Adopt-A-Trout

Bringing Kids to Wyoming’s Rivers and Trout to Wyoming’s Kids

PROGRAM & ACTIVITY GUIDE
PROGRAM OVERVIEW

What is Adopt-A-Trout?
The Adopt-A-Trout Program is a place-based educational and inspirational experience for elementary and middle school students. As part of the program, students are paired with an ongoing fisheries movement study in a local aquatic system and throughout the school year learn about the underwater life of trout. The program is accomplished through a multi-faceted classroom and field-based learning approach that engages multiple learning styles and gets kids out on the land and in our rivers and streams having fun. Where possible the program culminates with a field day to complete an on-the-ground conservation project related to the study.

What is Place-based education?
Place-based education focuses learning within the local community of a student. It provides learners with a path for becoming active citizens and stewards of the environment and place where they live. The resources of the community are brought into the learning process in a way that makes education exciting. The approach emphasizes hands-on, real world learning experiences that challenge students to learn and solve problems. It increases academic achievement, helps students develop stronger ties to their community, enhances student's appreciation for the natural world and creates a heightened commitment for serving as contributing citizens. Community vitality and environmental quality are enhanced as local citizens, organizations and environmental resources are woven into the process of educating its citizens (http://www.anei.org/pages/99_place_based_education.cfm).

Program Goals
Through classroom based lessons, field-based experiences, and ongoing monitoring of scientific data the Adopt-A-Trout program will:

• Spark children's curiosity and interest in trout, fishing, and aquatic ecosystems.
• Teach students about the underwater world of our lakes and streams.
• Involve students in a real world research study where they get to work with biologists and contribute to local science data.
• Create opportunities for students to actively engage in community restoration projects.
• Give students opportunities to get to know trout up-close and personal!
Resources
This program is based on the “Adopt-A-Fish” Program started in Montana by Montana Fish, Wildlife and Parks, The Blackfoot Challenge, The US Fish and Wildlife Service, and the Big Blackfoot Chapter of Trout Unlimited. We thank this group for launching such a great program and letting us expand on this program through a similar program in Wyoming. Wyoming TU carried many of the ideas and principles that were begun in this program into the Wyoming Adopt-A-Trout Program. To learn more about the Montana Adopt-A-Fish program please visit: http://fwp.mt.gov/education/angler/adoptAFish/

Why Adopt-A-Trout?
Across the country, there is a need for kids to have an understanding of science as more than a theoretical pursuit. The program is designed to apply an approach to learning that is integrated with real-world ongoing science and to provide students with an understanding that the same basic structure of the scientific method is used by biologists and study-designers. Additionally, a research study recently uncovered that a kid is far less likely to engage in hunting and fishing as an adult if he or she doesn't learn it as a child. Ultimately, the future of hunting, fishing, and many of our wild landscapes depend upon the commitment of future generations to learn, know and love these resources and traditional forms of recreation. Wyoming Trout Unlimited has been implementing Adopt a Trout programs since 2008.

Who is Trout Unlimited?
TU is a national organization with more than 150,000 volunteers organized into 400 chapters from Maine to Montana to Alaska. This dedicated grassroots army is matched by a respected staff of scientists, policy experts and lawyers, who work out of offices nationwide. These conservation professionals and volunteers ensure that TU is at the forefront of fisheries restoration work at the local, state, and national levels.

*Trout Unlimited’s Mission:* To conserve, protect, and restore North America’s coldwater fisheries and their watersheds.

*Trout Unlimited’s Vision:* By the next generation, Trout Unlimited will ensure that robust populations of native and wild coldwater fish once again thrive within their North American range, so that our children can enjoy healthy fisheries in their home waters.

This is an ambitious aspiration that calls for an ambitious plan. In order to fulfill this vision we:
- Protect the most important habitats.
- Reconnect them to downstream areas by removing obsolete dams, improving instream flows, and ensuring that culverts pass fish.
- Restore the habitats that will yield the biggest benefit to fish for the least cost.
- Sustain the effort over time by focusing on kids and the capacity of our volunteers so that our work will endure over time.
IMPLEMENTING THE PROGRAM

Key Participants
In order to successfully carry out an Adopt-A-Trout program there are several key players that should be brought on board.

*Wyoming Department of Game and Fish* When starting an Adopt–A-Trout program it is essential to contact your local Game and Fish biologists. Because of the research-based nature of this program, they are the key providing consent, permits, resources, and valuable knowledge. Call the WGFD headquarters at 307-777-4600 to get the contact information for your local fish biologist (also listed in Appendix B)

Local Biologist  Because one of the most rewarding components of the program is contributing to real-life research, it is best to bring a local biologist on board to help assist with the telemetry and answer students questions. This can be an independent biologist, Trout Unlimited staff, or a biologist with your local, state, or federal agency.

