A Tacoma Nature Center Field Investigation for Grades 3-5
Aligned for Common Core for Grade 3

The Tacoma Nature Center at Snake Lake
An Educational Facility of Metro Parks Tacoma
Contents

Program Overview.................................................................................................................. 3
Directions to TNC................................................................................................................... 4
TNC Background Information................................................................................................ 5
Plants and Animals found at TNC........................................................................................ 6

Pre-Field Trip

Vocabulary.............................................................................................................................. 7
Pre-Visit Lessons.................................................................................................................. 8-11

Field Trip

Guided Tour Overview......................................................................................................... 12-13

Post-Field Trip

Post-Visit Lessons................................................................................................................. 14-17
Evaluation.............................................................................................................................. 18

Appendices

Appendix A............................................................................................................................. 2
Appendix B.............................................................................................................................. 3
Appendix C.............................................................................................................................. 4-8
Appendix D.............................................................................................................................. 9
Appendix E.............................................................................................................................. 10
Appendix F.............................................................................................................................. 11
Appendix G.............................................................................................................................. 12

Field Journal.......................................................................................................................... 13-16
Thank you for scheduling a guided “Wetland Wonders” 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 students with a positive experience. Together we will visit a wetland habitat to see what lives there and learn about the adaptations the animals have for survival. We will also look closer using microscopes to classify and sort the smallest creatures.

The $6.00 per student 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. Please provide one 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 students. 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. This includes appropriate footwear – no flip flops or sandals.
- Bring special medications/allergy treatments your students may need.

Included is a master for a student field journal (Handout Pages 13-16). 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 Tacoma Nature Center

<table>
<thead>
<tr>
<th>Trees</th>
<th>Amphibians/Reptiles</th>
<th>Birds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sitka Alder</td>
<td>Pacific Tree Frog (Chorus Frog)</td>
<td>Canada Goose</td>
</tr>
<tr>
<td>Oregon Ash</td>
<td>Bullfrog</td>
<td>Wood Duck</td>
</tr>
<tr>
<td>Cascara Buckthorn</td>
<td>Long-toed Salamander</td>
<td>Gadwall</td>
</tr>
<tr>
<td>Black Cottonwood</td>
<td>Northwest Salamander</td>
<td>American Wigeon</td>
</tr>
<tr>
<td>Douglas Fir</td>
<td>Rough-skinned Newt</td>
<td>Mallard Northern Shoveler</td>
</tr>
<tr>
<td>Pacific Madrone</td>
<td>Western Painted Turtle</td>
<td>Bufflehead</td>
</tr>
<tr>
<td>Scouler Willow</td>
<td>Common Garter Snake</td>
<td>Common Goldeneye</td>
</tr>
<tr>
<td>Garry Oak</td>
<td>Northwester Garter Snake</td>
<td>Hooded Merganser</td>
</tr>
<tr>
<td></td>
<td>Northern Alligator Lizard</td>
<td>Pied-billed Grebe</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Great Blue Heron</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Osprey</td>
</tr>
<tr>
<td>Shrubs/Groundcovers</td>
<td></td>
<td>Bald Eagle</td>
</tr>
<tr>
<td>Red Elderberry</td>
<td></td>
<td>Cooper’s Hawk</td>
</tr>
<tr>
<td>Clustered Wildrose</td>
<td></td>
<td>Sharp-shinned Hawk</td>
</tr>
<tr>
<td>Indian Plum</td>
<td></td>
<td>Red-tailed hawk</td>
</tr>
<tr>
<td>Oceanspray</td>
<td></td>
<td>Glaucous-winged Gull</td>
</tr>
<tr>
<td>Tall Oregon Grape</td>
<td></td>
<td>Rock Pigeon Barn Owl</td>
</tr>
<tr>
<td>Douglas Spirea</td>
<td></td>
<td>Barred Owl</td>
</tr>
<tr>
<td>Black Twinberry</td>
<td></td>
<td>Anna’s Hummingbird</td>
</tr>
<tr>
<td>Evergreen Huckleberry</td>
<td></td>
<td>Belted Kingfisher</td>
</tr>
<tr>
<td>Orange Honeysuckle</td>
<td></td>
<td>Downy Woodpecker</td>
</tr>
<tr>
<td>Baldhip Rose</td>
<td></td>
<td>Northern Flicker</td>
</tr>
<tr>
<td>Beaked Hazelnut</td>
<td></td>
<td>Olive-sided Flycatcher</td>
</tr>
<tr>
<td>Common Snowberry</td>
<td></td>
<td>Western Wood-Pewee</td>
</tr>
<tr>
<td>Red Huckleberry</td>
<td></td>
<td>Pacific-slope Flycatcher</td>
</tr>
<tr>
<td>False Lily-of-the-Valley</td>
<td></td>
<td>Warbling Vireo</td>
</tr>
<tr>
<td>Salal</td>
<td></td>
<td>Cassin’s Vireo</td>
</tr>
<tr>
<td>Trailing Blackberry</td>
<td></td>
<td>Hutton’s Vireo</td>
</tr>
<tr>
<td>Dwarf Oregon Grape</td>
<td></td>
<td>Steller’s Jay</td>
</tr>
<tr>
<td>Sword Fern</td>
<td></td>
<td>American Crow</td>
</tr>
<tr>
<td>Creeping Snowberry</td>
<td></td>
<td>Common Raven</td>
</tr>
<tr>
<td>Bracken Fern</td>
<td></td>
<td>Violet-green Swallow</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Barn Swallow</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cliff Swallow</td>
</tr>
</tbody>
</table>

