

Spotlight on an Experimental Forest and Range!

Glacier Lakes Ecosystem Experiments Site

In 1908, the Forest Service established a system of experimental forests and ranges (EFRs) to be set aside for environmental research. More than 100 years later, 80 of these areas are spread across the United States

(figure 15). The smallest of these is 47 hectares, and the largest is 22,500 hectares. Multiply the number of hectares by 2.47 to find out the size of these areas in acres.

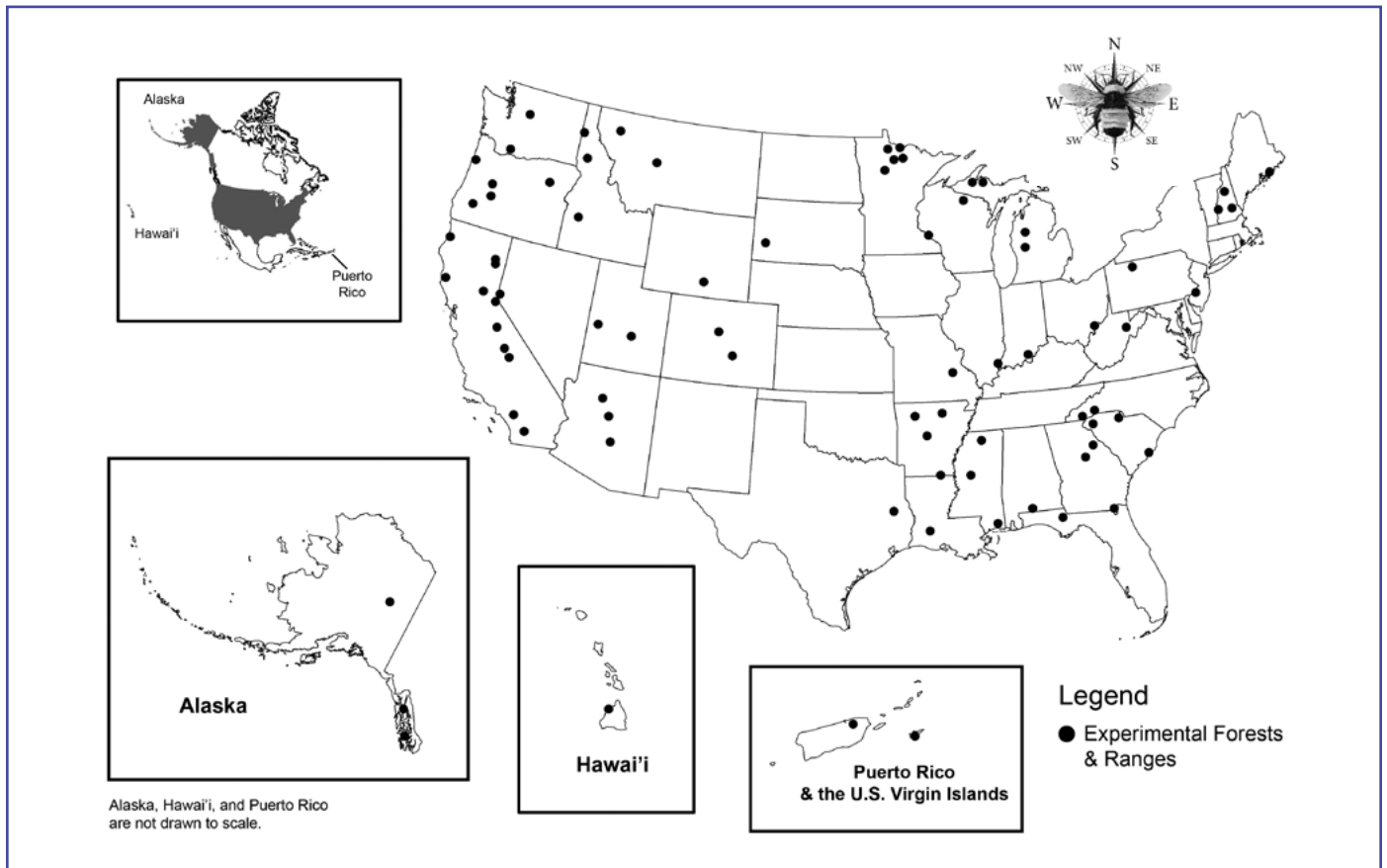


Figure 15. Experimental forests and ranges (EFRs) are located all across the United States. Which one is closest to where you live?

Map by Carey Burda.

Much of the research on EFRs is concerned with environmental changes that occur over long periods of time, over large areas, or both. More than 30 of the areas were established at least 70 years ago. In some cases, experiments are designed to last 40 or more years.

