

NOMENCLATURE AND TYPIFICATION IN THE GENUS
USNEA (LICHENIZED ASCOMYCETES)—
IV. *USNEA STUPPEA* & *USNEA SUBSTERILIS*

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ABSTRACT

This, the fourth part of our series discussing typification and nomenclature in the lichenized ascomycete genus *Usnea* attempts to clarify the application of the names *Usnea stuppea* (Räsänen) Motyka and *U. substerilis* Motyka. Both names are lectotypified and the differences between the two taxa are discussed.

RESUMEN

Esta, que es la cuarta parte de nuestra serie que discute la tipificación y nomenclatura en el género de ascomycete liquenizado *Usnea* intenta clarificar la aplicación de los nombre *Usnea stuppea* (Räsänen) Motyka y *U. substerilis* Motyka. Ambos nombres son lectotipificados y se discuten las diferencias entre los dos taxa.

INTRODUCTION

Some researchers may consider our approach to the typification of *Usnea* species overly cautious and technical; however, we would like to stress that the taxonomic study of *Usnea* has been (and still is) considered extremely difficult and complicated. Thus it would seem logical that the first step towards a clear and thorough revision of the genus would be a careful, precise review of the application of the published names with regard to their types. Unfortunately, many species of *Usnea* have not been properly typified, and often recent lectotypifications have not taken into account the fact that Motyka's monograph includes the lectotypifications of numerous taxa. It should also be remembered that Motyka's treatment remains the only complete revision of the genus to date.

The two species treated here belong to a series of closely related taxa that remains much confused and poorly understood. The first species, *U. stuppea* (Räsänen) Motyka, has been placed in synonymy with *U. substerilis* Motyka by Halonen et al. (1998). Here, we reject the recent lectotypification of *U. stuppea* by Halonen et al. (1998) because of an earlier typification by Motyka (1936). In order to clarify the typification (and taxonomy) of *U. stuppea* we also examined the type material of *U. substerilis*. As a result we have concluded that the

synonymy of *U. stuppea* with *U. substerilis* should be reconsidered. To clarify the application of the name *U. substerilis* we have also chosen a single thallus as the lectotype from among those lectotypified by Clerc (1987).

