

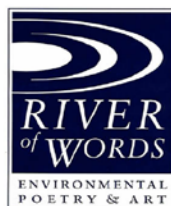
# River of Words

## Environmental Art & Poetry Project for K-12 Students



*The Beautiful Danger that Lurks Below*, Lillian McClellan, grade 3, SKA Academy of Art & Design, Duluth, Teacher: Leng Chang

## Georgia ROW Teacher's Guide







ENVIRONMENTAL PROTECTION DIVISION

RICHARD E. DUNN, DIRECTOR

WATERSHED PROTECTION BRANCH

GEORGIA PROJECT WET/RIVER OF WORDS  
2 MARTIN LUTHER KING, JR. DRIVE  
SUITE 1462  
ATLANTA, GEORGIA 30334  
404-651-8515

Dear Educator,

Welcome to the River of Words (ROW) Environmental Poetry and Art Project! ROW is a terrific tool to help your students identify their ecological address and explore their creativity, and it is a great way to bring literacy into your science classroom.

With the help of this Teacher's Guide you can lead your students to discover their watershed and describe their observations through art and poetry. The Guide includes:

- ▶ Contest Rules and Guidelines, Entry Forms and support
- ▶ Activities in Observation and Sensory, Journaling, Art, and Poetry to Support River of Words
- ▶ Inspirational Stories from Georgia Teachers
- ▶ Information about other related programs to use with River of Words

Visit the Georgia Project WET website ([www.projectwet.georgia.gov](http://www.projectwet.georgia.gov) > GA River of Words) for current rules and entry forms.

In our state, River of Words is coordinated by Georgia Project WET (Water Education for Teachers) and the Georgia Center for the Book. Since 1997, Georgia teachers have successfully incorporated this dynamic educational tool into their classrooms.

Winning poetry and art from the current year are on display in the *Georgia River of Words Exhibit*. The exhibit travels to libraries throughout the state and can be borrowed for other educational locations. For the most current library tour schedule and to see the galleries of winners since 2000 visit [projectwet.georgia.gov](http://projectwet.georgia.gov) >River of Words.

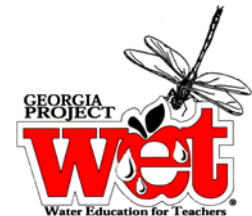
Happy ROWing!!

Sincerely,

Georgia Project WET/River of Words Coordinators:

Jo Adang [jo.adang@dnr.ga.gov](mailto:jo.adang@dnr.ga.gov)

Monica Kilpatrick [monica.kilpatrick@dnr.ga.gov](mailto:monica.kilpatrick@dnr.ga.gov)



The preparation of this guide was financed in part through a grant from the U.S. Environmental Protection Agency under provisions of section 319 (h) of the Federal Clean Water Act of 1987, as amended.



# Georgia River of Words Educator Guide

Georgia River of Words is an environmental poetry and art project for K-12 grade students, featuring an annual contest with the theme WATERSHEDS.  
**Visit [projectwet.georgia.gov](http://projectwet.georgia.gov) and click on **GA River of Words** to learn more.**

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Visit [projectwet.georgia.gov](http://projectwet.georgia.gov) to view past winning ROW poetry and art from Georgia.

## Georgia River of Words ®

Every year, in affiliation with the Georgia Center for the Book, River of Words sponsors a **free poetry and art contest** on the theme of **watersheds**. (Find out about a WATERSHED on page 120). The contest is open to students ages 5 through 19.

Since it was launched it in 1996, the ROW contest has attracted thousands of entries from classrooms, 4-H clubs, scout troops, wildlife clubs, summer camps, after-school programs, homeschool groups, and individuals submitting on their own.



### River of Words Program

- Nurtures respect and understanding for the natural world
- Promotes literacy in all its forms
- Prepares teachers to integrate the arts into core curriculum
- Gives youth a forum for expressing creativity and concerns
- Helps develop a sense of belonging to a particular place
- Builds community partnerships
- Distributes, publishes and displays student's art & poetry
- Provides support materials for educators

From thousands of entries, the judges select about 50 poems and artworks as Georgia River of Words winners in four different age categories.

Category I — Kindergarten-Grade 2

Category II — Grades 3-6

Category III — Grades 7-9

Category IV — Grades 10-12

### **Yearly Contest Deadline is February 1.**

*(Please check for changes on [projectwet.georgia.gov](http://projectwet.georgia.gov))*

**All rules and forms are available at  
[ProjectWET.Georgia.gov](http://ProjectWET.Georgia.gov)**

**NEW!**

**Georgia entries with attached forms are sent to:**

GA River of Words  
2 Martin Luther King Jr Dr.  
Suite 1462 East  
Atlanta, GA 30334

# Georgia River of Words ®

## Contest Rules and Guidelines

Georgia River of Words environmental art and poetry contest is open to any child in Georgia, from 5 to 19 years of age, who has not yet completed high school.

Category I — Kindergarten-Grade 2

Category II — Grades 3-6

Category III — Grades 7-9

Category IV — Grades 10-12

*There is no charge to enter*, and students may enter as many times as they like. However, a separate entry form must be completed for each submission.

Students may enter on their own or as part of a group (classroom, Girl Scout troop, 4-H, etc.).

Educators or facilitators must send all entries from their classes together in one or more packages. Please do not have each student mail his or her entry separately.

*Submissions become property of Georgia River of Words. Through submission of poetry or artwork, contestants and their legal guardians grant nonexclusive reproduction and publication rights to the works submitted. After judging, all original entries will be mailed back to the classrooms or individuals by the state office.*

### Entry forms are available on [ProjectWET.Georgia.gov](http://ProjectWET.Georgia.gov) (click on GA River of Words)

- ▶ **Student Entry Form** should be used for each submission.
- ▶ **Facilitator Form** must be completed by the educator or facilitator to accompany entry packages. There should also be a typed list of the names and grade levels of all entrants in your group. Please keep a copy of the form and list for your records.

## Poetry Guidelines

*All poems must be original work.*

Written poetry must be either typed (preferred) or legibly written in ink.

Poems should not exceed 32 lines in length.

The student's name, school, city and state should be on the poem, and a completed Entry Form (individual or group) must be stapled to back facing outward for each poem. Poems not submitted in this format, or with incomplete or illegible writing will not be judged.

## Artwork guidelines

*All artwork must be original work. We do not accept color photocopies.*

Artwork may not exceed 11" x 17"— no exceptions.

Acceptable media are paint, pencil, markers, ink, crayon, chalk or pastel (fixed), photography, cloth, collage, woodcuts, linoleum block prints, silkscreen, monoprints, lithographs and computer art. Photo entries must be at least 8" x 10".

All entries must include the student's name, school, city, and state on the back. Do not use marking pen or anything that will show through. A completed entry form must also be affixed with tape or other fixative to the back of each piece of artwork facing outward (if using glue be careful to use one that will not run through and damage the artwork). Do not use paperclips.

Art entries must be done on media that will allow for photographing and duplication. Please do not use notebook or typing paper, and do not mat, mount, laminate, frame, or fold artwork. Entries must be mailed flat or rolled in a tube.

## Deadlines

All entries must be postmarked by **February 1**.

We are not responsible for entries that are late or lost in the mail. Entries mailed after the deadline will be returned to the sender.

## Winners and prizes

About 50 poems and artworks are selected as State winners each year. A chosen few are sent on to the national contest after that.

We also award a special Dragonfly Award in art each year to a student in honor of Petey Giroux, the first state coordinator for River of Words.

Winners will be announced in April of each year, and they, their families and teachers are honored in a May ceremony.

*\*Georgia River of Words reserves the right not to award a Dragonfly Award if no entry merits such designation.*

For questions email [jo.adang@dnr.ga.gov](mailto:jo.adang@dnr.ga.gov) or [monica.kilpatrick@dnr.ga.gov](mailto:monica.kilpatrick@dnr.ga.gov)



# Georgia River of Words<sup>®</sup> Facilitator Form



This form must accompany **GROUP** entry packages.

(for facilitator-led ROW activities in school classrooms, scout troops, after-school programs, nature centers, museums, libraries or any other groups that produce a set of entries for the River of Words contest).

**CONTEST DEADLINE— entry packages must be postmarked by February 1<sup>st</sup>!**

## FACILITATOR FORM INSTRUCTIONS (SUBMIT with your group entries)

If you led a group in River of Words activities, please complete this form and submit it with the package of art and poetry entries from your group. Also include a complete class or group list with names and grade levels and staple to the back of this form. For details on the Contest Rules and additional forms visit [ProjectWET.Georgia.gov](http://ProjectWET.Georgia.gov).

Please note that **every entry in your group must have a completed STUDENT contest entry form attached.**

All entries with attached contest entry forms and this Facilitator form with a list should be sent in a single set to:

**GA River of Words, 2 Martin Luther King Jr. Drive, Suite 1462 East, Atlanta, GA 30334**

School or Organization Name: \_\_\_\_\_

School/Org Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

School/Org Phone: \_\_\_\_\_ Contact Name and Email: \_\_\_\_\_

Facilitator Name(s):	Email:
_____	_____
_____	_____
_____	_____

Total # of Contest Entrants: \_\_\_\_\_ Grade Level of Contest Entrants: \_\_\_\_\_

Total # of Art Entries Submitted: \_\_\_\_\_ Total # of Poetry Entries Submitted: \_\_\_\_\_

Last Day of Classes (M/D/Y): \_\_\_\_\_ (for returns)

**\*Please attach a typed list of all group participants and grade levels\***

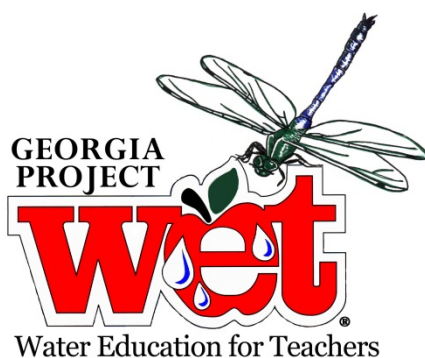
GA River of Words, 2 MLK Jr Dr., STE 1462 E, Atlanta, GA 30334

Tel: 404-651-8521 • Fax: 404-651-8556 ATTN: ROW • Email: [monica.kilpatrick@dnr.ga.gov](mailto:monica.kilpatrick@dnr.ga.gov) • Website: [ProjectWET.Georgia.gov](http://ProjectWET.Georgia.gov)

Revised 8/2017

## GEORGIA RIVER OF WORDS CONTEST RULES & GUIDELINES

1. The contest is open to students in grades kindergarten through 12th on the deadline date. Entrants need not submit work through their school or organization; individual submissions are also accepted if the student worked entirely on his/her own.
2. Students may enter the contest as many times as they like, but a separate entry form must be completed for each submission. **For Group Entries**, Educators must send all the entries together in one (or several, if needed) envelope or package.  
**Do not have each student mail his/her entry separately.** Every mailing of group entries should also contain a class list, listing the students' names whose work is included in the group and their grade levels.
3. **All poems must be original work.** Poetry must be either typed (preferred) or legibly written in ink. Poems should not exceed 32 lines in length. The student's name, school, city and state should be included on the poem, and a completed Entry Form should be attached to the back of the poem facing outward.
4. **All artwork must be original work.** Artwork should not exceed 11 x 17 inches in size--no exceptions. Acceptable media are paint, pencil, markers, ink, crayon, chalk or pastel (fixed), photography, cloth, collage and computer art. (Photo entries must be at least 8 x 10 inches.) All entries must contain the student's name, school, city and state on the back — do not use a marker or anything that will show through! A completed entry form must also be affixed to the back of each piece of artwork facing outward. Please attach the entry form with tape or other fixative (if using glue, be careful to use one that will not run through and damage the artwork) — also, do not use paperclips.
5. Art entries must be done on a surface that will allow for electronic scanning. Please, no notebook or typing paper, and do not mat, mount, laminate, frame or fold artwork. Entries must be mailed flat or rolled in a tube.
6. Submissions become property of Georgia River of Words. Through submission of poetry or artwork, contestants and their legal guardians grant non-exclusive reproduction and publication rights to the works submitted.
7. **DEADLINE: All entries must be postmarked by February 1.** We are not responsible for entries that are late or lost in the mail. Entries mailed after the deadline will be returned to sender.
8. Winners will be announced in April of each year.



# Georgia River of Words<sup>®</sup> STUDENT Entry Form

For use with all entries



**CONTEST DEADLINE: postmark by February 1.**

STUDENT ENTRY FORM INSTRUCTIONS (ATTACH this form to back of **each** entry facing outward)

*Your River of Words submission must be original and have been created by you alone.*

**GROUP ENTRY:** If you created your entry as an assignment in school, a scout troop, or with any other group or organization with a teacher or leader, check the **Group Entry box**. Your teacher/leader will send in your entry along with all the others in the group.

**INDIVIDUAL ENTRY:** If you created your entry all on your own, without an assignment or leadership, then enter as an individual and send in your piece by itself. Check the **Individual Entry box**.

**Educators/Leaders:** If you led a group to create ROW entries, submit all of the entries in your group together and make sure that a completed entry form is attached to each piece. In addition, complete a **Facilitator Form** and a class list to submit with each group. All Rules & Forms can be found at [ProjectWET.Georgia.gov](http://ProjectWET.Georgia.gov).

Send all entries with attached entry forms to:

**GA River of Words • 2 Martin Luther King Jr. Dr. • Suite 1462 East • Atlanta, GA 30334**

I am entering my work as a (select one)  Group Entry  Individual Entry

Name: \_\_\_\_\_ Email: \_\_\_\_\_ Grade: \_\_\_\_ Gender: \_\_\_\_ Age \_\_\_\_

Title of Submission: \_\_\_\_\_ (Circle one) Art Poem

For artwork, what medium did you use? (acrylic, pencil, pastel..?) \_\_\_\_\_

**Pledge of Originality:** *I promise that the poem(s) or art I am submitting to the River of Words Contest is my own original work and no one helped me complete it.*

Student's signature: \_\_\_\_\_ Date \_\_\_\_\_

Parent or Guardian's Name: \_\_\_\_\_ Phone: \_\_\_\_\_

Parent Email: \_\_\_\_\_

Home Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_ Zip: \_\_\_\_\_

## For Group Entries:

School or Organization: \_\_\_\_\_ School/Org Phone: \_\_\_\_\_

School/Org Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_ Zip: \_\_\_\_\_

Educator/Facilitator(s) First and Last Names and email addresses:

**Name:**

**Email:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## PARENT OR GUARDIAN

I hereby grant and assign to Georgia River of Words (ROW) the non-exclusive right and permission, in respect of the original artwork, writing, photos that I have submitted to River of Words, to use, re-use, publish, and re-publish, and otherwise reproduce, and display the same, individually or in conjunction with other original artwork, writing, photos, in any and all media now or hereafter known throughout the world, for illustration, promotion, art, advertising, and trade, or any other purpose whatsoever; and to use my child's name to identify the author of the work in connection with my participation in the River of Words Program. I understand that any use of this submitted work will include my child's name as its creator. I hereby release and discharge River of Words from any and all claims and demands arising out of or in connection with the use of the original artwork, writing, photos, including without limitations any and all claims for libel or invasion of privacy. I have read the foregoing and fully understand the contents thereof. This release shall be binding upon me and my heirs, legal representatives, and assigns.

I, \_\_\_\_\_, being the **parent or guardian** of the above-named minor, hereby consent to and join in the foregoing release and consent on behalf of said minor.

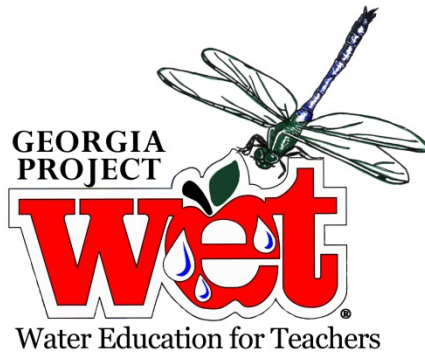
GA River of Words, 2 MLK Jr Dr., STE 1462 E, Atlanta, GA 30334 Tel: 404-651-8521 • Fax: 404-651-8556

ATTN: ROW • Email: [monica.kilpatrick@dnr.ga.gov](mailto:monica.kilpatrick@dnr.ga.gov) • Website: [ProjectWET.Georgia.gov](http://ProjectWET.Georgia.gov)

8/17

## GEORGIA RIVER OF WORDS CONTEST RULES & GUIDELINES

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2. Students may enter the contest as many times as they like, but a separate entry form must be completed for each submission. **For Group Entries**, Educators must send all the entries together in one (or several, if needed) envelope or package. **Do not have each student mail his/her entry separately.** Every mailing of group entries should also contain a class list, listing the students' names whose work is included in the group and their grade levels.
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6. Submissions become property of Georgia River of Words. Through submission of poetry or artwork, contestants and their legal guardians grant non-exclusive reproduction and publication rights to the works submitted.
7. **DEADLINE: All entries must be postmarked by February 1.** We are not responsible for entries that are late or lost in the mail. Entries mailed after the deadline will be returned to sender.
8. Winners will be announced in April of each year.



# FEBRUARY 1 DEADLINE

SEND ALL ENTRIES TO

GA River of Words, 2 MLK Jr Drive, Suite 1462 East, Atlanta, GA 30334



## Happy Bird

Watercolor

Ady Rajarajen, grade 1

Springmont School

Atlanta

Teachers: Theresa Dean and

Courtney Denis

## FAQs

### ***Am I entering as an individual or as part of a group?***

If you completed your River of Words contest entry as an assignment in a class, scout troop, nature center, youth organization or other club, then you are entering as part of a group. Your teacher or leader will send in all entries from the class together.

If you did not do your work through participation in a class assignment or group project, then you are entering as an individual.

If you have any questions about whether you should enter as a group or individual, please contact [jo.adang@dnr.ga.gov](mailto:jo.adang@dnr.ga.gov).

### ***May I submit more than one piece?***

Yes. You may submit as many poems and/or pieces of artwork as you wish as long as each entry has a separate entry form attached.

### ***How should I attach my entry form to my work?***

For poetry entries, please staple the entry form to the back of your poem facing outward.

For artwork, please affix your entry form to the back of your artwork facing outward with tape or glue. If using glue, be careful to choose a glue that will not seep through and damage your artwork. Please, do not staple or paperclip entry forms to the back of your artwork!

**Remember, for each poem or piece of artwork that you submit, you must complete a separate entry form attached to the back, facing outward—thanks!**

## Educator Guidelines

## *How do I begin ROWing?*

- Read this Georgia River of Words' Educator's Guide. It contains lots of background material on watershed science and activities on poetry, art and journaling to help students explore their surroundings and their imaginations.
- Remember the theme of River of Words is **WATERSHEDS**. The works submitted must be the student's exploration and discovery his/her own watershed, creating a sense of place. Find out what that means by reviewing the reference section of this guide starting on page 118.
- **Get outdoors**, even if it's only the schoolyard. Utilize field activities that encourage careful observation, data recording, sketching, listening, etc. Repeated visits to the same site allow students to observe changes. Many teachers incorporate a "service learning" component in their ROW projects, like water quality monitoring, tree planting, gardening, or creek clean-up.
- Read through the River of Words Contest Rules & Guidelines, which contain specifics about entering, artwork size, poem length, etc. Also visit [projectwet.georgia.gov](http://projectwet.georgia.gov) for updated rules and forms.
- Attend a Project WET educator workshop and receive 64 award winning, field tested K-12 water education activities correlated to state and national standards and become a part of the national Project WET network. Workshop information available at [projectwet.georgia.gov](http://projectwet.georgia.gov).
- Contact local water or park districts, museums, conservation and arts organizations to see if they have any resources you can use: naturalists, poets, artists, videos, maps, etc. A list is provided for you beginning on page 16.
- If you are school-based, try to involve other teachers in River of Words. Collaborations between science, language arts, social studies, and art teachers have been very successful in many schools and have not only produced wonderful poems and paintings, but have led to community service projects like creek clean-ups and school gardens.
- River of Words is designed as a vehicle for building community partnerships. It is an opportunity to involve parents, service groups, local businesses, the media and other community resources in a common goal.
- Educators or facilitators must send all entries from their classes in one or several packages. Please do not have each student mail his or her entry separately. Each entry must have an entry form attached to the back facing outward.
- Educators/facilitators must complete an FACILITATOR FORM to send along with the group entries, as well as a typed list of the names and grades of all entrants in your group. Please keep a copy of this list for your own records.
- Your group entries will be returned to you as soon as possible before the end of the school year. Georgia winners, their families and teachers will be honored at a ceremony in May. Reproductions of winners work will be part of a traveling display for one year and printed in a full-color booklet we call the ROW Journal.

Visit [ProjectWET.Georgia.gov](http://ProjectWET.Georgia.gov) to learn more about all of Georgia's watershed protection outreach programs.

# GEORGIA CLASSROOM TOOLS – AVAILABLE FOR LOAN



We have these items available to **EDUCATORS (formal and non-formal)** to help students better understand their own watersheds. **Please note: the availability of the ROW Exhibit is limited due to the library tour. TO REQUEST** – Complete this form and return to Monica Kilpatrick by email [Monica.Kilpatrick@dnr.ga.gov](mailto:Monica.Kilpatrick@dnr.ga.gov) or mail to Georgia Project WET, 2 Martin Luther King Jr Dr SE, Suite 1462 East, Atlanta, Georgia 30334.

Pick Up Date	Return Date	Item	Description
		Non-point Source Pollution EnviroScape	Model that allow learners to see pollution and runoff
		Wetlands EnviroScape	Model that allows learner to see wetlands in action.
		River of Words Exhibit	Student's award winning poetry and art on a large popup display

## RESPONSIBILITIES

1. In borrowing items from Georgia Project WET, participants are responsible for picking them up from the Project WET office, UGA Cooperative Extension Regional Office or previous borrower.
2. Items must be returned to the specified location **on the agreed upon date**. Your failure to do so may cost another borrower their opportunity.
3. There are specific set up or usage instructions for these loaner items. Participants agree to read and follow these instructions. **Items broken or lost must be replaced by the borrower**. Use the check off sheet to insure that you have repacked all items. When receiving an item, use the check off sheet to insure that you have all items. The model must be returned clean and dry.
4. Currently we do not require a deposit for the items. However, they range in price from \$500-\$4,000.

-----  
 Organization Requesting Item \_\_\_\_\_

Borrower's Name: \_\_\_\_\_

# of People Who Will Come in Contact with Classroom Tool (students, teachers, etc.) \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone \_\_\_\_\_

Email address \_\_\_\_\_

**I have read the information above and will abide by the responsibilities.**

Signature \_\_\_\_\_ Date \_\_\_\_\_

GEORGIA PROJECT WET ~ [monica.kilpatrick@dnr.ga.gov](mailto:monica.kilpatrick@dnr.ga.gov)  
 ProjectWET.Georgia.gov





# Field Trips to Support River of Words



## ***Reflection of Mother Earth***

Photograph

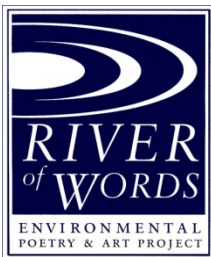
Brendan Patton, grade 12

Alpharetta High School

Alpharetta

Teacher: Christine Lauer





## Field Trips to Nature Centers supporting River of Words Activities

Across Georgia, nature centers offer programs that support River of Words. On a field trip, your students might discover their local watershed and create poems or art they can submit to the contest. The content, timeframe and cost of these programs vary by center.

### Blue Ridge Outdoor Education Center, Toccoa

Environmental Education Program

For All Grade levels through their school or select Home School Days

Blue Ridge Outdoor Education Center offers students of all ages the chance to see and touch the processes at work in the world around us and to get a sense of their special place in that system through environmental education. Discover the forests and streams of the Appalachian Mountains and be inspired by the organisms that call them home.

Cost: see website

Contact: 706-886-7621, [www.blueridgeoec.com](http://www.blueridgeoec.com); email: [blueridgedir@campmikell.com](mailto:blueridgedir@campmikell.com)

### Charlie Elliott Wildlife Center, Mansfield

The Brooke Ager Discovery Area offers a hands-on and multi-disciplinary approach to wildlife education where students use science, social studies, math, and reading comprehension skills while exploring nature in a fun and rewarding way. This three-part field trip aligns to GSE science standards for up to 50 students at a time. Teachers may book up to 3 class options.

Cost is \$5 per student (with a \$120 minimum charge for groups with 28 or less students).

For more information or to register for a program, call (770.784.3059) or email Amber Barrow

([amber.barrow@dnr.ga.gov](mailto:amber.barrow@dnr.ga.gov))

A K-2 trip runs from 9:30am-12:00 pm

A 3-5 trip runs from 9:30am-1:30pm

\* Inclement weather options need to be considered in case some of the activities outdoors cannot happen on the scheduled field trip date.

#### Lifecycles:

Grades: K – 2<sup>nd</sup>

Why do some living things change throughout their lives? Get an up close look into the lifecycles of plant life as well as terrestrial and aquatic wildlife through guided investigation.

Standards: S2L1, S2E3

#### Pond Study (April 1st-November 1st):

Grades: 3<sup>rd</sup> – 5<sup>th</sup>

A pond investigation provides the perfect opportunity to demonstrate the connections and food webs within an ecosystem. By utilizing nets, using field guides, and guided observation students gain will skills and discover the adaptations of some amazing aquatic creatures.

Standards: S4L1, S5L4

#### Water Cycles:

Grades: 3<sup>rd</sup> – 5<sup>th</sup>

What happens to water when it reaches the clouds? The soil? The sink? Students will explore the life of a water droplet and see how water moves throughout Georgia's ecosystems. We will also introduce vocabulary relating to water with nature journaling.

Standards: S4E1, S4L1, S3L2, S4CS5, S3P1, S3CS8

## Chattahoochee Nature Center, Roswell

Environmental Education Programs

Grades: Pre-K – 12<sup>th</sup>

Come and explore the Chattahoochee Nature Center with your class for a fun-filled educational experience your students won't soon forget. Educational programming is offered at the CNC Monday through Friday throughout the year. Programs are conducted rain or shine, with equivalent programming indoors in case of inclement weather. Please dress appropriately to be outdoors.

Cost: see website

Contact: 770-992-2055 x237, [www.chattnaturecenter.org/education/](http://www.chattnaturecenter.org/education/)

## Dauset Trails Nature Center, Jackson

Poetry and Prose in the Outdoors

Grades: 5<sup>th</sup> and up

Take a hike, explore the outdoors, and be inspired! Students are given the opportunity to learn about the natural world around them, and then encouraged to express their thoughts through writing.

