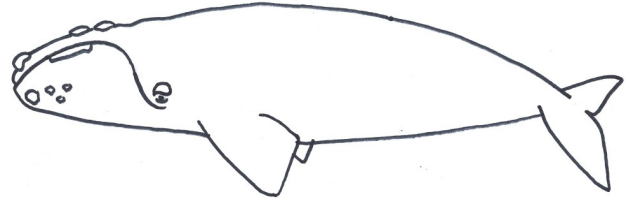




# Right Whale Population: Where Do They Stand?

Trying to understand the demographics of a species is difficult at best. It's even trickier when members of that species dive underwater for 20 minutes, swim thousands of miles and go undetected for years only to show up again. How many right whales are there in the North Atlantic? That is not an easy question to answer, but scientists use the best available research, tools and models to give an estimate. Currently, the estimated population is 409. That figure comes from years of continued research by many different organizations. These organizations make up the North Atlantic Right Whale Consortium. From their website:



Started in 1986 as a collaborative data sharing group, the North Atlantic Right Whale Consortium (NARWC) has grown to include more than 200 individuals from various research and conservation organizations, shipping and fishing industries, technical experts, U.S. and Canadian government agencies, and state and provincial authorities, all of whom are dedicated to the conservation and recovery of the North Atlantic right whale. The Consortium is internationally recognized and has been identified as a model for establishing other species-related consortia.