*School* The Adopt-A-Trout program fits well in to a formal school setting, but also could fit well in to an after school program or other youth program such as Boy/Girl Scouts, 4-H, or FFA. The program increases in success if you have a teacher excited about integrating the program into other parts of their school curriculum and who has a basic understanding of ecology. This program is ideal for 4-8th grade. There are opportunities to bring in older students (ie: a high school ecology class) by letting them do some of the teaching and program coordination.

*Community Volunteers* Critical to the program are local Trout Unlimited volunteers. This program is a great way to get your local TU chapter excited about working with youth and engaging the next generation of anglers. The primary role of the volunteers can include; program organization, being guest lecturers and teaching lessons, helping set up the field trip and/or conservation project, teaching kids to fish, finding supplies and program donations, etc.... You can also look for help to local fishing/guiding businesses, fishing clubs, and other outdoor organization for help in organizing and carrying out the Adopt-A-Trout program. Another source of ‘volunteers’ are college students studying natural resources, outdoor education, education, or are otherwise interested in working with students in an outdoor environment.

*Program Components*  There are several different components of the Adopt-A-Trout Program, all of which are critically entwined and dependent on multiple stakeholder involvement.
1. **Field Education Component.** Students, with the help of biologists and volunteers, tag and track trout in their home watershed through 2-4 field trips throughout the school year. They learn about the trout life cycle, movements, native vs. non-native species, watershed health, and habitat requirements. Students "adopt" a trout (or several trout) that they help tag and track, developing a relationship with that fish and learning about its movements. Students are also involved in a river conservation activity to help trout in their home watershed (i.e.: willow planting, river clean-up, etc...).

2. **Classroom Component.** Students participate in lessons that compliment the field education component of the program with potential for cross-curricular integration in science, language arts, math, art and social studies.

3. **Field/Classroom Recreation Component.** Students will also learn basic fishing skills so they can explore and enjoy the underwater world of trout with their families and friends outside of school.
4. **Website Component.** Students can regularly keep track of their fish through an interactive website. Here students can also post weekly questions to the biologists, download activities, share information with other Adopt-A-Trout program students, and learn about their trout’s habitat through an interactive web-site. In addition, biologists will be able post updated maps of fish locations and other information on the Adopt-A-Trout website. (Note: funding is currently being recruited for this website – please contact Wyoming TU for more information)

5. **Data collection.** The information gained during the telemetry study will be used by fisheries biologists to record and monitor fish movements with the goal of answering pertinent questions about the study watershed. Trout Unlimited will also use the data to identify pertinent future project work.

**Setting-Up an Adopt-A-Trout Program**

Below are suggestions for steps to set-up and carry out an Adopt-A-Trout Program.

**2-6 months prior**

1. Identify a program coordinator.
2. Contact local biologists and identify a telemetry project. Discuss the Adopt-A-Trout program with local biologist and ask them if they are interested in spending 5-20 hours over the course of the school year to help you implement it. Delineate partner biologist tracking and education responsibilities.
3. Find a classroom that is interested in participating in the program.

**1-2 months ahead**

4. Recruit volunteers to assist with program activities.
5. Purchase or request donations of supplies and equipment.
6. Plan classroom visits and field trips in coordination with local biologist and teacher.
1-2 weeks ahead
7. Confirm dates and times with volunteers and teacher.
8. Send out press release to local papers, TV news stations, etc...

Funding an Adopt-A-Trout program
Depending on local resources and the scale of the program, an Adopt-A-Trout can cost anywhere from $100 - $500. The price tag vastly increases however, if a local biologist with telemetry equipment or funding for telemetry equipment isn’t involved (that equipment ranges from $2500-$5000). General expenses are incurred through purchasing educational materials (see activities below). There might be additional costs if materials & equipment (ie: Fly rods, fly tying equipment, stream bank restoration materials, etc…) has to be purchased instead of borrowed or donated.