Cost: FREE, 15-25 students

Contact: Gordon Respass at 770-775-6798, [www.dausettrails.com](http://www.dausettrails.com)

## Dunwoody Nature Center, Dunwoody

Environmental Education Program

Grades: Pre-K - 5<sup>th</sup>

At the Dunwoody Nature Center, classes move through the meadow and trails of our park led by our highly trained staff of environmental educators for a hands-on learning experience that reinforces and brings to life the STEM concepts that they are taught in the classroom. Our field trips are correlated to Georgia Standards of Excellence according to grade level and subject area using academically-based curriculum materials. We feature four distinct habitats — meadow, stream, wetlands, and forest — that are ideally suited to enhance the fundamentals of environmental science in a controlled setting.

Cost: See website

Contact: 770-394-3322, [www.dunwoodynature.org](http://www.dunwoodynature.org)

### Water, Water Everywhere

Grades: 4<sup>th</sup> and up

Students turn into water drops and simulate the movement of water within the water cycle. Some will get stuck in the clouds, while others will float away to the ocean! Students will utilize tools such as a parachute to create energy and to see how water molecules change from solid to liquid to gas.

Cost: \$8 per student/day with a \$50.00 minimum deposit; Prices may vary

Contact: 770-394-3322, [www.dunwoodynature.org](http://www.dunwoodynature.org)

### Waterway Survey

Grades: 5<sup>th</sup> and up

Bring your students to explore Wildcat Creek and learn firsthand how constructive and destructive processes affect Georgia's waterways. During a hike upstream, students will find evidence of weathering, erosion, and the impact of organisms.

Cost: \$8 per student/day with a \$50.00 minimum deposit; Prices may vary

Contact: 770-394-3322, [www.dunwoodynature.org](http://www.dunwoodynature.org)

## Elachee Nature Science Center, Gainesville

Nature Journaling Activities

Grades: 5<sup>th</sup> – 8<sup>th</sup>

Investigate a stream and hike through a watershed while learning the important role that water plays in our lives. Then record your impressions in poetry or prose on the banks of a rushing stream.

Cost: \$10.00/student.

Contact: 770-535-1976, [www.elachee.org](http://www.elachee.org)

### Newman Wetlands Center, Hampton

River of Words & Nature Journaling

Grades: 6<sup>th</sup> - 12<sup>th</sup>

Students will learn about wetlands and the watershed, and will explore the role of human beings as stewards of these ecological systems. They will spend time in the creeks and wetlands of the Clayton County Water Authority property and participate in observation exercises of the wildlife and plant communities in these environments. They will have the opportunity to create poetry and artwork, either on-site or back at school.

Cost: \$5.00 per student with a minimum of \$50.00. Maximum number of students per class: 20

Contact: 770-603-5606, [www.ccwa.us](http://www.ccwa.us)

### Oatland Island Wildlife Center, Savannah

River of Words

Grades: 1<sup>st</sup> - 8<sup>th</sup> grade students

Students will learn about watersheds and wetlands and be able to describe the characteristics of wetlands, observe Georgia's dynamic coastal wetlands through direct experiences in our salt marshes and tidal creeks, and unleash their imaginations in a wetlands poetry writing session. The field trip is 2 hours in length.

Cost: See website for costs

Contact: 912-898-3980

[www.oatlandisland.org](http://www.oatlandisland.org)

### Oxbow Meadows Environmental Learning Center, Columbus

Environmental Education, STEM, Science, and Interdisciplinary Programs

For all ages

Looking for an educational experience unlike anything else in the Chattahoochee Valley? The helpful and knowledgeable staff of Oxbow Meadows will provide your students with a unique, hands-on learning experience to enhance curriculum and state standards. Our field trips are correlated to Georgia Performance Standards and Alabama Courses of Study.

Cost: \$6-9 a student

Length: 1-3 hours

Contact: 706-507-8550 <https://oxbow.columbusstate.edu/>

### Rock Eagle 4-H Center, Eatonton

Environmental Education Program

Grades: K - 12<sup>th</sup> grade students

Students will learn about watersheds, visit and explore a lake and stream environment, and learn about the animal and plant life unique to their ecological address in the Oconee River basin.

Cost: see website

Contact: 706-484-2862, [www.rockeagle4h.org](http://www.rockeagle4h.org)

## Sandy Creek Nature Center, Athens

### Pond Study

Grades: K5 - High School students.

Plan to get muddy while studying the natural community of our Claypit pond. Explore the area by making observations and taking biological samples. Students will learn how water quality can affect life in a pond. Wrap up the program by creating your own watershed art or poetry inspired by your visit.

Cost: \$3/Athens-Clarke County students and \$5/Non-ACC students. Minimum charge is \$30. Adult chaperones are free. Mention River of Words when booking.

Programs are scheduled Tuesdays-Fridays, 9:30-11:00a.m.

Contact: 706-613-3615 X 231, [www.sandycreeknaturecenter.com](http://www.sandycreeknaturecenter.com)

### World of Water

Grades: Middle and High School Students

Students will learn the importance of water to our planet and in our lives. Students will investigate a nearby stream to determine if it is healthy through visual, chemical and biological tests. Follow up discussions will help students understand natural changes that occur throughout a year compared to changes that are caused by human influence. Wrap up the program by creating your own watershed art or poetry inspired by your visit.

Cost: \$3/Athens-Clarke County students and \$5/Non-ACC students. Minimum charge is \$30. Adult chaperones are free.

Mention River of Words when booking.

Programs are scheduled Tuesdays-Fridays, 9:30-11:00a.m.

Contact: 706-613-3615 X 231, [www.sandycreeknaturecenter.com](http://www.sandycreeknaturecenter.com)

## Smithgall Woods Regional Educational Center, Helen

Environmental Education Program

Grades: 3<sup>rd</sup> and up

Explore a north Georgia watershed while collecting macroinvertebrates and learning how human activities can impact the physical and chemical characteristics of our water supply. Watch how students' natural curiosity is rekindled as they collect tadpoles and learn about aquatic plants along the edge of a small pond. Third grade on-site programs are employee led activities. Outreach programming is also available.

Cost: Please call for pricing information.

Contact: 706-878-3087



### **Georgia River of Words Display (8' x 20')**

Available for educational use by contacting [monica.kilpatrick@dnr.ga.gov](mailto:monica.kilpatrick@dnr.ga.gov)

# Activities

## to Support River of Words



***Rescue & Release***  
Photograph  
Carli Solinger, grade 9  
Ellaville





# From the River of Words Co-Founder:

"OH BEAUTIFUL FOR SPACIOUS SKIES," the song goes, "for amber waves of grain, for purple mountains' majesty across the fruited plain": In the future they are going to say of us that, at the end of the twentieth century, we inherited a vast and beautiful and living land, still full of wild mountains and rivers, the remains of great forests, windy desert mesas, bayous and glades and lakes, and a teeming creaturely life, all this endangered and some of it rendered immensely productive by our energy and cleverness and ingenious technologies, and they are going to ask what we did with it.

They might come to say that we respected it. That we were a country from the beginning that took its character from our relationship to the immensity and beauty and promise of the land and that, though we exploited it brilliantly, sometimes mercilessly, and often unwisely, we also loved it and that in end we preserved it and cared for it. That we understood that we were in a relationship of community to the land itself, its watersheds and grasses and trees and elegant quick-eyed life, and that we passed it on, still thriving, to our children.

Or they will say of us that we were clever, energetic, and greedy. That we kept saying how much we loved the land and that we were going to respect it, but we also kept saying that it made good sense to exploit it just a little more before we stop. And we kept cutting down our forests and polluting our rivers and fouling our air just a little more, just a little at a time, until there was not much left.

How is this story going to turn out? The answer to that question lies with our children the first generation of the twenty-first century. It lies in their own imagination of the land, in their understanding of it and knowledge of it and their feeling for the wild life around them. **The idea of *River of Words* is to ask them to educate themselves about the place where they live and to unleash their imaginations.** We need both things—a living knowledge of the land and a live imagination of it and our place in it—if we are going to preserve it. Good science and a vital art and, in the long run, wisdom. All this must begin in the classroom, in family conversation, and in family outings. There is no reason we cannot give our kids hope, and a sense of pride, and a love of our amazing earth, and a sense of purpose, and we need to begin now: *River of Words* is the seed of a place to start. Please join us in this effort.

To you students, I would say this: learning your watershed should be an adventure and so should expressing it in poems and art. I hope you'll bring all of your natural energy and imagination to it. It doesn't matter whether you live in the city or the country; water runs through it that supports—your life. Your imaginations run through the place where you live like the water does. So I wish you watery minds and earthy minds and airy minds—and fiery minds, and all of us involved with *River of Words* hope you have fun with this project.

**Robert Hass**  
*Former United States Poet Laureate*



## *What's Your Ecological Address?*

What follows is an adaptation of a quiz on basic perception of place that was originally published in *Co-Evolution Quarterly*, now known as *Whole Earth Review*. The quiz is culture-bound, favoring those children who live in the country over city dwellers, but even questions difficult for urban kids to answer (like naming edible plants in their region, for example) provide interesting possibilities for discussion and research (what kind of edible plants *used* to grow my area?).

1. Where does your tap water come from?
2. Where does your garbage go?
3. How many days till the moon is full?
4. When was the last time a fire burned your area?
5. What were the primary subsistence techniques of the culture(s) that lived in your area long ago ?
6. Name five edible plants in your region.
7. From what direction do winter storms generally come in your region?
8. How long is the growing season where you live?
9. On what day of the year are the shadows the shortest where you live?
10. Name five resident and five migratory birds in your area.
11. What is the land use history of where you live?
12. What species have become extinct in your area?
13. What kind of soil are you standing on? (It's down there somewhere, no matter where you're standing)
14. From where you're reading this, point north.
15. What river basin (watershed) are you living in?
16. What creek is closest to your school? (Remember, it might be underground.)

*Quiz compiled by: Leonard Charles, Jim Dodge, Pamela Michael, Lynn MiUman, Victoria Stockley*



# Create a Watershed in your Hand!

Students use crumpled paper to create a miniature watershed model that demonstrates the basic geography of a watershed, how water flows through this system and the impact people can have on the quality of our water.

Grades: K-12

Time: 10 to 30 minutes

Materials:

8 1/2" x 11" paper; one sheet for each student

3 different colors of water-soluble markers or watery paint

Several spray bottles of water

Setting: classroom

## Background:

A watershed is a geographic area in which water, sediments and dissolved minerals all drain into a common body of water like a stream, creek, reservoir or bay. A watershed includes all the plants, animals and people who live in it, as well as the non-living components like rocks and soil. We are all part of a watershed and everything we do can affect the surface and ground water that runs through this system. When you create your miniature watershed, be sure to use water-soluble markers-as the markers "bleed" they demonstrate how rain moving through the watershed affects soil erosion and urban runoff.



## Activity:

1. To create the watershed, crumple a piece of paper up into a tight ball. Gently open up the paper, but don't flatten it out completely. The highest points on the paper now represent ridges and the lowest wrinkles represent valleys.
2. Choose one color of water-soluble marker and use it to mark the highest points on the map. These points are the watershed's ridgelines.
3. Choose a second color and mark the places where different bodies of water might be: creeks, rivers, lakes, etc.

4. With a third color mark four to five places to represent human settlements: housing tracts, factories, shopping centers, office buildings, schools, etc.
5. Make it rain by using the spray bottles to lightly spray the finished maps. This spray represents rain falling into the watershed. Discuss any observations about how water travels through the system.

**Discussion:**

- What changes do you observe in the maps?
- Where does most of the 'rain' fall? What path does the water follow?
- Where does erosion occur? What happens to the human settlements – are any buildings in the way of a raging river or crumbling hillside? How does the flow of water through the watershed affect our choice of building sites?
- How does this map demonstrate the idea of a watershed?

**Extensions:**

- Look at the topographic map of the neighborhood to see if you can locate and mark ridgelines, creeks, and rivers that make up your school's watershed. Try to determine how a heavy rainfall and run-off might impact your neighborhood. (See the "Mapping Your Watershed" activity.) Create an imaginary watershed. Map out the landscape, the creeks and rivers, and where you might place houses and schools.
- Discuss issues of land use and water quality. Play a simulation game that will illustrate different viewpoints on how we use water. (A good example is the activity, "Guilty or Innocent?" in *Ranger Rick's Nature Scope: Pollution-Problems and Solutions*)

# How BIG is the River – Really?

**Objective:** Students will investigate the concept of a watershed, identify a river's watershed system, and describe the immediate watershed in which they live.

**Location:** Indoors

**Time Needed:** 60 minutes

**Subjects:** Geography, Science, Social Studies

**Levels:** 6th - 12th grades

## **Background:**

As streams increase in flow and join with other streams, a branching network is established, much like the branches of a tree. This network is called a river system. A watershed is all the land area that contributes runoff and precipitation to a specific river system. What affects a watershed in one place eventually affects other sites, as water proceeds downstream.

A topographic map can be used to determine the boundaries of a watershed, identify land use practices, and plan best management programs to prevent or reduce pollution. To effectively use topographic maps, it is necessary to understand the information shown.

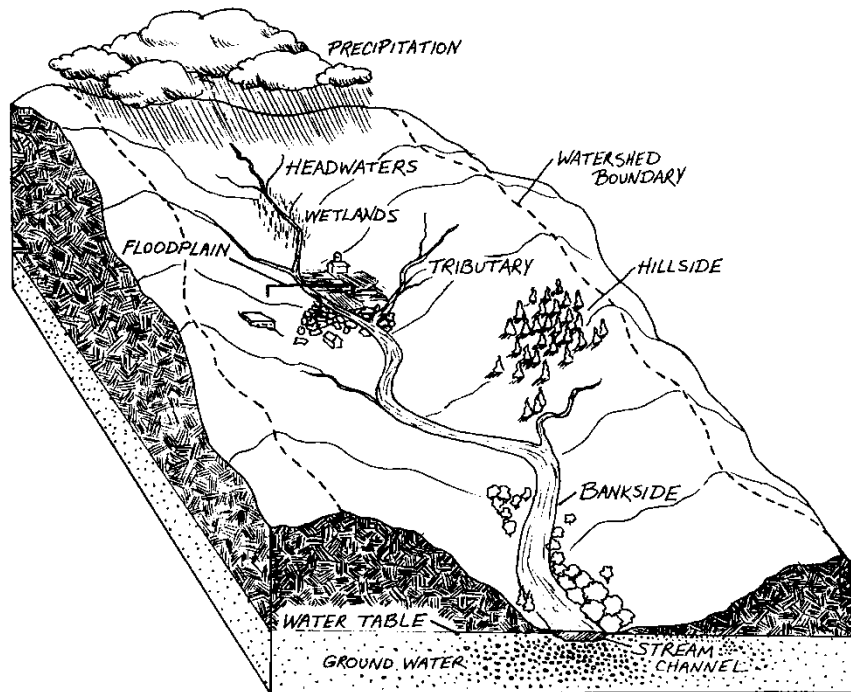
Topographic maps show the shape of the earth's surface using contour lines. Contour lines are imaginary lines that trace the land's surface at a particular elevation. Elevation is important in analyzing water flow patterns. Because water flows downhill and perpendicular to contours, a watershed can be determined from a topographical map. Intervals between contour lines are indicated on the map scale. A typical interval is 20 feet or 20 meters. Concentric circles, ovals or ellipses indicate a knob or hill. By marking the hilltops and ridges, it's possible to create a good outline of the complete watershed.

## **Materials:**

- Copies of a topographical map of the river near the school – one map per group (Maps can be acquired by contacting your county surveyor's office)
- Transparency sheets and pens
- Dot grid (provided) for Estimating the size of a Watershed (Grades 9-12)

## **Preparation:**

Before giving out the maps, have the topographical maps laminated so they can be used again. Have enough transparencies, approximately three (3) per group, to tape down to the laminated topographical maps. It is important that you are able to map out a watershed before helping the students. If you are uncertain, consider attending an Adopt-A-Stream Getting Started Workshop



## Procedures:

### Part One: Mapping the Watershed (Grades 6th – 12th)

1. Discuss the following terms: watersheds, contour lines, elevation, runoff and nonpoint source pollution. Definitions and explanations are given in Appendices A-1, A-2, and B-1. Above is a nice 3-D visual of a watershed you can use, or you can use any geography map that shows ridges and valleys.
2. Divide the class into groups of 3 or 4. Give each group a map showing local rivers and their tributaries, transparency paper, and a copy of the "Major Watersheds of Georgia" (located in Appendix A-3). Have the students tape the transparency paper down over the map.
3. Have students find their own town or community on the map.
4. Have students locate the waterway closest to the school on the map (scale 1:24,000) and trace it with a marker.
5. Ask the students which direction the water is flowing and how they know. Make sure to mark any lakes that are a result of a dam. If a dam is present, discuss the advantages and disadvantages.
6. Have the students locate the streams/rivers that join to form the main river and trace over them with a different color marker or crayon. Add additional transparency sheets if necessary.
7. Have students determine where the river goes. Rivers in Georgia flow to the Atlantic Ocean and the Gulf of Mexico.
8. Next, have the students outline the watershed near to the school. The students should first locate the high points (hilltops) around the stream and draw an X on them. Next, connect to the dots by drawing a line at right angles to the contour lines. The students will want to be

sure they are following ridgelines and not valley when they are connecting the dots. Step by step directions to delineating a watershed are found in Appendix A-1.

### **Part Two: Estimating the size of the Watershed (Grades 9th - 12th)**

1. Copy the dot grid on the following page and provide each group with a copy.
2. Have the students take the transparency paper off the topographic map and place it onto the dot grid.
3. Count all of the dots that are fully within the watershed boundary plus every other dot that falls on the line around the area. Record the number of dots.
4. Repeat this procedure three times, randomly placing the dot grid each time. Take the average number of dots from the three counts and multiply by the appropriate acres/dot factor on the bottom of the dot grid. This will be the estimate of the size of the watershed in acres.

**Optional:** Calculate the amount of rain that falls on the watershed by finding out the average rainfall and multiplying the value by the watershed area. It may be more appropriate if the amount of rain is converted to gallons. (Contact the local Soil Conservation Service for rainfall data.)

### **Discussion:**

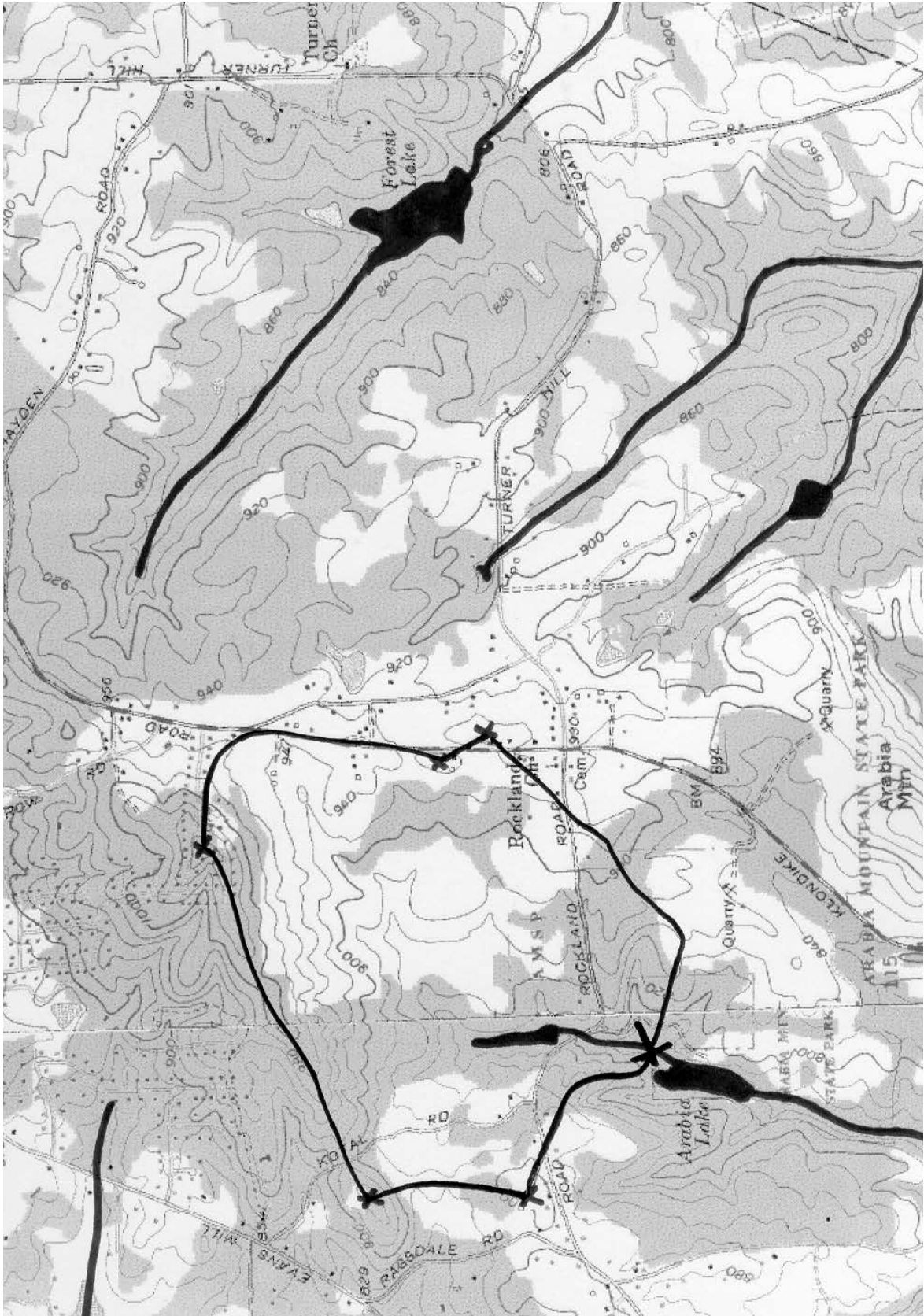
1. What is a watershed?
2. Knowing the watershed, how does land use in a watershed affect water quality? (Answers can be found in Appendix A-2).
3. Discuss the different land uses that exist in the watershed the students mapped out. (Examples may include farms, cropland, forests, parking lots, etc.)
4. Propose solutions to any existing problems in the watershed.
5. What is runoff? Where does it come from? (Fertilizers, pesticides, silt, and other pollutants could run into the streams) What types of land uses may influence the quality of runoff? (roads, parking lots, farms and lawns). See possible answers in Appendix A-2.
6. How does runoff affect the water quality in a stream?
7. How is the volume and rate of runoff affected by the land use in the watershed? (More impervious surface in the watershed increases both.)

### **Extension:**

1. Complete the "Watershed Walk" Activity found in this section of the Educator Guide.
2. Have students complete the "Watersheds, Floods and Flood Plains" Activity (Grade 6-8) from Watersheds: Where We Live poster produced by US Geological Survey. A copy of this poster is available from the US Geological Survey. Their contact information is located in Reference & Resource section of this guide.

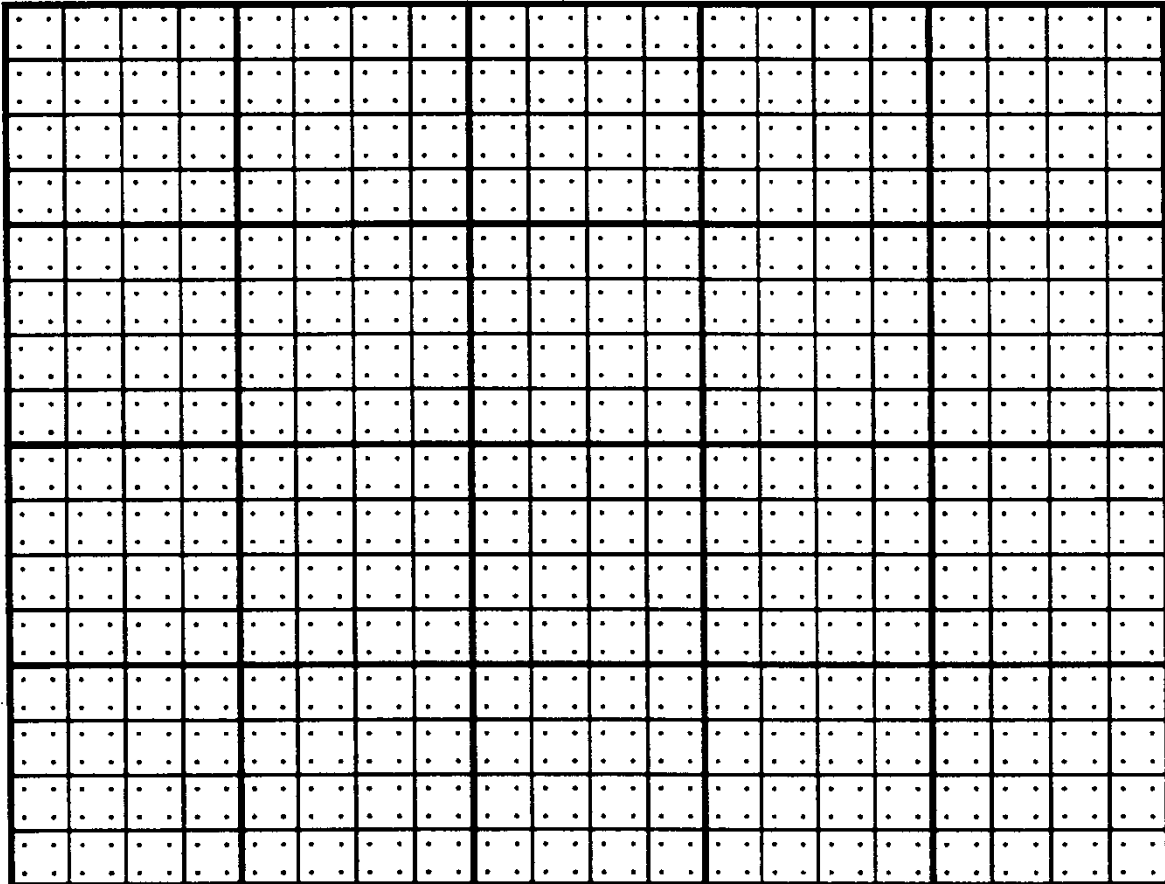
Based on the *Tennessee Valley Authority - Fall Workshop Teacher Guide, "Interpreting a Topographic Map."*

# Delineated Watershed





# DOT GRID MASTER



## Map Scales and Equivalents

Fractional Scale	Acres per Square Inch	Acres per Dot
1: 24,000 (1 inch = 2,000 ft.)	91.8	1.43
1: 100,000 (1 inch = 8,333 ft.)	1594.0	24.9

1. Clearly draw line around area to be estimated.
2. Place dot grid randomly over area to be estimated.
3. Count all dots fully within the area plus every other dot that falls on the line around the area.
4. Record total number of dots.
5. Repeat three times, randomly placing grid each time.
6. Take average of dot counts.
7. Multiply by appropriate acres/dot factor.

