

# Dwarf Pine Ridges



Steve Young in dwarf pine ridges at Sam's Point in the Shawangunk Mountains



Photo credits: *Laura J. Lehtonen*

<b>System</b>	Terrestrial
<b>Subsystem</b>	Barrens And Woodlands

## Did you know?

Dwarf pine ridges are a unique and globally rare natural community that are only known from the the Northern Shawangunk Mountains. The community is dominated by dwarf individuals of pitch pine, which require fire to regenerate. Pitch pine cones are serotinous, which means they require fire to open. Unlike other pine cones, which open in the fall and distribute seeds, pitch pine cones stay closed until heat from fire opens the them and distributes the seeds. The fire creates an excellent bed of nutrient-rich soil for the seeds to germinate. Pitch pines are adapted to fire in other ways as well. Even though large branches may die in a fire, their thick trunk survives and produces new branches.

## Summary

**Protection** Not listed in New York State, not listed federally.

**Rarity** G1G2, S1

A global rarity rank of G1G2 means: Critically Imperiled or Imperiled globally - At very high or high risk of extinction due to rarity or other factors; typically 20 or fewer populations or locations in the world, very few individuals, very restricted range, few remaining acres (or miles of stream), and/or steep declines. More information is needed to assign a single conservation status.

A state rarity rank of S1 means: Typically 5 or fewer occurrences, very few remaining individuals, acres, or miles of stream, or some factor of its biology makes it especially vulnerable in New York State.

## Conservation Status in New York

This community is restricted to outcrops of Shawangunk Conglomerate at Sam's Point in the Northern Shawangunk Mountains in Ulster County. Sam's Point appears to be the only occurrence of dwarf pine ridges, as described by New York Natural Heritage (Edinger et al. 2002), in the world.

## Short-term Trends

The dwarf pine ridge occurrence at Sam's Point has probably remained stable in its condition and size in recent decades due to the protection efforts of conservation partners.

## Long-term Trends

The dwarf pine ridges are under public and private conservation ownership and well-protected. Implementing the prescribed burn plan will likely improve the long-term viability of this community.

# Conservation and Management

## Threats

Dwarf pine ridges are threatened by development (especially plans for cellular telephone and radio towers, wind farms, etc.) and trampling by recreational visitors (e.g., mountain bikers, hikers). These threats have been greatly reduced as a result of protection efforts by conservation partners. The natural fire regime (e.g., from lightning strikes) has been suppressed in the past, but implementing a prescribed burn plan will likely improve the long-term viability of this community.

## Conservation Strategies and Management Practices

Management activities should include the development and implementation of a prescribed burn plan for Sam's Point. Fragmenting features such as roads, abandoned tower clearings, and unnecessary trails should be reduced or minimized, and high-impact activities, such as the use of mountain bikes and ATVs, should be restricted. Prevent the dumping of trash via signage at susceptible areas, and by implementing regular patrols.

## Development and Mitigation Considerations

Soils are very thin in and around this community and the effect of clearing and construction on soil retention and erosion must be considered during any development activities. Similarly, these soils are acidic and nutrient-poor and any soil enrichment activities (septic leach fields, fertilized lawns, etc.) have a high probability of altering community structure and function. The pitch pine-dominated structure of this community is maintained by fire and presents a fire hazard to existing and proposed development. Unprotected structures located within or near this community are more susceptible to damage from wild fire.

## Inventory Needs

Determine if dwarf pine ridges, as described by New York Natural Heritage (Edinger et al. 2002), occur in other northeast states (e.g., MA, CT, NJ, PA). Preliminary investigations suggest that sites with stunted pitch pine mixed with oak in other states are not this community (e.g., Mount Everett, MA; Panther Knob, WV). Other ridges in New York with lesser amounts of stunted pitch pine are generally better classified as pitch pine-oak-heath rocky summit.

## Research Needs

Determine if Sam's Point is the only global occurrence of dwarf pine ridges as described by New York Natural Heritage (Edinger et al. 2002). Determine the optimal fire regime for this community. Increase the confidence in the classification and the delineation of dwarf pine ridges from pitch pine-oak-heath rocky summit at Sam's Point.

## Rare Species

Northern Barrens Tiger Beetle (*Cicindela patruela patruela*)

Toothed Apharetra (*Sympistis dentata*)

Golden Corydalis (*Corydalis aurea*)

Northern Long-eared Bat (*Myotis septentrionalis*)

Appalachian Sandwort (*Minuartia glabra*)

## Identification Comments

Dwarf pine ridges are woodlands dominated by pitch pine (*Pinus rigida*) trees that are less than 5 m (16 feet) tall. They occur over thin soils on flat-topped rocky ridges of white quartzite conglomerate. The understory is well developed, with a shrub layer dominated by black huckleberry. Other understory associates that may be present include lowbush blueberry (*Vaccinium angustifolium*, *V. corymbosum*), black chokeberry (*Photinia melanocarpa*), sheep laurel (*Kalmia angustifolia*), wintergreen (*Gaultheria procumbens*), and sweet-fern (*Comptonia peregrina*).

## The Best Time to See

This community is scenic year round. It is impressive to find a high spot and overlook the dwarf pitch pines that blanket the flat summit of Sam's Point. Dense areas of huckleberries and blueberries ripen in the summer and their leaves turn scarlet red in the fall.

## Characteristics Most Useful for Identification

A dwarf woodland dominated by pitch pine and black huckleberry, occurring on flat-topped summits of rocky ridges. Other understory associates that may be present include lowbush blueberry, black chokeberry, sheep laurel, wintergreen, and sweet-fern. Large areas may be dominated by a closed canopy of stunted pitch pine (2 to <5 m tall).

## Elevation Range

Known examples of this community have been found at elevations between 1880 feet and 2283 feet.

