

Audience: Sixth grade; with adaptations for earlier grades and high school

Duration: 30 minutes to 1 hour

STEM Process Skills: analyzing real data

Learning Objectives/Goals:

Students will be able to develop and/or calculate fractions, ratios, or percentages with real world scientific data.

TEKS: Grade Six Math TEKS 1A and B for real life problem solving; and 4 and 5 relating to proportionality

Ocean Literacy Principles: #5, #6

Vocabulary: cold-stunning, sea turtle, endangered species

Set Up/Break Down: Copy the Stunning Numbers Fact Sheet for

Description: This activity challenges students to work with proportionality, fractions, ratios, and/or percentages using authentic counts from green sea turtle cold-stunning events in South Texas.

Materials: One copy of the Stunning Numbers Fact Sheet per student

Procedures: Students will develop or calculate ratios, fractions, and/or percentages from the facts provided.

Adaptations: Intermediate and younger grades may place the numbers in order from smallest to largest, or practice counting by tens or 100s, or create a number line with the facts provided. All levels can use the online resources listed below to learn more about sea turtles in the Gulf of Mexico and across the globe. High school students can download, read, and discuss the March, 2017 research article, Hypothermic stunning of green sea turtles in a western Gulf of Mexico foraging habitat, from the PLoS ONE journal at <https://doi.org/10.1371/journal.pone.0173920>.

Background Information: Texas waters provide important habitat for young green sea turtles (*Chelonia mydas*) in the western Gulf of Mexico. Unfortunately, when cold winter winds cause water temperatures to fall below about 8°C, the cold-blooded turtles are prone to hypothermic, or cold stunning. Cold-stunning is just like being paralyzed, making it impossible for the turtles to swim against a current or escape danger. Many will be stranded on beaches, and would likely die without human

intervention. Thankfully for the turtles, the U.S. Endangered Species Act requires wildlife officials to organize rescue and rehabilitation efforts. Texas State Aquarium's Wildlife Rescue and Recovery staff work closely with Padre Island National Seashore and other turtle experts to rescue cold-stunned turtles.

Resources:

www.arkive.org

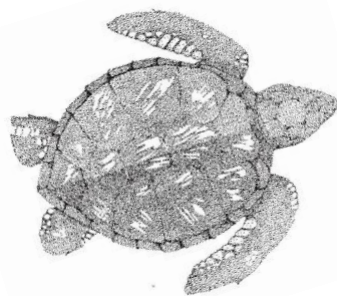
www.seaturtleinc.org/

www.eol.org

www.seaturtle.org/tracking/

www.oceantoday.noaa.gov

www.iucnredlist.org



TO LEARN ABOUT AQUARIUM CAREERS VISIT
www.texasstateaquarium.org/educate/teachers-and-schools/learning-resources/staff-profiles/

Cold Stunned Turtle Facts and Figures

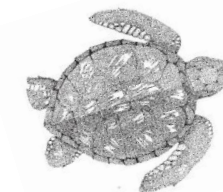
What is cold stunning?

Texas waters provide important habitat for young green sea turtles (*Chelonia mydas*) in the western Gulf of Mexico. Unfortunately, when cold winter winds drop water temperatures below 8°C, the cold-blooded turtles are prone to cold stunning. Cold-stunning is just like being paralyzed, making it impossible for the turtles to swim against a current or escape danger. Many will be stranded on beaches, and would likely die without human help. Thankfully for the turtles, the U.S. Endangered Species Act requires wildlife officials to organize rescue and rehabilitation efforts. Texas State Aquarium's Wildlife Rescue and Recovery Center team works closely with Padre Island National Seashore and other turtle experts to rescue cold-stunned turtles.

How many turtles are stunned and rescued?

Over 2,000 cold-stunned green sea turtles were recovered on Texas beaches during the winter of 2017-2018, and 1070 of them were brought to Texas State Aquarium's Wildlife Rescue and Recovery Center. After receiving medical treatment, 1000 of the turtles were released when waters had warmed again. Of those 1000 turtles, the United States Coast Guard assisted with the release of 400.

According to a newly released scientific paper (Shaver, et al, 2017), 4,529 out of 8,107 green turtles found stranded between 1980 and 2015 were victims of cold-stunning. Another 203 cold-stunned turtles were found at power plants, for a total 4,732 cold-stunned turtles found in Texas waters between 1980 and 2015.



You do the numbers

What ratio or percentage of the 2017-2018 cold-stunned turtles were brought to Texas State Aquarium?

What ratio or percentage of those turtles were released after treatment?

What fraction or percentage of the released turtles did the Coast Guard help with?

What ratio, fraction, and/or percentage of green turtles found stranded (including those found at power plants) between 1980 and 2015 were victims of cold-stunning? What fraction or percentage were represented by the turtles found at the power plants?

How does the number of cold-stunned turtles in 2017-2018 compare to the total found between 1980 and 2015? Write or calculate the relationships as a ratio, fraction, or percentage.

Reference

Shaver DJ, Tissot PE, Streich MM, Walker JS, Rubio C, Amos AF, et al. (2017) Hypothermic stunning of green sea turtles in a western Gulf of Mexico foraging habitat. PLoS ONE 12(3): e0173920.