On EFRs, scientists continually collect information about the weather, the amount of snowfall and rainfall, the soil, and the ecosystem in that location. The research in this monograph called “SPLAT! Protecting Pine Trees in the Western United States From Beetle Attack” was conducted at the Bridger-Teton National Forest located in Wyoming. Since the research from the article you read was located in the Western United States and in the State

of Wyoming, we chose to highlight an EFR in Wyoming.

Only one EFR is located in Wyoming. The Glacier Lakes Ecosystem Experiments Site (GLEES) is a high elevation site located in the Medicine Bow Mountains (figures 16 and 17). GLEES was established in 1987. The research at GLEES is conducted to determine the effects of atmospheric deposition and climate change.

Atmospheric deposition includes particles in the air that are dropped on the land and in the water when it rains or snows. Specifically, scientists study how atmospheric deposition and changing climate affect alpine and subalpine ecosystems.

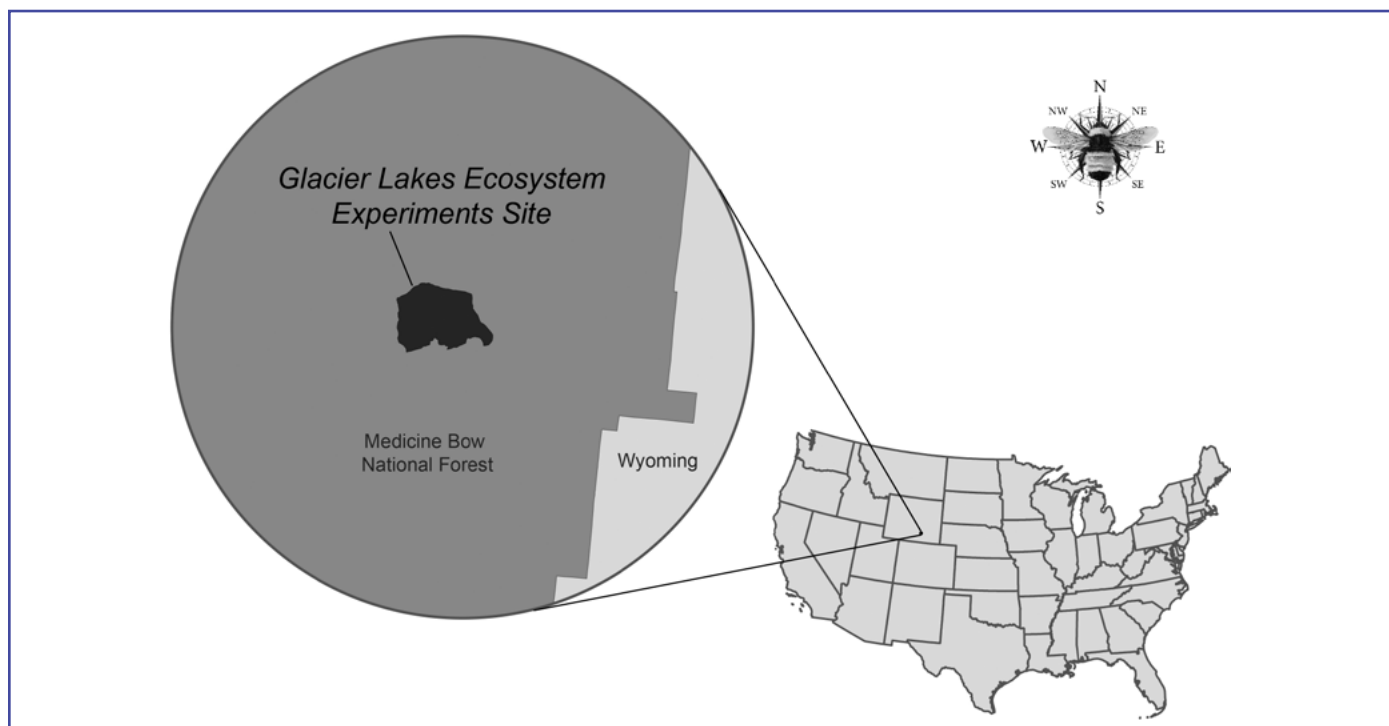


Figure 16. Glacier Lakes Ecosystem Experiments Site (GLEES) is located at a high elevation in the Medicine Bow Mountains in Wyoming. Map by Carey Burda.

Spotlight continued

On top of an 18-meter tall tower at GLEES, measurements of wind speed and direction, humidity, and temperature are taken. These data have been collected every 15 minutes for nearly 30 years. GLEES also has a tower where measurements of carbon dioxide and wind are recorded 20 times per second, adding up to over 60 billion measurements to date. Carbon dioxide is used to study climate change. Data on snowpack, snow characteristics, and atmospheric deposition are also recorded.

