

Loss and Substitution: The Ecology of Production in Southwestern Saskatchewan, 1860-1930

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Article abstract

The history of ecological change in southwestern Saskatchewan, and arguably on the Canadian plains as a whole, has been marked by the loss of indigenous species and their replacement with a smaller number of domestic species valued chiefly for the commercial profits they generate. This decline in natural biodiversity accelerated as regional residents embraced distinct manifestations of market capitalism between 1860 and 1930. Through participation in the robe trade, natives and Métis contributed significantly to the loss of the traditional "buffalo landscape" of the plains before 1880. After 1880, ranchers introduced the grazing patterns of domestic cattle and horses, decimated the population of natural predators, exceeded the grazing capacity of the range, and ultimately affected its vegetational composition. Wheat farmers, who had obliged ranchers to make many of these drastic changes, altered the environment to an unprecedented degree through their abiding devotion to monoculture production. The cumulative result was profound alteration of the nineteenth-century plains ecosystem with attendant economic and social disruption.

Loss and Substitution: The Ecology of Production in Southwestern Saskatchewan, 1860-1930

BARRY POTYONDI

Résumé

The history of ecological change in southwestern Saskatchewan, and arguably on the Canadian plains as a whole, has been marked by the loss of indigenous species and their replacement with a smaller number of domestic species valued chiefly for the commercial profits they generate. This decline in natural biodiversity accelerated as regional residents embraced distinct manifestations of market capitalism between 1860 and 1930. Through participation in the robe trade, natives and Métis contributed significantly to the loss of the traditional "buffalo landscape" of the plains before 1880. After 1880, ranchers introduced the grazing patterns of domestic cattle and horses, decimated the population of natural predators, exceeded the grazing capacity of the range, and ultimately affected its vegetational composition. Wheat farmers, who had obliged ranchers to make many of these drastic changes, altered the environment to an unprecedented degree through their abiding devotion to monoculture production. The cumulative result was profound alteration of the nineteenth-century plains ecosystem with attendant economic and social disruption.

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L'histoire des changements écologiques dans le Sud-Ouest de la Saskatchewan, et plausiblement celle de l'ensemble des plaines, a été marquée par la perte des espèces d'origine au profit d'un nombre restreint d'espèces domestiques prisées d'abord pour leur valeur commerciale. Le déclin de la diversité biologique et allé en s'accéléralant, à mesure que les habitants ont participé aux transformations du capitalisme marchand, entre 1860 et 1930. En participant au commerce des peaux de bison, les Métis et les Autochtones ont contribué à la disparition des «paysages du bison» caractéristiques des plaines d'avant 1880. Après cette date, les éleveurs ont introduit des pratiques de pâturage du bétail domestique et des chevaux qui ont décimé la population des prédateurs naturels, tout en dépassant les capacités naturelles de l'habitat. En dernière instance, la composition végétale de l'habitat s'en trouve même affectée. Les cultivateurs de blé, qui avaient été les premiers à obliger les éleveurs à des changements aussi drastiques, altèrent à leur tour l'environnement, d'une façon inégale, en souscrivant au credo de

The author would like to thank Parks Canada, Prairie Regional Office in Winnipeg, and Dr. Richard Stuart in particular, for the opportunity to carry out the longer study on which this paper is based. Thanks also to David Gauthier, Randy Widdis, Marilyn Lewry, Margaret Carter, Thelma Poirier and Lisa Dale for their research assistance and insightful comments.

la monoculture. De l'accumulation de ces pratiques, l'écosystème des plaines est ressorti profondément transformé, un changement qui entraîna à son tour des ruptures économiques et sociales majeures.

PATTERN OF ECOLOGICAL CHANGE ON THE CANADIAN PLAINS

In three-quarters of a century — one lifetime — the complex buffalo landscape that had dominated the northern Great Plains for 12,000 years or more yielded to a simplified ecosystem devoted to monoculture production. This radical re-ordering of the environment took place as regional inhabitants abandoned the age-old pursuit of lasting subsistence for the more uncertain benefit of immediate financial gain. Economically, the change represented the triumph of market capitalism. Ecologically, it entailed an unparalleled loss of natural diversity. Culturally, it meant recurrent social crisis and physical dislocation.

In the area now known as southwestern Saskatchewan,¹ this transformation began around the middle of the nineteenth century. By 1930, the economy had passed through three main phases of development, each marked by the harvest of a specific commodity for profit. Buffalo were the main commodity before 1880; domestic livestock from 1880 to 1908, and wheat from 1908 to 1930. Environmental alteration was apparent in all phases; only its intensity varied.

THE BUFFALO LANDSCAPE, 1860-1880

By 1860, both natives and Métis winterers made seasonal use of the resources of southwestern Saskatchewan and northern Montana. The natives who contested this area, including Assiniboine, Saulteaux, Cree, Blackfoot, Peigan, Gros Ventres, Bloods and Sioux, were still what John Milloy has called "buffalo people."² Buffalo remained central to their existence, governing their level of subsistence, affecting their social and political relationships, and easing their integration into the emerging market economy of the plains.³ Their participation in the new economy would not reach its climax until the decade of the 1870s.⁴ The buffalo, in turn, depended upon the naturally-curing grasses

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1. As used here, southwestern Saskatchewan refers to the area bounded on the south by the 49th parallel, on the west by the Cypress Hills, on the north by the Missouri Coteau, and on the east by Wood Mountain. It should be noted, however, that the semi-nomadism of the indigenous peoples and the free range methods of the ranchers require a flexible view of the study area in the period prior to 1908.
 2. John S. Milloy, "'Our Country': The Significance of the Buffalo Resource for a Plains Cree Sense of Territory," in Kerry Abel and Jean Friesen (eds.), *Aboriginal Resource Use in Canada: Historical and Legal Aspects* (Winnipeg, 1991), 57.
 3. Irene Spry, "The Great Transformation: The Disappearance of the Commons In Western Canada," in Richard Allen (ed.) *Man and Nature on the Prairies* (Regina, 1976), 21-45.
 4. J. E. Foster, "The Metis and the End of the Plains Buffalo in Alberta," in John Foster, Dick Harrison and I. S. MacLaren (eds.), *Buffalo* (Edmonton, 1992), 61-77. As Foster states, "The

of the vast plain that extended more than 5,000 miles from north to south. So symbiotic were these relationships that the natives themselves should be considered an integral element of the natural ecosystem.⁵ The Métis, who by mid-century had forged strong links to a metropolitan economy that significantly influenced the plains trade, viewed the buffalo differently.⁶ To them, the great beasts were more a source of profit than subsistence. Once both natives and Métis saw the buffalo primarily as a commodity desired by external markets, the species and the ways of life that depended on it were imperilled.

There were a limited number of locales that offered resources of enduring benefit to the natives and Métis: Moose Mountain, Wood Mountain, Old Wives Lake, the Cypress Hills, the Bears Paw Mountains, the Sweet Grass Hills, and the Elbow of the South Saskatchewan River. Plains people made recurring use of these resource oases in accordance with the seasons, the migrations of the buffalo, changing weather patterns, and the state of inter-tribal relations. Everything within the perimeter described by these landmarks was perceived as a veritable no-man's land, an area of semi-arid desolation that the Métis called *Les Mauvaises Terres*.⁷ Explorers, such as John Palliser, considered these "badlands" a northern extension of the Great American Desert and declined to investigate any but the resources on their periphery.

Because each oasis offered comparable resources, including abundant water, grass, and sheltering trees and coulees, they tended to attract similar fauna. Accounts dating from the 1850s to the mid-1870s agree on the predominance of ungulates such as buffalo, moose, antelope, elk, and deer; predators such as wolves, grizzly bears and coyotes; and a host of smaller creatures such as badgers and foxes. In fact, no pre-1874 description fails to mention the profusion and variety of game. Although we have no reliable numbers to judge from, the impression remains that this was a reasonably stable ecosystem as late as the last quarter of the nineteenth century. If this is true, the study area was anomalous, for game and waterfowl were being depleted rapidly in other parts of the North-West —

overwhelming proportion of buffalo hunters in the decade before extinction, the 1870s, were native peoples."