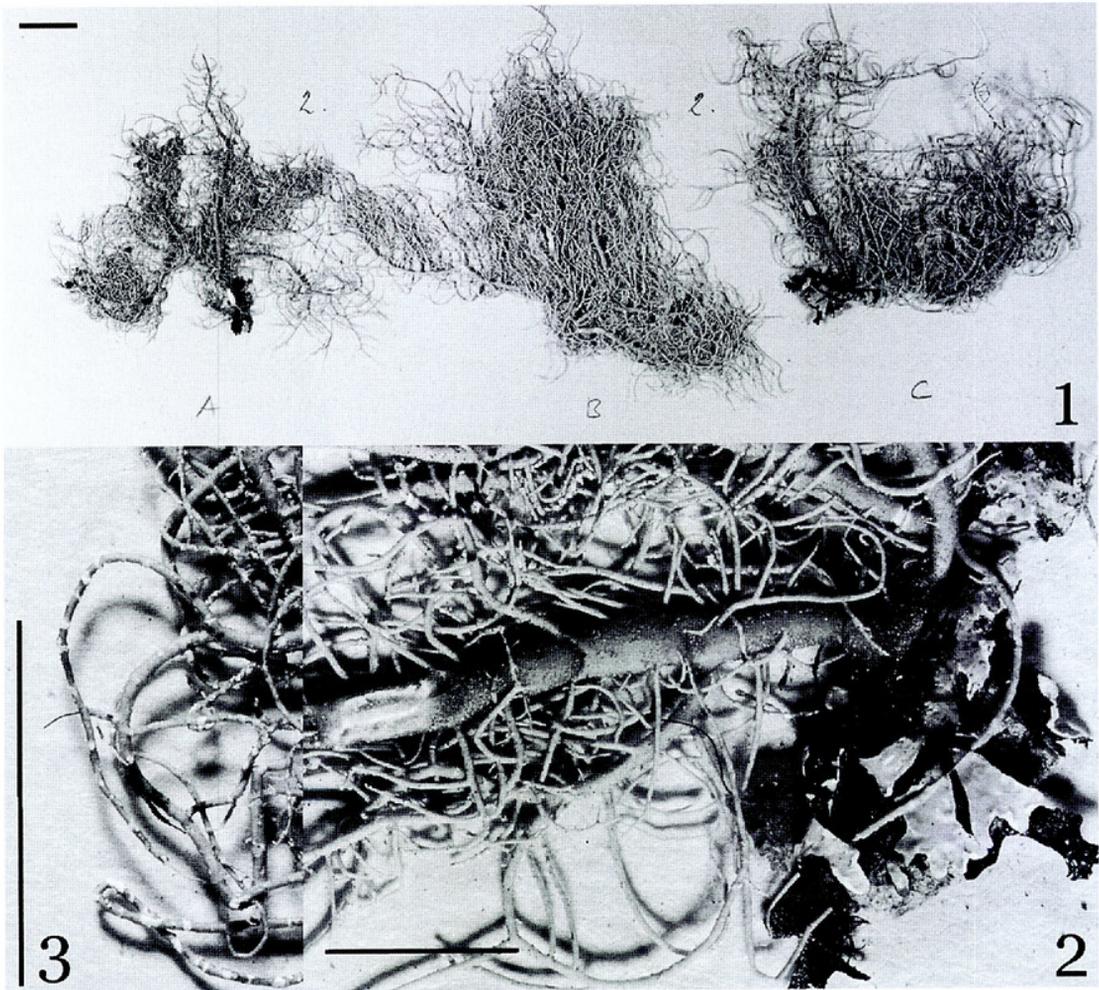
I. *Usnea stuppea* (Räsänen) Motyka

When Räsänen (1933) described *U. comosa* var. *stuppea* he cited only a single locality with a short diagnosis¹. Later, when Motyka (1936) treated the taxon in his monograph he elevated Räsänen's epithet to the specific rank and lectotypified the name on a specimen in the Räsänen herbarium. Unfortunately, there are three packets in the Räsänen herbarium with the same label data. Two of these were labeled by Räsänen himself (the packet numbered "1" was selected by Halonen et al. (1998) as the lectotype) and one is a specimen of Gyelnik's *Lichenotheca Exsiccati* 17. Only one of these packets retains an annotation by Motyka and thus this is the only packet we can conclusively state was reviewed by him. Because we consider Motyka's (1936) use of the term "type" to be effective lectotypification we consider the packet annotated by Motyka to be the lectotype. Halonen et al. (1998) selected as the lectotype the packet labeled by Räsänen and not annotated by Motyka, apparently because they were not aware of Motyka's previous lectotypification. The lectotypification of Halonen et al. (1998) thus had no standing since it was predated by Motyka's lectotypification. The lectotype selected by Motyka consists of two thalli (marked "A" and "C") mounted on a card with one thallus (marked "B") annotated by Motyka as a different taxon. The thalli marked "A" and "C" agree both with Räsänen's scant original description and Motyka's (1936) later description. The thallus marked "B" contains usnic and norstictic acids (I.M. Brodo, annotation) and was given the manuscript name *Usnea lapponica* var. *americana* by Motyka. Thus, in order to clarify Motyka's lectotypification and the application of this name we select the thallus marked "C" as the "second-step" lectotype (Greuter et al. 2000, Art. 9.14, Ex. 6):

Usnea stuppea (Räsänen) Motyka, Lich. gen. *Usnea* 1:262. 1936. (**Figs. 1–3**). *Usnea comosa* var. *stuppea* Räsänen, Ann. Missouri Bot. Gard. 20:9. 1933. TYPE: CANADA. BRITISH COLUMBIA: Hazelton, on *Picea murrayana*, Sep 1931, Kujala s.n. (LECTOTYPE, here designated: H (Räsänen Herbarium; packet marked "2," thallus on right marked "C").

The type collection of *U. stuppea* is a mixture of more than one taxon; we have made an effort to examine some of the duplicates distributed in Gyelnik's *Lichenotheca Exsiccati*. This examination revealed that some duplicates are a mixture of *U. lapponica* and *U. stuppea* while others include other taxa. Likewise the duplicate card in the Räsänen herbarium (packet marked "1") that was cited by Halonen et al. (1998) is also a mixture of *U. lapponica* and *U. stuppea*.