NOTE: Areas larger than dot grid may be estimated by breaking down into smaller areas, then totalling dots.

# Map Out a Watershed

A watershed is a system. It is the land area from which water, sediment, and dissolved materials drain to a common point along a stream, wetland, lake or river. For each watershed, there is a drainage system that conveys rainfall to its outlet. Its boundaries are marked by the highest points of land surrounding its waterbody.

But a watershed is more than the physical landscape that is defined by ridges with one outlet for water to flow. Watersheds support a variety of resources, uses, activities and values where everything is linked in such a way that eventually all things are affected by everything else. Most importantly, it contains the history of all that went before us and the spirit of all to come.

---George Wingate, *Bureau of Land Management*

A watershed may be as small as the land area that drains into a small neighborhood wetland or as large as a third of the state of Georgia which drains into the Altamaha River (see the Getting to Know Your Watershed Manual to see where the Oconee and Ocmulgee Rivers come together to form the Altamaha).

One of the most rewarding and least costly monitoring activities a volunteer program can conduct is the Watershed Survey. Some programs call it a windshield survey, a visual survey, or a watershed inventory. It is, in essence, a comprehensive survey of the geography, land and water uses, potential and actual pollution sources, and history of the waterbody and its watershed.

Researching the watershed is generally a one time per year activity that should yield valuable information about the cultural and natural history of your waterbody and the uses of the land surrounding it. This information will prove helpful in orienting new volunteers to the purpose of the monitoring program, in building a sense of the importance of the stream, lake, or wetland, and in identifying land use activities in the watershed with a potential to affect the quality of the waterbody. The background investigation is essentially a "detective investigation" for information.

Volunteers should learn to read a topographic map to learn more about the natural and cultural features of their study stream's watershed. Once you learn how to read a map, the next step is to delineate the boundaries of your watershed.

## **Delineate the Boundaries of Your Watershed**

Once you've obtained topographic maps of your area, follow these steps to draw your watershed boundaries:

1. Locate and mark the downstream outlet of the watershed. For rivers and streams, this is the farthest downstream point at which you will monitor.
2. Locate all water features such as streams, wetlands, lakes, and reservoirs that eventually flow to the outlet. Start with major tributaries, and then include smaller creeks and drainage channels. Highlight these water features in blue to make them easier to see.

3. To determine whether a stream is flowing to or from a lake or river, compare the elevation of land features to that of the waterbody. Use arrows to mark the direction of stream or wetland flow.

4. Find and mark the high points (hills, ridges, saddles) on the map. Then connect these points, following ridges and crossing slopes at right angles to contour lines. This line forms the watershed boundary.

If you don't need to know exact watershed boundaries, simply look at the pattern of stream flow and draw lines dividing different stream systems. This will give you an idea of the shape of your watershed and those that border it. Also, once you've identified watershed boundaries, water features, and flow direction, you might want to transfer this information to a road map for easier use.

Once you have delineated your watershed, it is time to make note of all land use activities within your watershed segment. Data for this portion of your survey should be obtained from your background research and from information you gather in the other portions of the Watershed Survey forms. It is best to finish this portion of the mapping exercise after you've completed your watershed survey.



**Heavenly**  
Photograph  
Jacqueline Rhinehart, grade 11  
Alpharetta High School, Alpharetta  
Teacher: Christine Lauer

## How well do you know Georgia Lakes and Streams?

1. What rivers form the state border between South Carolina and Georgia?
2. What major river runs through Metropolitan Atlanta?
3. Name three major rivers shared by Georgia and Florida.
4. What major lake is northwest of Augusta?
5. There are two Chattooga Rivers in Georgia. One is located in the northeast corner of the state, forming the state border. Where is the other?
6. Name the five rivers that drain directly into the Atlantic Ocean.
7. What two lakes are connected by the Flint River?
8. How many of the major rivers and lakes in Georgia end in “-ee”?
9. What counties are in the Ochlockonee River Basin?
10. What river basin is Columbus, Georgia in?
11. The Tallapoosa River runs through which counties in Georgia?
12. Unscramble: *LIMENOSE* – This lake is shared by two states.
13. This river is named for a type of stone used by the Native Americans to start fires. What is this river?
14. What river almost reaches from the northeast corner of Georgia to the southwest corner?
15. What are the two major rivers in Georgia that flow south to north? (Hint: Strangely, they are on opposite ends of state.)
16. What 1996 Olympic event was held at Lake Sidney Lanier?
17. What muddy river in Georgia do people often raft down?
18. Name one of the two major rivers that have a large waterfall by the same name in north Georgia.
19. What lake is downstream of Atlanta?
20. How many river basins are there in Georgia?
21. Which major Georgia River has its headwaters (start) in the Helen, Georgia area?

## Georgia Lakes and Streams Answers

1. Savannah River and Chattooga River
2. Chattahoochee River
3. Suwanee River  
St. Mary's River  
Alapaha River  
Withlacoochee River  
Ochlockonee
4. Clarks Hill Lake
5. In the northwest corner of the state  
and partly in Alabama.
6. Savannah River  
Altamaha River  
Satilla River  
Ogeechee River  
St. Mary's River
7. Lake Blackshear and Seminole  
Lake
8. Sixteen
9. Thomas County  
Colquitt County  
Grady County  
Mitchell County  
Worth County
10. Chattahoochee
11. Haralson County  
Paulding County  
Carroll County
12. Seminole Lake
13. Flint River
14. Chattahoochee River
15. St. Mary's River and Toccoa River
16. Rowing
17. Chattahoochee
18. Toccoa River and Tallulah River
19. West Point Lake
20. Fourteen
21. Chattahoochee River



A large rectangular grid containing a word search puzzle. The grid is filled with letters, and the words to be found are listed in the lists below. The grid is bordered by illustrations of dragonflies at the top, bottom left, and bottom right corners.

Can you find the names of these 48 Georgia rivers, lakes and reservoirs?

**RIVERS:**

- Alapaha
- Alcovy
- Altamaha
- Apalachee
- Broad
- Canoochee
- Chattahoochee
- Chattooga
- Chattooga
- Conasauga
- Coosawattee

- Elijay
- Etowah
- Flint
- Ochlockonee
- Ocmulgee
- Oconee
- Ogeechee
- Ohoopee
- Oostanaula
- Satilla

- Savannah
- Soque
- South
- St Marys
- Suwannee
- Tallapoosa
- Tallulah
- Toccoa
- Tugaloo
- Withlacoochee
- Yellow

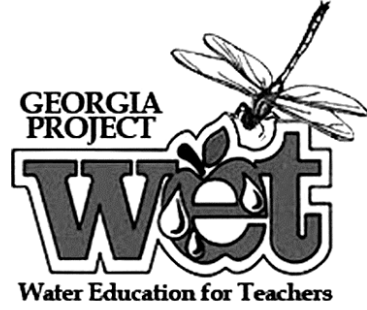
**LAKES AND RESERVOIRS:**

- Allatoona
- Blackshear
- Burton
- Carters
- Chatuge
- Clarks Hill
- Hartwell
- Jackson

- Oconee
- Nottely
- Russell
- Seminole
- Sidney Lanier
- Sinclair
- Walter F George
- West Point

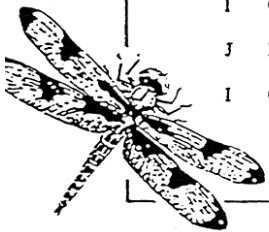


# Teachers' Key



A 20x20 grid of letters with several words circled in black. The words are:

- Row 1: S D R M Y J I E W Q N A G E C
- Row 2: A S T O L D E C F V S B U H
- Row 3: R A L T A M A H A W H I H S X
- Row 4: G S W S E A N A D C I R D I Z K G
- Row 5: U Y A E X E E T N O A T B N F G H T
- Row 6: R E L M S S A T I L L A H C E Q W A
- Row 7: T R T I S T M A R Y S E W L Q Y A L D
- Row 8: Y E N U U P H I O O P L A A K L L J
- Row 9: C R O X G Z O A S D C F I G C C A T H
- Row 10: V F L B A N O I M P Y H R O B O P N A
- Row 11: R G E T L O C O N E E Y L U L V O I I M
- Row 12: E E W Q O A H S E T L D F O A Y O C G E A
- Row 13: B O V C O G E B N K L M L C C K S J H H R H
- Row 14: C R X O Z B E G T Y O H N O K K A M J E U I A
- Row 15: X G O O P O L E T O W A H N S S O L F E E K N
- Row 16: W E O S S X C D C E R F D E H V B N G L Y C C H
- Row 17: Q S A V A N N A H Q P O E E L K I E U I O H M
- Row 18: A T W A L Z S W D E F G H A B V C E E C N A R T
- Row 19: A A B L X C A F S E S T R U S S E L L A T J K
- Row 20: N N T V A L A P A H A C H A T U G E I A S T H M
- Row 21: K A T M T A L L U L A H N J A G O C J R A O F J K
- Row 22: S P U E B O N M J G D A A W R P Y H A A K U O U I P O
- Row 23: X L E L O B J K G H D T S Q A E O N Y S G G T T U
- Row 24: F A S Z N U C B M N V T O X L Q O O Z H A A X W H
- Row 25: K M U Y C A R T E R S N O Q C A T P O R I V C E
- Row 26: I O H A R T W E L L L O U A C A E C W L E S D
- Row 27: J H U Y G O O C M U L G E E H O E H F L T R
- Row 28: I O K L P N L M S U W A N N E E A E J I O U
- Row 29: J A C K S O N O T T E L Y E
- Row 30: E



## Finding Your Sense of Place

# Observation & Sensory

### ***An Exercise in Attention***

*From Lew Welch, "Ring of Bone" This can be a homework assignment.*

Pick a place outdoors, perhaps a special place. Draw a circle a hundred feet round using yarn or string. Inside the circle are things nobody understands and maybe nobody's ever really seen. How many can you find?

Sit, observe closely and take notes in "notebook shorthand" for at least 30 minutes.

Notes:

*Some further possibilities:*

- Incorporate as many senses as you can (except, perhaps, taste).
- Maybe pick out a critter or object you have an affinity for (or something unusual and new to you: imagine its world or speak for it. Use a hand lens, or binoculars if you wish.
- Take an unusual perspective (look under rocks).

Afterwards arrange and add notes to begin a poem -at least 15 lines. Take at least 15 minutes for this step. This will be the seed of your poem to be completed in class.



## Sensory Activities that Encourage Descriptive Writing

There are many tricks for helping students to become more aware of what their senses perceive and to find a vocabulary to describe these sensations. Some ideas include sitting quietly and describing (not naming) every sound that occurs (e.g., "the increasing then fading hum of the truck tires passing on the highway", not "a truck goes by"); passing around bags of different materials and describing the textures (not just guessing what the object is or naming the source, but to describe the sensation) .You could also have students bring in oranges and describe every state of peeling and eating them.

Have students include metaphors and similes in their descriptive writing by finding analogies or comparisons for the sensations they are describing. The brainstorming exercises become drafts for polished poems or prose pieces. Here are some other activities to encourage the use of the senses.

### 1. Mystery Bags

Collect items from forest and sea (if possible) and put into brown paper bags. Provide one bag to each student. Have students get to 'know' their object first by sense of touch, then by drawing object after taking item out of the bag.

### 2. Sense of Smell

Fill film canisters with various scents, and place cotton balls in each canisters. Examples of scents may include: vanilla, cinnamon, eucalyptus, maple syrup, coconut lotion. Have students smell each item and write down what the scent reminds them of. Example: "it reminds me of a hot summer day at the beach" (coconut lotion).

### 3. Sense of Taste

Secure various food items with distinctive tastes; for example, nori seaweed, dark chocolate, rice cakes, cranberries, or mint tea. (Make sure before any sampling occurs that there are no students with food allergies.) Distribute one sample at a time, and then when everyone has the same food sample in front of them have students in unison taste and then write down immediately what they are reminded of by the taste and other associations. One student wrote that cranberries reminded him of "Christmas, a time of hope."

### 4. Sound Map (From Sharing Nature with Children, by Joseph Cornell)

A thrilling chorus of natural sounds delights the players in the Sound Map Game. Children love this activity -they become completely absorbed and sit surprisingly still while making their sound maps.

To play, begin by showing the group a 4X6 index card with an 'X' in the center. Tell the players the card is a map and that the 'X' shows where they're sitting. When they hear a sound, they should make a mark on the card that aptly describes the sound. The marks should be interpretive, not literal; the players don't have to draw pictures of plants and animals, just a few lines indicating wind or a musical note indicating a songbird. In other words, they should spend little time drawing and most of the time listening.

Tell the players to keep their eyes closed while they listen. Explain that cupping their hands behind their

ears provides a reflective surface for catching sounds, creating a shape like the sensitive ears of a fox or kangaroo. To hear sounds behind them, they needn't turn their head, but just cup their hands in front of their ears.

Select a site where the group is likely to hear a variety of sounds -- the far corner of the playground, fields, streams, and forests are fine. It's important to have everyone find a special "listening place" quickly, so that some aren't walking around while others are already listening. I usually give the group one minute to find a spot and tell them to stay in the same spot until the end of the game. Giving the players enough time to disperse fairly widely will ensure a diversity of sound maps and greater interest in sharing.

How long you should play depends on the group's age, attention span and how well supplied the environment is with sounds. A good basic guideline is 5- 10 minutes for children. Call the group back together by imitating a natural sound or blowing a crow or duck call. As the players assemble, ask them to share their maps with a partner.

It's some times hard to find a site that's protected from the sounds of cars and machinery, but these noisy areas are ideal for teaching lessons about noise pollution. Have the children make two sound maps, the first one near a busy street and the second in a quiet, natural spot. After the game, ask them where they felt more comfortable. This is a fine way to build children's conscious appreciation of natural areas.

After the students have drawn their maps and shared them, you can ask questions such as:

- How many different sounds did you hear?
- Which sounds did you like best? Why?
- Which sounds did you like least? Why?
- Which sounds had you never heard before?
- Do you know what made the sounds?

## Scavenger Hunt

To help you focus and observe what is around you, working by yourself, find:

Something older than yourself:

Something smaller than your thumb:

Something that flies:

Something that makes you laugh:

Something taller than you:

Something that you never seen before:

Something with a smell:

Something with spots:

Something younger than you:

Something smooth as glass:

# Mental Mapping

*From Community as a Context for Learning, Northwest Center for Sustainable Resources*

**Objectives:** Students will be able to:

- Visually represent a community.
- Identify and map community resources within a given area.

**Time needed:** One 45-minute class

**Materials:** large paper (11 x 17) for each student

**Procedures:** *This activity will be enriched if it is presented to the students at least one day before using it.*

Ask students to be highly aware of sights, Sounds, smells and interactions they encounter on the way home and to school, as they will be recording these items the next day.

Ask students to close their eyes and envision leaving their house and walking, riding or driving to school. Students should record the route they follow and the community resources (things, people and places) they pass en route. Provide students with large pieces of paper (11 x 17 or 11x14 work well) and ask them to draw aerial map of their daily route. To allow for a more extensive map, encourage students to use symbols and a legend to identify key points (e.g., X= school, O= tree, + store) instead of elaborate drawings. Discuss with the class the cardinal directions in relation to the school (e.g., the front door of the building faces North) so that students may use this information in their maps as well.

After students finish drawing their maps, discuss the activity and create a class list of all of the community resources on the students' maps. Some ideas for discussion include: How did you select what resources to put on your map? What resources do we use that are not on the class list of resources? Why are they not there?

Ask students to pair up and exchange maps with their partner. Can the students use the partner's map to follow his/her route?

This activity can be used as a baseline assessment of student awareness of their community. Allow the students to create another mental map after completing a project in the community and compare it to the first one. Has the students' community awareness changed? What new community resources and characteristics are now included?

## **Walking into Wonder - Observational Walks with Students**

By Cynthia Rothschild, GREEN Teacher's Book for Middle Schools

*Through observation walks, students discover the extraordinary in the ordinary and develop personal connections to the world around them.*

Every day I walk twenty minutes to school along the streets of Brooklyn. Day after day, I walk on the same sidewalks and cross the same streets. Often, I find myself lost in my own thoughts usually going over my lesson plans for the day or making 'to do' lists. Sometimes I am in a rush and catch myself practically jogging. But most days I try to set aside this time to attend to the details of my surroundings. Every day the walk differs from the one the day before -a handful more leaves are off the chestnut tree; someone has lost a gray glove on the ground; a small house sparrow enjoys a pothole full of rainwater. When I begin to see these signs, I know that I have left off my usual rush and have entered the realm of observant walking. Each new detail makes the familiar trip more and more like an adventure. I look at everyday sights with fresh eyes, my senses sharpen, and I begin to absorb my surrounding. In this-way, my daily walk helps me to make contact with my environment and the delicate and miraculous systems that exist within and around it.

### **Why teach observant walking?**

Observant walking is not the kind of walking that most of us usually do, and it may be an entirely new experience for some of our students. Yet learning to walk with awareness can open us to a greater sense of connection with our surroundings and enable us to find joy in the specifics of our life settings. For our students, this personal connection to their immediate place can jump-start a lifetime of care for the environment. Taking class time to help students observe with wonder the world around them can give them a way of seeing the ordinary as extraordinary and, ultimately, of seeing their connection to their environment and thinking consciously about how they wish to relate with it.

Whether in an urban or a rural setting, there are many opportunities to integrate observation walks into a curriculum. Observation walks can be apart of an environmental science class geared toward scientific observation; they can be a part of a social studies unit looking at the history of a place; or, as I use them, they can be part of an environmental ethics curriculum, helping students explore questions about the relationship between humans and the earth. I have found observation exercises useful to students as an introduction to a course, as a precursor to heavy readings, or as a weekly assignment. Although the activities described here work best with students aged 13 and up, they can be modified for younger students by focusing on discussion instead of reading and writing and by emphasizing group work.

Walks can be assigned to students individually as homework or they can be undertaken all together or in small groups during class time.

**Pre-walking.** Observation walks, to be most effective, should be preceded by what I term "pre-walking". This stage of the activity encompasses readings and discussions about how to walk as an active observer. I have found it easiest to begin by eliciting students' own experiences, asking them to recall times when they have been particularly aware of their environment. Often this will have been when they were traveling, had just moved to a new place, or were about to leave someplace they love. Sometimes students will remember special places close to home, such as a tree in which they build a tree house or a park where they spent time with their family. Ask students, in pairs or small groups, to think of such special places in their lives and then to share with the class what they remember about these places. Did the water in the pool they loved seem bluer than any blue they had seen? Were the stars brighter the night before they left than in any sky they had ever seen? What was different or special about this place that made their surroundings stand out?

An in-depth conversation about the significance of special places to students can help them to recognize why observation is important and to realize that they already unwittingly record information about the places where they go. Another tack is to discuss journeys, long and short, and how students have been influenced by the journeys they have taken. Another is to discuss the five senses and how each sense observes in a different way. Readings, particularly pieces about the local area, can also be a rich aspect of pre-walking (a couple of my favorites are listed in the resources section).

**Free walking.** Somewhat analogous to free-writing exercises, free walking is a great way to introduce students to the idea of walking as a learning tool. Students walk freely for a limited period of time, five to ten minutes, in an area that is familiar to them or in a place they consider peaceful. I ask students to let their attention wander during free walks and see what jumps out at them. A free-walking exercise can be neatly followed by a focused free-writing exercise. Students can write continuously, without pausing, about what they noticed while they walked and what thoughts or memories these observations stirred in their minds.

**Focused walks.** I use a variety of walks for different purposes. All require students to give careful attention to the surroundings, and each gives tools to help students heighten their sensitivity to their environment.

**Theme walks.** For a theme walk, plan a route that will enable the class to make a variety of observations on a particular theme (e.g., water). Before leaving the classroom, have students brainstorm questions to be answered on the walk. Questions for a water walk, for example, might include the following: in what different ways are people using water? Is there evidence of water being wasted or polluted? How could water be used more efficiently and without polluting it? If your walk takes you to a river or lake, consider: How does the look, smell, or feel of the water change at different points on the walk? What might cause these changes? In a science course, the walk could include taking water samples and measuring properties such as pH and temperature.

**Perspective walk.** Perspective walks focus on having students see familiar places in new ways. For example, walk to a high place with a view, take a route that students don't usually travel, or have students use magnifying glasses to observe common-place objects along the way. Have students list or sketch ten things they see that they have never observed before in the familiar area.

**Human impact walk.** Walk in an area where the impact of human activity is clearly visible, such as an industrial area, urban area, shopping mall, or well-used trail in the woods or mountains. Ask students to imagine what the place might be like if people had never been there. What might be here that isn't? What is here now that might not be? How might the area have looked 50 years ago? A hundred? Two hundred? How might we reduce our impact on the area now and restore features that have been lost? Students can complete writing or drawing exercises imagining what the area looked like in the past and envisioning what it might look like in another hundred years if the human impact continues. You can introduce or follow up a human-impact walk with readings, old maps, and drawings related to the history of the area.

**Systems walk.** During a systems walk, students can try to identify parts of a given system in the area in which they walk. These can be natural systems (e.g., the water cycle, food webs) or human - built systems (e.g., transportation, sanitation). What are the different parts of the system? How do the parts connect? How could the system be improved? If students are looking at a human-built system, what can they observe of the impact of the system on the environment? What alternatives to the current system can they imagine?

**Wildlife walk.** Have the students take a walk focusing on wildlife and signs of wildlife. Encourage them to look for nests, hives, insect galls, tracks, and scat, and to see if they can observe animals in places where they might not usually be seen, such as underground, on pond beds, or in tree cavities. Ask students to think about the relationships between different species. How do they compete with or support each other's livelihood? In what ways are the animals particularly well adapted to the area? What might be the impact of human presence on the population, diversity, and behavior of the wildlife?

**Sensory walk.** On a sensory walk, have students initially focus only on what they see; next on what they hear (they can work in pairs with one student closing his or her eyes and being lead by the other); then on what they feel; and, finally, on what they smell. It is helpful for any of the walks, but particularly this one, for students to go at a slower pace than they are used to, or to return to the same place again and again in different seasons or weather. Encourage students to be as quiet as possible in order to focus on their senses.

**Mapping walk.** Have students walk with the intention of later making a map of the area showing only its natural features. In a familiar urban area, this is a great exercise for getting students to think about the landscape in a new way. Encourage students to be specific, for example, writing "a young spruce tree" instead of "a tree" and making detailed sketches so that each natural feature can be differentiated on the maps. Ask them to look beyond vegetation and to note such features as where land slopes and in what direction, where there is water, or where there are rocks and of what type. Back in the classroom, ask pairs or groups of students to combine their maps. If the groups have walked different routes, they can then switch maps and each try to follow the other group's map to a specific destination.

**Post-walking.** After a walk, allow time for writing or class discussion to help students process their experiences. Encourage students to make connections between the very concrete observations they have made that day and much wider environmental issues. Questions to ask include: What would be the result if everyone in the world copied an observed behavior such as littering or planting native shrubs? Was anything that you observed different from what you - do in your own life? What could you do to change something you saw (e.g., a system or a specific place) for the better? What steps would you need to take and what help would you need in order to make the change?

Another exercise is to **list all the different observations** made during the walk and have students discuss or write about the connections between them.

**Sketching** can also be a powerful part of processing. If the class is scientific in nature, students can be asked to sketch plants or animals that they have observed closely or are studying currently. Later, students can research the species and come to understand how it fits into larger themes the class is studying. Whether students have taken observation walks on their own or as a class, post-walking adds another element to the exercise and gives room for ~ students to process their experiences and connect with the context of the curriculum.

**Artifact study.** Another assignment that works well after observation walks is an artifact study. Have students select objects from their daily lives or objects found on an observation walk to present as artifacts of modern life. If objects found on walks are ones that should not be picked up (i.e., sharp, corroded, toxic, or dirty items) or if you are more comfortable not having students pick up objects at all, have them sketch or photograph the artifacts they find. What would these objects show future archeologists about how people in the early 21st century relate with the natural world? Have students develop categories for the artifacts that help explain the human-nature relationships they demonstrate. For example, articles of clothing might show people to be consumers of nature, while tapes of the ocean sounds might show nature as a source of relaxation for humans, and discarded batteries might show people as destroyers of nature or ignorant of their effects upon it. Direct students to think about how these different relationships might affect both people and nature over time. In what different ways could we be relating to our environment and what kind of artifacts do students imagine these relationships might create? Have students write down or sketch these ideas and share them with the class after the walk.



Developing observation skills through walking experiences, recording what is noticed, and studying everyday objects as artifacts can ultimately help students to attend more carefully to the world around them. Through this attentiveness, students often begin to question for themselves the rights and wrongs of our behavior toward our environment. Yes, sometimes students giggle at the idea of walking super-slowly or frown at the thought of a walk in soft rain. Yet, in my experience, a picture begins to emerge in the discussions and journal entries that follow, showing that students' surroundings have become somehow new, and that this newness has brought forth a deeper level of inquiry.

## Resources

Cronon, William (Ed.) , *Uncommon Ground. Rethinking the Human Places in Nature*. New York: W. W. Norton & Company, 1996. The essays in this collection are helpful in conceptualizing the artifact assignment and possible types of categories.

Leslie, Clare Walker, and Roth, Charles, *Keeping a Nature Journal. Discover a Whole New Way of Seeing the World Around You*. North Adams, Massachusetts, Storey Publishing: 2000. A step-by-step guide to nature journals with ideas on how to assess journals and use sketching.

Peterson, David, and Blake, H. Emerson. *Writing Naturally. A Down to Earth Guide to Nature Writing*. New York: Johnson Books, 2001. Excellent essays and exercises to hone nature-writing skills.

Snyder, Gary. *Turtle Island* New York: New Directions Publishing, 1974. A literary example of what can come from looking at familiar places in unaccustomed ways; useful for class discussions and reading assignments before or after walking exercises.

Thoreau, Henry David. *Walking*. San Francisco: Harper San Francisco, 1994. Very useful for pre-walking; in my opinion the best literary introduction to the possibilities of walking observantly.



### **The Bright Sunflower**

Watercolor, marker  
Jonas Allen, grade 2  
East Laurens Primary  
East Dublin  
Teacher: Terry Litke

## Discover Your Sense of Place

*From Community as a Context for Learning (Grades 7-12), Northwest Center for Sustainable Resources*

**Objectives:** Students will be able to:

- List at least three essential "ingredients" of community and how the appearance of their community contributes to their sense of place.
- Identify their community's three most important assets.
- Make predictions about what other age groups like and need from the community.
- Explore how others feel about their community through books.

