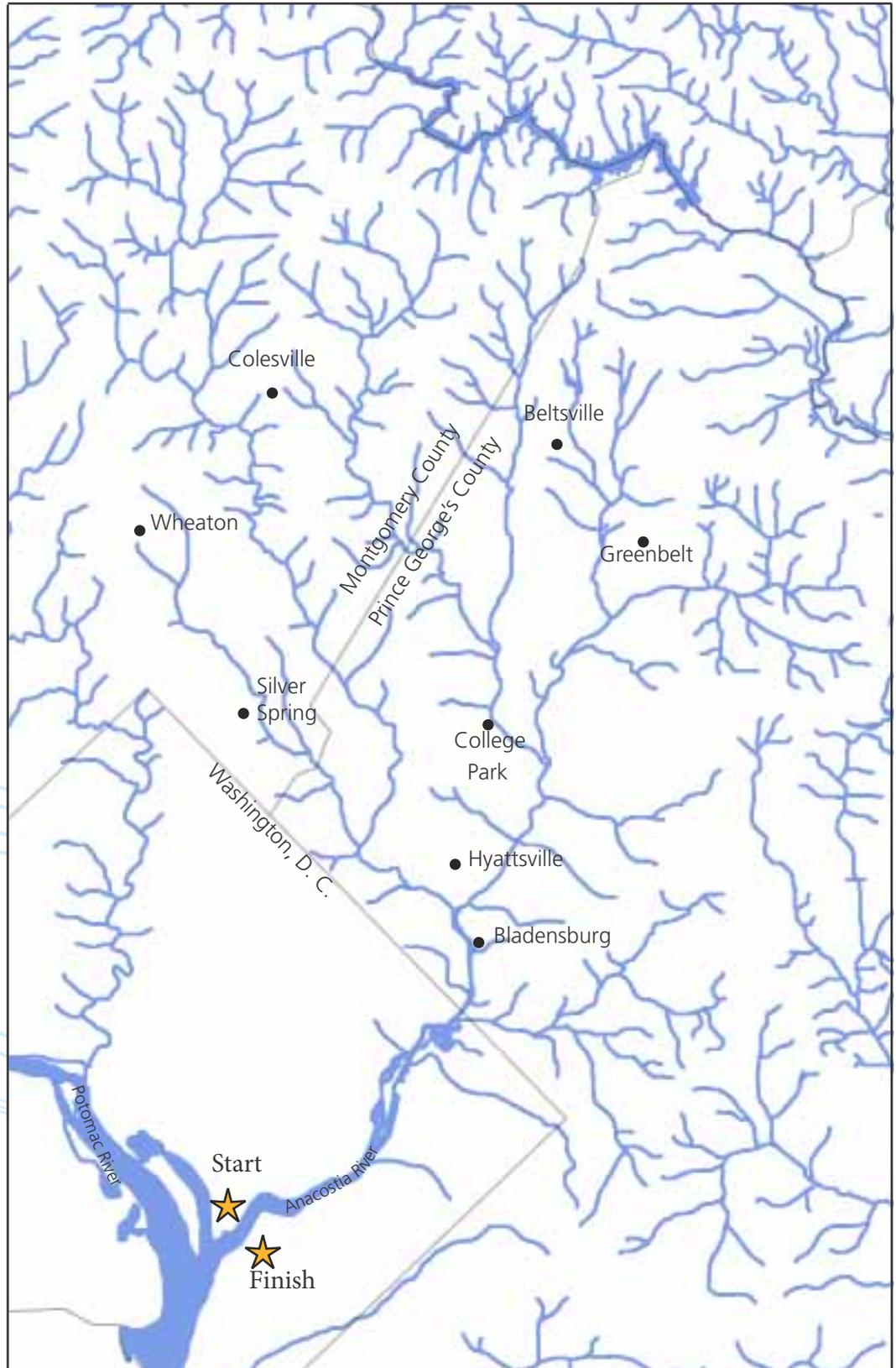
Find your way from start to finish without going over any of the streams or rivers in blue. You can cross the gray lines.

The watershed is our home where we live, work, and play.

Junior Ranger

Can you find where you live on this map?

Circle where your home is.



