

Introduction



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Wetlands exist in bewildering variety, from thermal algae mats to cattail lake margins to spray wash from towering waterfalls, and they produce a magnificent showcase of natural resources. They are the most productive habitats on Earth. (Productivity is measured by the total weight of plant and animal material produced per unit area.) Wetlands cover only 6.4 percent of the Earth's surface, yet they account for 24 percent of total global productivity (Kesselheim et al 1995). Neither forests, grasslands, nor irrigated agricultural lands produce more plant and animal material than wetlands.



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Bison at thermal pool on Geyser Hill. Top right: Dewdrop Lake.

Wetlands serve as crucial habitats for a tremendous diversity of plants and animals. While only 5 percent of the land area of the United States is wetland (Dahl 1990), 31 percent of all known U.S. plants are wetland plants (P. B. Reed, USFWS, pers. com.). Countless birds, fish, and wildlife species use wetlands for food, shelter, spawning, breeding, nesting, migration, and wintering areas. One third of threatened and endangered plant and animal species in the United States are wetland-dependent. Wetlands also help to control flooding, prevent coastal erosion, and protect water quality by serving as important natural filters of contaminants, pollutants, and other toxic materials.

At the time of European settlement, about 10 percent of what would later become the coterminous United States was wetlands (Dahl 1990). By the mid-1980s, more than half of the nation's wetlands had been drained, mostly for agriculture. As public understanding of the importance of wetlands in maintaining water quality and wildlife habitat increases, so does legal protection. In the meantime, however, the loss of wetlands continues, especially on private lands.

National parks, on the other hand, stand as a commitment and testimony of the American people to preserve portions of our natural resources. Yellowstone encompasses 2,219,791 acres, considerably larger than the states of Rhode Island and Delaware combined, and its wetlands total 228,766 acres—a dynamic and productive 10.3 percent of the park.

Yellowstone is a place of extremes. The park's geologic history ranges from catastrophic volcanic eruptions 1,000 times greater than that of Mt. St. Helens to periods of glaciation that supported ice

fields more than 3,000 feet thick. Elevations in the park range from 5,282 feet in the northwest, where the Gardner River drains, to 11,358 feet in the southeast, at the summit of Eagle Peak. Precipitation ranges from as low as 10 inches per year in the north near Gardiner, Montana, to nearly 80 inches per year in the park's southwest corner. Temperatures ranging from -66°F to 103°F have been recorded. These volatile geologic and climatic factors produce a dynamic setting for Yellowstone's wetlands.

Wetlands form through the combined characteristics of an area's soil, topography, hydrology, and climate. The primary influences on the nature, distribution, and extent of Yellowstone's wetlands are the location and water-holding capacity of their associated soils. Wetlands emerge as lakes, rivers, ponds, marshes, bogs, streams, seeps, wet meadows, thermal pools, and geysers found on high mountain slopes, in valleys, and along lower-elevation rivers. Lakes, rivers, and geysers are not always considered wetlands; however, they must be considered in an ecological approach to the park's management. Therefore, in this booklet the term "wetlands" is used generically to include both wetlands and deepwater habitats.

Yellowstone's wetlands range in size, depth, and availability of water. Some are temporarily flooded lands with seasonal water sources that provide an influx of water from snowmelt or rain in the spring only to shrink or dry up later in the season. These wetlands can be several inches deep and less than 0.1 acre in size. Other wetlands are permanently flooded with perennial water sources, such as Yellowstone Lake, which is at least 400 feet



Lower Falls of the Yellowstone River.

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deep and over 100 square miles in surface area. Shallow wetlands produce invertebrate life that feeds the smallest minnows, whereas Yellowstone Lake supports the largest remaining native inland cutthroat trout population in the world. The wetlands that exist between these two extremes include an aquatic diversity perhaps unrivaled anywhere in the world.



Shoshone Lake from the geyser basin.

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Fen north of Biscuit Basin.

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