

ARCGIS ONLINE: SHARK MIGRATION LESSON

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ArcGIS Online: Shark Migration Tutorial

Objectives:

- Student will be able to use GIS to determine gender of the 3 sharks.
- Student will be able to compare the migration patterns of the 3 sharks.
- Student will be able to determine the distance the sharks traveled
- Student will write paragraphs to compare their findings.

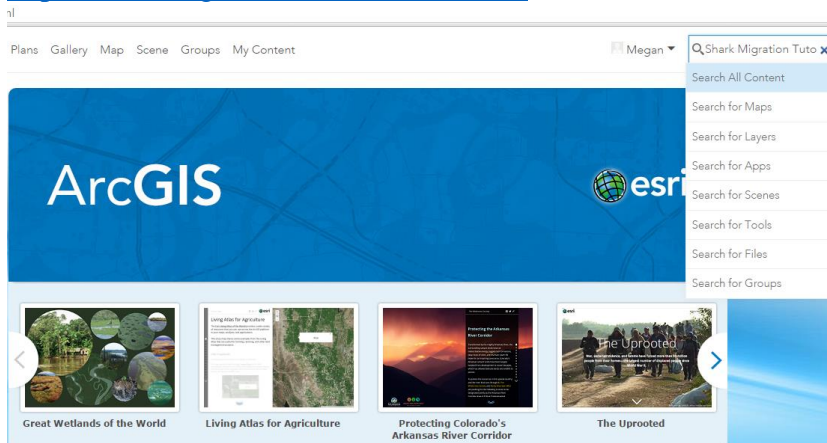
Materials:

- Public ArcGIS Online Account
- Computer with Internet access
- Writing utensils
- Paper

Procedures:

Daniel and Megan learned about great white sharks today in their science class, however, they found out that humans do not know a lot about their migration patterns. They wanted to do their own research using the data on arcgis.com.

1. Sign on to ArcGIS Online account using this link
<http://www.arcgis.com/home/index.html>



2. Search "SharkMigrationTutorial" (all one word, no quotations)
3. Click "Open" located under the Thumbnail

Search Results

Show 1 result

Relevance	Title	Owner	Rating	Views	Date
	Shark Migration	Web Map by MegBoo	☆☆☆☆ (0 ratings, 0 comments, 3 views)		Last Modified: March 24, 2016

All Results

- Maps
- Layers
- Scenes
- Apps
- Tools
- Files

Show ArcGIS Desktop Content

Related Searches

Find items published by Esri related to "SharkMigrationTutorial"

Find groups related to "SharkMigrationTutorial"

PREVIOUS NEXT

4. Zoom Out using the Minus “-“ button in the top left corner of the map or by rolling the wheel on your mouse until you can see all of the points.

ArcGIS Shark Migration New Map

Details Add Basemap Save Share Print Measure Bookmarks Find address or place

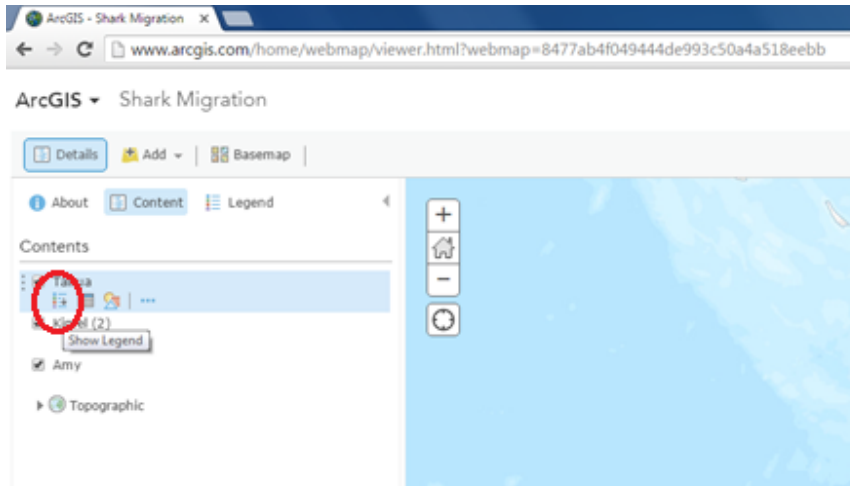
About Content Legend

Contents

- Taina
- Kimel (2)
- Amy
- Topographic

0 200 400km

5. The white box on the left is the details tab. Move your mouse over each name and you will see options appear under them in the form of symbols.
6. Click the first symbol which is the “Show Legend” button so you can take note of which name represents which colored point.