Flowing Through History



Read the following and find the **BOLDED** words in the word search below.

About 10,000 years ago, the **CHESAPEAKE BAY** was created when the polar **ICE CAPS** melted. The lower portions of the Susquehanna River were flooded by this increase in sea level, drowning the Susquehanna River Valley. This also created the 11 major **RIVERS** that flow into the Chesapeake Bay. The Anacostia River empties into the Potomac River and becomes one of those 11 major rivers.

The area around the **ANACOSTIA** has been inhabited for many thousands of years. When Captain John Smith arrived from Europe in 1608, he met the Algonquian-speaking Nacotchtank Indians who lived there. They were referred to later as the “**ANACOSTINES**”, from which the name Anacostia is derived.



Tobacco plants



Capt. Smith meeting the Powhatans in 1607, a neighboring Algonquian-speaking tribe to the Nacotchtank.

Over the years, the American Indians were gradually driven from the area as more settlers from Europe came and claimed land to farm.

Many of them established **TOBACCO** plantations and shipped large amounts of tobacco to Europe. In 1790, the US federal capital of Washington, D.C. was created which included land along the Anacostia River.

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



Unsafe Water Woes

Since the days when settlers arrived, a lot of things have happened to pollute the river. Right now the Anacostia is too polluted to swim in. With government regulations and community support, the river quality is slowly improving and it is hoped that within the next 20 years it will be clean enough to swim in again. A clean river is so far away because there is a lot of work that needs to be done.

No Swimming (yet)

There are dangerous toxins and bacteria that are found in the river. There are many ways for it to enter the water; one way is through the sewer system. When it rains, a lot, the sewer pipes overflow into the drains, causing the raw (*untreated*) sewage to enter the river. Measuring the amounts of the *E. coli* bacteria levels which are very high, indicate the healthiness of the river.

Fishing

A small variety of fish are able to live in the polluted waters of the Anacostia. Pollution removes oxygen from the water that fish need to breathe. The draining of the wetlands has limited places where fish live and breed. As the wetlands are restored, it will help to clean and filter the water. As water quality improves, it is possible that other species of fish will return to the Anacostia River. ***It is recommended that you do not eat or limit the amount of fish you eat from the Anacostia River.***

*Can you match each of these causes with its proper effect?
Draw a line from each statement to its correct outcome.*



Cause

1. Old Sewer system allows bacteria filled raw sewage into the river.
2. Polluted runoff removes dissolved oxygen from the water.
3. Toxins and chemicals left in the river.
4. Not enough wetlands to clean the water and provide habitat for fish and animals to live.

Effect

- A. Little oxygen left for fish to breathe.
- B. Dangerous levels of disease indicators, *E. coli* bacteria in the water.
- C. Dirty water and lower fish populations.
- D. Fish hurt by toxins in them and are unsafe to eat.

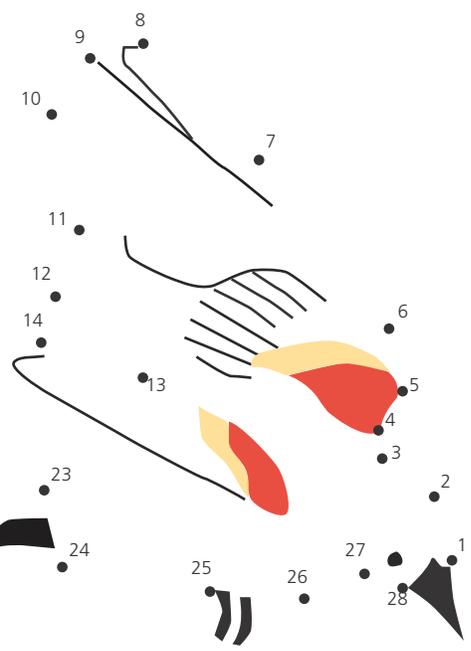


What lives on the Anacostia?

