

PhD Thesis review:

Taxonomy of species of the genus *Lachnum* s.l. in Central Europe
(M. Chlebická, 2009)

The author concentrated on various genera of the family Lachnaceae, their nomenclature and typification. During her work, she revised numerous herbarium specimens deposited in Czech herbaria as well as many new collections of her own, which represents great amount of skilled work.

The thesis consists of two yet unpublished checklists (Chapters I and VII), three published papers (II, III, IV) and two manuscripts (V, VI). Therefore the level of the chapters (and illustrations) varies greatly - those chapters containing published manuscripts are clear and concise, written in better English, while those "in preparation" seem to be written in haste, with missing details and some paragraphs and sentences are difficult to understand.

Chapter I consists of detailed checklist of Lachnaceae from Czech herbaria, completed with very informative comments about the availability of holotypes, conforming of specimens to protologue or older literature, location details, recent taxonomical revisions and measurements of morphological markers. The Czech checklist is discussed in relation to those of species in the Netherlands, Nordic countries and Germany.

Chapter II deals with revision of four lignicolous Lachnaceae (*Brunnipila*, *Capitotricha*, *Dasyscyphella* and *Neodacyscypha*) published in Czech Mycology. The study contains key, list of the species and comments about synonymy and similarity of the specimens with types and other old records, all written in a very detailed style. The paper contains also a new definition of the genus *Neodacyscypha* (Suková et Spooner) with an interesting, almost detective review of the historical origin and evolution of this name.

The only comment I have is that the legends to Figs should be self-explaining, without any need to refer to text in Material and Methods for abbreviations.

Chapter III contains revisions of several lignicolous *Lachnum* species published in Czech Mycology. It is written in the same style as II, with a nice comments about the synonymy of a doubtful species, *Lachnum grande*, with *L. pygmaeum*. Again, it is necessary to look for abbreviations in the Figs into Material and Methods - no self explaining legends.

Chapter IV was published in Mycotaxon and describes new species (*Fuscolachnum hainesii*) and new combination *Incrucipulum uralense*.

Chapter V - manuscript in preparation about herbicolous *Trichopeziza*.

This chapter is difficult to read. The author defined six groups of *Trichopeziza* specimens based on morphology, but it is not clearly stated what are the relationships of these groups with species described later - this could have been included already in Table 2. In Table 2 there are identical PRM specimen numbers (for e.g., 915566) in different morphological groups (in 2+3) - does that mean that the apothecia in the same specimen show different characteristics?

There are three graphs based on ascospore and apothecia length statistics, but the software used is not given and the axes in the graphs are undescribed; the legend again points to Table for explanation, is not self explaining.

In the typification of *Peziza sulphurea*, the year of the PRM 690235 specimen is absent - is it so because it is missing also on the specimen? Group 2+3 (*T. sulfureopilosa* nom. prov.) is not discussed closer.

As many collections are quite recent, why DNA analysis similar to that used in Chapter VI was not attempted to clarify the relationship between groups 2+3 and/or 5+6?

No. 1 in Results belongs to Discussion or Comments.

Also the English of this chapter is not very good so that some sentences are almost incomprehensible (see remarks in the text). Clearly more work is needed before submitting this manuscript to a journal.

Chapter VI - another manuscript, this time phylogenetically oriented, dealing with the relationship inside *Capitotricha* and related Lachnaceae. A standard analysis of ITS-5.8S region of rDNA was performed by Bayesian and parsimony method.

Neither the sequences nor the alignment were included in the Thesis as an supplement and are not yet deposited in DNA database and TreeBase, therefore I was not able to judge the relationships and similarity between the species myself! The sequence alignment contains data from several studies, among other from the only other phylogenetical paper of Cantrell and Hanlin (1997). In Cantrell and Hanlin's parsimony tree, *Lachnum pteridophyllum* was found as close to *Capitotricha bicolor* - why was then *L. pteridophyllum* omitted from the presented analysis? It is only mentioned in the discussion.

In the discussion part, again paragraphs more suitable for Results appear - for e.g., those pertaining to Table 3, 4 and Figs 2, 3. There is no sequence of *L. rhytismatis* AJ430394 in the tree (page 5), but AJ430220.

The phylogenetic tree on Fig. 1 is very difficult to read and not only for extremely small font. When the author discusses clade of *Eriosecyphella* spp. or other clades, maybe it would be useful to label the clades as such, especially, when not a single species in the clade bears this generic name.


As to the discussion about the relatedness of various clades: the topology of the presented tree differs in some aspects from that of Cantrell and Hanlin, which is rather usual when other sequences are added to the original dataset. Therefore maybe multigene phylogeny or another gene tree would be more reliable in establishing the relationship between the *Capitotricha* species. On the presented tree, the genus formed well supported clade with only small or no supports for the intra-clade species separation.

Again, stylistic and language problems need corrections when submitting this part.

Chapter VII shows a list of studied species of *Fusilachnum* and *Lachnum* on herbs and makes an impression of a hastily added appendix, so different from much better written checklist in Chapter I and species descriptions in the published chapters. It includes only rough pencil sketches. "Results" in this part should have been named "Comments" as they express author's personal views.

Conclusions: the author performed a lot of collections, observations, comparisons and studied the relevant source literature. In that she produced a valuable inventory and revision of Czech Lachnaceae species and the relevant specimens. She also used molecular methods which were so far applied only once in the research of the phylogeny of this taxon. Therefore it is a pity, that the resulting Thesis contains in the not yet published parts V-VII many stylistic, language and formal errors.

I recommend this thesis for acceptance.



RNDr. Sylvie Pažoutová, CSc.