A Tacoma Nature Center Field Investigation for Grades 3-5

Aligned for Common Core for Grade 4

The Tacoma Nature Center at Snake Lake
An Educational Facility of Metro Parks Tacoma
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Thank you for scheduling a guided “Forest Fun” tour at the Tacoma Nature Center. Our 70-acre nature preserve and interpretive center provides an excellent study site right in the middle of Tacoma. Education staff and volunteers are eager to provide your children with a positive experience. Together we will learn about forests and their importance to humans and wildlife through explorative walks, interactive programs, hands-on lab experiences and self-guided discovery.

The $6.00 per child fee includes 2 hours of activities led by staff and/or volunteers. Our tours will go rain or shine, so please advise your group to dress for the weather. In case of inclement weather, there is a designated area inside the building to eat lunch. Otherwise, there are many picnic tables to enjoy an outdoor lunch. Restroom facilities are available inside.

We accept checks, cash or credit cards as well as purchase orders. If possible, please provide a single form of payment for the entire group. We require payment at the time of the program. Groups that arrive more than twenty minutes late cannot be guaranteed a program. If the program is cancelled due to tardiness, you may still be charged for your program.

We hope you enjoy your upcoming field trip to the Tacoma Nature Center. Please remember:

- Common Core aligned pre-visit vocabulary words and activities and post-visit activities are included in this packet in order to prepare your students for the field trip, and to continue the application of field trip discovery.
- Have at least one chaperone per every 7 children. Our field trips work best when chaperones are prepared to participate in activities and be in charge of necessary discipline.
- Be prepared to divide your class into small groups. Each small group of no more than 15 will be led by a staff and/or volunteer in order to provide the best experience for the students. **Check the confirmation form to see how many groups we will need to have you divide into.**
- Dress for the weather; we will go outside even if it rains.
- Bring special medications/allergy treatments your child may need.

Included is a master for a student field journal (Handout Pages 14-17). If you would like to use these during your visit, please copy one for each student and bring them along. For students using journals, we do have pencils and clipboards available. Please let us know ahead of time if you would like to use them.

Your input is important. Please complete the enclosed evaluation after the field trip and help us improve. An evaluation is also included in the field journals for your students.

If you have any questions, please feel free to call the Tacoma Nature Center at (253) 591 – 6439.
1919 South Tyler Street
Tacoma, WA 98405
(253) 591-6439
Hours: Mon-Sat 9-4; Closed Sundays
tnc@tacomaparks.com

From Northbound or Southbound I-5, take the Gig Harbor/Bremerton exit – Highway 16 West
Exit Highway 16 West at 19th St. East, which is just past Cheney Stadium.
Go to the first light which is Tyler/Stevens Street.
Turn right onto Tyler Street.
The Nature Center driveway is immediately on the left-hand side.
The Tacoma Nature Center and preserve is a remnant of the habitats that once existed more abundantly in the Tacoma area. Within this 70 acre preserve is an emerging Douglas fir forest, which reflects historical influences by humans, logging and fire. The wetland is the dominant feature in the lower area of the park. Snake Lake, a long serpent-shaped body of water, is part of both a swamp and a marsh habitat.

Located geographically in the center of Tacoma, The Tacoma Nature Center preserve is a refuge for many species of wildlife. Although the wetland around Snake Lake is important for urban wildlife, it is the combination of several habitats and the edge areas between them, which is vital to their survival. For example, the red fox may find small mammals, amphibians, and other prey species in the wetlands but the terrain and plant cover in the forest habitat provide better shelter, protection from humans, and cooler temperatures during the summer months. Thus, the Tacoma Nature Center should be viewed as an ecosystem providing all the requirements to sustain life rather than 70 acres of different habitats.

Over 20 different species of mammals live within the boundaries of the preserve. Including both migrants and residents, over 100 species of birds have been identified here. In addition, several species of reptiles and amphibians live in the area. While most species are native, a number of exotics also inhabit the preserve.

