U.S. Department of the Interior
National Park Service
U.S. Geological Survey
Assisted by NatureServe

Vegetation of Pictured Rocks National Lakeshore

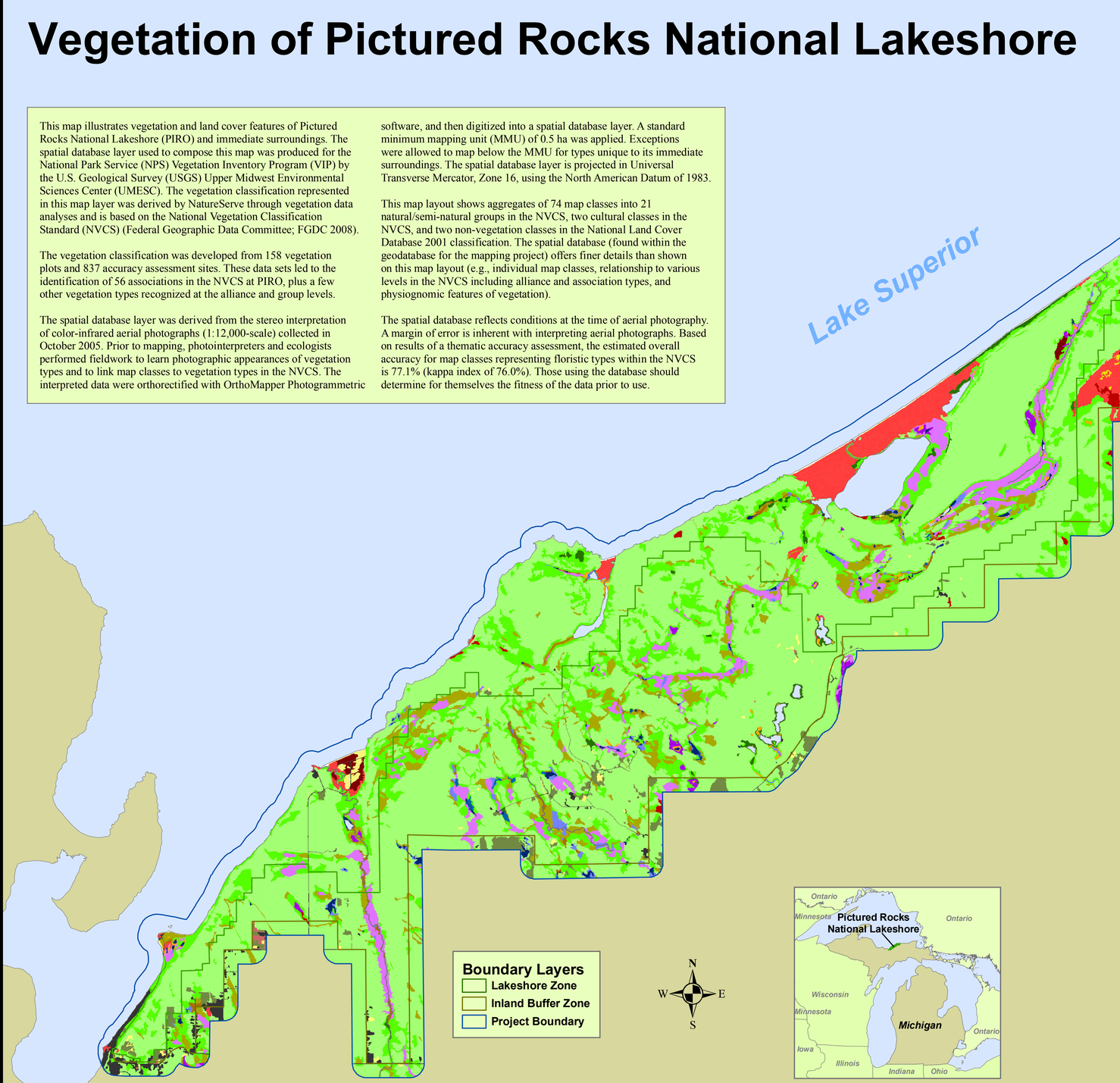
This map illustrates vegetation and land cover features of Pictured Rocks National Lakeshore (PIRO) and immediate surroundings. The spatial database layer used to compose this map was produced for the National Park Service (NPS) Vegetation Inventory Program (VIP) by the U.S. Geological Survey (USGS) Upper Midwest Environmental Sciences Center (UMESC). The vegetation classification represented in this 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 158 vegetation plots and 837 accuracy assessment sites. These data sets led to the identification of 56 associations in the NVCS at PIRO, plus a few other vegetation types recognized at the alliance and group levels.

The spatial database layer was derived from the stereo interpretation of color-infrared aerial photographs (1:12,000-scale) collected in October 2005. 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 unit (MMU) of 0.5 ha was applied. Exceptions were allowed 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 74 map classes into 21 natural/semi-natural groups in the NVCS, two cultural classes in the NVCS, and two non-vegetation classes in the National Land Cover Database 2001 classification. The spatial database (found within the geodatabase for the mapping project) offers finer details than shown on this map layout (e.g., individual map classes, relationship to various levels in the NVCS including alliance and association types, and physiognomic features of vegetation).

