Resource Brief
Alaska

National Park Service
U.S. Department of the Interior

Inventory and Monitoring Program
Alaska Region

Arctic Network *Central Alaska Network* *Southeast Alaska Network* *Southwest Alaska Network*

Natural Resource Inventories

Background

Twelve baseline inventories of biotic and abiotic ecosystem components are at the core of the National Park Service Inventory and Monitoring Program, which was expanded to its current form in several phases over the last 20 years. These baseline inventories have been identified as the minimum set of information needed to effectively manage and protect natural resources within parks. Nine of the inventories are managed through a combination of national, network, and park efforts. They include natural resource bibliographies, geology maps, weather data, air quality data, location of air quality monitoring stations, water body locations and classification, water quality data, species lists of vertebrates and vascular plants, and species distribution and status of vertebrates and vascular plants. Because of the vastness and inaccessibility of much of the state, a regional effort exists to manage the three remaining inventories, which are applicable across Alaska. The three inventories coordinated regionally are base cartography, vegetation, and soils. Along with the nine other core Natural Resource Inventories, the Alaska Regional Inventories are used by park managers, scientists, and planners to manage these and other park resources.

Because of the vastness and inaccessibility of much of the state, a regional effort exists to manage three inventories applicable across Alaska.

Photo: NPS

Vegetation, soil, and base cartography inventories can be used as part of monitoring and research efforts. Monitoring of sensitive vegetation communities, such as alpine communities where *Beckwithia glacialis* occurs, may use all three inventories to develop protocols and/or analyze data.

Photo: NPS

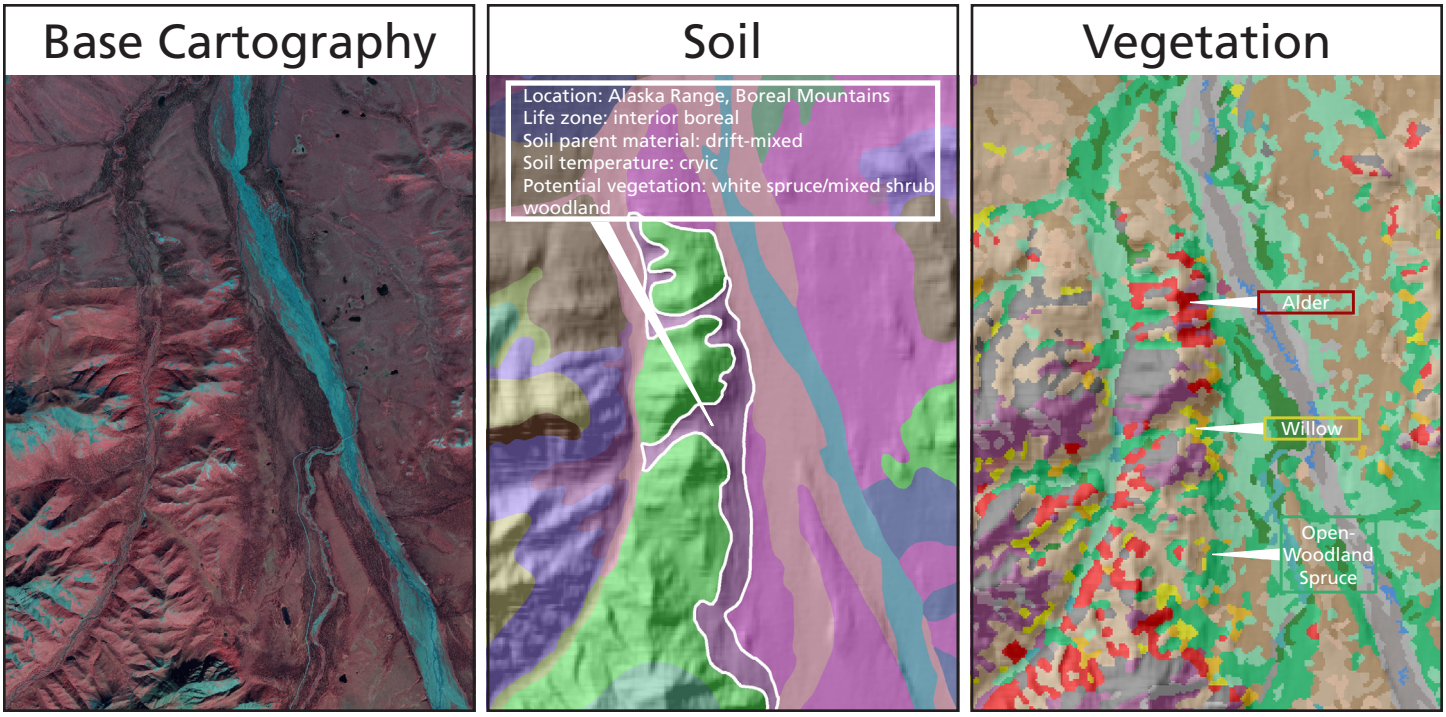
Although managed at the regional level, field work for each inventory is conducted within the parks. In the image above, a contracted researcher conducts a soil survey in Yukon-Charley Rivers National Preserve.

