

Grade Level

5th-8th

Objectives

- * To be able generate a graph based on current fishery data.
- * To be able to predict red drum weights and ages based on length.
- * To understand the importance of protecting fish populations through rules and regulations.

N.C. Standard Course of Study

Grade 8
(8.L.3.1)

Fishing for Red Drum



Overview:

North Carolina's state fish is considered a favorite sport fish not only in North Carolina, but all along the Atlantic and Gulf coasts. In this activity students will learn about the red drum fishery, how to generate a graph from current fishery data and to use the graphs to estimate fish age and weight based on length.

Background:

Red drum is a familiar fish to many recreational as well as commercial fishermen. Recreational fishermen enjoy fishing and often release what they catch unharmed. Commercial fishermen sell their catch if the fish meet size, weight and catch limits. All fishermen should be familiar with rules about catching fish that includes which gear they can use and size and catch limits. State rules apply to state waters which include everything from 0 to 3 miles from shore including all estuaries. Federal fishing rules apply from 3 to 200 miles offshore, but if a boat leaves state waters into federal waters then both state and federal rules apply to them.



Red drum is also known as channel bass, redfish, drum, puppy drum, spottail, and spottail bass. Their common name comes from their coloration and the "drumming" noise that they make underwater. Red drum is one of the largest growing fish in its family, with the record in North Carolina measuring 94 pounds. State fish biologists are able to age the fish by counting rings in the otoliths, or ear bones and have noted that these fish can live up to 35 years.

Red drum live in coastal and estuarine waters from Massachusetts to Mexico. These fish appear silvery to reddish-copper color. They have at least one large black spot on the tail (hence the name spottail bass). Most red drum reach sexual maturity during their fourth year, when they are about 30 to 37 inches long. Spawning takes place in the waters

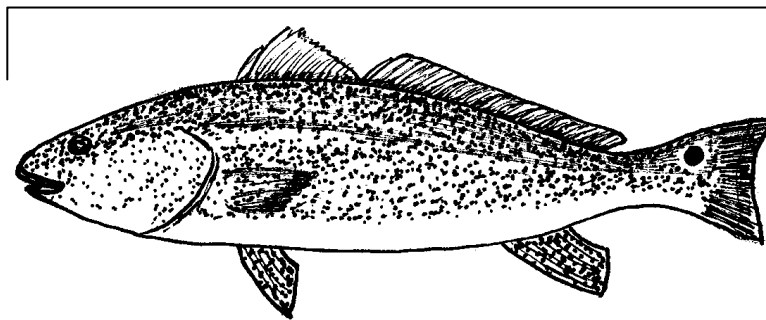
around the coastal inlets and in some areas of Pamlico Sound during the fall. Their eggs hatch within 24 hours and are carried throughout the sounds and estuaries by the tides and winds.

Red drum are bottom feeders where they feed on crabs, shrimp, and smaller fish such as menhaden, mullet, pinfish, and spot. Younger fish may feed on small invertebrates such as shrimp.

Recreational fishermen like to fish for red drum in shallow waters, often on the beach or sandbars. They prefer to fish during the changing tides near inlets when the fish are moving through the inlet to feed. Commercially, many drum are caught in seine, pound or gill nets.

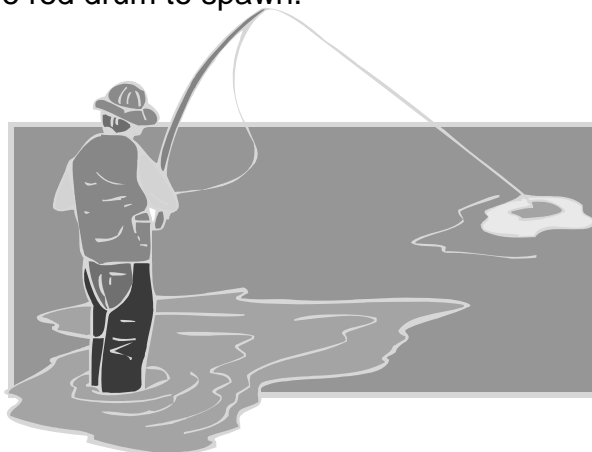
Because of strict rules for red drum in North Carolina, most fishermen release their fish back into the water. In North Carolina, the current rules state that in state waters, which are from 0 to 3 miles offshore, one fish per day may be kept for consumption if it is larger than 18 inches and smaller than 27 inches in total length (TL). It is unlawful to catch a red drum more than 3 miles from the coast (in federal waters) and it is unlawful to gig, spear or gaff one of these fish. For updated rules, check out North Carolina Marine Fisheries website at www.ncfisheries.net.

