

## Ecological Goods and Services from Native Prairies

by Diego Steinaker, SK Prairie Conservation Action Plan

Native prairies provide us goods and services that go far beyond forage and livestock commodities. Native prairies provide other ecological goods such as clean air and fresh water, and key ecological services including mitigation of floods and droughts, stabilization of climate, control of potential agricultural pests, dispersal of seeds, translocation of nutrients, maintenance of biodiversity, decomposition of wastes, soil and vegetation generation and renewal, pollination of crops and natural vegetation, groundwater recharge, greenhouse gas mitigation, and providing of aesthetically pleasing landscapes, among others.

These ecological goods and services are interconnected and depend on one another. For example, the decomposition of plant material (an ecological service), results in soil production (an ecological good). This ecological good allows us to grow food agriculturally or with human assistance. The process of seed dispersal and pollination of plants by birds and insects (an ecological service), produce plants (an ecological good).

Native grasslands in Saskatchewan provide habitat for numerous plants and animals including those at risk such as the endangered Burrowing Owl and threatened Loggerhead Shrike and Sprague's Pipit, which require grasslands to nest in and produce young. Burrowing Owls and Loggerhead Shrikes are natural forms of pest control in the prairie region. A family of Burrowing Owls can consume 1,800 rodents and 7,000 grasshoppers in one summer.

Wetlands also provide an abundance of ecological goods and services (EG&S) such as filtering and recharging our freshwater, helping to prevent flooding, storing greenhouse gases and providing habitat for over 600 wildlife species as well as various tourism and recreational opportunities. In Canada, we have approximately 25% of the world's remaining wetlands.



Cattle grazing on the grass manage growth. Photo credit: Diego Steinaker

The annual value of all the EG&S generated by one hectare of wetlands has been estimated to be between \$5,792 and \$24,330. The draining of just 6 hectares of wetlands releases the same amount of carbon dioxide that would be captured by switching from conventional tillage to zero tillage on 2,000 hectares of cropland.

Grasslands and wetlands are the most threatened ecosystem around the world, making them a conservation priority. The most important threats for these ecosystems are drainage and conversion for agricultural production. With the loss of native grasslands and wetlands, the quality of the water in our lakes and rivers is also being degraded by nutrient loading, increased sedimentation from soil erosion and pollution.

Livestock production is one of the few recognized land uses compatible with native grassland conservation. Grasslands evolved with and depend upon herbivory. Moderate grazing stimulates plant growth, enhance nutritive value and accelerate nutrient cycling. Grazing also plays a key role in maintaining species-rich habitats by controlling more dominant species and allowing other species to increase in the understory.

Moderate grazing removes excessive litter and alters the fuel-load, changing fire-return cycles and fire intensity. Thus, grazing can be used to intentionally manipulate fire fuel-loads in prescribed burning programs. Overall, effective grazing management may contribute to sustainable and healthy natural grasslands.

We should educate ourselves to recognize and incorporate the environmental and economic values of natural capital. Government and non-government organizations play an important role in delivering programs that conserve and restore natural areas. Because EG&S, such as carbon storage and habitat provision for species that favor pollination and pest control, have the potential for a dollar value, producers should be paid for owning and managing those services. But first it is necessary to better quantify the contributions from native prairies, whether it's carbon storage, pollination, pest control, groundwater recharge or habitat provision for species. Once the quantification of those benefits is done, the next step is to find the right policy mechanisms to promote, conserve or even increase them from these systems. 