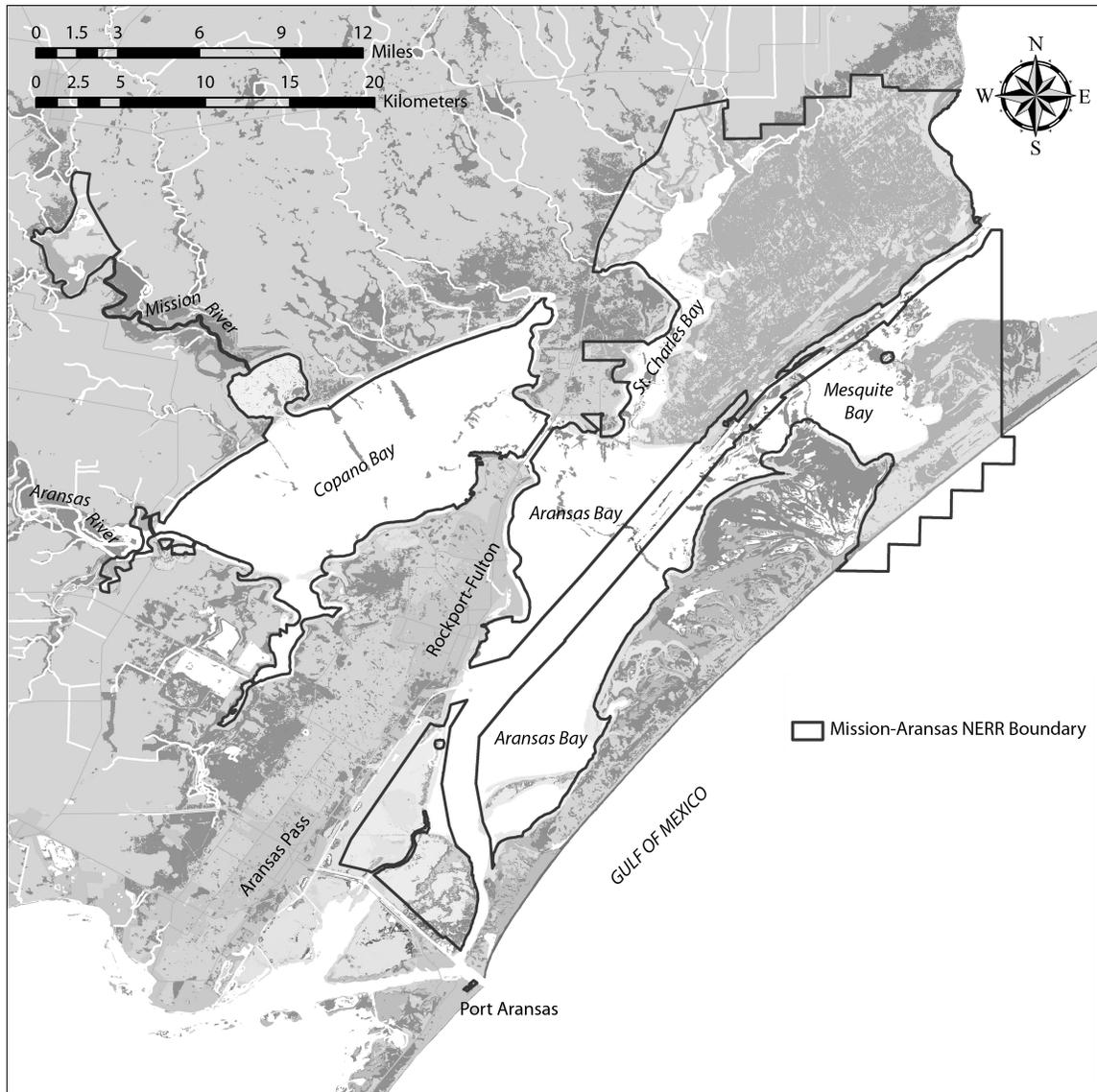


STUDENT MASTER

Clues in the Numbers



Oysters are a valuable part of estuary ecosystems. They help purify the water and control erosion. Oyster reefs provide habitat for numerous other species. However, oysters can also be an “indicator species.” Like a canary in a coal mine, oyster health and oyster abundance can tell us about changing conditions in an estuary. Studying the response of oysters to changing conditions over the short term can help scientists predict how long term changes, such as climate change, may impact oysters over the long term.

A few years ago, something odd happened to the oysters in Mission-Aransas Estuary in south Texas, a valuable oyster-growing area. In the first half of 2007, young oyster populations within the estuary’s Copano Bay and Aransas Bay were normal. But then, the numbers of young oysters mysteriously decreased, only to dramatically increase again the next year. To Dr. Jennifer Pollack, an oyster researcher at Texas A&M University, this was a real mystery. Now you can look at some of the data researchers used to solve the great oyster mystery.

Think of yourself as an armchair sleuth. You must mount a virtual research expedition to Aransas and Copano bays in the Mission-Aransas Estuary to collect data that will help you answer the following research question:

“What caused oysters to decline in 2007 and why did the population rebound so dramatically the following year?”

