

The Future of the Karner Blue is in Our Hands Program

Elementary Level Science
Core Curriculum Grades K-4

Overview:

- Standard 1, Scientific Inquiry
Key Idea 1, Engineering
Design Key Idea 1
- Standard 4, Key Idea 1, 3, 4,
5, 6, 7
- Standard 6, Key Idea 1
- Standard 7, Key Idea 1, 2



Note: The blue text explains how the standard directly applies to the program.

Standard 1: Analysis, Inquiry, and Design Scientific Inquiry

Key Idea 1: The central purpose of scientific inquiry is to develop explanations of natural phenomena in a continuing, creative process.

Students will learn about and answer questions pertaining to the Karner blue butterfly and their habitat loss. Using questions posed by the instructor as a guide, students will explore what it means to be endangered, as well as the factors that cause an animal to become extinct. Students will brainstorm ways they can help preserve the Karner blue.

Engineering Design

Key Idea 1: Engineering design is an iterative process involving modeling and optimization (finding the best solution within given constraints); this process is used to develop technological solutions to problems within given constraints.

Students will generate ideas about the solution to Karner blue habitat loss. They will discuss several options, choose the best one, and explain why they chose it.

Standard 4: The Living Environment

Key Idea 1: Living things are both similar to and different from each other and from nonliving things.

Students will learn what the Karner blue, as a living organism, needs to survive, as well as how the Pine Bush as a whole remains a healthy ecosystem (ex. planting lupine, controlling invasive species using fire, a nonliving element etc). The needs of lupine plants, such as water, and sunlight will be discussed.

Key Idea 3: Individual organisms and species change over time.

Students will learn how plants have adapted to the dry Pine Bush conditions and continue to thrive in its sandy soil.

Key Idea 4: The continuity of life is sustained through reproduction and development.

The life cycle of the Karner blue will be discussed, with emphasis on how it's caterpillar (larvae) rely on the wild blue lupine to survive.

Key Idea 5: Organisms maintain a dynamic equilibrium that sustains life.

The Karner blue, as well as every living thing in the Pine Bush needs nutrients, water, and space to grow and maintain life. Students will learn how living things in the Pine Bush are able to survive and exist in their particular environment.

Key Idea 6: Plants and animals depend on each other and their physical environment.

Students will see how plants and animals (particularly the Karner blue and lupine plants) interact with each other and are dependent on their surrounding environment.

Key Idea 7: Human decisions and activities have had a profound impact on the physical and living environment.

Students will explore the ways that humans have impacted the Pine Bush. Negative influences that harm the environment and endanger the Karner blue will be discussed, as well as positive conservation efforts such as controlled burns and lupine

restoration. Students will talk about how they personally can positively impact the Pine Bush.

Standard 6: Interconnectedness: Common Themes Systems Thinking

Key Idea 1: Through systems thinking, people can recognize the commonalities that exist among all systems and how parts of a system interrelate and combine to perform specific functions.

The different components of the Pine Bush ecosystem all rely on each other. We will discuss how the Karner blue needs lupine to survive, and lupine relies on the surrounding environment for water and sunlight.

Standard 7: Interdisciplinary Problem Solving Connections

Key Idea 1: The knowledge and skills of mathematics, science, and technology are used together to make informed decisions and solve problems, especially those relating to issues of science/technology/society, consumer decision making, design, and inquiry into phenomena.

Students will consider the problem of habitat loss for the Karner blue butterfly. They will reflect on what can be done to solve this problem and how they can help save the Pine Bush and educate others.

Strategies

Key Idea 2: Solving interdisciplinary problems involves a variety of skills and strategies, including effective work habits; gathering and processing information; generating and analyzing ideas; realizing ideas; making connections among the common themes of mathematics, science, and technology; and presenting results.

Students will process the information they are given about habitat loss and learn ways they can help the Karner blue and the environment.