Sample Adopt-A-Trout Schedule

<table>
<thead>
<tr>
<th>Visit #1: Early Fall Field</th>
<th>Students participate with biologists in the capture and tagging of fish. Other field round robin activities can be included such as macro-invertebrate sampling, fly casting, telemetry equipment usage, and electro-shocking.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visit #2: Early Fall Classroom</td>
<td>Classroom mapping exercise to teach data mapping skills. Students can also adopt their trout and begin a folder to log data.</td>
</tr>
<tr>
<td>Visit #3: Mid/Late Fall Classroom</td>
<td>Scientific method introduction, trout adaptations, and trout lifecycles overview. Students form hypothesis on the behavior of their adopted trout over the school year.</td>
</tr>
<tr>
<td>Visit #4: Winter Classroom</td>
<td>Lesson on “What is a Watershed?”</td>
</tr>
<tr>
<td>Visit #5: Early Spring Classroom</td>
<td>Lesson on “Your Watershed Community”</td>
</tr>
<tr>
<td>Visit #6: Spring Classroom</td>
<td>Revisit student hypotheses, and make conclusions with available data. Prepare for conservation project</td>
</tr>
<tr>
<td>Visit #7: Spring Field</td>
<td>Carry out the “Lend a Hand to the River” project. Time to practice casting and fishing.</td>
</tr>
<tr>
<td>Throughout</td>
<td>Students will track trout via the website or on physical maps where they can enter their trout’s location data points. They can also post projects, photos, ask biologists questions, etc… The teacher can also integrate this program into math, geography, language arts and reading.</td>
</tr>
</tbody>
</table>
ADOPT-A-TROUT CURRICULUM GUIDE ———————
CLASSROOM AND FIELD-BASED ACTIVITIES

Educational Objectives
After completing the Adopt-A-Tout Program students will be able to...

1. identify the characteristics of a trout and understand the life-cycles and differences between native, hybrid, and non-native trout species in their home watershed.
2. define and understand the term watershed, and depict a watershed through the eyes of a trout by identifying good habitat, potential threats, and hazards to a trout in the river.
3. describe several ways that biologists study trout and how they use the information that they discover.
4. be able to list 4 things that they can do to help trout in their watershed.
5. carry out a project that helps trout in their watershed.

Target Age
The below lessons have been given trial runs with 4th-8th grade students. Lessons need to meet the grade level of the students by going more in-depth into concepts and vocabulary or simplifying the ideas depending on age.

Additional Lesson Sources
In addition to the lesson plans below, there are countless resources out there available for classroom education of conservation concepts. A few we thought were relevant are listed in Appendix B.
Classroom Lesson Plan #1 – Find Your Fish!

Summary: Through discussion, demonstration, and hands-on participation, students will learn mapping skills and be able to plot the location of their trout on a study area map.

Participants: Students, Biologist, Guest Educator and others volunteers

Setting/Time: 1 hour 15 minutes. Classroom.

Target Age: 4-8th grade students

Materials Needed:

<table>
<thead>
<tr>
<th>Educational Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large study area maps (laminated is helpful with a grid overlay (lat/long or UTM)</td>
</tr>
<tr>
<td>Practice maps</td>
</tr>
<tr>
<td>Folders of fish with a data sheet and a place for a fish hypothesis and including pictures of the study fish if possible</td>
</tr>
<tr>
<td>Colored sticky note tabs to mark fish locations</td>
</tr>
</tbody>
</table>

Objectives:
After participating in this lesson students will...
1. Understand coordinates systems
2. Be able to interpret tracking data
3. Have the ability to plot fish locations on study maps
4. Adopt their fish and maintain a folder of data about locations

Introduction – Find Your Fish! (approx. 30 min)

Using a whiteboard draw a sphere with a top and bottom axis point (north and south pole). Draw an east/west line across the middle of the sphere and ask the students what it represents on the Earth (the Equator). Then discuss why humans have developed ways of finding locations and the need for a coordinate system. After introducing the system you are using in this study broadly works (either lat/long or UTM) review how to plot coordinates on a grid. This works especially well with 6th - 8th grade students who understand an x and y axis. Give some examples of points on a grid with an x and y axis of 1-10 on the whiteboard and have the students answer with corresponding coordinates.
Activity #1 – Map it - Pracitce! (approx. 20 min)

Have students group up in pairs or trios and out practice maps. A custom photocopy of a map with coordinates overlayed in a grid or along the border is a good aid. Demonstrate finding a coordinate using lat/long or UTM. After completing a couple of coordinates as a full group, provide students with coordinates on the board and have them plot them.

Activity #2 – Map it! (approx 20 min )

Introduce the large scale maps of the study area and data sheets associated with fish movement. Have the students plot the first data point of their adopted fish with the fish name and date.

Extension Ideas

Bring the trout tracking fun into other subjects. Write essays on “A day in the life of my trout”, Start a trout tracking journal, develop art projects, or host a trout science fair!

Classroom/Field Lesson Plan #2 – The Science Behind Trout Science!

Summary: Students learn about the scientific method and trout lifecycles.

Participants: Students, Guest Educators, local community members

Setting/Time: Classroom. 1 hour and 15 minutes.

Target Age: 4th-8th grade students

Materials Needed:

- Projection equipment and whiteboards
- Fish Model
- Fish paper puzzle
- Trout adoption folder

Objectives:

After this lesson students will...

