
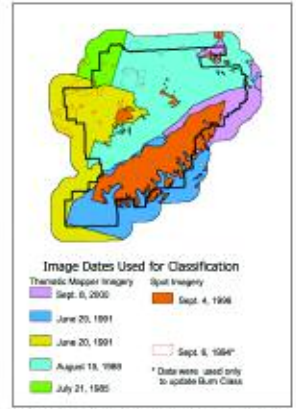


Denali National Park and Preserve Landcover Map

For more information contact:
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- Dense-Open Spruce
- Open-Woodland Spruce
- Stunted Spruce
- Broadleaf
- Mixed Spruce-Broadleaf
- Alder
- Willow
- Closed Low Shrub Birch
- Low Shrub Birch-Ericaceous-Willow
- Low Shrub-Sedge
- Peatland
- Herbaceous Shrub
- Dwarf Shrub
- Dwarf Shrub-Rock
- Dry-Mesic Herbaceous
- Wet Herbaceous
- Aquatic Herbaceous
- Sparse Vegetation
- Bare Ground
- Snow-Ice
- Shadow-Indeterminate
- Silty Water
- Clear Water
- Burn



The Denali Landcover Mapping Project was conducted as part of the Inventory and Monitoring Program of the National Park Service (NPS). Landcover mapping is intended to provide basic vegetation information that is useful for making resource management decisions on a Park-wide basis. This project was undertaken by the NPS Alaska Support Office in cooperation with Earth Systems Corporation and the Alaska National Heritage Program. Full documentation for this project can be found in the Denali Landcover Mapping Users' Guide available from NPS, April 2001.



Ecological Goldmine: The Denali Landcover Map and Denali Soil Inventory with Ecological Site Classification

By Guy Adema, Jess Grunblatt,
Mark Clark

The Inventory and Monitoring Program has recently produced two new tools for natural resource monitoring and management of Denali National Park and Preserve: a comprehensive soil inventory and ecological classification, and a landcover map based on satellite imagery. The products provide researchers, educators, and managers data that will allow for more informed research design, detection of natural resource change at a park-wide scale, more accurate and comprehensive education material, and baseline information for park management.

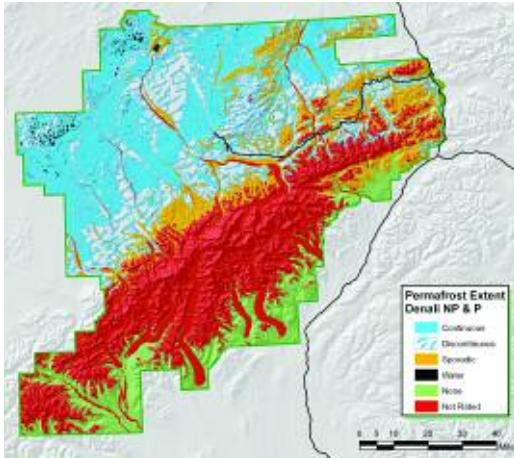
The landcover mapping program was completed by the NPS Alaska Support Office in collaboration with the Alaska Natural Heritage Program (University of Alaska Anchorage) and Earth Satellite Corporation (Rockville, MD). The development of the landcover map involved collection and analysis of field-verified datasets, and the analysis and interpretation of remotely sensed imagery (satellite and aerial photography). Landcover was mapped at intermediate scales (1:63,360 to 1:100,000) with 25 classes, following

a modified version of the Alaska Vegetation Classification system. The classification system was based primarily on vegetation structure (plant height) and form (tree, shrub or herbaceous), and to a lesser extent genera and species information. Landsat Thematic Mapper multi-spectral imagery was the primary data source, and SPOT XS data was the secondary source. Digital image processing was refined through iterative modeling using environmental and spectral data layers such as slope, elevation, the Normalized Difference Vegetation Index (NDVI), and available field data.

The landcover map allows users to understand the distribution of vegetation across the landscape and determine relative distribution of plant associations across the park. The most dominant of the 25 landcover classes are: snow-ice (16%), stunted spruce (14%), bare ground (10%), low shrub birch-ericaceous-willow (10%), open-woodland spruce (9%), shadow (7%), and dwarf shrub (6%). Plant associations were described using the ground data and a literature review. Plant associations provide a hierarchical link between the coarse scale landcover classes and finer scale

species information.

While the landcover map provides an overall view of the plant cover types and their distribution, the recently completed soil inventory provides detailed mapping and site information, including comprehensive ecological site classifications for over 2,200 sites in Denali. The survey was a cooperative effort of the Natural Resources Conservation Service, the National Park Service, and the University of Alaska Fairbanks. The final product, a result of fieldwork completed from 1997 to 2002, includes a 1:63,360 scale soils map with an attribute database and metadata, a database containing detailed soil and ecological data, digital site photographs, landtype and map unit distribution maps, figures, illustrations, soil temperature graphs, and a complete orthophoto mosaic of Denali. The data provide a comprehensive delineation of park ecosystems, including new discoveries of range extensions and previously undocumented natural processes in the park. The spatial database allows user-defined interpretations, including permafrost extent, extent of potential natural vegetation, landscape processes, and countless other queries.



The Denali Soils Inventory allows users to generate interpretive maps that display data at any desirable scale. This example illustrates the permafrost distribution across Denali.



National Park Service photograph

NRCS Soil Scientist Mark Clark, the primary field scientist for the soil inventory, shown here making observations in the Toklat Basin.

(Left) The Denali Landcover Map delineates 23 cover classes that allow visitors and researchers to quickly comprehend the scale and distribution of the primary vegetation classes.