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Ecosystem Protection in the National Park System[1]

A Research Brief in the IRIS Series[2]

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[1] Athens Research Group, Southern Research Station, USDA Forest Service, Athens, GA (Ken Cordell, Project Leader).

[2] The Internet Research Information Series (IRIS) is an internet accessible science report series covering outdoor recreation statistics (RECSTATS), the National Kids survey (NKSSTATS), natural lands research (NATLAND) and other human-dimension and demographics research (DEMOSTATS) related to natural resources. This research is a collaborative effort between the USDA Forest Service's Southern Research Station and its Forestry Sciences Laboratory in Athens, Georgia; the University of Georgia in Athens; and the University of Tennessee in Knoxville, Tennessee.
http://warnell.forestry.uga.edu/nrrt/nsre/IrisReports.html

Ecosystem Protection in the National Park System

Protecting and sustaining the diversity of ecosystems around the world is critically important. In the United States, one approach to protecting ecosystems is through public ownership of natural lands. National Parks are perhaps the best known public lands of the U.S. This short article is adapted from a more extensive national report (Cordell et al 2012) and identifies which ecosystems are being protected within the boundaries of the National Park System.

Digital spatial data were used to estimate land area coverage of different ecosystems within the boundaries of units of the National Park System (NPS). The GIS derived maps that follow show the spatial distribution of NPS units relative to 25 ecosystem divisions (Bailey 1995) across the continental United States. Park boundary data were downloaded from the U.S. Geological Survey website and overlaid onto the Bailey's Ecosystem Division (BED) boundary files using ESRI ArcMap spatial computation software.

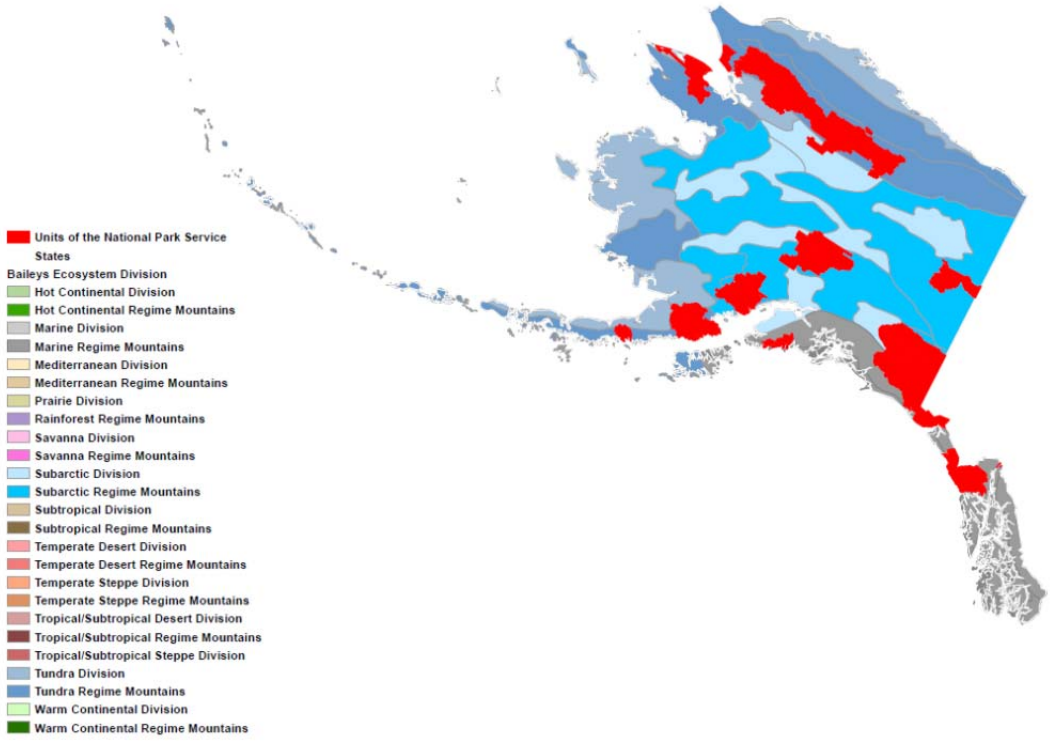

Figure 1. National Park System coverage of ecosystem types in Alaska (not shown in RPA report).

The Bailey's classification system is a hierarchy. The broadest class is the domain which groups areas with similar climates. Following in the hierarchy are divisions which represent areas having different precipitation and temperature patterns. Divisions are subdivided into provinces based on vegetation.

