

Youth Forum

Balancing Native Grassland Conservation With Economic Activity

By Sarah Anderson

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Four percent is what many experts estimate to be the amount of Saskatchewan's original native grasslands that remain in good ecological condition. Globally, native grasslands are disappearing at an alarming rate. As urbanization continues and industry expands, this trend will only continue to escalate and the world will be in jeopardy of losing a precious resource forever. The fragile ecosystem of Saskatchewan's Great Sand Hills, one of Canada's largest contiguous areas of native grassland, has been shaped naturally by the combination of soils and climate. This ecosystem is prized for its aesthetic qualities, its ability to generate tourism and recreation, its archeological significance, and most importantly, its value as a relatively undisturbed native grassland. Only within the last 16 years has its potential for natural gas development been realized. Now, more than ever, it has become important to examine some of the consequences surrounding poorly managed development and, secondly, address the issue of finding a balance between economic activity and the conservation of one of the few remaining native grassland habitats in the province for future generations.

Saskatchewan's Great Sand Hills

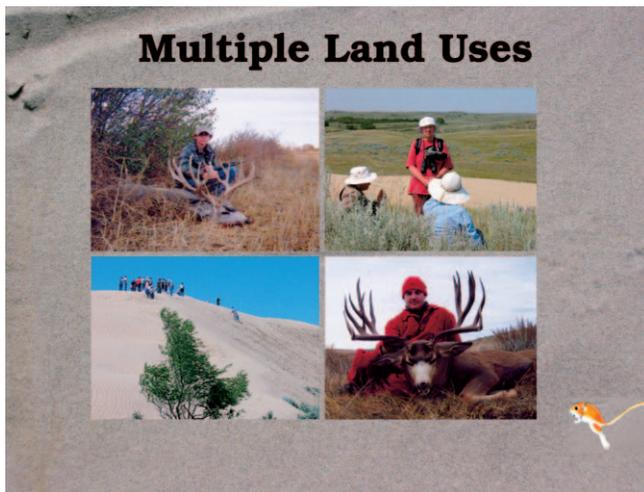
- One of the largest contiguous areas of native grasslands in Canada.
- A unique and fragile ecosystem that is valued for its multiple land uses.



Ranching has been the predominant land use of the area since the early 1900s and the Great Sand Hills have not only responded positively to this industry, but have prospered as a result. The introduction of ranchers and livestock brought about the development of underground water resources which led to a tremendous increase in vegetation and wildlife. To this day, the Great Sand Hills are renowned for providing habitat for some of Canada's largest populations of mule

deer and sharp-tailed grouse, as well as a variety of species that are considered to be either threatened or indigenous to the area. The Great Sand Hills were able to adapt so successfully to the changes brought on by the ranching industry because ranching is a relatively natural land use, and one that was able to mimic the way the land had been utilized for thousands

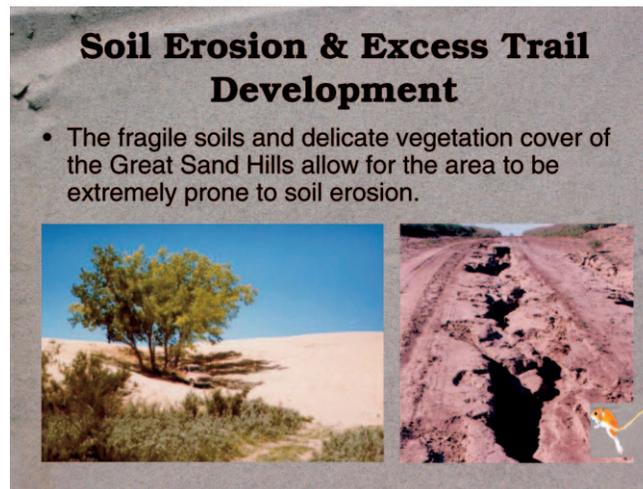
of years before cattle replaced the roaming bison. However, the extraction of natural gas is a much more mechanical and invasive process, which has never been naturally simulated in the past. There is little evidence to suggest that the impacts of gas development will benefit this ecosystem in the same way that ranching has, and even more to suggest that—without careful planning—it has the potential to have devastating consequences.



The importance of an unpolluted water source is indisputable. Contaminated water is detrimental to all life forms in any ecosystem. Spills, ruptured pipelines, leaking wells, and gas migration allow for the shallow water table of the Great Sand Hills to become extremely susceptible to contamination. Purification of toxic water sources will not only be time-consuming and difficult, but will also come at an immense cost. The unforeseen consequences of contaminated water are certain to be devastating and widespread.

