

The endophyte community of spotted knapweed (*Centaurea maculosa* Lam., Asteraceae)

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Spotted knapweed (*Centaurea maculosa* Lam.) is a noxious, invasive plant which was accidentally introduced into North America from Eurasia in the late nineteenth century. We have investigated the fungal endophyte communities of the knapweed plants from 17 locations in both native (Southeastern Europe) and invaded (Northwestern North America) ranges. The endophytes were extracted mostly from the achenes and cultivated in pure cultures. Some plants (especially from dry habitats) have no achene endophytes. According to the ITS-1 sequences we have obtained, 24 different haplotypes (putative species) of endophytes belong to 11 genera of asexual ascomycetes. Among them, *Alternaria* (5 haplotypes), *Botrytis* (6) and *Fusarium* (5) have the most diversity. 17 haplotypes (70%) are present in more than one locality, so the different estimations of haplotype richness (~28–31) are close to the actual number of haplotypes. More than 65% of them have no exact matches in the NCBI GenBank nucleotide database.

Greenhouse experiments showed that endophytes affect knapweed. Effects include suppression of flowering, direct suppression of seed germination, and increased competitive ability of knapweed. Endophyte-infected plants yielded nothing but endophyte-free achenes, suggesting that endophyte transmission is entirely horizontal in *C. maculosa*.

At least 6 haplotypes (25%) are identical in the native and exotic ranges; 3 of them are “exact matches” of GenBank sequences with Eurasian origin. More sampling is needed to determine whether endophytes were generally co-introduced to North America in the achenes of knapweed.