1. understand adaptations and specific adaptations and characteristics a trout posseses to aid it in it’s environment
2. understand the different life stages a trout must complete to fulfill its lifecycle
3. understand the scientific method and have employed it to come up with a hypothesis about their adopted fish over the course of the study

Introduction

This lesson integrates two main components woven together. In one component students learn about trout adaptations and their life stages. In the other they are engaged to theorize about their adopted fish throughout the study timeframe. Students will revisit their hypothesis towards the end of the school year after gaining a better understanding of trout and refine or accept their hypotheses.

Presentation and Activity - Scientific Method - Background Research! (approx. 60 minutes)

Introduce the scientific method and point out that this is the same method used by biologists to design the Adopt a Trout partner study. Discuss the need to have background information to create a hypothesis. In this case the background information will be on the adaptations and life stages of trout.

Adaptations and Characteristics. Discuss with students the adaptations that humans have, that help us survive in our environment. Make a list of the adaptations the students list in a column on a chalk or white board. Ask the students what characteristics they might have to develop to survive under water, in a river or lake? Make a list of these characteristics in a column next to the first.

Now let’s take a look at trout. Discuss the adaptations that trout have using the life sized model, actions (ie: see lateral line below) that the students participate through, and a large paper ‘fish puzzle’ discuss the different adaptations and special characteristics trout have to survive in their habitat.

Kype: The kype is the hooked part of the lower jaw. Males use the kype to fight over mates during spawning time.
Nare: The nare is a closed sac and functions as a nostril, helping the trout to detect odors.
Gills & Operculum: Gills work much the same way our lungs do. Trout draw water in through their mouths. The water passes through the gills where oxygen is exchanged for carbon dioxide. The delicate gills are covered by a hard plate called the operculum.
Eyes: The eyes provide sight. The pupil has a slight triangle shape which gives the trout a larger field of vision.
Lateral line: This sense organ runs from the operculum to the tail. This sensor detects pressure waves or vibrations. It helps the trout maintain position without bumping into other fish or objects in the water. Have students lay down on the classroom floor on their stomachs, and have them pretend they are a school of moving fish, have them
notice that it would be really hard to see what is on both sides and behind you if you had to turn your head all the time. The lateral line helps them ‘sense’ where other fish and objects are...

**Caudal fin:** The caudal fin or tail fin is the biggest fin. It provides the “push” for the trout to start moving and also acts as a rudder for steering through the water. Females use the caudal fin as a fan when making a redd.

**Dorsal fin:** The dorsal fin is used to stay upright and on course

**Anal fin:** The anal fin helps the trout propel forward, balance and steer.

**Adipose fin:** The adipose fin is used for swimming and stabilization. (Adipose means that it is a “fatty” fin without rays.)

**Pectoral fins:** These fins help the fish brake, turn, and balance. They are below the gills.

**Pelvic fins:** The pelvic or ventral fins are paired fins which are set back from the pectoral fins. They help with up and down movement.

Ask the students what the life stages of people are? Present the life stages of trout:

**Egg:** Deposited in the gravel of a spawning bed the egg also becomes an eyed egg closer to hatching.

**Alevin:** Trout that have hatched from the egg, but remain feeding off of the egg sac and living in the gravel.

**Fry:** After the egg sack has been eaten completely the tiny fish move into the calm river shallows and begin to seek food

**Adult**

**Spawning Adult:** During spawning adult trout will often display more vivid colors in addition to the kype jaw developed by some male fish.

**Activity # 2 (15 minutes)**

Students use background information to create a hypothesis about their trout. The students may not have enough information at this point to come up with the most accurate hypothesis available, but this can be desirable. As the class later revisits the scientific method in the spring after learning more trout/watershed curriculum and having followed the movement of their particular fish, they can refine their hypothesis and adapt to the new information available.

A few examples of hypotheses we've heard in past programs...

"Our brown trout 'Lunch' will move from his current location in the Middle Fork of the Popo Agie into the North Fork of the Popo Agie in the spring before returning to the mainstem Middle Fork." and "Our brown trout 'Fish Taco' will move upstream in the Middle Fork of the Popo Agie and be eaten by a bear."
Classroom Lesson Plan #3 – What is a Watershed?

**Summary:** Through discussion, demonstration, and hands-on participation, students will explore a simulated watershed and learn how trout move and depend on the habitat in their watershed.

**Participants:** Students, and Guest Educators

**Setting/Time:** 45 minutes. Classroom and playground or other open area.

**Target Age:** 4th-6th grade students

**Materials Needed:**
- Watershed Trailer and Accessories (Wyoming Game and Fish Department)
- Watershed outline (rope)
- Scent containers

**Objectives:**
After this lesson students will be able to...
1. Describe a watershed.
2. List four habitat requirements that fish need to survive.
3. List several threats that trout might face in their watershed.
4. List at least two reasons fish might migrate within their watershed and how they migrate.