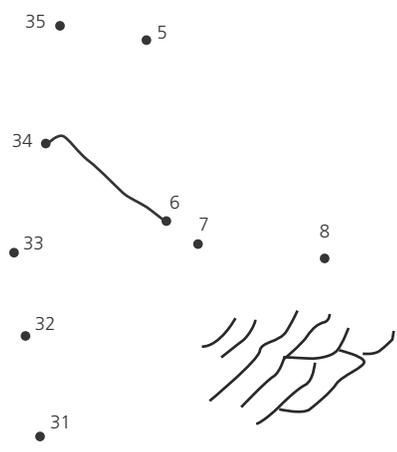
There are many kinds of animals that live near the river. Can you find them?
Connect the dots to reveal some of the river's inhabitants.



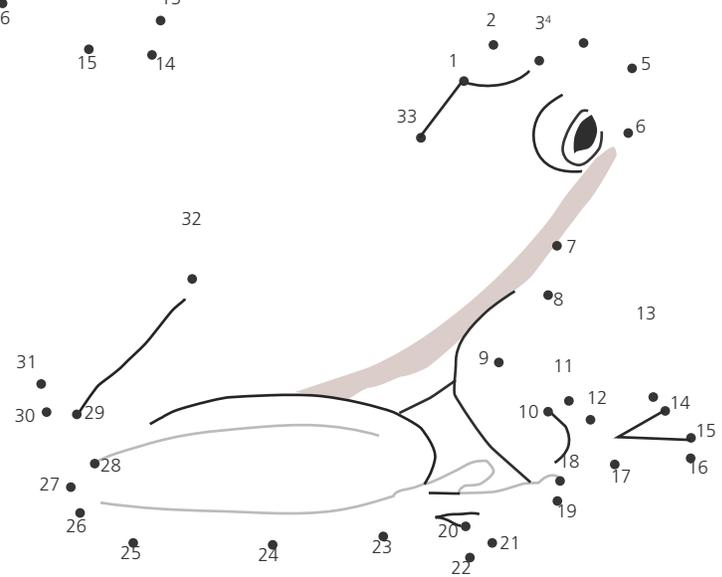
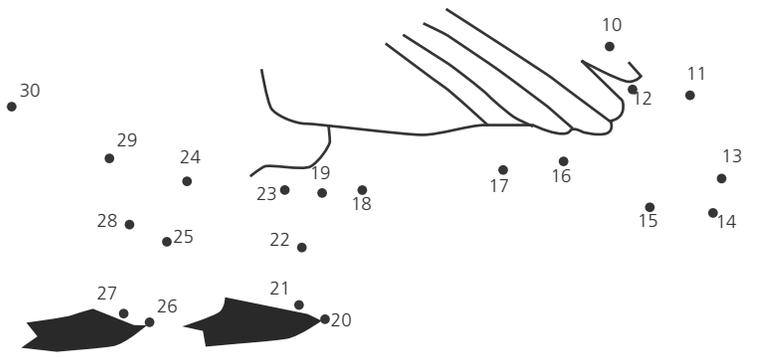
Canada Goose
Branta canadensis