5. R. Grace Morgan, *An Ecological Study of the Northern Plains as Seen through the Garratt Site* (Regina, 1979).
6. Arthur J. Ray, "The Northern Great Plains: Pantry of the Northwestern Fur Trade, 1774-1885," *Prairie Forum* 9: 2 (Fall 1984): 263-80. Gerhard J. Ens, "Kinship, Ethnicity, Class and the Red River metis: The Parishes of St. François Xavier and St. Andrew's" (Ph.D. dissertation, University of Alberta, 1989), 220. Ens indicates that Métis from the Red River Parish of St. François-Xavier first hunted at Wood Mountain between 1856-60.
7. John Palliser, *Papers Relative to the Exploration by Captain Palliser of that Portion of British North America which lies between the Northern Branch of the River Saskatchewan and the Frontier of the United States; and Between the Red River and Rocky Mountains* (New York, 1960 reprint of 1859-60 edition), 190, and Captain S. Anderson, "The North-American Boundary from the Lakes of the Woods to the Rocky Mountains," *The Journal of the Royal Geographical Society* 46: (1876), With Discussions from the Proceedings of the Society, 20: (1875/6).

in fact, throughout the country immediately to the north and east.⁸ The inhospitable nature of *Les Mauvaises Terres* to humans ensured that it remained a haven for many types of game until the people of the plains had no reasonable alternatives.⁹

In the pre-settlement era, this territory can only be described as a buffalo landscape. Recent estimates place the number of buffalo at around 28-30 million head for the Great Plains as a whole.¹⁰ While this is only perhaps one-quarter to one-third of previously-accepted estimates of the total plains buffalo population,¹¹ it is nonetheless a substantial figure, suggesting a density of nine to ten animals per square mile. Even though some observers have expressed the opinion that pronghorn antelope may have outnumbered the buffalo on the plains in pre-settlement times,¹² no other animal made the same impression on the landscape. Buffalo were creatures of such bulk that they had a profound effect on the land through which they passed on their annual migrations.

Wherever they marched in line over the semi-arid plains, buffalo left virtual highways of hard-packed earth. As no vegetation grew on these trails, they became the sites of accelerated soil erosion.¹³ Trampling was another direct effect that the herds had on vegetation, particularly when the animals crowded into small copses to escape the summer heat. In such circumstances, the underbrush might be all but eliminated. This, together with the combined effect of rubbing against and uprooting trees, was, according to George Arthur, "doubtless an important factor in checking the invasion of prairie by aspen and other timber, and hence, an integral element in the maintenance of grassland ecology."¹⁴ Buffalo also left their mark through the creation of wallows. These were shallow pits, usually about two feet deep, with a diameter of some 10 to 20 feet.¹⁵ The wallows of a large herd might cover many acres, usually on level ground but sometimes on moderate slopes as well. The visual effect would not have been unlike a golf course

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8. Arthur J. Ray, *Indians in the Fur Trade: Their Role as Hunters, Trappers and Middlemen in the Lands Southwest of Hudson Bay, 1660-1870* (Toronto and Buffalo, 1974), especially ch.6, "The Destruction of Fur and Game Animals."
 9. So pronounced was the difference in wildlife populations that J. G. Nelson referred to this area as "the last refuge." See his *The Last Refuge* (Montreal, 1973).
 10. Dan Flores, "Buffalo Ecology and Bison Diplomacy: The Southern Plains from 1825 to 1850," *Journal of American History* (September 1991): 471.
 11. Ernest Thompson Seton, the first to adopt a scientific approach to calculating the size of the original herds, estimated some 60 million head. See F. G. Roe, *The North American Buffalo* (Toronto, 1972 reprint), 502. Others have suggested a figure as high as 100 to 200 million.
 12. A. L. Rand, "The 1945 Status of the Pronghorn Antelope, *Antilocapra Americana* (ORD), in Canada," in National Museum of Canada, Bulletin 106, Biological Series 34, Ottawa, 1945. J. G. Nelson repeats this claim in "Changing Fauna of the Northern Plains Area: Images and Effects," in his *Man's Impact on the Western Canadian Landscape* (Toronto, 1976), 50.
 13. Andrew Goudie, *The Human Impact on the Natural Environment* (Cambridge, 1986), 35.
 14. George W. Arthur, "An Introduction to the Ecology of Early Historic Communal Bison Hunting Among the Northern Plains Indians" (unpublished Ph.D. dissertation, University of Calgary, 1974), 16.
 15. *Ibid.*, 14.

with closely-spaced sand traps; the ecological impact was one of spotty de-vegetation followed by accelerated erosion.¹⁶ Naturally, the herds gravitated to lakes, streams, and sloughs as they grazed. Historical reports indicate they turned the moist ground adjacent to these bodies of water into a hummocky landscape, and that they churned up and fouled the water itself. One observer described water holes as “mere mud trampled into paste.”¹⁷ The impact was often so pronounced that horses refused to drink at such spots.

The passage of so many animals left its impression on the land in another form as well. Buffalo dung, called “chips” when dry, covered the plains and was the only means of making a fire for warmth or cooking in the treeless land of southwestern Saskatchewan. While near Wood Mountain in 1874, George Dawson enthused about the abundance of chips; one hundred miles farther west he remarked, with perhaps less fervour, that his party was “wholly dependent” on them for fuel.¹⁸ Their domestic utility aside, the fertilizing quality of the chips has been described as “undoubtedly an important component in maintaining the grasslands of North America.”¹⁹ It has also been argued plausibly that their ubiquity contributed to the devastation wrought by nineteenth century prairie fires. To quote Dawson again, “Dry buffalo chips once taking fire could hardly be put out & often served to set the grass going [on fire] again.”²⁰

Fire was one of the main reasons buffalo found this area so attractive. The grasslands were, quite literally, ablaze each spring and fall in the pre-settlement era from lightning strikes and from fires deliberately set by natives. Contemporary observers believed the natives burned the plains to attract the buffalo or to provide better grazing for their horses, and modern research has offered a scientific basis for this speculation. The grass that follows burning is nutritionally better, as the volume of indigestible plant material is lower and the percentage of foods and minerals higher in the new shoots.²¹ It may also be that ungulates are attracted to new grass because in the absence of plant litter it can be grazed right down to the ground. At the same time, uncontrolled fire could just as easily destroy significant numbers of buffalo,²² consume personal property,²³ and, on

16. Nelson, *The Last Refuge*, 16.

17. *Opening Up the West: Being the Official Reports to Parliament of the Royal North-West Mounted Police Force from 1874-1881 by the Commissioners of the Royal North-West Mounted Police* (Toronto, 1973 facsimile edition), 49. See also Robert Bell, “A Summer on the Plains,” paper read before the Natural History Society of Montreal, 19 February 1874, 21.

18. McGill University Archives. General Diary and Notebook of George M. Dawson, May 1874, British North American Boundary Commission.

19. Milt Wright, “Le Bois de Vache II: This Chip’s For You,” in John Foster, Dick Harrison and I. S. MacLaren (eds.) *Buffalo* (Edmonton, 1992), 227.

20. A. R. Turner (ed.), “The Journal of George M. Dawson, 1873,” *Saskatchewan History* XXI: 1 (Winter 1968): 17.

21. Robert Daubenmire, “Ecology of Fire in Grasslands,” *Advanced Ecology Research* 5 (1968): 237.

22. J. G. Nelson and R. E. England, “Some Comments on the Causes and Effects of Fire in the Northern Grasslands Area of Canada and the Nearby United States, Ca 1759-1900,” in Nelson’s *Man’s Impact on the Western Canadian Landscape* (Toronto, 1976), 37-38.

