# Chapter 3 Natural Resources of Central Alaska Network Parks: What's Important?

In this chapter, we present an overview of natural resources in each Central Alaska Network park. We briefly introduce the setting of each park, then describe the natural resource themes of each. These "themes" highlight what we consider to be the most important natural resource features of each park—often the features the park was created to preserve. Whenever possible, we highlight the importance of each park's resources in a regional, national and international context. After considering each park individually, we present a brief synthesis of the important similarities and differences among the parks.

In summary, these parks contain resources of national and international significance. These resources include:

- mountains and opportunities to observe major geologic processes associated with mountains, including glaciation and volcanism;
- a diverse flora revealing influences from the Pleistocene;
- important resident and migratory wildlife populations;
- rivers, including major rivers with significant salmon runs;
- recognition as international biosphere reserves.

## *Yukon-Charley Rivers National Preserve*

Yukon-Charley encompasses 1 million hectares (2.5 million acres) of subarctic vegetation and complex landforms. Yukon-Charley is in eastern interior Alaska, and borders Yukon Territory, Canada (Fig. 2). The small bush communities of Eagle, Eagle Village, Circle City, Central, and Circle Hot Springs are the closest communities to the preserve.

The large and historically important Yukon River and nearly undisturbed Charley River offer an intriguing contrast in river ecosystems, and provide human access to this roadless area. The Yukon and its tributaries provide important habitat for both anadromous and resident fish. Annual runs of three Pacific salmon species help define a cycle of life important to cultural traditions thousands of years old. The Yukon River corridor within Yukon-Charley is characterized by south-facing bluffs vegetated by unique plant communities believed to represent steppelands more widespread during the Pleistocene. Historic and present human activity has had little impact on populations of rare endemic plants. In contrast to the turbid and massive Yukon River, the Charley River, which flows into the Yukon, is a clearwater river whose entire watershed is contained within the preserve.

Geologic and paleontologic resources in Yukon-Charley are significant. The exposed sedimentary record is nearly complete back to Precambrian formations. North of the

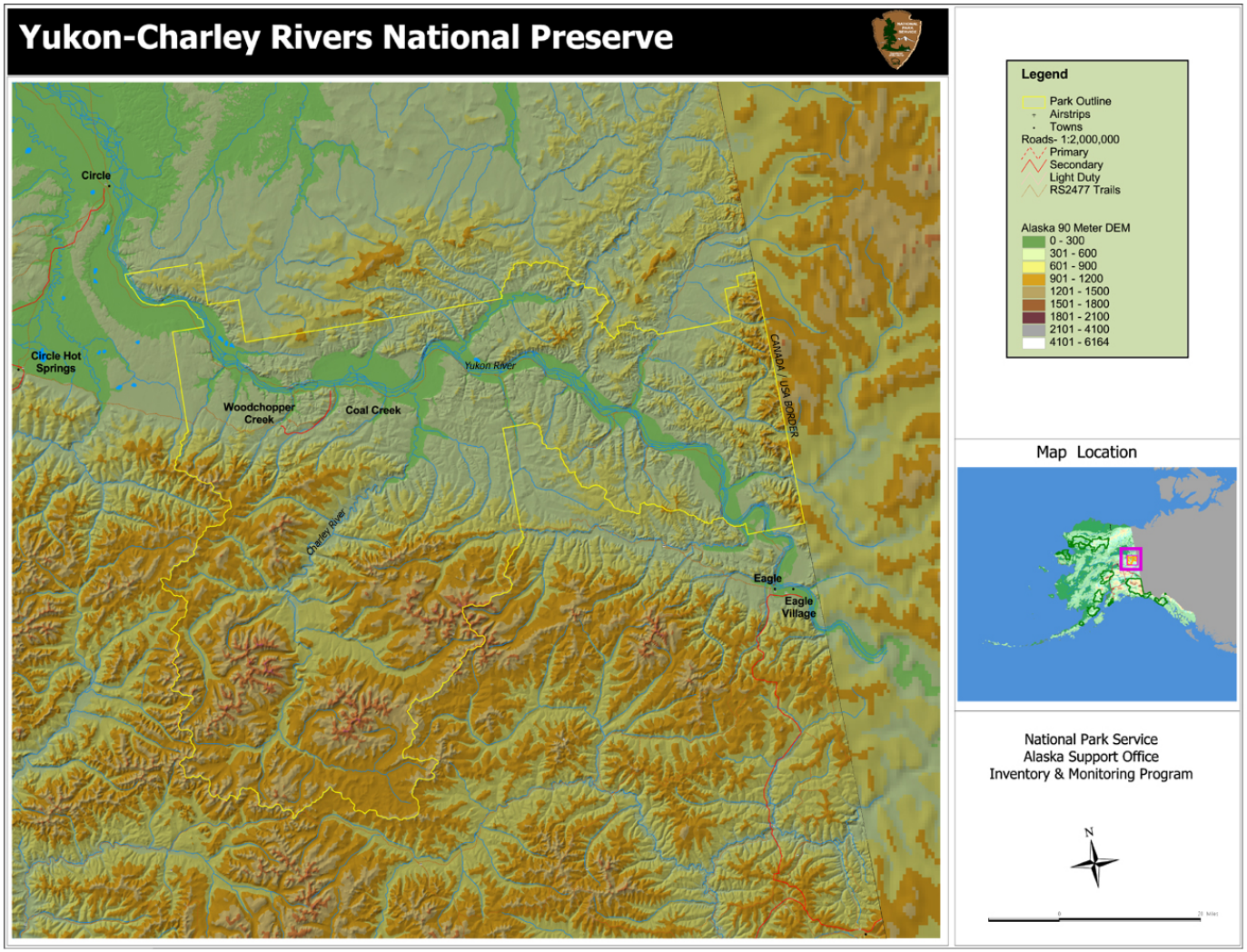


**Figure 2. Yukon-Charley National Preserve, AK.**

Yukon River lies the most ancient terrane in Alaska, perhaps the original continental margin. Highly fossilized formations reveal important evidence of very early marine and estuarine life forms and the environment in which they lived .