**Introduction**

Begin the lesson by reviewing some items covered in the last lesson. “We talked about some things that trout have on their bodies or do in their actions that help them survive. See if the students can remember what these things are called (adaptations). Today we are going to talk about what trout need in their environment or habitat to survive.” Help them come up with a definition of habitat. Ask the students about some of the things they have in their ‘habitat’ that helps them survive. (examples might include: a house to shelter from weather, food that gives them energy, clean water to drink, a place to play and learn, etc...) Tell them we are going to get to explore a trout’s habitat by going outside and looking at a mini-watershed.
Watershed trailer

Let the watershed trailer run for awhile. Explain that when we are talking about trout we usually say their habitat usually falls within a specific watershed. Define a watershed. Ask the students to make a few observations about what they see on the watershed trailer. (How is the water moving? Are other things moving with the water? Do you notice any places that people have influenced the watershed?)

Then ask the students what things they see in this watershed that might be good habitat qualities for trout.

- Clean cool moving water.
- Pools and riffles.
- Shaded areas for summer sun.
- Deep pools for winter when it freezes and summer when water temps rise.

And where threats to trout are:

- Buildings/Ag/roads close to stream.
- Place where there isn’t much water for a long stretch.
- Pollution

Reintroduce the idea of scientific inquiry. Point out a way that we could alter the watershed, ask the students to make a hypothesis what might happen. Make alterations to the Watershed Trailer using the props to create good habitat and threats to trout. Ask students to make hypothesis and then reevaluate their hypothesis based on the results of the alterations.

Explain how trout often have to travel to find all of the things they need to survive. Fish don’t have maps like we use when we travel but they do have a special tool...their sense of smell!

See Wyoming Game and Fish Departments “Stream Trailer Guide” for more details and ideas

Fish Scent Game

How does your sense of smell help you?
Tell them about the specialized ‘smell system’ that trout have and how it helps them smell danger, find food, and find their way.

Use rope to make a large watershed in an area on the playground. At each confluence place small containers with specific scents (vinegar, lemon, anise, etc...) Give each student a scent that he/she will use to find their way back to their home stream. At each confluence place scents...if the scent matches the students they take that route, using their nose to get back their home stream. Discuss what scenarios in a stream might effect a trout’s ability to migrate.
Wrap Up
Back in the classroom: Ask the kids to come up with a list that revisits good fish habitat and threats fish might face...Ask them to keep thinking about this and they can add to this list over the course of the next couple of weeks.

Definitions:
- **Watershed**: An area of land that drains water to a common receiving body or outlet.
- **Hypothesis**: An informed prediction.
- **Nare**: A fish’s nostril
- **Tributary**: A stream or river that flows into another body of water.

Classroom Lesson Plan #4 – Your Watershed Community

**Summary**: Students become landowners on their home river and learn about the effect their actions, and the actions of the collective landowners, have on the river, the watershed and each other.

**Participants**: Students, and Guest Educators

**Setting/Time**: 45 minutes. Classroom.

**Target Age**: 4<sup>th</sup>-8<sup>th</sup> grade students

**Materials Needed**:
- 11x17 paper (one for each student) with piece of river drawn through each paper so that when laid side by side the river connects.
- Crayons, markers, other drawing materials.
- Tape
- Pull up map of their home watershed on Google Maps™ or Google Earth™.

**Objectives**:
After this lesson students will be able to...
5. become imaginary owners of a piece of land along a river and make decisions regarding that land.
6. discuss with their classmate their actions, and how those actions effect trout, other species and their neighbors.
7. List three things they could do on their ‘property’ to help trout and the aquatic ecosystem.
Landowner Activity
Give students their own piece of land (on the 11x17 piece of paper) along their nearest home river. Tell them that they get to do whatever they would like on their land but keep in mind that their adopted trout live in that river and the actions they do on their land effect the river and the fish’s habitat. Have students draw out what they would like to do on their land.

After having time to draw, have the students tape their piece of land to the matching pieces of land that their classmates own up and down stream. Discuss the ‘big’ watershed picture. Ask what students considered when ‘managing’ their land? Does what they do effect their neighbors downstream? Would they do anything different after seeing all the pieces of land along the river connected?

Using Google Earth or an aerial photo show students what their watershed looks like from above. Ask them to rate the watershed on a scale of 1(bad)-10(good) on how “trout-friendly” it is. Ask the students to brainstorm some projects that could be done to help trout in the area. Use these ideas to plan your watershed action project. (You might ask G&F biologist or local TU chapter members about some projects they have in mind that the kids could help with, but the idea is to give the kids some ownership in an active stewardship project!).

Extension Ideas
Have student create dioramas of their land along the river and describe things they would do on their land in an essay.

NOTE: This activity could be used as a pre-post program evaluation. Have students do this activity as the first lesson in the program...then again at the end. See if they have implemented any good things for trout at the end of the program that they didn’t do in the beginning!
Additional Classroom Activities:
Alternate Start Lesson Plan #1 - Trout Busters!

