



Vegetation of Grand Portage National Monument



**National Vegetation Classification Standard
 Natural/Semi-natural Groups**

- Northern Hardwood - Hemlock - White Pine Forest**
 White-cedar - Boreal Conifer Mesic Forest (conifer phase)
 White-cedar - Boreal Conifer Mesic Forest (conifer - hardwood phase)
- White Pine - Red Pine - Oak Forest & Woodland**
 White Pine / Mountain Maple Mesic Forest (conifer mesic phase)
 White Pine / Mountain Maple Mesic Forest (conifer - hardwood mesic phase)
 White Pine / Mountain Maple Mesic Forest (dry-mesic phase)
- Northern & Central Hardwood & Conifer Ruderal Forest**
 Conifer - Hardwood Ruderal Forest
- Northern & Central Conifer & Hardwood Plantation**
 Conifer Plantation
- Northern & Central Alkaline Conifer & Hardwood Swamp**
 Black Ash - Mixed Hardwood Swamp (black ash phase)
 Black Ash - Mixed Hardwood Swamp (green ash - elm phase)
 Aspen - Balsam Poplar Lowland Forest
- Northern & Central Shrub Swamp**
 Gray Alder Swamp Shrubland (classic alder phase)
 Gray Alder Swamp Shrubland (hawthorn mix phase)
 Gray Alder Swamp Shrubland (willow mix phase)
- Jack Pine - Black Spruce Forest**
 Jack Pine - Aspen / Bush-honeysuckle Forest
 Jack Pine / Balsam Fir Forest
- Jack Pine - Northern Pin Oak Rocky Woodland**
 Boreal Pine Rocky Woodland
- White Spruce - Balsam Fir Forest**
 Spruce - Fir / Mountain Maple Forest
 Spruce - Fir - Aspen Forest
 Aspen - Birch / Boreal Conifer Forest
- Eastern Ruderal Shrubland & Grassland**
 Deciduous Ruderal Shrubland
 Ruderal Grassland
- Eastern North American Boreal Shrubland & Grassland**
 Boreal Hazelnut - Serviceberry Rocky Shrubland
- Eastern North American Freshwater Marsh**
 Water Horsetail - Spikerush Marsh
- Eastern North American Wet Meadow**
 Wet Meadow Mixed Herbaceous
 Bluejoint Wet Meadow
 Northern Sedge Wet Meadow
- Eastern North American Freshwater Aquatic Vegetation**
 Northern Water-lily Aquatic Wetland
 Midwest Pondweed Submerged Aquatic Wetland
- Great Lakes Cliff & Shore**
 Great Lakes Basalt - Diabase Cobble - Gravel Shore
 Northern Non-Carbonate Dry Talus Vegetation
 Northern Non-Carbonate Moist Talus Vegetation

**National Vegetation Classification Standard
 Cultural Class**

- Developed Vegetation**
 Developed Area
- Open Water**
 Stream & River
 Open Water Pond
 Open Water Lake

Boundary Layers

- The Grand Portage**
- Park Boundary**
- Project Boundary**

This map illustrates vegetation and land cover features of Grand Portage National Monument (GRPO). The spatial database layer used to compose this map was produced for the National Park Service (NPS) Vegetation Inventory Program (VIP) by the U.S. Geological Survey (USGS) Upper Midwest Environmental Sciences Center (UMESC). The vegetation classification represented in the spatial map layer was derived by NatureServe through vegetation data analyses and is based on the National Vegetation Classification Standard (NVCS) (Federal Geographic Data Committee; FGDC 2008).

The vegetation classification was developed from 23 vegetation plots and 147 accuracy assessment sites. These data sets led to the identification of 20 associations in the NVCS at GRPO, plus a few other vegetation types in the NVCS recognized at the group level.

The spatial database layer was derived from stereo interpretation of color-infrared aerial photographs (1:12,000-scale) that were collected in October 2006. Prior to mapping, photointerpreters and ecologists performed fieldwork to learn photographic appearances of vegetation types and to link map classes to vegetation types in the NVCS. The interpreted data were orthorectified with

OrthoMapper Photogrammetric software, and then digitized into a spatial database layer. A standard minimum mapping (MMU) unit of 0.25 ha was applied, although allowances were made to map below the MMU for types unique to its immediate surroundings. The spatial database layer is projected in Universal Transverse Mercator, Zone 16, using the North American Datum of 1983.

This map layout shows aggregates of 35 map classes into 15 natural/semi-natural groups in the NVCS, one cultural class in the NVCS, and one non-vegetation class in the 2001 National Land Cover Database. Finer unit delineations are shown, revealing the diversity of map classes and modifiers mapped within these aggregates. The spatial database (located within the geodatabase for the mapping project) offers these finer details, along with additional information, including a crosswalk to various levels in the NVCS.

The spatial database reflects conditions during the time of aerial photography. A margin of error is inherent with interpreting aerial photographs. Based on results of a thematic accuracy assessment, the estimated overall accuracy of map classes representing floristic types in the NVCS is 91.8% (kappa index of 90.7%). Those using the spatial database should determine for themselves the fitness of the data prior to use.

