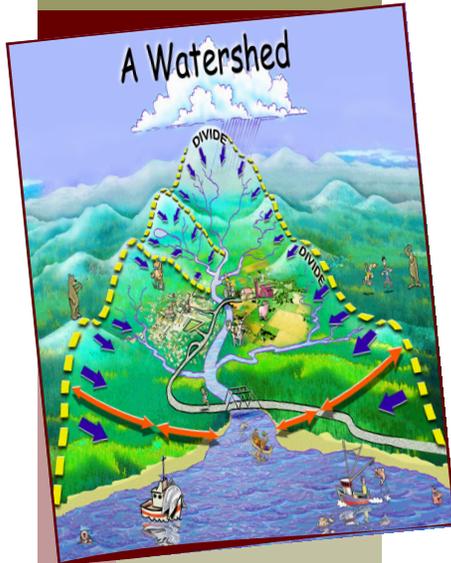


Watershed Footprint



When one tugs at a single thing in nature; he finds it attached to the rest of the world. -John Muir

The Waterdrop

The water you use in your kitchen today may have contained oil from a mall parking lot last week.



Water is recycled and transported worldwide via the water cycle. Therefore, water pollution can affect areas hundreds or thousands of miles from a release. Did you know 42% of our nation's water is considered impaired? Everything we do affects our water. Water is used to produce energy, food, items we use and wear on a daily basis and remove waste. Understanding your watershed footprint is vital to your own health.

A watershed is the area drained by a stream, river or lake. Therefore, a watershed is directly affected by the quality of the land in the watershed. If the land contains a lot of paved surfaces, exposed

soil, dump sites, lacks trees or native vegetation, contains a lot of animal waste or has a heavy use of pesticides/fertilizers the likelihood of the watershed being polluted increases. Our watersheds are affected by storm water run-

The average American uses 50 gallons of water a day. When we remove water faster than it can be replenished we face shortages.

off, agriculture, construction, industry, trash, landfills, logging, day to day activities, etc. And, watersheds drain to other watersheds. Therefore, the health of one watershed affects another.

Fort Campbell lies within the Red River Watershed, which is part of the Cumberland River Basin, which is part of the Ohio River Basin that drains to the Mississippi River. You can help:

- Conserve water, e.g. turn off the tap when brushing teeth
- Landscape with native plants
- Reduce, Reuse, Recycle
- Compost yard & raw food waste at home
- Water your lawn in the morning or evening only
- Tap water is heavily regulated. Using a reusable container instead of bottled water reduces the need to make single-use, disposable bottles. Manufacturing, transporting and disposing bottles creates additional and unnecessary environmental concerns especially when you consider bottled water may contain 50% tap water. Remember the water cycle - It's all "been around the block".



Just hitch'in a ride

Inquiring Minds...

1. Do bats lay eggs in your hair? No. It is a common misconception that bats lay eggs and get tangled in hair. Bats do not lay eggs. They are mammals; they have fur and bear live young. Most humans are near a source of light at night. Lights mean bugs, bugs mean bats. If a bat actually did get tangled in your hair, it would

likely be because it was pursuing an insect, and you just happened to be in its way.

2. Do hummingbirds hitch rides on the backs of geese?

No. This is an old wife's tale and it's hard to understand how such a myth began. First, hummingbirds and geese don't migrate at the same time. Hummingbirds migrate mid-

August to early September, Canada geese in late September to mid-October. Second, these two species do not migrate to the same areas. Some hummingbirds winter in the U.S., but most travel to Central and South America. Geese, on the other hand, generally spend the winter in the

Interesting Facts & Trivia

Water regulates the Earth's temperature

Running water while brushing teeth wastes ~ 3 gallons of water

It takes 39,090 gallons of water to manufacture a car and it's four tires

Eight times as much fertilizer and other chemicals are used by homeowners as compared to farmers

The toilet uses the largest amount of water



~ 50 gallons of water are recycled through our kidneys every day

During WWII, milkweed fluff was gathered to stuff floatation jackets for the war effort. Milkweed fluff is five times more buoyant than cork and six times lighter and warmer than wool and it's hypoallergenic

