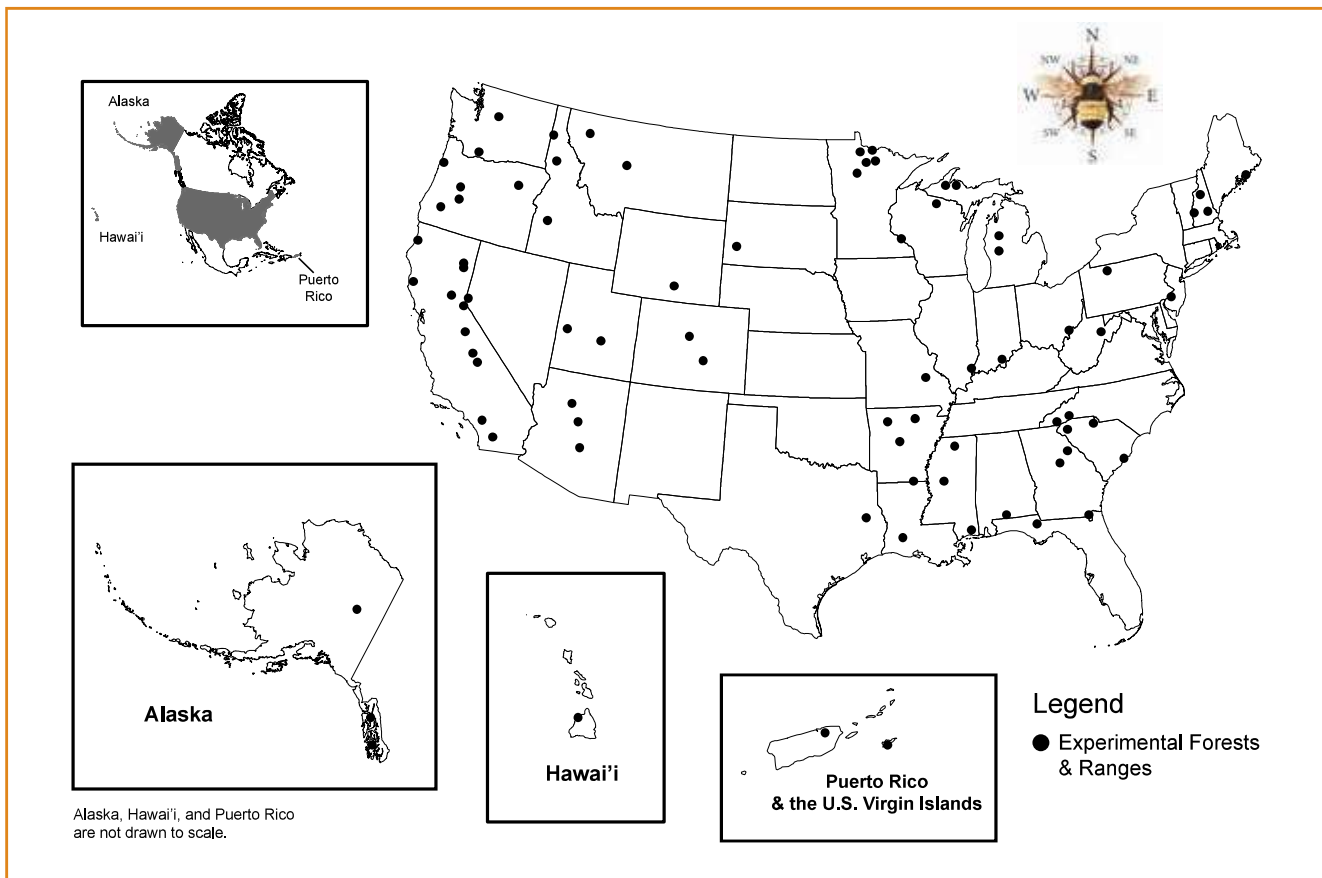


# Spotlight on an Experimental Forest and Range (EFR) Bonanza Creek Experimental Forest

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 24). 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.

