

# Friday/Monday, November 3/6, 2017

Your Learning Goal: SWBAT interpret real finch data to create graphs and better understand how environmental changes can shape populations.

Table of Contents: **Uncover the Mystery- 13R+L**

Catalyst: (13L)

Watch the Video clip

- Record observations and questions about the island and finches that live there.



Homework:

CER Paragraph  
DUE 11/14

Agenda:

1. Catalyst video
2. Creating Graphs

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| 9/22/17     | Transitions             | 7R+L        |
| 9/26/17     | Present Day Vertebrates | 8R +L       |
| 10/6/17     | Lines of Descent        | 9R + L      |
| 10/13/17    | Inheriting Traits       | 10R + L     |
| 10/20/17    | Darwin's Voyage         | 11R +L      |
| 10/24/17    | Welcome to Clipland     | 12R + L     |
| 11/3 /17    | Uncover the Mystery     | 13 R + L    |

11/3/17

Catalyst:

Watch the video  
(found on Google classroom)

Record the observations and  
questions you have about  
Daphne Major and the finches  
that live there.

CER:

**13L**

11/3/17

Uncover the Mystery

Hi!  
I'm Rosemary and  
this is Peter



**13R**

# Focus question

- How do environmental changes shape species/populations?



# Interpreting Data

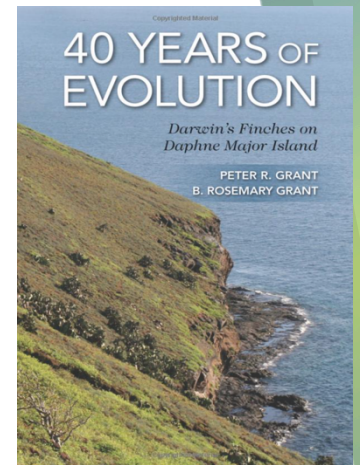
Look at the data

Answer the following questions on the handout with your elbow partner

- ▶ What do you want to investigate further?
- ▶ What do you notice in the data?
- ▶ What relationships seem interesting or important? Why?
- ▶ How can you organize the data to help you make sense of those relationships?
- ▶ What other data would help you understand the story of these finches on Daphne Major?

# Graphing from Data – Narrowing Our Focus

Explore a smaller data set on two species of finch that Rosemary and Peter Grant collected, published in this book...



<http://tinyurl.com/medground>

We will learn how to graph changes in **beak depths** of the **medium ground finch** from raw data.

Since this data file is view only, you will need to make a copy :

- ▶ Click file
- ▶ Click make a copy
- ▶ Rename the file with their names and save to their Google drive

## Graphing with Google - Step by Step

# Highlight

Highlight the data that you want to include...

- For the top image, I clicked in the “year” box and held down, while going over to the next column and down to row 6.
- Please highlight “Year” and “Beak depth” all the way down to the bottom. To do this, you can also just click on the “A” and hold down the button over to “B”.

<http://tinyurl.com/medground>

|    | A                          | B          | C           | D          | E | F                   | G          | H           | I          |
|----|----------------------------|------------|-------------|------------|---|---------------------|------------|-------------|------------|
| 1  | <b>Medium ground finch</b> |            |             |            |   | <b>Cactus finch</b> |            |             |            |
| 2  | Year                       | Beak depth | Beak length | Beak width |   | Year                | Beak depth | Beak length | Beak width |
| 3  | 1973                       | 9.48       | 10.76       | 8.69       |   | 1973                | 9.28       | 14.55       | 8.57       |
| 4  | 1974                       | 9.42       | 10.72       | 8.66       |   | 1974                | 9.21       | 14.57       | 8.58       |
| 5  | 1975                       | 9.19       | 10.57       | 8.55       |   | 1975                | 8.94       | 14.14       | 8.37       |
| 6  | 1976                       | 9.23       | 10.64       | 8.58       |   | 1976                | 9.06       | 14.41       | 8.52       |
| 7  | 1977                       | 9.35       | 10.73       | 8.63       |   | 1977                | 9.14       | 14.55       | 8.6        |
| 8  | 1978                       | 9.74       | 11.04       | 8.86       |   | 1978                | 9.35       | 14.52       | 8.7        |
| 9  | 1979                       | 9.78       | 11.07       | 8.73       |   | 1979                | 9.26       | 14.48       | 8.62       |
| 10 | 1980                       | 9.81       | 11.11       | 8.9        |   | 1980                | 9.31       | 14.61       | 8.68       |
| 11 | 1981                       | 9.75       | 11.04       | 8.89       |   | 1981                | 9.23       | 14.44       | 8.63       |