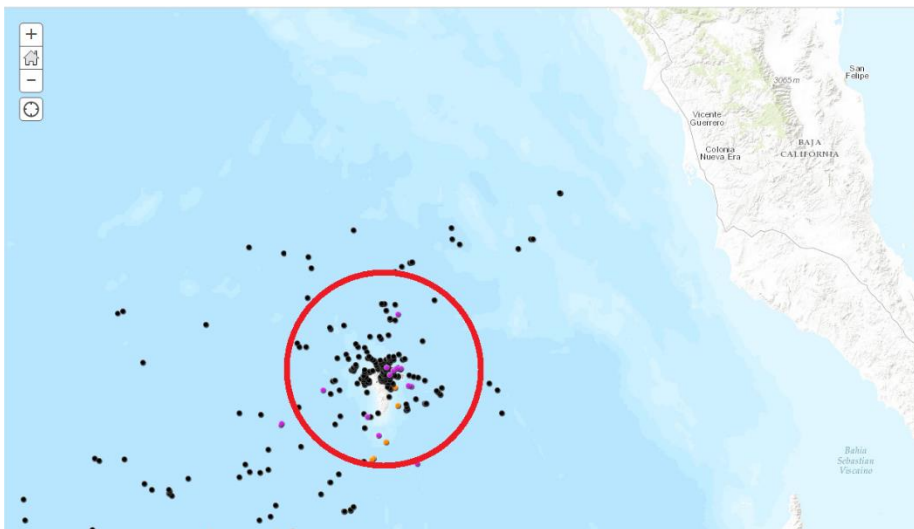


Daniel looked closely at the points on the map and tried to discover any similarities and differences between the three colors. Megan pointed out that certain colors would enter in the Gulf of California and travel deeper into the ocean where as other colors would not. Daniel researched that female sharks mate in the coastal area and then travel into the deep ocean to carry their babies. Female white sharks can skip a year between successive reproductive cycles and during that skip year their migration track would not be distinguishable from that of a male. However, we know the female sharks in this example are going through the pupping stage which takes them farther than the male shark.

Knowing this, what are the names of the two female sharks?

They also noticed a large cluster right off of the coast of Baja California.

7. Zoom in to the large cluster to see what they were surrounding.

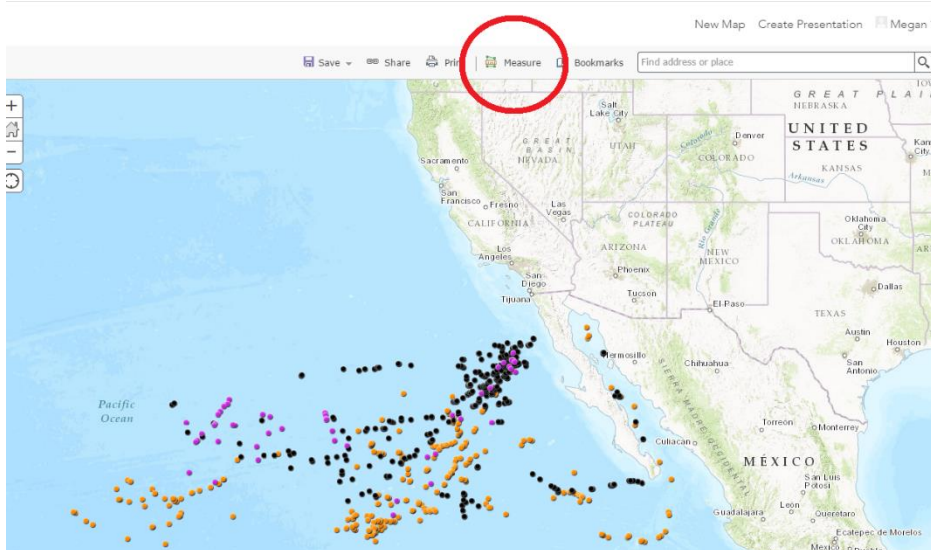


What is the name of the island they were surrounding?