Summary: Ideally, students would get to go out in the field at the start of the program and actually help tag their adopted trout. If this is not feasible educators can employ alternate curriculum methods to kick off Adopt a Trout the classroom. In the following lesson plan students will learn about special adaptations of trout, use telemetry equipment, and see a trout being tagged through discussion, demonstration, and hands-on participation.

Participants: Students, Biologist, Guest Educator and others volunteers

Setting/Time: 1 hour 15 minutes. Classroom and playground or other open area.

Target Age: 4-8th grade students

Materials Needed:

<table>
<thead>
<tr>
<th>Educational Materials</th>
<th>Biologist Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish Puzzle</td>
<td>Telemetry Equipment (extra tags, tracking equipment, weight, etc...)</td>
</tr>
<tr>
<td>Fish Model</td>
<td>Surgery Equipment (plastic bin, surgery supplies, etc...)</td>
</tr>
<tr>
<td>Adopt-A-Trout Folder</td>
<td>Two trout</td>
</tr>
<tr>
<td>UpStream – Amazing Trout</td>
<td></td>
</tr>
</tbody>
</table>

Objectives:
After participating in this lesson students will...

1. be able to identify 4-7 characteristics of trout and how these characteristics help the trout survive in its environment.
2. have had the opportunity to use telemetry tracking equipment to track hidden tags and be able to explain 3 ways that biologists study trout.
3. observe a fish tagging surgery.

TroutBusters! (approx. 15 min)

Using a ‘detective’ theme (ie: investigation, clues to how trout survive, detective gear, etc...) to introduce people/characters involved and give the students a sneak preview of what we are going to be doing today. CREATIVE TWIST: Break out ‘detective’ props/costume/etc...(notepads,
magnifying glass, long coat, detective hat, etc...) and act the part! The goofier the better for 4th graders...😊

Adaptations and Characteristics. Discuss with students the adaptations that humans have, that help us survive in our environment. Make a list of the adaptations the students list in a column on a chalk or white board. Ask the students what characteristics they might have to develop to survive under water, in a river or lake? Make a list of these characteristics in a column next to the first.

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Lateral line: This sense organ runs from the operculum to the tail. This sensor detects pressure waves or vibrations. It helps the trout maintain position without bumping into other fish or objects in the water. Have students lay down on the classroom floor on their stomachs, and have them pretend they are a school of moving fish, have them notice that it would be really hard to see what is on both sides and behind you if you had to turn your head all the time. The lateral line helps them ‘sense’ where other fish and objects are...
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Anal fin: The anal fin helps the trout propel forward, balance and steer.
Adipose fin: The adipose fin is used for swimming and stabilization. (Adipose means that it is a “fatty” fin without rays.)
Pectoral fins: These fins help the fish brake, turn, and balance. They are below the gills.
Pelvic fins: The pelvic or ventral fins are paired fins which are set back from the pectoral fins. They help with up and down movement.
Split into two groups to do activities #1 and #2

**Activity #1** – Try out Telemetry! (approx. 20 min)

Before the lesson begins, hide 3-4 telemetry tags outside on the playground. To introduce telemetry have a short discussion on how it is often difficult to study fish because they are underwater, so biologists have to come up with special techniques in order to find out information and collect data about fish. Demonstrate how telemetry equipment is used, what it can do and any special safety concerns. Let small groups of students try to find the hidden tags using the telemetry equipment; make sure that every student feels like he or she gets to participate.

**Activity #2** – Tagging Trout! (approx 20 min )

Set up trout surgery equipment prior to lesson, try to find a place where students can gather close or otherwise see the demonstration. Have a biologist demonstrate the steps of tagging a fish, noting concerns and what special considerations have to be taken when doing this on the river. Discuss with students why we might tag and track fish. What can we learn from this information? Let students practice ‘fish surgeries’ of their own on plastic cup ‘fish’.

**Activity #3** – Adopt Your Trout! (15 min)

The importance and ‘coolness’ of this program centers on the students participation in a real-life research project happening in their local watershed. Discuss and show photos of the fish tagging on the river (or get out on the river with the biologist and meet your trout first hand!) Hand out ‘adoption’ packets that include: a photo of their fish, a data sheet, name their fish, , some worksheets where the students can write a story about their fish, draw photos, etc.

**Wrap-Up**

Let them know that throughout this year, they will follow their adopted fish out in the river. They will get to see where it lives, what it might be eating and how it is using its adaptations to survive, in the mean time they can ‘watch’ their fish move through the online or paper maps, and by asking weekly questions to fish biologists.
Classroom/Field Lesson Plan #4 – Watershed Warriors

Introduction: Depending on the study area and program coordinator it is often appropriate to select a conservation project for the partner class with the help of local biologists, land owners, or land managers. With the correct variables it may be possible to allow the class to plan the conservation project on it's own.

