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Important pathogenic fungi on conifers in Iceland

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Abstract: Finds of Gremmeniella abietina, Lachnellula willkommii, sensu lato, Phacidium coniferarum, Sirococcus strobilinus, and Stereum sanguinolentum are recorded. The paper illustrates the spread of dangerous forest pathogens introduced into Iceland by man.

The Nordic Forest Pathology Group met in Iceland 12-18 August 1989. Among the subjects discussed and which were especially studied in the field, was the introduction and spread of important forest pathogens. For two of the not Icelandic participants, Helga and Finn Roll-Hansen, it was of specieal interest to compare the situation with what they found 20 years earlier (F. ROLL-HANSEN and Helga ROLL-HANSEN 1971, 1973a, 1973b). The meeting in 1989 was organized by Sigurður Blöndal. During the excursions forest stands at Hallormsstaður, Skorradalur, and Heiðmörk were studied. A few important finds are reported and discussed below.

Gremmeniella abietina (Lagerb.) Morelet
(Ascocalyx abietina) (Lagerb.) Schläpfer)
Anamorph: *Brunchorstia pinea* (P. Karsten) Höhn.

On *Pinus contorta.* Only the anamorph found. Heiðmörk, 18 August 1989. Leg. et det. H. Solheim. Killed shoots. Needles with typical brown bases.

On *P. mugo.* The anamorph. Heiðmörk, Vífilsstaðir, 19 August 1989. Leg. et det. F. Roll-Hansen. Conidia (3-) 5-7 septate, length 28-40 µm

The first find of *G. abietina* in Iceland was made on *P. artstata* in Fossvogur nursery in Reykjavík in 1969 (ROLL-HANSEN & ROLL-HANSEN 1973a and 1973b). The fungus was probably introduced into Iceland on conifer plants. This dangerous pathogen may have spread further since 1969, but the damage does not seem to be great yet.

Lachnellula willkommii (Hartig) Dennis

On *Larix russica (L. sucaczewii).* Hallormsstaður, 15 August 1989. Leg. et det. F. Roll-Hansen. Saprophyte on a fallen branch.

On *L. russica.* Hallormsstaður, 15 August 1989. Leg. et det. F. Roll-Hansen and K. Venn. Parasite on a few living branches on two living trees.

On *L. russica.* Skorradalur 17 August 1989. Leg. et det. F. Roll-Hansen. Apparently a parasite on a living twig, and possibly a pure saprophyte on a dead twig on the same tree.

The first find of *L. willkommii* in Iceland was made on *L. russica* at Hallormsstaður in 1969 on a dead, fallen branch (ROLL-HANSEN & ROLL-HANSEN 1973) . The fungus was then named *L. willkommii* var. *hahniana,* and later identified as *L. occidentalis* (Hahn & Ayers) Dharne (*L. hahniana* (Seaver) Dennis). Probably the same fungus was later found on the same host at the same locality by Götzsche and identified as *L. occidentalis* by D.K. Brenøe(pers. comm. Helgi Hallgrímsson). I find it difficult to distinguish between a parasitic *L. willkommii* and a saprophytic *L. occidentalis.* ROBAK (1952) made thorough comparisons and found small differences; he concluded that they may be considered varities of on species. I have not distinguished between the two taxa here. The species must have been introduced by man.

Phacidium coniferarum (Hahn) DiCosmo, Nag Raj & Kendrick
(*Potebniamyces coniferarum* (Hahn) Smerlis)

Anamorph: *Phacidiopycnis pseudotsugae* (M. Wilson) Hahn. Only the anamorph was found.

On *Larix russica.* Hallormsstaður, 15 August 1989. Leg. The Nordic Forest Pathology Group, det. F. Roll-Hansen.

On *Pinus mugo.* Heiðmörk, Vífilsstaðir, 18 August 1989 Leg. et det. F. Roll-Hansen.

On *P. sylvestris.* Heiðmörk, Vífilsstaðir, 18 August 1989. Leg. et det. F. Roll-Hansen.

At Skorradalur we saw extensive killing of the bark around wounds on stems of *Pinus contorta* after pruning in the late fall. The fungus was probably introduced by man on conifer plants.

Phacidiopycnis pseudotsugae was found in 1969 on *Larix russica* at Hallormsstaður, near Mývatn, and at Skorradalur ; að Hallormsstaður it was also found on *Picea pungens* (ROLL-HANSEN & ROLL-HANSEN 1971, 1973a, 1973b). The fungus was found to be very damaging to larch, especially after wounding in the rest period of the tree, but it also infected the stem through small branches killed by frost.