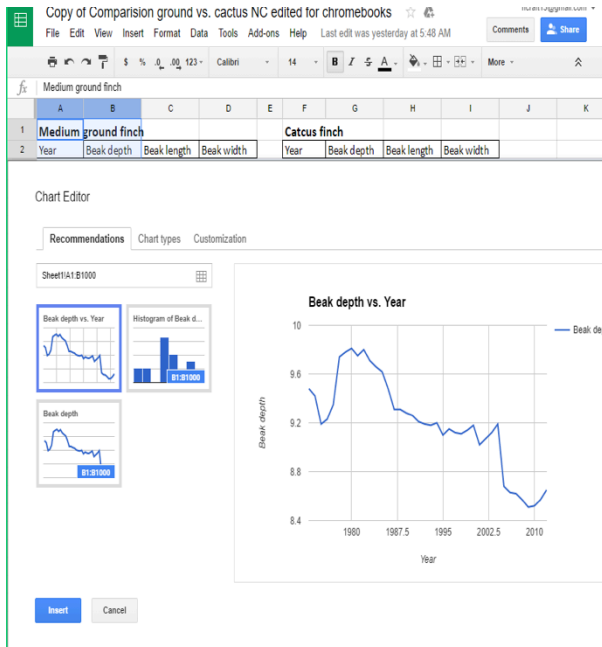
|    | A                          | B          | C           | D          | E | F                   | G          | H           | I          |
|----|----------------------------|------------|-------------|------------|---|---------------------|------------|-------------|------------|
| 1  | <b>Medium ground finch</b> |            |             |            |   | <b>Cactus finch</b> |            |             |            |
| 2  | Year                       | Beak depth | Beak length | Beak width |   | Year                | Beak depth | Beak length | Beak width |
| 3  | 1973                       | 9.48       | 10.76       | 8.69       |   | 1973                | 9.28       | 14.55       | 8.57       |
| 4  | 1974                       | 9.42       | 10.72       | 8.66       |   | 1974                | 9.21       | 14.57       | 8.58       |
| 5  | 1975                       | 9.19       | 10.57       | 8.55       |   | 1975                | 8.94       | 14.14       | 8.37       |
| 6  | 1976                       | 9.23       | 10.64       | 8.58       |   | 1976                | 9.06       | 14.41       | 8.52       |
| 7  | 1977                       | 9.35       | 10.73       | 8.63       |   | 1977                | 9.14       | 14.55       | 8.6        |
| 8  | 1978                       | 9.74       | 11.04       | 8.86       |   | 1978                | 9.35       | 14.52       | 8.7        |
| 9  | 1979                       | 9.78       | 11.07       | 8.73       |   | 1979                | 9.26       | 14.48       | 8.62       |
| 10 | 1980                       | 9.81       | 11.11       | 8.9        |   | 1980                | 9.31       | 14.61       | 8.68       |
| 11 | 1981                       | 9.75       | 11.04       | 8.89       |   | 1981                | 9.23       | 14.44       | 8.63       |
| 12 | 1982                       | 9.8        | 11.06       | 8.91       |   | 1982                | 9.25       | 14.45       | 8.64       |
| 13 | 1983                       | 9.71       | 11.03       | 8.92       |   | 1983                | 9.16       | 14.36       | 8.63       |
| 14 | 1984                       | 9.66       | 10.93       | 8.93       |   | 1984                | 9.1        | 14.25       | 8.6        |
| 15 | 1985                       | 9.62       | 10.91       | 8.91       |   | 1985                | 9.07       | 14.23       | 8.6        |
| 16 | 1986                       | 9.48       | 10.91       | 8.75       |   | 1986                | 9.22       | 14.4        | 8.71       |
| 17 | 1987                       | 9.31       | 10.93       | 8.69       |   | 1987                | 9.14       | 14.2        | 8.64       |
| 18 | 1988                       | 9.31       | 10.93       | 8.69       |   | 1988                | 9.14       | 14.2        | 8.64       |
| 19 | 1989                       | 9.28       | 10.91       | 8.67       |   | 1989                | 9.14       | 14.27       | 8.67       |
| 20 | 1990                       | 9.26       | 10.89       | 8.65       |   | 1990                | 9.14       | 14.28       | 8.66       |
| 21 | 1991                       | 9.21       | 10.83       | 8.66       |   | 1991                | 9.07       | 13.93       | 8.64       |
| 22 | 1992                       | 9.19       | 10.82       | 8.66       |   | 1992                | 9.01       | 13.75       | 8.58       |
| 23 | 1993                       | 9.18       | 10.82       | 8.67       |   | 1993                | 9.09       | 13.85       | 8.65       |
| 24 | 1994                       | 9.2        | 10.84       | 8.67       |   | 1994                | 9.1        | 13.84       | 8.65       |
| 25 | 1995                       | 9.1        | 10.74       | 8.59       |   | 1995                | 9.12       | 13.87       | 8.63       |
| 26 | 1996                       | 9.15       | 10.81       | 8.64       |   | 1996                | 9.15       | 13.85       | 8.67       |
| 27 | 1997                       | 9.12       | 10.77       | 8.65       |   | 1997                | 9.19       | 13.84       | 8.71       |
| 28 | 1998                       | 9.11       | 10.84       | 8.67       |   | 1998                | 9.07       | 13.68       | 8.63       |
| 29 | 1999                       | 9.14       | 10.89       | 8.71       |   | 1999                | 9.02       | 13.43       | 8.56       |
| 30 | 2000                       | 9.18       | 10.92       | 8.73       |   | 2000                | 9.08       | 13.15       | 8.55       |
| 31 | 2001                       | 9.02       | 10.75       | 8.59       |   | 2001                | 8.91       | 13.31       | 8.55       |