Along the way, you will look at maps and graphs of real scientific data and have the opportunity to gather your own data online. There’s no rest until you find out what happened! It’s time to get your first clues.

Procedure

1. In this exercise, you will be using two bar graphs showing the abundance of young oysters in samples taken by researchers in Aransas Bay and Copano Bay, which are both located within the Mission-Aransas Estuary.
2. Look at the Aransas Bay Young Oyster Abundance Graph. Decide what the bars on the graph indicate and what the data tells you about the young oyster abundance in Copano Bay at different times. Use the Aransas Bay Young Oyster Abundance Graph to fill in the statement below:

Clue one: “Abundance of young oysters in Aransas Bay was normal from January 2007 to October 2007. Young oysters were absent from _____ (month and year) to _____ (month and year). Following their disappearance, young oyster abundance was _____ (high, low, or normal) from _____ to _____ (months and year).”

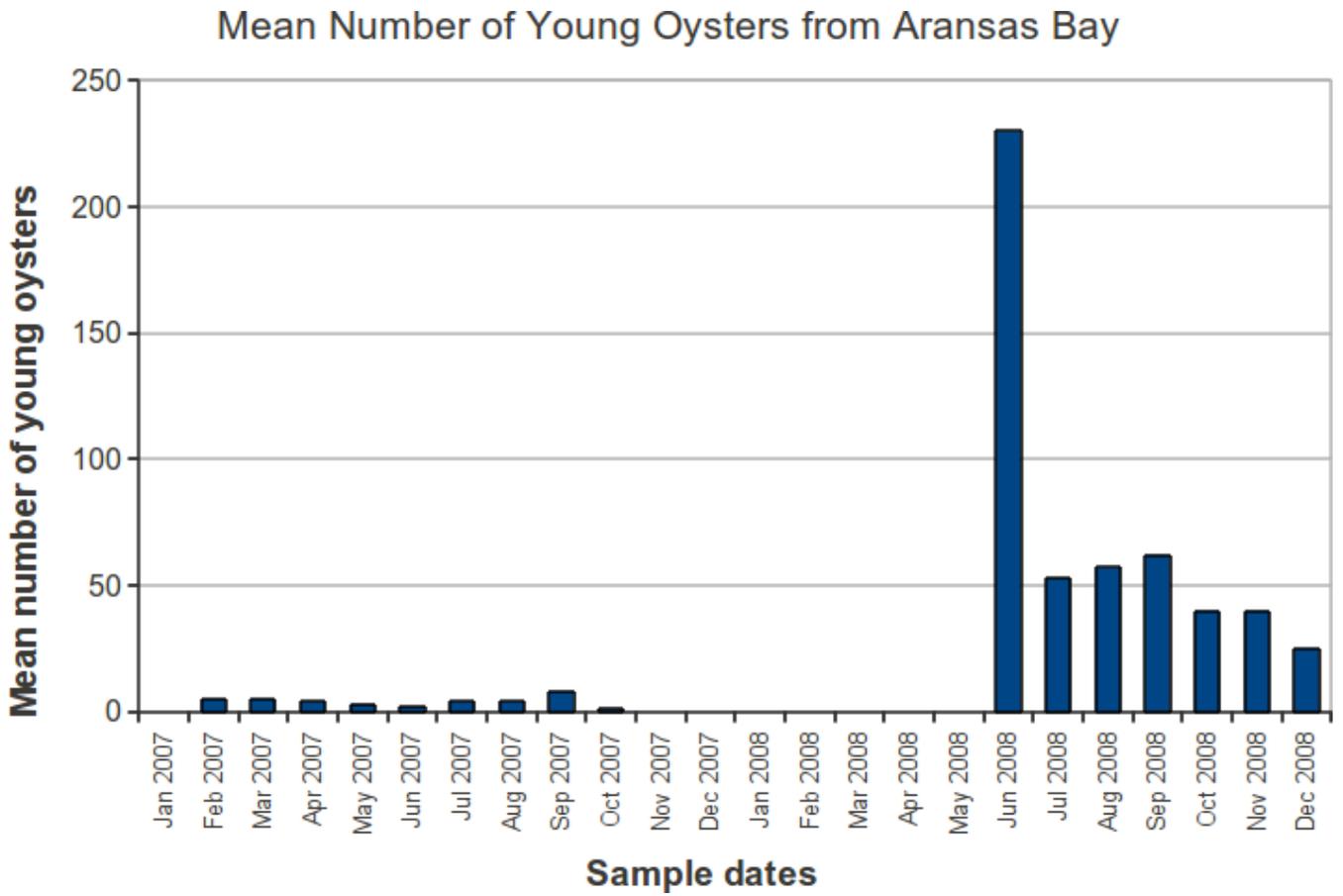
3. Now look at the Copano Bay Young Oyster Abundance Graph. Use this graph to in the statement below:

Clue two: “Abundance of young oysters in Copano Bay was normal from January 2007 to October 2007. Young oysters were absent from _____ (month and year) to _____ (month and year). Following their disappearance, young oyster abundance was _____ (high, low, or normal) from _____ to _____ (months and year).”

