



Friends of the Island Fox

a Program of the Channel Islands Park Foundation, a 501 (c) (3) public benefit org.

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Visit us at www.islandfox.org

Grade Level: 4 -12

Objective: Students will 1) put data numbers into graph form, 2) interpret population trends from the graphed data, 3) compare natural population fluctuations with unnatural declines.

Method: Students use math skills to graph actual population data.

Materials: Graph paper and writing implements.

CA Standards:

Science: 4 2b,3a,b,;
6 5b,e; 7 3e;

Math: 4 Measurement and
Geometry 2.0, Statistics
1.0; 5 Statistics 1.1;
6 Statistics 1.1, 2.5;

EEL:

Principle III, Concepts A,C

When Numbers Tell a Story

Population numbers provided the first evidence that island foxes were encountering challenges to their survival on four of the six Channel Islands where they live. By graphing population numbers, students can see how numbers tell a story and how data can alert scientists to environmental problems and successes.

Background: Island fox populations on the Channel Islands were seen as stable, if not abundant during the 20th century. Early in the 1990s, however, there was a common belief that island foxes were declining in numbers but there was no population data. The first population estimates were made in 1994.

Over the next six years, island foxes declined dramatically on the northern islands (San Miguel, Santa Rosa and Santa Cruz) because of predation by a new predator, the golden eagle. On Santa Catalina Island disease caused rapid population decline. The population data collected by the National Park Service, The Nature Conservancy and the Catalina Island Conservancy from 1994 thru 2000 illustrates this population crash. At the same time, biologists working for the U.S. Navy on the southern islands (San Clemente and San Nicolas) documented stable, naturally fluctuating populations.

Since 1998, population numbers have been meticulously documented each year and they tell the following story:

- ▶ **2000:** San Miguel and Santa Rosa populations nearly go extinct. All individual animals moved into captive breeding facilities on each island. Santa Cruz population continues to drop. Santa Catalina population diagnosed with canine distemper disease. Majority of remaining animals on Santa Cruz and approximately a third on Santa Catalina brought into captive breeding
- ▶ **2000-2001:** Captive breeding program begins. Bald eagles released on islands.

- ▶ **2004:** Small numbers of island foxes released back into the wild. Golden eagles captured and removed from islands.
- ▶ **2006:** Captive breeding successful, facility closed on Santa Catalina all island foxes returned to wild. Natural breeding out produces captive breeding. Island foxes vaccinated for canine distemper and rabies.
- ▶ **2007:** Captive breeding successful, facility closes on Santa Cruz and San Miguel, all island foxes returned to wild. Feral pigs actively removed from Santa Cruz Island.
- ▶ **2008:** Captive breeding somewhat successful, facility closes on Santa Rosa, all island foxes returned to the wild.
- ▶ **2009:** Last known breeding golden eagle and all feral pigs removed from Santa Cruz. Bald eagles successfully nesting on Channel Islands.
- ▶ **2010:** Golden eagle migrating past Santa Rosa Island kills approximately 10 island foxes of breeding age during pupping season.
- ▶ **2011:** Introduced deer and elk removed from Santa Rosa Island.

Procedure:

1. Provide students with graph paper and the “Island Fox Population Data” table. What kind of graph do they think will best visualize the data?
2. Have students graph the data and compare the different populations. What can they tell from the data? What questions come to mind when they look at the graphs?
3. Provide specific information from the historic timeline. How are these events visible in the graphs?
4. Which population decreased the most? Which recovered the fastest? Which populations still are in the process of recovery?

Assessment:

5. Additional questions: *How does a normal fluctuating population compare to a population in crisis? Was captive breeding equally effective across the four islands? The population number for Santa Rosa in 2009 was 389. How was Santa Rosa Island impacted by losing a few island foxes of breeding age during the breeding season? What other impacts could have influenced the slow recovery of the Santa Rosa Island fox? What is significant about the trend between 2010 and current for the Santa Cruz population?*

Conclusion:

6. A complete island fox fact sheet is available as a pdf on the “About Island Fox” page of the website www.islandfox.org.
7. For detailed information on why the populations numbers changed the way they did, students can explore the Friends of the Island Fox website at www.islandfox.org

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