**Time needed:** Two 50-minute class periods

**Materials:** None

### **Procedures:**

Using a variety of activities, students will begin to explore what they believe are the essential ingredients of community, how the appearance of their community contributes to their sense of place, how they feel about changes to their community, and how others in their community feel about this place where they live. These activities can be conducted all on one day, as stations, or they may be done individually over a period of days.

You may want to assess your students' ability to define their sense of place and what they value in their community, before beginning this unit, and again after the unit. You could ask students to describe their "ideal" community by posing this question for students to write about in their journals, "What would the perfect community be like?"

*Set up the following stations in a large classroom or library:*

**Station A. Diversity of Communities.** Using postcards, brochures or pictures of different communities (small towns, suburbs, sprawl, large cities) from a travel agency or Internet, students will identify those places that they find attractive and those places where they would not like to live.

Students record their responses from class determined criteria and scale onto a data table, and then transfer their responses to a large tally sheet posted on the wall for class responses.

Compare and discuss students' responses. Does everyone like the same places? Which do they like least? Why? Which is most like where we live?

**Station B. Values Barometer.** Students place themselves on the line from 'Agree Strongly' to 'Disagree Strongly' for selected questions relating to changes in their community. Students observe that there are many, different ways to feel about things.

**Station C. What Is Special About Your Community?** Students list what is special about their community or what they like about their community on a large sheet of newsprint on the wall. Later, note the similarities and differences in students' responses.

**Station D. A Memorable Place.** Students write a paragraph describing a place that moved, inspired, or profoundly impacted them (positively or negatively).

**Station E. Quotable Quotes.** Students review a variety of books to identify a quote that describes their own sense of place and explain why. Possible books: Prayers, Pilgrim at Tinker Creek by Annie Dillard, A Year in the Maine Woods by Bernd Heinrich, Sand County Almanac by Aldo Leopold, The Wisdom of the Native Americans, ed. Kent Nerburn. Your choice of books will guide your students' in the direction of the visual environment and sense of place.

**Station F. Photo Comparison.** Students compare a variety of photos (taken by the teacher) of the local area that characterize the community. This is a warm-up for the lessons that follow. Possible photos to include are: franchise buildings, historic buildings, parks, parking lots, use of landscaping and similar photo without landscaping, ugly large signs and attractive signs, etc.

**Station G. Predictions.** Students make predictions about what makes the area a good place to live for different age groups. Discuss whether all age groups have the same needs? Do the needs of some residents conflict with other residents' needs? For example, do all age groups have the same needs for: safety, playgrounds, skate parks, ice skating rinks, golf courses, transportation options, fast food restaurants, libraries, etc. How can our community provide for all residents' needs?

**Station H. Home: A Journey Through America.** Students read the book Home: A Journey Through America by Thomas Locker. 1998. (ISBN: 01520147 3X) and write a poem or paragraph describing their home. Then, if time allows students can draw or create a painting of their community, following the examples in Home. For artists and writers, home can become part of how we see the world and how we shape our words or our artwork. For everyone, the place we call home becomes a part of our lives. This book contains writings by various authors about the places that they call home- Pacific coast, plains, Midwest heartland, Hudson River valley, and more.

**Assessment** Each group will complete all the stations in a given time frame and turn in their completed record/ response sheets.

**Station B- Values Barometer Statements**

*What do students value or think about different aspects of the community in which they live?*

As the teacher reads each statement below, the students should position themselves along a /\ continuum marked on the wall or floor, labeled *Strongly Agree* at one end, and *Strongly Disagree* at the other end. Have students note the variety of perspectives within their class.

Would they expect the same responses from their parents? Grandparents?

1. My community has a sense of pride.
2. Our area needs more malls and shopping centers.
3. Our area has too many parks and recreational areas.
4. Property owners should have the final say in what happens on their land.
5. Water quality is not important to my community.
6. It is important to maintain habitat in our community for birds and wildlife.
7. Streams get in the way of community growth and development.
8. Businesses should not be allowed to put up big billboards advertising their businesses, only smaller ones should be allowed.
9. We should have more big franchise restaurants and stores so we can be like everywhere else.
10. Unique natural habitats, geologic formations, and historical places in our area should be protected.
11. It doesn't matter to me how our community changes in the next 20 years.
12. I should have a say in how my community grows.
13. Communities need to provide safe ways for people to walk and ride bikes to places.
14. New buildings do not need to blend in with the buildings already in our community.

## Station E -Quotable Quotes

1. Quote:

Source (Title and Author):

2. Quote:

Source (Title and Author):

3. Quote:

Source (Title and Author):

### Station F - Photo Comparison

Look at the variety of photographs displayed on the table. Select one photograph that you really like and one that you don't find attractive. Then answer the following questions about the photographs.

Photograph that I really like # \_\_\_\_\_

Photograph that I like least # \_\_\_\_\_

1. I think # \_\_\_\_\_ photograph is attractive because:

2. Photograph # \_\_\_\_\_ reminds me of:

3. Photograph # \_\_\_\_\_ could become more attractive if the following was changed:

4. If I lived in # \_\_\_\_\_ I would:

5. I don't like photograph # \_\_\_\_\_ because:

## **Station G -Student Predictions**

For each of the categories listed below, make predictions about what makes our community a good place to live for each group.

Babies and Toddlers (0-5 years of age)

Elementary Students (6-12 years)

Middle, High School and College Students (13-22 years)

Adults (ages 23-59 years)

Senior Citizens (ages 60 and older)

## "Small Noticings" at the Riverside

**First Impressions:** The first thing I noticed at the creek or river was...

**Description:**

**Sounds All Around:** These are the sounds that I hear ...

**Plants Growing:** These are the kinds of plants I see growing...

**Animal Activity:** These are the animals or evidence of animals (tracks, homes, feathers) I see...

**I like being in nature because...**

**Last Impressions:** This is what I want to remember about creek or river ...



## The Private Eye Process

*From The Private Eye: Looking at Thinking by Analogy, by Kerry Ruet*

The Private Eye (using the jewelers loupe) is about the drama and wonder of looking closely at the world, thinking by analogy, changing scale and theorizing.

### 1. Loupe-Look with Questions:

Take a loupe (5X magnification) and press its wide end to the bones around your eye (typically take off glasses if you wear them) Hold your free hand about 2" from the lens-end of the loupe. Focus on your hand until image is sharp. (The loupe - cuts out visual distractions.)

*Have your class begin to use the jeweler's loupe by looking at their own hands.* It will be, you will soon discover, like landing on another planet, the first of many. As you explore your hand –back, palm, nails, knuckles, and dirt - ask yourself the questions:

*What else does it remind me of? What else does it look like?* Write down 5- 10 things your hand reminds you of.

Remember, this keeps the eye/ mind looking longer. It exercises and develops thinking by analogy (main tool of scientist, writer and visual artist), and simultaneously gives "bones-for-poems," beginnings of short stories, essays, research, inventions, and more. All the while you get the 'feel' of what it means to concentrate.

For a group poem, you can list the students' words or phrases or sentences on the board.

Now, have students as a group, or individually, choose lines that interest them, and arrange them in an order they like to form a group poem. Later, encourage them to expand analogy words and phrases to become even more specific. In second or third drafts, add wishes, memories, fears and dreams.

### **My Hand**

The jagged lines remind me of lightening streaks on a dark and stormy night.

The lines on my hand remind me of rivers flowing calmly.

My fingerprints are like swirling whirlpools.

My fingernail reminds me of a rhinoceros horn.

My fingerprints look like a very large corn maze.

My fingerprints look like a quilt work of land.

My knuckles remind me of waves coming into shore, one after the other.

My hairs on the back of my hand are like tally marks before the world begins.

My hand reminds me of exploring the wonders of my life.

## **2. Write:**

Choose something to look at from the real world... something you've collected (e.g. a leaf, a bug, a shell) and explore it with the loupe and questions: "*What else does it remind me of? Or look like?*" Make up 5 to 10 answers for each object. Write them down. (There's no wrong answer) Your answers (analogies) become the bones-for-a-poem, the beginnings of a short story, memoir, nature essay and later the clues for hypothesizing why something is the way it is. (Metaphors and similes are compressed analogies.)

Nest two loupes and you get 10X. For a further change in scale, try a 20X, 50X, 100X or higher powered microscope on the same items. Repeat the steps for the things you find on your person, in your yard, in your refrigerator, at the beach, and in the woods.

## **3. Draw:**

Alternate between a) visually exploring subject with loupe, and b) putting pen (pencil) to paper. Loupe-look, draw, loupe-look, draw, etc. Like magic, your drawing will be, if you go slowly, delightful. Even if you thought you couldn't draw (To draw is itself to look closely: first step for science, art, language arts.)

## **4. Theorize:**

After becoming "friends" with your hand, a dragonfly wing, a piece of popcorn, a flower's center or any of a million objects... go on to the next question that go with the loupe- as you observe some feature on your object: "*Why is this like that?*" or "*What is going on here?*"

To create possible answers to the above question, use your analogy list, which we just - called 'bones-for-poems,' as a set of clues to the function of whatever feature you're observing. Since 99% of what's found in nature is functional, and, since form follows function, ask yourself: "*If it reminds me of \_\_\_\_\_ I wonder if it might function or work in some way that helps the critter or plant survive? Or that supports the reaction, condition, or force?*" E.g., if a leaf is covered in a kind of 'hair' or 'fur', might that covering function like 'hair' or 'fur' in some way to help the plant survive?

You'll get surprisingly close to the truth. And you'll always be interested in the answer to the puzzle." (A vested interest!) Enough to design tests or check experts for current thinking/theory on the subject. And you'll always get practice theorizing as scientists do... the first step to scientific theory.

## Writing Prompts using Jewelers Loupes

### Descriptive Writings:

**The Beach.** Make analogies on five beach items collected. Create your own beach. Now you have:

1. Landscape to begin a story.
2. Option: continue on and write a reflection, memoir, or fictionalized account that happens on this beach.
3. Read or study poems or stories that have a beach, shore, or ocean theme. Isle of the Blue Dolphins, by Scott O'Dell, etc.

**The Nature Essay:** Using a natural object, expand "analogy-bones" list into a prose reflection on the object, and on what else it reminds you of in life.

Read aloud from nature writers who are considered excellent prose writers. Consider Loren Eiseley's essays in *The Immense Journey*, or writing by Annie Dillard, Barry Lopez, Stephen Jay Gould, Mary Austin, Lewis Thomas, Ann Zwinger, or notes from George Washington Carver - these and more. Consider, also, passages from novels that are steeped in nature observations and reflections. Move on to the nature-based poem (e.g.: Mary Oliver's poems - which rely on much imagery from fields, ponds and shores; A.R. Ammons -whose imagery comes largely from geology and the Earth's crust; Theodore Roethke -some of his poems take place in greenhouses).

### The Summer Day Who Made the World?

By Mary Oliver, winner of the Pulitzer Prize for Poetry

Who made the swan, and the black bear?

Who made the grasshopper?

This grasshopper, I mean -

the one who has flung herself out on the grass,

the one who is eating sugar out of my hand,

who is moving her jaws back and forth instead of up and down –

who is gazing around with her enormous and complicated eyes.

Now she snaps her wings open, and floats away.

I don't know exactly what a prayer is.

I do know how to pay attention, how to fall down

into the grass, how to kneel down in the grass,

how to be idle and bless, how to stroll through the fields,

which is what I have been doing all day.

Tell me, what else should I have done?

Doesn't everything die at last, and too soon?

Tell me, what is it you plan to do with your one wild and precious life?

A short passage, from Loren Eiseley's The Judgment of the Birds:

*...It was cold that autumn evening and standing under a suburban street light in a spate of leaves and beginning snow, I was suddenly conscious of some huge and hairy shadows dancing over the pavement. They seemed attached to an odd, globular shape that was magnified above me. There was no mistaking it. I was standing under the shadow of an orb-weaving spider. Gigantically projected against the street she was about her spinning when everything was going underground. Even her cables were magnified upon the sidewalk and already I was half-entangled in their shadow.*

## What to Collect/Study with The Private Eye

Go on a treasure hunt to find what you think is loupe-interesting. Here's a list of ideas to start:

### Human body:

- Your fingerprint
- Your neighbor's fingerprint
- Your fingernail
- Your hand
- Adult's hand vs. child's; man's vs. woman's
- Your coat, sweater, shirt, soles of shoes, etc.

### Food:

- Your lunch (bread, lettuce, orange, etc.)
- Bean sprouts (need to be fresh!)
- Kiwis (one student wrote that the kiwi reminded her of "black boats sailing the Mediterranean Sea")
- Strawberries
- Oranges
- Cantaloupe sections
- Broccoli
- Brussels sprouts
- Popped popcorn
- A fish or dried fish skin
- Spices: like peppercorns, anise, dill seed, celery seed
- Cookies

### Gardens, woods/waysides, scruffy margins of the world:

- Dandelions
- Tree clippings: cedar branch snips; holly, redwood, etc.
- Buds of anything: a whole load of springtime choices...
- Flowering trees and shrubs: mock plum, quince, etc.
- Flowers: tiny Forget-me-nots are great with loupe and two. The insides of many flowers are a "Georgia O'Keeffe" experience: from tulips to foxglove
- Cones from evergreen trees

### Leaves, etc:

- Sage
- Foxglove
- Ferns
- Lichens
- Liverworts
- Moss
- Mushrooms

**Seed Pods:**

Anything left over from winter  
Maple wings, especially Big Leaf  
Alder cones (still hanging on the trees, or grounded, brushed into piles by wind)  
Magnolia seed pods (found under magnolia trees)

**Wood:**

Tree rings  
Logs  
Bark from various trees (Ponderosa is great...like puzzle pieces)

**Insects:**

Millions of species!

**Beaches:**

Barnacles  
Crab claws  
Seaweeds  
Crab back molts  
Sand dollars- half a sand dollar is best. Look at the structural supports!

**Stones:**

Amethyst, leopard jasper...some are more interesting than others; kids can compare various stones found on the school ground, etc. and discuss sedimentary v. igneous etc.

And Much More! You might ask your PTO to help form collections in tubs.

**Balance of the Rapids**

Photograph  
Kenedy Thorne, grade 12  
Alpharetta High School  
Alpharetta  
Teacher: Christine Lauer

*Note: Rather than have 30 of the same item, consider 40 or so mixed samples, or several 1-of-a-kind for students to choose from on a loupe-look period. This mimics the vitality and variety of the natural real world.*

## Private Eye Teachers Share...

### I. Natural History Mystery *Liz Baird, North Carolina State Museum of Natural History*

The Private Eye at Summer Field Institute: Each of the North Carolina educators in attendance represented a school which had been a part of the "Using The Outdoors to Teach Experimental Science" (UTOTES) program led by The North Carolina State Museum of Natural Sciences and funded by the National Science Foundation. UTOTES is a teacher education program designed, to improve elementary science instruction by improving school grounds for hands-on learning. Educators learn to enhance their school grounds for wildlife and use these habitats to teach all subjects.

The initial outdoor activity had each team of six teachers explore the grounds of the lodge, find interesting natural history items, and flag them with surveyor's tape. After marking their interesting finds, the teams shared what they found interesting with other teachers. Each team then chooses one item to investigate more fully. We called these unique natural history items **Natural History Mysteries**.

Each participant was given a Private Eye loupe to examine the team's "Natural History Mystery." Everyone was asked to observe the mystery item and to "loupe sketch it" in his or her journal. After sketching, they used The Private Eye questions to create lists of analogies. From these observations they went into the field guides to see if they could figure out their "Natural History Mystery." Each team then shared interesting information they learned about their items.

All of the participants agreed that spending time observing and sketching their mystery item made it easier to identify later. They enjoyed using the analogies as they tried to explain the way their mystery item fit into the system. For example, the flower of the wild ginger plant was described as a "little vase." The team guessed that the vase shape would help lure small insects into the flower.

We used the loupes throughout the rest of the week in many ways: when we traveled to the Botanical Garden we looked at carnivorous plants and seeds; paddled a local lake and louped the aquatic environment; sampled in a mini-pond and identified aquatic Invertebrates; and explored a butterfly garden and examined caterpillars. The field sketches created using the loupes were outstanding.

Many participants have purchased class loupe sets and are reporting great success with student use. One principal noted that the analogies written by her students using The Private Eye were "terrific examples of the value of learning which combines school grounds and language arts."

## II. Poetry *Ian Hagreaves-, Miracle Beach Elementary, Comox Valley, BC*

It never fails to amaze me just how quickly a student's creative writing, analytical thinking and general observational skills come on when exposed to the Private Eye program and use of the loupe. The following are poems written by Grade Six students after just two weeks of working with the loupes and the program.

### **Amethyst**

It looks like a scarred dinosaurs head,  
And the rough crags of a mountain range.  
It reminds me of a purple gravel bed,  
And of a cow with a nose so strange.  
It looks like the crashing waves,  
At Torrey Pines, CA.  
And it reminds me of a canyon.  
It looks like the soft sunrays,  
On the wrinkled hide of an elephant's head.  
It reminds me of little suckling piglets.  
And their mamma pig overhead.

*By Hannah A. de Putter*

### **Agate**

It looks like I'm in a galaxy,  
Or maybe I'm not.  
It looks like I'm in a crystal cave,  
Or maybe I'm not.  
I think I'm on Mars,  
Or maybe I'm not.  
Oh no it's exploding,  
All space is exploding,  
Now it is raining  
All purple raindrops.  
The sound wave it's killing me  
My ears are exploding.  
By Tessa Lee Goodwin

## III. Jeweler's Loupes as Field Microscopes *Donna Rainboth, Eastern Oregon State College*

Four or five years ago my good friend and teaching colleague, Sharon Freeman, came home from a science conference exclaiming about the outstanding session she had attended and the great tool participants had been given at the end of the session. The session she attended was the "Private Eye" and the tool was a simple jeweler's loupe.

We use the loupes primarily for viewing spiders, insects and aquatic macro-invertebrates.



The fact that water does not harm the loupes makes them ideal for aquatic studies also. We capture aquatic macroinvertebrates such as mayfly and stonefly larva, put them into a Petri dish with a small amount of water, and put the loupe right on top of the specimen. This way the critter can't move out of sight and students get a magnified view of it.



# Journaling

## Mapping a Watershed

By Lucia Harrison, Artist and Evergreen State College Professor

### Goals:

- to define "watershed"
- to make a personal map of a watershed
- to combine information from close observation, drawing and note-taking, personal reflection, and visual research into a personalized map of a watershed
- to identify questions for further scientific research

**Supplies:** journal, pen, pencil, eraser, colored pencil, watercolor, jeweler's loupes, maps

### Activities:

- Give students topographical maps of the place they will visit (1 map/per student or group of students)
- Students mark and name the bodies of water in colored pencil
- Students note the highest and lowest points on the map
- Students guess at the direction of the flow of water
- **Define watershed:** the area drained by a river system; important concept because it links the land to the river and enables people to see how land use affects water quality
- Show the map of the extent of the Chehalis River Watershed
- Send students out on a field experience with their maps

Each student should record: their name, the date, time, place, group they are with, temperature, wind speed and direction, cloud patterns, moon phase and daily sunrise and sunset

Encourage them not to talk, even if they go in pairs

Have them visit five different places on their map (10 minutes per place). You could have them go on organized walks in smaller groups and stop five times. Using their journals, for each stop:

- a. Listen: write down what you hear
- b. List the plants and animals you see and hear
- c. Note the man made objects you see and what impact they might have on water quality
- d. Note features that affect the flow of water
- e. Make two drawings using gesture, contour and/ or schematic techniques

Return to the classroom

- Using a large sheet of paper and the topographical map as a reference, transfer the experiences from the walk to the map.
- Sketch lightly the area you would like on your map. Note the places where you stopped to draw
- Transfer your drawings to the map
- Write your analogies and questions on the map
- Consult field guides for information about the wildlife
- If time allows, answer your questions and write the information on the map
- Indicate direction (north, south, east and west)
- Add a legend
- Embellish the map with ink, watercolor and colored pencils
- Share the maps in small groups so the group can see the diversity of approaches and observations

Encourage students to focus on the following types of drawings.

**Ground observation:** look at what is on the ground. Draw each thing you see. Use the jeweler's loupe to observe more closely. Estimate the size of the object using your own body parts (arm lengths, distance from the knuckle to end of the finger). Note the colors or draw in the colors with colored pencil.

**Eye-Level observation:** stand up and look at what you can see at eye level. Make several drawings of what you see. Label the drawings and describe what the plant, animal, or insect is doing.

**Overhead observation:** look up at the sky, note what you see (birds, tree tops etc.). Make some drawings.

**Landscape sketch:** choose a section of the landscape. Starting with the background or the foreground, begin using contour drawing and draw in the basic shapes you see and the direction you are facing and what you see in the drawing.

For each subject of the drawing:

- Think of several analogies and write them down.
- Write down questions you have about the subject that you would like to research.

# A Curriculum Web for Nature Journaling

## Earth Sciences

- \* Plants
- \* Insects
- \* Birds
- \* Other Animals
- \* Trees and shrubs
- \* Habitats and seasons
- \* Weather

## Physical Education

- \* Walking, exploring
- \* Outdoor activity
- \* Hiking

## Math

- \* Charts
- \* Graphs
- \* Mapmaking
- \* Computation
- \* Measurement
- \* Statistics
- \* Percentage

## Language Arts

- \* Writing composition: poetry, prose, fiction/non-fiction
- \* Oral presentation: description, problem solving, communication
- \* Listening: group interaction, sharing

## General Sciences

- \* Observing
- \* Identifying
- \* Measuring
- \* Comparing
- \* Listing

## Social Sciences

- \* Local history
- \* Natural communities
- \* Human communities
- \* Mapmaking
- \* Environmental Health

## Fine Arts

- \* Hand-eye skills
- \* Self-confidence
- \* Composition
- \* Artistic expression
- \* Mapping
- \* Concentration, observation

# A Path to Place: Creative Nature Journaling

-Journaling Prompts By Kristen Clapper Bergsman, Laughing Crow Curriculum

## Smell

The sense of smell is powerful. In one moment, a scent can transport you through time and space, triggering a specific memory. In the field, gather some natural objects with different scents, such as crushed leaves, flowers, berries and soil. Ask your students to close their eyes as they smell one of the objects, inhaling deeply. Then, encourage your students to free-write for a short time about the images conjured up by the scent. Encourage students not to strive to identify the source of the scent, but just to enjoy its unique fragrance.

## Touch

Gather some natural objects with interesting shapes and textures, such as a branch covered in lichen or a pinecone dripping with dried sap. Ask your students to close their eyes and explore the object by touch. Ask them to explore the object carefully with their fingertips and with their whole hand. How heavy is it? What is its texture? What is its shape? Now, challenge your students to write about the object, trying to describe it without knowing what it is. After students are done writing, show them their object for a surprise.

## Metaphors

Ask your students to each find a natural object for a subject. Any natural object will work, such as a stone, the bark of a tree, the surface of a pond or a fern frond. Challenge your students to develop a list of metaphors for their natural object. Students should write down their metaphors freely without evaluating them. For example, some metaphors for the bark on a tree might include: newly stripped bone; tea-stained teeth; or peeling paint that needs scraping. You may want to ask students to revisit their list of metaphors and develop one or more of them into a poem or short essay.

## Edges

All around you are edges, the boundaries between two spaces. An edge might be large, such as a place where two different ecosystems meet or it might be a tiny border. An edge could be an estuary, the side of a gravel path, a garden bed or the base of a cliff. Write about the edge. What is happening there? Encourage students to include sketches of their edge as well.

## Relationships

Sit quietly in nature and soon you'll see relationships emerge. *tree leaves rustling in the sunshine. A songbird eating a worm. A raindrop splashing into a creek.* Ask your students to name the relationships that they see around them. How are the things in the immediate environment connected?

## Shift in Seasons

On a warm summer day, imagine what a natural place will look and feel like in the middle of winter. Choose a different season from the current one and try to imagine how the place will change. What will happen to the plants? What will the animals do differently? Write a description and perhaps draw a picture of how you think the place will change.

## **Postcards Home**

Pretend that you are on a tourist vacation to your natural place. You'll want to write a postcard to send to your family back home to explain this amazing, exotic place. Draw two rectangles on your paper, both the same size. In the top rectangle, draw a picture that captures the essence of your natural place. In the bottom rectangle, write a short note to your family, trying to describe what is unique about the place you are visiting. You can also cut a stiff piece of paper into a rectangle to create your postcard or use an index card.

## **Silhouettes**

Sometimes, the hardest part of journaling is starting. When a blank page looms before you, leaving you stuck, try this simple exercise: Collect several leaves from the ground around you. Choose leaves with interesting and diverse shapes. Trace the leaves on your blank journal page. Now, use the structure imposed by the leaf shapes to form your writing. You can either write your words within the shapes of the leaves, or along the outside edges of the leaves. Try this with other natural objects as well, such as stones, shells, and feathers.

## **Animal Eyes**

Shift your perspective and try observing the world around you through the eyes of a wild animal. How would this meadow look if I were a fox? What would I be doing if I were a pond snail? How would this feel if I were a chickadee? Encourage your students to choose an animal that would live in the particular habitat that they are journaling in. Try to describe the place through the eyes of that animal.

## **Time Machine**

Imagine what your natural place will look like into the future. If you could sit in the same place, and have time speed by you, what would you see? What events would unfold around you? Ask students to write and draw pictures about their chosen place into the future, using powers of ten. What will it look like in five hours, five days, five months, five years, fifty years, five hundred years, five hundred thousand years, five million years and so on?

## **Perspective**

Sometimes we get in the habit of doing something the same exact way. The creativity and spontaneity of nature journaling can suffer when it becomes "the same old thing." Try shifting your physical body into a new location and journal from your new perspective. Try lying down in the grass, covering yourself with dead leaves, or hiding in a hollow tree.

## **Nicknames**

Plants and animals usually have two names: their scientific Latin name and their common name. Now is your chance to give the trees, flowers, moss, insects and birds around you nicknames. In your journal, create a nickname, a short description, and maybe even a quick sketch of the different life forms around you. Create a nickname for each animal or plant based on the characteristics you observe, such as the shape of the leaf, the color of the petals, or its smell.

## **Secrets**

Go to a natural place that you know well. It could be your backyard, the school garden or a nearby park. Now, write down all of the secrets that only you know about this place.