Second only to land conversion, the introduction of invasive species is the biggest threat to remaining native grasslands. The petroleum industry allows for increased accessibility, and this increased out-of-area traffic threatens to introduce invasive species through cross contamination. The construction of a portion of the Trans-Canada Pipeline is a prime example of this issue. The extent of erosion was so severe that a vehicle could have easily driven beneath the pipeline, so it was covered with sand and straw to attempt to stabilize this area further. However, the straw was contaminated with downy brome, which quickly established itself within the area. Even the most minimal alterations to the vegetation of a fragile ecosystem can have significant repercussions, as the native species will have increased competition which may not only deprive them nutritiously, but may eliminate the species entirely. Vegetation is the basis of all life forms in any habitat, and if variety, quality, or quantity are modified there will undoubtedly be negative consequences for the wildlife, especially the rare species which have become dependent on the diet which this particular habitat has provided in the past. Once invasive species are introduced, it will be extremely dif-

ficult—if not impossible—to reverse their effects and revert back to a completely native grassland.



Considering that the active dunes of the Great Sand Hills move approximately 2 meters per year, soil erosion is a primary concern because of the area's fragile soil type and delicate vegetation cover. Increased vehicular traffic associated with natural gas exploration leads to excess trail development, which disturbs vegetation and exposes mineral soils. The process of soil erosion, once initiated, tends to escalate quickly and severely. In the past, straw or other mulched material was predominately spread along trails in an attempt to prevent erosion and reduce vehicular impacts. However, the risk of spreading material containing noxious weeds, in combination with the need for frequent reapplication, required gas companies to search for a more effective method. Gravel application has since replaced the original techniques of trail conservation, but unfortunately, this method successfully eliminates any opportunity for complete reclamation in the future.

Excess trail development presents an additional problem in the form of habitat fragmentation. For example, in 100 acres of contiguous, undisturbed land there are a particular number and type of species that are able to exist. Now imagine if a trail were to cut this area in two. It would seem as if the remaining result would be two 50-acre portions of relatively unaltered habitat; however, this is not the case because the number of species in any given area is directly related to its geographical size, and, therefore, the sum of the parts does not equal the whole. Additionally, on either side of this trail there is what is known as edge effect—altered habitat along the source of a disturbance which consequently further decreases the area of suitable habitat. Natural gas development and habitat fragmentation are directly proportional to one another; the greater the number of wells there are, the greater the number of trails, and thus the greater the rate of habitat fragmentation.

In regard to the initial development and operational stages of natural gas exploration, there have been significant advances made. However, the final decommissioning stage

of development has not been significantly or adequately addressed in any Environmental Protection Plan. Although there are guidelines pertaining to the decommissioning of the actual well site, there has been limited consideration given to repairing soil, vegetation, and potential water damages of the entire affected area, suggesting that native grassland deterioration will become permanent. Is this because of lack of concern, or simply the fact that there has not been enough research conducted to develop a strategy to satisfy these issues? The unforeseen consequences of natural gas exploration in an environmentally sensitive area are perhaps the most threatening aspects of this issue. If these problems cannot be foreseen how will they be reversed? Or better yet, how will they be prevented? Careful contemplation of all potential problems and solutions has been neglected due to rapid

industry expansion, leaving too many unanswered questions to allow for educated decisions. In 1990 there was a limit of 4 wells per section; barely 16 years later, that quota has doubled to 8 wells per section. Perhaps this is an indication that this fragile ecosystem will undergo a substantially greater impact at perhaps 16 wells per section. If industry expansion continues at the same rate this will be the reality as there are already similar areas currently operating at a 16 well-per-section limit and seeking to expand to 32 wells per section.

Admittedly, the natural gas industry has generated a substantial amount of revenue within the province, and has unquestionably promoted the population growth in declining rural towns, but do the short-term economic benefits supercede the long-term ecological risks at this point? Balanced decisions based on education, research, and careful planning are imperative. The voices of all land users should be heard despite increasing economic demands. Eventually, natural gas resources will become depleted and the Saskatchewan population will be left to once again sustain itself on the resources—agriculture, wildlife, and recreation—found within the Great Sand Hills and similar native grasslands. The ultimate question, however, is will these original industries be able to continue after all nonrenewable resources have been exhausted, or by then will the human footprint be too large to maintain the integrity of a fragile ecosystem? What the future holds for our native grasslands is uncertain, but it will undoubtedly depend on our actions today. Therefore, it is absolutely imperative that society continues to strive to find a balance between native grassland conservation and economic activity.



Author is a high school student from Sceptre, Saskatchewan, Canada, s7anderson@hotmail.com.