TALLGRASS ONTARIO

Ontario Tallgrass Prairie and Savanna Association

PRINCIPLE #4

FOR THE MANAGEMENT OF TALLGRASS PRAIRIE AND SAVANNAH FRAGMENTS IN SOUTHERN ONTARIO

Tallgrass Ontario (TGO) has created a series of six principles to offer support to the landowner in southern Ontario who wishes to maintain and enhance their tallgrass habitat, and are derived from the experiences of tallgrass habitat managers from across the eastern portion of North America. These principles apply to all the various tallgrass habitats in southern Ontario including prairies, savannahs, woodlands, and most types of alvars. More information on what, exactly constitutes tallgrass habitats is provided on the TGO website. In addition, please refer to the Further Readings section appended to these principles.

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DISTURB THE EQUILIBRIUM

Prairie habitats depend upon periodic disturbances for their continued existence. Some types of disturbance are built into a site – poor soils, flooding, drought. In other cases, the disturbances are (or were) more dynamic – wildfires, trampling by large herds of elk or other grazers .

One of the biggest issues with prairie conservation today is that such dynamic disturbances rarely occur naturally. Woody and brushy plants are allowed to crowd out tallgrass species. One of the biggest jobs of a prairie manager, then, is to periodically disturb the equilibrium of their prairie site. There are three key issues: First, the type and the intensity of the disturbances MUST be varied. Fire is not the only type of disturbance that gave rise to, or sustained prairies in Ontario. Prairies were also created and sustained by droughts, floods, windstorms, shallow soils, intensive trampling, and low soil nutrients, to name just the more common types of disturbances. Using only one type of disturbance skews the natural order by selecting for only those species that can best survive that particular disturbance. Be creative and try using a matrix of disturbances to keep you patch dynamic.

Secondly, do not assume a set timing for your disturbances. In nature, disturbances happen on a much more random schedule, creating a situation where some years a site can experience extreme disequilibrium when many, or almost all, disturbances happen over the same 12 month period, and several disturbances actually happen almost simultaneously. Some of the most ecologically unhealthy prairies we have seen, on the other hand, are those that are only burned, and further, burned at the same time each year or set series of years. This scheduled, generic disturbance favours particular floral and faunal elements within the prairie patch that then begin to dominate, giving the patch a "cultivated" appearance. The only timing of disturbances that must be met for prairies is what is necessary to keep shrubs and trees to a minimum; apart from that, keep the timing of your disturbances as random as possible.

The third and final point to keep in mind when planning a disturbance regime for your prairie patch is to avoid affecting the whole patch at any one time. Again, because of scheduling and other pressures it has become somewhat common to try and burn entire prairies whenever a crew is available and the circumstances are right. However, this practice ignores the patchy nature of natural prairie fires operating over large landscapes. The unburned patches are vital as refuge for animals fleeing the fire and as seed reservoirs for burned patches, providing habitat diversity over the larger landscape. Further, the location of the undamaged portions should be rotated. Sequential disturbances insure overall habitat heterogeneity, allowing for a higher biodiversity. Unburned portions of prairie can be assured by such techniques as firebreaks, low-intensity fires, and a varied fire schedule. Other types of disturbances will require other techniques to create undisturbed habitat patches. Remember, keep your prairie complex!

FURTHER READING

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ALISON, R. M. (1976). The History of the Wild Turkey in Ontario. The Canadian Field Naturalist, 90, 481-85.

ANDERSEN, O. B., CROW, T. R., LIETZ, S. M., & STEARNS, F. (1996). Transformation of a landscape in the upper mid-west, USA: The history of the lower St. Croix River valley, 1830 to present. Landscape and Urban Planning, 35, 247-67.

BALL, P. W. (1981). Hill's Oak (Quercus ellipsoidalis) in Southern Ontario. The Canadian Field Naturalist, 95(3), 281-86.

BOLLINGER, E. K., BOLLINGER, P. B., & GAVIN, T. A. (1990). Effects of Hay Cropping on the Eastern Populations of the Bobolink. Wilderness Society Bulletin, 18(2), 142-50.

BRAY, J. R. (1960). The Composition of Savanna Vegetation in Wisconsin. Ecology, 41(4), 721-32.