## From Journal to Poetry Writing

Where do poems begin? *With the eyes, the ears, the hand, and the heart.* Poets don't wait for inspiration; they find inspiration through their explorations of the world around them. Poets have been known to keep tattered notebooks and scraps of paper in their pockets at all times to write down what they see, hear and feel at any moment of the day or night. Poets will use journals to record the names of things, to help them remember specific details of what they have seen, and to write down what they might learn in books and other texts. All of this information is then used to create poems.

Have your students choose a place near water to write about. Ask them to describe in their journals the physical characteristics of the area, the water characteristics, weather, flower and plant population, and bird population. Encourage your students to use their journal entries to write a list poem about what they saw, heard, smelled, tasted, and felt in their nature spot.

Have them try organizing the poem into "sense" categories, each category including a list of four or five specific concrete things. The list should include repetition of phrases, sentence structure, and sound. Suggest students end the poem with a list of what they know, feel, wish, and/or dream of.

### The Culture of Place

For this poem, your students will begin by expanding upon their earlier observations of their water spots by exploring what they can of the culture and history of the place and the area around it, as well as their own family history and culture. They can ask family members for information, as well as explore guide and tourist books, history books and encyclopedias to gather information about their place.

Have your students try to answer the following questions:

1. What is the human history of your place: who lived there before you? What kinds of dwellings exist on their spot now, or might have existed there a long time ago? Who lives there now? Who else might have come to this place, past or present? Encourage students to find and use the proper names of things, such as the names of the people, the foods, dwellings, and objects they might find and record their findings in their journals.
2. Are there any foods for which the area or region is known?
3. What languages were/are spoken in the area?
4. What types of people live in the area?
5. What is your area famous for?

Once students have completed their journal entries, ask them to share their discoveries with each other in groups.

# Exploring Special Places

*From Sharing Nature with Children, by Joseph Cornell.*

## Explorer's Guide Activities

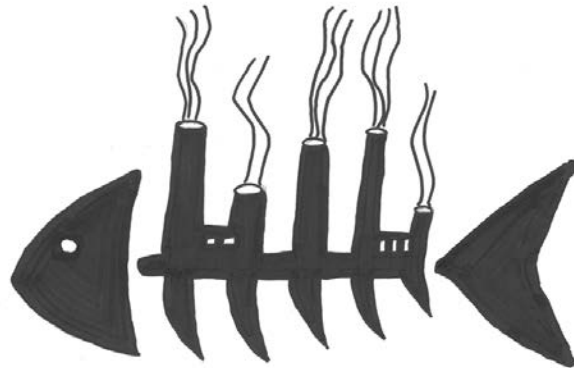
**Choose a time that is appropriate for the group. Also allow time for transition between the activities. The activities can be done individually if the group has a short attention span and requires more guidance.**

Select a natural area with a variety of habitats where the group can spread out and each person can find a special place. If you have younger children you'll want to look for an area with a natural boundary so you can keep everyone in sight. If the area is safe, it may be appropriate for young adults to go farther a field if they are knowledgeable about the outdoors.

Tell the group that they will have a certain amount of time (25 to 40 minutes is a good range) to find a special place and to do activities from the Explorer's Guide. They do not have to do every activity, but should choose the ones that most interest them and give the greatest sense of involvement with their special place. They will also make an invitation card to invite a guest to their special place. At the specified time, the explorers are to come back and divide into pairs and share their places (it takes about 20 minutes). Afterwards, they meet together again and share their discoveries with the rest of the group.

Pass out pencils, clipboards, and the Explorer's Guide and explain some of its activities with enthusiasm so that the children can begin to catch the spirit of the adventure. For example, tell the explorers if they sketch their best view, they can give it to their guest to see if he can find it by using the drawing as a guide.

Designate the area where everyone is to search for a special place, and make arrangements for everyone to return at the same time. Tell them you will be walking around to see where everyone is and how they are doing.



### **Bad to the Bone**

Sharpie  
Kia Smith, grade 12  
The Cottage School, Roswell  
Teacher: Katja Burkett

## Explorer's Guide Activities

My Journey to: \_\_\_\_\_

After choosing a special area, take time to wander around. Then pick a comfortable spot where you can think about your place and answer these questions:

- What are some of the first things you noticed about your site? How do you feel being here?
  
  
  
  
  
  
  
  
  
  
- Pick a name that suits your special place. You can change it later, if you think of something better. Naming it at the start will help it make it your own right away. The name of my special place is:

**A. Find the best view and give it a special name.** Then sketch the view in this "photo" space. Later, you'll see if a friend can find your "best" view by using your drawing as a guide.



**B. Find the best place to listen for nature sounds.** Then, see how long it takes to hear at least five different natural sounds. See if you can figure out what is making the sounds.

Write down the sounds and who made them:

1)

2)

3)

4)

5)

**C. Describe a bird's call or any other natural sound that you hear using words or letters.** For example, the gathering call of the Quail has been described as "Bob-White!" and the sound of a crow as "Caw Caw Caw"

The sound you heard:

The sound you heard:

The sound you heard:

**D. Find the oldest or most striking tree.**

Draw the tree and tell why it's unique.

**E. Use your hands to find the warmest and coldest places.** Also look for the wettest and driest sites. Can you find the windiest and calmest places? Make a simple map of your area and mark all these places on it.

**F. Stop at different places. Close your eyes and focus your attention on the sense of smell.** Find three different smells and describe them. See if you can figure out where they come from.

1)

2)

3)

**G. Find something that:**

1) Is small and has five or more colors

2) Makes you smile

**H. Notice how each sound, movement, texture and color is different.** Feel the special quality that each thing expresses. If you see a darting, swift-moving flock of birds, feel the joy of their flight. If you see a tree swaying in a light breeze, feel its strength and gracefulness. Try writing a Vertical Poem - you'll be surprised how easy it is.

### Vertical Poem

Choose a word that captures the feeling of the place you've chosen. Then use each letter of the word to begin a line of your poem. While walking on Mount Subasio near Assisi, Italy, this poem was written to the word "spring. The flower-covered hillsides expressed a feeling of excitement as the shadows of the clouds raced over them.

**S**un-made clouds shadows

**P**laced on the earth

**R**unning across its surface

**I**n and out of the sun I sit

**N**ot long does the cloud's twin stay

**G**oing, going on its way

### The Poetry of Your Site

Now write the word you've chosen, with one letter on each line. Then use each letter to begin a line of your poem.

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Once everyone has returned from their special places, have each person make an invitation from an index card if they haven't already.

Ask half the group to put their cards into a hat; then those still holding cards draw a card out of the hat. Once they've picked a card, they should pair up with the person whose card they've drawn. Then, for example, if Mary picks Barbara's card, Mary keeps Barbara's card and gives her own to Barbara. Then Barbara and Mary go off to share their special places with each other.

Have pairs share the activities they've done, as well as anything else they've discovered about their special places. Once the pairs are finished sharing, gather together and go over the activities, one at a time, allowing people to share their place names, sketches, poems, etc., with rest of the group. I like to start the sharing by having everyone point in the direction of their special place.



**Cricket**  
Watercolor, colored pencil  
Lily Glidden, grade 1  
Trinity School  
Atlanta  
Teachers: Lauren Rose and  
Nina Chamberlain

## **The World by the Water**

*From My Nature Journal, by Adrienne Olmstead*

Here you are, by a pond or stream. Before you go any further, take some time to write in these two journal pages and get to know the world by the water.

**First Impression** -The first thing I noticed at this pond or stream was...

**Description** -This is my description of this pond or stream:

**Sounds All Around** -These are the sounds I heard:

**Plants Growing** -These are the kinds of plants I see growing:

**Animal Activity** -These are the animals or evidence of animals (tracks, homes, feathers) I see:

**Last Impression** -This is what I want to remember about this pond or stream:

## **If I Were A Tree**

*From My Nature Journal, by Adrienne Olmstead*

Have you ever wondered how it would feel to be a tree? You would be anchored in the ground your whole life. Birds would nest in your branches. Squirrels would scamper up your trunk. You would eat sunlight, carbon dioxide and water. You would grow tall and bend in the wind.

How would it feel to be a tree?

Sit down near a tree that you like. Take a few moments to watch the tree. Imagine the whole life of the tree... from a seed in the ground to the tree before you. How many seasons has it lived through? How many animals have lived in its branches? Imagine that you are that tree.

Below, write the life story of the tree as if you were the tree. Begin as a seed in the ground and continue to today.

*My life began in the ground . . .*

## Land Autobiography

*From: Literature and the Land: Reading and Writing for Environmental Literacy, 7- 12. Emma Wood Rous, 2000.*

A 'land autobiography' is a personal narrative in which writers look back over their lives at all of the natural places that have been special to them and have shaped who they are. The places can be ordinary, everyday places as well as special places associated with a vacation or trip. The writing should include both vivid, specific description of the places and discussion of what the places mean to the student. To avoid superficial treatment, limit the number of sites described to four or five (or allow time for a longer paper). One student of mine, Mandy, who started out saying she could not write a land autobiography because no place had any special meaning for her, eventually wrote a very effective paper about her hockey field:

*I like nature and being outside? but there really aren't any places where I feel connected to the land. The places I like to spend a lot of time are the fields where I play sports...I still remember exactly what all the fields I've played on look like? as well as their surroundings.*

*Its field hockey season right now and I spend three hours a day on the field hockey field I know every bump and hole in the field I've played on that field for four years... It will always be part of me? even long after I graduate and move away...*

*In the off season I often find myself looking out at the field from the library window thinking about all that I've been through on that field How I've grown up without knowing if but that field was always there? part of me...*

*The field hockey field at Oyster River is the one I call home. It's where I grew up playing the sport I loved and learning lessons in life all at the same time. I won't miss this school when I leave? but I sure will miss that field*

The land autobiographies can result in an awareness and appreciation of how much natural places mean to us and how much they have influenced who we are.

### **Favorite Place**

Everyone has a 'favorite place,' a place they escape to in their imagination, or in reality, in times of joy or trouble. You can introduce this assignment by asking students to close their eyes and imagine they are in the place they most love in the world. It can be anywhere and any kind of place, but it must be a real place, and one that they have actually been in. (Imagined 'best' places can be the subject of another assignment.)

#### **Ask these questions:**

Where do you look forward to being when you are in a place you do not like?

Where do you like to spend vacation time?

Where do you like to be when you have problems to work out?

Where might you like to live as an adult?

Where would you rather be than here?

**Once they have a place**, ask students to imagine its sounds, tastes, smells, sights, and textures.

What are their own feelings as they imagine being there now?

What feelings do they associate with being there in the past?

Why is it their favorite place?

Students then write a description (at home or in class) of the 'favorite place' with such specificity of physical details and feeling that readers can place themselves in the scene and appreciate it along with the writer.

Students like the personal focus of this paper and it often results in some of their best writing. They have written about grandparents' vacation home in the mountains, a family cabin where a student spend his last summer with a dying brother, the beach, and even their own bedrooms. Claire called her paper about skiing in Colorado "Pure Escape":

*I remember everything as though it were yesterday - from the smell of the air to the texture of the powder. It had snowed a foot the night before... the kind of snow that you can actually fly through, that cushions your turns perfectly, and dances as you slice through it... I had just fallen... and tumbled until stopped It was the moment I fully realized I was in heaven. The dark evergreen trees surrounded either side of the trail. These were just the foreground of the beautiful view in front of me, free themselves from the detaining forces of ground It stole my breath... somehow, it just all fit, like I belonged.*

Share these descriptions in class and consider the range of places and what they have in common that makes them 'favorites.

Purposely do not tell students that their 'favorite place' must be a place in nature, usually at least three quarters of the pieces describe natural places. Discussion reveals many reasons for this: nature represents an escape; it is different from our normal surroundings; it is beautiful.

**Lovable River Creature**

Oil pastel

Mahika Banerjee, grade 4

SKA Academy of Art & Design

Duluth

Teacher: Leng Chang





# Drawing

## The Connection between Drawing and Poetry

*By Georgia Heard, author of Awakening the Heart: Exploring Poetry in Elementary and Middle School*

Observational drawing helps students with their poetry. It's a good technique for helping students to linger when they observe -to encourage the eye to saunter rather than glance quickly. If we ask our students to write with details, we must first teach them to notice the details.

- Drawing helps students to linger, to slow down, and to stay seeing and re-seeing (re- visioning), which is at the heart of all writing.
- Drawing also encourages students to notice details they might not have noticed before
- Drawing sharpens students' visual senses, which help them write more concretely and with their senses.
- Drawing natural or ordinary objects helps students see the poetry in the ordinary, small and unglamorous.



### **Ice Capade**

Photograph

Maranda Bullard, grade 7

Paideia School

Atlanta

Teachers: Tom Painting and

Korri Ellis

*"One aspect of a poet's life is really seeing... if you are going to draw you have to look at that leaf and see the way the lines come down. You have to see the way the life is shaped and the way plants grow differently. When you're drawing details that's what you're writing about too." ~ Karla Kuskin*

*"I have learned that which I have not drawn, I have never really seen." ~ Frederick Franck*

*" What is genius? A superior power of seeing." ~John Ruskin, writer on art and architecture*

# Beginning Drawing *Exercises*

by Lucia Harrison, Artist and Professor, Evergreen State College

## Goals:

- To demonstrate different basic drawing techniques
- To build some basic skills before students go into the field

**Supplies:** paper, pen, pencil, interesting objects to draw

**Time:** be sure to give ample time for these exercises.

## Memory Drawing

- Choose an interesting object to draw .Close your eyes and relax
- Open them and pick up the object
- Look at the object closely, feel the edges, curves, shape, texture .Think about how its shape is related to its function .Try to memorize its features .
- Draw it from memory

Why? In the field, you need to concentrate on looking first. Sometimes the subject jumps away and you have to remember it. It also helps you to identify the important features of the subject:

## Gesture Drawing

This is a quick all-encompassing drawing that captures basic shapes and what the subject is doing.

- Concentrate on basic posture of the subject (if possible assume the stance of the subject)
- Scan the subject entirely before beginning to draw
- Remember that your hand will record the movement of your eye
- Keep drawing tool in contact with the paper at all times; gesture drawing uses continuous flowing lines
- Keep your eye on the subject, not your paper. Avoid outlines, draw through the shapes
- Limit your time 20 seconds -1 minute

Why? This develops eye-hand coordination in drawing. In the field, you only have a brief chance to see the subject (e.g. a bird, chipmunk) .If you get the gesture, you can look up the details of color in a field guide. Gesture drawing allows you to get to know your subject. You can build a more polished drawing on top of the gesture.

## Blind Contour Drawing

This activity is a slow, careful inspection of the contours of the subject. Explain what a contour is: internal and external edges of the parts of the subject, intersection of two planes, edges of a shadow, change in texture, and change in color. A contour is not an outline.

- Use a sharp pointed implement like a pen or pencil
- Keep your eyes on the subject; don't look at your paper
- Imagine that you are touching the subject with the drawing tool; imagine that you are an ant crawling all over the subject
- Keep your eye and hand coordinated, don't let your eyes move faster than your hand
- Draw only where there is a plane shift or where there is a change in value (light and dark), texture or color
- Don't retrace over existing line
- Don't erase for corrections
- Vary the weight of a line to indicate information about the space (what is closer) or weight of the subject

The resulting drawing will look funny - the lines won't match up, but it will capture the beautiful edges of an object.

Why? Your hand is totally dependent upon your eye. This exercise develops eye-hand coordination; allows you to record how the object actually looks from your eye, not clouded with judgments of how it should look; captures the sense or feeling of the object; and captures the beautiful edges of the object.

## Blind Contour Drawing Activity

When making a blind contour drawing, the eye is not watching the hand as it draws on the paper. Contour drawing is an excellent way to train the eye to draw what it really sees rather than what it thinks it sees. The first contour drawings you do will look funny. However, with practice, you will find that you will be able to accurately record an image on paper without looking at your hand as it draws! It's a great warm-up drawing activity for any age group.

*What you need:* Pencil, Paper, Everyday Objects (shoes, plants, desks, pencils, etc.)

*What you do:*

1. Choose an object to draw (a door, a book, shoes, window, plant, etc.)
2. Pick a point on the object where the eye can begin its slow journey around the contour or edge of the object. Remember, the eye is like a snail, barely crawling as it begins its journey.
3. When the eye begins to move, so should the hand holding the pencil. At no time should you look at your hand as it draws. Try drawing the entire contour of the object without lifting your pencil from the

paper.

4. Practice this drawing method often and you will find your drawings looking more and more like what you see.

If you are feeling adventurous, place your drawing under a box as you draw, that way there is no possible way for you to see what you are drawing. Try it.

And remember, don't be disappointed if your drawing of a shoe looks more like a squashed beetle . . . Relax and keep it fun. Practice, practice, practice. That's how artists do it.

### *Finding Your Sense of Place - Drawing*

#### **Contour Drawing with Looking**

Do the same exercise as above, only look at the paper to find the points of intersection .Draw looking at the subject 99% of the time; only look at your paper to find your place (1% of the time)

Why? In this drawing the shapes will line up, so it will look more like the object.

#### **Combining Gesture and Contour Drawing**

Begin with a light gesture drawing. This establishes some basic information about the object and where you want to place it on the page. Do a contour drawing on top of the gesture drawing.

#### **Schematic Drawing**

Schematic Drawing is used to describe specific feature of the subject that will be useful in identifying what it is.

- Pay attention to the accurate relationships among the parts of the subject (e.g. are the leaves alternating not directly across from each other)
- Use a ruler to measure the parts of the object.
- Label the scale of the drawing (e.g. how long are the leaves) .Note the color, texture and sound of the object
- Write down two or three key features that will help you to identify the plant or animal (e.g. white flowers, thorny stem, and scalloped edges on leaves, found near a stream)
- Write down what the object reminds you of(e.g. leaves look waxy like a candle) .Write down questions you would like to know more about (e.g. where else does it grow, what does it eat, how does it reproduce)



#### **Protect our Wonderful Earth**

Acrylic

Nancy Wang, grade 4

Shijun Art Studio, Lilburn

Teacher: Shijun Munns

## Five Short Art and Observation Exercises

*By Jessie Moyer, artist and former Americorps volunteer*

Supplies: ... Pencil, Light-colored paper or Black paper and white chalk

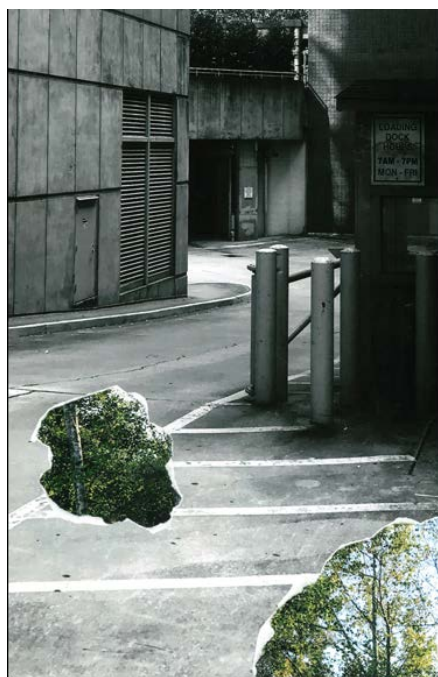
**1. Negative Space:** Focus on the shapes that are created by the open spaces between objects.

**2. Upside-down:** Look at the subject of your drawing from an alternative perspective (such as upside-down) to ensure you're seeing it rather than assuming it. Try to forget that you are representing a "cloud" or a "foot" and concentrate on the forms, lines, and textures that you observe. (Don't turn your paper right side up until you've finished checking how objectively you saw your subject.)

**3. Movement:** Think about how to represent motion or a particular movement on a still piece of paper. You may choose to follow a swallow's flight path or capture the fluttering of leaves in the wind.

**4. Value:** Squint your eyes in order to reduce your observation to value, i.e. light and darkness. Focus on pulling out the brightest areas by drawing them onto a black paper with white chalk, or focus on the darkest shapes by drawing on white paper with a dark pencil. (The longer you spend on this activity, the more middle tones you'll find and the more detail you'll be able to bring out.)

**5. Distance:** Consider the distance between you and what you want to draw. If you are inclined to pick a subject very close to you, look out to the horizon to broaden your perspective. If you tend to observe wide landscapes, zero in on a leaf right in front of you to pick up details you might not otherwise notice.



### Escape

Photographic collage

Emi Kuhs, grade 7

DaVinci Academy, Gainesville

Teacher: Lyndrid Patterson

You can't go wrong in the way you realize any of these exercises. The objective is not to create a polished final product, but rather to develop and diversify your observation and representation skills. Creativity and personal interpretation are key.

# Watershed Memory Drawing Exercise

*from Lucia Harrison, artist and Professor Evergreen State College*

**Guided Journal Exercise:** *Students will do a private journaling exercise. They won't have to share what they wrote unless they want to.*

## **Procedure:**

Close your eyes. Take a couple of deep breaths and get comfortable.

Think back through your life to experiences you have had with rivers, creeks, lakes or oceans. *(Then give some examples from your own experiences.)*

When was the first time you came into contact with a creek, river, lake or ocean? As the memories come, jot down a few notes in your journal. Your notes may look like this:

- Looking for stream bugs in the Oconee River, at my uncle's house
- Swimming at the Lake
- Tubing on the Chattahoochee

*(Have students take 5-10 minutes to generate a list.)*

Now take one memory, the one that jumps off the page and write about it in more detail.

**Describe the scene:** Who was there? What season was it? What was the weather like? Was it nighttime or daytime? What did the place look like? Did you see any animals there? Did you hear anything? Did you feel anything? What did you do there? How did you feel?

*(Have your students only write things that they are comfortable with. If a memory is too scary or upsetting, they should write about something easier. When your students finish writing, tell them to re-read what they have written and see if there is anything they would like to add)*

Now close your eyes again and take a couple of deep breaths. Try to get to the place just before you fall asleep. See if any images or sounds come to your mind's eye? If so, just watch them and see if they change. *(Let a few minutes pass)* When you are ready, take a few minutes to describe or draw the images.

*Ask if anyone would like to read his or her journal entry aloud. If no one does, that's fine.*

## **Drawing Assignment:**

Make an image inspired by your journal entry on a watershed memory. This could be a map of the place, a non-objective drawing about your feelings in the place, a drawing of the place, a drawing of your favorite plant or person in the place or some other idea.

## Drawing Tips with a Jeweler's Loupe

*From Magic Eye: Looking at Thinking by Analogy*

Use jeweler's loupe, then write, even when you're creating works of "art". The analogy - making step keeps you looking and seeing longer, personalizes the subject, and lends shades of meaning to the subject "in preparation" for putting pen or pencil to paper.



1. You'll have excellent results if you or students draw a 5 inch square frame on an 8 1/2 X 11 inch page. Tell students to "fill the frame" when they draw. Some teachers may want to 1 cut folded paper. Don't start with filling a whole 8 1/2 X 11 size- it's *too* big a space, in general, to fill in one leap. Move up to this larger size study after the first 5 inch drawing.

2. Use black pen, fine-tip felt pen (e.g., Sharpies), or pencil. The advantage of the black ink is that it eliminates editing and gives intense visual feedback and exciting results. Pencils shade nicely

3. Tell students to look carefully before they start.

4. In any area of the object, see what design nature used to fill the space: e.g., hexagons, triangles, and lines. Use the same design that nature used to fill in an area of drawing.

5. As you draw just "see where it takes you."

6. Make a commitment to what you're doing. When you're committed -however you draw it "" -it will look like you meant it to be that way. If you think you made a mistake figure how to work it into the design, again, see where it takes you.

7. When you think you're done, look again with your loupe and see if there are even smaller details you'd like to add.

8. Use fine paper when possible: it tends to invite you even more deeply into the process. Ask printers for "free" ends of fine papers or buy cream cover stock.

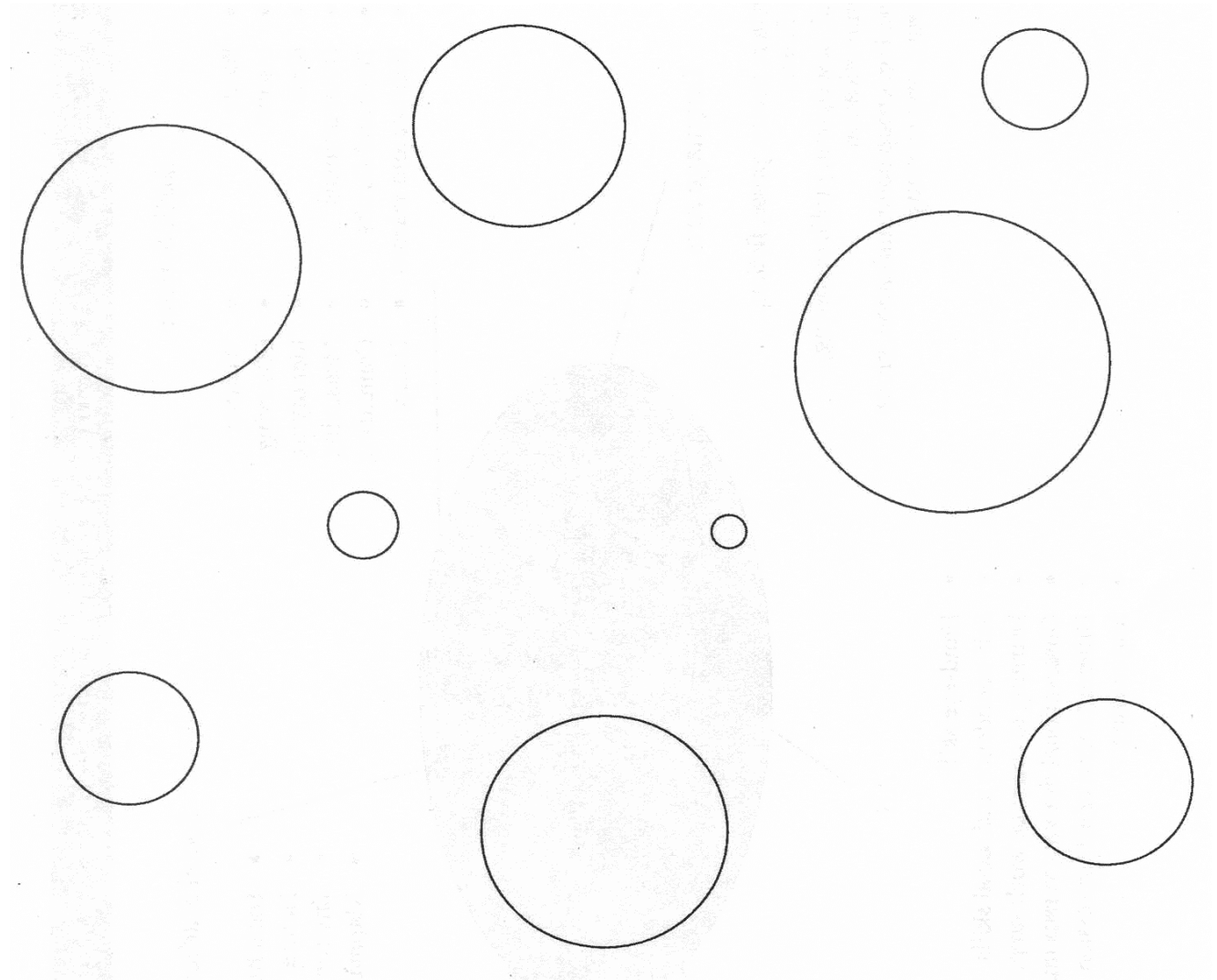
Students don't even think of copying each other when drawing with the jeweler's loupe since the loupe cuts out their neighbor, along with the rest of the world, and intensifies drama, wonder and visual information, all at once. Self-esteem, concentration and aesthetics together soar.

