

Smooth brome persistence and invasion in the aspen parkland and fescue grassland ecoregions of Alberta

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Less than 5% of grassland dominated by plains rough fescue (*Festuca hallii* (Vasey) Piper) remains in the aspen parkland. Furthermore, efforts to restore disturbed lands are hampered by invasion of aggressive introduced species. Smooth brome (*Bromus inermis* L.) is an aggressive invader on disturbed lands and establishes in native rough fescue prairie. To prevent the spread and establishment of this species in native rough fescue prairie and to effectively eradicate it where it has become established, its pattern and process of invasion and persistence must be better understood. Research has historically focused on local invasions and eradication methods. However, an understanding of landscape level factors that affect smooth brome invasion and persistence is essential to develop ecosystem-level management plans to limit its spread and to provide direction for future research. Brome persistence 25 years after introduction was evaluated along 21 kilometres of pipeline in Alberta's aspen parkland. Landscape-level factors of interest were slope, aspect, dominant vegetation, and grazing impact. Preliminary results show increasing brome persistence as slope angle decreases, dominant vegetation tends towards woody, and grazing impact is minimal. Persistence also increases on north-facing slopes. Moisture appears to be the underlying factor of importance behind the landscape-level pattern of brome persistence. Brome has higher persistence and is therefore more likely to invade in mesic rather than arid to semi-arid environments. It is in these areas where introduction should be avoided and eradication efforts directed. A better understanding of smooth brome invasion ecology will also help guide restoration efforts in the aspen parkland ecoregion.