

NOAA Gray's Reef National Marine Sanctuary Acoustic Fish Tagging Project

Activity: Interpretation of Data and Graphs – Grades 9-12

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Use the available table and graphs at the end of this document, or online sources to answer the following questions. The table and graphs are real data collected by scientist at Gray's Reef National Marine Sanctuary.

More information on the particular acoustic tagging project at Gray's Reef can be found at the Gray's Reef Website:

(http://graysreef.noaa.gov/science/research/fish_tagging/welcome.html)

and NOAA's FishWatch website (<http://www.nmfs.noaa.gov/fishwatch/>).

1. What are the scientific names of red snapper, gag grouper, and scamp grouper?
2. What families do red snapper, gag grouper, and scamp belong to?
3. What are the current fishing regulations for these fish according to the Southeastern Atlantic Fisheries Management Council (SAFMC)?
4. Scamp and gag are considered to be protogynous hermaphrodites. What does this mean?
5. Fishermen have the goal to capture the largest fish they can. Since gag and scamp are protogynous hermaphrodites, what problem has overfishing caused?
6. The size of the fish caught and tagged by Gray's Reef NMS has been recorded in the table below. Can "Rare Treat" the gag (49895) be a male? Remember that 1 in (also written as 1") equals 2.54 cm.
7. Gag grouper usually move offshore to spawn. "Rare Treat" the gag (49895) tagged by Gray's Reef has not moved from the same ledge for a

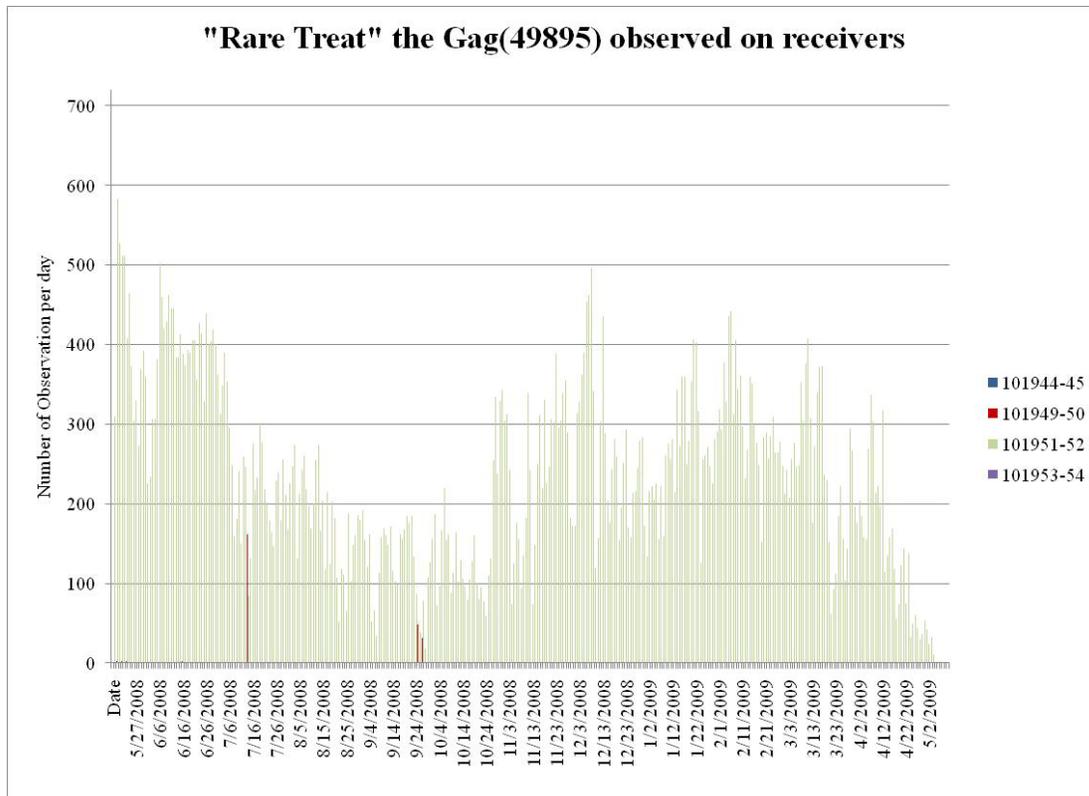
full year. What is your hypothesis as to why the gag did not leave? When do you think it will leave?