## It's a Small World

A meadow is full of small things. A hopping grasshopper. A colorful flower. A patient spider sitting on its web. A fluffy seed floating through the air. If you look closely at the small things, you will find that a field or meadow is a busy place!

How many small things can you find in your field or meadow?

Search the field or meadow for small things. Use a magnifying glass or jeweler's loupe. Try to find things that are the size of the circles on the page. If you want, you can draw what you find in each circle (you may have to draw the really small things outside the circles and make them bigger than they really are).





# Poetry

## Thirteen Ways of Looking At...

From Literature and the Land: Reading and Writing for Environmental Literacy Read and briefly discuss Wallace Stevens' poem, "Thirteen Ways of Looking at a Blackbird." Note that the stanzas are not just random impressions, but reveal a structure and a sequence, from sensory to personal to philosophical and back to a concrete image that can now encompass the other levels of meaning.

Outside, have students choose something to observe and then find thirteen ways to describe it. This assignment forces the writer to get beyond first impressions and to dig deeper for ideas. Students consider the order of their images and what this conveys.

### Thirteen Ways of Looking at a Blackbird by Wallace Stevens

I  
Among twenty snowy mountains  
The only moving thing  
Was the eye of the blackbird.

II  
I was of three minds,  
Like a tree  
In which there are three blackbirds.

III  
The blackbird whirled in the autumn winds.  
It was a small part of the pantomime.

IV  
A man and a woman Are one.  
A man and a woman and a blackbird Are one.

V  
I do not know which to prefer,  
The beauty of inflections  
Or the beauty of innuendoes,  
The blackbird whistling Or just after.

VI  
Icicles filled the long window With barbaric glass.  
The shadow of the blackbird  
Crossed it, to and fro.  
The mood  
Traced in the shadow  
An indecipherable cause.

VII  
O thin men of Haddam,  
Why do you imagine golden birds? Do you not see  
how the blackbird  
Walks around the feet  
Of the women about you?

VIII  
I know noble accents  
And lucid, inescapable rhythms;  
But I know, too,  
That the blackbird is involved  
In what I know.

X  
When the blackbird flew out of sight,  
It marked the edge  
Of one of many circles.

XI  
At the sight of blackbirds  
Flying In a green light,  
Even the bawds of euphony  
Would cry out sharply.

XI  
He rode over Connecticut  
In a glass coach.  
Once, a fear pierced him,  
In that he mistook  
The shadow of his equipage  
For blackbirds.

XII  
The river is moving.  
The blackbird must be flying.

XIII  
It was evening all afternoon.  
It was snowing  
And it was going to snow.  
The blackbird sat  
In the cedar-limbs.

# In the Country of Images: Teaching Young Poets

*A Series of Lesson Plans From Alicia Hokanson, Lakeside School, ROW Teacher of the Year 2003*

## A. Writer's Walk: Making an Event Map

An Event Map traces your route through a landscape, BUT it isn't a map that will help you find your way back to the place you started from!

- It is a wavy line that mirrors the path YOU walked, complete with stops and turnarounds.
- It records with DRAWINGS, SENSORY DESCRIPTIONS and SYMBOLS the sights, sounds, scents and feelings that YOU notice and find significant.
- It includes questions that occur to you while on your walk.
- It is NOT drawn to scale. The map expands in spots where YOU have found many things to record.

When making your event map you should both actively SEARCH for sights and sounds (*Maybe I should take a closer look at this pine cone and sketch it in detail*) and passively NOTICE when events happen around you (*a garter snake just slithered across the path*)

RECORD in MORE THAN ONE SPOT ALONG YOUR WAVY LINE the following things that will change along the way:

- **Time:** What time of day is it? How do things look during this time of day?
- **Weather:** Is wind changing the trees around me or is rainfall affecting the trail I'm on. When the sun comes out what do I notice?
- **Sequence:** What did I see first -the big rock or the oak tree? Did I notice the ant nest after stepping on the apple and following the path of the ants eating it?
- **Significance:** How does this litter affect the environment? How do I feel about stepping into this apple on the ground?
- **Topography**
  - the terrain underfoot (springy green grass? Sticky brown mud?)
  - basic vegetation (what plants do I see?)
  - animals and insects (which ones, and what are they doing?)
  - rocks exposed
  - water (width, speed, depth, temperature)

Have fun sketching and describing. Use all your senses, except for taste! Sound, textures and smells can be described or you can make *up symbols for them*. *Look at some examples before you start.*

**B. Scavenger Hunt** As a group of three or four you will search for the items listed below. You must stay within earshot (about 25 yards) of your teacher so he or she can initial the items that you have found. Here's the trick: The teacher gets to ask anyone of the persons in your group to supply at least two significant facts about each item before you get credit. No one else may help with the answer or the explanation once the teacher selects the person. Please discover and discuss at least 3 items on the list among yourselves before asking the teacher to test your knowledge and identification skills. It is ok to use just one sheet per group.)

\_\_\_ Loblolly Pine

\_\_\_ Southern Catalpa

\_\_\_ Georgia Hackberry

\_\_\_ River Birch

\_\_\_ Hawthorne

\_\_\_ Hickory

\_\_\_ Short-leafed Pine

\_\_\_ Flowering Dogwood

\_\_\_ Persimmon

\_\_\_ American Holly

\_\_\_ Poison Ivy

\_\_\_ Muscadine Grape

\_\_\_ Blackberry Vine

\_\_\_ A live tree with a circumference more than 3 kids' arm span

\_\_\_ Stumps with springboard cuts

\_\_\_ Nurse logs/ nurse stumps

\_\_\_ Evidence of shallow fertile soil (trees having broad, shallow root systems rather than deep tap roots)

\_\_\_ Evidence of pileated woodpeckers (sittings, calls, or large rectangular holes in trees and snags)

\_\_\_ Evidence of decomposers (decomposers break down dead material into simpler parts)

### C. Sensory Writing

1) Once you have been assigned to a spot along the trail, sit down and get comfortable. You will have about 50 minutes to write and draw without interruption. Please stay put and do not communicate with others until your teacher comes by to get you.

2) Sit quietly for several minutes. Close your eyes... Breathe... Relax... After you are relaxed, begin to **describe in detail your observations**. Use all of your senses, (except for taste) and avoid using the word "I" .For example, instead of writing, "I see many ferns and leaves," try writing, "The ferns glow as light radiates through the overhead leaves."

Please use the spaces below for your sentences.

a)

b)

c)

d)

e)

3) Our sense of sight is such a dominant sense that our other senses often get ignored or overshadowed. Close your eyes and gently cover them with the palms of your hands. Now continue using only your touch, smell, and hearing senses. Look at your paper in order to write each sentence legibly, and then re-cover your eyes.

f)

g)

h)

i)

j)

Pick any object near you -a tree, a fern, a stump, or a spider web. Describe it using your sense of sight, smell, and touch. When you're done you should have an inspired, descriptive paragraph.

## References for Writing: Sensory Words

Touch:

Cool	Damp	Oily	Dry	Bumpy
Steamy	Mushy	Satiny	Hairy	Warm
Slippery	Gritty	Pulpy	Hard	Tough
Silky	Thick	Prickly	Tepid	Leathery
Rough	Tender	Velvety	Rubbery	Sharp
Fragile	Sticky	Lukewarm	Elastic	Thin
Furry	Icy	Fleshy	Smooth	Feathery
Cold	Wet	Crisp	Dull	Moist
Sandy	Fuzzy			

Taste: (items teacher has provided)

Tangy	Unripe	Raw	Alkaline	Medicinal	Fishy
Burnt	Spicy	Peppery	Oily	Buttery	Salty
Rotten	Bland	Sour	Tasteless	Fruity	Vinegary
Bitter	Sugary	Crisp	Hearty	Minty	Oniony
Mellow	Spoiled	Bittersweet	Gingery	Hot	

Smell:

Sweet	Minty	Acidy	Sickly	Scented	Odorous
Acrid	Stagnant	Fragrant	Pungent	Burnt	Moldy
Musty	Gaseous	Tempting	Aromatic	Perfumed	Spicy
Reeking	Mildewed	Heady	Savory	Putrid	Damp
Fresh	Sharp	Rotten	Dank	Stench	Earthy
Fishy	Sour	Spoiled	Gamy	Piney	Rancid

Sounds:

Crash	Thud	Bump	Thump	Boom	Thunder
Bang	Smash	Explode	Roar	Scream	Screech
Shout	Yell	Whistle	Whine	Squawk	Bark
Bawl	Rage	Blare	Rumble	Slam	Clap
Stomp	Stamp	Noisy	Discord	Jangle	Rasp
Clash	Clamor	Tumult	Riot	Racket	Brawl
Bedlam	Pandemonium	Hubbub	Blatant	Deafening	Raucous
Earsplitting	Murmur	Piercing	Rowdy	Disorderly	Twitter
Sigh	Hum	Whisper	Whit	Rustle	Crackle
Patter	Peep	Mutter	Snap	Hiss	Swish
Bleat	Speechless	Buzz	Zing	Gurgle	Melody
Still	Drone	Mute	Faint	Inaudible	

## Sensory Writing II

Sit quietly and just OBSERVE your surroundings for a few minutes. Let all your senses open up. Then, when you are calm and alert, start writing. Write a couple of sensory images for each sense. Try to be as clear and specific in your observations as you can --get the details!

### Examples:

Sound: The raspy call of the crow drifts across the field.

Touch: Chill morning air clings to my skin like a damp shirt.

### SIGHT:

- 1.
- 2.
- 3.

### SOUND:

- 1.
- 2.
- 3.

### SMELL:

- 1.
- 2.
- 3.

### TOUCH (*texture, sensation*):

- 1.
- 2.
- 3.

### TASTE: (*this may be hard to do! Perhaps a remembered taste from the morning?*)

- 1.
- 2.
- 3.

## An Image Sequence

*"Go to the pine if you want to learn from the pine or to the bamboo if you want to learn about the bamboo. And in doing so, you must leave your subjective preoccupation with yourself. Otherwise you impose yourself on the object and do not learn. Your poetry issues of its own accord when you and the object have become one when you have plunged deep enough into the object to see something like a hidden glimmering there. However well phrased your poetry may be, your feeling is not natural -if the object and yourself are separate- then your poetry is not true poetry but merely your subjective counterfeit." -Basho*

I found an equation somewhere that I really like: **Imagination (image + nation) = in the country of images**. It seems to me an apt way of thinking about how important images are to our creative powers. One of my main goals as a writing teacher is to help kids pay attention to their senses, notice more, and find the most exact words to record their sensory experiences. Becoming more attentive to the world also helps build a lot of skills besides just the ones writers' need.

Here's a series of forms and exercises that build on the image in a somewhat sequential and imaginative way. To effectively introduce each form, I always read lots of examples, especially student examples, to help them intuitively and musically understand the form.

### 1. "Small Noticings"

Students pay attention to the sensory events of their daily lives. One line of exact detail of sight, sound, touch, taste or smell. Have students write 5 or 10 "small noticings" for homework, or take them outside for sensory writing. (Students can build longer sensory poems from this work. Find an organizing title that pulls all the images together, such as "A Field Guide to Autumn")

### Homework assignment

How often do you stop to just notice some small sensory detail that catches your attention during the day? Paying attention to these things is what gives good writers the concrete details to their writing that come alive for the reader. Here are some examples of "small noticings:"

- the silver trail left by a snail crawling along a leaf
- fire, dancing and crawling along a piece of dry firewood
- the way mist slowly lifts off the lake's surface at dawn
- a leaf gliding on top of the water
- the way shadows grow larger in sunlight

Keeping your senses open: sight, sound, taste, touch and smell, write 5 "noticings" each day this weekend:

## 2. Bantu Form

This collaborative two line form from Africa is a neat way to start talking about correspondences and implied metaphor and simile -- how our sensory impressions correspond with emotions, and how much can be suggested through Images. Also introduces the idea of juxtaposition - an important principle in Chinese and Japanese poetry. (Synesthesia, the mixing of the senses, might also come up) A Ghazal, a Persian form of linked couplets, can be easily built from several Bantus.

Among the Bantu people of Africa, there is a tradition of rhythmic work dialogue. One man says, "The sound of tusk cracking." The person beside him, in the stride of work, says after a while: "*The voice of an angry man.*" Another example: "*All day I carved the ironwood stick.*" The reply: "*I kept thinking what I should have said to him.*"

The principle is internal comparison - a dialogue the imagination has with itself--One statement sparking another not by logic, but by intuition. Another example: "*An elephant shot with a poison arrow*" or "*A lake drying up at its edges.*" Both things here are large and both are being diminished by some outside agent. The sun's rays are in a way like arrow. The effects of both agents work from the outside in. The skin of the elephant is visually very much like the dried, cracked mud at the edges of a lake in summer heat. All of these similarities are part of what makes up parallel imagery and implied comparison (metaphor).

**Bantu examples:** (from 5th - 9th graders)

Waves pounding on the shore  
A guilty conscience

Fish shimmering in and out of shadows  
Those thoughts never fully grasped

A sailboat on glassy water  
The flow of pens across paper

The strong wall surrounded the city  
The man would not cry

A burned up candlestick  
Gardens in the fall

Drifting clouds  
A kid just out of high school

Firecrackers going off  
Sprinklers in the sunlight

Grandmother has Alzheimer's disease  
A locket with no picture

Children on the playground  
Popping corn

### Ways to Work with Bantus in Class:

After introducing the form and discussing it, (What are the correspondences the students see in the two images? What are the senses or similar emotions that are called up?) Ask for some of their "small noticings" (images) lines. Put a few on the board.

Brainstorm some corresponding lines or have everyone try to write a second line for the same image. Read the results! Interesting!

Have each student write 3 to 5 images (one image per small slip of paper) , then pass them around to others. Students will collaborate by completing the images they get. After time to write, ask each student to read one of the combinations they made. OR ask students to complete several of their own images.



Its important to point out that a Bantu is a sort of metaphor. (The two images juxtaposed suggest a comparison.) Show how they can easily be changed into similes: "Fish shimmered in and out of the shadows like thoughts never fully grasped."

*Follow-up assignment:* Write a series of 6 Bantus that are linked somehow to form a Ghazal (a Persian form of linked couplets, though the links are usually very subtle)

### 3. Haiku

The supreme form of attentiveness - the Image is all - and much is implied rather than directly stated. The Haiku more than any other form gets students to wrestle with word choice, compression, and what images can convey.

Moving from the two line form of the Bantu (which can be expanded into the Ghazal) It's an interesting step to introduce the Haiku as another form which depends for its effect on the well written image -the image which suggests more than it tells. (Just as the Bantu suggests the relationship between two images.) I think it's useful to tell students that though they may have learned that a Haiku is based on a syllabic count of 5,7 ,5 - that is true only for Japanese language writers. The form in English is a bit looser, mainly emphasizing the exactness of the images in three short lines.

Since students have had practice with "noticing" and "sensory images" it's not difficult to get them writing Haiku after you've shared with them some good examples. (See example sheet)

### 4. Tanka

Build from the Haiku with a couplet that comments on the feeling implied in a Haiku, or moves it in some new direction. Students can build on each other's work- trade Haiku and add the couplet-- or work on their own.

A tanka is really part of the longer Renga form, basically a Haiku with an added couplet, but is written by one author instead of two. It shares some characteristics with the Bantu in that the couplet is commenting on or connecting to the original Haiku in a subtle way.



### 5. Renga

The renga is a collaborative poem with very strict rules. It's fun for kids to learn that in Japan writing poetry was a high art and also a party "game." Letting their imaginations loose while " making interesting leaps and connections is one of the joys of renga. The writer doesn't have to " know where she is going -she can just respond in the moment.

A whole class gets into the act in this traditional linked poem - lots of fun to see how their imaginations are sparked by each others' images. Drink tea, eat sesame snacks. And have a renga party for a period!

#### **Owl on Log**

Charcoal pencil

Maddie Lombard, grade 8

Gen. Ray Davis Middle, Stockbridge

Teacher: Katy King

# Found Poetry

*Adapted from Language Art Curriculum Guide, Rivers Curriculum Project purpose*

Using the prose selection provided below, write a poem by rearranging the author's words into lines of poetry. Discover the poetry in prose.

**Background** This exercise gives you the opportunity to write an original poem using the words of another author.

## Procedure

1. After reading the prose "Hibernation," from the book *Animals Close-Up: Frogs*, identify words and phrases you find particularly meaningful or whose sounds you like. Select words or phrases that convey a desired feeling or effect or that help tell a story.
2. Arrange those words or phrases into lines of poetry. You may put words from different passages in any order you choose. You may exclude words from a phrase or line, but you may not add any of your own words. Your new poem should reflect a single effect and have a unifying theme or idea.
3. Title your poem "Found Poem"
4. After the title, in parentheses, write words from, then the title of the prose. At the end of your poem, write Arranged by and your name.

## A Sample Found Poem

*(Words from "August: the Green Pasture," a Sand County Almanac)*

*Some paintings become famous.  
I know a painting seldom viewed at all.  
It is a river who wields the brush  
When the mood to paint will come upon him.*

Arranged by Jaclyn Schliepsik

## Animals Close-Up: Frogs Hibernation

It is almost autumn. Bad weather is approaching. The tree frog hunts in the daylight during these final warm hours at the end of the summer. Finally, when the frog can no longer stay warm enough, it looks for some shelter in which to sleep. A cracked rock, dead leaves, or a hole in a tree will protect it from the harshness of winter. Its breathing slows down as it begins to hibernate, but it continues to absorb oxygen through its skin. The tree frog stops eating and drinking. In a deep sleep, it will remain hidden until the first signs of spring. When spring arrives, it will wake up and start its activities again.

## "Randomness" Poetry Activity

*Adapted from "The Word as Catalyst, Igniting Children's Imagination through Creative Writing"*

This exercise allows students to experience the pleasure of using words in unexpected ways. Pass out a list of one hundred words (or so) to each student and tell them to keep the list face down until the instructor says to turn it over. Allow the students a fixed amount of time (between ten seconds and one minute) to choose and circle ten words on the list. Then allot them five minutes to write a poem using these words. This arbitrary time limit encourages students to take a lighter approach to the task and cuts out the agonizing stages that many students go through. With younger students, you might say that you want them to write a story linking the words; if they can't think of something, suggest they write sentences using the words. (This exercise works especially well with middle school students because it helps them break out of their self-consciousness.)

You can make up your own list of words by looking through poetry anthologies, magazines, or newspapers and pulling out words that students may like, including words that name a specific locale or common local animals. The key is to stay with action verbs and object nouns.

### One Hundred River Basin Words (or so)

moon light	murky	night	sun	estuary
pale	waves	chill	refuge	mix
dark	skim	roll	canopy	salty
swamp	wet	river	rainstorm	liquid
drum	fish	whale	raccoon	tumble
riparian	beach	lake	coyote	bard owl
cedar	farm	stream	rock	hoot
oak	foggy	waterfall	boulder	winged
pine	rainy	pool	osprey	raptor
forest	mudflats	drop	eagle	red-tailed hawk
old-growth	willow	long	snow	Atlantic ocean
watershed	heron	meander	hail	Gulf coast
frog	mist	wild		
oysters	sky	catch		
docks	sunset	jump		
migration	heat	culverts		
dragonflies	dry	run off		
clams	grasses	bridge		
wetlands	lichen	harvest		
tidal	preserve	glide		
gentle	smooth	water		
tibutary	green	aquifer		



**The Incredible Beach**  
Mixed media  
Noorulhuda Ahmed, grade 3  
Hamzah Academy, Alpharetta  
Teacher: Noorulain Syed

## "Randomness Bird" Poetry Activity

*Adapted from "The Word as Catalyst, Igniting Children's Imagination through Creative Writing"*

This exercise allows students to experience the pleasure of using words in unexpected ways.

Pass out a list of one hundred words (or so) to each student and tell them to keep the list face down until the instructor says to turn it over. Allow the students a fixed amount of time "" (between ten seconds and one minute) to choose and circle ten words on the list. Then allot them five minutes to write a poem using these words. This arbitrary time limit encourages students to take a lighter approach to the task and cuts out the agonizing stages that many students go through. With younger students, you might say that you want them to write a story linking the words; if they can't think of something, suggest they write sentences using the words. (This exercise works especially well with middle school students because it helps them break out of their self-consciousness.)

You can make up your own list of words by looking through poetry anthologies, magazines, or newspapers and pulling out words that students may like. The key is to stay with action verbs and object nouns.

### One Hundred Bird Words

moon	light	midair	dark	shorebird
migratory	roll	listen	osprey	red-tailed hawk
salty	mollusk stopover	swamp	drum	Piedmont
plumage	flocks	habitat	plover	salt marsh
breeding	skim	glide	grazing	feeding
waves	soars	wet	night	river
majestic	updraft wintering	estuary	dives	high tide
bass	sun	Mexico	searching forest	hunts
sandpipers	beach	calls	refuge	stream
tributary	oak	riparian	foggy	uplands
rainstorm	fledgling	call	frog	rainy
mudflats	eelgrass	watershed	graceful	oysters
rest	mountains hoots	coyote	wading	cliff
nesting	worms	sky	wetland predator	beak
probe	honking	fishing	Atlantic Ocean	tidal
migration	coloration	winged	talons	raptor
monarch	beauty	gentle	gulf coast	behavior
bill		flies	barrier island	wild
catch		heron		flyway
wonder		freedom		raccoon

# The Power of Verbs

By Bill Yake, published poet and retired environmental scientist

## Introduction:

"Almost all the Sanskrit roots, which seem to underlie J, European languages, are primitive verbs, which express characteristic actions of visible nature. The verb must be the primary fact of nature, since motion and change are all we can recognize in her."

". . . a large number of the primitive Chinese characters, even the so-called radicals, are shorthand pictures of actions or processes." From "The Chinese Written Character as a Medium for Poetry." Ernest Fenollosa

Images are a critical component of poetry - especially for those of us with visual imaginations. (Think if the source of the word *imagination*.) Often when we think of images, we think of things - nouns. But the vitality of those images lies in their action -strong, potent verbs.

Verbs should incite the senses- *rustle, rub, reek, reveal and relish*. Fenollosa also said, "The true formula for thought is: The cherry tree is all that it does;" and this exercise derives from that assertion. You'll find a poem at the bottom of this exercise that was written using this quote as an epigraph.)

## Exercise:

**A.** Pick a specific plant, critter, stone, mountain or other natural item. If you pick an "animate" item the exercise might be a bit easier; picking an "inanimate" item may increase the challenge. Take 15 minutes to list verbs that describe, as Fenollosa put it, all that it does. Use your senses; use your imagination; think past; think now; think future. Don't limit your list at this point- brainstorm. But also collect with special zeal strong, vivid, precise, accurate verbs. Note that there are a surprising number of words that are nouns and verbs.

**B.** Now sort out the strongest, most vivid, accurate and potent verbs on your list and use them, either alone or in combination with vivid, accurate nouns, to draft a poem of at least 15 lines. Devote 10 minutes to creating this draft.

**C.** If necessary take 5 minutes to add a required adjective or two, a few prepositional phrases, and/ or a handful of conjunctions to the draft. No adverbs.

**D.** Now you have the seed of a poem. Revise as appropriate.

## The Tree as Verb

"The true formula for thought is: The cherry tree is all that it does." Ernest Fenollosa

Seed, swell, press and push, sprout, bud, curl, bloom, unfurl, quicken, ripen, and dispense.

remain.

blotch, ferment, rot and mushroom.

germinate.

probe, grope, root, draw in, draw up, dole out, absorb, allot, assimilate, respire, reconstitute,

release.

senesce.

reach, brace, resist, avoid, deflect, split, notch, rustle, shake, bend and shimmy.

occupy.

cover, mask, obscure, protect, enclose and hide; tolerate, support, feed, shade, harbor and disguise.

stand, sketch out, stretch out, fork, reach, branch, divide, incline and sway.

reclaim, endure and burn.

return, leaf out, green, synthesize, digest, night-quiver, yellow, wilt and wither, abscise, and give way.

Written by Bill Yake

**The Water Fox**  
Pastel, crayon, watercolor  
Shelby Prichett, grade 6  
Gen. Ray Davis Middle  
Stockbridge  
Teacher: Katy King



# Inspirational Teacher Stories



## ***Under the Sea***

Colored pencil

Jasmine Patrick, grade8

Gen. Ray Davis Middle

Stockbridge

Teacher: Katy King





## **River of Words: A palette for inspiration**

For the past three years my art and photography students have participated in The River of Words International Environmental Poetry and Art competition. I usually avoid "poster" contests like the plague and was reluctant when in November of 1999 an exuberant and wonderful first year teacher and co-worker, Lynn Giroux, told me about River of Words. (Actually when I saw the word "poster" the flight instinct almost had me out the door.)

Lynn was excited and had great ideas. She succeeded in convincing me that we should provide this opportunity to our students. We sat down together and designed a lesson plan. It took me about two seconds to begin to see the wonderful teaching opportunities that this program could offer to our students.

That first year we focused on the elements of art, specifically pattern and repetition. The students' images revolved around ecosystems, wildlife, and flora and fauna indigenous to the state of Georgia. Lynn and I taught the students about the 52 Georgia watersheds, focusing on the metro Atlanta area. The results were wonderful! Beginning art students received state and national recognition. I was hooked. I expanded my horizons by developing units for my photography and Advanced Placement classes.

The project has proven to be successful on all levels. Not only are my students completing assignments that are aligned with my art curriculum, they are creating images that are addressing an issue that is becoming more and more relevant as our drought continues. Each year the sophistication of my students' work inspires me. They create relevant and moving imagery that communicates the importance of water in all aspects of our lives. They also create imagery that illustrates what the not so distant future may hold if we destroy our watersheds.

Each year my students participate I am more excited about the possibilities.