Red-winged Blackbird
Agelaius phoeniceus



Green Tree Frog
Hyla cinerea



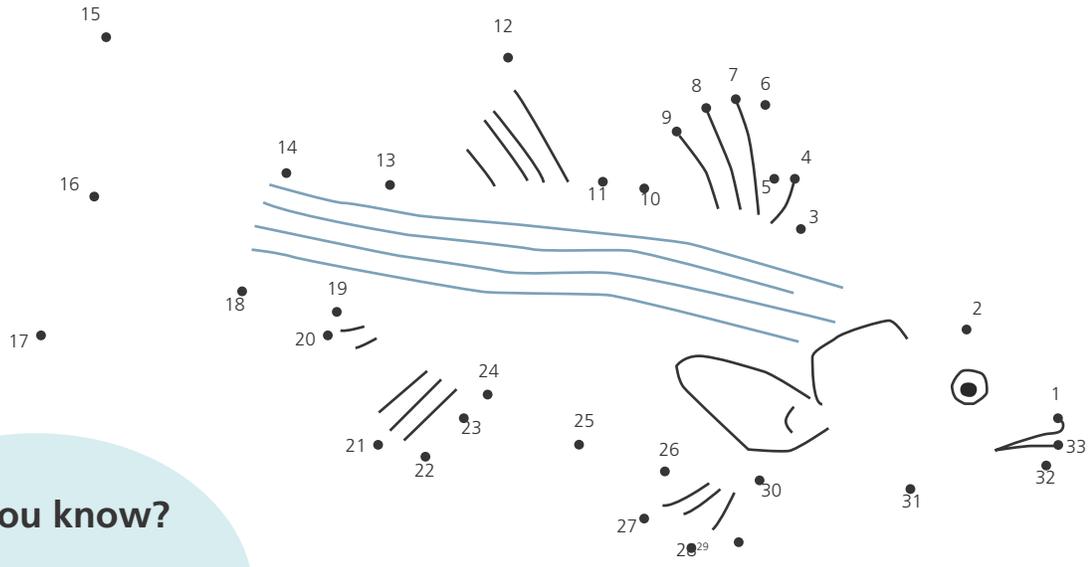
Junior Ranger

Can you hear any animals?
Find a natural area and listen quietly for 30 seconds.



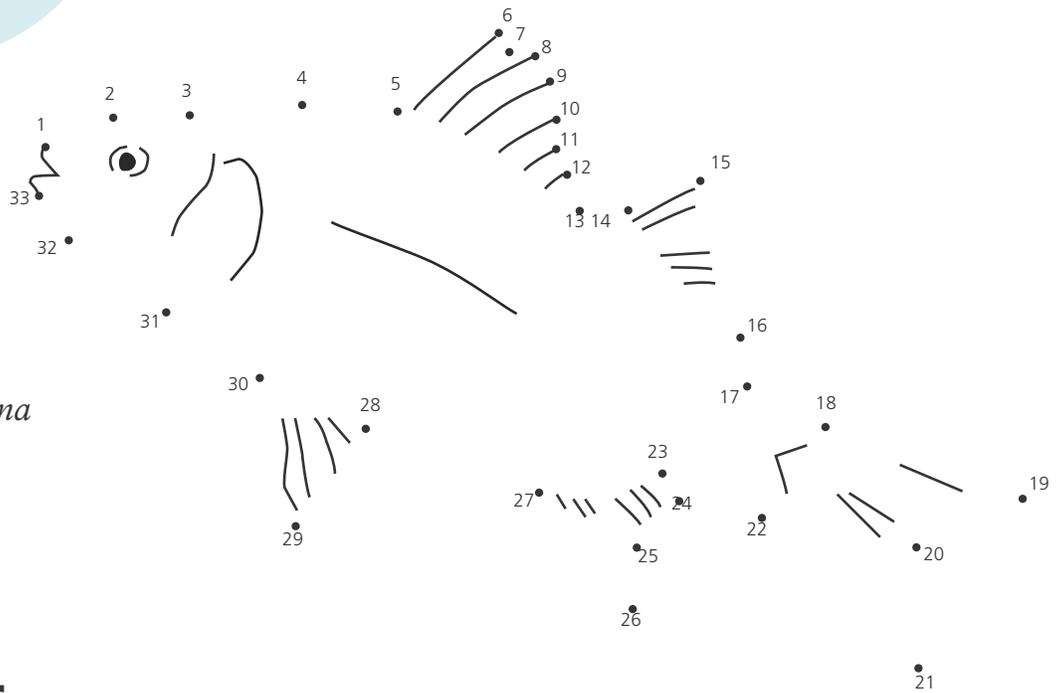
What lives in the Anacostia?

What sort of animals are these? Connect the dots to see what kinds of swimming animals live inside the river.



Did you know?
 Adult striped bass live in the ocean but return to fresh water to breed.

Striped Bass *Morone saxatilis*



White Perch *Morone americana*

Junior Ranger

*Can you imagine what it is like to be a fish?
 Act out how a fish swims or moves.*



Runaway Runoff

Impervious surfaces are a large challenge facing our watershed today. Impervious surfaces mean that the surfaces are hard. This is unlike *pervious* surfaces which allow water to go through them. If you poured water onto an impervious surface, where would the water go? If it rained where would the water go?

Due to building and paving roads, we have increased the number of these hard, impervious surfaces. Every time it rains, it creates powerful runoff streams that carry away soil and trash into sewers. These sewers empty the polluted runoff directly into the river.

Are the following surfaces pervious or impervious to water?