The Tacoma Nature Center is open to the public year round. Pets, bicycles and motorized vehicles are not allowed in the park. The Visitor Center offers hands on displays and exhibits that focus on wetlands, watersheds and wildlife. The center is open 9am to 4pm Mondays through Saturdays. Membership opportunities are also available.
Plants and Animals seen at the Tacoma Nature Center

**Trees**
- Sitka Alder
- Oregon Ash
- Cascara Buckthorn
- Black Cottonwood
- Douglas Fir
- Pacific Madrone
- Scouler Willow
- Garry Oak

**Amphibians/Reptiles**
- Pacific Tree Frog (Chorus Frog)
- Bullfrog
- Long-toed Salamander
- Northwest Salamander
- Rough-skinned Newt
- Western Painted Turtle
- Common Garter Snake
- Northwestern Garter Snake
- Northern Alligator Lizard

**Shrubs/Groundcovers**
- Red Elderberry
- Clustered Wildrose
- Indian Plum
- Oceanspray
- Tall Oregon Grape
- Douglas Spirea
- Black Twinberry
- Evergreen Huckleberry
- Orange Honeysuckle
- Baldhip Rose
- Beaked Hazelnut
- Common Snowberry
- Red Huckleberry
- False Lily-of-the-Valley
- Salal
- Trailing Blackberry
- Dwarf Oregon Grape
- Sword Fern
- Creeping Snowberry
- Bracken Fern

**Birds**
- Canada Goose
- Wood Duck
- Gadwall
- American Wigeon
- Mallard Northern Shoveler
- Bufflehead
- Common Goldeneye
- Hooded Merganser
- Pied-billed Grebe
- Great Blue Heron
- Osprey
- Bald Eagle
- Cooper’s Hawk
- Sharp-shinned Hawk
- Red-tailed hawk
- Glaucous-winged Gull
- Rock Pigeon Barn Owl
- Barred Owl
- Anna’s Hummingbird
- Belted Kingfisher
- Downy Woodpecker
- Northern Flicker
- Olive-sided Flycatcher
- Western Wood-Pewee
- Pacific-slope Flycatcher
- Warbling Vireo
- Cassin’s Vireo
- Hutton’s Vireo
- Steller’s Jay
- American Crow
- Common Raven
- Violet-green Swallow
- Barn Swallow
- Cliff Swallow
- Black-capped Chickadee
- Chestnut-backed Chickadee
- Bushtit
- Red-breasted Nuthatch
- Brown Creeper
- Bewick’s Wren
- Pacific Wren
- Golden-crowned Kinglet

**Mammals**
- Red fox
- Coyote
- Raccoon
- Virginia Opossum
- Eastern Cottontail
- Douglas Squirrel
- Eastern Gray Squirrel
- Townsend’s Chipmunk
- Norway Rat
- Deer Mouse
- Vagrant Shrew
- Townsend’s Mole
- Black-tailed Deer

**Amphibians/Reptiles**
- Ruby-crowned Kinglet
- Swainson’s Thrush
- Hermit Thrush
- American Robin
- Varied Thrush
- European Starling
- Cedar Waxwing
- Yellow-throated Warbler
- Black-throated Gray Warbler
- Wilson’s Warbler
- Yellow Warbler
- Spotted Towhee
- Fox Sparrow
- Song Sparrow
- White-crowned Sparrow
- Golden-crowned Sparrow
- Dark-eyed Junco
- Western Tanager
- Black-headed Grosbeak
- Red-winged Blackbird
- Brown-headed Cowbird
- Purple Finch
- House Finch
- Pine Siskin
- American Goldfinch
- House Sparrow
**Trunk**- the main stem of a tree, as distinct from the branches and roots.

**Roots**- a part of the body of a plant that develops, and grows downward into the soil, anchoring the plant and absorbing nutrients and moisture.

**Forestry**- the science of planting and taking care of trees and forests.

**Tree Cookie**- slices of a tree that shows the rings of growth.

**Habitat**- the natural environment or home of an organism.

**Deciduous Tree**– a tree that drops leaves annually.

**Evergreen**-trees that have green leaves throughout the entire year.

**Foliage**-the leaves of a plant, collectively.

**Growth Rings**-the rings on the inside of a tree trunk that show the age of the tree (pictured below).

**Photosynthesis**– the process in which green plants and certain other organisms make their food using light as an energy source (sun).
To be sure your students get the most out of their visit to the Tacoma Nature Center, we suggest you prepare them with the lessons below. Each is designed to complement 4th grade Common Core Standards. 45-60 minutes (or more) each lesson.