The spatial database reflects conditions at 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 for map classes representing floristic types within the NVCS is 77.1% (kappa index of 76.0%). Those using the database should determine for themselves the fitness of the data prior to use.



National Vegetation Classification Standard
Natural/Semi-natural Groups

Northern Hardwood - Hemlock - White Pine Forest*
(Conifer Forests)
Great Lakes White Pine - Hemlock Forest
White-cedar - Boreal Conifer Mesic Forest (conifer phase)
Hemlock Mesic Forest

Northern Hardwood - Hemlock - White Pine Forest*
(Deciduous Forests)
Maple - Yellow Birch Northern Hardwoods Forest (classic phase)
Maple - Yellow Birch Northern Hardwoods Forest (yew phase)
Maple - Yellow Birch Northern Hardwoods Forest (balsam fir shrub phase)
Maple - Yellow Birch Northern Hardwoods Forest (sugar maple phase)

Northern Hardwood - Hemlock - White Pine Forest*
(Conifer - Deciduous Forests)
White-cedar - Boreal Conifer Mesic Forest (conifer - deciduous phase)
North-Central Hemlock - Hardwood Forest
Great Lakes Hemlock - Beech - Hardwood Forest

White Pine - Red Pine - Oak Forest & Woodland
Red Pine - Aspen - Birch Forest
Red Pine / Blueberry Dry Forest
White Pine - Red Oak Forest
White Pine - Mixed Deciduous / Bracken Barren Forest and Scrub (forest phase)
White Pine - Mixed Deciduous / Bracken Barren Forest and Scrub (scrub phase)
White Pine - Aspen - Birch Forest
White Pine / Blueberry Dry-Mesic Forest

Great Lakes Pine Barrens
Great Lakes Dune Pine Forest

Northern & Central Hardwood & Conifer Ruderal Forest
Conifer Ruderal Forest
Hardwood 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 (lowland phase)
White Pine - Red Maple Swamp (swamp phase)
White Pine - Red Maple Swamp (swamp - dune mosaic phase)
White-cedar - Black Ash Swamp
Hemlock - Yellow Birch Swamp Wet-Mesic Forest

Northern & Central Shrub Swamp
Gray Alder Swamp Shrubland

Jack Pine - Black Spruce Forest
Black Spruce / Feathermoss Forest
Jack Pine - Aspen / Bush-honeysuckle Forest
Jack Pine / Balsam Fir Forest
Jack Pine / Blueberry / Feathermoss Forest

White Spruce - Balsam Fir Forest
Balsam Fir - Paper Birch Forest
Paper Birch / Fir Forest
Spruce - Fir - Aspen Forest
Spruce - Fir / Mountain Maple Forest

Black Spruce - Tamarack Acidic Swamp
Black Spruce - Tamarack / Labrador-tea Poor Swamp (black spruce phase)
Black Spruce - Tamarack / Labrador-tea Poor Swamp (tamarack phase)

Tamarack - Conifer Alkaline Swamp
White-cedar - (Mixed Conifer) / Alder Swamp

Eastern Shrub-Herb Sand Barrens
Bracken Grassland

Eastern Ruderal Shrubland & Grassland
Ruderal Shrubland
Ruderal Grassland

Great Lakes Coast Grassland & Shrubland
Great Lakes Beachgrass Dune
Great Lakes Beach-heather Dune Dwarf-shrubland
Great Lakes Juniper Dune Shrubland
Great Lakes Coast Pine Barrens (barrens phase)
Great Lakes Coast Pine Barrens (woodland phase)
Cottonwood Dune Open Woodland
Sand Cherry Dune Shrubland

Boreal Alkaline Peatland
Bog Birch - (Willow species) Saturated Shrubland
Wiregrass Sedge Shore Fen
Sweet Gale Shrub Fen

North American Boreal Acidic Peatland
Northern Sedge Poor Fen
Leatherleaf - Sweetgale Shore Fen
Leatherleaf Poor Fen

Eastern North American Freshwater Marsh
Water Horsetail - Spikerush Marsh
Midwest Mixed Emergent Deep Marsh

Eastern North American Wet Meadow
Wet Meadow Mixed Herbaceous
Bluejoint Wet Meadow
Northern Sedge Wet Meadow
Dogwood - Willow Swamp

Eastern North American Freshwater Aquatic Vegetation
Northern Water-lily Aquatic Wetland
Midwest Pondweed Submerged Aquatic Wetland

Eastern North American Lake Flat & Beach Group
Inland Freshwater Strand Beach
Lake Mudflats

Great Lakes Cliff & Shore
Great Lakes Sandstone Bedrock Shore
Great Lakes Shore Sandstone Cliff

National Vegetation Classification Standard
Cultural Classes

Agricultural Vegetation
Deciduous Orchard

Developed Vegetation
Developed Area

Non-vegetation

Open Water
Stream & River
Open Water Pond
Open Water Lake

Barren Land
Sand & Cobble Beach

*** Northern Hardwood - Hemlock - White Pine Forest Group**
The map classes within this group were used to classify over 90% of the mapped vegetation. To display the diversity within this group, the group was split into three categories: Conifer Forests, Deciduous Forests, and Conifer - Deciduous Forests. These categories are not part of the National Vegetation Classification Standard.

Composition Date: June 2010
Produced by the USGS UMESC for the NPS VIP