Summary: Students identify, plan and implement a “Help your Watershed” project.

Participants: Students, Guest Educators, local community members

Setting/Time: Pre-project planning time and an afternoon or full day field trip to river for the project.

Target Age: 4th-8th grade students

Materials Needed:
• Planning materials for students (paper, markers, maps, projects that could be done from biologists, etc…)
• Restoration/Clean-up/Project materials (this will depend on the type of projects the students decide to do)

Objectives:
After this lesson students will...
4. have and be able to use the skills and tools to identify and plan a watershed project.
5. work collaboratively to complete a community project.
6. have completed a watershed project that benefits their trout, the environment and their community!

Introduction

This lesson has several phases; a brainstorming stage, a planning stage, and a project implementation stage. It works best to start brainstorming and planning after the Adopt-A-Trout program is started but when there is still enough time before the end of the school year to implement the project.
**Brainstorming**

Ask students to brainstorm potential ways they could help their adopted trout and community. Create lists of ideas (based on student ideas, asking local biologists and community members, their local Conservation District, reading newspaper reports, etc...). Have students prioritize the list based on their interest, and ability to complete the project.

**Planning**

Use community resources to plan the project. Bring in local biologists, volunteers, your Conservation District, etc... Help the students answer the questions on the following page.

**River Helper Project**

What do we need to do to complete the project? And who is going to help with each part?

What supplies and materials do we need?

Who do we need help from?

What is the time line for this project?
APPENDIX A

CONTACTS FOR WYOMING ADOPT-A-TROUT PROGRAM

WYOMING GAME AND FISH DEPARTMENT

Janet Milek - Aquatic Education Coordinator
3030 Energy Lane
Casper, WY 82604
Phone (307) 233-6404
Fax (307) 473-3433
janet.milek@wgf.state.wy.us

US FOREST SERVICE

Bighorn National Forest
2013 Eastside 2nd Street
Sheridan, WY 82801
307-674-2600

Medicine Bow-Routt National Forests, Thunder Basin National Grassland
2468 Jackson Street
Laramie, WY 82070
307-745-2300

Shoshone National Forest
808 Meadowlane Ave
Cody, WY 82414
307-527-6241

Bridger-Teton National Forest
P.O. Box 1888
Jackson, WY 83001
(307) 739-5500

LOCAL COUNTY CONSERVATION DISTRICT OFFICE

Campbell County Conservation District
PO Box 2577
601 4J Ct, Suite D
Gillette, WY 82717

Cody Conservation District
808 Meadow Lane Avenue
Cody, WY 82414
307-587-6763
307-682-1824 (phone) 307-682-3813 (fax)  codycd@vcn.com
www.cccdwy.net  icd@vcn.com
Converse County Natural Resource District
911 Windriver Drive
Douglas, WY 82633
307-358-3050
michelle.huntington@wy.nacdnet.net
www.conserveconverse.org

Dubois-Crowheart Conservation District
PO Box 27
706 Meckem Street
Dubois, WY 82513
307-455-2388
dccd@dteworld.com

Hot Springs Conservation District
601 Broadway, Suite A
Thermopolis, WY 82443
307-864-3488
carla.thomas@wy.nacdnet.net

Lake DeSmet Conservation District
621 West Fetterman
Buffalo, WY 82834
307-684-2526
nikki.lohse@wy.nacdnet.net

Laramie County Conservation District
11221 US Highway 30
Cheyenne, WY 82009
307-772-2600
info@lcxcdnet.org
www.lccdnet.org

Laramie Rivers Conservation District
5015 Stone Road
Laramie, WY 82070
307-721-0072
tony.hoch@wy.nacdnet.net
www.LRCD.net

Lincoln Conservation District
PO Box 98
110 Pine Street
Cokeville, WY 83114
307-279-3256
brenda.lazcanotegui@wy.nacdnet.net

Lingle-Fort Laramie Conservation District
1441 East M, Suite B
Torrington, WY 82240
307-532-4880
nancy.borton@wy.nacdnet.net

Little Snake River Conservation District
PO Box 355
285 North Penland Street
Baggs, WY 82321
307-383-7860
lsrcd@yahoo.com

Lower Wind River Conservation District
508 N. Broadway
Riverton, WY 82501
307-856-7524
cathy.meyer@wy.nacdnet.net

Medicine Bow Conservation District
PO Box 6
510 Utah Street
Medicine Bow, WY 82324
307-379-2221

Meeteetse Conservation District
PO Box 237
2103 State Street
Meeteetse, WY 82433
307-868-2484
mbcd@carbonpower.net

mcd@tctwest.net
www.meeteetsecd-wy.gov

Natrona County Conservation District
5880 Enterprise Drive, Suite 100
Casper, WY 82609
307-234-4022
katherine.myers@wy.nacdnet.net

