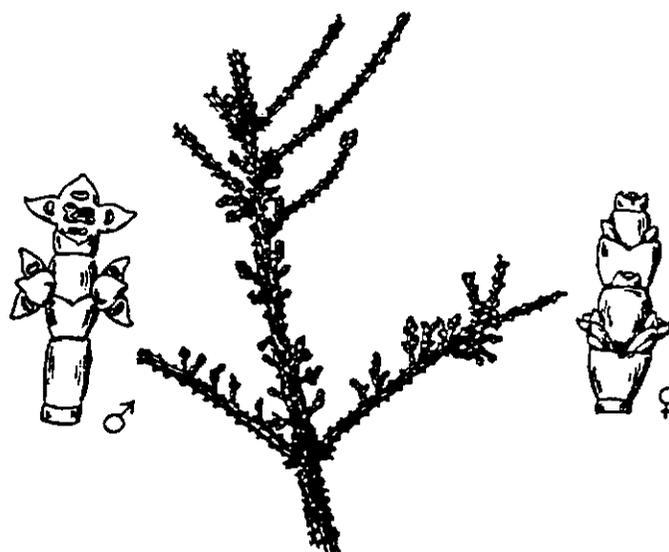


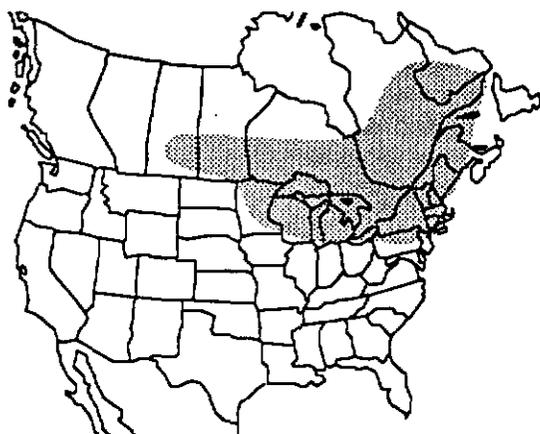
MASSACHUSETTS SPECIES OF SPECIAL CONCERN

Dwarf Mistletoe
(*Arceuthobium pusillum* Peck)

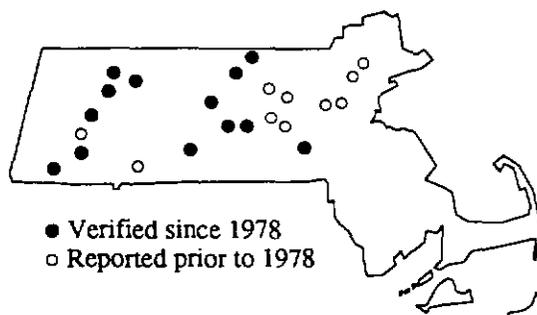
DESCRIPTION: A member of the Mistletoe family (Loranthaceae), dwarf mistletoe is a small fleshy shrub, usually no more than 2 cm (0.8 in.) tall, that parasitizes coniferous trees. Its generic name reflects this parasitic habit, coming from the Greek words for juniper (*arkeuthos*) (one group of host plants) and life (*bios*). This simple or sparingly branched plant has greenish to chestnut-colored, or even purplish, stems that are circular when fresh and four-angled when dry. The opposite leaves are reduced to thin, connate, obtuse (blunt-tipped) scales with a width of only 1 mm (0.04 in.). Dwarf mistletoe is dioecious (male and female flowers are on separate plants). Mistletoes reproduce by means of seeds expelled from explosive fruits. The sticky seeds cling to needles, eventually sliding down the needles to germinate on twigs. During the first year, the parasite penetrates the wood with a root-like structure and develops food and water transport systems. An aerial fruiting structure arises in the early spring of the second year. The structure is green and about as long as the spruce needles. Male and female plants are located on separate branches or on separate trees. During the third year, flowers are produced. Pollen-producing structures, which survive only a short time, are large and orange-yellow. Pollen



Gleason, H. A. The New Britton and Brown Illustrated Flora of the Northeastern U.S. and Adjacent Canada. New York Botanical Garden, 1952.