8. The unnamed scamp (49903), which is not a yearlong resident, has not been detected by any receivers since October. Provide three reasons as to why the scamp is no longer detected. Remember that the receivers can only determine if the tagged fish is absent or present.
9. "Sergio Snapper" the red snapper (49899) moved around to different receiver areas. What do you think would persuade the fish to do this?
10. "Rare Treat" the gag (49895) can be detected 720 times per day. On the day with the most detections what was its % detection and on the day with least detections (not including zero) what was its % detection.
11. How long did "Sergio Snapper" the red snapper (49899) stay in the detection area? Do you think "Sergio Snapper" the red snapper (49899) would benefit from a protected area around receiver 101953-54?
12. Which fish stayed at receiver 101951-52 the longest? Which stayed at receiver 101944-45 the shortest?

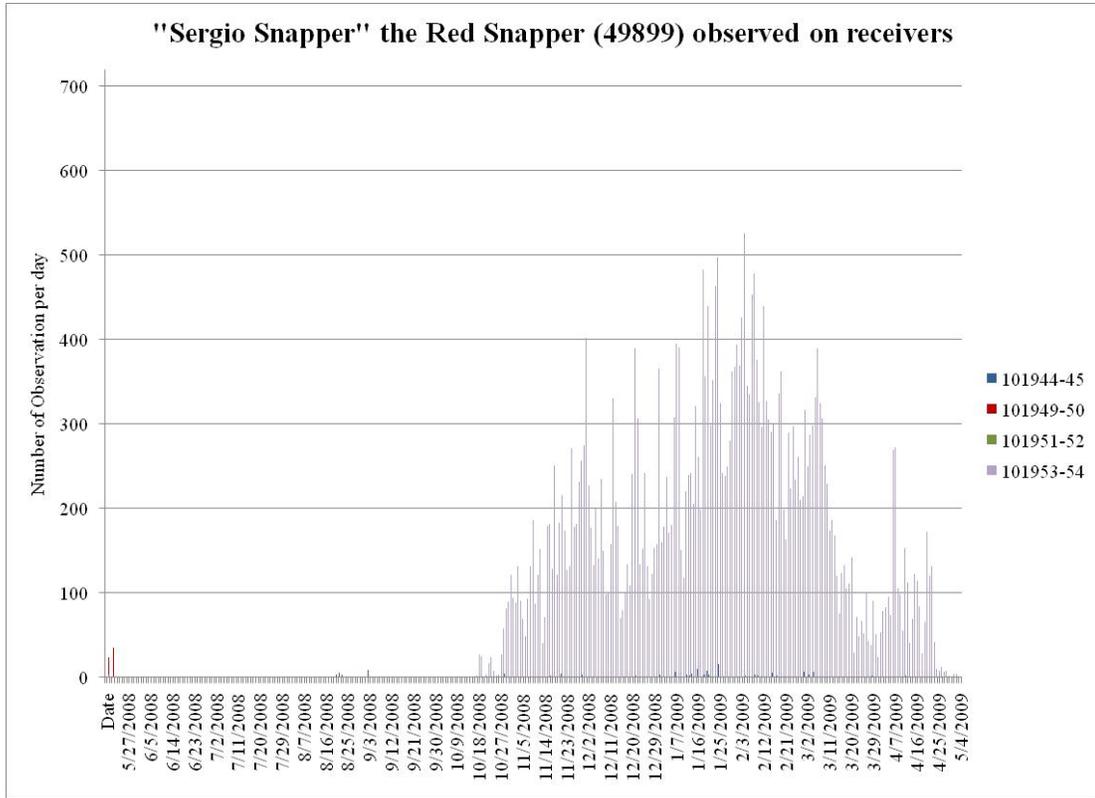
Date Tagged	Species	Name	Forklength (cm)	Transmitter number	Date Released
5/14/200	<i>Mycteroperca phenax</i>	Killer Grouper	58	49898	5/15/2008
5/14/200	<i>Mycteroperca phenax</i>	--	85.5	49903	5/15/2008
5/15/200	<i>Mycteroperca phenax</i>	--	84	49901	5/16/2008
5/17/200	<i>Mycteroperca phenax</i>	Snappy Striper	74	49894	5/18/2008
5/17/200	<i>Mycteroperca microlepis</i>	Rare Treat	63	49895	5/18/2008
5/17/200	<i>Mycteroperca phenax</i>	--	75	49896	5/18/2008
5/18/200	<i>Mycteroperca phenax</i>	--	83	49897	5/19/2008
5/18/200	<i>Lutjanus campechanus</i>	Sergio Snapper	59	49899	5/19/2008