Niobrara Conservation District
PO Box 659
Lusk, WY 82225
307-334-2953
lshaw@wyoming.com

North Platte Valley Conservation District
1441 East M, Suite B
Torrington, WY 82240
307-532-4880
nancy.borton@wy.nacdnet.net

Platte County Resource District
1502 Progress Court
Wheatland, WY 82201
307-322-9060
brady.irvine@wy.nacdnet.net
http://www.conservewy.com/pcrd.html

Popo Agie Conservation District
221 S. 2nd Street
Lander, WY 82520
307-332-3114
pacd@wyoming.com
www.popoagie.org

Powder River Conservation District
PO Box 48
Kaycee, WY 82639
307-738-2321
anita.bartlett@wy.nacdnet.net
www.powderrivercd.org

Powell-Clarks Fork Conservation District
1017 Highway 14A
Powell, WY 82435
307-754-9301
ann.trosper@wy.nacdnet.net
www.pcfcd.org

Saratoga-Encampment-Rawlins Conservation District
PO Box 633
101 Cypress Avenue
Saratoga, WY 82331
307-326-8156
jean.runner@wy.nacdnet.net
www.sercd.org

Sheridan County Conservation District
1949 Sugarland Drive, Suite 102
Sheridan, WY 82801
307-672-5860
carrie.rogaczewski@wy.nacdnet.net
www.sccdofwyo.org/

Shoshone Conservation District
359 Nevada Avenue
Lovell, WY 82431
307-548-7422
shoshonecd@tctwest.net

South Big Horn Conservation District
408 Greybull Avenue
Greybull, WY 82426

South Goshen Conservation District
1441 East M, Suite B
Torrington, WY 82240
307-765-2483  
janet.hallsted@wy.nacdnet.net  
www.conservewy.com/sbhcd

307-532-4880  
nancy.borton@wy.nacdnet.net

Star Valley Conservation District  
PO Box 216  
61 E. 5th Avenue  
Afton, WY 83110  
307-885-7823  
bashworth@starvalley.org  
www.starvalleycd.org

Sublette County Conservation District  
PO Box 36  
1625 W. Pine Street  
Pinedale, WY 82941  
307-367-2257  
sccd@wy.nacdnet.net  
www.sublettecountycd.com

Sweetwater County Conservation District  
79 Winston Drive, Suite 110  
Rock Springs, WY 82901  
307-362-3062  
admin@swccd.us  
www.swccd.us

Teton Conservation District  
PO Box 1070  
230 E. Broadway, Suite 2A  
Jackson, WY 83001  
307-733-2110  
randy@tetonconservation.org  
www.tetonconservation.org

Uinta County Conservation District  
PO Box 370  
100 East Sage Street  
Lyman, WY 82937  
307-787-3794  
kerri.sabey@wy.nacdnet.net  
www.uintacountycd.com

Washakie County Conservation District  
208 Shiloh Road  
Worland, WY 82401  
307-347-2456  
wccd@rtconnect.net  
http://www.conservewy.com/wccd.htm

Weston County Natural Resource District  
1225 Washington Boulevard, #3  
Newcastle, WY 82701  
307-746-3264  
christina.schmidt@wy.nacdnet.net
APPENDIX B

ADDITIONAL EDUCATION RESOURCE/LESSON PLANS

Future Farmers of America
Wyoming based information – another good partner
http://www.wyomingffa.org/index.html
PALS program (links highschool students with elementary students)
http://www.ffa.org/index.cfm?method=c_programs.PALS

Teton Science School
Stream Explorers Program
Great resources for water quality testing and macroinvertebrates
http://www.tetonscience.org/index.cfm?id=tlc_wystemteam

Trout Unlimited
StreamExplorers Website
Online youth activities
www.streamexplorers.org

First Cast Curriculum and Coldwater Conservation Education Guide
Resources for teaching fly fishing and stream ecology to children through adults.
http://www.tu.org/about-us/youth/first-cast-program

Trout in the Classroom
Another great TU youth program – good lesson plan ideas and info about trout!
http://www.troutintheclassroom.org

USDA Forest Service
Lots of activities, curriculum ideas on the larger ecosystem.
http://www.fs.usda.gov/conservationeducation

Wyoming Association of Conservation Districts website
Great list of links, curriculums and websites (most Wyoming specific)
http://www.conservewy.com/EDUCATION.htm

Wyoming Association of Environmental Education
Good way to find out what others are doing around the state – also a great curriculum.
http://www.wyaee.org/

Wyoming Game and Fish Department
Excellent partner also has a bunch of great programs for further outdoor education opportunities!
http://gf.state.wy.us/services/education/index.asp