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

- Black-capped Chickadee
- Chestnut-backed Chickadee
- Bushtit
- Red-breasted Nuthatch
- Brown Creeper
- Bewick’s Wren
- Pacific Wren
- Golden-crowned Kinglet
- Ruby-crowned Kinglet
- Swainson’s Thrush
- Hermit Thrush
- American Robin
- Varied Thrush
- European Starling
- Cedar Waxwing
- Yellow-rumped 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
Bog: A wetland of wet, spongy ground containing peat.

Conservation: Wise use of natural resources to prevent destruction.

Ecology: The part of science concerned with the relationship of plants and animals and their environment.

Endangered Species: A plant or animal species that is in danger of becoming extinct.

Estuary: A place where saltwater and freshwater mix, usually where a river meets an ocean or sea.

Filter: A device through which liquid or air is passed to clean out dirt or other matter.

Food Chain: The chain of what eats what. Plants and animals make up the food chain.

Food Web: Connecting and overlapping food chains.

Habitat: The places where plants, animals and people live (home).

Marsh: Low, soft, wetland where plants like grasses and reeds grow; trees are rare.

Nutrients: Substance that provides nourishment to a living thing.

Phytoplankton: Plant-like organisms that float freely in water.

Pollution: The contamination of air, water, or land by substances harmful to people, plants, or animals.

Primary Consumers: Animals that eat plants.

Producer: Anything which makes its own food (plants).

Secondary Consumers: Animals that eat other animals.

Swamp: Low, soft, wetland where shrubs and trees grow.

Threatened: A plant or animal species likely to become endangered.

Vegetation: Plant life.

Wetland: Land covered by water some or all of the time.

Zooplankton: Tiny animals that float freely in water.
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 3rd 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>Draw a picture of a scientist.</td>
</tr>
</tbody>
</table>

Allow 5 minutes or so for students to draw a scientist. Many preconceived ideas about scientists will emerge. Have students share their picture with their elbow partner and find 3 things they have in common and 3 things different about the pictures. Have groups share out and make a list of things scientist drawings have in common.

You may want to show some pictures of non-traditional scientists, especially ecologists (Handout Page 2-Appendix A). The thing these scientists have in common is a curiosity about the world around them and a desire to learn more. This means that the whole class can be scientists!

<table>
<thead>
<tr>
<th>Tools</th>
<th>11x17 paper for each student Markers, colored pencils or crayons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities</td>
<td>Students will discuss the traits of scientists, inquiry and the scientific method. They will 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.</td>
</tr>
</tbody>
</table>

Write on the board or review the idea that scientists ask 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.
Activities

Have students draw a self portrait of themselves as scientists. Have them label their drawings and any tools they think would be useful. For example, their eyes, ears, nose and hands may be useful for making scientific observations.

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 sentence or more explaining how you used the habits and how they helped you.

Science/Language Arts

Learning Target

I can explain the meaning of important ecology vocabulary.

Common Core Standards

3.RI.4 Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area.

3.RI.2 Determine the main idea of a text; recount the key details and explain how they support the main idea.

Do Now/ Warm Up

Have students read the document (Handout Page 3-Appendix B). 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 Wetland 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 Wetland Dictionary of key terms. They may do this in their journals or on the handouts provided (Handout Pages 4-8-Appendix C). 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  
plankton  
adaptations  

The following websites have great information about wetlands that may help students make sense of the terms:  

http://kids.nceas.ucsb.edu/biomes/freshwaterwetlands.html  
http://idahoptv.org/dialogue4kids/season6/wetlands/facts.cfm  
http://education.nationalgeographic.com/education/encyclopedia/wetland/?ar_a=1  
http://water.epa.gov/aboutow/owow/kids.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 a 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.  