Draw a line from the picture to the correct word.

Thinking further

What kind of surfaces would you find in an area with houses? Businesses? What about forests?



rooftop



soil

© JOHN GOETZINGER



grass

© CHRISTIAN GUTHIER

impervious



asphalt

pervious



brick

© JOHN LLOYD



gravel

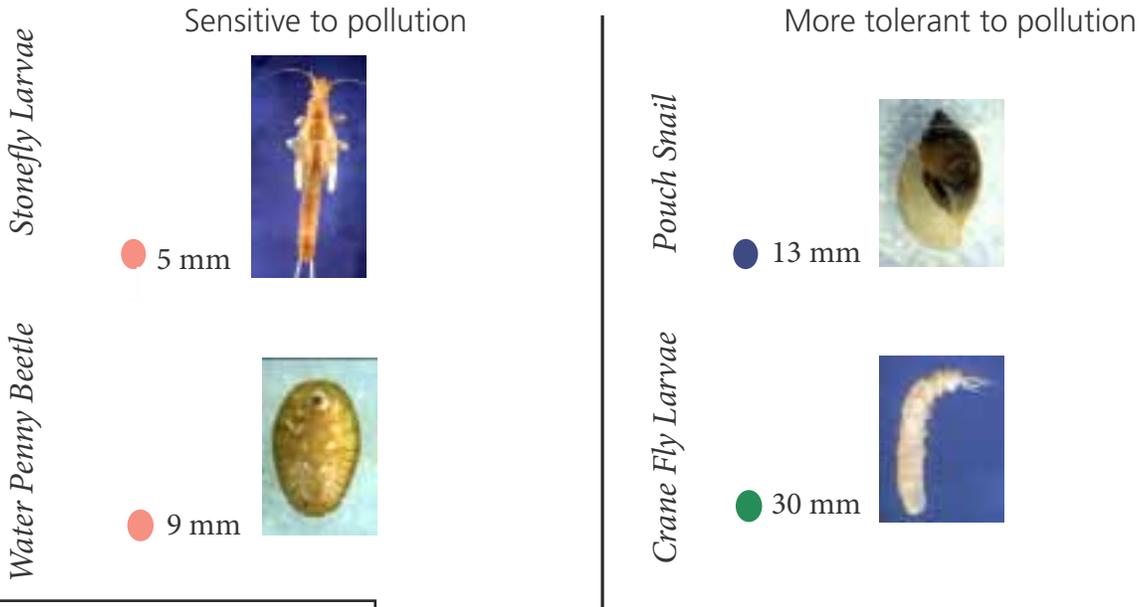
© JAKE MATES



Looking at River Health

How do we measure the health of the river?

Read about aquatic invertebrates and try surviving in the river.