The combination of complex geologic structure, severe semi-arid continental climate, frequent occurrence of fire and discontinuous permafrost soils have interacted over time to create a complex mosaic of taiga and tundra biotic communities. A diversity of subarctic flora and fauna reflect this combination of physical processes, largely unaffected by Pleistocene glaciation. Hundreds of species of vascular and non-vascular plants create a mosaic of wildlife habitats, and provide for a variety of human uses. Some plant associations may represent relict "arctic steppe" communities isolated by the passage of time and climate change (Young 1976). Four narrowly endemic plant species are listed as species of concern for federal threatened or endangered status (Murray and Lipkin 1987).

A rich ecological assemblage of native subarctic mammals thrives in the Yukon-Charley's diverse habitats. Dall sheep, moose and two distinct caribou herds are found throughout the area. Fourteen species of furbearers inhabit the preserve, of which marten and lynx are the most economically valuable. Grizzly and black bears also occur throughout the preserve. Small mammals, including mice, voles and shrews, are important in the food web. The hardy wood frog is the lone native amphibian. A climate characterized by seasonal extremes precludes the occurrence of reptiles.

At least 160 species of birds, most of them migrants, occur within Yukon-Charley. This geographic location allows for unusual observations of errant bird species from more southern and eastern temperate regions. The once endangered American peregrine falcon attains one of the densest breeding populations in North America, with an estimated at 100-125 pairs breeding on Yukon River and Charley River cliffs within the preserve. This spectacular bird is one of seventeen species of raptors found in the area.

Many fish, wildlife and plant species are important for contemporary subsistence uses by local Athabaskan and non-native peoples in the seasonal economy of the region. The Preserve is an area of compelling archeological potential. Evidence suggests that this region was geographically and environmentally suitable for very early human habitation. It may have seen intensive use, perhaps continuously since initial occupation, up to the present period of Athabaskan habitation.

The two most significant geographic attributes for prehistoric peoples were the presence of the Yukon River and the absence of an extensive Wisconsin glaciation. The Yukon was a migration route, leading populations from Beringia into interior Alaska and the northern temperate zone. Lack of glaciation provided favorable living conditions for early occupants, and perhaps concentrated wildlife into accessible areas. This region's archeological resources could well illuminate the controversial timing and nature of the peopling of the New World (Griffen and Chesmore 1988).

Three aspects of the natural resources of Yukon-Charley stand out as especially important from a regional and national context. All are directly related to the presence of the Yukon River and its important tributaries within the preserve. These resources are: (1) arctic steppe plant communities associated with river bluffs; (2) breeding Peregrine Falcons, and (3) the rivers themselves.

### *Arctic Steppe Plant Communities*

The arctic steppe plant communities that occur within Yukon-Charley are unique assemblages of native species on south-facing river bluffs (Wesser and Armbruster 1991) along the Yukon (Edwards and Armbruster 1989) and Charley rivers, and other Yukon tributaries. These plant communities contain four species of concern: *Cryptantha shackletteana*, *Draba murrayi*, *Eriogonum flavum* var. *aquilinum*, and *Podistera yukonensis*. Only two isolated populations of *C. shackletteana* and *P. yukonensis* have been discovered.

In the past, botanists from the United States, former Soviet Union, and Canada have conducted research on Yukon, Charley, and Kandik river bluffs in an attempt to inventory species present in representative communities. According to Murray *et al.* (1983) the portion of the upper Yukon within the Preserve includes "…the most extensive system of steppe bluffs and also the largest array of endemic and disjunct taxa…" found in Alaska. Yukon River surveys (Roland 1990) included photo-documentation and plant sampling at 8 bluffs including Woodchopper bluff, Biederman bluff, Kathul Mountain, Nation bluff, and Montauk bluff. Surveys on the Kandik River revealed the presence of *Draba murrayi*, and two other steppe plants, *Erysimum asperum* var. *angustatum*, and *Phacelia mollis* (Roland 1991). Charley River surveys revealed communities very similar to those investigated on Yukon River bluffs, and several rare species were documented (Roland 1990).

Botanists have also sporadically visited representative sites in the Ogilvie Mountains north of the Yukon to examine communities present there. The northeast corner of the Preserve contains the only extension of the Canadian Ogilvie Mountains into Alaska. Geologically distinct, the Ogilvies provide unique habitat for plant assemblages. Investigation of these communities may provide documentation for range extensions for a number of rare plants currently known to occur only in Canada.

Past research suggests that arctic steppe species exist at the limits of their environmental tolerance and therefore may be sensitive to climate changes. Arctic steppe communities are considered modern "remnants" of past vegetation types that may have been widespread during the Pleistocene (Edwards and Armbruster 1989). These remnant communities may provide botanists with the most tangible examples of a landscape long since vanished. Current increased interest in monitoring the effects of global climate change could lead to utilization of these communities as "indicators" of changes in climatic variables. Because of their geological stratigraphy and exceptional ecological significance, four bluffs supporting arctic steppe communities have been proposed for inclusion in the National Natural Landmark System.