

UNIVERSITY OF HELSINKI

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Title Biology of true mistletoes (<i>Phoradendron</i> spp [Viscaceae]) in the conterminous United States	
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<p>Abstract</p> <p>In this paper I depict the biology of true mistletoes (<i>Phoradendron</i> Nutt. [Viscaceae]) occurring in the conterminous United States. This paper is based on literature and observations made by the author in the U. S. states of California, Oregon and Nevada. I drew together the available, scattered information and presented my own observations with this background. The term "conterminous U.S." includes all states but Alaska and Hawaii.</p> <p>The name "mistletoe" is used of plants belonging to dicotyledonous plant families Eremolepidaceae Tiegh. ex T. Nakai, Loranthaceae Juss., Viscaceae Miers or Misodendraceae Agardh. Mistletoes are hemiparasites, by which it is understood that they obtain i.a. water and nutrients from their host, but are photosynthetic. Mistletoes occurring in the conterminous U.S. are placed in two genera; <i>Phoradendron</i> and <i>Arceuthobium</i>, in the genus <i>Phoradendron</i>, 13 mistletoe species or subspecies are distinguished.</p> <p>Formerly the genus <i>Phoradendron</i> was placed in the family Loranthaceae as a member of the subfamily Viscoideae. The family Viscaceae has later been separated from the family Loranthaceae. Seven genera are placed in the family Viscaceae.</p> <p>Distribution of the family Viscaceae is primarily pantropical, but i.e. mistletoes of the genus <i>Phoradendron</i> are found also in areas of cooler climate.</p> <p>All mistletoes found in the conterminous United States attach to either branches or trunk of their host plant. True mistletoes (<i>Phoradendron</i> spp.) form densely branching spherical, erect or pendulous bushes reaching a diameter up to about one meter. Diameter of the stems is about 1,5-8 mm., and old stems are lignified. Mechanically weakly connected internodes of 1-2 cm's. in length form the stems. Leaf size varies according to species from small scale like leaves to ones about 40x50 mm. in size.</p> <p>Host specificity varies greatly in mistletoes of the genus <i>Phoradendron</i>. However, true mistletoes parasitize almost without exception only gymnospermous or angiospermous, arborescent plants. True mistletoes parasitizing angiospermous plants have often a wider selection of potential hosts than those parasitizing gymnospermous plants. Causes of host specificity are poorly known.</p> <p>Mistletoe attaches to its host plant and transfers water and nutrients by means of a haustorium. In plants of the genus <i>Phoradendron</i>, haustorial system has direct (symplastic) connection only with the xylem of the host plant, therefore photosynthates found in the hosts cambium and phloem are not directly transferred into the mistletoe. True mistletoes transpire in excess of their host, possibly to ascertain sufficient supply of nutrients. As a result, the host suffers from waters stress in dry habitats.</p> <p>Flowers of true mistletoes are insect pollinated. Seeds are disseminated by birds, but passage through the alimentary tract of a bird is not necessary for the germination of the seed. Locally true mistletoe may thus be dispersed when the seeds drop directly on the branches of the host.</p> <p>Many species of true mistletoes of the conterminous U.S. occur on a more restricted area than their hosts, presumably because of climatic limitations. Occurrence of true mistletoes is affected i.a. by suitable hosts' distribution, climate and disseminators (birds). Other factors, which significance is either not known or it is poorly known, are i.a. pollinators, soil, topography, light, etc.</p> <p>Host plants growth is reduced if heavily infected by true mistletoes, and it is exposed to pathogens and insects. Tree-tops death is a typical damage caused by true mistletoes. True mistletoes interfere with forest management, but the magnitude of economical losses is not precisely known.</p>	
Key words <i>Phoradendron</i> , Viscaceae, mistletoe, hemiparasite, conterminous United States.	
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