Tacoma Nature Center– Wetland Wonders
### Science/Math

<table>
<thead>
<tr>
<th>Learning Target</th>
<th>I can explain how I find the totals of groups of animals.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Core Standards</td>
<td>3.OA.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.</td>
</tr>
<tr>
<td>Do Now/ Warm Up</td>
<td>How do you think scientists use math? Make a list.</td>
</tr>
<tr>
<td>Do Now/ Warm Up</td>
<td>Allow students to work in pairs to come up with a list of the ways that scientists use math in their work. Discuss as a class and create a class list that can be referred to before and after the field trip.</td>
</tr>
<tr>
<td>Tools</td>
<td>Copies of the handout for each student</td>
</tr>
<tr>
<td>Activities</td>
<td>Think Time, Turn and Talk, Partner Work, Whole Class Discussion</td>
</tr>
<tr>
<td>Activities</td>
<td>Review multiplication concepts as fit or distribute the handout and have students draw pictures to make sense of the multiplication (Handout Page 9-Appendix D). Invite students to the board to share their strategies and have other students ask questions about their strategies.</td>
</tr>
<tr>
<td>Activities</td>
<td>You may want to discuss how likely it would be to have exactly the same number of animals in each tree, for example, and what scientists may have to do in that case. Get students thinking about keeping track of the numbers of birds, reptiles, amphibians, invertebrates and mammals they observe on the field trip.</td>
</tr>
<tr>
<td>Assessment</td>
<td>Summative: class observation</td>
</tr>
<tr>
<td>Assessment</td>
<td>Formative: exit task– Explain what multiplication means in your own words.</td>
</tr>
<tr>
<td>Practice/ Homework</td>
<td>Differentiated-choose one of the following:</td>
</tr>
<tr>
<td>Practice/ Homework</td>
<td>• Draw and fill in a multiplication table up to 10 x 10.</td>
</tr>
<tr>
<td>Practice/ Homework</td>
<td>• Explain the difference between multiplication and division.</td>
</tr>
<tr>
<td>Practice/ Homework</td>
<td>• Find an example of a scientist using math on a show, in a book or on the internet. Be prepared to share what you find with the class.</td>
</tr>
</tbody>
</table>
Objectives
To understand the functions of a wetland
To understand the food web process and the interdependence of life
To encourage scientific exploration and discovery
To understand the value of wetlands 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 wetlands

We will spend approximately 10 minutes discussing the above. After this, we will split into 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 into groups, each leader will rotate their groups through the various activities.

On the walking tour, leaders will stop along the trail to discuss wetlands and habitats. An emphasis will be placed on the functions of wetlands and their value to humans and wildlife. As students learn the functions of wetlands, they are encouraged to check them off and/or record them in their field journal. 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 observe the tiny animals that live in the water. There is a page in their field journals to record what they see under the microscopes. Students will also learn about food webs and will be able to fill out a food web in their field journal. Students will learn about wetland animals and their adaptations through hands-on discovery. They will be able to match up wetland animals with their adaptations in the field journal.

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>Walking tour</td>
</tr>
<tr>
<td>Group B</td>
<td>Lab</td>
</tr>
</tbody>
</table>

Small group sizes will allow for hands-on opportunities at each station.

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 “Wetland Wonders” kit. 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 3rd grade Common Core Standards. 45-60 minutes (or more) each lesson.

Science

<table>
<thead>
<tr>
<th>Learning Target</th>
<th>I can explain the value of wetlands.</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>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 for posters 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 wetlands. Explain that now that they know about the wetland at the Tacoma Nature Center, they are going to encourage others to protect it!

Discuss the benefits of wetlands:
- **Food for wildlife**
- **Nursery for baby animals**
- **Filters water**
- **Soaks up floods**
- **Shelter for animals**

You will probably come up with many more! Have students choose (or assign) one benefit to make a poster about. The poster should inform (provide some information about the importance of wetlands), entertain (by being colorful and with pictures or illustrations), and inspire (with a call to action and tips for how everyone can do their part to protect wetlands).

