



## Eagle Graphing

### Recording Bald Eagle Food, Graphing, Develop an Appreciation of our Natural World

Diane Cook, Flemington Raritan School District, April 2016

Grade 2

*"In the end we will conserve only what we love. We will love only what we understand. We will understand only what we are taught." –Baba Dioum, Senegal*

Note: Our district uses the drawing program Pixie (Tech4Learning). There are others out there that will help meet these objectives as well. Students are well acquainted with the software and how to use it before this lesson. The lesson provides the opportunity to use and perfect the use of tools in the software. Since I teach computer literacy, this lesson was designed to use technology. You can opt for a non-tech approach, by using more traditional paper/pencil materials.

Sample of finished project is in resources. Because my templates are program specific, teachers will make their own using the included samples as ideas.

This lesson is written according to 2nd grade standards, but could be used in other grades as well with modifications (easy changes for grades K-1). Simply watch the live cam, chart food brought to the nest on a class chart as part of the regular calendar routine (tally number of days in school, etc.) Once tally chart is complete have students draw, color, cut pictures of prey (fish, turtles, etc.) Use these to create a simple class picture graph.

This lesson can be modified to look at the bald eagle population across the United States. For older students, the collection and analyzing of this data can lead to other questions that can then be researched.

Sample of finished project is in resources. Maps included in this lesson were not current. Modify to compare eagle populations in specific counties of NJ using current information from Conserve Wildlife Foundation of NJ.

Another fun modification would be to create teams of students. Assign different live cams to each team. Teams record the information and compare prey observations in other states or compare other birds of prey.



### **Common Core Curriculum Standards**

#### [CCSS.MATH.CONTENT.2.MD.D.10](#)

Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

#### [CCSS.MATH.CONTENT.2.OA.A.1](#)

Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

### **New Jersey Core Curriculum Science Standards**

#### **Math**

CC.K-12.MP.1	Make sense of problems and persevere in solving them.
2.MD.10	Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put together, take-apart, and compare problems using information presented in a bar graph.
4.4.2.A.1	Collect, generate, record, and organize data in response to questions, claims, or curiosity.
4.4.2.A.2	Read, interpret, construct, and analyze displays of data.
4.5.E.1	Create and use representations to organize, record, and communicate mathematical ideas.
4.5.E.2	Select, apply, and translate among mathematical representations to solve problems.
4.5.E.3	Use representations to model and interpret physical, social, and mathematical phenomena.
4.5.F.1	Use technology to gather, analyze, and communicate mathematical information.
4.5.F.2	Use computer spreadsheets, software, and graphing utilities to organize and display quantitative information.

#### **Technology**

8.1.2.A.1	Identify the basic features of a digital device and explain its purpose.
8.1.2.A.2	Create a document using a word processing application.
8.1.2.E.1	Use digital tools and online resources to explore a problem or issue.
8.1.2.F.1	Use geographic mapping tools to plan and solve problems.



### **Next Generation Science Standards**

#### **K-LS1-1,**

Use observations to describe patterns of what plants and animals (including humans) need to survive.

#### **1-LS1-2**

Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive

#### **2-LS4-1**

Make observations of plants and animals to compare the diversity of life in different habitats.

#### **Objectives:**

- Students will develop an awareness/appreciation of our Natural World
- Students will chart food brought into the nest of a bald eagle using tally marks
- Students will create a picture and bar graph representing collected data
- Students will write and solve questions based on the information in graphs

#### **Materials**

- [Duke Farms Bald Eagle Cam](#)
- Computers/Chromebooks/iPads with Internet connections and drawing program
- Optional paper, pencil, crayons, etc. - traditional drawing materials if opting for a non-tech book format

**Vocabulary:** bird of prey, prey, live cam, beak, talons

**Background Information/Skills:** The Duke Farms live web cam is a great website to use in practicing and providing real life application of math skills (data collection and graphing). It is important to explain to young or sensitive viewers that the bald eagle is a bird of prey and that means they hunt and eat other animals. Be sensitive to the feelings this may stir in some students. I often explain that I love watching nature, but it can be hard to see. I know that the survival of these baby animals depends on other animals not living. Be sure to remind students that if they see something that makes them uncomfortable, they do not need to watch. These students can get missing data from a classmate or teacher.

Part of observing the bald eagles and monitoring their comeback from the decline in population, is looking at what they are eating and feeding their young. This can help the scientists to know the health of the birds and the habitat in which they live. Larissa Smith, eagle biologist from Conserve Wildlife



Foundation of NJ created a [data collection sheet](#) this year to track what the adults are feeding this year's eaglets.

