

Peatlands Need Bigger Buffers to Protect Species

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In 2002, Heritage Program ecologists surveyed peatlands on the Kootenai National Forest in northwestern Montana through a cooperative project with the U.S. Forest Service. Peatlands are an uncommon type of wetland in Montana and support 40 plant species of concern or about 9% of the state's rare flora. These species-rich wetlands are characterized by wet, organic, and nutrient-poor soils. Widespread timber harvesting and related road building have raised concerns that increased sedimentation and nutrient inputs may alter vegetation diversity and nutrient balance. Although existing regulations require small buffers to be left around peatlands, the effectiveness of those buffers had not been evaluated.

In order to test the effectiveness of these buffers, Heritage ecologists sampled eight ecologically similar rich fens, comparing the extent of roading and logging within 50- to 200-meter buffers to vegetation and soil nutrient concentrations within the fens. The results showed that soil nutrients increased as the buffer area—the average distance from the peatland boundary to the nearest road or clearcut—decreased. This relationship was observed at distances of up to 100 meters from peatlands. Increased nutrient concentrations were in turn associated with decreased richness and diversity of vascular plants. We also found that the occurrence of rare species was associated with high vascular plant diversity. These results are significant because the conservation value of peatlands is due in part to the high diversity of species and the large number of rare taxa that they support.

This study suggests that buffer widths required under existing regulations (8-30 meters) do not effectively protect peatlands from adjacent land uses. Increasing buffer distances to 50 or 100 meters may help reduce nutrient inputs from adjacent land uses and thereby maintain the quality of these distinctive wetlands.