Students can present their work to the class or hang their posters around the school.
**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:  
- Watch a show about wetlands. (PBS kids may be a good resource.) Explain the main idea of the show to the class.  
- Research a wetland animal. Write a paragraph about why it depends on its wetland habitat.  
- Visit another wetland 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 write about and support my opinion.</th>
</tr>
</thead>
</table>
| **Common Core Standards** | 3.W.1 Write opinion pieces on topics or texts, supporting a point of view with reasons.  
a. Introduce the topic or text they are writing about, state an opinion, and create an organizational structure that lists reasons.  
b. Provide reasons that support the opinion.  
c. Use linking words and phrases (e.g., because, therefore, since, for example) to connect opinion and reasons.  
d. Provide a concluding statement or section. |

<table>
<thead>
<tr>
<th>Do Now/ Warm Up</th>
<th>Turn and talk-what is the difference between fact and opinion? One person talk and the other person listen for 30 seconds and then switch.</th>
</tr>
</thead>
</table>
| **Tools**       | Student access to the internet and written resources-optional  
Student journals from the field trip  
Writing materials  
Opinion organizer-optional |
| **Activities**  | Writing, reading  
Explain that they will be writing for the following prompt: The city wants to build a new playground for kids but in order to build it they will have to fill in a small wetland. Should the city build the playground?  
Discuss that in writing an opinion it must be supported with reasons in order to be convincing. Have students use the optional Opinion Organizer handout or other tool to begin their prewriting (Handout Page 10-Appendix E). |
## Assessment
- **Summative:** Completed writing
- **Formative:** Exit task – explain your opinion and three supporting reasons.

## Practice/Homework
What else do you have an opinion about? Can you provide at least 3 reasons to support your opinion?

---

### Science/Math

**Learning Target**
I can explain how I make sense of my data using graphs.

**Common Core Standards**
- 3.MD.3. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one-and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph may represent 5 pets.

**Do Now/ Warm Up**
- Have one piece of chart paper each for mammals, birds, reptiles, amphibians, invertebrates and other hanging around the room.

Review your data from your field journal. On each chart paper, write the number of each animal you saw on the field trip that you recorded in your journal. (Note: this is a movement activity. Class procedures apply.)

**Tools**
- Chart paper, student journals from the field trip, graph paper, copies of handout for each student

**Activities**
- Inquiry, Whole Class Discussion, Think Time

It will probably be pretty clear to students when they see their data on the chart papers that this is not a very clear or organized way to show data. 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.

NOTE: if you do not have data from the field trip, use the handout with Carlos and Latoya’s data (Handout Page 11-Appendix F).

Distribute the handout and have students work independently before collaborating with a partner (Handout Page12-Appendix G). Have students share their work, highlighting misconceptions and breakthroughs. Of particular interest is the use of intervals of 5 on the graph. How are students accounting for numbers of animals that are not multiples of 5? Discuss.
**Activities**
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—using your graph, find the most common and least common types of animals at the Tacoma Nature Center.

**Practice/ Homework**
Find a bar graph in the newspaper, a magazine or on the internet. Interpret what it means and write 2-3 sentences about it. Bring the bar graph 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
Appendix A

Wetland Ecologists at work!
Wetland Warm -Up

Read the passage below. Circle key words or any words you don’t know and underline the main idea.

Wetlands are important habitats for wildlife. They provide food like plankton for many species that live in the water. They provide shelter for animals that have adaptations for living in water such as frogs and ducks. They provide space for baby animals to grow up. And of course the water in a wetland is important for all living things. Wetland habitats are valuable habitats.

Appendix B

Wetland Warm -Up

Read the passage below. Circle key words or any words you don’t know and underline the main idea.

Wetlands are important habitats for wildlife. They provide food like plankton for many species that live in the water. They provide shelter for animals that have adaptations for living in water such as frogs and ducks. They provide space for baby animals to grow up. And of course the water in a wetland is important for all living things. Wetland habitats are valuable habitats.
Personal Wetland Dictionary

Name: ___________________________
Date: __________________________

Word: nature preserve

Definition in your own words

Facts / characteristics

Non-examples

Examples

Illustration
### Personal Wetland Dictionary

**Word:** Habitat

<table>
<thead>
<tr>
<th>Definition in your own words</th>
<th>Facts / characteristics</th>
<th>Illustration</th>
<th>Examples</th>
<th>Non-examples</th>
</tr>
</thead>
</table>

---

**Date:** ____________

**Name:** ____________
Adaptations

Word

- Illustration

Definition in your own words

Examples

Facts / characteristics

Non-examples

Name: ___________________________

Date: ____________________________

Personal Wetland Dictionary
<table>
<thead>
<tr>
<th>Word</th>
<th>Illustration</th>
<th>Examples</th>
<th>Definition in your own words</th>
<th>Facts / characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>species</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Calculating Critters

Sometimes scientists use math to help them figure out how many animals or species of animals are living in a habitat. Can you figure out how many total animals each scientist observes below?