Much of the National Park System acreage is in Alaska (figure 1), and this acreage makes up a large share of the Park System's national total acreage. Excluding Alaska, the NPS is a little more balanced in terms of acreage across regions of the rest of the U.S. (figure 2). The North has by far the least acreage, but the greatest number of units of any region. This is largely due to the presence of numerous national historic sites, historical parks, and memorials. Not counting national preserves (which are almost entirely in Alaska), national recreation areas (3.4 million acres) and national monuments (2.3 million acres) are a distant second and third, respectively, to national park land area (50 million acres).

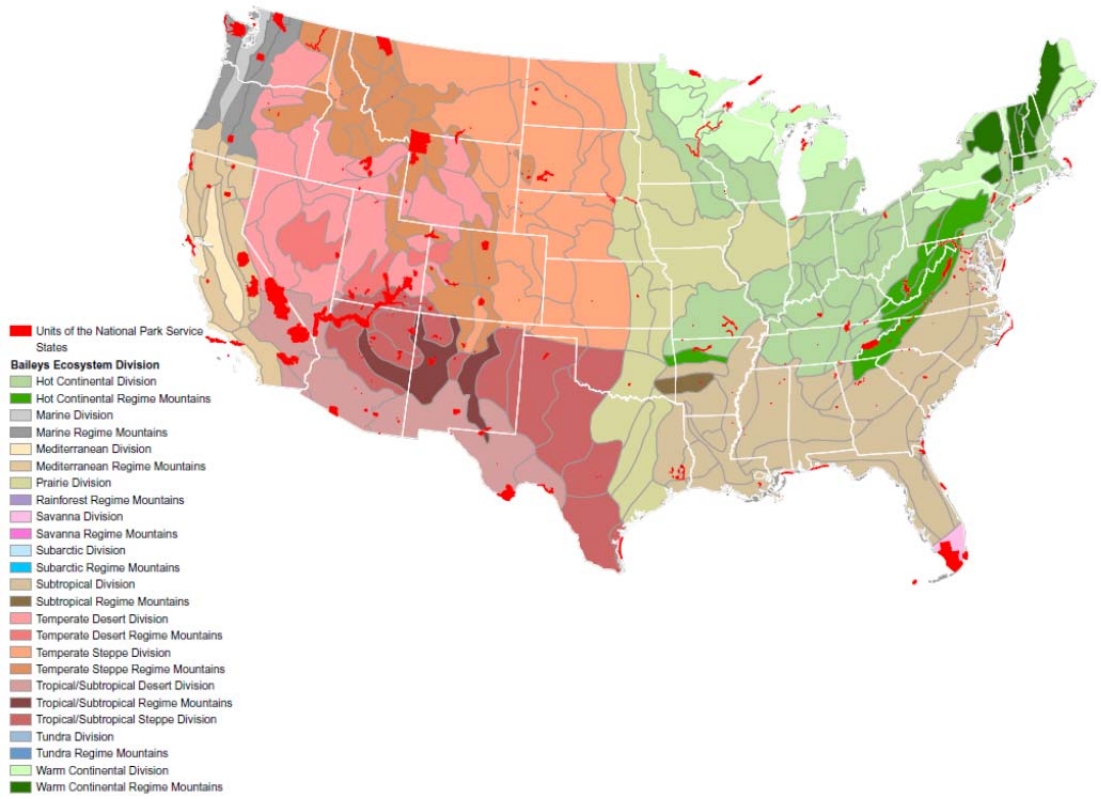

Figure 2. National Park System coverage of ecosystem types in the contiguous United States.

In terms of percentage of the National Park System, National Parks in Alaska are especially important in protecting the Tundra and Subarctic Mountain Divisions with 26 and 23 percent of System total acreage, respectively. Next greatest coverage of ecosystems by the National Park System is the Marine Regime Mountains of the Northwest, Tropical/Subtropical Desert of the Southwest, and Temperate Steppe Division Mountains of the Rocky Mountains. In terms of percentage of divisions protected by National Parks, The Savanna Division of southern Florida has the highest percentage protected at 34 percent. Next highest percentages are the mountain divisions of Alaska, followed by the Tropical/Subtropical Desert Division of the Southwest. While noting what is protected, it is important to also acknowledge which Bailey Divisions are not well represented in the National Park System. Almost all divisions are represented with at least some acreage in the NPS, however, some divisions, such as Prairie, Subtropical, Subtropical Regime Mountains, Warm Continental, and Warm Continental Regime Mountains each comprise less than one percent of the system.