# Graphing with Google - Step by Step

## Chart

If you do not see the “Chart” button on the toolbar, you can click on “Insert” then on “Chart”.

You should see the image below when you are finished.



The screenshot shows the 'Insert' menu in Google Sheets, with 'Chart...' selected. The spreadsheet data is visible in the background, showing two columns of data: 'Medium ground finch' and 'Cactus finch'. The 'Medium ground finch' column has columns for Year, Beak depth, Beak length, and Beak width. The 'Cactus finch' column has columns for Year, Beak depth, Beak length, and Beak width. The data points are as follows:

| Year | Medium ground finch Beak depth | Cactus finch Beak depth |
|------|--------------------------------|-------------------------|
| 1973 | 8.69                           | 9.28                    |
| 1974 | 8.66                           | 9.21                    |
| 1975 | 8.55                           | 8.94                    |
| 1976 | 8.58                           | 9.06                    |
| 1977 | 8.63                           | 9.14                    |
| 1978 | 8.86                           | 9.35                    |
| 1979 | 8.73                           | 9.26                    |
| 1980 | 8.9                            | 9.31                    |
| 1981 | 8.89                           | 9.23                    |
| 1982 | 8.91                           | 9.25                    |
| 1983 | 8.92                           | 9.16                    |
| 1984 | 8.93                           | 9.1                     |
| 1985 | 8.91                           | 9.07                    |



# AT THE BOTTOM: CLICK “USE OLD CHART EDITER”

## 3. Choose Scatter

Click on the “Chart types” tab.

Scroll down and select “Scatter”.


Chart Editor

Recommendations **Chart types** Customization


Sheet1!A1:B1000

- Aggregate column A
- Switch rows / columns
- Use row 1 as headers
- Use column A as labels


Pie



Scatter

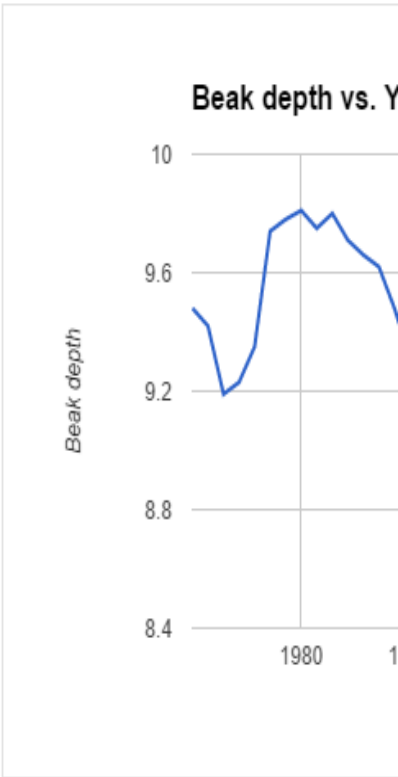


Map



**Insert** Cancel

**Beak depth vs. Y**



| Year (Y) | Beak depth |
|----------|------------|
| 1975     | 9.4        |
| 1976     | 9.2        |
| 1977     | 9.3        |
| 1978     | 9.7        |
| 1979     | 9.8        |
| 1980     | 9.7        |
| 1981     | 9.8        |
| 1982     | 9.7        |
| 1983     | 9.6        |
| 1984     | 9.5        |

## Graphing with Google - Step by Step


### 4. C

- Click on the “Customization” tab.
- Scroll down to “Axis”.
- While it is on the Horizontal axis, type in the minimum and maximum [1970 - 2015].
- Change “Axis” to “Left Vertical”. Type in the minimum and maximum [8.4 - 10].
- Click “insert”.


