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Belowground traits of herbaceous species in young coniferous forests of the Olympic Peninsula, Washington

Ann L Lezberg, Joseph A Antos, Charles B Halpern

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Canadian Journal of Botany, 1999, 77(7): 936-943, 10.1139/b99-056

ABSTRACT

Variation in belowground traits of herbaceous species may influence their ability to persist and spread during and after the closed-canopy period of forest development. In 40- to 60-year-old closed-canopy, coniferous forests of the Olympic Peninsula, Washington, we excavated root and rhizome systems of 11 herbaceous species to compare morphology, vegetative spread, and proportion of biomass in belowground structures. All species were perennial and most were rhizomatous; four species were nonclonal. Of the seven clonal species, only two (*Maianthemum dilatatum* and *Oxalis oregana*) spread extensively (mean lateral spread >50 cm) by belowground perennating structures. The proportion of total biomass in belowground structures varied considerably among species (21-85%) and was higher for deciduous than for evergreen species. High variability in belowground traits suggests that multiple strategies may contribute to survival during closed-canopy conditions. For species with a high proportion of belowground biomass, we suggest that the ability to store resources or to acquire new resources through lateral spread may contribute to persistence in dense coniferous forests. **Key words:** biomass allocation, canopy closure, forest understory plants, rhizomes, root systems, succession.

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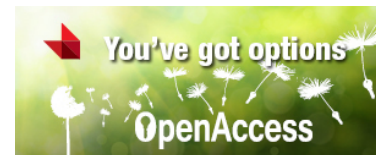
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