
LICHENS AND THE VANISHED GRASSLAND



by
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If you were trying to select a conversation piece for your living room coffee table, and if the theme were to be British Columbia's native grasslands, your winning choice would surely have to be a dollop of cow dung.

Whether B.C.'s native grasslands have already been called the most endangered of B.C.'s endangered spaces, I don't know. But they should be. Everything you've read about the old growth forests of the Pacific Northwest is weak spruce tea in comparison to the native grasslands. While the former are merely disappearing, the latter already vanished.

This last is a point worth belabouring. And worth belabouring, too, is the fact that the key to the demise of our native grasslands is not just cattle; it's also lichens. Let me tell you what I mean.

In the beginning there were no grasses - and so, perforce, there were no grasslands. Grasses seem to have evolved comparatively recently, the earliest dating from 60 million years ago, or about the time the last of the dinosaurs was busy decomposing. By 25 million years ago, the grasses of western North America had already convened into wide-ranging

grasslands. Today, grasslands cover approximately 30 percent of the earth's land surface - not the least of which is probably your front yard.

Broadly speaking, grasses come in two kinds: spreading sod grasses that reproduce partly by seed, but mostly by underground stems called rhizomes; and tufted bunchgrasses that reproduce by seed alone. Sod grasses are especially well developed over much of the prairies (and your lawn). They are said to have evolved in response to dependable summer rains and heavy trampling by grazing animals. In their turn the sod grasses - lush and virtually evergreen - have historically provided food for grazers in the tens of thousands. Hence, for example, the stampeding bison herds of the Great Plains.

Things are otherwise in the intermountain valleys farther west, including southern B.C. Here, especially at lower elevations, summer drought is more intense, and soil moisture simply too low to support rhizomatous sod grasses. In their place have evolved funnel-shaped, deeply rooted, widely spaced bunchgrasses. These are the signature of the western grasslands.

Because bunchgrasses are quick to go into (relatively) unnutritious dormancy once the summer droughts begin, they provide considerably less sustenance for grazing animals than the sod grasses do. Until recently, less food for the grazers meant - surprise, surprise - fewer of them. This is an important point: different from the prairie sods, the bunchgrass grasslands of B.C. have evolved in the relative absence of large hoofed animals. As you might predict, the plant communities that developed under such conditions were held together by factors other than heavy grazing. Which in a vague way explains why they fell apart so abruptly once grazing cattle came on the scene during the mid 19th century. Simply put, cattle in the western grasslands replaced the bison that never were.

The damage the cattle industry has visited upon B.C.'s native grasslands over the past 150-odd years is impressive. The net effect is an assemblage of grasslands communities so thoroughly denatured that few people realize they have ever been otherwise. This damage has been accomplished partly by the cattle eating their favourite grasses to death, and partly also by their helping to spread and sow a legion of alien invaders, including knapweed, tumbleweed, and tumble mustard - **a weed flora today nearly as large as the native grassland flora itself.**

What, you ask, has any of this got to do with lichens?

The answer is that lichens happen to be the bondfast glue that originally held the bunchgrass communities together. Even today they remain an integral part of any healthy bunchgrass grassland. Given a chance, and in company with mosses, hepatics and algae, lichens form a living crust over the otherwise barren soil that separates one bunchgrass tuft from the next. **So long as that crust remains intact, the grasslands are admirably impervious to the inroads of alien weeds.**

I need hardly describe what effect the trampling of cattle has had on these lichen crusts. At four hoofs per animal, and at God knows how many footfalls per lifetime, the lichens simply haven't got a chance - and neither have the native grasslands the lichens help to maintain. When agrologists tell you that weeds are favoured by overgrazing, they don't really mean overgrazing so much as over-trampling. You could munch the grassland grasses and forbs till the cows come home, but so long as you didn't disturb the soil crusts surrounding them, there would be no opening for the weeds. **It's the trampling of soil crusts, not the mere munching of grasses, that has contributed most to the denaturing of our native grasslands.**

Lately my work has taken me to the grasslands of the south Okanagan, and here I've had occasion to trample a few lichens for myself. But alas, almost invariably the cattle have got there before me; seldom do I find much worth stepping on.

Yet every so often, perched high on some rocky outcrop above the lowing herds, I have been fortunate to glimpse a patch of grassland as it must have appeared three hundred years ago: bunchgrasses tall enough to rub a horse's belly; weeds few and sparse enough to be forgotten; and, at base, the soil still wearing its wonderful, colorful, intricate lichen armour. These things I'd much rather contemplate than cattle dung. *

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