**Science**

<table>
<thead>
<tr>
<th>Learning Target</th>
<th>I can explain good science habits.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Next Generation Science Standards</td>
<td>Science Models, Laws, Mechanisms, and Theories; Explain Natural Phenomena</td>
</tr>
<tr>
<td>Do Now/ Warm Up</td>
<td>Make a “wordle” for the word SCIENTIFIC. Use science-related words for each letter in the word.</td>
</tr>
<tr>
<td></td>
<td>You can provide the example below to get students started thinking or have them work on their own. Provide a reasonable time frame for them to think of scientific words before having them share with their elbow partner. When each pair feels they have a good list, create a class list on the board or large paper.</td>
</tr>
<tr>
<td></td>
<td>As you discuss each scientific word, emphasize any words or phrases that relate to good science habits. You may want to circle them to discuss later.</td>
</tr>
<tr>
<td></td>
<td>Example: Specimen Control group</td>
</tr>
<tr>
<td></td>
<td>I E N T I F I C</td>
</tr>
<tr>
<td>Tools</td>
<td>11x17 paper for each team</td>
</tr>
<tr>
<td></td>
<td>Markers, colored pencils or crayons</td>
</tr>
</tbody>
</table>
**Activities**

Students will discuss the traits of scientific inquiry and the scientific method. They will collaborate to show their understanding of good science habits on a poster to hang in the classroom prior to the field trip to the Tacoma Nature Center.

Write on the board or review the idea that science is about asking lots of questions. Discuss science habits of **observing, communicating, comparing, organizing and relating**. Observing means using all your senses to gather information. Communicating means sharing thinking with others and can be written, oral or other methods. Comparing means finding similarities and differences with what you discover and with what others discover. Organizing means showing data in a way that will be easy for others to understand. Relating means making sense of new information and using it to understand the world around you.

Have students work in pairs or threes. Assign each group one of the 5 science habits listed above so that groups nearby aren’t next to a similar group. Assign each group to make a poster that explains the science habit in words and pictures and provides an example.

At the end of class student groups may share their poster with the class, or post them in class or the hallway as a reminder of the science habits they will need to use on the field trip.

**Assessment**

Summative: Completed assignment
Formative: metacognitive exit task: Which science habit do you think will be the most difficult for you? Which will be the easiest for you? Why do you think so? Explain.

**Practice/Homework**

Differentiated- choose one of the following:
- Find an internet site about the scientific method. Print 1 page from the website and be prepared to share about it in class.
- What other subjects would the good science habits help with? Write a 5 sentence paragraph explaining your thinking.
- Use good science habits to discover something new in your neighborhood or playground. Write a paragraph explaining how you used the habits and how they helped you.
### Science/Language Arts

<table>
<thead>
<tr>
<th>Learning Target</th>
<th>I can explain the meaning of important forest vocabulary.</th>
</tr>
</thead>
</table>
| Common Core Standards | 4.RI.4 Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 4 topic or subject area.  
4.RI.2 Determine the main ideas of a text and explain how it is supported by key details; summarize the text. |
| Do Now/ Warm Up | Have students read the document (Handout Page 2-Appendix A). Tell them to circle any key words or words you don’t understand and underline the main ideas. Once students have finished, have them compare their circled words and main ideas with their elbow partner. Finally, compile a list of key words on the board or chart paper. |
| Tools | Copies of document for each student  
Copies of Personal Forest Dictionary pages for each student, or have students copy into their journal. |
| Activities | Reading, Thinking Time, Turn and Talk, Whole Class Discussion, vocabulary pages in journal or handout  
To prepare for the field trip, understanding some key vocabulary words will help all students get more out of the experience. From your class list, or the words provided, students will create a Personal Forest Dictionary of key terms. They may do this in their journals or on the handouts provided (Handout Pages 3-8-Appendix B). You may want to pair students as appropriate to work on their dictionary pages, and alter the number of words assigned as manageable for your students.  
Suggested key words are: nature preserve  
habitat  
species  
fungi  
lichen  
coniferous  
deciduous  
Canopy  
adaptation  
ecosystem  
The following websites have great information about forest ecology that may help students make sense of the terms:  
http://quizlet.com/10311763/forestry-vocabulary-pt-1-flash-cards/  
http://www.explorelearning.com/index.cfm?
**Assessment**
Summative: Completed vocabulary pages
Formative: metacognitive exit task: Rate yourself 1-5 on how well you think you understand the vocabulary words learned in class. Why do you think so? Explain.