Key

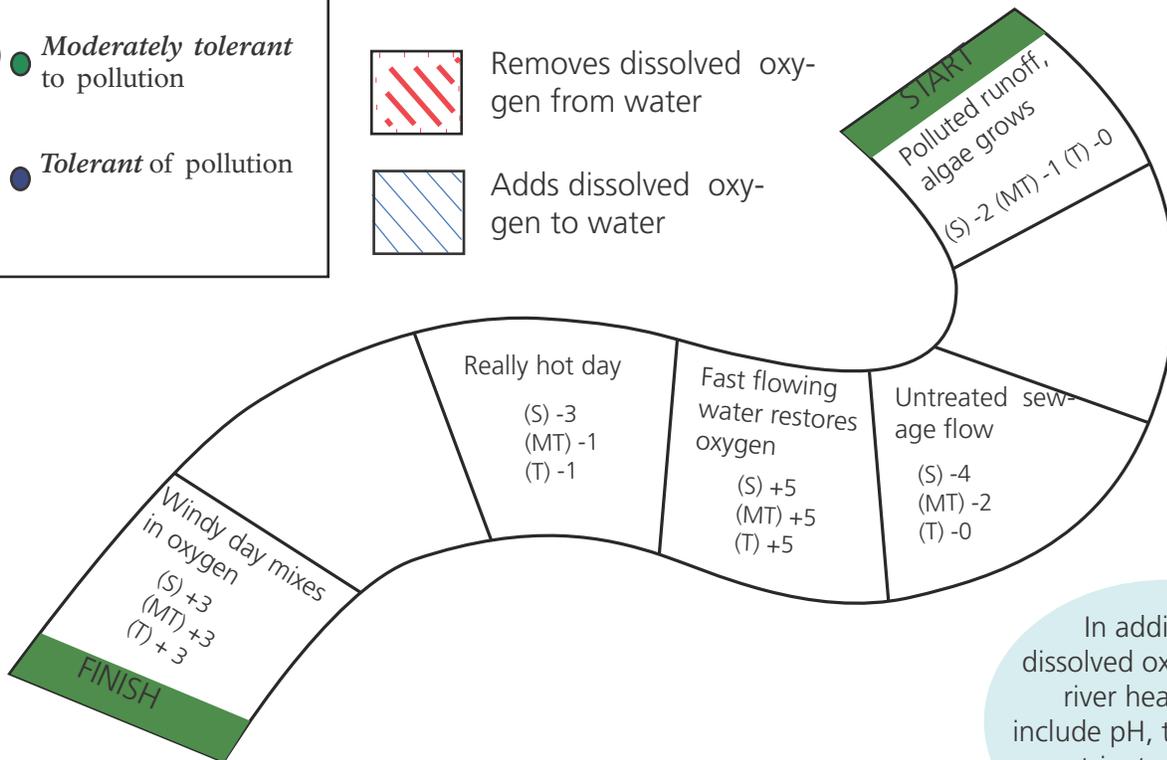
(S) ● *Sensitive* to pollution

(MT) ● *Moderately tolerant* to pollution

(T) ● *Tolerant* of pollution

Removes dissolved oxygen from water

Adds dissolved oxygen to water



In addition to dissolved oxygen, other river health signs include pH, temperature, nutrients, and toxic chemicals.



Thinking About Trash

It's not only runoff that ends up in the river. Every year about 20,000 TONS of trash end up in the Anacostia River. Not only does trash look bad, but it is an expensive problem for our communities, businesses, and governments to clean up. All of this trash in the photo on the right could have been avoided if everyone took care to dispose of their trash properly.

*How do your trash habits stack up?
Take this quiz and add up your score.*

COURTESY/ANACOSTIA WATERSHED SOCIETY



Trash buildup on an Anacostia River tributary.

1. You are eating a snack at a bus stop. You are done eating your snack when the bus arrives. What do you do?
 - A. Leave it at the bus stop.
 - B. Leave it on the bus.
 - C. Keep it and find the nearest trash can.
2. You go to throw away a non-recyclable bottle but find that the trash can is completely full. Do you:
 - A. Place it next to the trash can.
 - B. Balance it on top of the trash pile.
 - C. Find another trash can.
3. You're finished drinking a recyclable soda can. Where do you put it?
 - A. Throw it on the ground.
 - B. Put it in the trash can.
 - C. In a recycling bin.
4. You just ate lunch in a car. Where did the trash go?
 - A. Out the window.
 - B. Left it in the car.
 - C. In a trash bag I brought from home.

5. You have something to throw away but there is no trash can that you can see. What should you do?

- A. Leave it, there's no trash can.
- B. Look around some more, and then leave it on the ground.
- C. Hold on to it until later.

Scoring Answers

any "A" answer - 1 point any "B" answer - 2 points any "C" answer - 5 points

Your Score is _____

- | | |
|-------|--|
| 0-9 | Remember where your trash is going! |
| 10-17 | It's a start! Now try and find ways to improve. |
| 18-25 | You're really pitching in to help out. Keep at it! |



Who Dirtied the Water?

Unscramble the letters to complete the story below.

A community of people lived nearby in a beautiful watershed. They decided to drain the wetlands to build their homes. Later on there was a big storm. Without the wetlands to hold the rain, it rushed through storm drains and streams and 1. _ _ _ _ washed into the river. The next day a family had a 2. _ _ _ _ _ _ in the park. They threw their 3. _ _ _ _ away, but the 4. _ _ _ _ blew it out of the trashcan where it was washed away into the river. Then a person walking their 5. _ _ _ didn't clean up after their pet and the poop washed into the river too. Finally, the community wondered why the river was dirty and called a meeting.