Dr. Deneeka Waters was studying plankton in the lab. She noticed there were 6 copepods in each petri dish. There are 7 petri dishes in the lab. How many copepods are there in the lab? Explain your answer with words and/or pictures.

Dr. Jose Marquez noticed there were 9 birds in each tree in the wetland. There were 9 trees. How many birds did Dr. Jose Marquez see? Explain your answer with words and/or pictures.

There are twice as many turtles on logs on sunny days as on rainy days. On the last rainy day, there were 2 turtles on each of the 4 logs in the lake. How many turtles would you expect to find on the next sunny day? Explain your answer with words and/or pictures.
Opinion Organizer

The city wants to build a new playground for kids but in order to build it they will have to fill in a small wetland. Should the city build the playground?

My opinion is:

Three reasons that support my opinion
1. 

2. 

3. 

I may want to use linking words and phrases to connect my opinion and the reasons. Some good linking words and phrases to use are: because, therefore, since, for example.

My concluding statement will be:
Carlos and Latoya counted all the species they saw when they visited the Tacoma Nature Center on a field trip. They kept track of what they saw below.

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invertebrates</td>
<td></td>
</tr>
<tr>
<td>Mammals</td>
<td></td>
</tr>
<tr>
<td>Reptiles</td>
<td></td>
</tr>
<tr>
<td>Birds</td>
<td></td>
</tr>
<tr>
<td>Amphibians</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>
Appendix G

Show me the data!

Record your class data on the graph below.

<table>
<thead>
<tr>
<th></th>
<th>Number seen</th>
</tr>
</thead>
<tbody>
<tr>
<td>mammals</td>
<td></td>
</tr>
<tr>
<td>birds</td>
<td></td>
</tr>
<tr>
<td>amphibians</td>
<td></td>
</tr>
<tr>
<td>reptiles</td>
<td></td>
</tr>
<tr>
<td>invertebrates</td>
<td></td>
</tr>
<tr>
<td>other</td>
<td></td>
</tr>
</tbody>
</table>

How many more birds did your class see than reptiles? ______________________________

How do you know? __________________________________________________________________

How many fewer mammals did your class see than reptiles and amphibians combined?

________________________________________________________________________________

How do you know? __________________________________________________________________

What questions do you have? __________________________________________________________

Name: ___________________________  
Date: ___________________________
Thank you for visiting the Tacoma Nature Center and taking the time to complete our survey.

Keep on exploring nature!
In the Lab
Many of the creatures that live at Snake Lake are so small you need a microscope to see them! Take a look through one of our microscopes to observe the many plankton.

In the circle, draw an interesting plankton that you saw under the microscope.
Can you name it?

How was your visit?
Please answer the questions below. Cut out the bottom section and turn it in to your teacher. Your

At the Tacoma Nature Center, I learned that

My favorite part was

Wetlands are important because

I am ____ years old.
On the Trail
Snake Lake is an example of a wetland right in the middle of Tacoma! On the trail you will learn why wetlands are so important to both the animals that live in them and the people who live near them!

In the Classroom
Wetland critters have wonderful tools that help them survive in this habitat. These tools are called adaptations. Draw a line connecting the animal with its adaptation below. Some animals may have more than one!

Match up the phrases on the left side with the correct phrases on the right side.

Wetlands are like filters because...
- they are resting places for migratory birds

Wetlands are like sponges because...
- they clean the water of pollutants

Wetlands are like pillows because...
- they filter out material from the water

Wetlands are like soap because...
- they provide food for the animals

Wetlands are like cradles because...
- they soak up the extra water from floods

Wetlands are like diners because...
- they are places where many animals start their lives

- webbed feet to aid in swimming
- camouflage to hide from predators
- long, sharp beak for catching fish
- thick, oily fur to repel water
- hard shell to protect itself from predators
- long, skinny body to help it glide through the water
- chisel-like teeth for chewing wood
- long flat tail for warning others of danger
Healthy habitats are important for all animals. Draw a healthy wetland habitat for a critter you saw at the Tacoma Nature Center. Be sure to include food, water, shelter and space for your wetland critter!

In the Lab
The tiny plankton that you see are a very important part of the food chain. Complete the food chain below to find out who depends on plankton!

```
Plankton
  / \                / \                / \
 Salmon Bear Salmon Bear Salmon
  |     |                |     |                |     |
  | Bear |  Salmon         | Salmon |
  |      |                |       |
  |      | Salmon          |
  |      |                |
  |      |
  |
```