## Similar Ecological Communities

**Dwarf pine plains:** Dwarf pine plains are codominated by dwarf pitch pine and scrub oak (*Quercus ilicifolia*), and are restricted to the level outwash sand and gravel plains of eastern Long Island.

**Red pine rocky summit:** Red pine rocky summits occur on acidic bedrock ridges and are dominated by red pine (*Pinus resinosa*) with red oak (*Quercus rubra*) and white pine (*Pinus*

strobis) as possible codominants.

**Pitch pine-oak-heath rocky summit:** The dwarf pine ridge community is dominated by dwarf pitch pine with tree heights less than 5 m (16 feet) tall, that often form a closed canopy. Pitch pine-oak-heath rocky summits are a mix of pitch pine, and tree and shrub oaks with heath shrubs. Although pitch pine-oak-heath rocky summits may have a few stunted pitch pines, they are not dominant, nor do they form a continuous canopy as is seen in dwarf pine ridges.

**Pitch pine-scrub oak barrens:** Pitch pine-scrub oak barrens have full-sized pitch pines with abundant scrub oak, and they occur on sandy soils of dunes or outwash plains.

**Pitch pine-heath barrens:** Pitch pine-scrub oak barrens have full-sized pitch pines with a heath-dominated understory, and they occur on sandy or rocky soils.

## Characteristic Species

### Trees > 5m

Red Maple (*Acer rubrum*)  
Paper Birch (*Betula papyrifera*)  
Gray Birch (*Betula populifolia*)  
Blackgum (*Nyssa sylvatica*)  
Pitch Pine (*Pinus rigida*)  
Eastern Hemlock (*Tsuga canadensis*)

### Shrubs 2-5m

Paper Birch (*Betula papyrifera*)  
Sheep-laurel (*Kalmia angustifolia*)  
Black Chokeberry (*Photinia melanocarpa*)  
Sassafras (*Sassafras albidum*)  
Highbush Blueberry (*Vaccinium corymbosum*)  
Northern Wild Raisin (*Viburnum nudum* var. *cassinoides*)

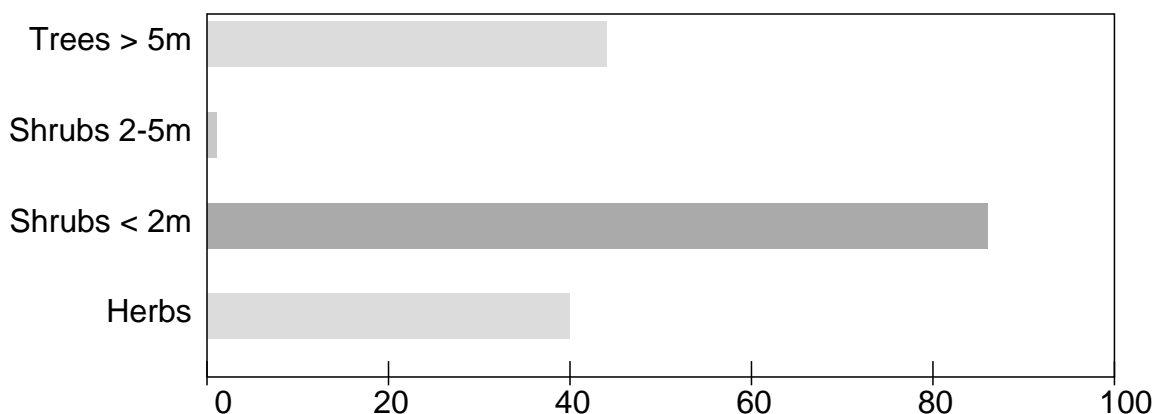
### Shrubs < 2m

Sweet Fern (*Comptonia peregrina*)  
Black Huckleberry (*Gaylussacia baccata*)  
Scrub Oak (*Quercus ilicifolia*)  
Lowbush Blueberry (*Vaccinium angustifolium*)  
Early Lowbush Blueberry (*Vaccinium pallidum*)

### Herbs

*Carex* spp.  
Bunchberry (*Cornus canadensis*)  
Pink Lady's-slipper (*Cypripedium acaule*)  
Eastern Hay-scented Fern (*Dennstaedtia punctilobula*)  
Teaberry (*Gaultheria procumbens*)  
*Lycopodium* spp.  
Canada May-flower (*Maianthemum canadense*)  
Narrowleaf Cowwheat (*Melampyrum lineare*)  
Eastern Bracken (*Pteridium aquilinum*)

## Nonvascular *Polytrichum spp.*



This figure helps visualize the structure and "look" or "feel" of a typical dwarf pine ridges. Each bar represents the amount of "coverage" for all the species growing at that height. Because layers overlap (shrubs may grow under trees, for example), the shaded regions can add up to more than 100%.

## International Vegetation Classification System Associations

This New York natural community encompasses all or part of the concept of the following International Vegetation Classification (IVC) natural community associations. These are often described at finer resolution than New York's natural communities. The IVC is developed and maintained by NatureServe.

Pitch Pine / Black Huckleberry Scrub (CEGL006079)

Pitch Pine / Broom Crowberry Woodland (CEGL006154)

## NatureServe Ecological System Associations

This New York natural community falls into the following ecological system(s). Ecological systems are often described at a coarser resolution than New York's natural communities and tend to represent clusters of associations found in similar environments. The ecological systems project is developed and maintained by NatureServe.

Central Appalachian Pine-Oak Rocky Woodland (CES202.600)

## Additional Resources

### Links

#### Minnewaska State Park Preserve: Sam's Point Area

<https://parks.ny.gov/parks/193>

#### Sam's Point Preserve (TNC)

<http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/newyork/places-preserves/eastern-sams-point-preserve.xml>

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