Endangered Friends

Migrating Bats

By Amie Lehman

As winter quickly approaches bats are making their way to their cold weather “hangouts”. Bats are hibernators, meaning they lower their body temperature and breath, and metabolize slowly throughout the cold winter months. Fort Campbell biologists monitor for two federally listed endangered species, the Indiana bat and the gray bat, both hibernate in caves from fall into early spring. It is during this time when bat “pups” are born to hibernating mothers. Very few caves nationwide provide the



specific conditions required by the Indiana and gray bats. Eighty percent

of the entire population of Indiana bats hibernates in only 23 caves/ mines; ninety-five percent of the entire population of gray bats hibernates in only nine caves. Therefore, it is very important to stay out of caves that are not designated as recreational areas. A slight disturbance to a group of hibernating bats can have detrimental effects on the entire species. Bats play an important role in the health of our watersheds. They consume thousands of mosquitoes and other insects and pollinate many fruits and nuts we enjoy. Protecting these mammals is vital to our own survival.

The Great Outdoors

Reconnect With Nature

By Gene Zirkle

When was the last time you ventured into the wild? Autumn’s short days, cool nights, and mosaic of colors provide the perfect time to visit the great outdoors. Hiking provides one with a picture frame to nature in its purest form. A promise of the rich rewards await around each bend or even over the next hill. Small groups are great as they limit the number of distractions, which tend to frighten wildlife.

Fall’s brilliant colors from bright yellows to vibrant reds provide the perfect backdrop for hiking, fishing, or a picnic. Put down the remote and video game and spend time outdoors with family and friends enjoying what nature provides once a year. Visit Land Between the Lakes or any one of many state parks to hike along side nature and enjoy the most splendid show on Earth. Check the websites for park and hiking information.

<http://www.wildernet.com/index.cfm>

<http://www.tennessee.gov/environment/parks/>

LBL: <http://www.lbl.org/>

Port Royal: <http://www.tennessee.gov/environment/parks/PortRoyal/index.shtml>

Dunbar Cave: <http://state.tn.us/environment/parks/DunbarCave/>



Going Local - Apple/Pumpkin Pie Time

The air is crisp and the temperatures are dropping, football season is in full swing and finally, apples, pears and pumpkins are ready to harvest. What a great time of year, as there is nothing



like the smell of an apple pie fresh from the oven. Lucky for us, there are many local orchards and farms. Buying from local farmers helps to preserve open areas that would otherwise be lost to urban development. Open areas slow storm water runoff, which is great for our watershed. Buying local is also great for our local economies. You can find local

farms, pumpkin patches, etc. by accessing the following websites:

<http://www.picktnproducts.org>

<http://www.localharvest.org/>

Did you know that 12 plants provide 3/4 of the world’s food? Local farms tend to grow heirloom and heritage products, another reason to go local.

The Savannah Post

Barrens

By Andrew Leonard

Much of Fort Campbell is grassland. A grassland is an area where grass is the dominant plant. A barren is a specific type of grassland community characterized by native warm-season grasses and weedy plants called forbs. Barrens play an important role as they provide habitat and food for many animals. In fact, some species depend on barrens. For instance, birds such as the Henslow's sparrow and Bachman's sparrow only nest on Fort Campbell and one other site in Tennessee. Unfortunately, the



Henslow's sparrow

importance of barrens were not always understood. Early explorers thought these vast treeless areas must have poor or "barren" soil due to the lack of trees. They did not realize Native Americans kept the area open

with regular fires. Barrens contain good quality soil and eventually farmers converted the barrens to agriculture. Most of the barrens from the local area have been converted. Fort Campbell contains some of the only remaining examples of this community.

Like the Native Americans, we use fire as a tool to manage barrens.

Mowing and disking are also used to keep the areas open. Many of the plants and animals depend upon periodic fires to survive and reproduce. Without fire or other disturbance trees would grow and the area would become forest.



Storm Water Affairs

By Fort Campbell Storm Water Program

What is Storm Water?

Storm water is water from precipitation that flows across the ground when it rains or when snow and ice melt.

Why Manage Storm Water?

- Preserve natural resources
- Reduce flooding
- Improve water quality

Protect people and property

BMP For The Quarter:

Best Management Practices (BMPs) are methods for removing, reducing or preventing pollutants from entering our waterways. In autumn, leaves make their way to our lakes and streams when rain washes them into storm drains. Leaves release nutrients in the water that can cause algae growth.