Regional Inventories

The ***Base Cartography Inventory*** provides digital satellite imagery, digital aerial photography, and digital elevation models (DEMs) for use within geographic information systems (GIS) and remote sensing applications. This inventory serves as the primary base map and background data that other inventories and GIS projects build upon.

The ***Soils Inventory*** assesses the condition and status of soil resources within a park. The primary objective of each Soils Inventory is to increase our understanding of national parks by describing and mapping the locations of soils. Information from this inventory is used in resource management activities, interpretation, and as inputs to understanding park ecosystem processes.

The ***Landcover (vegetation) Inventory*** is an effort to classify, describe, and map vegetation communities within the Alaska Region's park units. The primary objective of the Landcover Inventory is to produce high-quality, standardized maps and associated data sets of vegetation occurring within the region's 16 parks.



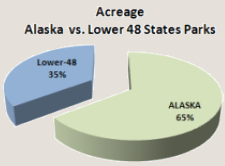
The three images above show some of the products of the base cartography, vegetation, and soil inventories. Base cartography is shown in near infrared. Soil and vegetation inventory maps are shown as transparent layers over base cartography. Examples of data imbedded within each inventory map is noted. (area shown: section of the Teklanika River near Cathedral Mountain in Denali National Park)

Design & Implementation

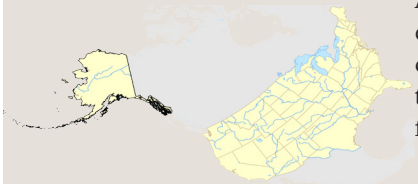
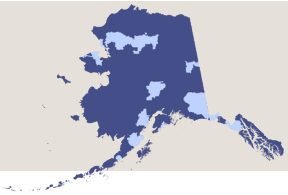
The goal of the Alaska Regional Inventories is to provide reliable and consistent scientific information to assess the status and trends in condition of park resources. In order to work within nationally set timelines and funding limits, we conduct the regional inventories at a more general resolution and level of detail than non-Alaskan Inventories. While more general, these first generation inventories are designed to be compatible with NPS standards and form a basis for more detailed mapping in the future.

The base cartography, soil, and vegetation inventories are currently in progress for Alaska. The baseline cartography inventory is being completed using a combination of satellite imagery, aerial photography, and Digital Elevation Models (DEMs). Imagery is being obtained from commercial vendors and interagency agreements with U.S. Geological Survey. Imagery has been collected for all parks. Approximately 33% of this data has been ortho-rectified (corrected for topographic distortion). The soil inventory uses two methods, both of which operate in cooperation with local experts. The first method uses the established soil survey methodology developed by NRCS and is implemented by Inventory and Monitoring programs throughout NPS. The second method, a Soil Landscapes Survey, characterizes soil with a combination of satellite imagery, statistical models, and field data. Both methods involve extensive field observations. To date, 72% of parks have been inventoried for soils. The landcover, or vegetation, inventory relies on local vegetation ecologists at the University of Alaska Anchorage. This inventory has a set four products for each area that includes maps and GIS data, technical reports, image mosaics and a Field Data Viewer. To date, 98% of the vegetative inventory is complete.

Challenges of Field Work in Alaska



The vegetation, soil, and base cartography inventories are managed at the regional level as an efficient solution to addressing the challenges of conducting field work in Alaska. The state contains some of the most vast and pristine natural areas within the country, many of which are roadless. With a cumulative acreage of approximately 54 million acres, Alaska's parks account for roughly 65% of all parklands in the National Park Service system. Limited roads and means of access require the use of boats and aircraft to access study sites in many locations. Additionally, Alaska has a short field season and harsh weather, which further compound challenges of collecting field data, and financial and human resources are often quite limited. As a result, the Inventory and Monitoring program, and all field researchers operating within Alaska, make every effort to balance Alaska's challenges with obtaining the highest quality data feasible.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