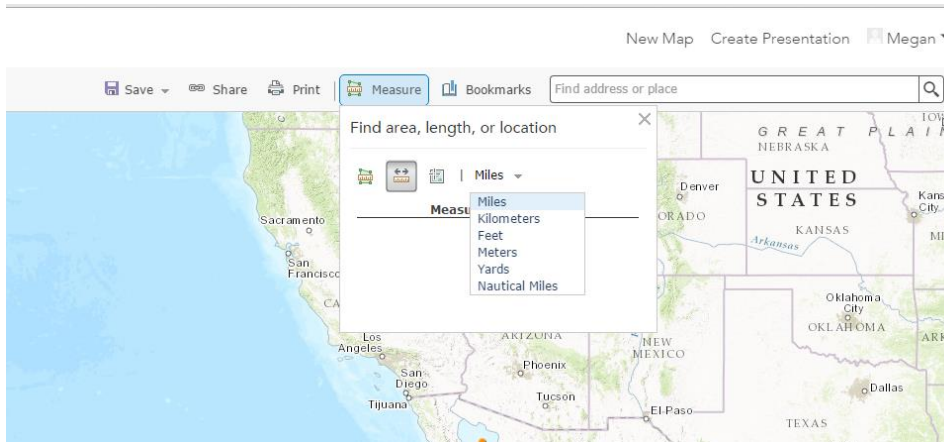
Which shark appeared to be there the most?

Daniel and Megan were curious how far these sharks must have traveled during their long voyage.

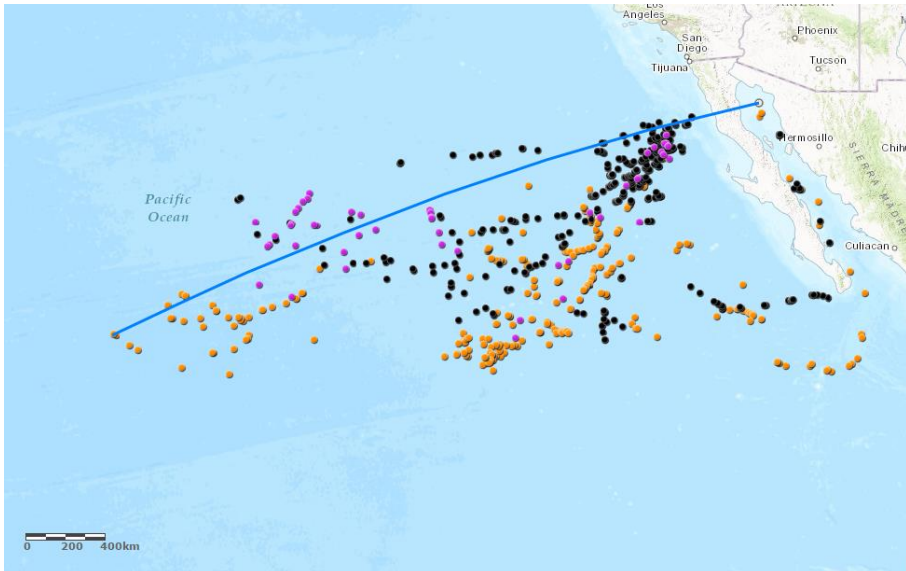
8. Zoom out again until you can see all of the points on the map.
9. Click on the “Measure Tool” in the top portion of the screen.



10. Click the second ruler which is the solid ruler in the pop-up box.
11. Click on the drop down arrow and select “Miles”



12. Click on a point for a female shark on the far right of the screen then click on a point of the same color on the far left of the screen.



What is the name of the shark whose distance you measured and how far did they travel?

13. Click the small “x” on the measure tool box.

14. Repeat steps 9-13, this time choose the male shark and compare the distances.

How far did the male shark travel?

They were surprised at how far the sharks travelled and how different the numbers were between the male and female sharks. They wondered how large the area was that the sharks covered in total.

