



boundaries, ecological properties, threats to its existence, and management ideals. Today, “Greater Yellowstone Ecosystem” and its more general form “Greater Yellowstone” are used widely in print and conversation from the dusty trail to the halls of government. Although each disciple of Greater Yellowstone loves the region in a different way, we have a common understanding of its basic definition—a self-contained and self-sustaining region where elevation, hydrology, soils, geological features, and the behavior of wildlife, vegetation, and humans are interdependent and noticeably different from areas in the periphery. The Greater Yellowstone Ecosystem spans approximately 31,250 square miles of territory in northwest Wyoming, southeast Idaho, and southwest Montana—with Yellowstone National Park at its core comprising only 3,400 square miles. The boundaries of the region roughly extend from the Snake River plain of eastern Idaho in the west to the Bighorn and Wind River basins of Wyoming in the east. From north to south, the Greater Yellowstone Ecosystem extends roughly from the Yellowstone and Jefferson rivers in Montana to the Red Desert of Wyoming. Within these boundaries, at least ten major rivers rise at countless mountain peaks, which top at least a dozen major mountain chains and over ten smaller mountain ranges.

“The sight of danger is less hideous than the thought of it.” —Osborne Russell in *Journal of a Trapper*, 1839

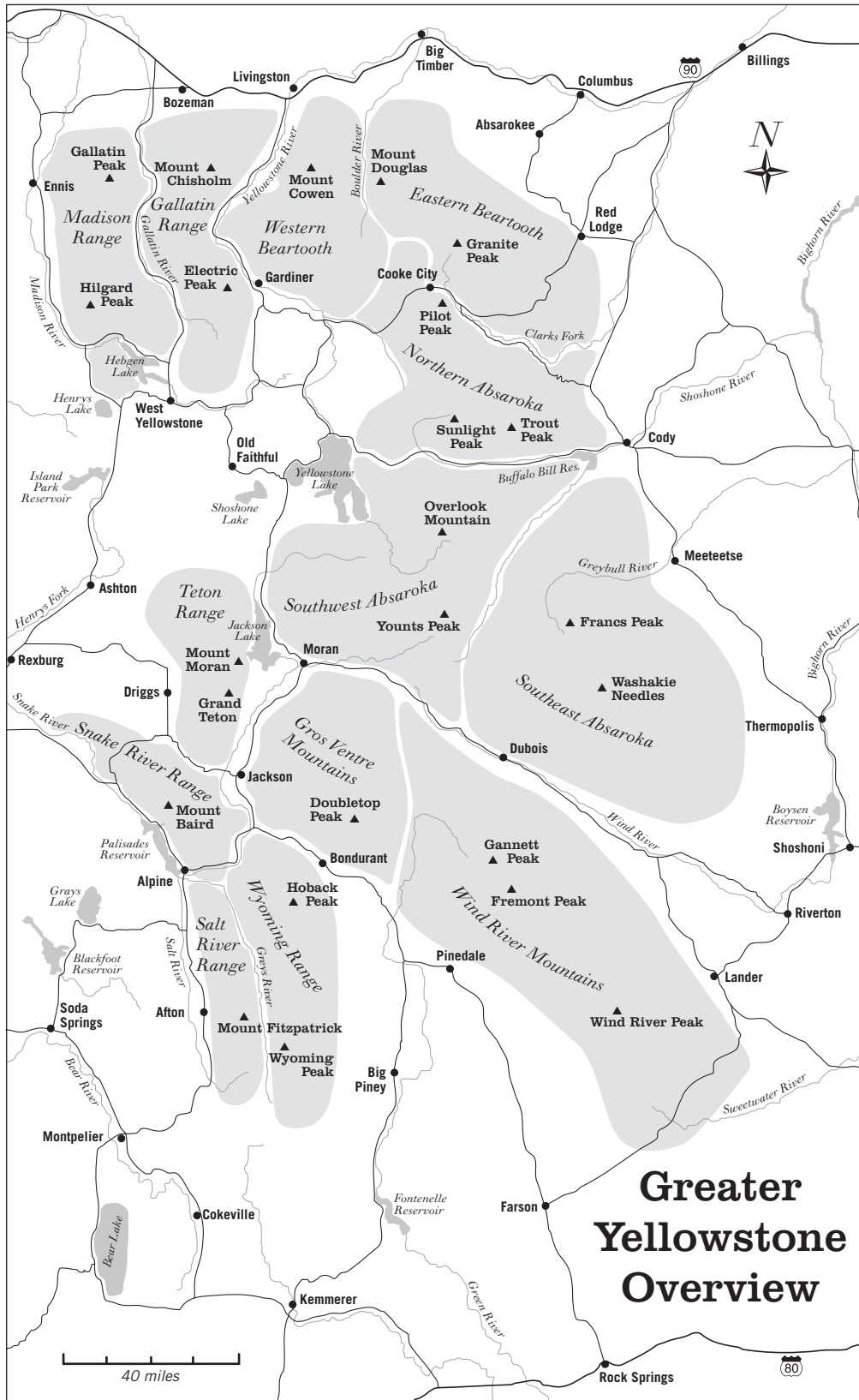
Selecting Peaks

For the mountaineer, Greater Yellowstone’s mountains are both the foundation and the culmination of the region’s wonder. If Greater Yellowstone was a musical composition, the mountains would be the crescendo. If Greater Yellowstone was a painting, the mountains would be the focal point. If it was a birthday cake covered with icing and sprinkles, the mountains would be the cake itself. The pursuit of Greater Yellowstone’s summits allows humans to experience and bond with wildlife, geysers, forests, waterfalls, rivers, lakes, and the elements in one swoop. Empowering and invigorating, summits are focal points of beauty and energy in Greater Yellowstone.

“I have a low opinion of books; they are but piles of stones set up to show travelers where other minds have been, or at best signal smokes to call attention.... One day’s exposure to mountains is better than a cart load of books.” —John Muir

In addition to introductory sections on general geology and mountaineering history, this book is divided into thirteen chapters covering a selection of mountain ranges within Greater Yellowstone. In order of appearance in this book, these ranges include: Madison, Gallatin, Western Beartooth, Eastern Beartooth, Northern Absaroka, Southwest Absaroka, Southeast Absaroka, Wind River, Gros Ventre, Wyoming, Salt River, Snake River, and Teton. These ranges were selected, divided, named, and arranged in this particular way for the purpose of clarity and simplicity in this book. Under different circumstances, they might be designated differently. The divisions were based on factors such as topographical boundaries, geological similarity, relative size, and existing names. Of approximately thirty named mountain ranges that may be considered part of the Greater Yellowstone Ecosystem, only the conterminous ranges within the region’s core were selected to keep the book at a manageable size and to maintain a high standard of accuracy and thoroughness throughout. The ranges omitted include Big Hole Mountains, Bridger Mountains, Caribou Mountains, Centennial Mountains, Crazy Mountains, Gravelly Range, Owl Creek Mountains, Ruby Range,