Total Length



Fish are measured in **TL** which is total length.

Why are there rules and regulations? All rules for fishing are set to help conserve and improve fish populations. Scientists study populations and help managers and fishermen to establish realistic rules for everyone to follow. Marine patrol officers check fishermen's catch to make sure rules are being followed. The size limit is set between 18 inches and 27 inches to allow the larger, sexually mature red drum to spawn.



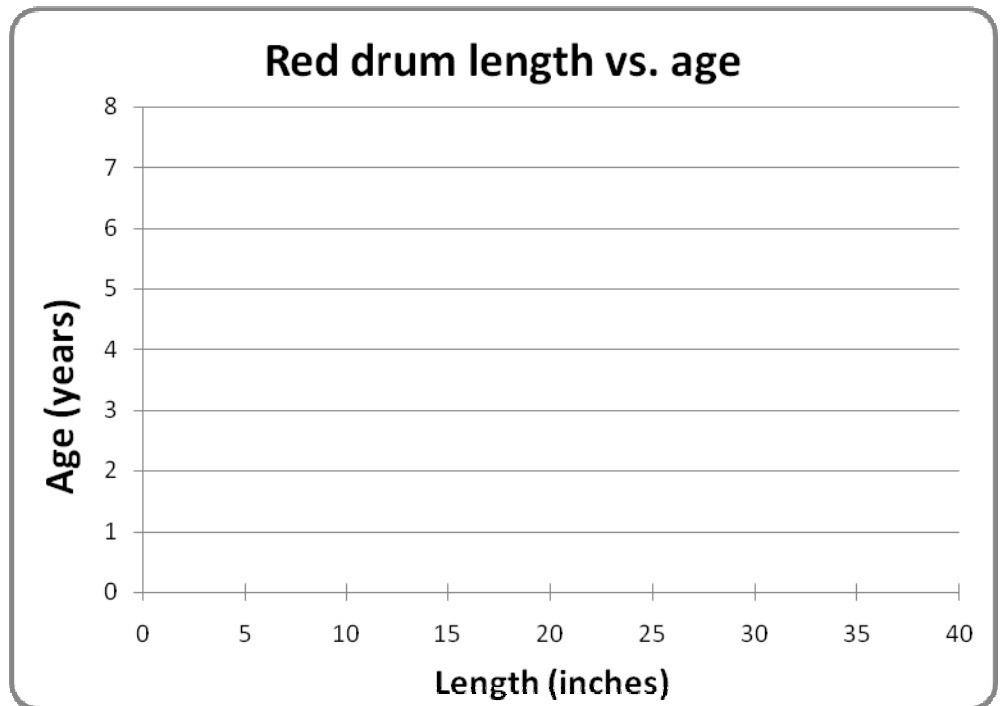
Part 1: Graphing fishery data

Last fall you went surf fishing with a couple of friends. Red drum were running and you and your buddies caught and released seven red drum. You thought it would be fun to measure the length of each fish before you released them. Upon returning from your fishing trip you learned that you could estimate the age and weight of the fish you caught based on the length you recorded. The data below was collected by state fishery biologists.

Graph the red drum length vs. age data in the table below. Once you have plotted all the data draw a straight line through the data using a ruler (note: all points will not be on the line – the line is only an estimate).