23. Capt. A. Featherstonhaugh, “Narrative of the Operations of the British North American

occasion, kill people. It also inevitably reduced all the buffalo chips in its path to ashes, making travelling in *Les Mauvaises Terres* more difficult than usual.²⁴

The effects of annual burning on the fauna of the plains were equally mixed. Spring fires might devastate ground-nesting birds, or take a significant toll of newborn buffalo calves or young antelope. Creatures that utilized burrows, such as prairie dogs, badgers, burrowing owls or rattlesnakes, would have been affected less. On the other hand, once a burned area recovered, some species, such as the pronghorn antelope, would likely have found the tender new grass as much to their taste as did the buffalo, particularly during the spring and autumn seasons.²⁵ Prairie chickens, nesting waterfowl, and sandhill cranes have also been found to benefit significantly from the more vigorous growth that follows burning.²⁶

The effects of fire on vegetation are more difficult to assess. While scientists once vigorously debated the impact of recurrent fire on grasslands, most now agree that it was instrumental in suppressing the growth of trees, thereby assisting in the formation and maintenance of the grasslands. This happens because grass recovers much more quickly from burning. In fact, woody species that do not sprout from their roots may be greatly reduced and occasionally eliminated altogether by burning.²⁷ The impact on forbs is less clear, although it seems that in most grassland ecosystems fire tends to favour their proliferation. Forbs are important to the diet of mammals such as antelope and deer.

Perennial grasses usually sprout one to three weeks earlier than usual on burned areas, and may remain green longer.²⁸ This occurs because the denuded soil tends to be warmer during the daytime. At first glance, then, the palatability of such growth suggests that the native practice of burning in the fall may have been important in luring game to the area during the following spring. In the northern plains, however, this advantage could easily be offset by the susceptibility of these early seedlings to spring frosts. It could also be nullified over the longer term by the propensity of ungulates to eat the shoots down to the ground, thereby severely taxing the root reserves and jeopardizing

Boundary Commission, 1872-76," *Professional Papers of the Corps of Engineers*, XXIII: (Woolwich, 1876): 38-39.

24. Isaac I. Stevens, "Narrative and Final Report of Explorations for a Route for a Pacific Railroad near the 47th and 49th Parallels of North Latitude from St. Paul to Puget Sound," in *Reports of Explorations and Surveys to Ascertain the Most Practicable and Economical Route for a Railroad from the Mississippi River to the Pacific Ocean, 1853-5*, Volume XII, Book I. (Washington, 1860), 77.
25. R. Courtney, "Pronghorn Use of Recently Burned Mixed Prairie in Alberta," *Journal of Wildlife Management* 53: 2 (1989): 304.
26. L. Kirsch, and A. Kruse, "Prairie Fires and Wildlife," *Proceedings of the Tall Timbers Ecology Conference* 12 (1972): 291.
27. Daubenmire, "Ecology of Fire in Grasslands," 248.
28. *Ibid*, 242.

the possibility of recovery.²⁹ That the natives of the area persisted in their burning year after year would seem to indicate, however, that they found the practice to their advantage more often than not.

The rapid loss of this complex buffalo landscape was an indirect result of metropolitan demand for buffalo robes. The trade in robes, and to a lesser extent in tongues and hides, was a continental phenomenon that began in the 1830s, rose to a peak between the late-1860s and the mid-1870s, and collapsed precipitously in the late 1870s.³⁰ Estimates of its volume, which are difficult to come by, have been summarized best by Beal, Foster and Zuk.³¹ During the 1830s one American Fur Company partner stated that his firm marketed 70,000 robes per year, that the Hudson's Bay Company sold 10,000 per year, and that other interests handled a further 10,000 robes annually. Another source, referring only to the American Fur Company, estimated a volume of 45,000 robes in 1839, 67,000 in 1840, and 110,000 in 1847.³² Most robes were harvested in the Missouri River watershed, which drains southwestern Saskatchewan, and shipped to eastern markets via the Missouri. Fort Benton, the head of navigation on the Missouri, saw more than 400,000 robes pass over its docks between 1833 and 1858.³³ An additional 760,000 robes were shipped down river between 1859 and 1884.³⁴ During more or less the same period, Hudson's Bay Company purchases are said to have averaged 10,000 robes per year, for a total of about another half million.³⁵

The effect of such heavy annual harvesting was pronounced: by 1879, buffalo were virtually gone from the plains. As they vanished, those who depended on them rapidly depleted the local stocks of other game before seeking more favourable locales. In 1872, for example, the scarcity of game forced the Métis of Wood Mountain to divide their community between that location and one on the Milk River to the southwest.³⁶ This was a pragmatic response to the reduced carrying capacity of the modified ecosystem. Three years later, when only straggling herds could be found east of the Cypress Hills, the Métis all but abandoned their traditional wintering settlement at Wood Mountain.³⁷ By 1880, most had permanently relocated, some to the Missouri River country to the south, others to northern and central Saskatchewan, and still others to the Peace River country of

29. A. De Vos, "Ecological Conditions Affecting the Production of Wild Herbivorous Mammals on Grasslands," *Advances in Ecological Research* 6 (1969): 150.

30. R. F. Beal, J. E. Foster, and Louise Zuk, "The Métis Hivernement Settlement at Buffalo Lake, 1872-1877," unpublished report prepared for Alberta Department of Culture, Historic Sites and Provincial Museum Divisions, April 1987, 82 cf.

31. *Ibid.*, 86.

32. *Ibid.*, 86.

33. Joel Overholser, *Fort Benton: World's Innermost Port* (Fort Benton, 1987), 30.

34. *Ibid.*, 31-32.

35. Beal, Foster and Zuk, "The Métis Hivernement Settlement," 86.

36. Wood Mountain Historical Society, *They Came to Wood Mountain* (Wood Mountain, 1967), 6.

37. L'Abbé C. Rondeau, *La Montagne de Bois (Willow-Bunch, Sask.)* (Québec, 1923), 64.

Alberta.³⁸ The remaining few established a new settlement at Willow Bunch, east of Wood Mountain. Indigent natives, on the other hand, were denied even the right to relocate as they pleased. Having signed away their rights to the land during the treaty negotiations of 1874 and 1876, the Cree, Assiniboine and Saulteaux who then dominated the area demographically were obliged by the Dominion government to relocate to reserves in the Qu'Appelle Valley to the north. Neither culture would ever regain its domination of the plains.

RANCHERS ON THE BUFFALO PLAINS

Railways mark the boundary between native and non-native domination of the plains. The same rails that quickly carried off millions of tons of buffalo bones, thus removing the most poignant feature of the ancient buffalo landscape, permitted more efficient integration of hinterland resources and metropolitan markets and opened up new opportunities to those with investment capital.

Where Palliser, in search of arable lands, saw no utility in southwestern Saskatchewan, ranchers recognized the grass for what it had always been, the area's most important resource. Beginning in the mid-1880s, Métis and French-Canadian ranchers served small local markets, comprising mainly Indian reserves and Mounted Police detachments, but within a decade large American concerns were shipping thousands of head annually to eastern Canadian and foreign stockyards.

In the absence of other demands for land in the southwest, the ranchers were able to operate in accordance with the American tradition of the free range. This meant letting the cattle and horses graze the range, unmolested, until the annual fall round-up. Much of the time the whereabouts of specific herds was unknown. Little thought was given to putting up winter feed, which meant the death of hundreds or perhaps thousands of head in all but the mildest winters. The most serious instance of this was the winter of 1906-07, when local ranchers lost at least half their beef herds, but there had been a number of less drastic "die-offs" in previous years as well. While undeniably hard on domestic stock, this laissez-faire approach to range utilization did little to impair the grassland itself because cattle and horses could adjust their grazing patterns to the availability of grass. Livestock were also not present in numbers sufficient to overwhelm the range.

