Notes on the ascomycete genus *Stamnaria*, obligate parasites on horsetails (*Equisetum* spp.)

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Stamnaria americana on *Equisetum hyemale ssp. affine* in Wisconsin, USA.
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Stamnaria is a genus of parasitic ascomycete fungi (Order: *Leotiales*, respectively *Helotiales*) that exhibits yellow to orange fruiting bodies, called apothecia, as well as spores, called conidia of the asexual *Titaeospora* type, on living as well as dead horsetails (*Equisetum* ssp.). One group does grow apothecia on living shoots of *Equisetum* subgenus *Hippochaete*, as *E. hyemale*, *E. laevigatum*, *E. ramosissimum*, and occasional hybrids. These will frequently (perhaps not always?) follow an initial *Titaeospora* stage, bearing anastomosing, filamentous conidia.
Species' of the other group do develop fruiting bodies from *Titaeospora* conidia bearing primordia on the year following infection, and may be found on dead material on the ground in late spring to summer. Asexual primordia (acervuli) were not proved for species' inhabiting *E. variegatum* and *E. sylvaticum* by E. Gruber.

Most of the following species are documented in Europe and eastern North America. Some may be present in British Columbia, though they are not documented here to date. The genus *Stamnaria* appears to be rare in western North America—though it has possibly been overlooked.

Please share your observations with Erwin Gruber to help contribute to our knowledge of the diversity and distribution of the genus *Stamnaria*.

Equisetum arvense

Host to "*Stamnaria mougeotii*" (ined.) and, less commonly, *S. persoonii* (syn. *S. equiseti),* in Europe. The latter species has also been confirmed in association with *E. arvense* from the west coast of Greenland. *Stamnaria* was detected in association with *E. arvense* in an early mitotic (asexual) *Titaeospora* stage from southern Ontario in the late 19th century, but could not be determined to species.
Described characters of apothecia from Prince Edward Island do suggest presence of "S. mougeotii", investigation of specimens is pending, see NBM F 07063, NBM F 07064.

Equisetum fluviatile

Host to *Stamnaria persoonii* (syn. *S. equiseti*) in Europe.
Stamnaria was also detected in association with *E. fluviatile* in an early mitotic (asexual) *Titaeospora* stage from southern Ontario in the late 19th century, but could not be determined to species. No fruitbodies have been verified from North America (by E. Gruber).

Equisetum hyemale

Host to *Stamnaria americana* and the closely related "*S. laetissima"* (Cesati) comb. ined. (s.lat.). Rare findings of the asexual stage on *E. hyemale* in western USA could not be identified to species. These reports are likely attributable to *S. laetissima* (s.lat.), *vs S. americana*, which is not known to occur here. On the other hand, *S. laetissima* has not yet been confirmed in association with *E. hyemale* outside of Europe.

Equisetum laevigatum

"*Stamnaria laetissima*" s. lat. has been found on living E. laevigatum, in Pullman, E Washington State, and Roseburg, Oregon (identified by E. Gruber as the nominative ssp. *laetissima*). Several specimens bearing asexual *Titaeospora* stage are also known on the same host plant from states in midwestern to western USA, which likely represent *S. laetissima.*

Equisetum ramosissimum

Host to *S. laetissima* (s.str.) in Europe and north Africa, quite likely as well in Asia. This horsetail species is alien to America, but apparently naturalized in some regions. It is possible that it is host to another species of North American *Stamnaria,* in especial "*S. laetissima*" s. lat.

Equisetum sylvaticum

Stamnaria yugrana is solely found on dead parts of *E. sylvaticum*, known from the Yugra region in western Siberia. This species was described in 2018.

Equisetum variegatum

Two unpublished species', "*Stamnaria austriaca*" ined. and "*S. poeltii*" ined., develop yellow to orange fruiting bodies on dead parts of *E. variegatum* in European Alps and elsewhere in Europe. These taxa may well have circumpolar range, as they are commonly overlooked.

Equisetum palustre, E. pratense, E. scirpoides, E. telmateia

Stamnaria has not yet been found in association with these species of horsetail, but may yet be discovered.

For more information and images, see the following reference online:

Horsetails infected by genus *Stamnaria*

Frequent white spotting, usually at uppermost segments, indicate herbivory by arthropods; they do not suggest infection by *Stamnaria*, as there on Galiano Island, British Columbia, Canada. Photo taken and copyrights held by Andrew Simon, Galiano Island, British Columbia, Canada.

Stamnaria americana in Pfäffikon, Canton Schwyz, Switzerland.

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