**Practice/ Homework**
Differentiated-choose one of the following:
- Find an article in print or online that is related to the article you read in class. Identify any words in common with the ones you learned in class.
- Write an 8 line poem using the vocabulary words learned in class.
- Explain the meaning of your vocabulary words to a parent or guardian at home. Have them send a note with their signature showing you understood the words.

**Science/Math**

<table>
<thead>
<tr>
<th>Learning Target</th>
<th>I can explain how I find a line of symmetry.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Core Standards</td>
<td>4.G.3 Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line symmetric figures and draw lines of symmetry.</td>
</tr>
<tr>
<td>Do Now/ Warm Up</td>
<td>What does half mean? Take a few minutes of private think time to try to describe what half means and write about your thinking. You may use words, pictures, a bulleted list or a combination of things to show your thinking. Allow 2-3 minutes for students to think and work on their own before sharing and discussing their answer with their elbow partner. Walk around the class to find students to share their thinking with the class. Especially look for misconceptions to highlight and students thinking about half being two parts that are exactly the same amount. Have selected students share their thinking and discuss with the class.</td>
</tr>
<tr>
<td>Tools</td>
<td>Copies of the handouts for each student, scissors, document camera picture of leaves</td>
</tr>
</tbody>
</table>
**Activities**

Think Time, Turn and Talk, Partner Work, Whole Class Discussion

Discuss the idea of “half” as being something divided into two pieces the exact same size. Expand this idea to symmetry, particularly line symmetry.

Distribute Handout Page 9-Appendix C. Have students cut out the shapes and find where the shape can be folded so that it is symmetrical on each side. Once they can do this with the actual shapes challenge them to find the line(s) of symmetry for objects around the room such as the desk top, clock, or books. Discuss whether objects can have more than one line of symmetry.

Distribute Handout Page 10-Appendix C. Have students work in pairs to determine the line(s) of symmetry for the nature objects. Allow a few minutes to do this, and have students share results with the class. Make a list of things that are symmetrical and which are not.

Discuss that scientists often use whether objects are symmetrical to determine what kind of animal or plant it is. This is especially helpful in identifying plants and trees. On the document camera, place the picture of leaves, or visit [http://www.vplants.org/plants/glossary/plate_all.html](http://www.vplants.org/plants/glossary/plate_all.html) for many pictures of leaf variations (Handout Page 11-Appendix C). Can they tell the symmetrical ones?

**Assessment**

Summative: class observation
Formative: exit task- Explain how you can tell if something is symmetrical.

**Practice/Homework**

Differentiated-choose one of the following:
- Find two samples of leaves in your neighborhood. Determine whether they are symmetrical or not. Be prepared to explain your reasoning to the class.
- Draw a symmetrical leaf. Label important parts and why they are symmetrical.
- Are trees symmetrical? Write a paragraph explaining why or why not.
Objectives
To understand the components of a forest
To understand the process of forest succession, and the concept that nature is ever changing
To encourage scientific exploration and discovery
To understand the value of forests to wildlife and humans

Schedule of Activities
1. Upon arrival, students gather on the wooden seats in the center of the building. Children are encouraged to find a seat quickly and quietly so that we can begin. A Naturalist will then spend a few minutes providing an orientation to the Tacoma Nature Center. Information will include:
   - Rules, etiquette and expected behavior
   - General outline of the day’s activities
   - An introduction to forests

   We will spend approximately 10 minutes discussing the above. After this, we will split in to groups for the rest of the tour. We ask teachers to assign the groups as they are familiar with the number of kids per chaperone, students’ names and the like. Groups will contain no more than 15 students. Use the following as a guide to the number of groups you should assign prior to the trip:
   - If you make a reservation for 10-15 students, you will have 1 group.
   - If you make a reservation for 16-30 students, you will have 2 groups.

2. Once the students are divided in to groups, each leader will rotate their groups through the various activities.

On the walking tour, leaders will stop along the trail to discuss forests and habitats. An emphasis will be placed on the components of the forest and the value to humans and wildlife. As students see components of the forest, they are encouraged to check them off and/or record them in their field journal (Handout Pages 14-17). This will serve as a record of what is found as well as a fun way to keep kids looking.
While in the lab, students will use the microscopes to investigate tree “cookies” and learn about how trees grow. There is a page in their field journals to record what they see under the microscopes and to make calculations. Additionally, they will learn to identify some common trees. Students will also learn about forest animals and their adaptations for survival in their habitat. A page in the field journal corresponds to this lesson.

