

Step Softly: Environmental Stewardship

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Spring is in the air! Native orchid enthusiasts are gearing up for another year of discovery and enjoyment of their favorite blooming beauties. Photographers are hoping to find the species that eluded them previously. Others including myself are looking forward to initiating or continuing long term tracking studies. Now is a good time to consider the relative impact of all those feet on the orchids and their environment.

Believe me, even one person moving carefully through the forest has an impact. Several people following in those same footsteps multiplies the trampling effect. Damage to fragile ecosystems such as bogs and fens may be more quickly apparent but all habitats are vulnerable to foot traffic. Ironically, it is the recent popularity of the 'great outdoors' that exacerbates the problem. The very orchids that interest us may disappear as a result of our forays unless we consider the impact of what we do (Penskar and Higman, 2000; Meleg, 2003). Studies in Finland, Ireland and Switzerland have measured the effect of trampling on forest trees, tree seedlings, ground cover plants and on the soil microbial community. The first plants to disappear are tender herbs like mosses. "With only minimal trampling 20 peatland species are lost" (MacGowan, 1996). In a Finnish study, the microbial community structure of the humus layer in an urban forest was affected by a cascade of events beginning with trampling then extending to changes in vegetation and litter quality which ultimately affected humus pH (Malmivaara-Lämäsa and Fritze, 2003). The Swiss study by Waltert et al. (2002) investigated the impact of trampling on the mycorrhizal roots of seedling and mature trees. Not only did they report that trampling caused considerable damage to forest floor vegetation but it especially affected seedling trees and their mycorrhizal fine roots.

We do not yet have a measure of the indirect effect of trampling on orchids but there are reports of the deleterious effect of leaf damage and removal. When leaves of *Dactylorhiza maculata* and *Tipularia discolor* were removed in whole or in part experimentally, plants became progressively smaller and were less likely to flower the following year (Whigham, 1990; Vallius and Salonen, 2000). Effects of human visitation and touch on plant growth and herbivory have been documented for species other than orchids (Cahill Jr., Castelli and Casper, 2002; Hik et al. 2003). Because we do not yet know enough about the impact of human visitation on orchids, we must minimize disturbance when we visit sites to photograph or otherwise study them. We must take care.

So how do we minimize any damage we may cause?

- A Consider the habitat and its relative fragility. Wetlands are especially vulnerable and should be visited with great caution and preferably not in large groups.
- B Consider the orchid and its rarity. While we may want to see the 'rare' ones, it might be best to leave a fragile site or a small population completely undisturbed. When in doubt, please don't.
- C Consider the orchid and its ecosystem. Orchids do not live in isolation. They have a complex life cycle and a reliance on particular habitat conditions to survive. Human visitation can lead to soil compaction, changes to the soil microflora and loss of vulnerable species.
- D Walk softly and carefully. Even common orchids like the Helleborine (*Epipactis helleborine*) deserve our consideration and respect if we expect to learn something meaningful about their behavior. Ever since I began a study in 1985, I have limited my visits to the absolute minimum needed to gather data, have walked on exposed rocks wherever possible to minimize disturbance, and have resisted moving companion plants that were spoiling my view. I wear running shoes which are less potentially damaging than hiking boots.
- E Be an exemplary environmental steward. Stay on paths and walkways where they are provided and especially where the park respectfully requests that you do so.

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