As the new proprietors of the grasslands, ranchers were concerned with the devastation wrought annually by grass fires. Indeed, so severe was the impact that non-native residents of the southwest sometimes referred to fires as the chief impediment to their prosperity. Recognizing this, the government of the North-West Territories instituted a system of stiff penalties for starting fires.³⁹ The effect of such penalties is

38. Walter Hildebrandt and Brian Hubner, *The Cypress Hills: The Land and Its People* (Saskatoon, 1994), 39.

39. Canada. National Archives (NAC), RG 15, Records of the Department of the Interior, Vol. 139, File 275, "An Ordinance for the Prevention of Prairie and Forest Fires, passed 26 September 1879."

unknown, but clearly not even the rule of law could stop common lightning fires. The threat of fire became even more acute once the main line of the Canadian Pacific Railway crossed the northern edge of the area in 1882-83. It then became common for Mounted Police reports to note, as did one in November of 1888, that

the whole district, with the exception of Wood Mountain itself, was burnt over by prairie fires, which came down from the neighbourhood of the Canadian Pacific Railway. None of these were preventable, nor could their actual origin be ascertained, as they covered such a large area. . . . There will, consequently, be no feed for horses along the line of patrol until well into June of next year.⁴⁰

Because sparks from the smokestack could not be arrested effectively, the railway instituted a policy of burning the grass along its right-of-way. In an extremely dry year like 1893 even this measure did not help, while in a wet year, such as 1891, it was not at all necessary. To a considerable extent, then, the human agency in starting fires in the grasslands continued for decades after the natives were confined to reserves, although not on a deliberate basis.

Elsewhere on the plains, notably where farm settlement was already dense, the incidence of fires declined markedly during the same years.⁴¹ The sparsely-settled country of the southwest, where ploughs remained rare, was the last section of Saskatchewan to control prairie fires. They remained an integral component of the ecology of southwestern Saskatchewan until the Great War years, serving to distinguish the area from the remainder of the northern plains. They also exemplify the comparatively benign impact of early ranching on the natural environment. Despite their intentions, ranchers were simply unable to prevent prairie fires, a fundamental component of the age-old grasslands ecosystem.

The introduction of domestic livestock was accompanied by a new attitude toward the natural predators of the southwest. Before 1880, wolfers had sought the skins of wolves and coyotes for immediate financial gain but, as ranching intensified, these elements of the natural order were perceived for the first time as a serious threat to business rather than a source of profit. Unaware of, or perhaps indifferent to, the place of wolves, coyotes, bears, foxes and other carnivorous creatures in the area's ecosystem, ranchers tried to exterminate them. Their response to the natural environment was based almost exclusively on the protection of capital assets.

The destruction of predators was not unique to the local ranching community. Rather, it was a pattern of behaviour toward wild carnivores that may be traced back for centuries in Europe and to the colonial period in North America.⁴² This attitude was

40. Canada. Sessional Papers. *Annual Report of the Commissioner of the North-West Mounted Police for 1888*.

41. S. Raby, "Prairie Fires in the North-West," *Saskatchewan History* XIX: 3 (Autumn 1966): 81-99.

directed at birds such as hawks and eagles no less than at wolves and coyotes. Typically, all such creatures were described as “noxious” or, more simply, “bad.” The prevailing attitude was well summed up in the name of a piece of Saskatchewan legislation called “The Useful Birds Act.” As creatures without obvious economic utility, wolves, coyotes, foxes and other predators became dispensable.

The destruction of predators rose as farm settlement spread through Saskatchewan (see Figure 1). While local data are fragmentary and not available at all beyond 1911, statistics for the entire province reveal that the killing of wolves peaked as early as 1911 at 270 head and then steadily declined, with only two comparatively minor rises, the first in 1917-18 (59 head) and the second in 1923-24 (31 head). That the absolute numbers are so small may indicate either that unrecorded, pre-1911 kill levels were much higher than those which followed, or that few wolves had survived the elimination of the buffalo in the 1870s. With the virtual disappearance of the wolf from the plains, yet another element of the old buffalo landscape was lost.

The situation with respect to coyotes was more grim (Figure 2). The pattern of extirpation was also different, with an annual kill of about 7,600 head in 1911 rising to a staggering 35,794 in 1918-19 before beginning an even more precipitous decline. It must be remembered, too, that the data reflect only applications for bounties, so that the total number of animals killed may have been higher.

It is possible to trace the slaughter of wolves and coyotes only because this was a kill officially sanctioned by the provincial government. Lost from statistical view are the concurrent deaths of other creatures such as the magpie, the long-billed curlew, and the swift fox. The magpie nearly disappeared from southwestern Saskatchewan between 1902 and 1911 as a result of eating poisoned bait put out to eliminate coyotes.⁴³ Virtually nothing is known about the curlew’s near loss, except that it happened after 1910.⁴⁴ With regard to the swift fox, when pioneers such as Eloise Leighton arrived in the country in 1906, she said they were not only a common sight, but a nuisance, too, as they had a habit of chewing up harness for its salt content.⁴⁵ The boys in the McEwen family, who homesteaded southwest of Wood Mountain in 1910, held contests to see who could snare the most swift foxes and gophers “as both were plentiful in those days.”⁴⁶ Equating swift foxes with gophers seems beyond belief in light of their rapid and almost complete disappearance. Yet local people like George Smith, who worked on ranches along the Frenchman River as a young man and later resided near Mankota, said that the one and

42. Thomas R. Dunlap, “Values for Varmints: Predator Control and Environmental Ideas, 1920-1939,” *Pacific Historical Review* LIII (1984): 144.

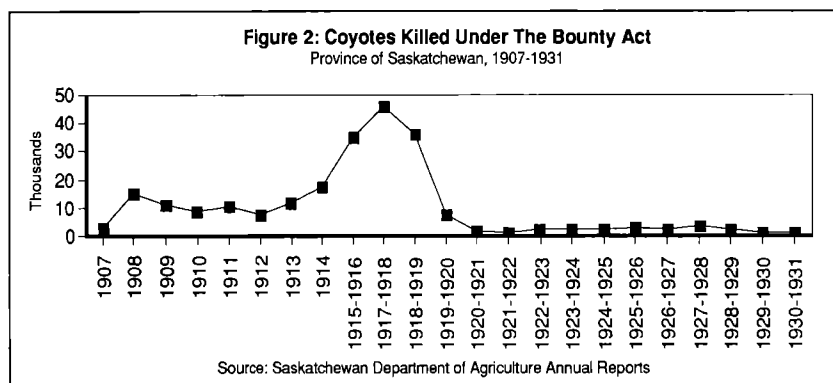
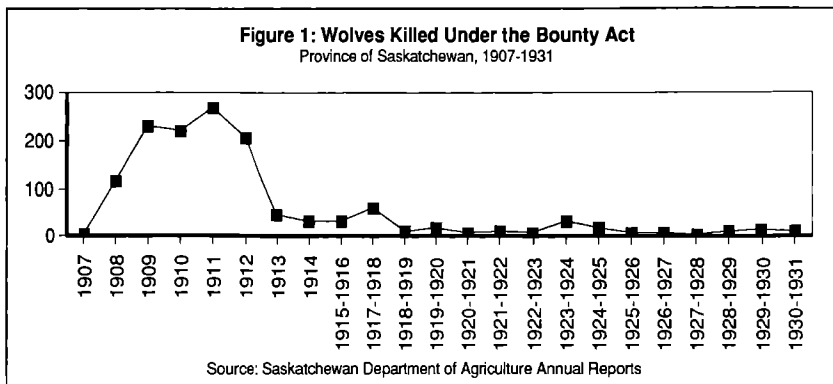
43. Saskatchewan. Department of Agriculture. *Annual Report for 1927*, 166.

44. Observations made by local ornithologists along the Whitemud River and reported as “Bird Migration Notes” in the annual reports of the Department of Agriculture to 1910 indicate that up to that time the long-billed curlew was common along that stream.

