



## ***From Hatchling to Yearling***

### ***A Year Long Activity Graphing Turtle Growth***

*Created by the NC Aquarium at Fort Fisher Education Section*

#### **Essential Question:**

How do sea turtles grow in their first year?

#### **Lesson Overview:**

Students will learn about sea turtle growth by following the growth of the Loggerhead sea turtle ambassadors at the North Carolina Aquarium at Fort Fisher.

#### **Learning Objectives:**

Students will graph the weight and length of sea turtles at the NC Aquarium at Fort Fisher. Students will be able to:

- Create a bar graph
- Compare the weights and lengths of two turtles

#### **North Carolina Standards:**

##### Second Grade:

###### *Math:*

- **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<sup>1</sup> using information presented in a bar graph.

###### *Technology:*

- **2.TT.1** Use technology tools and skills to reinforce classroom concepts and activities.
  - **2.TT.1.1** Use a variety of technology tools to gather data and information (e.g., Web-based resources, e-books, online communication tools, etc.).

##### Third Grade:

###### *Math:*

- **3.MD.B.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.

###### *Technology:*

- **3.TT.1** Use technology tools and skills to reinforce classroom concepts and activities.
  - **3.TT.1.1** Use a variety of technology tools to gather data and information (e.g., Web-based resources, e-books, online communication tools, etc.)



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### Fourth Grade:

#### *Math:*

- **4.MD.A.1** Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table.

#### *Technology:*

- **4.TT.1** Use technology tools and skills to reinforce classroom concepts and activities.
  - **4.TT.1.1** Use a variety of technology tools to gather data and information (e.g., Web-based resources, e-books, online communication tools, etc.).
- **4.RP.1** Apply a research process as part of collaborative research.
  - **4.RP.1.1** Implement a research process by collaborating effectively with other students.

### Fifth Grade:

#### *Math:*

- **5.MD.A.1** Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

#### *Technology:*

- **5.TT.1** Use technology tools and skills to reinforce and extend classroom concepts and activities.
  - **5.TT.1.1** Use a variety of technology tools to gather data and information (e.g., web-based resources, e-books, online communication tools, etc.)

### **Time Frame:**

Preparation: 10 minutes

Activity: 5 minutes/week

### **Materials (per student):**

- Two large sheets of butcher paper
- Markers
- Weighing and Measuring Sea Turtles Video (<https://www.youtube.com/watch?v=Du5JxpKD2ss>)
- Access to the Sea Turtle Exploration Blog (<http://seaturtleexploration.com/masonry-blog/>)

### **Supplemental Background Information for Teachers:**

Sea turtle hatchlings, like other baby animals, grow a lot when they are young. Every year, the North Carolina Aquarium at Fort Fisher exhibits rescued sea turtle hatchlings. In order for the aquarium to keep these hatchlings, a federal permit must be obtained. In order to make sure the turtles get the best care, they are closely monitored. Each week the turtles are weighed and measured to determine how much they are growing. The staff uses the weight of the turtles to determine how much the turtles should be fed. Each turtle is fed a percentage



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its body weight. The smaller the turtle, the larger the percentage they are fed. You can see these ratios here:

Turtle weight	Feed %
0-100g	15%
100-200g	7%
200-500g	4%
500g+	3%

The turtles are closely monitored each week to make sure they are growing at a healthy rate. If the turtles are fed too much, their bones will grow too quickly. This could potentially weaken the turtle's skeleton. If they are fed too little, the turtles will not grow to be strong and healthy. At the North Carolina Aquarium at Fort Fisher, our turtles are fed half of their food in the morning before they go on exhibit, and the other half at the end of the day. In the morning, the turtles typically receive a gel food, made from unflavored gelatin, vegetables, fish and calcium powder. The gel food ensures the hatchlings are receiving all the necessary nutrients. In the afternoon, the turtles are fed meat, which typically consists of fish or squid. On occasion they are also treated to jellyfish, one of their favorite foods.

### Preparation:

This can be done as a class or prior to class beginning. Using butcher paper, create two bar graphs. The x-axis on both graphs will be the date. On one graph, the y-axis will be weight in pounds or grams depending on what unit your class uses. On the other graph, the y-axis will be length in inches or centimeters depending on the unit your class uses. These should be hung somewhere in the classroom where they can be used all year.

### Procedure:

1. With the class, review the parts of a bar graph. Discuss what types of data can be shown on this type of graph.
2. Then, watch our video on how to weigh and measure sea turtles:  
<https://www.youtube.com/watch?v=Du5JxpKD2ss>
3. Each week, visit the Sea Turtle Exploration Blog to get the weight and length of the Aquarium's loggerhead sea turtles.
4. Select a color to represent the two different turtles.
5. Each week, add the data to the bar graph.
6. As a class, discuss questions such as which turtle is longer, which one weighs more, which one grew more over the course of the week, etc.

### Extensions:

1. Have the students create a copy of the graph in their own science notebooks.
2. As a class, turn the bar graph into a line graph.
3. Convert the data from pounds to grams and inches to centimeters.
4. Have the students predict the weight and length of the turtle based on the data on your graph.