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



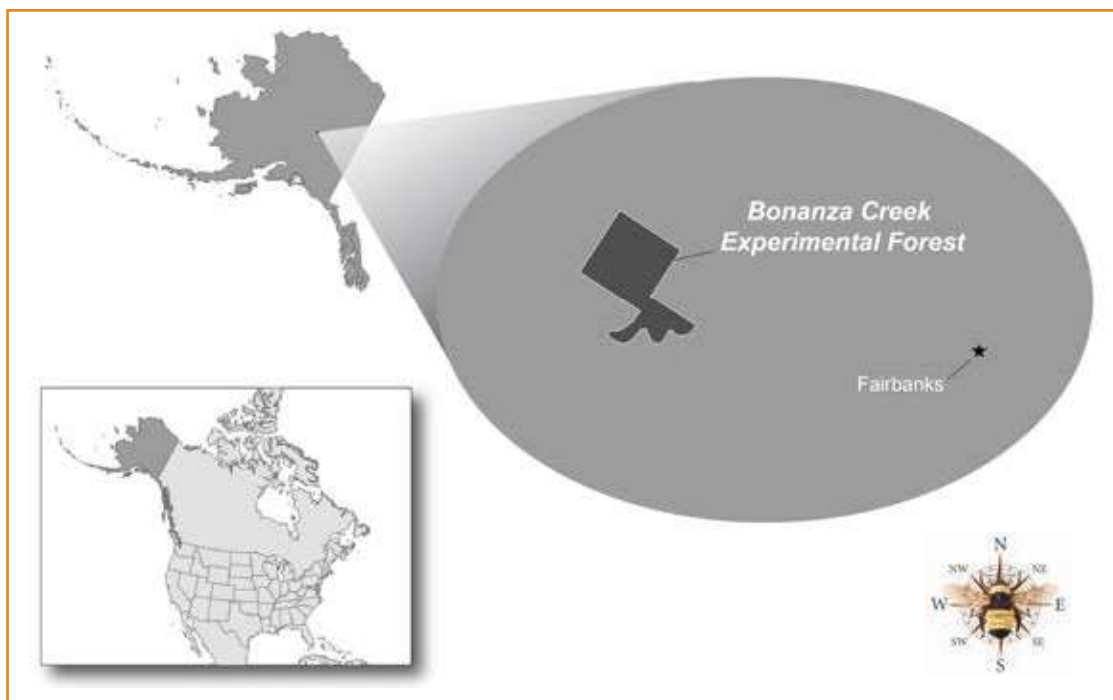
**Figure 24.** Experimental forests and ranges (EFRs) are located all across the United States. Which one is closest to where you live? Map by Carey Burda.

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 “Where There’s Smoke There’s Fire: Is Climate Connected to Very Large Wildland Fires?” focused on very large wildland fires occurring in the Western United States. However, the scientists did not include one Western State: Alaska.

Alaska has five EFRs, including Bonanza Creek Experimental Forest. Bonanza Creek Experimental Forest was established in 1963, just 5 years after Alaska became a State. Bonanza Creek Experimental Forest is located in central Alaska (figure 25).

Bonanza Creek Experimental Forest is one of only two forest research areas in the United States located in boreal forests. Boreal forests are ecosystems in cold climates that are dominated by conifer trees, like pines, spruces, and larches. Bonanza Creek Experimental Forest has a cold climate with low precipitation. Most precipitation falls in the winter as snow. Due to low levels of precipitation, wildland fires occur often at Bonanza Creek Experimental Forest.

Early research at this EFR focused on birch, white spruce, and aspen trees. Recent research at Bonanza Creek Experimental Forest has focused on understanding soils and forests near the Tanana River, forest growth after wildland fires, and insect and disease issues following wildland fires.



**Figure 25.** Bonanza Creek Experimental Forest is located in central Alaska near the City of Fairbanks, Alaska. Map by Carey Burda.

## What Is a Boreal Forest?

Boreal forests are located in North America, Europe, and Asia. Due to their location far from the equator, boreal forests have cold climates with precipitation that comes mainly as snow. Plants and animals found in boreal ecosystems are adapted to survive in the cold climate.

The most common trees are conifer trees, like pines, spruce, and larches that have needles (figure 26). The shape of these trees allow for snow to fall off, therefore protecting the branches from breaking.

Boreal forests host fewer total animal species due to the cold climate. In North America, some animals that are likely to be found in boreal forests include lynx, elk, moose, wolves, bears, and porcupines (figure 27). Many birds also use boreal forests in the summer as a place to lay eggs and raise young.



**Figure 26.** The most common trees in boreal forests are conifers. Conifers are adapted in many ways to survive in the cold climate.

Photo by Michelle Andrews, University of Georgia, used with permission.

**Figure 27.** Gray wolves are predators that live in boreal forests.

Photo by Jim Peaco, USDI National Park Service.

One of the largest research projects at Bonanza Creek Experimental Forest is a study concerning succession in boreal forests. Succession is the transition from one plant community to another plant community. Results of this research have shown that succession in boreal forests is affected by the physical environment. Scientists have also discovered that herbivores (animals that eat plants) can also affect succession in boreal forests.

Bonanza Creek Experimental Forest has a unique location that enables Forest Service scientists to study boreal forest ecosystems. To learn more about this EFR, visit <https://www.fs.fed.us/pnw/exforests/bonanza-creek/>. However, Bonanza Creek Experimental Forest is just one example of an experimental forest and range. To learn more about all the experimental forests and ranges, visit <https://www.fs.fed.us/research/efr/>.