I am hoping to expand River of Words at Druid Hills to include an ESOL class. ROW is a perfect venue for teaching English to non-native speakers. There is the wonderful opportunity to utilize maps, photographs, and pictures to teach concepts and new vocabulary. And, more importantly, ROW would provide the opportunity to teach ESOL students about the new environment in which they live.

ROW is a wonderful palette with which to inspire your students. Three years ago I was inspired to utilize ROW in my classroom. I was inspired by a first year teacher with the skills of a veteran. That inspiration has been like a drop of water on a pond. The light continues to catch on the silent ripples traveling in a wide arc.

Betsy Eppes

Druid Hills High School

## **Inspirational Story from Jennifer Ritter's Student**

First it started out as another school project. I thought "Who wants to take pictures of water, or even worse, write about it?" I borrowed my mom's digital camera, and I rode my bike down to the Line Creek Nature Area, a wooded area with trails and streams running through it. Line Creek is a tributary into the Flint River, which is my watershed. I was not happy because of two reasons, the first one being I didn't want to ride my bike when there were more comfortable ways of transportation, and second of all, I couldn't go over to my friends house because I had to do schoolwork on the weekend.

I got there and started taking pictures at various points along the streams. I took a lot of pictures. The more pictures I started taking the more I got to thinking, "It isn't that stupid to be taking pictures of water, I mean water has been one of the building blocks of life, and it always will be. It is a symbol for freedom. Constantly flowing and never ceasing." I wanted to capture the view point of water always twisting and turning to a new place. I finally found a spot where the stream went over a rock and it made a small waterfall. I took many pictures of that same spot, and decided on one where I was down low and right up close to the fall. I now have a different viewpoint about what water is. I realize that it is taken for granted and that it may not always be there. It was, is, and always will be an essential for humankind to exist.

Craig Handy  
8<sup>th</sup> Grade  
J.C. Booth Middle School

## **J.C. Booth Middle School Students Discover the Flint River Watershed**

I teach enrichment (gifted) science to sixth, seventh, and eighth grade middle school students. As a first semester major project, my students selected and completed a project to be entered in a national science contest. Some of the projects the students chose from included the NASA Student Involvement Program, Toshiba Exploravision, and Craftsman Young Inventor. I was always seeking additional and diverse selections from which my students could choose so that each might tap their interest and creativity strengths. River of Words was brought to my attention at the end of the 1999-2000 school year.

I offered River of Words as a project choice in the fall of 2000. Approximately 20% of my students chose to participate in this contest. The structure for this project included background research into our watershed, a poetry entry related to their research, and an art entry related to their research. Students of each grade level chose this option.

To get the project off the ground, we were fortunate enough to have Kristen Sanford of the Georgia Department of Natural Resources meet with students who had chosen this project. She related information and answered students' questions, as well as offered them her email as a contact should they have questions throughout the project. Her talk inspired students to seek all they could on the Flint River watershed and to devise both prose and pictures in a creative fashion. Their research took them to the Internet for data and to the banks of the river for inspiration.

## **The project due date brought wonderful results.**

Students proudly presented their work to their classmates, told what they had learned about their watershed, read their poetry and presented their drawings or photographs. At each grade level, this project option tapped creativity not offered by the other contests, which was ever so appropriate for the students who made this selection. Their enthusiasm was contagious and I was very pleased with the work submitted to the national contest.

In our first year effort, two of my students were state winners, one for poetry, one for both poetry and picture. In the second year, only one student was a state winner, however her poem appeared on the state poster. With these successes and what was learned by all involved, this contest became a mainstay of the choices.

With the new emphasis on science fair, the contest projects have been moved to second semester. Last year I made River of Words the only choice. The work was amazing and the interest level was high. Creativity blossomed and I proudly sent their entries to be judged. Four of my students rose to the state award level, one in poetry and three in art. I am very proud of all my students and very pleased to have been able to offer them this opportunity to learn about and enjoy their watershed.

Jennifer Ritter  
J.C. Booth Middle School  
Fayette County School

## **Students Flow with River of Words**

The River of Words Program has offered us a wonderful avenue for helping our students develop in areas of creative thinking and personal expression. The lessons provided in the manual supported our focus for the year, and the contest became an outlet for developing their creative writing and artistic skills.

Last year we developed a yearlong unit called "A River Runs Through." Our third graders adopted a creek nearby the school in Chimney Springs. After gaining knowledge of stream ecology and training in water quality testing, teams of students ran monthly assessments on the creek. The visits included chemical, visual, and biological assessments, velocity tests, temperature readings, and litter clean up of the area. As teams completed their assessments, they would sit by the creek and begin reflecting in their journals. These reflections included personal thoughts, responses to a prompt given in advance, poetry, and sketches. The students became passionate about their responsibility to the creek and their need to protect our water resources.

Based on their enthusiasm, we saw the River of Words contest as an opportunity to help them further pursue their passion through creative writing and art. We began teaching them styles of creative writing such as using similes, metaphors, and personification. Our students absolutely loved using personification in their writing. This year every student proudly entered the River of Words contest. Using their newfound skills, many students entered poetry while others chose to submit artwork. Although the majority of our students were not state or national winners, they had the personal satisfaction of knowing they had made a difference in this world. The certificates they received were a confirmation of their commitment to the environment.

Wendy Limerick & Tamera Neal, Teachers at Tritt Elementary, Marietta

**River of Words Lets The Mind Flow...**  
***..and flow...and flow... and flow...***

For the past three years The River of Words Program has inspired a wave of enthusiasm out of the students of the little Casa Montessori School here in Marietta. I first heard about the program from a former teacher at Casa who had brought the program from her previous school. We adopted it into our Upper Elementary (4,5, & 6th grade) curriculum and it has mushroomed into a project enjoyed by many of the teachers at different levels.

Casa is a special and unique place. Conservation on all levels has been practiced here for many years. Respect for our land and resources is taught to the very youngest of 2 1/2 year olds. From only bringing lunch packed in reusable containers, using cloth napkins, saving scraps for the compost pile and learning to care for plants in the garden.

The students I teach have been brought up through this mindset so that when I get them they are ripe for the picking! We make several overnight field trips during the year to get a real immersion into the environment. Last year we camped on Georgia's National Seashore, Cumberland Island and in the mountains of North Carolina. This year I am taking them backpacking along the Appalachian Trail. I can't wait to see what creative material they will come away with.

River of Words is the perfect way to incorporate water education into an art form. The creative juices flow and so much pours out of their young minds. I start by opening all the doors and drawers of the art room and let each child pick which medium suits them best. We have water color, pastels, crayon, pencils and chalk all going at the same time. Poetry is also encouraged. This acts as an equalizer for those who may not feel as confident using one material verses another.

The contest is an equalizer not only on the classroom level but on the school level as well. Participating in this national contest gets the students so excited about somehow being connected to a greater purpose. We will continue to let River of Words keep our minds and ideas flowing as water to the sea.

Theresa Dean  
Upper Elementary Art Teacher  
Casa Montessori School  
Marietta

## Hand in Hand: Let's Encourage Our Students' Creativity

How do we encourage creativity in young people? No one needs to persuade us that young people need to be encouraged. No one must convince us that the creativity of young people is endless and vital. We are reading here because we already believe these things. And we know that environmental issues and the joy of nature can walk hand in hand with our creative impulses.

As teachers of writing and science and art and social studies, we are already eager to give our students the opportunity to respond in creative ways both to earth's problems and its delights. The annual International River of Words Art and Writing Contest, begun in California by former US Poet Laureate Robert Haas and supported and sponsored locally by the Department of Natural Resources and coordinated by the Georgia Center for the Book and Georgia Project WET, allows us to encourage and to recognize young people's creative efforts.

As teachers, we may have given some attention, worked with a student, or mailed an entry. We have celebrated the word and the visual image in their power both to disguise and to disclose the sacred reaches of the human heart. We may have seen a first cursive or computer printout of a student's efforts or watched an incredible visual take shape. We might have heard a poem read aloud or seen a picture explained by a proud, unsteady voice at the ROW Awards Ceremony, which is held each May, perhaps witnessing in wonder for the first time the beauty and the terror of words that say exactly what has never been said before in quite the same way or art that captures feelings and structures and colors beyond our imaginings.

But I tell you what *more* we could do. First, we must give young people more opportunities to write and photograph and paint and draw. We must assume the difficult job of having our students create and create again. We must guide them and lead them to the soul of art within each of us: our own response to otherness, as well as to ourselves.

Second, we must nurture every writer and artist, giving special care and attention to those whose gifts are beyond our understanding. We nurture with praise, with rewards, with questions, with support. The poet Khalil Gibran says it like this:

The teacher who walks in the shadow of the temple, among his followers, gives not of his wisdom but rather of his faith and his lovingness. If he is indeed wise, he does not bid you enter the house of his wisdom, but rather leads you to the threshold of your own mind.

Next, we must really respect the students' efforts, the students' work and recognize young people's creativity with opportunities such as River of Words. A few of these students' lives will be changed by our support. Some will become writers or artists themselves: Ben's play was staged in London; Stephen writes for TV; Karen is an editor; Nancy is a sports writer; and Angus' poem appeared in a Paris magazine. Some will become teachers of writing or art: Pat in Iowa; Mary in South Carolina; Donna in Illinois; Denise in DeKalb and Chuck in Hall County. Many, in other careers, will create for fun, for thought, for life.

And finally, to encourage creativity in our students, we must create, ourselves, prepared for surprise. We must not fear the revelations nor compartmentalize our imaginations. I am a writer and a photographer, as well as a teacher, because I have been given opportunities. I have been nurtured by family, teachers, friends, and loved ones. My efforts, early and late, awkward and inspired, have been respected and recognized and loved. The great musician Mozart tells it like this:

Neither a lofty degree of intelligence, nor imagination, nor both together, go to the making of genius. Love, love, love, that is the soul of genius.

Diana Lynn Farmer, Ph.D.  
English teacher, Chamblee High School

## An Inspirational Letter from our Teacher of the Year, John Bush

This year was the first year that my students participated in The River of Words contest. I heard about The River of Words contest from a colleague of mine, and I thought of it as an opportunity for the kids to enter a state and national contest. Since I love fishing, especially on Georgia's rivers, creeks, and streams, I saw this contest as a little special, but overall I saw it as only another contest to enter, one that would be like all the others. But what I didn't know then was the impact the contest would have on my kids and what we, including myself, learned throughout the process of this contest---I began reading my students' poetry, and that has made all the difference between The River of Words contest and the rest.

When I first mentioned it to the class, the students were just as excited as they were with the other contests we had entered: they saw it as just another contest. They wanted to know what they had to do to enter: "Do we have to sign our names on the back?" "Do we place our address on a separate sheet of paper?" "Are we going to be anonymous?" I realized this perception, so I tried to encourage them a little. They didn't begin to turn until I received the book of poems from the previous year's contest and began reading the poems of the previous winners.

I read the poems from the book, and they listened intently, began asking questions, questions like "I wonder what that poet meant by using the waterfall as an image?" They commented on the creativity of the poets: "She really did a fine job with comparing herself to a country." I saw they were wading in deeper, and I was wading right there with them. We discussed the poems, the imagery, the metaphors, the use of diction, the creativity of the poets. We began to focus on the contest, not only as a contest, but as a way to talk about the craft of poetry, a way to develop ideas, a way to communicate our emotions using symbolism. We talked about our lives, our experiences, and what we noticed in the world around ourselves. We talked about the environment and how we enjoy it, what it brings to us, how we need it to survive, to cope, to notice that we are all human. We really enjoyed the deep discussions, and I saw that we all began to see this contest as more than a contest: it was an opportunity that encouraged a poetry of life, a way to be mindful of ourselves, of others, the world around us. As they wrote the poetry, I saw how much they wanted to share with the class their ideas, their poem, and I saw how each student would help out another in some way with communicating an idea. The River of Words helped to create and to inspire a community of writers and this inspired me. I even wrote a poem related to the contest topic and they helped me on it! But what inspired me most was the poetry they wrote, the memorable lines, images, and the genuine feelings they communicated.

I recall reading Bethany Bernard's poem, *Rain*, and I am reminded of the gift that we all have in water and what it creates: life. Bethany's faith in an ultimate goodness that will persevere is reflected in this poem. She speaks of the simple word rain, that simple drop of water, yet she communicates that this simple word, simple drop is the gift that we all want and need. Her poem becomes the rain, the droplets of words that help remind the reader of life and water.

I recall Bridget Walsh's poem, *Turtle Beach*. Her words capture the essence of being, capture a moment in relishing what the world has to offer, offerings that make us human. And even though she says the horizon is a myth, it is a myth that we need, a story that we can all share and look forward to, a hope that keeps us on the edge of wanting more. And she understands that what we see is not all that we get: her poem tells us that there is more out there beyond our sight, that "seeing" what exists beyond our sight depends on a faith in our world, a faith in ourselves that we can understand it without seeing it. And she does just that.

And finally I recall, again and again, Katie Zelinski's poem, *The Freest Element*. She questions what it feels like to be as free as the water, to be a part of everything around us, to commune with the world. She wakes in her poem to water, understands that nature is what will survive us all. She intrinsically knows that we are all connected in some way to the earth, knows that we are "one with all things." I read Katie's poem and am reminded of how much we need the world around us, and I am reminded that in saving the world, we save ourselves. Katie passed away a week before the River of

Words ceremony and while she may have questioned how it feels to be water she really knew the answer, for even in asking the question, she knew the response: words and spirit, like water, live in us all.

These poems and all of the poems that the students created were great to me. I found in each poem wonderful drops of rain, gifts, as Bethany would say, that not only a teacher could enjoy, but any reader could enjoy. And through it all, the wading in, the discoveries we made in turning over rocks and stones, the discoveries we made under and between the waters, I found that I made the greatest catch of all: I saw how they each saw the world in a new way, a world, as one of my students Steven Peele put it in his poem, where he

“[launches] bodily off the edge of a fall,  
suspended flying  
never sinking,  
but rocketing out into the sky  
toward the sun.”

And that is all that matters.

Thank you for it all,

John Bush  
North Gwinnett High School

### **Luna Moth Resting in the Rain**

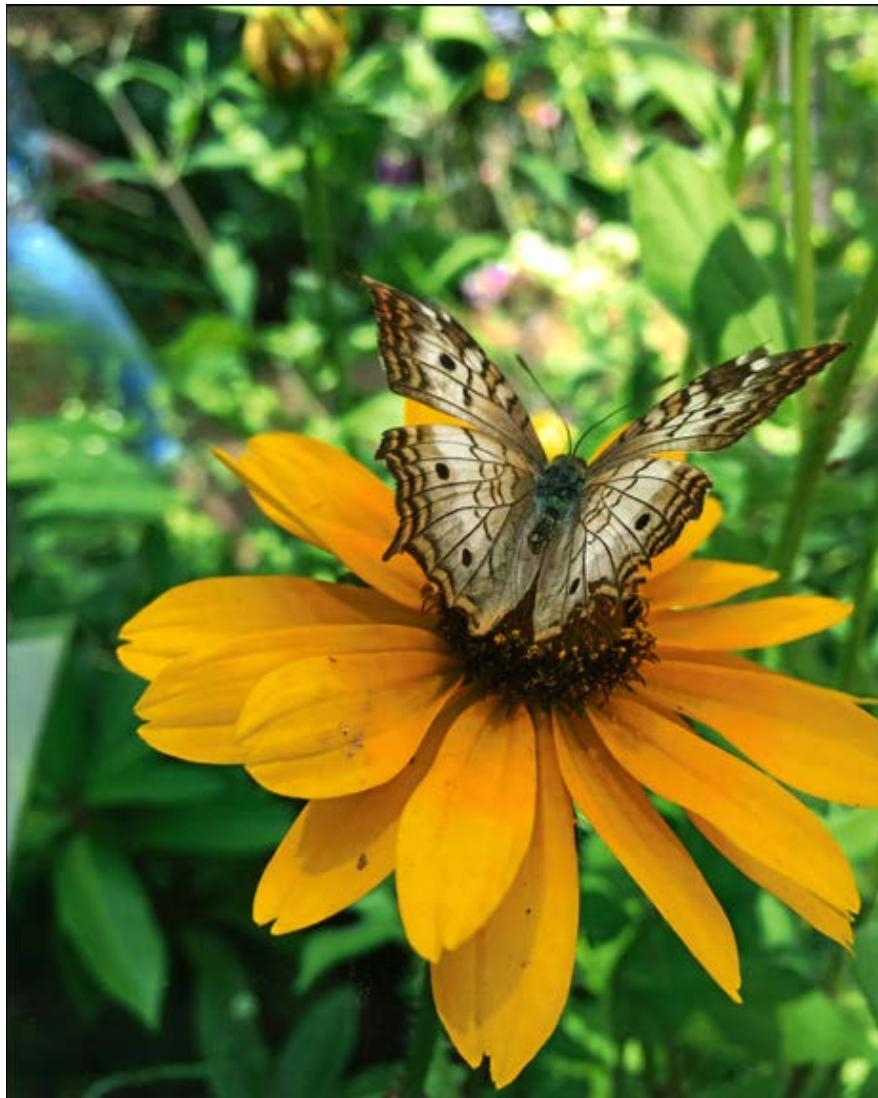
Watercolor, crayon  
Seth Landers, grade 1  
Whitlow Elementary, Cumming  
Teacher: Taylor Rodden







# Other Outreach Programs from Georgia EPD



***Unnoticed Beauty***  
Photograph  
Mikayla Stoltz, grade 6  
The Walker School, Marietta  
Teacher: Mary Ann Stillerman



# GEORGIA Adopt-A-Stream

## *Georgia's Volunteer Water Quality Monitoring Program*

The goals of Georgia Adopt-A-Stream are to (1) increase public awareness of the State's nonpoint source pollution and water quality issues, (2) provide citizens with the tools and training to evaluate and protect their local waterways, (3) encourage partnerships between citizens and their local government, and (4) to collect quality baseline water quality data. To accomplish these goals, Georgia Adopt-A-Stream encourages individuals and communities to adopt sections of streams, wetlands, lakes or rivers. Manuals, training, and technical support are provided through Georgia EPD, Adopt-A-Stream Regional Training Centers and community/watershed Adopt-A-Stream organizers throughout the state.



Department of Natural  
Resources

[Environmental Protection Division](#)

### Getting Started

- Locate a stream, wetland or lake you would like to monitor.
- Obtain the introductory manual, ***Getting To Know Your Watershed*** from the Georgia Adopt-A-Stream office.
- Read the manual and follow the directions to register your stream, wetland or lake.
- Conduct a Watershed Assessment using the data forms and directions in the manual.
- Plan one cleanup event and one outreach activity for the year.
- Call Georgia Adopt-A-Stream to find out about additional manuals and workshops for visual, biological and chemical monitoring.



### *Free Resources Available from Georgia Adopt-A-Stream*

***Getting To Know Your Watershed*** Manual

***Visual Stream Survey*** Manual

***Biological and Chemical Stream Monitoring*** Manual

***Wetland Monitoring*** Manual

***Adopt-A-Lake*** Manual

Adopt-A-Stream Educator's Guide

***Georgia Adopt-A-Stream: It All Begins with You*** video

***Georgia Outdoor: Georgia Adopt-A-Stream & Rivers Alive*** video

***You're the Solution To Water Pollution*** brochure and poster

Georgia Adopt-A-Stream Newsletter

Water Quality Data on Google Earth

Training Workshops

Teacher PLU Credits

**Contact:** Georgia Adopt-A-Stream  
2 Martin Luther King Jr Dr SE, Ste. 1462 East  
Atlanta, GA 30334  
[www. AdoptAStream.Georgia.gov](http://www.AdoptAStream.Georgia.gov)



## Visual Stream Survey

### What

- A visual & physical evaluation of stream conditions

### Why

- Most of the critical water pollutants and habitat damage (sedimentation, erosion, excessive nutrients) can be detected through the visual survey

### When

- Monitor quarterly or once every season

## Chemical Monitoring

### What

- The basic tests are pH, dissolved oxygen, temperature and settleable solids
- Advanced tests include phosphates, nitrates, ammonia, alkalinity and conductivity

### Why

- Oxygen is needed for respiration
- Temperature is directly related to biological activity
- pH measures the acidity or alkalinity of the water
- Phosphates and nitrates are nutrients that cause algal blooms when present in excess

### When

- Monitor once a month



## Biological Monitoring

### What

- An inventory of Macroinvertebrates in the stream

### Why

- The overall health of the stream can be determined by the diversity of macroinvertebrates found. The presence of macroinvertebrates indicate the quality of both water and habitat

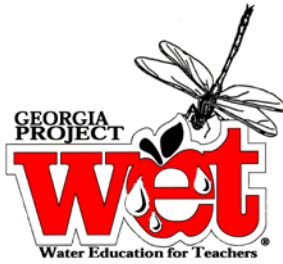
### When

- Monitor quarterly or once every season



**Contact: Georgia Adopt-A-Stream**  
**Georgia Adopt-A-Stream**  
**2 Martin Luther King Jr Dr SE**  
**Ste. 1462 East**  
**Atlanta, GA 30334**

[AdoptAStream.georgia.gov](http://AdoptAStream.georgia.gov)



## What is Project WET?

The Project WET (Water Education for Teachers) is an international, interdisciplinary water science and education program for educators of K-12 students with the mission to reach the world with water education. The 64 Lessons in the Curriculum and Activity Guide are correlated to national and state standards in every discipline.

## How can I become a WET Educator?

Be a part of a network committed to teaching young people the vital connections between water resources and our lives through interactive, fun workshops. Participants of WET Educator Workshops (6-10 hours) receive training to teach children, the Project WET Curriculum and Activity Guide, as well as additional water education resources. Facilitator Workshops (10-16 hours) are also available for those educators wanting to provide training to other adults through their own Project WET Educator Workshops. Check the calendar page on [proejctwet.georgia.gov](http://proejctwet.georgia.gov) or [eeingorgia.org](http://eeingorgia.org) for the latest workshop schedule.



For more information contact:

Georgia Project WET  
[ProjectWET.Georgia.gov](http://ProjectWET.Georgia.gov)

Georgia Project WET is sponsored by The Department of Natural Resources,  
Environmental Protection Division, Watershed Protection Branch.

[ProjectWET.Georgia.gov](http://ProjectWET.Georgia.gov)

2 Martin Luther King Jr Dr SE, Ste. 1462 East  
Atlanta, GA 30334



Take your students' learning further!



## Rivers Alive - Georgia's Annual Waterway Cleanup

What is Rivers Alive?

**Rivers Alive** is a volunteer cleanup event that targets all waterways in the state of Georgia including streams, rivers, lakes, beaches, and wetlands. The mission of **Rivers Alive** is to create awareness of and involvement in the preservation of Georgia's water resources. **Rivers Alive** is held annually each October and is sponsored by the Georgia Department of Natural Resources' Georgia Adopt-A-Stream Program and the Georgia Department of Community Affairs' Keep Georgia Beautiful Program, in cooperation with the Columbus "Help the Hooch".

Why should you get involved?

Georgia's 70,150 miles of streams and rivers need your help! Our waterways provide us with fresh drinking water, great recreational opportunities like canoeing and fishing, and they serve as a pleasant respite from our busy day to day lives. Everyone contributes to pollution in our streams. This is your opportunity to help by giving something back to the environment! Help us clean our rivers, streams, lakes, beaches and wetlands by supporting **Rivers Alive!**

How you can get involved:

- For those of you who would simply like to join a cleanup, please visit our website ([www.riversalive.org](http://www.riversalive.org)) in the fall to search our maps and find a cleanup near you and contact information.
- If you are considering organizing a local **Rivers Alive** cleanup event, go to the **Rivers Alive** website ([www.riversalive.org](http://www.riversalive.org)) and register your event to receive free t-shirts for your volunteers.
- Event registration begins in June and runs through July 31st.
- On our website, you will find a River Cleanup Guide with ideas to make your event more successful, sample press releases, waivers, maps, and detailed contact information so volunteers can find your event, and links to your local **Rivers Alive** cleanup web pages!

For more information contact:  
Georgia Environmental Protection Division  
NonPoint Source Program

[RiversAlive.georgia.gov](http://RiversAlive.georgia.gov)

# Reference Information



## ***Tales of the Tiger Swallow***

Acrylic, pencil, watercolor

Rylee Breese, grade 8

Gen. Ray Davis Middle, Stockbridge

Teacher: Katy King



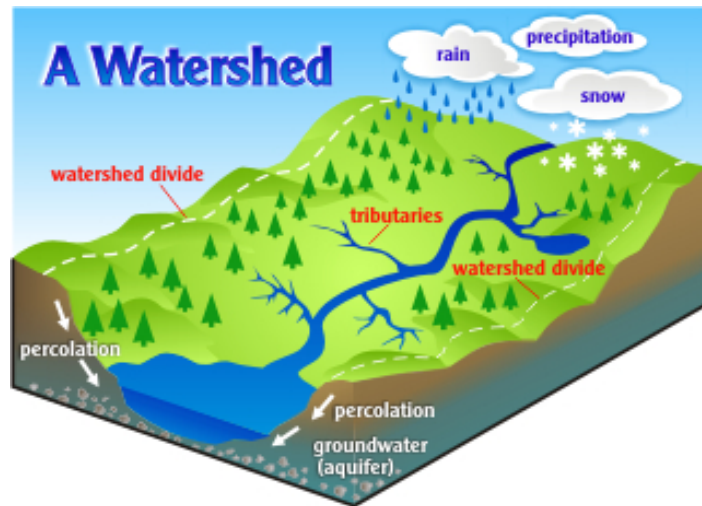


## What is a Watershed?

A watershed is the area of land where all of the water that is under it or drains off of it goes into the same place. John Wesley Powell, scientist geographer, put it best when he said that a watershed is:

"that area of land, a bounded hydrologic system, within which all living things are inextricably linked by their common water course and where, as humans settled, simple logic demanded that they become part of a community."

Watersheds come in all shapes and sizes. They cross county, state, and national boundaries. In the continental US, there are 2,110 watersheds; including Hawaii Alaska, and Puerto Rico, there are 2,267 watersheds.