Length of fish at different ages

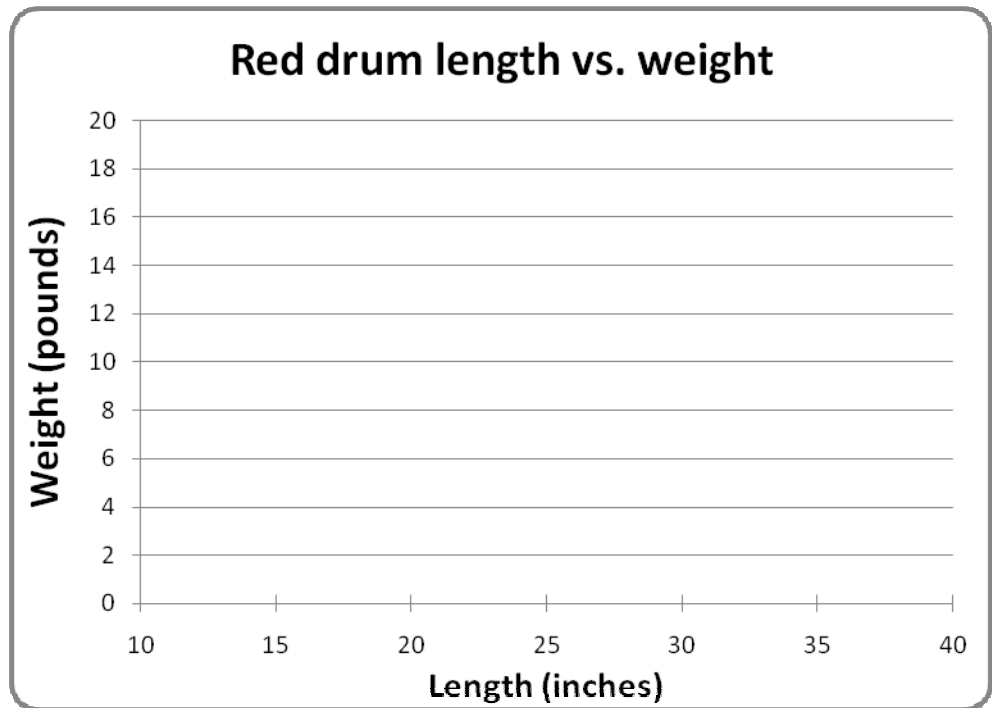
Length (inches)	Age (years)
13	1
21	3
30	5
33	6
36	7



Graph the red drum length vs. weight that was collected by the state fishery biologist. When you have plotted all the data draw the best-fit straight line through your data (again, note that not all data points will be on the line).

Weight of fish at different lengths

Length (inches)	Weight (pounds)
14	1
17	3
22	5
26	7.5
29	11
34	15.5
37	20



Using the data above, answer these questions.

- In October you caught 7 red drum. You did not want to keep them, so you measured them and released them unharmed. Based on the length of your fish, approximately how much did these fish weigh? (These were your 3 biggest!)

	Length (inches)	Weight (pounds)
A)	28"	
B)	33"	
C)	24"	

- Now using the age data, estimate how old each fish was (these were the other fish you caught).

	Length (inches)	Age (years)
A)	16.5"	
B)	12"	
C)	21.5"	
D)	22"	

Part 2: Recreational catch data for red drum.

Using the recreational catch reports for red drum in North Carolina, answer the following questions.

- In which year was the largest number of fish caught? What was the average weight of the fish caught by recreational fisherman that year?
- In 2001 how much did the average red drum weigh?
- Based on the average weight of the fish in 2001, what was the approximate length of fish caught?
- Estimate how old the average red drum was in 2001.
- The rules established by North Carolina's Division of Marine Fisheries for catching Red Drum in North Carolina are that fish between 18 and 27 inches may be kept. All other fish must be released. Why do you think that this rule was set this way? Do you think it helps the fish or the fisherman? How?

Recreational catch reports for NC

Red Drum		
Year	Number of Fish	Pounds Caught
1989	62,359	214,851
1990	33,149	302,996
1991	38,658	108,269
1992	23,593	109,136
1993	49,493	266,461
1994	28,953	192,062
1995	83,686	382,431
1996	35,406	195,742
1997	8,650	38,327
1998	114,638	591,435
1999	64,782	326,573
2000	57,122	292,888
2001	22,881	131,313
2002	42,827	183,531
2003	24,943	116,401
2004	30,441	115,545
2005	52,143	236,754
2006	52,177	216,115

Extension:

- Have students study other recreational or commercial fish species in North Carolina. Note the different shapes of their bodies, how different are they and could the weight be estimated from their length?
- Look at the rules for other fish species and discuss how or why the regulations were written a particular way. The North Carolina Division of Marine Fisheries has a list of all recreational and commercial fish and the regulations governing their harvest (www.ncfisheries.net).

Vocabulary:

- catch
- release
- otolith
- population
- fishery
- state waters
- sexual maturity
- spawning

References:

Manoock, C.S. 2007. Fishes of the Southeastern United States. North Carolina State Museum of Natural History, Raleigh, NC. 362 pgs. (ISBN: 0917134079).

National Science Standards:

Content Standards *Unifying concepts and processes. [5-8]*

Life science. [5-8]

Science in personal and social perspectives. [5-8]

Ocean Literacy Principles:

*Essential Principle #5. The ocean supports a great diversity of life and ecosystems.
(Fundamental Concepts – h, i)*

*Essential Principle #6. The ocean and humans are inextricably interconnected.
(Fundamental Concepts – b,c,e)*

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