Storm water drains into our streams, lakes & rivers untreated. Litter is often carried via storm water to our waterbodies. Please do not litter.

Help our streams by following the Fort Campbell family Housing Guidelines:

During autumn, "residents can either rake or bag

leaves... rake leaves to the curb for once a week service. If using bags, they must be biodegradable."

Tree Talk



A Fall Spectacle

By Bruce Franklin

Why do trees change color? The answer is simple. Deciduous trees (oaks, maples, ashes) are the same as you and me; they prepare for colder months. Late September the trees begin to react to a change in the amount of daily sunlight, cooler temperatures, dry conditions of autumn and the position of the sun. The process takes approximately two

weeks. Typically, by mid-October this winter preparation is complete. Fall triggers the termination of food production (which is the role of green leaves). Water transportation to the leaves stops and the tree seals off the leaf from the branch. Production of green pigment ends allowing other colors within the leaf to show. The colors red, orange, and yellow are visible for only a short time, after that the leaves turn brown and drop. The sacrifice of the leaf-bearing tree is a visual spectacle for all.



So head outside and enjoy the brilliant colors before they are gone. Check the US Forest Service for fall color reports.

<http://www.fs.fed.us/news/fallcolors/>

Trivia: Did you know autumn is a great time to plant a tree. Fall tree planting gives a tree's roots time to become established.

Chirp Notes

Migration

By Daniel Moss

As summer comes to a close and autumn arrives on schedule the seasonal south-bound journey is getting into full swing for migratory birds. The **Summer Residents**, who flew north to nest during the summer months, have completed their breeding season and have fattened for their long flight to their wintering grounds. Heading south allows the birds to escape the harsh winter



White-throated sparrow
Winter Resident

weather and decreased food supply. **Winter Residents** are the bird species that nest in the north and arrive in our yards to spend the winter. White-throated sparrows are common winter residents that are often found at bird feeders.

Some bird species, like the Cardinal and Bluebird, are **Permanent Residents** living year round in our yards. Sometimes a bird species that's pre-

sent in our neighborhood the whole year can also be migratory. For example, robins that nest here move south for the winter and robins that nest farther north fly to this area to winter.

Transient species are the birds that don't nest or winter here, but just pass through our area as they travel north or south.



Bluebird
Permanent Resident

Water Connections



Plastic bags, litter, practicing the three Rs (reduce, reuse, recycle) - how are these related to the quality of water? Several ways:

- Water is required to produce plastic bags
- Plastic bags often become litter and litter is often in our water, hurting



wildlife and polluting our environment

- Practicing the three Rs helps to eliminate the use of plastic bags, decreases litter and saves water.

Per the EPA, 380 billion plastic bags are used yearly in the U.S. Plastic bags are among the top 12 items most often found during coastal

clean-ups. Plastic does not biodegrade. Additionally, plastic bags are difficult to recycle because they tend to bind in the equipment.

*Plastic or paper bags ?
Neither, both require many resources
and are difficult to recycle. Instead,
bring your own reusable bag.*



What's Under Your Sink

I have to confess, I'm a clean freak, and I used to think everything had to smell like bleach to

be clean. However, I realize it's satirical to clean with products that pollute our health, homes, and environment. There are alternatives that work well. Most of these items are in our pantries: white vinegar, baking soda, borax, cream of tartar, hydrogen peroxide, and lemon juice. Did you know that white vinegar and lemon juice are great in the laundry. Vinegar aids rinsing and

lemon juice brightens clothes. Baking soda is a hit-man for odor, grease and grim and hydrogen peroxide is a great germ fighter. See websites and recipes below for healthier cleaning ingredients. If you decide to dispose of old cleaners do not dump down the drain or place in the trash; instead, use a local household hazardous waste collection event.

http://healthychild.org/resources/checklist/clean_with_5_basic_tools/

<http://www.ecologycenter.org/factsheets/cleaning.html>

<http://www.motherearthnews.com/Modern->

Homesteading/2004-04-01/Green-Cleaners.aspx

All-Purpose Cleaner: Mix 2 teaspoons borax, 1/4 cup vinegar & 3-4 cups hot water in spray bottle. For extra cleaning power add 1/4 teaspoon liquid soap to mixture.

Laundry brightener: 1/2 cup strained lemon juice during rinse cycle.