45. Wood Mountain Historical Society, *They Came to Wood Mountain*, 95.

46. *Ibid*, 176.

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only time he saw a swift fox was in 1926, when his father made a special point of showing him one in a granary near Bracken.⁴⁷ In only a decade or so, another once-numerous species had been virtually exterminated.

Once the Dominion Lands Act was amended in 1908 to allow farm settlement of semi-arid lands such as those in southwestern Saskatchewan, barbed-wire fencing enclosed most of the land and the era of the open range drew to an end. Ranchers had no choice but to adopt more self-sustaining grazing methods or face the loss of pastures through environmental degradation brought about by the same over-stocking that had destroyed the American range. After 1908, then, law determined the basic relationship between people and the natural world in the grasslands.

Fencing increased grazing pressure which affected, in turn, the composition of the range. Unable to graze freely as the quantity and quality of pasture diminished in one

47. George Smith, interviewed by Thelma Poirier, 18 January 1993 (transcript of the interview is in author's possession).

area, livestock cropped the grass beyond its capacity to recover quickly. This affected the proportion of grass species. Normally, short- and mid-grasses such as blue grama, speargrass, wheatgrass, and Junegrass comprise most of the vegetation in a short-grass prairie setting such as southwestern Saskatchewan. Blue grama grass may account for one-quarter to two-thirds of the grass coverage.⁴⁸ As the intensity of stocking increases, the proportion of blue grama increases markedly. As other grasses are eliminated, weeds take their place.⁴⁹ Being less palatable to livestock, the weeds flourish and produce seeds in quantities that may soon overwhelm the range. This impact was exacerbated in the southwest by the high proportion of horses, known for their close grazing.⁵⁰

The severe drought of 1917-21 made permanent degradation of the range a distinct possibility throughout the southwest. As Rowe and Coupland explain, this took place because

Persistent heavy grazing decreases the supply of soil moisture by reducing the amount of organic matter and vegetative protection at the soil surface. The rate of infiltration is reduced with the result that more moisture evaporates or runs off. Increased insolation at the unprotected soil surface during the warmest season further adds to evaporative loss. The results have been reduced plant vigour, in terms of both height and density, and changes in floristic composition.⁵¹

This offers an even greater advantage to the more drought-resistant blue grama grass, to the detriment of other species, and the cycle of weed infiltration continues. The situation was made worse by a post-war decline in livestock prices, which prompted many ranchers to keep their stock from market, thus exerting more pressure on the range.

By 1920, the traditional approach to ranching in the southwest was seriously compromised. The need to import winter feed and to ship livestock to greener pastures elsewhere in the west were symptoms of the drastic change that had occurred in the range through a combination of drought and over-stocking. One study of grass yields at Swift Current found that between 1888 and 1960 the growth of the range exceeded livestock requirements in only 22 of the 72 years.⁵² In 27 of those years, grass stocks were insufficient to meet the demand of cattle on the range. This, together with the uncertainty

48. S. E. Clarke, J. A. Campbell and J. B. Campbell, "An Ecological and Grazing Capacity Study of the Native Grass Pastures in Southern Alberta, Saskatchewan and Manitoba," in Canada, *Department of Agriculture Technical Bulletin* 44 (1942): 11.

49. S. E. Clarke, "Pasture Investigations on the Short Grass Plains of Saskatchewan and Alberta," *Scientific Agriculture* 10 (1930): 747.

50. R. T. Coupland, "A Reconsideration of Grassland Classification and the Northern Great Plains of America," *Journal of Ecology* 49 (1961): 136; and J. B. Campbell, R. W. Lodge, A. Johnston, and S. Smoliak, *Range Management of Grasslands and Adjacent Parklands in the Prairie Provinces* [Canada. Department of Agriculture, Publication 1133 (Ottawa, 1962)], 7.

51. J. S. Rowe and Robert T. Coupland, "Vegetation of the Canadian Plains," *Prairie Forum* 9: 2 (Fall 1984): 243.

52. *Management of Prairie Rangeland* [Agriculture Canada Publication 1589/E (Ottawa, 1982)], 19.

of tenure that confronted the ranching community at the same time, forced all but a few ranchers out of business during the 1920s.

THE FARMER AS ENVIRONMENTAL ENGINEER

Farmers displaced the ranchers of southwestern Saskatchewan with stunning rapidity. Individually, farmers often found it difficult to adapt successfully to semi-arid lands, yet as an economic group their ecological conquest of the plains was swift and convincing. Motivated by the prospect of significant and rapid economic gain, supported by the latest technology and science, and much favoured by politicians, the farming community demonstrated an awesome prowess in transforming the plains into an artificial, managed environment.

The demand for farm land in southwestern Saskatchewan was part of the broader agricultural settlement of the western plains before the Great War. After 1896, as a global depression lifted and demand for farm products grew, prospective farmers took up land even in the driest corners of the west. There were good reasons for doing so. Between 1896 and 1913, a bushel of wheat landed at Liverpool rose in value from \$0.84 to \$1.13; during the war years, the price would peak at more than \$2 per bushel. Crop production soared, to the point where the railways were frequently unable to meet the demand for boxcars in the autumn months. Farmers petitioned politicians and railway companies for the construction of more branch lines, better elevator facilities, and lower freight rates — and got them. They imported seasonal labour from eastern Canada and abroad to ensure a successful harvest season. For a brief time, land prices shot skyward and small towns boomed everywhere on the plains. In such a heady atmosphere, farmers who borrowed heavily to buy more land and the machinery needed to farm it successfully seemed the most rational of businessmen.

The farmers of southwestern Saskatchewan realized that they could benefit optimally from this surge in demand only if they significantly altered the natural environment. Simply put, the land as they found it failed to satisfy their economic imperatives. Indeed, aside from some pasture for their small cattle herds and draft horses, these settlers had little initial use for grassland. Instead, they subscribed to the government view that “the first task of the farmer is to destroy native plants in order to prepare a place for cultivated plants to grow.”⁵³ This was essentially the same argument advanced by ranchers when they spoke of wolves and cattle, an unveiled reference to what they saw as an irreconcilable clash between wilderness and civilization. Certain elements of the landscape had to be eliminated before economic progress could occur. Grain farming was nothing less than the agriculture of ecological transformation.

It is this aspect of conscious environmental alteration that differentiates the farming era so clearly from those of the natives, the Métis, and the ranchers. Cereal agriculture

53. Saskatchewan. *Report of the Royal Commission Inquiry into Farming Conditions, 1921*, 46.

was simply not viable within the existing ecosystem. The grass had to be ploughed, new seeds sown, creeks dammed, and predators, rodents and insects killed if the new economic régime was to last. The result of this direct intervention was a fundamental and irreversible metamorphosis of the grasslands environment.

This change must be understood in the context of local climate and soil conditions, neither of which favours cereal agriculture. Farmers wishing to grow and harvest grain successfully in this, the heart of Palliser's infamous triangle of aridity, must hope for an advantageous conjunction of many circumstances, none of which they can influence. Even if they chose their land with an eye to the most fertile soils, they must still rely on the rains to come in the spring and stay throughout the early summer months to germinate the seed and bring the vulnerable seedlings to maturity. The temperature must remain moderate, for frost and excessive heat can severely damage the immature crops. The winds must not blow too hard, especially when the air is hot, for this will desiccate the tender, green shoots. And the unpredictable mid-summer hailstorms must rage elsewhere upon the land. In such an area, the possibility of crop failure is great. When the environment does co-operate, farmers in southwestern Saskatchewan may produce bumper crops that rival any in the west, but over the longer term the margin for success in monoculture production is slim without significant capital reserves and strong market demand.