CARPENTER, J. R. (1940). The Grassland Biome. Ecological Monographs, 10(4), 617-84.

CATLING, P. M., & CATLING, V. R. (1993). Floristic Composition, Phytogeography and Relationships of Prairies, Savannas, and Sand Barrens Along the Trent River, Eastern Ontario. 1-53.

CATLING, P. M., CATLING, V. R., & MCKAY-KUJA, S. M. The Extent, Floristic Composition and Maintenance of the Rice Lake Plains, Ontario, Based on Historical Records. The Canadian Field Naturalist, 106(1), 73-86.

COLLINS, S. L. (1987). Interaction of Disturbances in Tallgrass Prairie: A Field Experiment. Ecology, 68(5), 1243-50.

COLLINS, S. L., & ADAMS, D. E. (1983). Succession in Grasslands: Thirty Two Years of Change in a Central Oklahoma Tallgrass Prairie. Vegetation, 51(12), 181-90.

COUPLAND, R. T. (1950). Ecology of Mixed Prairie in Canada. Ecological Monographs, 20, 271-315.

DELANY, K., RODGER, L., WOODLIFFE, P. A., RHYNARD, G., & MORRIS, P. (2000). Planting the Seed.

DEPAUL, L., & KOPITZKE, D. Incentives for Savanna Protection on Private Lands: Past Present and Future. Transactions, 87, 47-56.

DYKSTERHUIS, E. J. (1957). The Savannah Concept and Its Use. Ecology, 83(3), 435-42.

FABER-LANGENDOEND, D., & MAYCOCK, P. F. A Vegetation Analysis of Tallgrass Prairie in Southern Ontario. Thirteenth North American Prairie Conference, 17-32.

FABER-LANGENDOEND, D., & MAYCOCK, P. F. (1987). Composition and Soil - Environment Analysis of Prairies on Walpole Island, Southwestern Ontario. Canadian Journal of Botany, 65, 2410-19.

GIBSON, D. J. (1988). Regeneration and Fluctuation of Tallgrass Prairie Vegetation in Response to Burning Frequency. Bulletin of Torrey Botanical Club, 18(1), 1-12.

GOODBAN, A. G., BAKOWSKY, W. D., & BRICKER, B. D. The Historical and Present Extent and Floristic Composition of Prairie and Savanna Vegetation In the Vicinity of Hamilton, Ontario. Fifteenth North American Prairie Conference, 87-103.

HANNON, S. J., COTTERILL, S. E., & SCHMIEGELOW, F. K. A. (2004). Identifying Rare Species of Songbirds in Managed Forests: Application of an Ecoregional Template to a Boreal Mixed Wood System. Forest Ecology and Management, 191, 157-70.

HERKERT, J. R. (1997). Bobolink Dolichonyx oryzivorus Population Decline in Agricultural Landscapes in the Midwestern USA. Biological Conservation, 80, 107-12.

HIGGINS, K. F. (1984). Lightning Fires in North Dakota Grasslands and in Pine Savanna Lands of South Dakota and Montana. Journal of Range Management, 32(2), 100-03.

HOWE, H. F. (1994). Managing Species Diversity in Tallgrass Prairie: Assumptions and Implications. Conservation Biology, 8(3), 691-704.

JACKSON, M., & COWELL, C. M. (2002). Vegetation Change in a Rainforest Remnant at the Eastern Presettlement Prairie Margin, U.S.A. Natural Areas Journal, 22(1), 53-60.

LEACH, M. K., & GIVNIGH, T. J. (1999). Gradients in the Composition, Structure, and Diversity of Remnant Oak Savannas in South Wisconsin. Ecological Monographs, 69(3), 353-74.

LEE, J. T., WOODY, S. J., & THOMPSON, S. (2001). Targeting Sites for Conservation: Using a Patch-Based Ranking Scheme to Assess Conservation Potential. Journal of Environmental Management, 61, 367-80.

LOOMIS, R. S. (1984). Traditional Agriculture in America. Annual Review of Ecology and Systematics, 15, 449-78.

LUMSDEN, H. G. (1966). The Prairie Chicken in Southern Ontario. The Canadian Field-Naturalist, 80, 33-45.