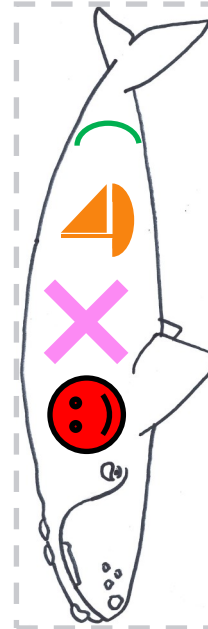
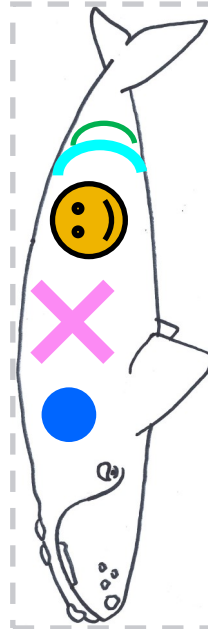
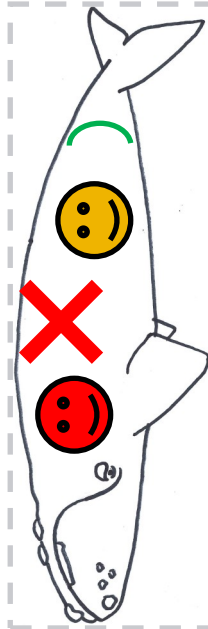
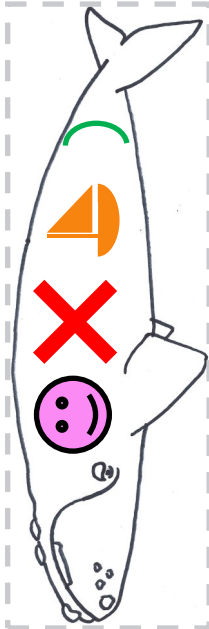
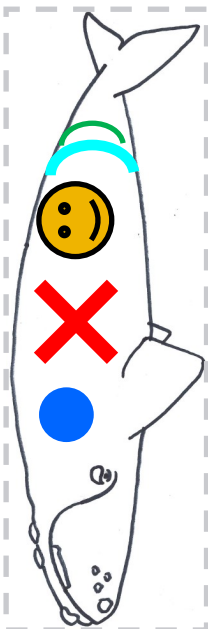
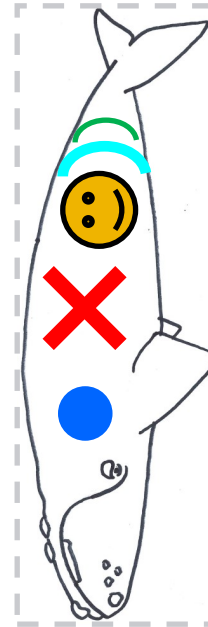
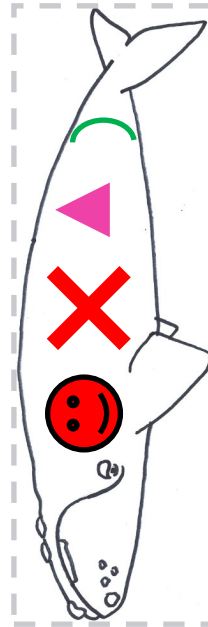
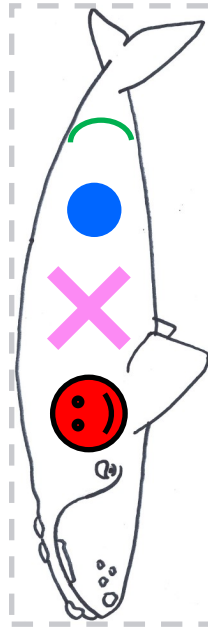
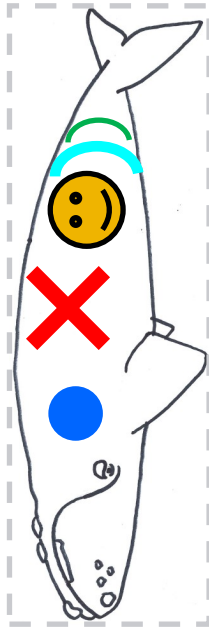
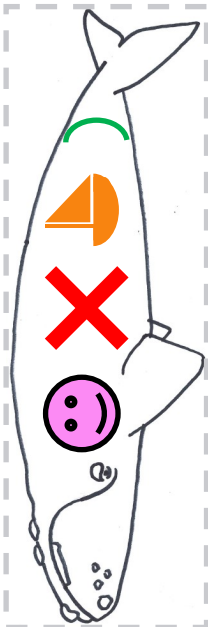
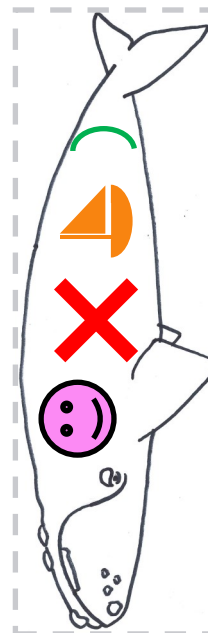
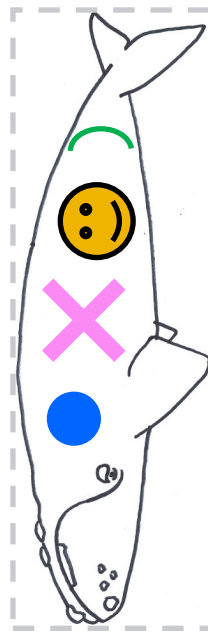
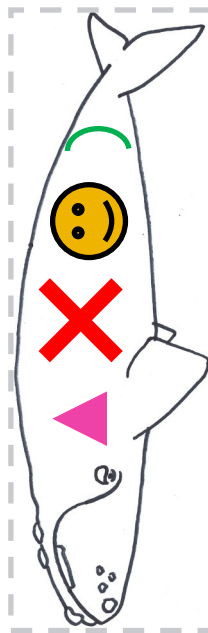
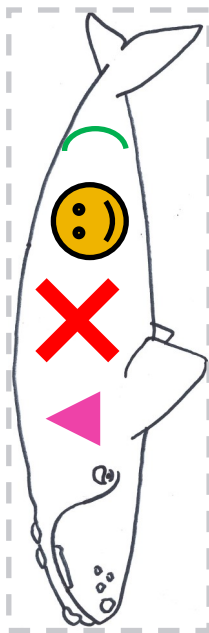
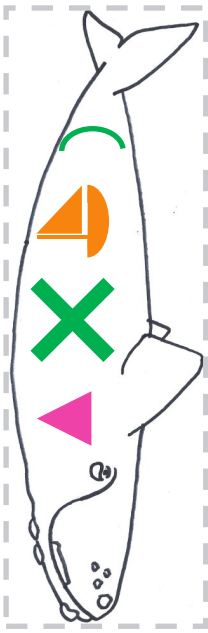
Researchers from the Consortium submit data to the NARWC databases. The "**Sightings Database**" is maintained and curated by the University of Rhode Island, and the "**Identification database**" (the one we have used for previous lessons), is maintained and curated by the New England Aquarium. Scientists then use this data to help understand the population numbers and trends. Every year they publish a "report card", "includes updates on the status of the cataloged population, mortalities and entanglement events, and a summary of current management and research efforts that have occurred over the previous 12 months" (NARWC website). [Click here](#) to read the most recent report card if you are interested.

