



Review of PhD Thesis

Jan Prančl: Evolutionary processes responsible for complexity in aquatic vascular plants

Overall assessment

The thesis reviewed represents an outstanding case of modern biosystematic study based on excellent knowledge of the studied objects and an application of appropriate methods to answer clearly formulated questions of general importance.

I like the exhaustive general introduction summarizing all special aspects of aquatic plants from morphological and physiological adaptations, peculiarity of reproduction and dispersal modes to an analysis of evolutionary processes operating in aquatic environment.

The main part of the thesis consists three papers focusing on analysis of genetic variation in two aquatic groups, *Callitriche* and *Ranunculus* sect. *Batrachium* and reconstruction of evolutionary processes, which shaped this variation. Two papers with revised distribution of all species of studied groups in the Czech Republic are next part of the thesis. The strength of this thesis is use modern molecular methods within a frame of traditional taxonomical approach. Results of presented thesis have provided significantly better understanding of evolutionary history of studied groups over large geographical scale and have fundamentally changed traditional view of their taxonomy and distribution of particular species in Central Europe. The author has done a really big scientific job. Therefore, I can declare, that PhD thesis fully meets the requirements for the PhD theses.

Questions to the defence

- There are several cytotype of *Ranunculus peltatus* and *R. penicillatus*, which were represented only by one individual (p. 231). Do you mean they are some important understudied lineages or only some random deviation?
- Why do you think the larger genome size of *Ranunculus trichophyllus* from Hallstättersee (p. 234 p. Fig. 3B) is potentially interesting issue and it is not simple aneuploid like by *R. peltatus* (p. 234 p. Fig. 3G).
- What do you mean about origin of hexaploid *R. peltatus* hybrid from the Vltava river? How do you explain the smallest Cx among all taxa? Do you have some new results of ongoing molecular study?

Technical remark

The whole thesis is clearly written and logically connected. However, the first paragraph at p. 120 does not follow logically to the previous text. I checked the original paper and a beginning part of the paragraph has been omitted by mistake.

doc. ing. Milan Štech, Ph.D.