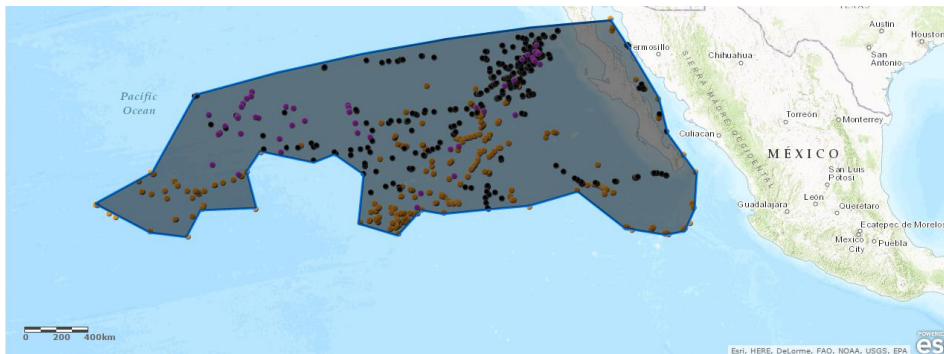
15. Click the Measure tool again.

16. Click the first ruler. This is the ruler with the green area around it.

17. Select Sq Miles again by clicking the drop down arrow.

18. Click a point on the edge of the shark’s coverage.

19. Go around the edge of the area by clicking points to encompass everything within the line.



20. When the majority of the points are encompassed by the polygon, look at the measurement box to see the total area covered by the sharks.

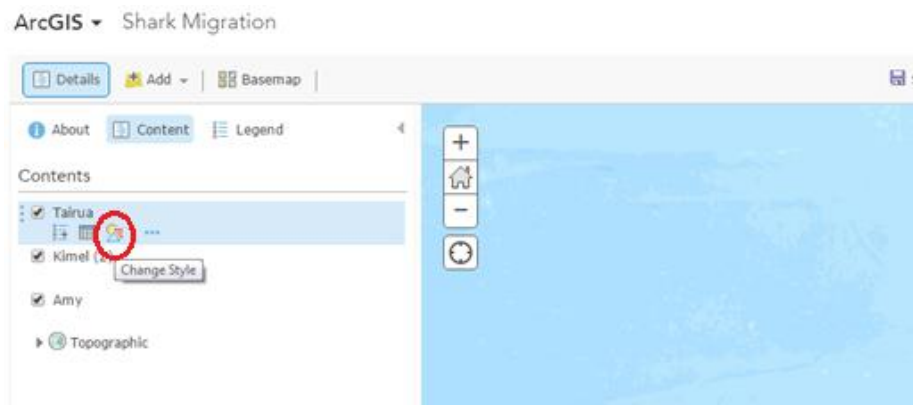
What is the area covered by the sharks?

21. Click the small “x” on the Measure tool box.

Megan couldn't believe how much the sharks had covered in their time at sea but wanted to learn even more about their tendencies. She wanted to find a way to see which areas were populated the most by the sharks. Daniel showed her how to alter the view of the map.