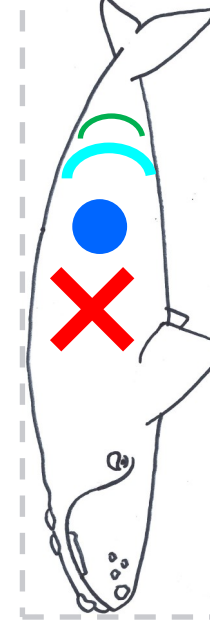
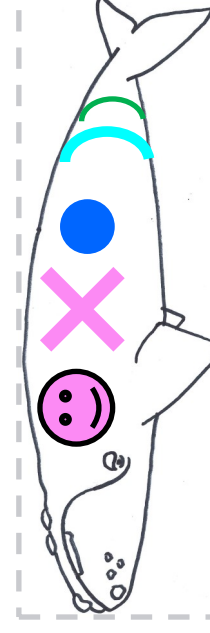
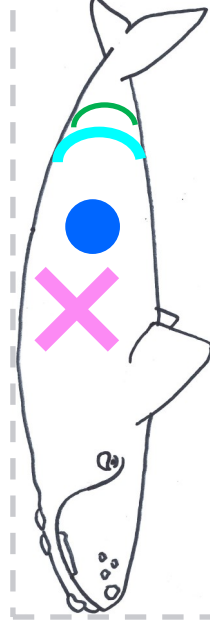
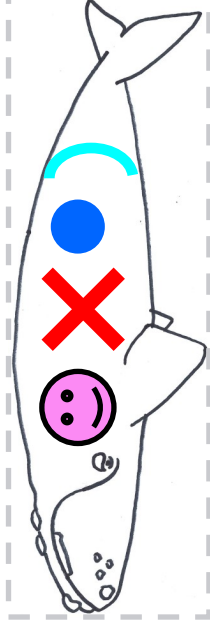
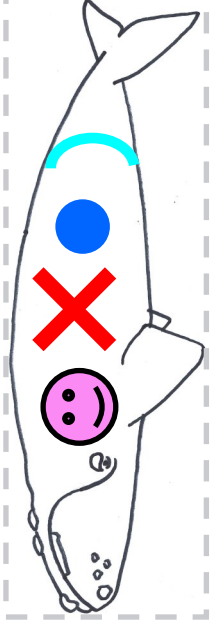
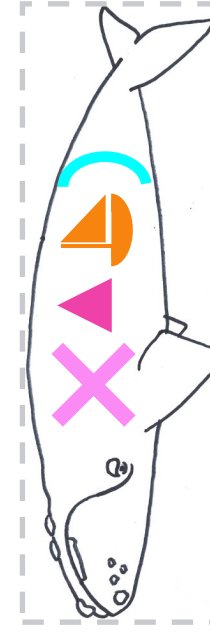
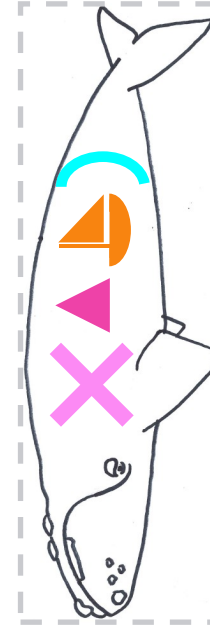
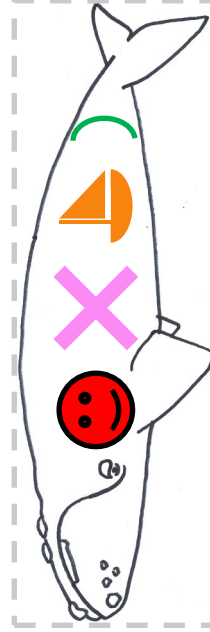
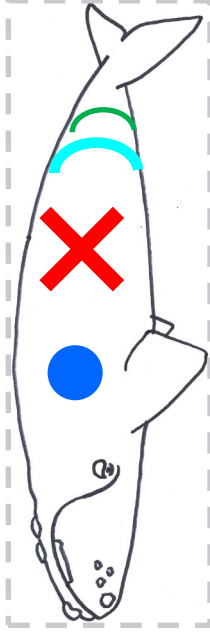
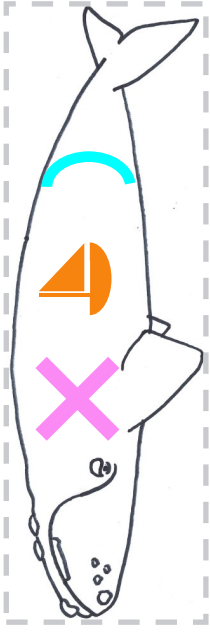
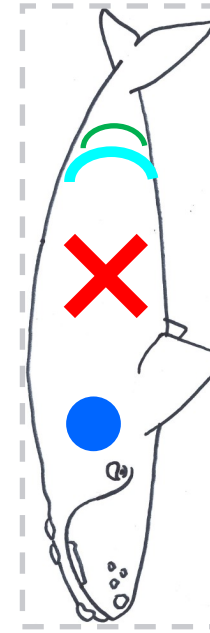
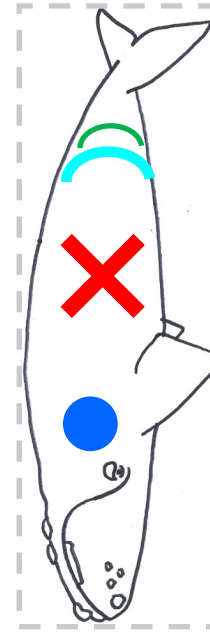
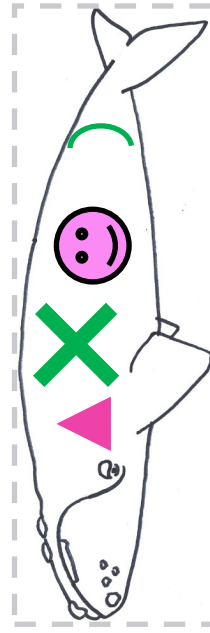
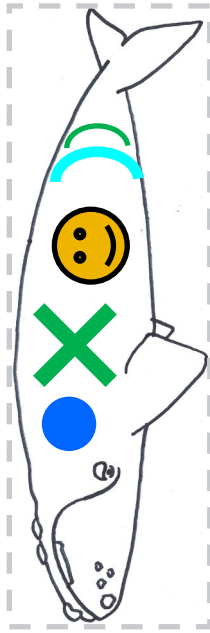
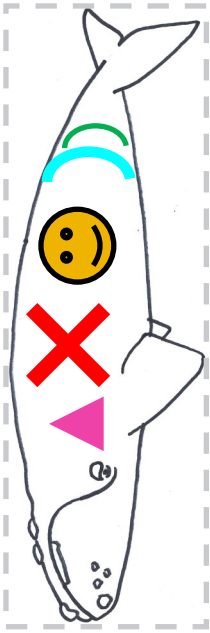
Today's lesson is going to focus on the demographics of the North Atlantic right whale population. We are going to think about whether certain characteristics of the population are good or bad. We are also going to start talking about what is happening to them.