Fish Captured and Tagged by Gray's Reef in May 2008

These fish have been monitored by the deployed receivers to determine if they are present or absent in the detection area of the receivers. The following two graphs are the number of times a fish has been detected by a receiver per day. Detection is when a tag is in the range of a receiver and its signal has been picked up and recorded. Detections can be made from as far as 200 meters away from the receiver. As you can see, some fish can be detected 500 or more times a day. All graphs have a scale of 720 detections on the y-axis because the transmitters will send about 720 "pings" in one day.

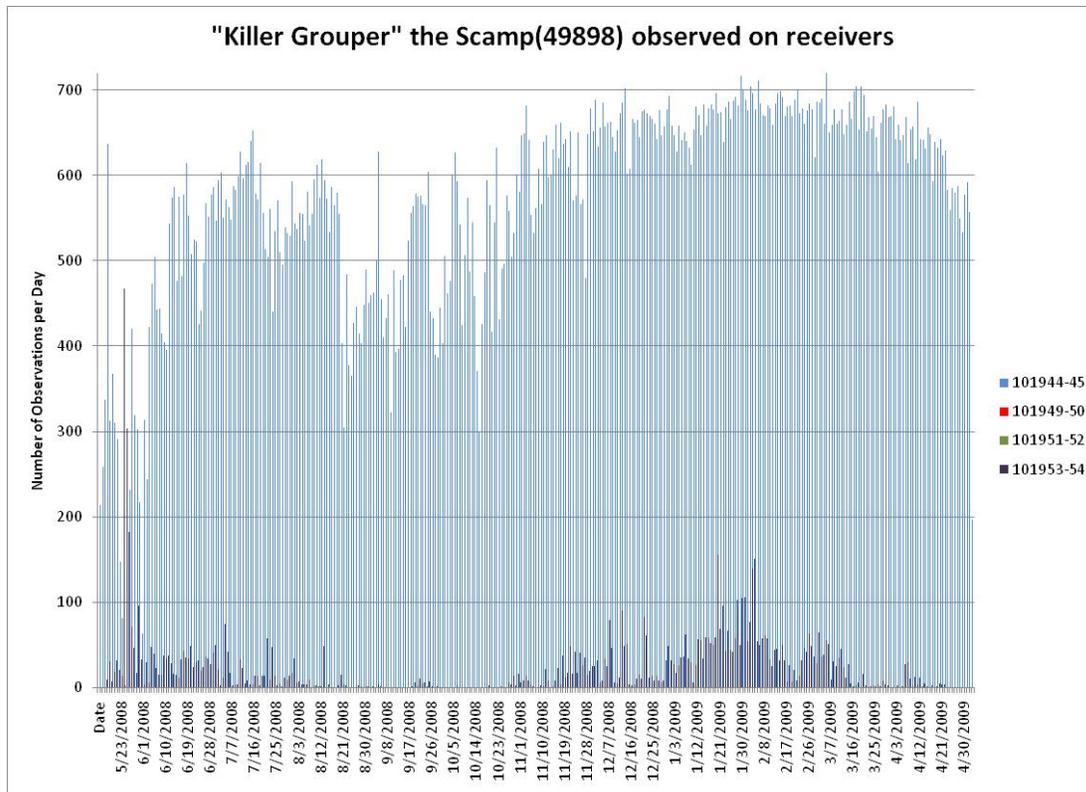


This graph represents present-absent data of a gag grouper in select areas of Gray's Reef National Marine Sanctuary. The numbers in the legend on the right side of a graph represent a receiver placed in the sanctuary. Each vertical bar is a single day of the year and it is the number of times the gag was detected around that receiver (match the colors to the numbers on the right). As you can see the gag was mostly detected on receiver number 101951-52, and was picked up a few times on receiver 101949-50.