22. Move your mouse to Tairua in the Details Tab on the left side of the screen.

23. Choose the third symbol called “Change Style”

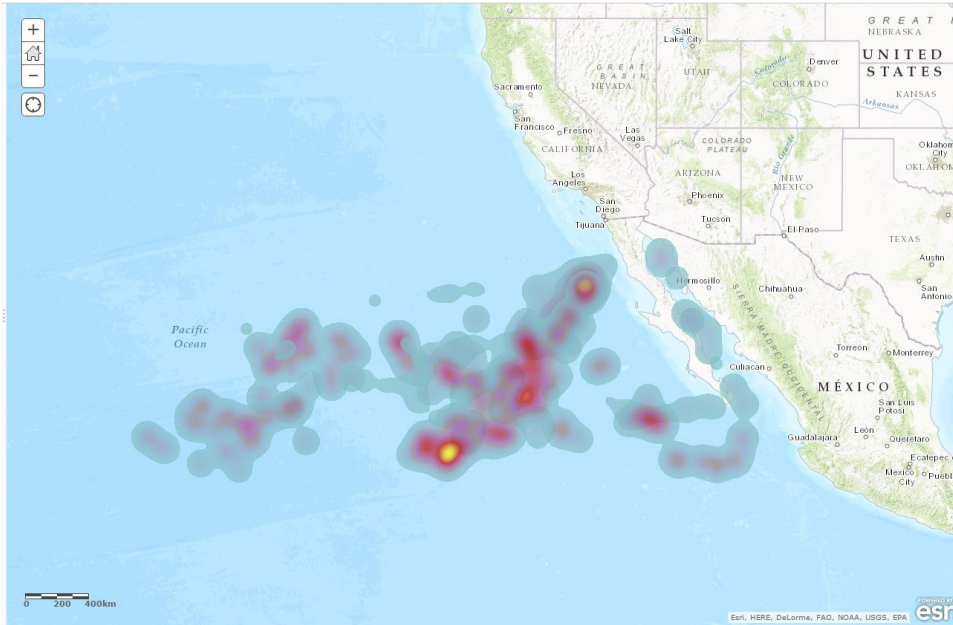


24. Select “Heat Map”

25. The map now has shaded regions displaying the highest populated areas for Tairua.

26. Click done at the bottom of the Details Tab and repeat steps 22-24 for the other two sharks

27. Notice how the map view changed.

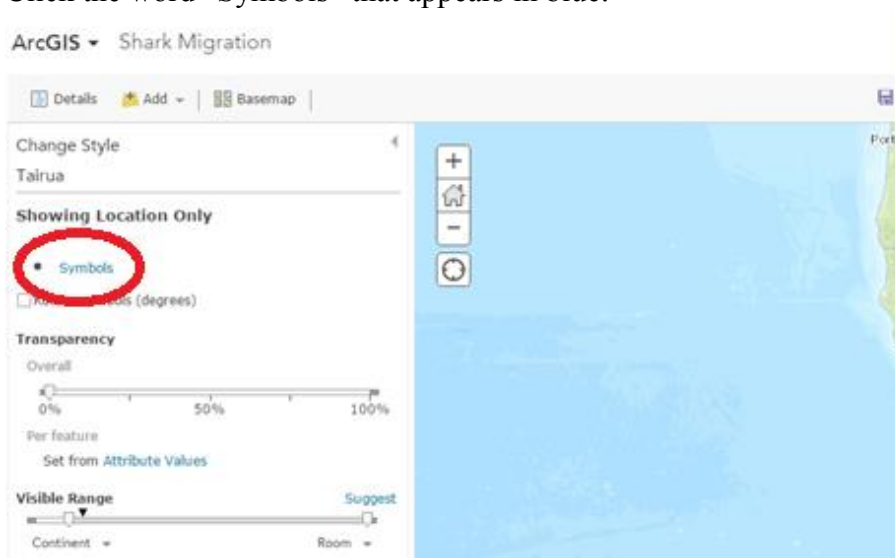


28. Click the “Show Legend” option under the shark’s names.

What color represents the most populated areas, what color represents the least populated areas?

Now that Megan saw which regions were more populated, her and Daniel wanted to set the map back to the point style view they were using originally.

29. Click the Change Style symbol under Tairua’s name on the Details Tab.
30. Select Location (Single Symbol)
31. Click the options button that replaced the select button on the Location (Single symbol) option.
32. Click the word “Symbols” that appears in blue.



33. You can select any symbol you would like to represent your sharks.

As you can see, there are many options for what you can use to represent the points. ArcGIS users utilize the change symbol tool to display their data in a way that is functional and clear.

34. Click the drop down arrow next to the word “shapes” for even more options.
35. Once you choose your symbol you can alter the symbol size at the bottom of the pop up box by dragging the arrow on the line or using the up and down arrows on the number box.
36. When finished click “OK”
37. Click “OK” on the details tab
38. Click “DONE”
39. Repeat steps 29-38 for Amy and Kimel.

Daniel and Megan learned a lot more about sharks today. What did you learn? Write a paragraph explain the different tools you used on arcgis.com and the facts they helped you learn about great white sharks.