From a technological and scientific point of view, however, these newcomers to the plains were well-positioned to bring about the transformation of their choice during their brief tenure. They were the beneficiaries of decades of practical experimentation with dryland farming in Canada and the United States. Agricultural experimental stations and sub-stations throughout the prairies conducted scientific trials with new grain varieties, machinery, and farming methods to give incoming settlers every chance to succeed in the semi-arid west. The federal government led in disseminating this knowledge and, after 1905, field representatives of Saskatchewan's Department of Agriculture spent much of their time spreading the gospel of technological innovation and product diversification to large audiences of farmers throughout the province.

Of all the changes wrought by farmers in the grasslands, alteration of the soil structure was perhaps the most fundamental. Ploughing the sod led to a loss of what is called the crumb structure of the soil. In the top six inches of virgin soil, 80 to 100 per cent of the minerals are tied up in crumb-like aggregates. Continuous cultivation typically reduces this proportion to less than five per cent.⁵⁴ Another result may be greater compaction of the soil particles, which reduces the soil's ability to absorb moisture, resulting in greater surface run-off. Very fine soils can also form crusts under the beating action of rain and essentially seal themselves against water penetration. Where strong winds blow regularly, the potential for wind-based erosion during a dry season is also

54. George W. Cox and Michael D. Atkins, *Agricultural Ecology: An Analysis of World Food Production Systems* (San Francisco, 1979), 272-74.

increased by regular cultivation. To C. H. Anderson, an authority on western soil erosion, the historical relationship between cereal agriculture and erosion by wind was clear; in his words, "soil drifting started on the prairies as soon as the soils were cultivated."⁵⁵

The introduction of exotic grains was a second basic change. Under favourable conditions, these "green immigrants," as one botanist has called them,⁵⁶ became established quickly, first dominating the look of the land and, eventually, its ecology. Between 1907 and 1914, the total cropped acreage of Crop District No. 3, which took in all of southwestern Saskatchewan, rose from a mere 20,000 acres to more than 600,000 acres.⁵⁷ Most of this land was devoted to wheat production, particularly Marquis and Red Fife, for which there was strong market demand. Oats, used primarily as horse feed, formed the next largest crop in the study area. Barley and flax made up the small remainder.

Farm settlement also brought about the decline of prairie fires. Even though train locomotives became more common throughout the study area as settlement advanced, the incidence of prairie fires dropped steadily until, by about 1917 — ironically, the beginning of the drought — such conflagrations were rare. The railway companies, dependent as they were on the yields of the cropland that flanked their tracks, could not afford to be careless about inadvertently igniting the countryside. As a result, section gangs set controlled burns of the right-of-way to reduce the likelihood of fire from a cinder-belching steam locomotive. Stubble burning, another cause, was regulated by the municipal governments and local improvement districts formed in the pre-war years. Construction of roads provided an effective grid of fireguards that contained most blazes that did erupt. And of course the sheer density of the population made a significant difference, not only because an increasing number of settlers regularly ploughed fire guards that hindered the progress of a blaze, but also because for the first time people were around in sufficient numbers to fight a fire successfully. Aside from eliminating the blackened landscape and smoke-laden air of yesteryear, the cessation of annual fires allowed additional trees to take root and flourish in the sheltered, well-watered coulees.

Just as efforts to prevent grass fires was based in economic self-interest, so too were the campaigns of destruction that farmers waged against numerous species of wildlife indigenous to the area. While the farmers' participation in wolf and coyote eradication was likely every bit as great as that of the ranchers,⁵⁸ they were alone in their contempt of gophers. The provincial government assisted by providing strychnine and detailed instructions on setting the bait. It even went so far as to enlist the help of every pupil in

55. C. H. Anderson, *A History of Soil Erosion by Wind in the Palliser Triangle of Western Canada* (Ottawa, 1975), 8.

56. Claire Shaver Haughton, *Green Immigrants: The Plants that Transformed America* (New York and London, 1978).

57. Saskatchewan. Department of Agriculture. *Annual Reports for 1907 and 1914*.

58. Kills of both wolves and coyotes rose markedly as settlers emigrated to southwestern Saskatchewan between 1908 and 1917. See Figures 1 and 2.

the province by organizing an annual Gopher Day, when enticing prizes were awarded to the children who killed the largest number of gophers. The full impact of this campaign remains unknown, but in 1920 alone more than two million gophers were destroyed on Gopher Day,⁵⁹ and this says nothing about unrecorded kills.

Provincial government officials felt that farmers should have applied this same vigilance to weeds in the southwest. In 1905, the Department of Agriculture designated a provincial weed inspector to offer sound advice at agricultural exhibitions, stock shows, and the similar gatherings. The premise of this proselytizing was the same as that which lay behind all of the Department's extension work. As the first Annual Report phrased it, "all must admit that good farmers cannot be made out of bad by Act of Parliament."⁶⁰ Accordingly, the Weed Inspector and, later, his regional subordinates, emphasized that weeds used up the moisture domestic crops needed to grow to maturity, which led to reduced profits.

Like botanical stowaways, weeds accompanied emigrants to southwestern Saskatchewan. Immigration officials were often berated for their lax inspection of settlers' outfits at the border, for it was held that many immigrants brought "foul" seed grain with them into the country, thus initiating a chain of weed infestation that could not be broken. Particular concerns were raised about the amount of "dirty" flax seed coming in from the United States. While immigration officials may have made the situation worse through inaction, it was always farmers themselves who were singled out as the greatest source of field contamination. In the government view, farmers frequently used dirty seed grain, failed to clean weeds off their implements before moving from one field to another, and fed weed-infested feed to their livestock, which then deposited the seeds far and wide. Saskatchewan's Weed Inspector believed that the noxious growth along the province's road allowances was caused by hauling weed-infested grain to market; the small weed seeds would leak out of the wagon box onto the road, where they would be picked up by the wheels of other passing vehicles or the feet of horses.⁶¹ Elevator agents themselves were also condemned from time to time, as some disposed of their screenings — the weed seeds separated from the grain — by dumping them in low spots on the prairies, thus ensuring many weeds a well-watered, uncultivated base from which to spread. As more and more exotic cereal grains were imported from overseas, the character of weed infiltration assumed a specific pattern: according to one authority, some 60 per cent of the farmland weeds now common in Canada are of European origin.⁶² This particular impact of cereal agriculture must be considered all the greater for the fact that the native grass species of the Great Plains were among the plant species most resistant to invasion and colonization by non-indigenous forms of vegetation.⁶³

59. Saskatchewan. Department of Agriculture. *Annual Report for 1921*, 79-81.

60. Saskatchewan. Department of Agriculture. *Annual Report for 1905*, 21.

61. Saskatchewan. Department of Agriculture. *Annual Report for 1905*, 22.

62. Edward Salisbury, *Weeds and Aliens* (London, 1961), 87.

63. Alfred W. Crosby, *Ecological Imperialism: The Biological Expansion of Europe, 900-1900*

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Strong wartime demand for grain ensured the occupation and cultivation of every dry acre of a land that had been a refuge for game for millennia. The resulting pressure on habitats was more than many species of wildlife could bear. A 1913 report on the southwest, typical of the period, indicated that “big game has almost left this district. There are a few antelope, white tailed deer and black tailed deer. All reports indicate that big game is decreasing in this district. . . .”⁶⁴ The report went on to pin-point the reasons for the decrease:

The game laws in this district are not observed any too well. One guardian reports: “The provisions of The Game Act are observed somewhat indifferently by farmers in outlying districts, especially in the case of antelope shooting.” Elk, deer, antelope and swans are in danger of being exterminated, according to our guardian’s reports.⁶⁵

The decline was apparent among other species as well. For example, after 1914 Neil Gilmour, the provincial game guardian for the southwest, repeatedly noted the scarcity of prairie chickens and grouse. Gilmour believed that over-hunting was one reason for the decline, but he also observed that “farmers when improving their property often unintentionally destroy the natural breeding grounds of the grouse. This is a source of destruction which eventually has an appreciable effect upon the supply of game in certain districts.”⁶⁶ He further linked their demise to an increase in natural predators that occurred as the price paid for mink, skunks, weasels, and coyotes declined after the Great War began. Gilmour reserved his most poignant comments for the antelope of the southwest. This timid creature had been reduced, by 1913, to as few as 1,500 head. The winter of 1906-7 had been as hard on them as on cattle,⁶⁷ but Gilmour attributed the loss to “the encroachment of settlers upon their former breeding grounds,” with its concomitant rise in their loss to hunting farmers.⁶⁸ Gilmour’s astute comments contain more than a glimmer of understanding of what would later be called “the balance of nature,” yet he and his counterparts throughout Saskatchewan had no effective means of enforcing the game preservation laws of the day.