## Chart Editor

Recommendations Chart types Customization

**Axis** Horizontal

Title **B** **I** 12 

Year

Axis labels **B** **I** 12 

Slant labels Auto

Treat labels as text

Min Max

1970 2015

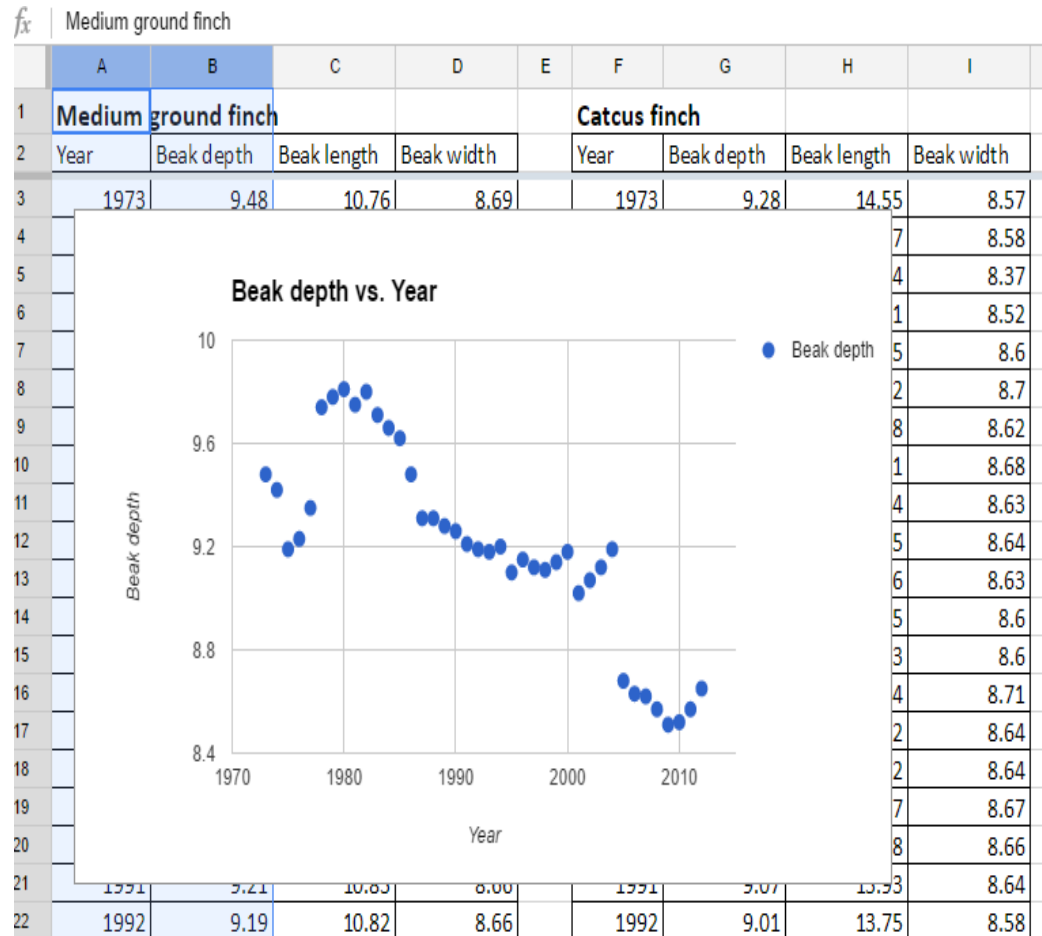
Allow bounds to hide data

Beak depth

## Graphing with Google - Step by Step

# 5. Move Graph

- The graph will show up on top of your data.
- Click on the graph and drag it to the right, so that it is next to your data instead.



# Try Your Own Graphs!

Your job now is to try to make two different graphs. \*hint\* if you want to use two columns of data that are not next to each other, you will need to highlight one, then press “Ctrl”, then highlight the other.