¹Räsänen (1933: 9). "Thallus erectus aut suberectus, brevior fruticulosus, 5–7 cm. longus, laevigatus vel leviter verrucosus, sorediosus, pallido-stramineus; soredia maculiformia, demum parce isidiosa. Medulla laxa, stuppea, K-"



FIGS. 1–3. *Usnea stippea*. **Fig. 1.** Lectotype card, thalli marked A and C = *U. stippea*, thallus marked B = *U. lapponica*. **Fig. 2.** Detail of lectotype thallus: internal anatomy and basal point of attachment to the substrate. (Note sunken area of cortex on main branch below cut.) **Fig. 3.** Detail of lectotype thallus: small fibrils and secondary branches with soralia lacking isidiomorphs. Scale bar = 1 cm.

The duplicate of *Lichenotheca Exsiccati 17* in Räsänen's herbarium consists of one large thallus of *U. stippea*.

II. *Usnea substerilis* Motyka

When Motyka (1930) first described *U. substerilis* he did not designate a type specimen. Later, however, he selected an exsiccatum of *Arnold Lichenes Exsiccati 1538b* in W as the lectotype (Motyka, 1936). While treating some of the species of the *U. fragilescens*-group, Clerc (1987) also selected part of an exsiccatum of *Arnold Lichenes Exsiccati 1538b* in W as the lectotype noting that it was a mixture of several taxa. While reviewing the status of *U. stippea* we also attempted to confirm the typification (and taxonomy) of *U. substerilis*. A loan of the type material from W revealed that the packet selected by Clerc bore no annotation by Motyka, a situation similar to that of *U. stippea*. This

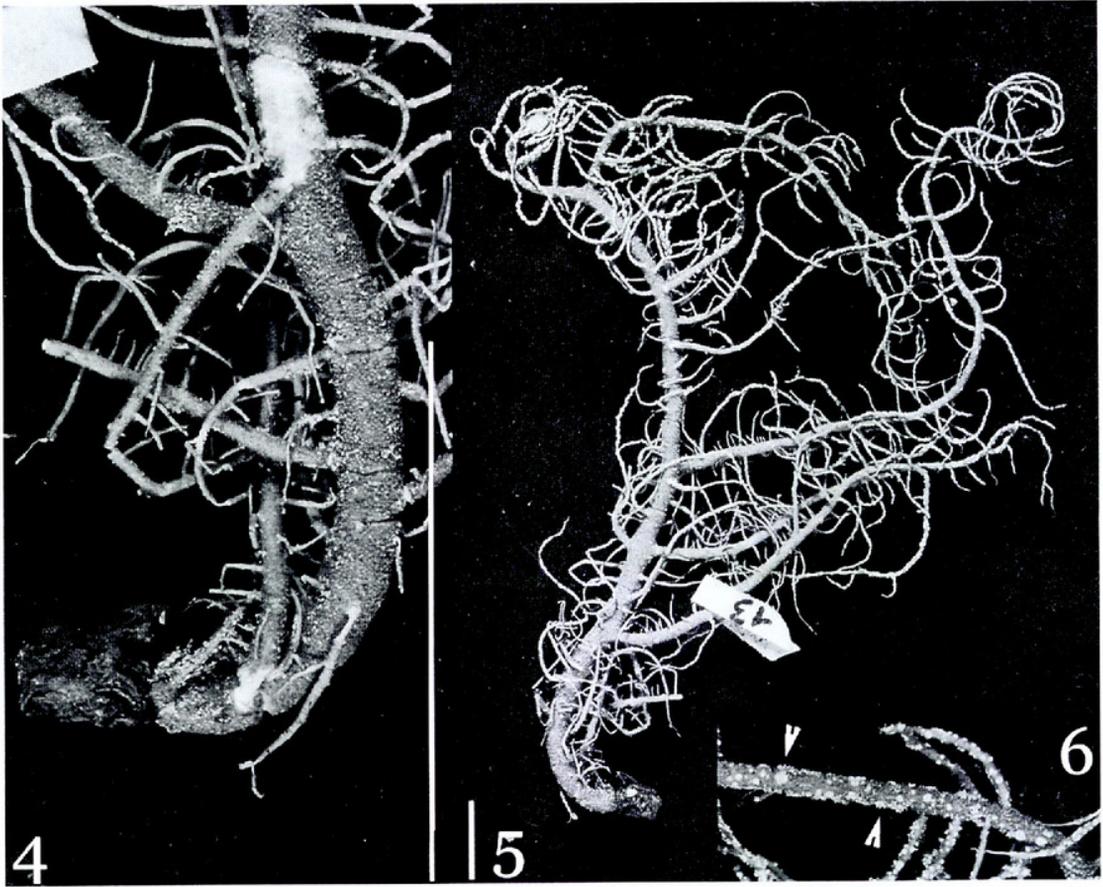
case differs from *U. stuppea*, however, because no specimen matching the data given for the lectotype by Motyka (1936) with Motyka's annotation was located in W. Thus, because no specimen annotated by Motyka could be found his lectotypification must be superseded by that of Clerc (1987). In order to avoid any doubt as to the application of the name *U. substerilis* we have thus chosen to further clarify the lectotypification of Clerc (1987) and select a single thallus from among the thalli selected as the lectotype by Clerc.