A sample schedule may look like this:

<table>
<thead>
<tr>
<th>First Hour</th>
<th>Second Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>Lab</td>
</tr>
<tr>
<td>Walking tour</td>
<td></td>
</tr>
<tr>
<td>Group B</td>
<td>Walking Tour</td>
</tr>
<tr>
<td>Lab</td>
<td></td>
</tr>
</tbody>
</table>

The pre and post-visit lessons in this packet are designed to use in the classroom before or after your visit. The Tacoma Nature Center has videos, kits and materials available for loan, including a “FOREST” kit as well as a “FORESTRY” kit with a variety of hands-on classroom activities. Call for more information.
To be sure your students get the most out of their visit to the Tacoma Nature Center, we suggest you follow up your field trip experience with the lessons below. Each is designed to complement 4th grade Common Core Standards. 45-60 minutes (or more) each lesson.

### Science

<table>
<thead>
<tr>
<th>Learning Target</th>
<th>I can design something to protect forests.</th>
</tr>
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<tbody>
<tr>
<td>Next Generation Science Standards</td>
<td>Science Models, Laws, Mechanisms, and Theories; Explain Natural Phenomena</td>
</tr>
<tr>
<td>Do Now/ Warm Up</td>
<td>In journals or on a piece of paper, students are to write 3 things they learned on the field trip to the Tacoma Nature Center, 2 things they enjoyed about the field trip and 1 question they still have. Allow 5-10 minutes for students to think and write independently before asking for students to share.</td>
</tr>
<tr>
<td>Tools</td>
<td>Completed field journals from the field trip. Paper Colored pencils (optional)</td>
</tr>
<tr>
<td>Activities</td>
<td>Discussion, Collaboration, Inquiry, Engineering design</td>
</tr>
</tbody>
</table>

Discuss the field trip and the importance of healthy forests for wildlife and humans to use. Explain that now that they know about the importance of trees, they are going to design a playground that protects the forest!

Discuss the steps in the engineering design process:
- Define the Problem
- Do Background Research
- Specify Requirements
- Brainstorm Solutions
- Choose the Best Solution
- Do Development Work
- Build a Prototype
- Test and Redesign

You will likely work through the first five or six as time allows, but building model prototypes, testing them and revising as necessary are excellent extensions.
Activities

Work through the first few steps together. You may define the problem as, “The city wants to build a new playground, but would have to cut down the trees in a small forest to do it. The people of the city want the trees for the shade and wildlife habitat, but they really want the new playground too. How can we design a playground that is safe and fun and keep the forest too?”

Have students start by drawing a healthy forest in pencil. It should be a small urban forest, perhaps near your school. As they look at their forests, have them brainstorm some fun ideas as well as some safety concerns.

Allow students time to work independently on their drawing to solve to playground and forest problem. Students can present their work to the class or even send their ideas to the Tacoma Nature Center.

Assessment

Summative: Completed assignment
Formative: Walk around and evaluate designs. Are they meeting the needs of the project?

Practice/ Homework

Differentiated—choose one of the following:

- What do you think is the most important invention of all time? Write a paragraph explaining what it is and why you think it is so important.
- Research an invention that you admire. Find out about the scientist or inventor who created it. Be prepared to teach the class what you learned.
- Visit another forest in the city. Do you think it is a healthy habitat? Why or why not? Take photos of your trip to share with the class.
### Science/Language Arts

<table>
<thead>
<tr>
<th>Learning Target</th>
<th>I can explain an environmental issue in my city.</th>
</tr>
</thead>
</table>
| Common Core Standards | 5.R.I.7 Draw on information presented visually, orally or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.  
5.R.I.9 Integrate information from two texts on the same topic in order to write or speak about the subject knowledgably.  
5.W.7 Conduce short research projects that build knowledge through investigation of different aspects of a topic. |
| Do Now/ Warm Up | Quick Write-write for two minutes about what you think may be an environmental issue in our city. You may write complete sentences or a list but you must write for the entire time. |
| Tools | Student access to the internet and written resources  
Optional poster-making supplies |
| Activities | Writing, reading, inquiry, research |
|  | Tacoma is a wonderful city, but even here there are environmental issues that impact us all. What are they? What can we do about them? That is what this research project is about.  
Students are to research an environmental issue in our city. They can use the research template provided (“Troubleshooting Tacoma”) or another way of being sure they find all the information needed (Handout Page 12-Appendix D). Once they have researched their issue, they are to offer a possible solution or solutions. Their research, solution and call to action will be put together on a Call to Action Poster to be hung in the school hallways. |
| Assessment | Summative: Completed research project  
Formative: exit task-explain your research topic and why it is a problem for our city. |
| Practice/ Homework | Continue working on research project in order to finish by the required deadline. |
Science/Math