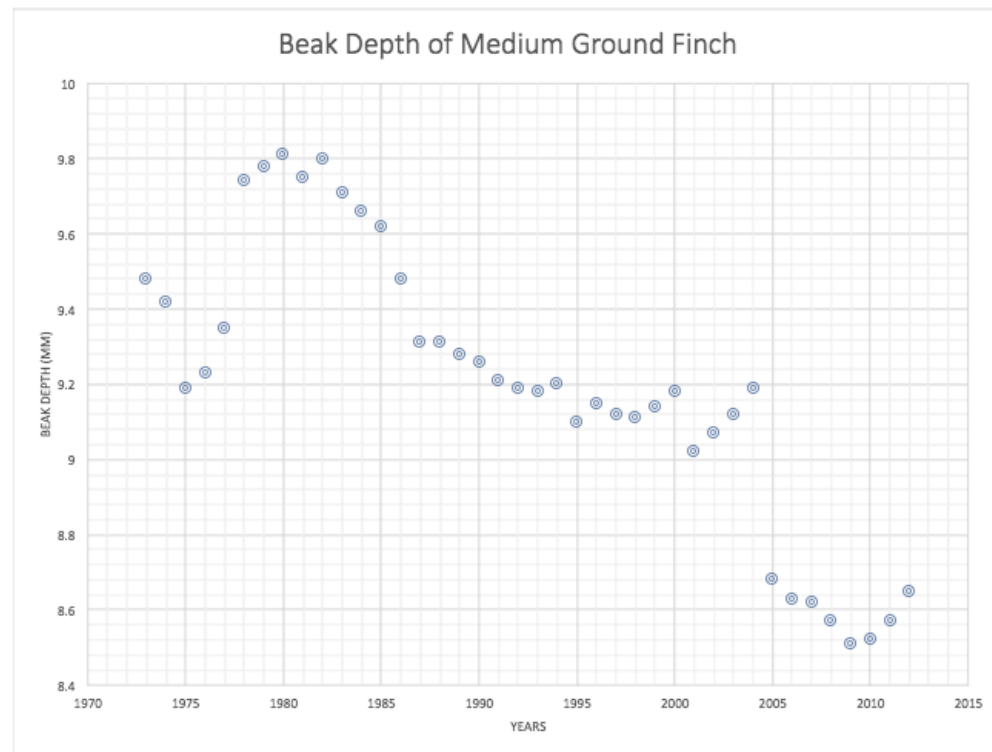
You can try to graph 3 columns at the same time, or use the same data and pick a different type of graph, or change the minimum and maximum... just play with this graphing capability of Google Sheets.

You need a total of 3 graphs by the end of the period. If you finish early, your job is to walk around and help others.

# Analyze Data - Step 1 Identify

## “What I see” comments:

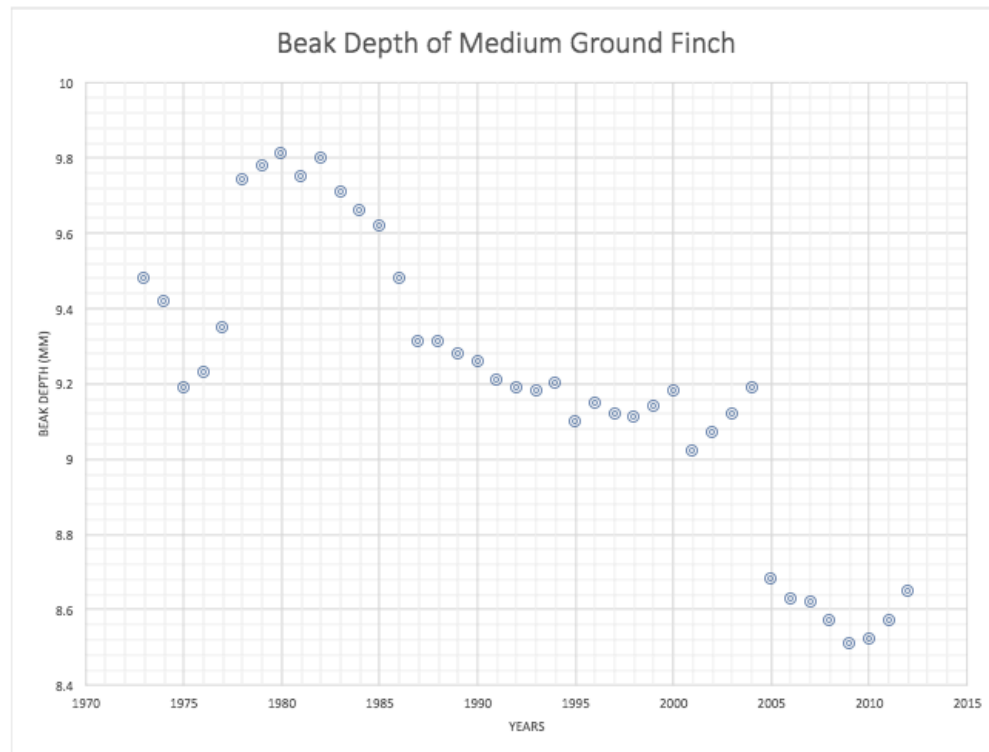
- Identify any changes, trends, or differences you see in the graph.
- Draw arrows and write a “what I see” comment for each arrow.
- The comments should be just what you see.
- Do not try to explain meaning yet.