Soft scrub: mix baking soda and water until you get a consistency you like.



Mother Nature, the Master Recycler

We're using the same water the dinosaurs did.

The Water Cycle - Recycling Water

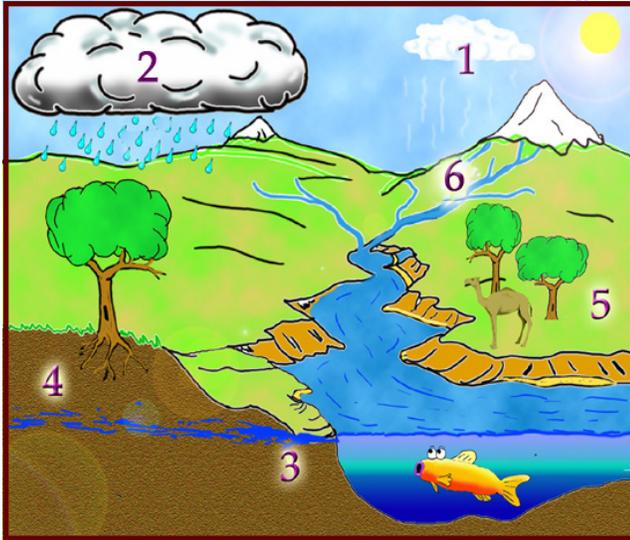
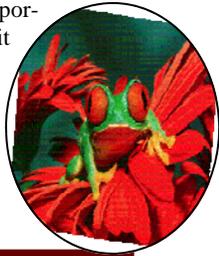


Photo courtesy of the National Institute of Health Services, NIHS.

1. Water evaporates from lakes, streams and oceans. Evaporated water forms clouds that travel over the earth.
2. Precipitation falls to the earth in the form of rain, sleet or snow.
3. Groundwater may emerge as a spring or enter a body of surface water, such as a stream or the ocean.
4. Some water sinks into the ground becoming groundwater.
5. Plants and animals use water and return it to the environment through transpiration, perspiration and urination.
6. Surface water runoff enters streams, lakes and oceans.

Although most of us receive clean water at our homes, it's important that we don't pollute it, especially since everyone shares it to include our animal friends.

Did you know frogs can jump over twenty times their own length? How far can you jump? Frogs are pollution sensitive. Help them, conserve water.



Puzzling Water

Across

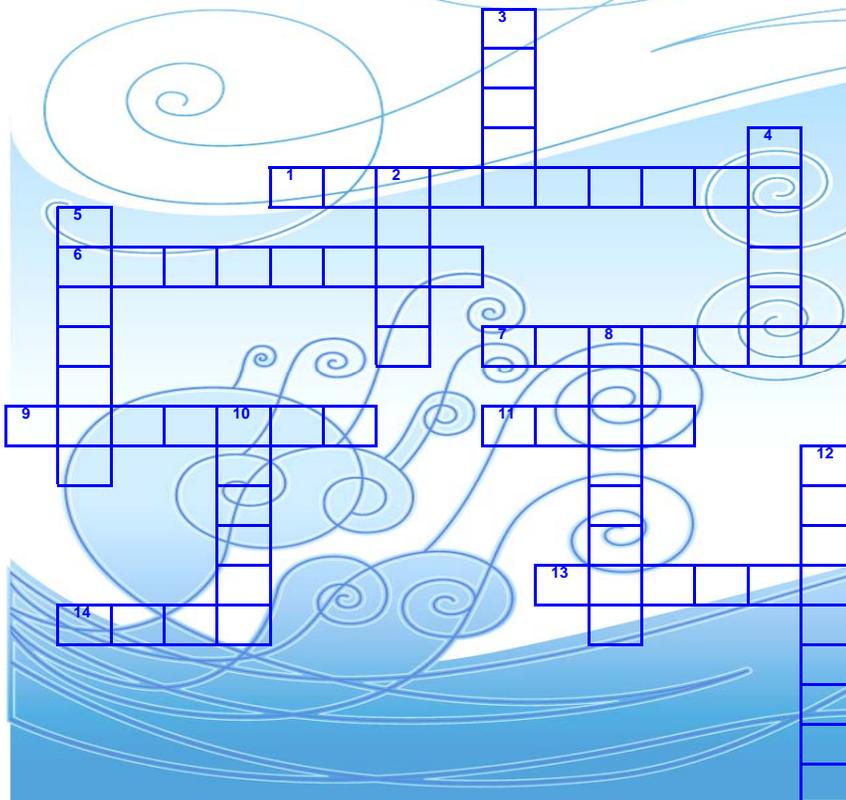
1. Water is cycled through the _____.
6. Fort Campbell is located in the _____ watershed.
7. Instead of landfilling your food waste you can _____.
9. Bats are _____ and have live young.
11. _____ is another word for Autumn.
13. _____, reuse, recycle to help our water stay healthy.
14. Bat young are called _____.

