

Survival on Daphne Major

The scientists on Daphne Major observe everything on the island, and they keep a careful record of their data. In 1977 and 1978 they recorded a spell of over 500 days in which no rain fell. During this extremely dry period, many plants failed to produce seeds. Investigate some measurements from the scientists' field notes. Turn their data into graphs to get a picture of what happened to the food supply and the finch population after the drought.

Work with a partner

Each team will need:

- Seed Abundance Graph
- Finch Population Graph

1 Tracking the Seed Supply

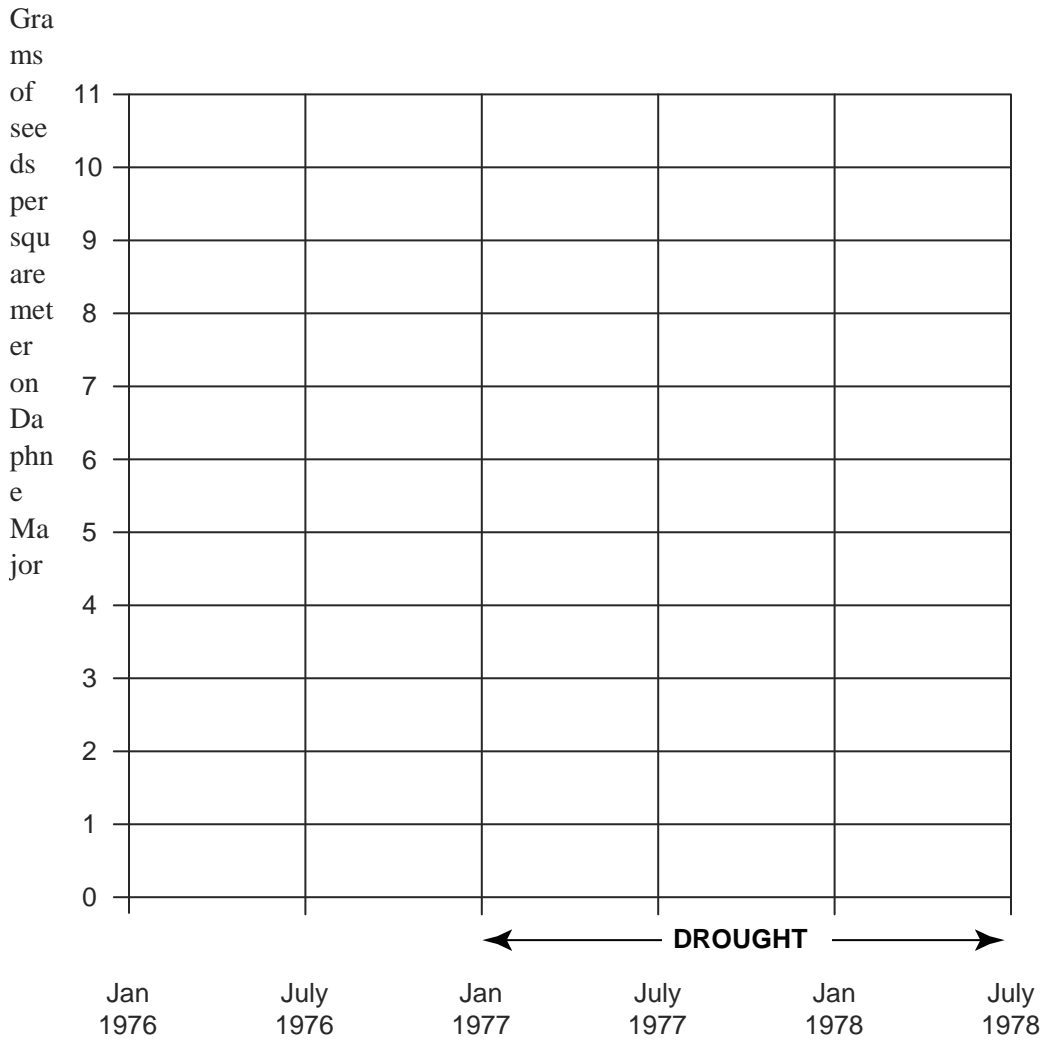
The observers on Daphne Major tracked seed abundance by first measuring a square meter area of ground and then sifting through the soil to count every seed. This was done at many different places to get an accurate count. They repeated the count every six months. Here are their data:

