Analyzing Red Squirrel Population Dynamics

The Mount Graham red squirrel (*Tamiasciurus hudsonicus grahamensis*) is an endangered red squirrel subspecies that is endemic to the Pinaleño Mountains in southeastern Arizona. Population data for this squirrel is shown in Figure 5. Use this information and independent research to determine population trends for the red squirrel. Investigate whether the red squirrel habitat is declining and what natural or human-caused disturbances may be responsible for fluctuations in the red squirrel population. Based on your investigation, decide whether you think the Mount Graham red squirrel population is resistant or resilient to disturbance.

1. ASK A QUESTION

Develop a set of questions to help guide your research and data analysis. Focus your inquiry on population trends for the Mount Graham red squirrel, how those trends relate to habitat loss, and how the causes of the habitat decline are affecting the red squirrel population.

2. CONDUCT RESEARCH

Investigate the Mount Graham red squirrel population. Use library and Internet resources to explore how this species has fared over the last half-century.

3. ANALYZE DATA

Analyze your research and the population data provided. Graph the population data in order to visualize the red squirrel population trends. Is there evidence of disturbances, ecosystem decline, or the resilience or resistance of the squirrel population?

4. CONSTRUCT AN EXPLANATION

Use your analysis to answer your questions and construct an explanation for the changes in the population of the Mount Graham red squirrel and its habitat.

5. COMMUNICATE

Present your findings about the Mount Graham red squirrel and its habitat. Be sure to include whether you think the squirrel population is resilient or resistant to disturbance. Your presentation should include images and data to support your claims.

FIGURE 5: Average population estimates for Mount Graham red squirrels, 1987-2010.

Year	Average population estimates	Year	Average population estimates
1987	242	1999	530
1988	202	2000	484
1989	174	2001	270
1990	275	2002	292
1991	391	2003	293
1992	332	2004	276
1993	375	2005	289
1994	419	2006	285
1995	407	2007	305
1996	381	2008	273
1997	392	2009	259
1998	566	2010	216

Source: U.S. Fish and Wildlife Service. 2011. Draft Recovery Plan for the Mount Graham Red Squirrel (Tamiasciurus hudsonicus grahamensis), First Revision. U.S. Fish and Wildlife Service, Southwest Region, Albuquerque, NM. 85 pp. + Appendices A-D. [September 30, 2016] https://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/MGRS/MGRS_dRecov_Plan_Revision_Final_May2011.pdf

CHECK YOUR WORK

A complete presentation should include the following information:

- guiding questions answered in the final presentation
- a graph that shows the population of Mount Graham red squirrels over time
- an explanation of the current status of the squirrel and its habitat, a discussion of disturbances that affected the squirrel population, and if the squirrel population has shown resilience or resistance to disturbance
- images and data that further support your explanation