<table>
<thead>
<tr>
<th>Learning Target</th>
<th>I can explain how I make sense of my data using a line plot.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Core Standards</td>
<td>4.MD.4 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.</td>
</tr>
</tbody>
</table>

Do Now/ Warm Up

While at the Tacoma Nature Center, we saw lots of trees. Someone measured the heights of 10 of the trees in a small area and wrote them here:

- 22 feet
- 23 ½ feet
- 18 feet
- 23 ¼ feet
- 22 ¾ feet
- 23 feet
- 24 ¼ feet
- 24 feet
- 25 feet
- 24 ½ feet

Write all the heights of the trees in order from shortest to tallest.

Tools

8 ½ x 11 paper for each student, handout (optional)

Activities

Inquiry, Whole Class Discussion, Think Time

Explain that when scientists looked at the trees in the west forest at the Tacoma Nature Center, they found this:

- 12 trees are 22 feet tall
- 11 trees are 23 ½ feet tall
- 8 trees are 18 feet tall
- 7 trees are 23 ¼ feet tall
- 10 trees are 22 ¾ feet tall
- 4 trees are 23 feet tall
- 19 trees are 24 ¼ feet tall
- 11 trees are 24 feet tall
- 8 trees are 25 feet tall
- 11 trees are 24 ½ feet tall

Looking at the list of numbers isn’t very helpful. The data is all accurate, but it doesn’t mean very much without an organized way of displaying it. This is one reason scientists use graphs to display and interpret their data.
| Activities | Discuss with the class some ideas of how to organize and display data so it will be easier to understand, including the pros and cons of each method of display. Explain that we will be using line plots. Allow time for students to work independently on their line plot before working with a partner. Then distribute the handout (optional) and allow more time for students to work in pairs to refine their line plots on to the handout (Handout Page 13- Appendix E). Walk around and look for samples of line plots to share with the class under the document camera and discuss misconceptions or insights as they arise. The impact of the graph is in the interpretation of the graph. Have students answer the questions at the bottom of the handout or answer and discuss similar questions in their journals. |
| Assessment | Summative: completed handout Formative: exit task- what is the difference in height between the tallest tree and the shortest tree on your line plot? |
| Practice/ Homework | Find a line plot in the newspaper, a magazine or on the internet. Interpret what it means and write 2-3 sentences about it. Bring the line plot and your sentences to share with the class. |
Teacher Evaluation

School___________________________________________________
Grade level_______________________________________________
Date of visit ______________________________________________
How did you hear about us? _________________________________

Please rate the following by circling the appropriate number from 1 (lowest) to 5 (highest).

The packet contains clear and useful information. 1 2 3 4 5
The field trip met my expectations. 1 2 3 4 5
The Pre-Visit Lessons helped prepare students for program concepts. 1 2 3 4 5
The Post-Visit Lessons helped reinforce concepts students learned. 1 2 3 4 5
The Common Core aligned material met my curriculum goals. 1 2 3 4 5
My students were able to relate to and understand the Common Core aligned material. 1 2 3 4 5
My students had a learning experience. 1 2 3 4 5
My students had fun. 1 2 3 4 5
I am likely to recommend this program. 1 2 3 4 5
The presenter was knowledgeable and fun. 1 2 3 4 5

Presenter name____________________________________________
Comments:
Appendices
Read the passage below. Circle key words or any words you don’t know and underline the main idea.