## ACTIVITY PREPARATION:

Cut out all the right whales on the next two pages along the dotted line (Feel free to cut out each individual whale if you want). Find a table that you can spread them out on.

**As of Nov. 2019, the estimated population of North Atlantic right whales was around 409.** For this exercise, each of these paper whales represents 14 whales in the actual population.







# Activity: Where Do They Stand?

## ACTIVITY

● Put all the whales with a blue dot on one side of the table, all those without a blue dot on the other. This represents the number of males in the population as it stands right now.

How many paper whales are there with blue dots? \_\_\_\_\_

Approximately, how many males are in the population? (answer above x 14) \_\_\_\_\_

How many females in the population? (Use 409 for the total population) \_\_\_\_\_

THINK: Is this breakdown of males and females good or bad for the population and why? \_\_\_\_\_

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▲ Put all the whales with a pink triangle on one side of the table, all those without a pink triangle on the other. This represents the number of reproductive females in the population (The whales that are likely to give birth.)

How many paper whales are there with pink triangles? \_\_\_\_\_

Approximately, how many breeding females are in the population? (Multiply by 14) \_\_\_\_\_

THINK: Is this number of breeding females good or bad for the population and why? \_\_\_\_\_

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) Put all the whales with a green scars on their tail on one side and those without on another. This represents the number of whales that have been entangled in fishing gear (have scars indicating that.).

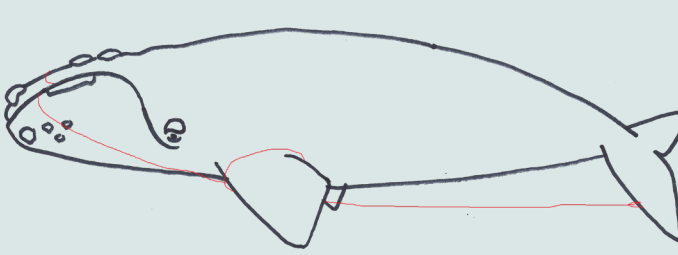
How many whales have been entangled in fishing gear? \_\_\_\_\_

What percentage has been entangled? \_\_\_\_\_

THINK: Is this number of entanglements good or bad for the population and why? How could this impact the whales? \_\_\_\_\_

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	<p><b>Put Your Thinking Cap On.</b> . . What could happen to this whale? _____</p> <p>_____</p> <p>_____</p> <p>_____</p>
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# Activity (cont.)

## Where Do They Stand?

 Put all the whales with an orange boat on one side of the table, all those without an orange boat on the other.

How many paper whales are there with orange triangles? \_\_\_\_\_

What percentage of the paper whales have orange triangles? \_\_\_\_\_

Between 1970 and 2007, many whales died. One out of every three whales that died was hit by a boat! (The percentage above!) At that point, a speed limit was put into effect along the Eastern seaboard when right whales are present. This has drastically reduced the number of vessel strikes in the US. Canada followed suit after they had a high number of whales die from vessel strikes in 2017 in the Gulf of St. Lawrence.

**THINK:** How would a speed limit help reduce the number of vessel strikes? \_\_\_\_\_


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Now we are going to change gears. Each whale represents just one whale. Let's look at population trends over the past 4 years.

For the next few questions, you can arrange the whales by icon or just count them.


 How many calves were born in 2017? \_\_\_\_\_

 How many whales died in 2017 that we know of (this means their bodies were found.) \_\_\_\_\_

 How many calves were born in 2018? \_\_\_\_\_

 How many whales died in 2018? \_\_\_\_\_

 How many calves were born in 2019? \_\_\_\_\_

 How many whales died in 2019? \_\_\_\_\_

 How many calves were born in 2020? \_\_\_\_\_

Totals: How many whales have been born in the past few years? \_\_\_\_\_

How many have died? \_\_\_\_\_



# Activity (cont.)

## Where Do They Stand?

THINK: What is the general trend? Is this good or bad and why? \_\_\_\_\_

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Have you heard about the [Marine Animal Entanglement Response \(MAER\)](#) team that is based at the Center for Coastal Studies in Provincetown, MA? Established in 1984, they are charged with disentangling marine animals. Since their inception, they have freed over 200 large whales. They maintain a list of right whales that were last seen entangled in fishing gear. If an individual animal is on their list, their body has not washed up—meaning they could be alive. Unfortunately, many of them were not in good health when last sighted—some as long as 6 years ago. How many do you think are on that list? \_\_\_\_\_

Now take a minute to put all the whales with an aqua parens on one side of your table and the ones without on another. How many have that aqua mark? \_\_\_\_\_ That's how many are on the list!