Documented Range of
Dwarf Mistletoe



Distribution in Massachusetts

is spread to the tiny female flowers by wind, insects, and birds. Each female flower then bears one barrel-shaped fruit. The fruit, which matures in the fall, has a hard seed covered with a sticky substance. The seed is shot out of the coat for a distance of up to 30 feet. The fruiting structure then withers and falls off, leaving only the cup-shaped base. Seeds may also be carried on the feathers of birds and the fur of mammals. Dwarf mistletoe will only germinate on live host branches within certain favorable areas, usually where large populations of black spruce occur.

RANGE: Dwarf mistletoe is a northern species whose documented range extends from Newfoundland and Quebec to Minnesota and Saskatchewan and south to northern New Jersey, Pennsylvania and Michigan.

HABITAT IN MASSACHUSETTS: In Massachusetts, dwarf mistletoe occurs in peatlands generally on the branches of black spruce (*Picea mariana*). Elsewhere in its range, this plant occasionally occurs on red spruce (*Picea rubens*), white spruce (*Picea glauca*) and tamarack (*Larix laricina*). Throughout its range, it favors wetland communities dominated by coniferous trees and influenced by acidic water. Specific habitats in Massachusetts include acidic conifer swamps, bog forests, and headwater swamps. In addition to black spruce, associated species include larch (*Larix laricina*), balsam fir (*Abies balsamea*), yellow birch (*Betula alleghaniensis*), hemlock (*Tsuga canadensis*), red maple (*Acer rubrum*), bog laurel (*Kalmia polifolia*) and Labrador tea (*Ledum groenlandicum*). Light conditions at these habitats varied from open to shade, with most sites having either filtered light, open light or some combination of the two. Dwarf mistletoe may cause the host tree to form "witches' brooms", clumps of dense branches arising from a single point.

POPULATION STATUS IN MASSACHUSETTS: Dwarf mistletoe is currently listed as a species of "Special Concern" in Massachusetts. As with all species listed in Massachusetts, individuals of the species are protected from take (picking, collecting, killing...) and sale under the Massachusetts Endangered Species Act. There are 15 current stations (discovered or relocated since 1978) in 13 towns and 12 historical stations (unverified since 1978) in 11 towns. (One town has both current and historical stations and is represented by a single, solid dot on the town distribution map.) The distribution of dwarf mistletoe is determined by the presence of its hosts, frequently spruces, which themselves are quite limited in occurrence. Due to its inconspicuous size, it is likely that some occurrences have as yet gone undiscovered. Dwarf mistletoe is also considered rare in Vermont, Rhode Island, Connecticut, New Jersey and Pennsylvania.

MANAGEMENT RECOMMENDATIONS: Various species of *Arceuthobium* are the only flowering plants that cause hosts to produce "witch's brooms". The vast majority of witch's brooms seen in Massachusetts are caused by other parasites, such as fungi and mites. Branches affected by witches' brooms may eventually die, as can, later, the entire tree. While dwarf mistletoe is considered to be a serious threat by foresters—particularly in eastern Canada and the Lake states—it is not a problem in Massachusetts, where its rarity has resulted in its being placed on the state's rare species list. Dwarf mistletoe, one of the most widespread of the New World species of *Arceuthobium*, is found throughout most of the range of its hosts. Nevertheless, the distribution of dwarf mistletoe is limited by that of its host species—in Massachusetts, primarily black spruce. Hence, in order to preserve a local population, it becomes necessary to ensure that its host persists in the immediate vicinity. Generally, the foliage of another black spruce needs to be within 30 to 40 feet of the host spruce. Possible management activities that might encourage black spruce are removing shade producing competitors such as red maple to release nearby immature black spruce or scarifying soil to promote black spruce seed sprouting. Another possibility is to collect mistletoe seeds that have fallen to the ground and place them on the bark of a black spruce. However, specific encouragement of dwarf mistletoe and black spruce are probably not necessary if the peatland habitats are maintained with natural water levels.