I wish I could visit a nature preserve. I want to see all the species of fungi and lichen that live there. I want to look up at the canopy of deciduous and coniferous trees in the forest ecosystem. I want to discover the adaptations of the animals in their habitat. Maybe my teacher will take our class on a field trip and my wish will come true!
### Personal Forest Dictionary

Name: ___________________________
Date: ____________________________

<table>
<thead>
<tr>
<th>Word</th>
<th>Definition in your own words</th>
<th>Facts / characteristics</th>
<th>Examples</th>
<th>Non– examples</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>nature preserve</td>
<td></td>
<td></td>
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<tr>
<td>habitat</td>
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### Word

**coniferous**

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### Word

**deciduous**

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**Illustration**

**Definition in your own words**

**Facts / characteristics**

**Word**

**Examples**

**Non– examples**

**Illustration**
Line Symmetry 1

What does “half” mean? Explain with words, pictures, lists or a combination of all three.

Can you fold the following shapes in half? Are the halves symmetrical? Cut out the shapes and give it a try!
Appendix C

Line Symmetry 2

Name: ___________________________
Date: ____________________________

Draw a line or lines of symmetry on each shape below.

Where is the line or lines of symmetry on these objects from nature? Draw where you think they should go, or if not symmetrical write “none” and explain why you think so.

What other objects in nature could be symmetrical?

What questions do you have?
Leaf Pictures for the document camera

PLATE 3. LEAF SHAPES

ACICULAR  CORDATE  DELTOID  ELLIPTIC  FALCATE

HASTATE  LANCEOLATE  LINEAR  LYRATE  OBCORDATE

OBLANCEOLATE  OBLONG  OBOVATE  ORBICULAR  OVAL

OVATE  RENIFORM  RUNCINATE  SAGITTATE  SPATULATE


From http://www.vplants.org/plants/glossary/plate_all.html. More images available!
Troubleshooting Tacoma

Name: _________________________

Date: _________________________

Tacoma is a great city, but there are still environmental issues that impact us all. Your job is to research one of these issues and help others learn more about it. The more people know, the more they can help with the solution!

Environmental issue I will research: ________________________________________________________________

______________________________________________________________________________________________

Where is it a problem? ____________________________________________________________________________

______________________________________________________________________________________________

Who does it impact? _____________________________________________________________________________

______________________________________________________________________________________________

How does it affect Tacoma? _______________________________________________________________________  

______________________________________________________________________________________________

Why is it important? ____________________________________________________________________________

______________________________________________________________________________________________

Other interesting information about this issue: _____________________________________________________

______________________________________________________________________________________________

Here are my ideas to solve this problem:

______________________________________________________________________________________________

______________________________________________________________________________________________

Sources

This is where I got my information: (list below)
Tree Height Data

Plot your tree height data below.

Height in feet

What does your line plot show? Summarize what your graph means.
Thank you for visiting the Tacoma Nature Center and taking the time to complete our survey.

Keep on exploring nature!

This field journal belongs to:

Date of my visit to Tacoma Nature Center:

1919 S. Tyler
Tacoma, WA 98405
253-591-6439
In the Lab

Scientists use microscopes to help see tiny objects much larger. Draw and label what you saw under the microscope below.

Healthy habitats are important for all animals. Draw a healthy forest habitat below for a critter that you saw at the Tacoma Nature Center. Be sure to include food, water, shelter and space for your forest critter!
On the Trail
What makes a forest a forest? Below is a list of some of the things that make up a forest. Place a check next to the ones you find on your forest walk at Tacoma Nature Center.

- deciduous trees
- coniferous trees
- shrubs
- rocks
- water (stream, lake, etc.)
- ferns, lichens & mosses
- fungi
- animals
- groundcover plants
- soil
- roots, holes & burrows
- leaf litter
- flowers
- other ____________________

In the Lab
Examine the tree cross sections. What is the difference between them? Draw two different ring patterns below. Why are they different? Describe.
At the Tacoma Nature Center, I learned that

My favorite part was

Forests are important because

I am ____ years old.

How was your visit? Please answer the questions below. Cut out the bottom section and turn it in to your teacher. Your teacher will make sure it gets to us. Thank you!

Animal Adaptations
Adaptations are the “tools” that enable animals to survive in their habitat. Draw a line connecting the animal with its adaptation below. Some animals may have more than one!

- sharp canine teeth for tearing meat
- herbivore
- long claws for digging
- eyes on the sides of the head to look for predators
- thick fur to keep warm
- retractable claws for catching prey
- omnivore
- flat molars for grinding plants
- warning coloration
- excellent sense of smell
- hooves for high speed chases
- eyes in front of the head to see depth and distance
- carnivore
- claws for tree climbing

coyote

deer

bear

weasel

elk

skunk

fox

bobcat