A wetland is a flooded land habitat that was once very common in the U.S.A. It is a home to many special animals and plants.

Is the watershed clean anymore? yes / no

Who made the water dirty?

Did anyone knowingly dirty the water?

Scrambled word bank

1. S L O I
2. P C I N C I
3. T A S H R
4. W D I N
5. D G O



Get Involved

How will you help? Rank these in order from 1-6 of what YOU can do.

Properly dispose of trash

Oils, cleaners, and other trash and chemicals should never be put down drains or sewers where they will contaminate drinking water and harm aquatic life.



Install a rain barrel

Save water from rooftops in a barrel to reduce storm water flows and save money on car washing and lawn watering.



Build a rain garden

Beautify your lawn with a garden designed to hold water and prevent runoff. This both improves water quality and creates important bird and butterfly habitat.



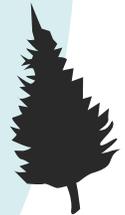
Pick up after your pet

Proper trash or toilet disposal of pet waste prevents harmful bacteria from entering our waterways.



Plant a tree

Trees hold soil from washing away and provide cooling shade. Planting them near streams can stabilize banks and encourage aquatic life.



Help protect your parks

Get involved in hands-on conservation and environmental stewardship events by volunteering. Meet new friends, and have fun outdoors.



Go to the Center for Watershed Protection website to learn more at <http://cwp.org> Click on "Watershed 101" then "What You Can Do".

In addition, your local watershed society may offer free workshops on creating rain barrels, rain gardens, and more! Find your local watershed society at <http://www.epa.gov/surf>.

Congratulations! Working together, we can make the Anacostia watershed clean again.

Everyone has a part to play in keeping the river clean. Keep the waters flowing by joining in a clean-up, either at school or your community.

Remember, no matter where you live, you are in a watershed!



“Rowing is a sport for dreamers. As long as you put in the work, you can own the dream. When the work stops, the dream disappears.”

-Jim Dietz, Rowing Coach, USCGA

Checklist

Use this page to help keep track of the activities you have done.

- | | | | |
|--------------------------|------------------------------|--------------------------|-------------------------|
| <input type="checkbox"/> | Ways of a Watershed | <input type="checkbox"/> | Looking At River Health |
| <input type="checkbox"/> | Water Words | <input type="checkbox"/> | Runaway Runoff |
| <input type="checkbox"/> | Trace the Watershed | <input type="checkbox"/> | Thinking About Trash |
| <input type="checkbox"/> | Flowing Through History | <input type="checkbox"/> | Who Dirtied the Water |
| <input type="checkbox"/> | What lives on the Anacostia? | <input type="checkbox"/> | Get Involved |
| <input type="checkbox"/> | What lives in the Anacostia? | | |
| <input type="checkbox"/> | Unsafe Water Woes | Total | _____ |

cut here

Check that you have at least **6** activities.

Have a parent or a ranger sign below.

Cut this page carefully. Fold and tape closed.

Write your return address.

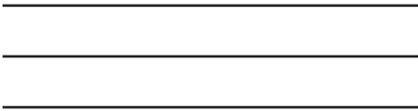
Add a stamp and put in the mail!

I certify that _____ has met all the requirements for becoming a Junior Ranger and has read the Junior Ranger Watershed pledge.

Parent's or Park Ranger's Signature

Tape closed here

fold here



place a
stamp
here

Attn: Watershed Junior Ranger
National Capital Parks-East
1900 Anacostia Drive, SE
Washington, DC 20020

fold here

cut here

cut here



JUNIOR RANGER CERTIFICATE

is awarded to



your name

I pledge to do my part to protect
the watershed where I live,

That I will tell others about what
we can do to help,

And that we will all work towards
a beautiful and healthy river.

Park Ranger's Signature or Stamp



Continue the Junior Ranger fun online with WebRangers. Play interactive games and earn a free WebRangers patch!

<http://www.nps.gov/webrangers>



This booklet was produced as part of a partnership between the Student Conservation Association and the National Park Service.



Original artwork by Heather Chen
Special thanks to Park Ranger Barbara L. Wadding