

*Mycologia*  
Vol. 90, No. 5, pp. 846-853.  
1998

## Cryptic species in the *Puccinia monoica* complex

**Barbara A. Roy**

Geobotanical Institute, Swiss Federal Institute of Technology (ETH), 8044 Zürich, Switzerland

**Detlev R. Vogler**

Conservation Genetics Laboratory, Biology Department, San Francisco State University, San Francisco, California, USA 94132

**Thomas D. Bruns and Timothy M. Szaro**

Department of Plant and Microbial Biology, University of California, Berkeley, California, USA 94720

---

### Abstract

The *Puccinia monoica* complex is an enigmatic group of rust fungi. They are flower mimics, and they greatly reduce host reproduction and survival. These fungi are relatively common, attacking approximately 960 species in 11 genera of crucifers as well as at least five genera of grasses. In modern taxonomic treatments the *Puccinia monoica* complex is treated as four species that are differentiated by the number of spore states in their life cycles. However, other systematic treatments have divided the group into species or forms based on host association. Within the species based on spore state there is morphological variation, but it has not been readily assignable to either host species or geographic area. We used DNA sequencing and phylogenetic analysis to determine whether there are cryptic species in this group that are not evident when only morphology is used. We sequenced the nuclear rDNA region containing the internal transcribed spacers (ITS-1 + 5.8S gene + ITS-2) of isolates from different hosts. Our results indicate that there are cryptic species in the *Puccinia monoica* complex, and that species in this group cannot be identified strictly by life cycle stage.

**Keywords:** Arabis, mimicry, molecular phylogeny, *Puccinia thlaspeos*, rust fungi, Tranzschel's Law