As you can see, many different types of data are gathered over long time periods at GLEES. However, GLEES is just one example of an experimental forest and range. To learn more about all the experimental forests and ranges, visit <http://www.fs.fed.us/research/efr/>. To learn more about GLEES, visit <http://www.fs.fed.us/rmrs/experimental-forests-and-ranges/glees-glacier-lakes-ecosystem-experiments-site>.

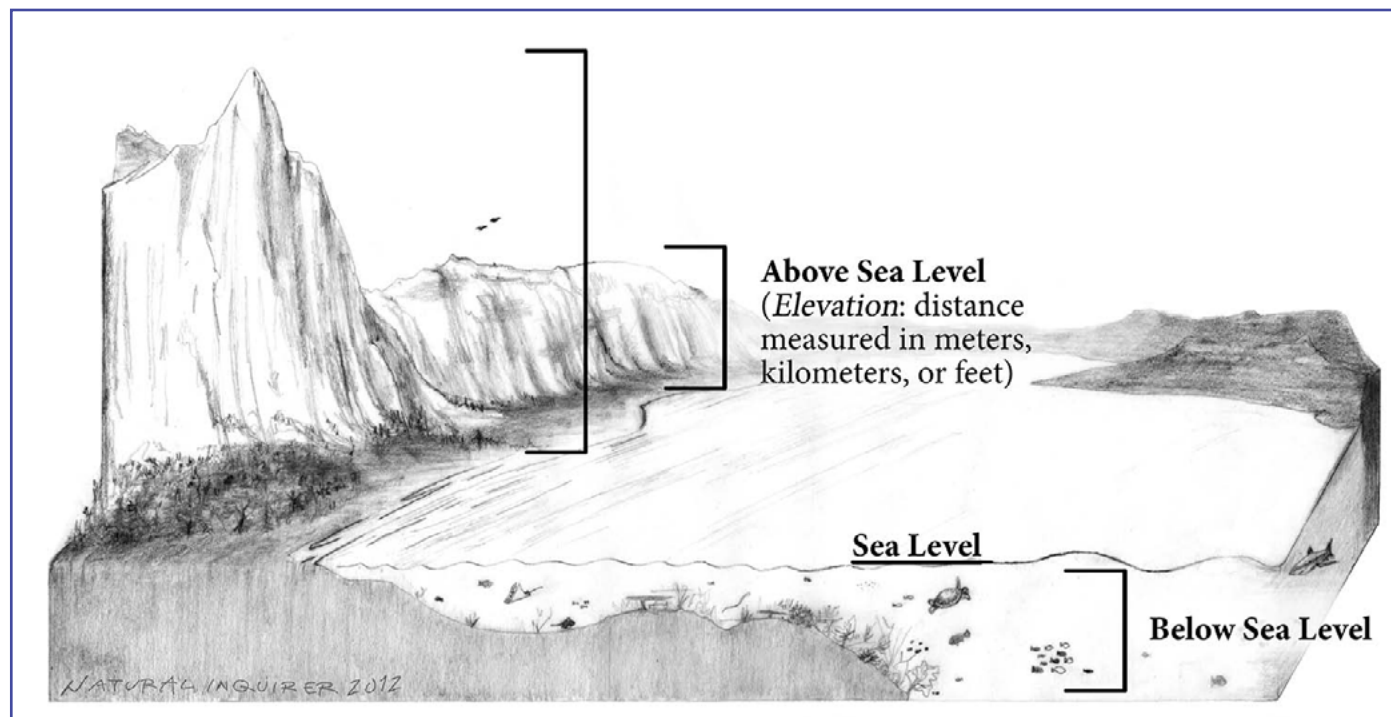


Figure 17. Elevation is a measure of the height above the level of the sea. The location of GLEES is at an elevation between 3,200 and 3,500 meters above sea level.

Illustration by Stephanie Pfeiffer.

What Are Alpine and Subalpine Ecosystems?

Alpine ecosystems are just above the tree-line at 11,000 to 11,500 feet above sea level in southern Wyoming. Cold temperatures and frequent, high winds make the alpine ecosystem a challenging place for plants and animals to live. However, certain plants and animals like moss, alpine sunflowers, yellow-bellied marmots, and pikas are well adapted to live in alpine environments.

Subalpine ecosystems begin just below the tree-line between 9,000 and 11,000 feet above sea level in southern Wyoming. Trees such as fir, spruce, and pine do well in these ecosystems.



Yellow-bellied marmots are a type of ground squirrel that live in alpine environments. Yellow-bellied marmots hibernate for about 8 months each year due to the cold temperatures and frequent high winds in these environments.

Photo by Steve Hillenbrand, via the U.S. Fish and Wildlife Service.