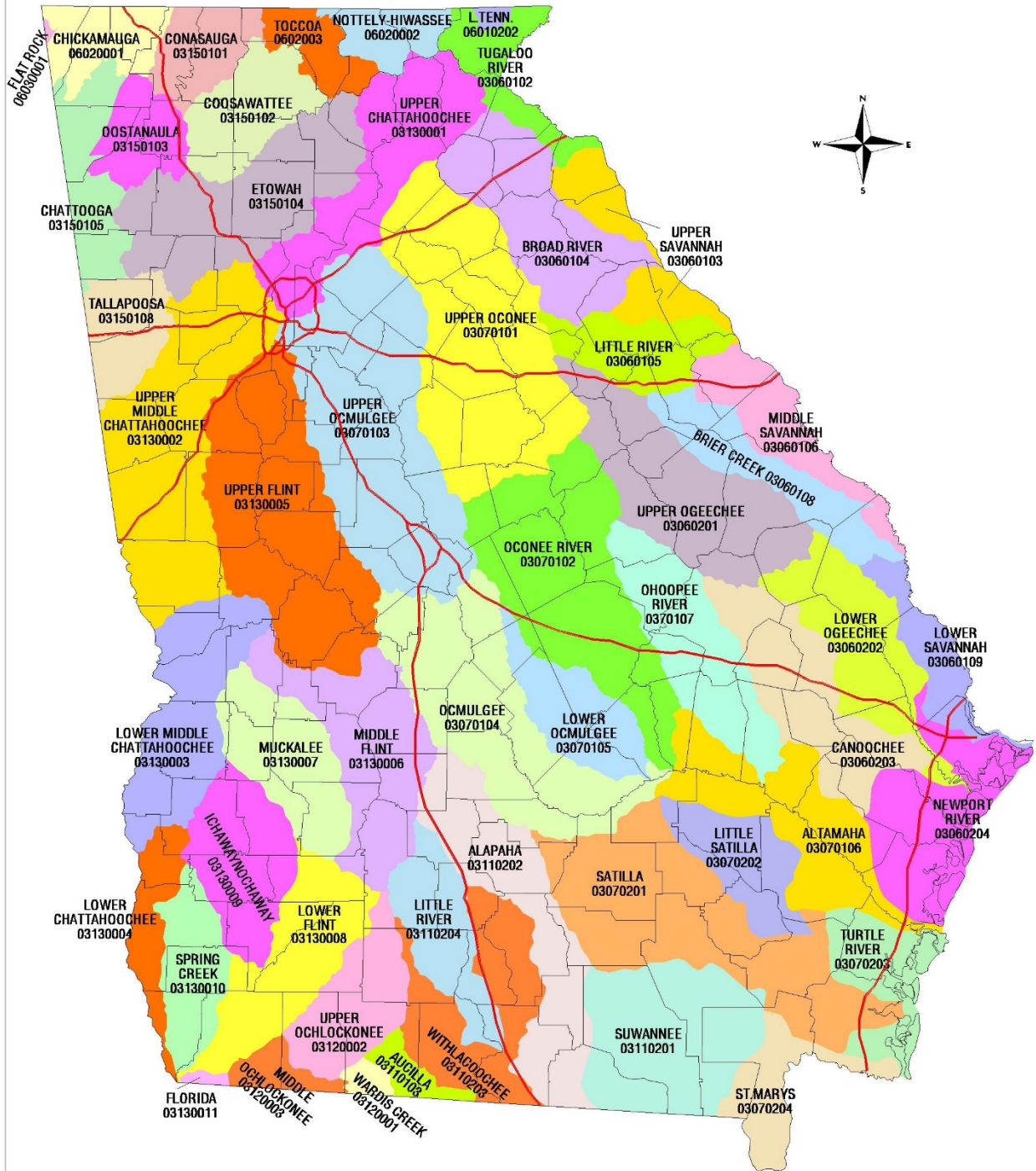


Source : <http://water.epa.gov/type/watersheds/whatis.cfm>

Find an interactive U.S. watersheds map here : <http://www.interactivewatersheds.net/uswtrmap.html>

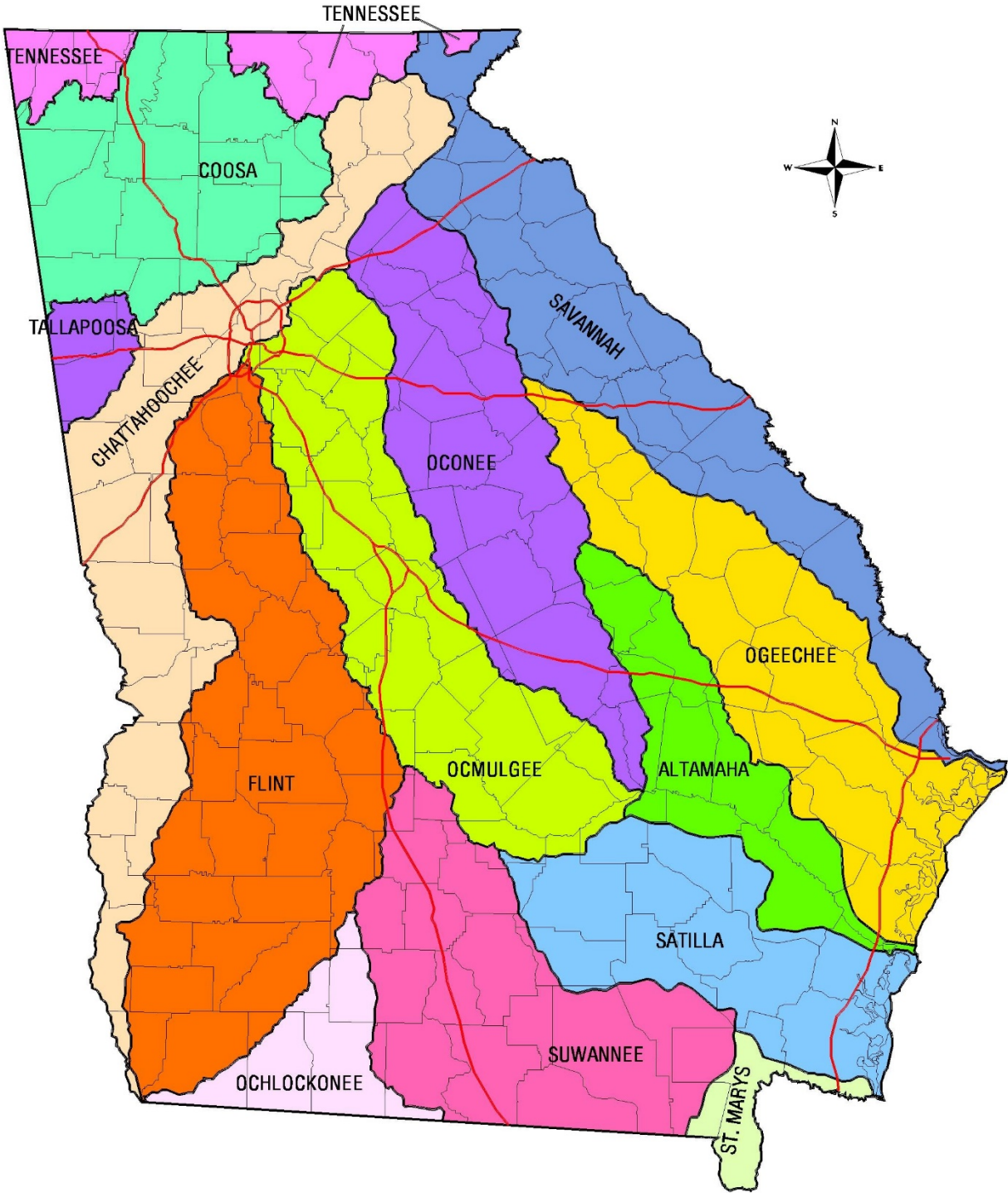
Find the watershed you live in here: [http://water.usgs.gov/wsc/map\\_index.html](http://water.usgs.gov/wsc/map_index.html)

# Georgia's 52 Watersheds

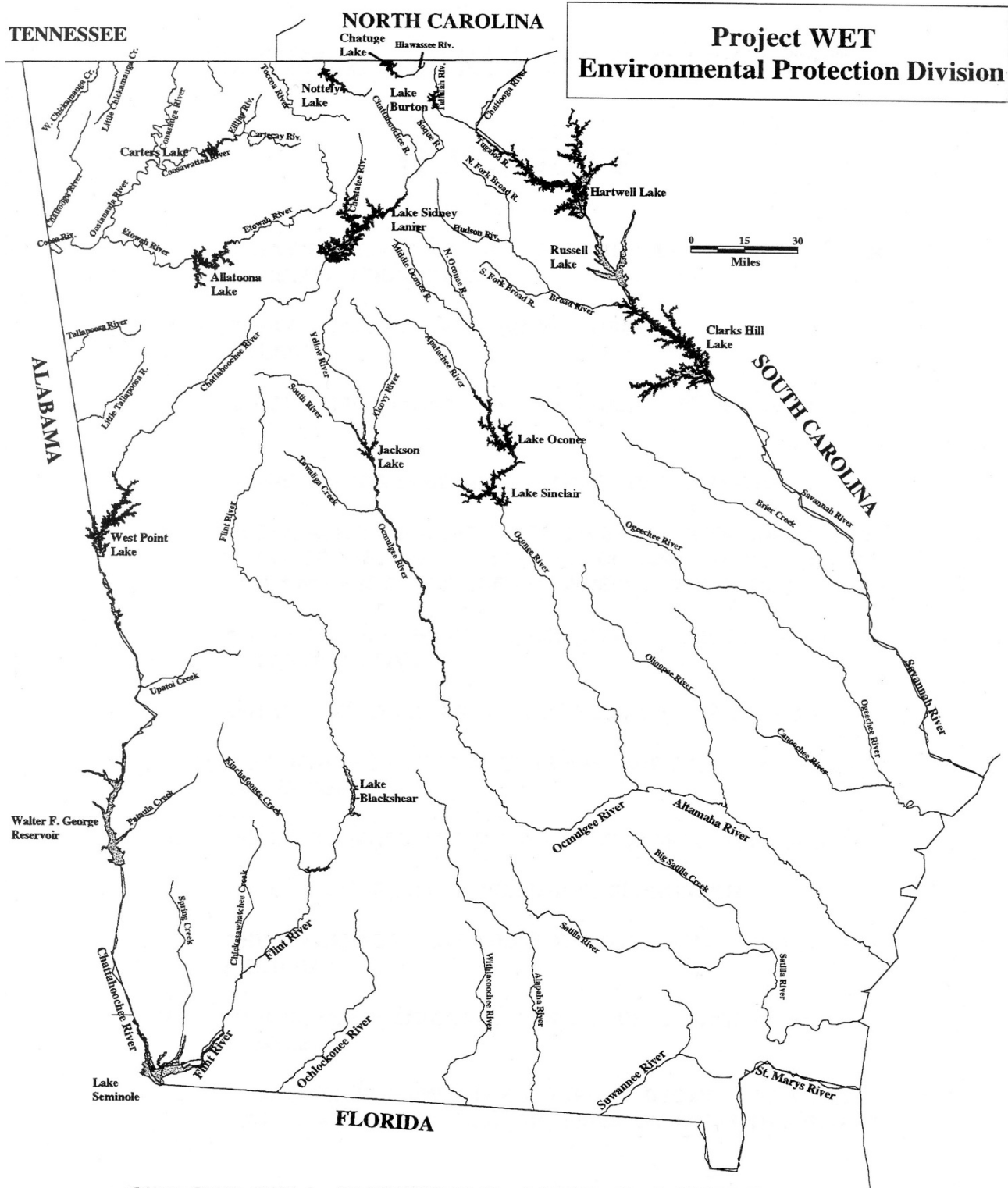


Map by the Geologic Survey Branch, Environmental Protection Division  
 Provided to the Georgia Water Management Campaign  
 Watershed boundaries from United States Geological Survey 8-digit Hydrologic Cataloging Units  
 Watershed names from Water Protection Branch, Environmental Protection Division

# EPD 14 River Basins




Map by the Geologic Survey Branch, Environmental Protection Division



# GEORGIA RIVERS AND LAKES

Map Produced by GA EPD - Hazardous Waste Management Branch, 1997



## NONPOINT SOURCE POLLUTION: Causes and Sources

<b>Causes (pollutant or stressor)</b>	<b>Possible Sources</b>	<b>Potential Adverse Impacts</b>
Sediment and Siltation (sand, silt, clay)	Cropland Forestry activities Pasture Stream banks Construction Roads Mining operations Gullies Livestock operations Other land-disturbing activities	Sediment may destroy fish habitat by: (1) blanketing spawning and feeding areas; (2) eliminating certain food organisms; (3) causing gill abrasion and fin rot; and (4) reducing sunlight penetration, thereby impairing photosynthesis. Suspended sediment decreases recreational values, reduces fishery habitat, adds to mechanical wear of water supply pumps and distribution systems, and adds treatment costs for water supplies. Nutrients and toxic substances attached to sediment particles may enter aquatic food chains, cause fish toxicity problems, impair recreational uses or degrade the water as a drinking water source.
Nutrients (phosphorus, nitrogen)	Erosion and runoff from fertilized fields Urban runoff Wastewater plants Industrial discharges Septic systems Animal production operations Cropland or pasture where manure is spread	Nutrients are essential for the growth and survival of aquatic plants and animals. Excess nutrients may cause excessive algae and aquatic plant growth, which may choke open waters and consume oxygen (primarily from decomposition of dead plants and algae). These conditions will adversely affect fish and aquatic organisms, fishing and boating, and the taste and odor of finished drinking water. Nitrogen contaminants in drinking water significantly above the drinking water standard may cause methoglobinemia (blood disease) in infants, and have forced the closure of many water supplies.

<p>Pathogens (bacteria and viruses)</p>	<p>Human and animal excretions Animal operations Cropland or pasture Wastewater treatment Septic systems Urban runoff Wildlife</p>	<p>Waterborne diseases may be transmitted to humans through drinking or contact with pathogen-laden water. Eating shellfish uncooked or taken from crops irrigated with pathogen-laden waters may also transmit waterborne diseases. The principal concern in both surface and ground waters is the potential degradation of public water supply sources. Pathogens reaching a lake or other surface water may limit primary contact recreation, such as swimming.</p>
<p>Pesticides</p>	<p>All land where pesticides are used: (forest, pastures, urban/suburban areas, golf courses, waste disposal sites) Sites of historical usage (chlorinated pesticides) Urban runoff Irrigation return flows</p>	<p>Pesticides may enter surface waters either dissolved in runoff or attached to sediment or organic materials, and may enter ground water through soil infiltration. The principal concerns in surface water are their entry into the food chain, bioaccumulation, toxic effects on fish, wildlife and microorganisms, habitat degradation and potential degradation of public water supply sources. Ground water impacts are primarily related to water supply sources.</p>
<p>Toxic Substances (heavy metals, oil, and petroleum products)</p>	<p>Urban runoff Wastewater treatment Industrial discharges</p>	<p>Toxic substances may enter surface waters either dissolved in runoff or attached to sediment or organic materials and may enter ground waters through soil infiltration. Principal concerns in surface water include entry into the food chain, bioaccumulations, toxic effects on aquatic organisms, other wildlife and microorganisms, habitat degradation and degradation of water supplies. Ground water impacts are primarily related to degradation of water supply sources.</p>

<p>Organic Enrichment (depletion of dissolved oxygen)</p>	<p>Human and animal excretions Decaying plant &amp; animal matter Discarded litter and food waste</p>	<p>Organic materials (natural or synthetic) may enter surface waters dissolved or suspended in runoff. Natural decomposition of these materials may deplete oxygen supplies in surface waters. Dissolved oxygen may be reduced to below the threshold necessary to maintain aquatic life.</p>
<p>Thermal Stress &amp; Sunlight</p>	<p>Riparian corridor destruction Bank destruction Urban runoff Hydromodifications Industrial dischargers</p>	<p>Direct exposure of sunlight to streams may elevate stream temperatures, which can exceed fish tolerance limits, reduce dissolved oxygen and promote the growth of nuisance algae. The lack of trees along a stream bank contributes to thermal stress and excessive sunlight. Thermal stress may also be the result of storm water runoff, which is heated as it flows over urban streets. Hydromodifications that create wider, shallower channels create more surface area and allow for quicker temperature changes. Modifications that create pools and increase the storage time of water may also contribute to thermal stress by increasing surface area and not allowing the warmed water to wash out of the watershed. Coldwater fish may be eliminated or only marginally supported in streams affected by thermal stress.</p>
<p>pH (acidic and alkaline waters)</p>	<p>Mine drainage Mine tailings runoff Atmospheric deposition Industrial point source discharges</p>	<p>Acidic or alkaline waters will adversely affect many biological processes. Low pH or acidic conditions adversely affect the reproduction and development of fish and amphibians, and can decrease microbial activity important to nutrient cycling. An extremely low pH will kill all aquatic life. Acidic conditions can also cause the release of toxic metals that were adsorbed to sediments into the water column. High pH, or alkaline conditions, can cause ammonia toxicity in aquatic organisms.</p>

<p>Flow Alterations (hydrologic modifications)</p>	<p>Channeling Dams Dredging Stream bank modifications</p>	<p>Hydrologic modifications alter the flow of water through the stream. Structures or activities in the water body that alter stream flow may in turn be the source of stressors, such as habitat modifications, or exacerbate others, such as thermal stress. Dams may also act as a barrier to the upstream migration of aquatic organisms. Stream flow alterations may result from a stressor such as sedimentation, which may change a streambed from narrow with deep pools to broad and shallow.</p>
<p>Habitat Modifications</p>	<p>Channeling Construction Changing land uses in the watershed Stream burial Dredging Removal of riparian vegetation Stream bank modifications</p>	<p>Habitat modifications include activities in the landscape or in the water body that alter the physical structure of the aquatic and riparian ecosystem. Some examples include: removal of stream side vegetation that stabilizes the stream bank and provides shade; excavation in the stream and removal of cobbles from the stream bed that provide nesting habitat for fish; stream burial; and development that alters the natural drainage pattern by increasing the intensity, magnitude, and energy of runoff waters.</p>
<p>Refuse, Litter and Other Debris</p>	<p>Litter Illegal dumping of solid wastes</p>	<p>Refuse and litter in a stream can clog fish spawning areas; stress aquatic organisms; reduce water clarity; impede water treatment plant operations; and impair recreational uses of the water body, such as swimming, fishing and boating.</p>

*From the Georgia Adopt-A-Stream Teacher's Manual  
Visit [www.georgiaadoptastream.org](http://www.georgiaadoptastream.org) for more information about this program.*



## Land Uses and Water Quality

### Urbanization

The urbanization of land concentrates people, and the pollutants that result from their lifestyles, in areas that largely covered with impervious surfaces--buildings, driveways, roads, sidewalks, and parking lots. This combination of people, pollutants, and pavement produces urban runoff that can carry a greater pollutant load than municipal sewage.

The amount of pollutants carried in urban runoff with stormwater or snowmelt is influenced by traffic density, littering, fertilizer and pesticide use, construction site practices, animal wastes, soil characteristics, topography of the area, percentage of impervious surfaces, atmospheric deposition, and amount of precipitation.

Pollutants transported in urban storm sewer systems to nearby waters include nutrients, bacteria, litter soil, toxic chemicals, and organic (oxygen-consuming) materials.

### Construction sites

Construction activities can harm nearby waters in three ways. The first occurs when natural land cover is disturbed during excavation and grading operations. Soil stripped of its protective vegetation can be easily washed into nearby surface waters.

Second, stormwater runoff often carries materials used on the site, such as oil, grease, paints, glues preservatives, acids, cleaning solutions, and solvents, into nearby lakes or streams.

And third, inadequate planning--failure to design and construct projects with water quality factors in mind, such as peak runoff and flow routing--can accelerate runoff.

### Septic Systems

Many homes are not connected to municipal wastewater treatment systems and rely on septic tanks and field lines for sewage treatment.

If they are well designed, installed, and maintained, septic systems will safely treat wastewater for 20 to 50 years. Improper design, installation, or operation of septic systems or holding tanks can lead to pollution of surface or groundwater by bacteria, nutrients, and household toxic chemicals. A recent U.S. Environmental Protection Agency (EPA) report stated that most waterborne diseases are probably caused by old or poorly designed and operated septic systems.

Septic systems use natural decomposition to treat wastes. Holding tanks do not treat wastes, but simply contain them on site. Both septic systems and holding tanks must be periodically pumped out or cleaned. Care must be taken in disposing of the materials removed in this cleaning. Solids cleaned out of septic systems can be land-spread since they are partially treated, but continuous spreading on a single site of land should be avoided. Wastes removed from holding tanks need additional treatment since they generally have not undergone much decomposition.

## **Croplands**

Stormwater and snowmelt runoff from croplands can carry sediments, nutrients, bacteria, and organic contaminants into nearby lakes and streams. Nitrates and pesticides can seep from agricultural lands and contaminate underlying groundwater supplies.

By volume, sediment is the pollutant entering waters in the largest quantity. Cropland erosion is the most significant source of sediment.

Good water quality and soil erosion management practices by individual land managers is the key to stopping valuable soil loss. This also protects water quality by preventing the movement of sediment and other pollutants from croplands to waters.

## **Livestock Operations**

Animal feedlots are defined as lots and buildings used to confine animals for feeding, breeding, raising, or holding purposes. This definition includes open ranges used for feeding and raising poultry, but does not include pastures.

Poor or inadequate feedlot management can allow stormwater runoff to carry pollutants from accumulating manure into surface and groundwaters.

The trend nationally has been toward the construction and operation of fewer, but larger and more specialized livestock and poultry farms.

Feedlots can create significant pollution problems. Pollutants coming from animal feedlots include nutrients, oxygen-demanding materials, and pathogens that may affect humans and animals. High nitrate levels in groundwater have been associated with improper storage of animal manure.

## **Fertilizers**

Nitrogen, phosphorus, and potassium are the three primary nutrients applied to crops, gardens, and lawns as fertilizers.

Phosphorus and nitrogen entering water bodies in runoff from overfertilized areas can cause nuisance conditions, such as heavy algal blooms and excessive weed growth, making lakes unsuitable for swimming, waterskiing, and other uses.

The presence of nitrates in rural well water presents a risk to infants under six months old whose formula is prepared with nitrate-contaminated water. Young infants lack the ability to handle high levels of nitrate and may develop methemoglobinemia (blue-baby syndrome), a disease impairing the ability of blood to carry oxygen throughout the body.

Studies have indicated that nitrogen in fertilizers and manures is a probable source of elevated nitrate concentrations in rural groundwater supplies.

## **Pesticides**

Pesticides are used to control undesirable plants or animals. They include herbicides, insecticides, fungicides, and rodenticide. Pesticides are used on agricultural lands, on urban and suburban lawns and gardens, as aquatic nuisance controls in lakes, and in forest management.

Pesticide application can lead to groundwater contamination. Surface waters can be contaminated by drift from pesticide spraying and by runoff from pesticide-treated soil. Both surface and groundwaters are vulnerable to contamination by stormwater runoff flowing from storage, mixing, loading, and spray-tank cleaning areas.

# THE FOUNTAIN'S ROAR

Traveling up the lonely mountain  
Not a soul in sight  
That's when I hear the fountain  
Pouring down in the dimming light  
It pours down from a river  
On top of the hill  
Jumping from rock to rock  
Shock makes me stand still  
The fountain's roar is defining  
But there is comfort in it  
I rest on the ground reclining  
As its spray washes away the grit  
As I lay the mist cools me  
My limbs become un-sore  
I lay thinking there's no place better to be  
As I listen to the fountain's roar

Cameron Britt, grade 7  
Elkins Pointe Middle, Roswell  
Teacher: Jennifer Okiyama

# BUTTERFLY

Flies effortlessly through the air  
Camouflage design for protection  
Harmless, gentle, dainty insect  
Colorful, fragile  
Butterfly

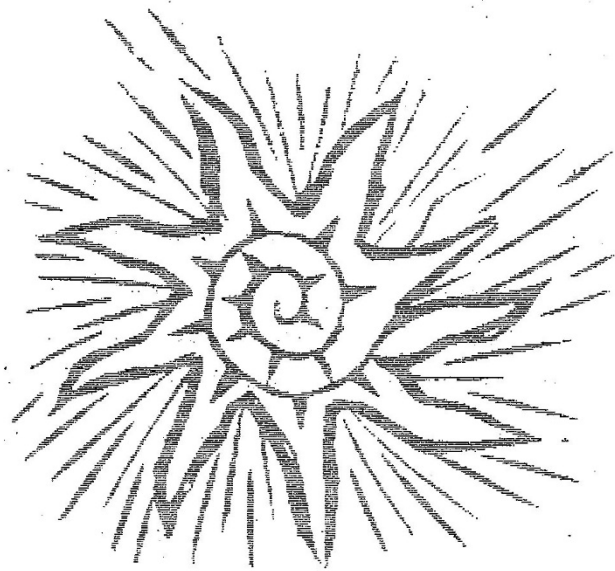
Katie Hodges, grade 2  
East Laurens Primary, East Dublin  
Teacher: Terry Little

# About Watersheds

---

Long Person, you passed a stone's throw away from his door,  
Your ripples are Cherokee prayers,  
You carry the hopes of this nation within your banks,  
You and he are alike, you are contained histories,  
You are a generation of yet unbroken channels.

*—Gladys Cardiff  
From "Long Person"*

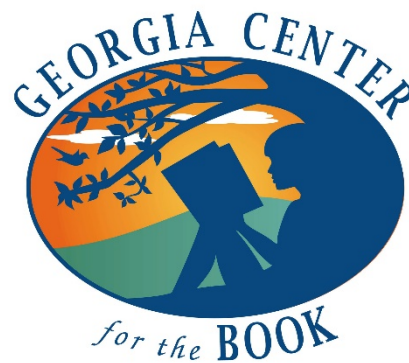
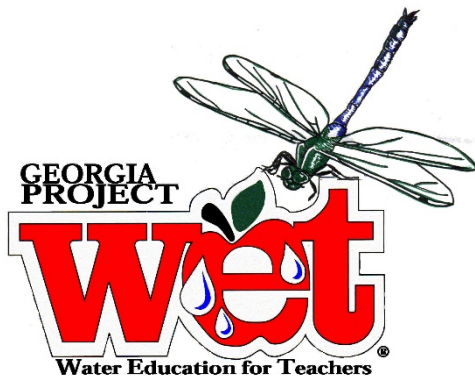




# *Happy Rowing!*

For more information and the current library tour schedule visit  
***ProjectWET.Georgia.gov***

*Sponsored in Georgia by--*



*The annual deadline for River of Words is **February 1**.  
Send all River of Words Contest entries with entry forms to:*

**Georgia River of Words**  
2 MLK Jr. Drive, Suite 1462 East  
Atlanta, GA 30334

Georgia River of Words is facilitated through Outreach in the Watershed Protection Branch of the Georgia Environmental Protection Division. The preparation of this guide was financed in part through a grant from the U.S. Environmental Protection Agency under provisions of section 319 (h) of the Federal Clean Water Act of 1987, as amended.