# Analyze Data - Step 2 Interpret

## “What it means” comments

- Interpret the meaning of each “what I see” comment by writing a “what it means” comment.
- Do not try to interpret the whole graph or figure.



# Analyze Data - Step 3 Caption

- Write a caption for the graph.
- Start with a topic sentence that describes what the graph shows.
- Then join each “what I see” comment with its “what it means” comment to make a descriptive sentence.

## WHEN YOU FINISH YOUR TWO GRAPHS

Share them with Ms. Salzburg: [maxime.salzburg@larchmontcharter.org](mailto:maxime.salzburg@larchmontcharter.org)

Your email MUST include for full credit:

1. A salutation: Ex- Hi Ms. Salzburg
2. A description of what your two graphs are comparing
3. The names of the two people in your group.



If you finish with time to spare:  
**WORK ON YOUR CER DUE**

**P 2 & 6 - WEDNESDAY NOVEMBER 8**

**P 1 & 5 - THURSDAY NOVEMBER 9**



# Tuesday/Thursday, November 7/9, 2017

Your Learning Goal: SWBAT examine data at the 7 stations and make sense of why finch populations changed over time

Table of Contents: **Uncover the Mystery- 13R+L**

Catalyst: (13L)

Watch the Video clip

- Record observations and questions about the island and finches that live there.

## Homework:



CER Paragraph

DUE TODAY

(turn it into the bin!)

## Agenda:

1. Create 8 squares 13R
2. Stations Activity

11/7/17

Catalyst:

Watch the video  
(found on Google classroom)

Record the observations and  
questions you have about  
Daphne Major and the finches  
that live there.

CER:

Draw this graphic  
organizer in your  
notebook!



11/7/17

Uncover the Mystery

|   |                        |
|---|------------------------|
| A | B                      |
| C | D                      |
| E | F                      |
| G | <u>Expert Findings</u> |

# Exploring Data Over 40 Years

You will be traveling to different stations in your table group  
(A, B, C, D, E, F, G)  
5 - 7 minutes each

## You will be collecting more clues about:

1. Daphne major
2. The finches that live there
3. What occurred during the 40 years of the Grant's study.

**Please write your findings  
into your notebook**

**13R**

# Share Expert Findings

Record your thinking about the following in your science notebook.

- What variable(s) had the greatest impact on the death's of **Medium Ground Finches** in 1977?
- Does this event correspond to what occurred during the whole 40 years of the study?

**13R**

# Share Expert Findings

Discuss your thinking with your team, then revise your explanation in your notebook.

- What variable(s) had the greatest impact on the death's of medium ground finches in 1977?
- Does this event correspond to what occurred during the whole 40 years of the study?

**13R**

# Let's Hear From Rosemary and Peter Grant

Watch the video clip # 2 and hear from Rosemary and Peter Grant their explanation and then revise your explanation in your notebook.

- What caused the beak size to change over the course of 40 years?



11/7/17

Catalyst:

Watch the video  
(found on Google classroom)

Record the observations and  
questions you have about  
Daphne Major and the finches  
that live there.

---

CER:

What might happen to the finch  
population over 100 or 1,000 or  
even more generations? Why?

Over the next 100 or 1,000  
generations the finch population...

**13L**

11/7/17

Uncover the Mystery

|   |                        |
|---|------------------------|
| A | B                      |
| C | D                      |
| E | F                      |
| G | <u>Expert Findings</u> |

**13R**