A couple of these whales are breeding females. How might the death of a breeding female impact the population in comparison to the death of a male? \_\_\_\_\_

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### What's killing them?

In 2019, a paper published in the journal [Diseases of Aquatic Organisms](#) reported on the causes of death of 70 North Atlantic right whales over a 16-year time period (2003-2018). The cause of death was determined for 43 of them.

Remember that in our activity, the orange boats represent whale deaths related to ships and the green parens represents whales entangled in fishing gear. Put the animals that have one or both of those on one side of the table.

How many are there? \_\_\_\_\_ What percentage of the paper whales is that? \_\_\_\_\_  
That is the percentage of known deaths caused by entanglements and vessel strikes.

### **We are the right whales' greatest threat and **only** hope!**

Take some time and explore online what scientists, conservationists, fisherman, governments and others are doing to try to reduce vessel strikes and entanglements. We will be addressing this in upcoming activities! Write down some notes and save them for the next lessons.



## Answers

### BLUE DOTS

How many paper whales are there with blue dots? 15

Approximately, how many males are in the population?  $15 \times 14 = 210$

How many females in the population? (Use 409 for the total population) 199

**THINK:** Is this breakdown of males and females good or bad for the population and why? Good, it's important to have even numbers of males and females.

### PINK TRIANGLES

How many paper whales are there with pink triangles? 7

Approximately, how many breeding females are in the population?  $7 \times 14 = 98$

**THINK:** Is this number of breeding females good or bad for the population and why? Bad, only half of the potential females are having calves. Some are just not old enough ([See Activity: Learning About Lifetimes](#) to learn how old they are when they first have calves. We need to understand the others are not calving. Without calves, the population will not grow.

### GREEN PARENS

How many whales have been entangled in fishing gear? 25

What percentage has been entangled? 83.3 % (The number is closer to 85%)

**THINK:** Is this number of entanglements good or bad for the population and why? How could this impact the whales? It's horrifying that so many animals have been entangled in fishing gear. Some have been entangled up to 6 or 7 times! If a breeding female becomes entangled and sheds the gear, it can have the same energetic impact as having a calf. The calving interval (time between calves) will then be much longer. Check out [this article](#) highlighting Julie van der Hoop's work related to this.

### ORANGE BOATS

How many paper whales are there with orange triangles? 10

What percentage of the paper whales have orange triangles? 33.3%

**THINK:** How would a speed limit help reduce the number of vessel strikes? Think of a speed limit on land. They are slower in areas of high congestion, where people could be likely moving around. The slower we drive, the faster we can stop, and the slower things go by us. The same applies to boats. If a vessel going over 10 kts (11.5 mph) strikes a whale, the likelihood of the whale dying or being seriously injured increases. (Same with cars, the faster it's going, the more damage it will do if it hits something)





## Answers

For the next few questions, you can arrange the whales by icon or just count them.

How many calves were born in 2017? **5**

How many whales died in 2017 that we know of (this means their bodies were identified.) **17**

How many calves were born in 2018? **0**

How many whales died in 2018? **3**

How many calves were born in 2019? **7**

How many whales died in 2019? **10**

How many calves were born in 2020? **10**

Totals: How many whales have been born? **22** How many have died? **30**

**THINK:** What is the general trend? Is this good or bad and why? **The general trend is a decreasing population. That's not sustainable because there are less and less every year.**

### AQUA PARENS

Now take a minute to put all the whales with an aqua parens on one side of your table and the ones without on another. How many have that aqua mark? **17** That's how many are on the list!

A couple of these whales are breeding females. How might the death of a breeding female impact the population in comparison to the death of a male? **If you lose a breeding female you lose all the potential calves she might have in the future. (And the calves of those calves)**

### What's killing them?

Remember that in our activity, the orange boats represents whales killed by boats and the green parens represents whales entangled in fishing gear. Put the animals that have one of both of those on one side of the table. How many are there? **27** What percentage of the paper whales is that? **90%**

That is the percentage of known deaths caused by entanglements and vessel strikes. **22 died because of entanglement and 16 died because of vessel strikes.**