The endless fields of grain that characterized the whole of the North American Great Plains in this century also proved fertile ground for a number of plant diseases and insects. These natural infestations got their start on the winter wheat crops of the Texas plains and then worked their way north as the season advanced. Their spread was further encouraged by the adoption of monoculture agriculture, which provided the same favourable conditions year after year.⁶⁹ Stem rust and stinking smut were the most

(Cambridge, 1986), 159 cf.

64. Saskatchewan. Department of Agriculture. *Annual Report for 1913*, 232.

65. Saskatchewan. Department of Agriculture. *Annual Report for 1913*, 233.

66. Saskatchewan. Department of Agriculture. *Annual Report for 1916*, 229.

67. Saskatchewan. Department of Agriculture. *Annual Report for 1908*, 176.

68. Saskatchewan. Department of Agriculture. *Annual Report for 1913*, 246.

69. Canada. Department of Agriculture. *Diseases of Field Crops in the Prairie Provinces Canada*. [Department of Agriculture Publication 1008 (Ottawa, 1967)], 7.

Table 1: Estimates of Insect Damage, 1926-1930

Year	Sawfly	Cutworms	Wireworms
1926	\$12,341,000	\$3,053,000	\$3,533,000
1927	4,565,000	695,000	4,145,000
1928	4,270,000	555,000	3,865,000
1929	5,503,000	1,329,000	3,180,000
1930	2,315,000	3,195,000	1,510,000
Totals	\$28,994,000	\$8,827,000	\$16,233,000

Source: Saskatchewan Department of Agriculture. *Annual Report for 1931*, 22.

common diseases affecting local cereal crops. Until better means of control were found, which did not occur until the 1930s, rust and smut wreaked havoc on the prairie economy. Rust was particularly a problem in 1916, 1921, 1925, 1927, and 1930. One estimate placed the loss to Saskatchewan and Manitoba wheat crops for the years 1925-32 at more than \$35 million.⁷⁰ Losses attributable to smut were smaller but still substantial, on the order of \$12 million for Canada as a whole in the years 1920-23.⁷¹

Newly-broken or repeatedly-sown cropland also encouraged the spread of various damaging insects. Wireworms, cutworms, and sawflies formed the most feared entomological threesome in western Canada. Data on damage attributable to them are scarce, for provincial crop reports rarely tallied losses according to cause, but in 1931 the Department of Agriculture provided the following information on estimated provincial loss from these insects in the period 1926-31 (Table 1). Invariably, the southwest corner of Saskatchewan was included among those areas where crops had been seriously damaged by these insects.

Better known than any of these insects, perhaps only because of its visibility, was the grasshopper. Long considered a recurrent menace to plant life on the plains, grasshoppers badly damaged crops in southwestern Saskatchewan during the drought years of 1917-21. In 1920, for example, an estimated \$1.7 million worth of grain was destroyed between the international boundary and Saskatoon.⁷² Provincial and federal authorities urged farmers to combat the insects with Paris Green, a mixture containing

70. H. T. Güssow, *Losses Caused by Diseases of Cereals in Western Canada* (Ottawa, 1933), 3-5.

71. *Ibid.*, 4.

72. Saskatchewan. Department of Agriculture. *Annual Report for 1921*, 69 cf.

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arsenic trioxide and copper acetate, with the result that 7,200 tons of poisoned bait were spread on Saskatchewan's fields in a single year.

Despite the extraordinary ability of farmers to modify the dryland plains environment, it paled in comparison to nature's ability to reverse their fortunes time and again. Without detailed analysis of local land records, we will never know the exact extent of the economic devastation that afflicted farmers regularly in the southwest prior to 1930. One study of a "typical" farming township in the Maple Creek area showed, however, that 28 per cent of the original homesteaders left permanently in the period 1910-20, while an additional 34 per cent departed between 1920 and 1930. Altogether, then, on the order of 62 per cent of homesteaders abandoned their land between 1910 and the Great Depression.⁷³ This is consistent with Chester Martin's estimated failure rate of 57 per cent for all Saskatchewan farmers between 1911 and 1931.⁷⁴

The economic devastation of the south country after 1917 aroused a clamour for permanent solutions to farming's problems within a semi-arid environment. Both the provincial and federal governments responded with a wide range of initiatives, most of which had been identified in a 1921 royal commission into farming conditions in the southwest that local farmers had demanded.⁷⁵ The keystone of their recommendations was reiteration of the need for greater farm diversification, something that both federal and provincial authorities had advocated strenuously in Saskatchewan during the previous two decades. And, for a time, it seemed that farmers in the southwest were finally willing to accept lower immediate returns in exchange for greater long-term security.

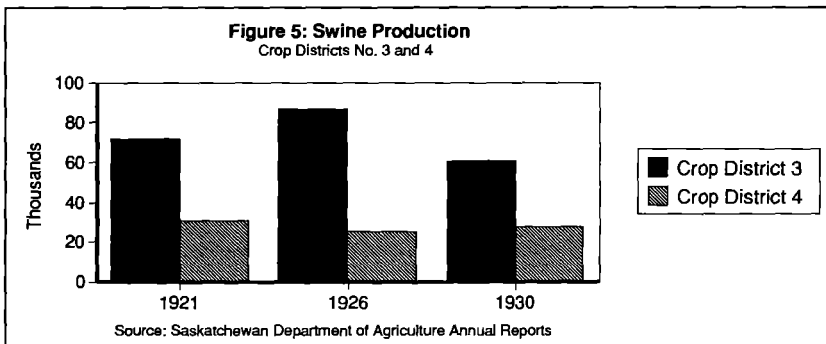
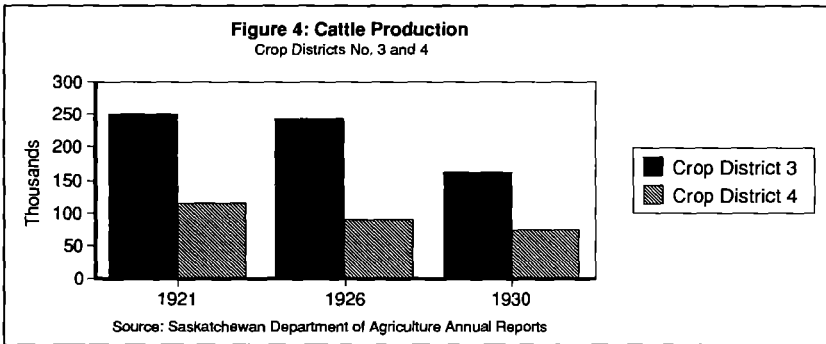
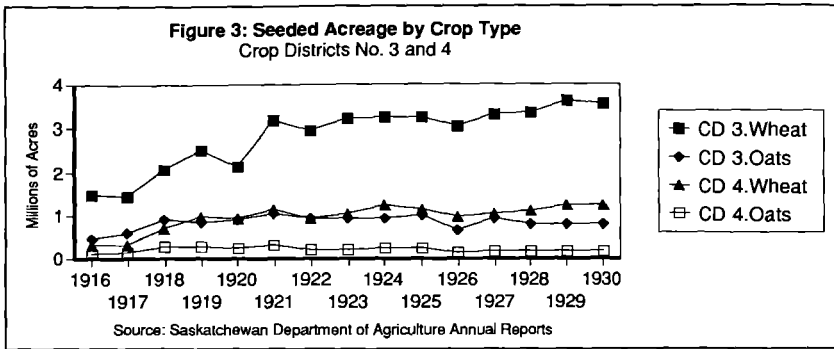
Recommitment to farming the south country on this enlightened basis remained strong only as long as the post-war recession lasted. While the governments continued — and even intensified — their research and extension activities in the decade after 1921, the farming community of the southwest failed to keep pace. Its enthusiasm for the new ethic of sustainable development flagged in lock-step with rising grain prices. Rather than continuing to diversify, farmers returned to the monoculture agriculture that had been the downfall of so many producers only years before. Wheat production not only continued to outstrip that of all other crops sown in the southwest during the 1920s, but the acreage devoted to it actually rose slowly throughout the decade (Figure 3).