SELECT PEAKS OF GREATER YELLOWSTONE



directly across mountain ranges in places such as Snake River Canyon, Wind River Canyon, Beartrap Canyon, and Shoshone River at Rattlesnake and Cedar mountains.

In addition to the re-emergence of ancient buried mountain ranges, new ranges formed throughout the Rocky Mountains as a result of the Idaho hotspot. As the Earth's crust bowed upward and stretched during the last 17 million years, approximately 200 miles of land was added between the Sierra Nevada Mountains in the west and the Teton and Wasatch ranges in the east. Giant blocks of crust vertically offset while pulling apart along numerous north-south-trending normal faults. Valleys dropped and mountain ranges—such as the Madison, Gallatin, Western Beartooth, Teton, Snake River, Salt River, and Wyoming—were raised and defined as the alternating basins and ranges we see today.

“A human life is but an instant in geologic time, so people have trouble reacting to the threat of infrequent geologic catastrophes. Yet as sure as time proceeds, the same geologic forces that shaped and sculpted this beautiful landscape will do so again—with awful consequences for living creatures. “

—Robert Smith, *Windows Into the Earth*

Yellowstone Calderas

Perhaps the most astonishing Miocene and Pliocene process was the simultaneous migration and stretching of the interior West over the hot spot. In the past 16.5 million years, the hot spot has erupted approximately 100 times at between seven and thirteen volcanic centers across the Snake River plain of Idaho. The Earth's crust moved and stretched over the hot spot while periodic colossal eruptions obliterated Idaho's central mountain ranges in succession from west to east. As the Earth's crust at today's Yellowstone migrated over the hot spot, the surface bulged upward as much as 2,000 feet in preparation for the hot spot's three most recent eruptions. The first eruption occurred about 1.8 million years ago destroying the southern end of the Gallatin Range and the northern end of the Tetons. This eruption was 2,500 times the size of the 1980 Mount St. Helens eruption in Washington, depositing a layer of ash 500 to 2,500 feet thick known as the Huckleberry Ridge tuff. The second Greater Yellowstone caldera erupted 1.3 million years ago in the Island Park area depositing a 500-foot thick layer of ash known as the Mesa Falls tuff. The most recent eruption, 630,000 years ago, formed the giant caldera in today's Yellowstone National Park. This eruption was 1,000 times the size of the Mount St. Helens eruption and it deposited the Lava Creek tuff, which is 1,600 feet thick in places. Since the most recent caldera eruption, there have been about thirty explosive eruptions of rhyolite lava and ash that have filled the caldera and dramatically altered the landscape. The most recent of these eruptions occurred about 70,000 years ago to form the Pitchstone Plateau. Today, the hotspot fuels the wonderful geothermal features in and around Yellowstone National Park while the North American plate continues its southwest migration over the hot spot at a rate of one inch per year. Perhaps the Beartooths or Northern Absaroka may someday be blown into oblivion.

