Quince rust of common juniper in Newfoundland

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This note is the first record of Quince rust of common juniper, *Juniperus communis,* caused by *Gyrnnosporangium clavipes* from Newfoundland. It also reports the distribution and severity of the disease, and its status in relation to the ornamental value of the host on the Island

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Le present article constitue la premiere mention de la rouille du cognassier causee par *Gymnosporangium clavipes* chez le genevrier commun *(Juniperus communis)* dans l'île de Terre-Neuve. Il fait egalement état de la distribution et de la gravite de la maladie, ainsi que de son importance en regard de la valeur ornementale du genevrier dans l'île.

The common juniper, *Juniperus communis* L., is a small tree which together with its shrubby varieties, is circumpolar in the Northern Hemisphere. It is native to many parts of Canada, including Newfoundland, and is used as an ornamental in many urban areas of the Island.

Quince rust, also known as rust galls, is caused by *Gymnosporangium clavipes* (Cke. and Pk.) Cke. and Pk., and is one of the most conspicuous stem diseases of *Juniperus communis* in the United States. In Canada, Quince rust is widespread and has been observed on several species and varieties of *Juniperus* and *Amelanchier.* In the summer of 1979 this disease was observed on ornamental shrubs of *Juniperus communis* var. *Suecica* Ait. in Mount Pearl and St. John's. The pathogen was also observed on one of its alternate hosts, smooth serviceberry, *Amelanchier laevis* Wieg., in forests at several locations in eastern Newfoundland. Records of the Newfoundland Forest Research Centre Mycological Herbarium shows that *G. clavipes* was collected on an *Amelanchier* species in 1961; and an unidentified *Gymnosporangium* species was collected on Bartram's serviceberry, *Amelanchier bartramiana* (Tausch) Roem; smooth serviceberry, *A. laevis;* and round leaf serviceberry, *A. sanguinea* (Pursh) DC in the same year. The latter rust has now been identified as *Gymnosporangium clavipes.* This article records the disease on *Juniperus communis,* reports its distribution and severity in insular Newfoundland, and discusses its status in relation to the ornamental value of this juniper in urban areas of the Island.

Information on the symptoms and the incidence and intensity of the disease is based on the observations and records made from a total of 13 infected ornamental shrubs of the juniper (1.2 - 1.8 m tall) and 30 wild growing bushes of smooth serviceberry in forests scattered across the eastern part of the Island. The number of infected live and infected dead shrubs; number of shrubs with infected stems, branches or both; number of galls per branch; number of nodal and internodal galls; and size of galls were recorded. Percentage of infected shrubs, stems, and branches was calculated. The identity of the pathogen was confirmed by comparing it with authentic descriptions of symptoms, aeciospores and teliospores (Ziller, 1974; Parmelee, 1965).

The incidence of disease on juniper was sporadic, but its intensity on individual shrubs was severe, infecting up to 100% of the shoots and causing a mortality of up to 40% of the young shoots and 10% of the older shoots. No shrub mortality was observed. The pathogen was always caulicolous and the infection was mostly confined to branches, rarely on the main stem. The characteristic fusiform swellings or galls were common on twigs and branches, and up to 11 galls were recorded on an infected shoot. These galls encircled the twigs or branches and at maturity ruptured irregularly with rough, black bark, exposing golden-orange or orange-brown, pulvinate telia. The galls varied from 1.3 cm to over 5.0 cm in length and induced a 2-3 times increase in the diameter of the shoot. The galls were both nodal and internodal in location.

The infection of the rust on serviceberry was mostly fructicolous, rarely caulicolous; it was not at all observed on leaves. Up to 60% of the berries on some bushes were infected, with an average of 25% infection. The caulicolous infection was only about 5%. Swelling (up to 2 or 3 times the normal size), deformation and mumification of berries was conspicuous. Fusiform galls (up to 5.0 cm long and twice the normal diameter of the branch) were observed on the nodes of some branches. Aecia produced delicate, cylindric spore horns on berries and on caulicolous galls, and released yellow aeciospores.

This research note is the first record of the occurrence of Quince rust on *Juniperus communis,* a common orna-

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mental bush on the Island. It also describes the distribution of the disease in scattered patches at widely separated locations on the Island. It appears that the disease in all these areas did not originate from one source of infection. Funk (1974) remarked that sporadic occurrences of some diseases of forest and ornamental trees are completely unpredictable and sometimes they do cause a serious impact on the development and growth of trees. At present this disease does not cause any tree mortality, but the infected trees do appear unsightly because of numerous dead branches and twigs, and orange-colored fusiform galls.

Although Quince rust is of no importance to forestry in Newfoundland, it has been known to be a menace in some parts of eastern North America (Ziller, 1974), and its potential impact on ornamental trees of this species and other junipers on the Island should not be overlooked. With increasing interest in urban trees and shrubs, including this and the other related species in Newfoundland, this disease may become more important in future. Also, the host range of this fungus is wider than that of any other North American tree rust (Ziller, 1974) and its aecial stage is known to parasitize more than 480 host species belonging to more than 10 genera of the family Rosaceae (Crowell, 1935). In telial stage, it parasitizes junipers belonging to section *Oxycedrus* and section *Sabina* of the genus *Juniperus.* The disease is known to be specially detrimental to apple and juniper. It is suggested that special care must be taken when introducing seedlings of juniper and other susceptible hosts into Newfoundland and that the seedlings should be examined before shipment and transplanting in gardens; infected plants should be destroyed.

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