This renewal of enthusiasm for wheat cultivation was not offset by a new commitment to increased investment in livestock or poultry production. In fact, during the decade of the 1920s, the opposite occurred. Data for Crop Districts 3 and 4 show without question that the investment in cattle, swine and poultry tended to decline over the period 1921-30 (Figures 4, 5 and 6).

73. John W. Bennett, *Northern Plainsmen* (Chicago, 1969), 229.

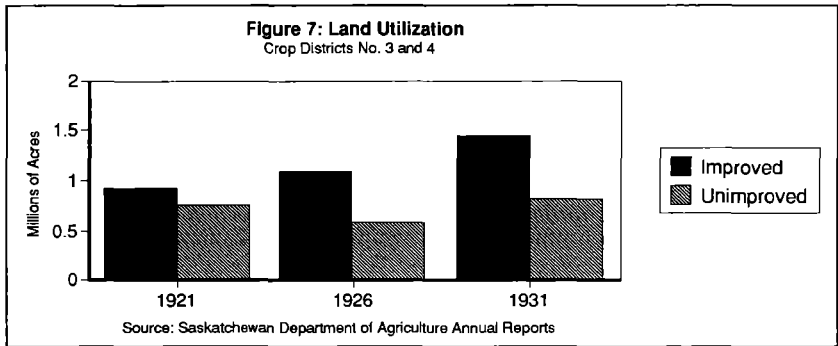
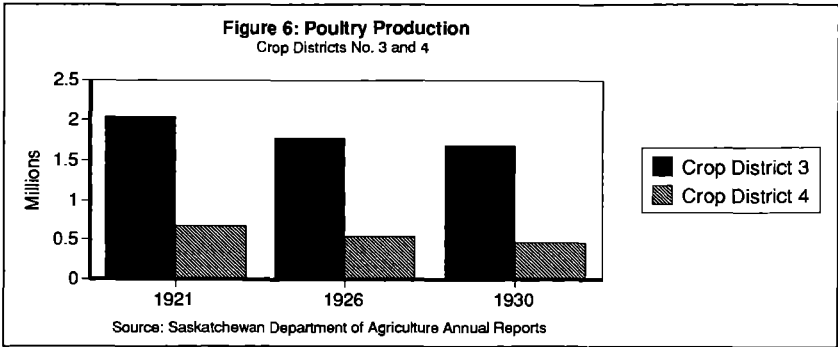
74. Chester Martin, *"Dominion Lands" Policy* (Toronto, 1973), 172.

75. Saskatchewan, *Report of the Royal Commission Inquiry into Farming Conditions, 1921.*



The acquisition and improvement of land in the south country, on the other hand, proceeded to such a degree during the 1920s that local witnesses before the Royal Commission on Immigration and Settlement in 1930 testified, to a man, that there was little arable land left in southwestern Saskatchewan.⁷⁶ Increased mechanization made this

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possible. Witnesses also emphasized that few local farmers engaged in mixed farming beyond their immediate needs. In other words, local devotion to monoculture production was greater than ever. This is further illustrated by statistical data for Crop Districts No. 3 and 4 that show a rise in improved lands (cultivated acreage) during the years 1916-30 (see Figure 7).

Even after the disastrous drought years of 1917-21, then, most farmers in the southwest remained unconvinced of the merits of greater economic diversification. They simply did not subscribe to the view, expressed endlessly by government officials, that to engage in mixed farming was to hedge one's bets in a tenuous business venture that combined local environmental unpredictability with global economic uncertainty. Financially committed to single-crop agriculture through extensive borrowing of investment capital, and enticed recurrently by spikes in the price of wheat, they continued to eschew product diversification. As John Herd Thompson said of western Canadian farmers in general during

76. Saskatchewan Archives Board (Regina) R249.V28. Royal Commission on Immigration and Settlement (Saskatchewan)—1930.

the Great War, "In their scramble to take advantage of sudden high prices, farmers traded the long-term productivity of their land for short-term profits."⁷⁷

In short, the typical pre-Depression grasslands farmer was no husbander of the soil, caring for it in an enlightened manner. Rather, to paraphrase John Stilgoe, he was more like an engineer, using the latest science and technology to bend nature to his will, ever conscious that even though the natural world might occasionally rebuff his efforts, he was ultimately the master of his own economic destiny.⁷⁸

THE MARKET ECONOMY AND ENVIRONMENTAL TRANSFORMATION OF THE GREAT PLAINS

The experience of the Canadian plains reflected a global trend that witnessed the transformation of grasslands from "wilderness" into "productive" economic units. In fact, southwestern Saskatchewan was rather a latecomer to these changes. Similar developments had already taken place in the American west, on the veldt of southern Africa, the pampas of South America, and the steppes of the Russian Empire. This study, then, has considered a particular manifestation of a worldwide phenomenon.

The intensity of this ecological transformation varied over time. At mid-century, the natives and Métis harvested their commodities within the existing natural order to a marked degree. Unconcerned until too late about the domino-like consequences of exceeding the regenerative capacity of the ecosystem, the natives and the Métis undermined their traditional cultures as they strongly embraced the new capitalist ethic in the 1870s. The domestic livestock which filled the vacuum left by elimination of the great buffalo herds had a limited impact on the area's environment until modification of the Dominion Lands Act in 1908 enclosed the ranchers' landscape with fencing and caused the first over-grazing of the natural range. In both cases, the pull of metropolitan economic and political forces greatly exceeded the ability of hinterland residents to resist, as common sense told them they must if their ecosystem-based cultures were to survive intact.

In contrast, the one-crop farmers who dominated the area after 1908 deliberately created an environment without the capacity to sustain itself. Rather, the new ecology of cereal production required vigilant protection to survive. Imposed on the land as an offshoot of an agricultural system developed for a different environment, dryland farming did not work well as a mode of production in the extremely dry southwest over the long term. In addition, the deployment of new technologies accelerated the speed of environmental change to the point where a "second nature"⁷⁹ masked nearly all traces of

77. John Herd Thompson, *The Harvests of War: The Prairie West, 1914-1918* (Toronto, 1978), 66.

78. J. R. Stilgoe, *Common Landscape of America, 1580 to 1845* (New Haven, 1982), 137.

79. William Cronon, *Nature's Metropolis: Chicago and the Great West* (New York and London, 1991), 56.

the earlier buffalo landscape. Even the everyday terminology of the farmers depreciated the value of the natural world and hinted at the artificiality of their intrusion: “cultivated” crops and “tame” grass replaced “wild” hay; machinery replaced horsepower; “correction” lines replaced ancient trails that followed natural contours. This was a collision of natural and human forces on a grand scale, legislated into being and mediated by science and technology.

At the root of the ecological change in each phase was a dominant culture that imputed commercial value to natural components, transforming them from sustainable features of the environment into non-renewable commodities of international exchange. As William Cronon has put it, the process was one of giving social value to the wealth of nature.⁸⁰ It is only by examining ecological change in this context that we can comprehend the enormity of the change that imposition of a market economy brought to the environment of the Great Plains.

80. *Ibid.*, 149.