Down

2. Fall is a great time to plant _____.
3. We can not live without _____.
4. _____ can be used to clean your home.
5. _____ is an endangered species monitored on Fort Campbell.
8. _____ fluff is 6 times warmer than wool.
10. _____ and pears are ready to harvest in the fall.
12. _____ is an area drained by a stream, river or

Word Bank

Apples, water, reduce, fall, lemons, milkweed, Red River, compost, watershed, mammals, gray bat, water-cycle, pups, trees



Do you have a question
or comment for us?
Please feel free to contact us. We'd love to
hear from you.

Fort Campbell Conservation Branch Office
13th Street, Bldg 2159



Jeff Atkins, Chief, Conservation Branch, 270-798-9858
Gene Zirkle, NEPA/Wildlife Program Manager, 270-956-2738
Sharon Sanford, Conservation Support, , 270-798-9825
Rick Zimmer, GIS Coordinator, 270-956-2697
Paul Waggoner, IT Coordinator, 270-956-2732
Amie Lehman, Endangered Species Biologist, 270-798-9855
Dawn York, Watershed Ecologist, 270-798-9824
Daniel Moss, Avian Ecologist, 270-798-7226
Andrew Leonard, Wildlife Biologist, 270-798-9855
Danny Dulin, Wildlife Technician, 270-798-7226
Beth Boren, Agronomist, 270-798-9856

Linda Alderdice, Post Forester, 270-798-2616
Joey Joiner, Prescribed Fire Coordinator, 270-798-6242
Art Rioux, Timber Sale Manager, 270-956-3376
Drew Mickolay, Forester, 270-798-1533
Clayton Lanier, Forester, 270-798-2623
Steve Stedman, Forester, 270-956-3378
Bruce Franklin, Urban Forester, 270-956-2452
Richard Davis, Cultural Resources Coordinator, 270-798-7437
Richard Williamson, Archaeologist, 270-798-9104
Teresa Brown, Archeologist, 270-798-7228
Niki Mills, Archeologist, 270-798-9104
Lydia Bravard, Cultural Resource Technician, 270-798-9104

Did You Know?



Leaving the water on while brushing your teeth wastes approximately 3 gallons of water. If you brush 2 times a day that's 6 gallons wasted. In one year, that's 2,190 gallons of water wasted per person. By the time you are 65 years old you will have wasted 142,350 gallons of water. What a difference a person can make! Turn off the tap while brushing your teeth, not only do you save water, but you also create less pollution.

You Be The Scientist

Make Your Own Water Cycle

Water exists in three forms, a liquid, gas or solid. Outside, water is always changing from one form to another. This process is called the water cycle. The sun's heat makes water evaporate from streams, rivers and oceans. The water vapor (gas) rises. When it reaches cooler air, it condenses to form clouds. When the clouds are full, they release some of the water as a liquid (rain) or as ice crystals (sleet or snow).

Materials:

Large metal or plastic bowl
Pitcher or bucket
Sheet of clear plastic wrap
Dry mug (coffee mug)
Long piece of string or large rubber band
water

Instructions:

1. Put bowl in sunny place outside
2. Using pitcher or bucket, pour water into bowl until it is 1/4 full.
3. Place mug in the center of bowl. Do not splash any water into it.
4. Cover bowl tightly with plastic wrap.
5. Tie string around bowl to hold plastic wrap in place.
6. Watch bowl to see what happens.

The mist that forms on the plastic wrap will change into larger drops until the water begins to drip. After a few minutes carefully remove the plastic wrap. Is the coffee mug still empty? Water from the "ocean" from the water in the bowl evaporated. It condensed to form misty "clouds" on the plastic wrap. When the clouds became saturated it "rained" into the mug.