Sirococcus strobilinus Preuss
(*Ascochyta pinicerda* Lindau)

On *Larix russica.* Skorradalur, 17 August 1989. Leg. et det. F. Roll-Hansen.

The conidia were longer than given by most authors; I found a length of 15-21 µm. But ROBAK (1956) recorded that still greater lengths can be found. The fungus is a parasite on conifers. Damaging attacks have ben found on contorta plants in nurseries ROLL-HANSEN (1978). The fungus was probably introduced by man.

Stereum sanguinolentum (Alb. & Schw.: Fr.)Fr.

On *Larix russica.* Hallormsstaður, Guttormslundur, 15 August 1989. Leg. et det. F. Roll-Hansen, H. Solheim, and K. Venn.

On *Pinus contorta.* Skorradalur 17 August 1989. Leg. et det. H. Solheim.

On *Pseudotsuga menziesii.* Hallormsstaður, 15 August 1989. Leg. et det. F. Roll-Hansen.

On all three hosts the fungus was found on stumps. The fruit bodies were bleeding when wounded. But on closer examination they did not seem to be active at the moment; spores and acanthocystidia were not found. The fungus was identified as *S. sanguinolentum* (not *S. rugosum*) because of the substrate and because the fruit bodies were thin, with tissue formed only in one season.

In 1969 the fungus was found on *Pinus mugo* near Akureyri (ROLL-HANSEN & ROLL-HANSEN 1973a, 1973b). This is, however, not the first find of the fungus in Iceland; Helgi Hallgrímsson has informed me that he found *Stereum sanguinolentum* already in 1961 at Grund in Eyjafjörður. This conifer fungus is known from other countries to cause much damage both as a wound parasite, and as a rot fungus in stored timber. It was probably introduced into Iceland by man. Now it is widely spread.

Gremmeniella abietina, Lachnellula willkommii, Phacidium coniferarum, Strococcus strobilinus, and *Stereum sanguinolentum* are important forest pathogens, and all of them have probably been introduced by man. They may have been introduced on infected living coniferous plants, perhaps from Norway, when import of plants was without control. The damage made in Iceland by these fungi has not been dramatic, so far; greatest loss have been recorded by *Ph. coniferarum* on *Larix russica.* But only one strain, or a few strains, of the fungi may yet have been introduced: The pathogical picture of *L. willkommii* on *Larix* in Iceland seems uniform and, so far, not dangerous. Our great number of pure culture isolates of *Ph. coniferarum* from Iceland in 1969 were all equal, whereas Norwegian isolates show great variation. More dangerous strains of the fungi treated above may be introduced in the future.

There are other fungal pathogens which way be dangerous to trees in Iceland, but which seem not to have been introduced yet. *Heterobasidion annosum* is an example; the rather low temperature in Iceland may hinder the spread, but we do not know. Other examples both on conifers and on broadleaf trees are numerous rot fungi and rust fungi.

It may be right as far as possible to try to prevent introduction into Iceland of new strains of dangerous fungal species which have already been introduced, as well as of species which have not yet been introduced.

REFERENCES

Robak, H. 1952. Om saprofyttiske og parasittiske raser av lerkekreftsoppen, *Dasyscypha willkommii* (Hart.)Rehm. Meddr Vestland. forstl. Forsstn 9: 113-211

Robak, H. 1956. Some fungi occurring on died-back tops and branches of *Picea abies* and *Abies* ssp. in Western Norway. Friesia 5: 366-389

Roll-Hansen, F. 1978. Fungi dangerous at *Pinus contorta* with special reference to pathogens from North Europe. Eur. J. For. Pat. 8:1-14

Roll-Hansen, F. & Roll-Hansen, H. 1971. *Potebniamyces coniferarum* Literature Review. Occurrence on *Larix russica* in Iceland. Meddr norske SkogforsVes. 109(9): 527-556

Roll-Hansen, F. & Roll-Hansen, H. 1073a. Litt om skogsykdommer og råtesopper i Island. (Notes on forest diseases and rot fungi in Iceland). Tidsskr. Skogbr. 81:73-79

Roll-Hansen, F. & Roll-Hansen, H. 1973b. Stutt yfirlit um nokkra trjásjúkdóma og fúasveppi á Íslandi. Ársrit skógræktarfélags Íslands 1972-1973: 46-50