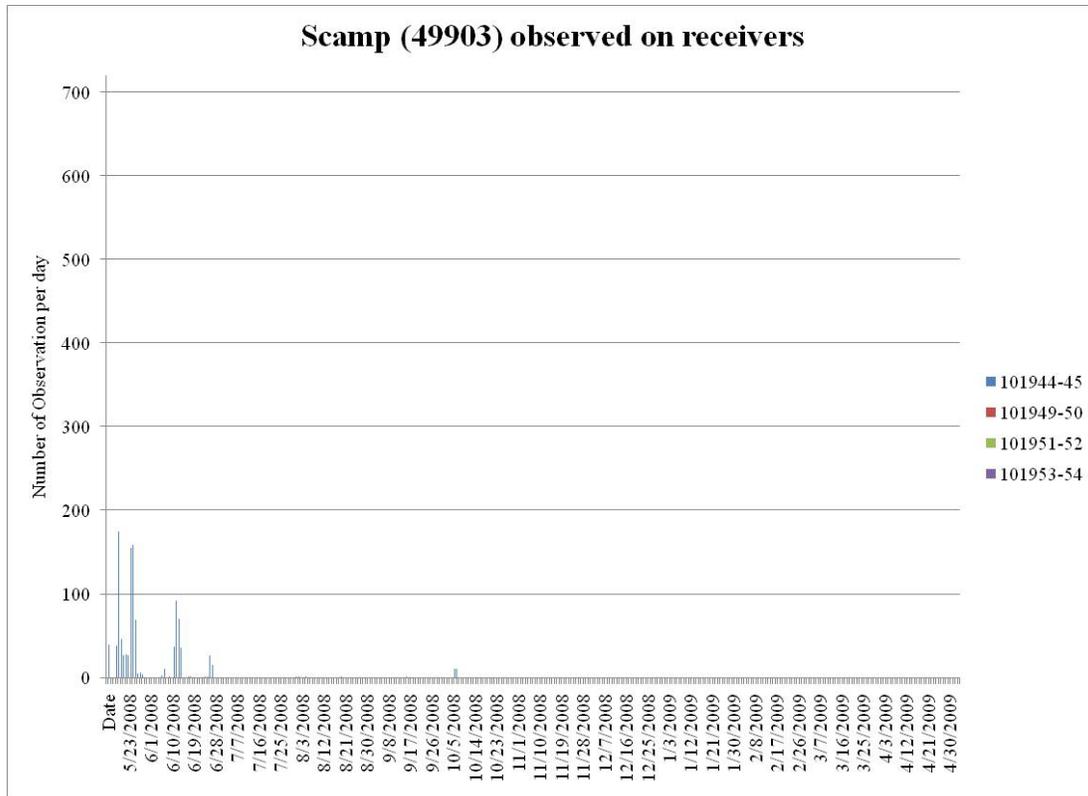
"Sergio Snapper" the Red Snapper (49899) observed on receivers

This graph represents present-absent data of a red snapper in select areas of Gray's Reef National Marine Sanctuary. The numbers in the legend on the right side of a graph represent a receiver placed in the sanctuary. Each vertical bar is a single day of the year and it is the number of times the red snapper was detected around that receiver (match the colors to the numbers on the right).



"Killer Grouper" the Scamp (49898) observed on receivers

This graph represents present-absent data of a scamp in select areas of Gray's Reef National Marine Sanctuary. The numbers in the legend on the right side of a graph represent a receiver placed in the sanctuary. Each vertical bar is a single day of the year and it is the number of times the scamp was detected around that receiver (match the colors to the numbers on the right).



Scamp (49903) observed on receivers

This graph represents present-absent data of an unnamed scamp in select areas of Gray’s Reef National Marine Sanctuary. The numbers in the legend on the right side of a graph represent a receiver placed in the sanctuary. Each vertical bar is a single day of the year and it is the number of times the scamp was detected around that receiver (match the colors to the numbers on the right).