MACDOUGALL, A. S., BECKWITH, B. R., & MASLOVAT, C. Y. (2004). Defending Conservation Strategies with Historical Perspectives: A Case Study From a Degraded Oak Grassland System. Conservation Biology, 18(2), 455-65.

MAYCOCK, P. F. (1963). The Phytosociology of the Deciduous Forest of Extreme Southern Ontario. Canadian Journal of Botany, 41, 379-438.

MCCUNE, B., & COTTAM, G. (1985). The Successional Status of a Southern Wisconsin Oak Woods. Ecology, 66(4), 1270-78.

MORSINK, W. A. G. (1984). Deciduous Forest Mapping Units and Major Tree Lists for the Essex, Kent, and Lambton Tri-County Area of Southwestern Ontario. Ontario Field Biology, 38, 17-29.

PACKARD, S. (1988). Just a Few Oddball Species: Restoration and the Rediscovery of the Tallgrass Savanna. Restoration and Management, 6, 13-22.

PLUMB, G. E., DODD, JERROLD L. (1993). Foraging Ecology of Bison and Cattle on a Mixed Prairie: Implications for Natural Area Management. Ecological Applications, 3(4), 631-43.

PYNE, S. J. Indian Fires. Natural History, 2(83), 6-11.

REZNICEK, A. A. Association of Relict Prairie Flora with Indian Trails in Central Ontario. Eighth North American Prairie Conference, 33-39.

REZNICEK, A. A., & MAYCOCK, P. F. (1983). Composition of an Isolated Prairie in Central Ontario. Canadian Journal of Botany, 61, 3107-16.

ROBERTS, T. M., ROBSON, T., & CATLING, P. M. (1977). Factors Maintaining a Disjunct Community of Laitris specata and Other Prairie Species in Ontario, Canada. Canadian Journal of Botany, 55, 593-605.

ROBERTSON, H. (1993). Between the Banks and the Blue Sky. Equinox, 47-57. Robertson, K. R., Anderson, R. C., & Schwartz, M. W. (1997). The Tallgrass Prairie Mosaic (pp. xvi, 436 p). New York: Chapman & Hall.

ROGERS, C. M. (1966). A Wet Prairie Community from Windsor, Ontario. Canadian Field Naturalist, 80, 195-99.

SKARPE, C. (1991). Spatial Patterns and Dynamics of Woody Vegetation in an Arid Savanna. Journal of Vegetation Science, 2, 565-72.

GOVERNMENT of ONTARIO. Prescribed Burns For Tallgrass Prairie and Savannas in Southern Ontario. Ontario Ministry of Natural Resources

TESTER, J. R., MARSHALL, WILLIAM H. (1961). A Study of Certain Plant and Animal Interrelations on a Native Prairie in Northwestern Minnesota. Occasional Papers, 8, 1-51.

TRANSEAU, E. N. (1935). The Prairie Peninsula. Ecology, 16(3), 423-37.

VAN DER HEIJDEN, M. G. A. (2004). Arbuscular mycorrhizal Fungi as Support Systems for Seedling Establishment in Grasslands. Ecology Letters, 7, 293-303.

VINTON, M. A., HARTNETT, D. C., FINCK, E. J., & BRIGGS, J. M. (1993). Interactive Effects of Fire, Bison (Bison bison) Grazing and Plant Community Composition in Tallgrass Prairie. The American Midland Naturalist, 129, 10-18.

VOGL, R. J. (1964). Vegetational History of Crex Meadows, A Prairie Savanna in Northwestern Wisconsin. American Midland Naturalist, 72(1), 157-75.

WALK, J., & WARNER, R. E. (2000). Grassland Management for the Conservation of Songbirds in the Midwestern USA. Biological Conservation, 94, 165-72.

WALLACH, B. (1985). The Return of the Prairie. Landscape, 28(3), 1-5.

WARMAN, L., SINCLAIR, ANTHONY. (2000). A Systematic Method for Identifying Priority Conservation Areas Using Wildlife Habitat Relationships and Observed Locations of Rare Species. Proceedings, 141-44.

WOOD, J. D. (1961). The Woodland-Oak Plains Transition Zone in the Settlement of Western Upper Canada. Canadian Geographer, 1, 43-47.