

Migration Mystery

Background:

Gray whales have the longest single migration of any marine mammal. Traveling to the Arctic in the summer to feed on bottom-dwelling organisms and then south to Baja California, Mexico in the fall to give birth and mate.



Source: BajaCaliforniaTravel

Unfortunately, there has been a recent unexplained increase in Gray whale deaths and some researchers hypothesize that changing ocean conditions may be one cause of these events. In this activity, using research data, you can investigate the causes of deaths and how changes in ocean conditions may influence the migration of Gray whales.

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Instructions:

- ❖ Using the provided data box below, count the number of each cause of death and fill in the graph below.
 - ❖ Use your completed graph to complete page 4.
- *Print this page for the blank graph below OR plot on a separate piece of paper.*

Strand Date	Cause of Death
03/11/2019	suspect malnutrition
03/11/2019	unknown
04/04/2019	suspect malnutrition
04/10/2019	trauma/human interaction
04/16/2019	trauma/human interaction
04/17/2019	trauma/human interaction
04/18/2019	suspect malnutrition
04/29/2019	trauma/human interaction
05/06/2019	trauma/human interaction
05/13/2019	suspect malnutrition
05/14/2019	unknown
05/20/2019	suspect malnutrition
05/24/2019	suspect malnutrition

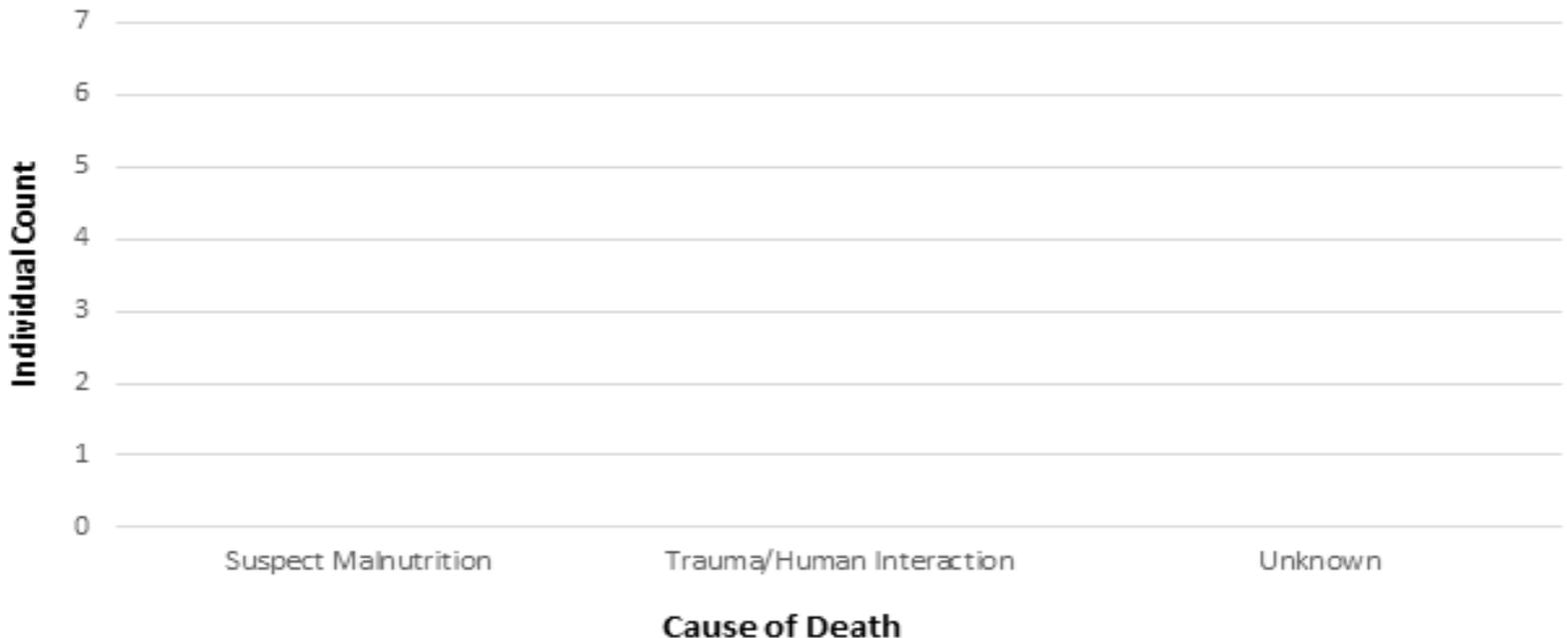
of suspect malnutrition: _____

of trauma/human interaction: _____

of unknown: _____

Graph A:

Stranded Gray Whales' Causes of Death



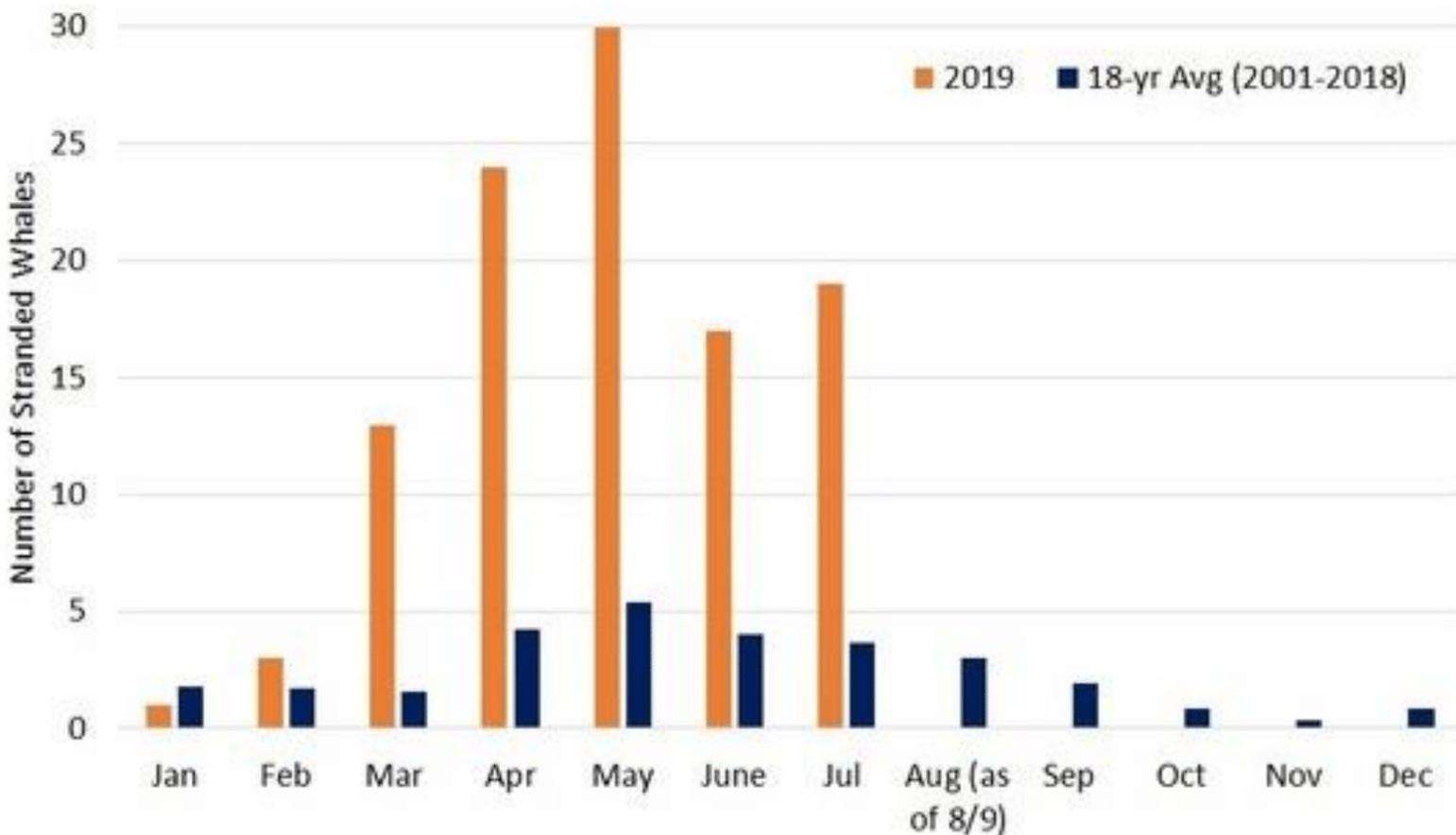
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Instructions:

- ❖ Using the provided graph below, answer Questions 2&3 on page 4.

Graph B:

Combined 2019 Gray Whale Strandings in California, Oregon, Washington and Alaska



Source: NOAA Fisheries



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Activity Questions:

1. Using Graph A, what was the most common cause of death for stranded Gray Whales?

2. On Graph B, in what month and year were there the largest number of Gray Whale strandings?

3. Using your answer from number 2, which direction are Gray whales migrating during that month? (North or South)

4. What are some of the impacts climate change has on Gray whale migrations?

5. How might these impacts increase the number of Gray whale deaths?

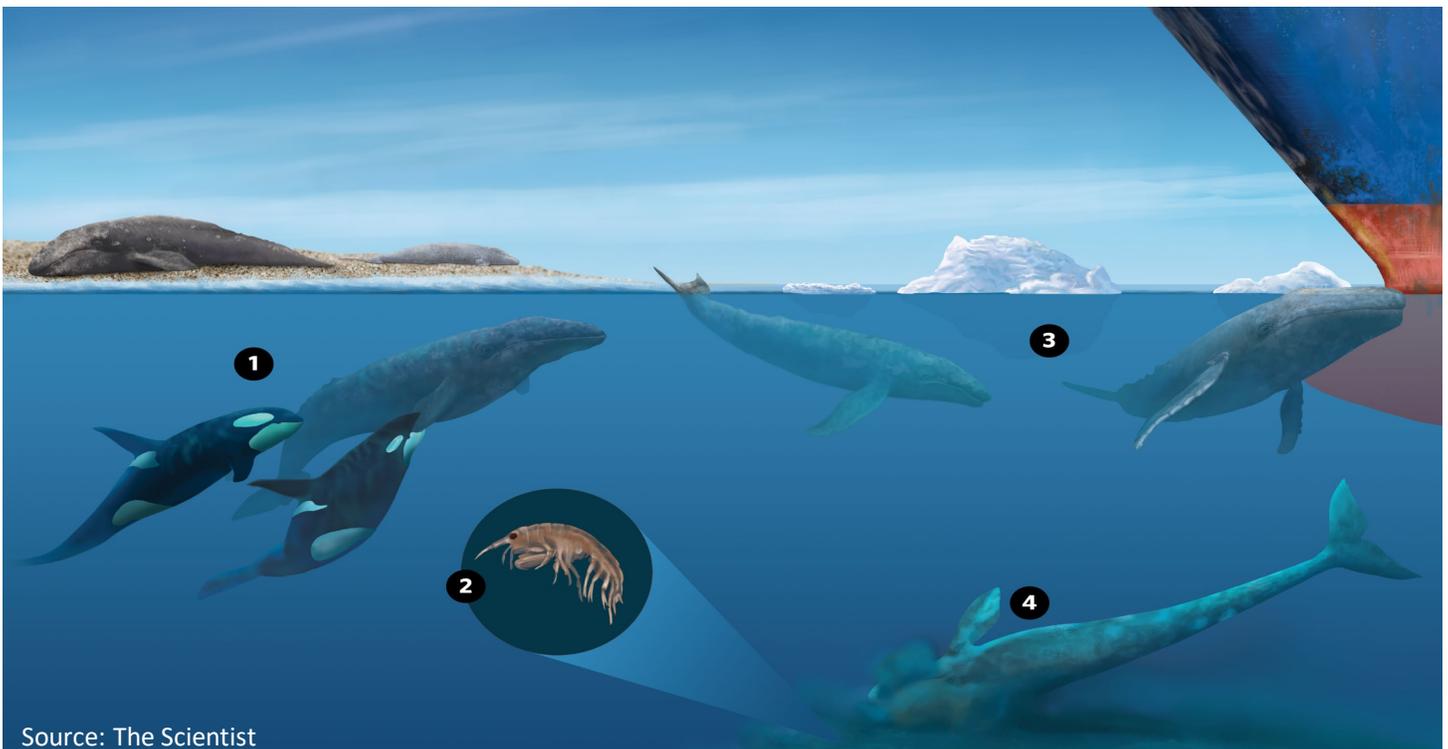
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Gray whales and Changing Ocean Conditions:

Changing ocean conditions, such as warming waters, are causing Gray whales to migrate further north into the Arctic as the location of their food source is changing. This addition to their already long migration, requires more energy for the whales. In addition, warming water temperatures also negatively impact the quality of the amphipods, or small shrimp-like crustacean, that Gray whales eat (**See image 2**).

The exhaustion from longer migrations and the malnutrition from less nutritious food makes it difficult for Gray whales to return South to mate and give birth. Exhaustion and malnutrition also make Gray whales more susceptible to toxins and diseases and less likely to be able to fend off attacks from potential predators such as Orca whales (**See images 1&4**).

As ocean conditions change and warm, ice growth changes too. Less ice growth allows commercial boats to travel into areas that were previously protected and frequented by Gray whales and could increase the chance of Gray whales experiencing trauma from boat strikes or human interactions (**See image 3**)



Source: The Scientist

Additional Resources:

For more information about how changing ocean conditions may lead to Gray whale deaths, see: [Clues Point to Climate Change as a Culprit in Gray Whale Deaths](#) published by The Scientist featuring The Marine Mammal Center.

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Gray whales and Unusual Mortality Events:

Since January 1, 2019, there has been an increased number of Gray whale deaths that have been classified by NOAA as an Unusual Mortality Event (UME). A UME is defined as a *stranding that is unexpected; involves a significant die-off of any marine mammal population; and demands immediate response (fisheries.noaa.gov).*



Become an Ocean Hero:

While this Unusual Mortality Event is currently ongoing there are ways you can help! The Marine Mammal Center has a Cetacean Field Research Team conducting research to address negative human interactions in urban environments. By reporting whale sightings [here](#) at our community science portal, you are supporting the Center's efforts to create healthy oceans for marine mammals and people alike.



**Call our 24-hour rescue hotline to report marine mammals in need at
415-289-7376 (SEAL)**