Usnea substerilis Motyka, *Wyd. Muz. Söask. w Katow.* 24. 1930. (Figs. 4–6). TYPE: ITALY. Groeden, ad ramulos emortuos *Laricis* in silva supra Unterkoffel prope St. Ulrich, 1889, *Arnold s.n. - Lichenes Exsiccati 1538b* (LECTOTYPE, here designated: W! (thallus figured herein)).

Halonen et al. (1998) placed *U. stuppea* in synonymy with *U. substerilis* Motyka without discussion; however, we prefer to maintain *U. stuppea* as a distinct taxon based on a number of differences in internal and external anatomy. First, in the type of *U. substerilis* the papillae on the primary branches are raised (tall), rounded at the top, and worn off to some degree closer to the base of the thallus. They are also better defined in shape, and gradually sparser, closer to the tips of the main branches. On the secondary branches the papillae also gradually become sparser, larger, and more infrequent towards the tips of the branches. The type of *U. stuppea* however, possesses papillae that are evenly distributed from the base to the tips of the main branches. The papillae themselves are less raised (shorter), and more blunt. On the secondary branches the papillae are nearly absent except close to the point of attachment to the main branch.

The size, shape, and ontogeny of soralia have also been considered valuable characters in distinguishing species (Herrera-Campos et al. 1998; Halonen et al. 1998; Ohmura 2001) and the soralia of *U. stuppea* and *U. substerilis* differ in a number of characters. Those of *U. substerilis* are raised above the cortex (not excavate) and produce few to many small isidiomorphs. As the isidiomorphs are abraded away with age the soralium becomes excavate and larger in size. This is contrasted with the soralia of *U. stuppea* which are not distinctly raised above the cortex and do not produce isidiomorphs. Instead, the soralia produce large coarse soredia, and, with age the soralia become larger in size and considerably deeper (more excavate).

As discussed by Tavares (1987) and Ohmura (2001) cortical anatomy is also a valuable character for distinguishing *Usnea* taxa. The cortex of *U. substerilis* is harder, more rigid, and considerably thicker than that of *U. stuppea* and has a dusty gray-brown (subpruinose) appearance in the herbarium. Likewise, the cortex of *U. stuppea* tends to be softer (occasionally sinking into slight foveae or depressions on the main branches) and lacks the granular appearance of *U. substerilis*. The branches of *U. substerilis* are also distinctly shorter than those of *U. stuppea*. It is important to note that both *U. stuppea* and *U. substerilis* differ from material currently referred to *U. lapponica* Vainio (i.e. thallus "B" on



FIGS. 4–6. *Usnea substerilis*. **Fig. 4.** Detail of lectotype thallus: internal anatomy and basal point of attachment to the substrate. (Note rough appearance of cortex and tall raised papillae.) **Fig. 5.** Lectotype thallus, marked No. 13 in packet by P. Clerc. **Fig. 6.** Detail of lectotype thallus: secondary branch and fibrils showing raised soralia with isidiomorphs (indicated by arrows). Scale bar = 1 cm (fig. 4, scale identical for fig. 6), .5 cm (fig. 5).

the lectotype card of *U. stuppea*) by the presence of a subpruinose (*U. substerilis*) or subglabrous (*U. stuppea*) cortex. The cortex of the material here referred to *U. lapponica* is lighter in color (yellowish in the herbarium) than those of the other two taxa and glabrous instead of subpruinose or subglabrous.

ACKNOWLEDGMENTS

We wish to thank the curators of the following herbaria for loaning material for this study: BP, FH, H, NY, LBL, S, W. We are grateful for the comments of Gerry Moore and an anonymous reviewer.

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Lendemer, James C. and Tavares, Isabelle I. 2004. "NOMENCLATURE AND TYPIIFICATION IN THE GENUS USNEA (LICHENIZED ASCOMYCETES)-IV. USNEA STUPPEA & USNEA SUBSTERILIS." *SIDA, contributions to botany* 21, 637-642.

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