Field notebook seed count (measured in grams per square meter)

January 1976	7.5	January 1977	8.0	January 1978	2.0
July 1976	10.5	July 1977	5.5	July 1978	3.5

- a Using the entries from the field notes, enter the data as a dot on the graph for each date. Connect the dots to complete the graph.
- b Review the Seed Abundance Graph. During what month and year did the seed supply shrink to its lowest amount?
- c During what month and year was the seed supply most abundant?

Seed Abundance Graph



2 Counting the Finch Population

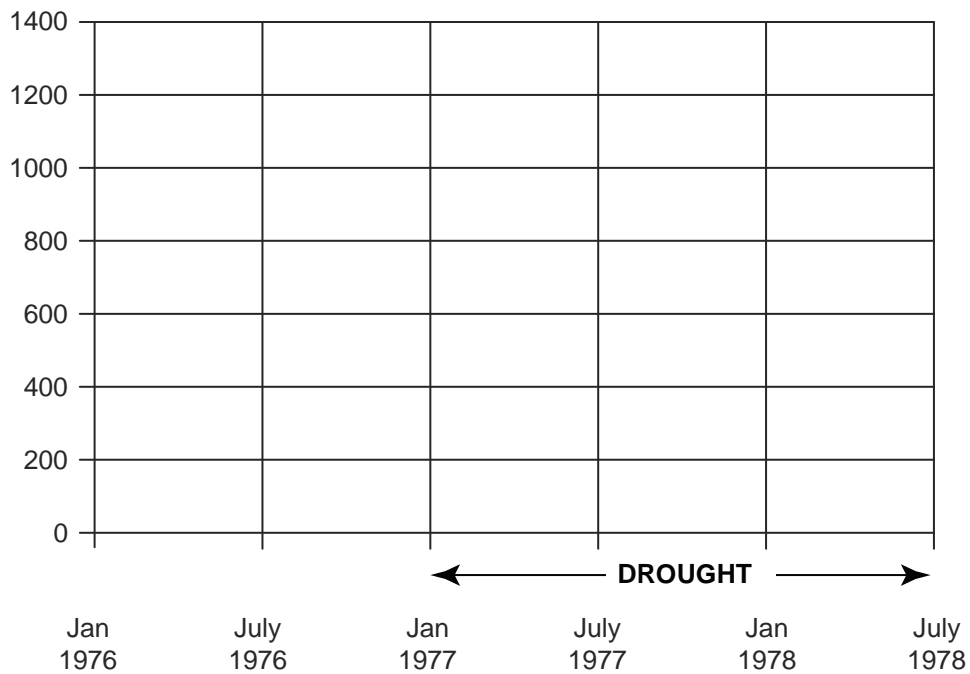
The finches were counted every six months. Here are the data for the same period of time as the seeds were measured.

Field notebook finch count:

January 1976	1100	January 1977	850	January 1978	200
July 1976	1400	July 1977	400	July 1978	357

Finch Population Graph

Medium ground finches on Daphne Major



Month and Year

- Using the entries from the field notes, enter the data as a dot on the graph for each date. Connect the dots to complete the graph.
- Review the Finch Population Graph. When was the finch population the lowest?
- When was the finch population the highest?

3 Think About Seeds and Finches Together

- a. Compare the graphs side by side.
- b. What happened to the finch population when the seed supply shrank to its lowest amount?
- c. How do you account for this?

- d. When the seed supply increased, what happened to the finches?

- e. How do you account for this?

4 Bigger Beaks, But Why?

When the team returned to Daphne Major, they found only one in seven finches survived the drought. When they measured the survivors, they found that most were finches with big beaks. Why do you think bigger-beaked birds survived better than the smaller-beaked birds?

5 Consider This

Beak size is a variation that is passed from parents to offspring. When the new generation of young finches was measured in 1978, there were many more young birds with larger beaks. What happened?