



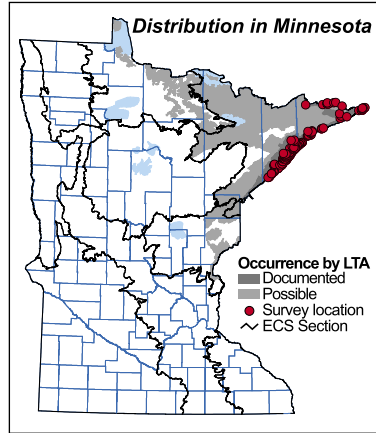
Northern Open Talus

Open plant communities on steep talus slopes, usually below cliffs or rock outcrops. Dominated by lichens or mosses, with sparse cover of trees or herbaceous plants. Most common in rugged terrain in northeastern Minnesota.

Vegetation Structure & Composition

Description is based on summary of plant species lists and field notes from 72 talus slopes.

- **Lichen and bryophyte** cover is high. Lichens, including foliose species such as reindeer lichen (*Cladina* spp.), are the dominant cover on dry sites and codominant with mosses on mesic sites.
- **Herbaceous plant** cover is absent to very sparse (<5%) on dry sites (see CTn12a below). On mesic sites, the fern common polypody (*Polypodium virginianum*) is often abundant, with 10-75% cover. Characteristic cliff species are often present on talus slopes, especially on mesic sites. Common species are rusty woodsia (*Woodsia ilvensis*), fragrant fern (*Dryopteris fragrans*), and firmosses (*Huperzia* spp.).
- **Tree and shrub** cover ranges from absent to sparse (0-25%). The shrub skunk currant (*Ribes glandulosum*) is characteristic on mesic sites (see CTn12b below).



Landscape Setting & Soils

CTn12 is most common on lower to middle portions of steep talus slopes below cliffs or rock outcrops in rugged, bedrock-controlled terrain in landscapes dominated by Superior and Rainy lobe till deposits. CTn12 is only rarely present in association with cliffs in river gorges or along lakeshores because of removal of talus by floods or wave action. Common rock types include diabase, basalt, gabbro, diorite, anorthosite, rhyolite, and granite. Size and shape of talus blocks are quite varied, depending on the cleavage properties of the parent bedrock. Many talus slopes have blocks averaging 12-36in (30-90cm) in diameter, but recorded averages range from <6in (15cm) to >48in (120cm). There is also considerable variation in block size from upper to lower portions of most talus slopes, with smaller blocks at the upper part of the slope near the base of the parent cliff or outcrop (i.e., the source of the talus) and larger blocks at the bottom of the slope. The zone of small talus at the very top of the slope often supports a dense band of shrubs and small trees, which is recognized as Northern Scrub Talus (CTn24). Blocks the size of small trucks are not uncommon at the bases of some talus slopes. Talus blocks are typically angular and sharp sided, and depending on the cleavage properties of the bedrock source, can range from thin and flat to triangular or rectilinear. True soil development is minimal, with soil confined to spaces between or beneath talus blocks.

Natural History

Species in talus communities are exposed to greater environmental extremes than species in surrounding terrestrial communities, including rapid fluctuations in substrate temperature, high desiccation rates, limited nutrient availability, and stress caused by shifting substrates. Lack of soil limits opportunities for colonization by vascular plants, which are generally restricted to mossy mats or pockets of soil that have accumulated between talus blocks. Rock slides triggered by rocks fractured from escarpments upslope are major but rare events that disrupt plant community equilibrium on talus slopes and can also remove trees growing along the margins of the community. On some talus slopes, ice, cool water, and naturally refrigerated air in voids beneath large blocks of talus moderate the microclimate of the lower part of the slope. In contrast, on



the upper parts of slopes the talus is often quite warm from absorption of sunlight. In summer, the difference in temperature between the surface of the talus at the top of a slope and the refrigerated spaces beneath the largest blocks at the lower part of the slope can be as much as 40°F (22°C). The cooling effect at the base can be strong enough to support a narrow band of boreal scrub vegetation characterized by stunted black and white spruce trees and abundant ferns and mosses.

Similar Native Plant Community Classes

● **CTn24 Northern Scrub Talus**

CTn24, which is characterized by small trees and often dense shrub cover, is commonly present in a band between CTn12 and the upslope parent bedrock, either cliff or outcrop. When the two classes occur on the same talus slope, the line between them, based on woody plant cover, is usually distinct. Some talus slopes, especially those composed of smaller talus (<12in [30cm] average diameter), occasionally have scattered small trees and tall shrubs. These examples are intermediate between open and scrub talus; they are structurally similar to CTn24, but based on lichen and moss species composition are floristically more similar to CTn12.

▶ **CTn24**—Tree and shrub cover is >25%.

▶ **CTn12**—Tree and shrub cover is <25%.

● **CTn11 Northern Dry Cliff and CTn32 Northern Mesic Cliff**

Cliff communities share a number of species with CTn12, especially in the typical situation where talus slopes are associated with cliffs. Cliffs are easily differentiated from talus slopes, however, based on substrate (i.e., solid vertical bedrock vs. sloping talus).

● **RON12 Northern Bedrock Outcrop**

Bedrock outcrop communities share a number of species with CTn12. Separating the two classes can be difficult in settings where talus has accumulated in place on horizontal or sloping bedrock exposures (this is especially common on rhyolite bedrock exposures, which are susceptible to fragmentation by weathering). Fragmented bedrock exposures have been recorded with talus accumulations >12in (30cm) deep. Some sites have combinations of shallower talus and bedrock outcrops and may be best treated as complexes of CTn12 and RON12.

Native Plant Community Types in Class

● **CTn12a Dry Open Talus (Northern)**

Dry, open communities with little or no shrub or tree cover. Lichens are the predominant cover, with fruticose species common, including reindeer lichens. Vascular plants and mosses are uncommon and very sparse. Talus fragments are generally moderate to large (6in to >60in [15cm to >150cm] in diameter). CTn12a occurs on steep slopes below cliffs of all aspects (although it is more common on south- to west-facing aspects) in the North Shore Highlands and Border Lakes subsections in NSU.

● **CTn12b Mesic Open Talus (Northern)**

Dry-mesic to mesic, open communities with little or no shrub or tree cover. Lichens are codominant with mosses and the fern common polypody. Other characteristic vascular plants include skunk currant and firmosses. Talus fragments are generally moderate to large (6in to >36in [15cm to >90cm] in diameter), although they are often obscured by thick moss and lichen mats. The habitat below talus blocks is often quite moist, especially at the bases of slopes. CTn12b occurs predominantly on steep north-facing slopes below cliffs in the North Shore Highlands and Border Lakes subsections in NSU.