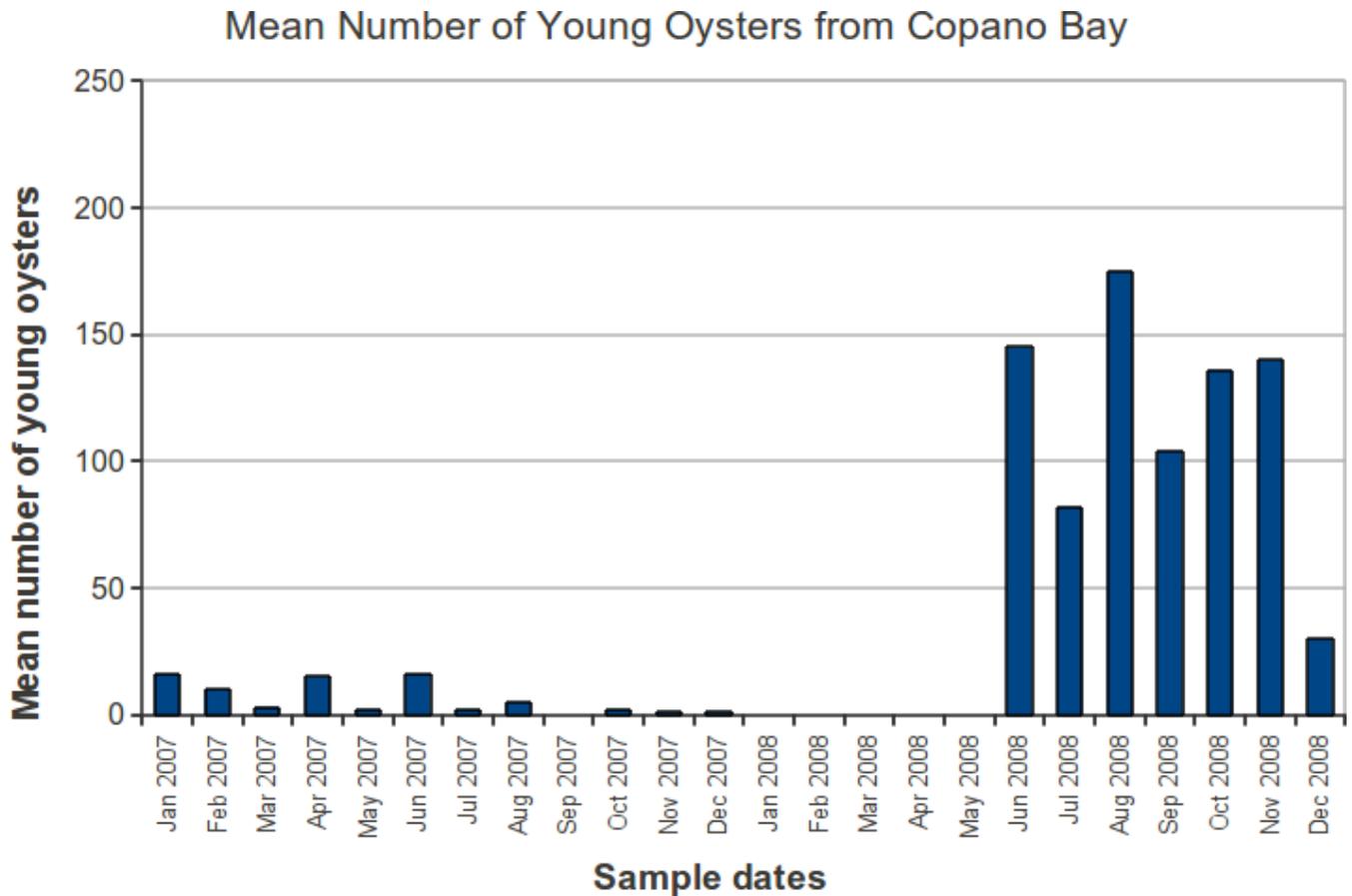
Questions

- Q1. Are there any similarities between the abundance or lack of abundance of young oysters in Aransas Bay and Copano Bay during 2007 and 2008? If so, what are the similarities?
- Q2. Does one of the bays seem to have more oyster growth than the other? What evidence do you see to back up your observation?
- Q3. Have you solved the oyster mystery or do you need more clues?

Oyster Abundance Graphs



Oyster Abundance Graphs



Notes on the data

What do the above graphs tell you about the abundance of young oysters in Aransas and Copano Bays? The “young” oysters counted by researchers are the spat — larval oysters that have attached to bigger oysters. Researchers dredged oyster samples from the bottom of the bays. They picked out five oysters from whatever they dredged up and counted the number of spat on those five oysters. The counts were then averaged to give the monthly numbers you’re seeing above. Since the same method was used for the entire period of time, you can compare months and know that what you see should represent actual increases or decreases in larval oysters in that bay over time. And because the same sampling method was used in both bays, the numbers can be compared with each other.