If modifying the lesson to compare bald eagle populations across the US, students can begin to question why the numbers differ from state to state, why some states have greater/lesser populations, etc. Great questions and research opportunities for older students.

If using technology, students should be familiar with or teacher would instruct how to use basic tools - text, line drawing, sticker library, etc.

**General Procedures:**

**Part 1:** Explain to students that while watching the live cam, they will keep a tally of the food the adults are bringing into the nest. The lesson may be introduced in math class or during morning meeting whatever best fits the class routine. This can be done once 1 day, across several days. As the eaglets grow and are eating more, the adults are very busy keeping the nest supplied with food. This is the optimal time to engage in the lesson (eaglets are about 3-4 weeks of age and beyond.)

Data can be collected in several ways: (See resources for samples)

- Each student records information on a personal data collection sheet
- Students take turns recording food with a tally mark on a class chart
- Use the data collection sheet from Larissa Smith and then based on that, students can practice recording totals with tally marks.

**Part 2:** Once data has been collected, students will create the graphs.

- Paper/Pencil - students complete the template provided
- Technology - students complete the template provided

See samples in resources.

When complete, students can trade with peers. Students will read the questions posed, use the information in the graphs and/or tally marks to answer those questions. Questions will vary. Teacher may guide students in creating questions.

**Evaluation:** Teacher observation of students using tools, students participating appropriately during class period, and printed or saved work.

**Modifications:** For students with special needs/struggling: Teacher or Teacher Assistant may redirect, refocus, or prompt student. If using technology, teacher or teacher assistant may point to the keyboard or provide clues to key location and tools in the drawing program to guide until the student feels secure



in doing it alone. Teacher or Teacher Assistant may need to use hand-over-hand on the mouse to guide student.

Secure students may work at their own pace. They may also serve as mentors for peers.

**Resources:**

- [Duke Farms Live Cam](#)
- [Other Bird of Prey live cams](#)
- [Larissa Smith eagle data collection sheet](#)
- [http://www.biologicaldiversity.org/species/birds/bald\\_eagle/report](http://www.biologicaldiversity.org/species/birds/bald_eagle/report)
- [Bald Eagles in New Jersey by County](#)
- Simple Tally Sheet and Sample

Name

Write the name of Prey seen. Then use tally marks to show how many you saw today.  
Write the number too.

Fish     |||| III     8

Turtle    II            2



# Graphing Template

## Food Graph

Name \_\_\_\_\_

Template created by Diane Cook 4/21/16

<p>Data</p>     	<p>Picture Graph</p> <table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>																																																		
<p>Questions</p>     	<p>Bar Graph</p> <div style="border: 1px solid black; width: 90%; margin: 10px auto; height: 150px;"></div>																																																		

Eagle Graph (modify for NJ counties): to use with states or counties with larger numbers, simply add a key to the graph. Each picture=2 or 5. Use a number that would best represent the total.

Name \_\_\_\_\_

Template created by Diane Cook and Lea Klein Spring 2016

<p>Data</p> <p style="font-size: small;">Use tally marks and the data on the next page to show the number of breeding pairs of eagles in the following states:</p> <p>Utah Nevada Washington DC New Hampshire Vermont New Mexico</p>	<p>Picture Graph  Use copy and paste to show the number of breeding pairs in the states shown</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>UT</td><td> </td><td> </td></tr> <tr><td>NV</td><td> </td><td> </td></tr> <tr><td>DC</td><td> </td><td> </td></tr> <tr><td>NH</td><td> </td><td> </td></tr> <tr><td>VT</td><td> </td><td> </td></tr> <tr><td>NM</td><td> </td><td> </td></tr> </table>	UT																NV																DC																NH																VT																NM															
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### Graphing Sample

#### Food Graph

Name Mrs. Cook Template created by Diane Cook 4/21/16

<p>Data Bald Eagle Prey</p> <p>Fish     IIII IIII I</p> <p>Turtles   IIII III</p> <p>Duck     I</p>	<p>Picture Graph  = 2</p> <table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>																																																												
<p>Questions</p> <p>Which animal is hunted most?</p> <p>Which animal is hunted the least?</p> <p>How many more Fish than Turtles?</p>	<p>Bar Graph</p> <table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr><td></td><td colspan="10" style="background-color: blue;"></td></tr> <tr><td></td><td colspan="8" style="background-color: green;"></td></tr> <tr><td></td><td colspan="1" style="background-color: pink;"></td><td colspan="10"></td></tr> <tr><td></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td></tr> </table>																																		1	2	3	4	5	6	7	8	9	10	11																
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