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# CRITICAL HABITAT OF THE BURROWING OWL IN SASKATCHEWAN

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**ABSTRACT***: The paper highlights at the basic level some of the factors accounting for the declining numbers of burrowing owl populations in Saskatchewan. Apparently, a Recovery strategy for the Burrowing Owl has been introduced but its success will depend on different approaches. Drawing on secondary data, this paper suggests bird recovery successes on lands not classified as protected areas or where major economic sacrifices are needed may be complicated.*

KEYWORDS*: Burrowing Owl, Recovery strategy, Habitat.*

## INTRODUCTION

Burrowing Owls (*Athene cunicularia*) are small birds with a typical owl head, large yellow eyes surrounded by discs of feathers, large wings relative to their body (Saskatchewan Burrowing Owl Interpretive Center, 2007). Unlike many owl species, which are large birds, live in trees and hunt at night, the burrowing owl lives on open prairie grasslands, using abandoned prairie dog and ground squirrel burrows for nesting, food storage and shelter (Green and Anthony, 1989). The burrowing owl inhabits the prairie grasslands of the North Western Provinces of Canada Manitoba, British Columbia with majority of population in Alberta and Saskatchewan. It is well adapted to the prairie environment, well-drained grasslands, softer soils that are old glacial lake bottoms and have few rocks. Grass height is more important when choosing a nest site than grass species composition; grasses kept short by grazing, mowing, haying, climatic conditions or burning are preferred (Clayton and Schmutz 1999; Parks Canada 2009). Burrowing owl lives in short grazed prairie that offers plenty of holes for shelter with an open view to detect predators whilst it hunts in areas with tall vegetation within their home range that supports a population of prey (Parks Canada 2009). Since the 1930's, population of the burrowing owl has declined rapidly (Wellicome and Haug 1995). In 1978 it was designated a threatened species (Wedgwood, 1978) by 1995 it had become an endangered species. Currently, it is listed as one of the endangered wild species on the brink of extinction in Saskatchewan (Government of Saskatchewan 2007). Also, Burrowing Owls are listed as an endangered species under COSEWIC, SARA, and Saskatchewan's Wildlife Act (Pepper 2010). Habitat loss and fragmentation, road kills, pesticides, food shortage, fewer burrow providers are the major factors contributing to its decline (Parks Canada, 2009).

The Community Pasture Program (CPP) was created in the 1930s with the mandate to reclaim badly degraded prairie lands and ensure that agriculture and biodiversity co-exist in harmony (Agriculture and Agri-Food Canada, 2011). It has returned about 145, 000 hectares of poor-quality cultivated lands to grass cover so far (AAFC 2011). However, burrowing owls are on the brink of extinction prompting the introduction of a Recovery strategy for the Burrowing Owl (*Athene cunicularia*) in Canada (Environment Canada 2010).

## METHODS

The study aims to examine the factors driving burrowing owls to extinction in Saskatchewan. The province Saskatchewan is chosen as a study site considering the fact that it has a larger population of burrowing owls in Canada. The main source of data for this paper is secondary data that is reviewed. A wide range of secondary sources such as articles and journals among others that served as literature were thoroughly reviewed.

## RESULTS

After examining the literature it was realized that, much attention has been paid to burrowing owl biology but most of the factors accounting for the decline in their numbers are either more anthropogenic or still not known (Alberta Burrowing Owl recovery plan 2012). Among the causes identified by scholars is the extermination of prairie dogs through the use of pesticides (Government of Saskatchewan 2007). However, halting the use of pesticides entirely in the province of Saskatchewan may be impossible because Agriculture constitutes a major share of the economy. According to the Government of Saskatchewan (2013), agriculture accounts for over one-third of the province's total exports. Again, most of these lands are not protected areas but rather ranch lands. This paper suggest beneficial management practices be adopted. But even at that quantitative data on burrowing owls is necessary. Collision with vehicles is yet another cause of juvenile mortality in Alberta and Saskatchewan (Shyry and Todd 2000) due mostly results from urban sprawl and the construction of roads. A careful search through the literature therefore suggests that anthropogenic factors, agriculture and urbanization may account for the declining numbers of burrowing owls. Apparently, no single solution has been provided to avert the situation.

## DISCUSSION

Protecting the burrowing owl on AAFC managed lands in Saskatchewan demands different approaches because most lands are not protected areas but rather large working ranches. Some activities on these ranches impact negatively on burrowing owls in Saskatchewan.

The extermination of prairie dogs (genus Cynomys), a keystone prairie species, has an effect on the burrowing owl habitat since they provide burrows for nesting (Green and Anthony 1989). Prairie dogs are considered pests and eliminated by farmers thereby resulting in a cascading effect on other species that feed on them. As an immediate response there must be installation of artificial nest boxes for Owls and education on the conservation of the Prairie dog as a long-term measure. Maintaining the prairie dog may affect farmers, recreational hunting and burrows may cause injury to horses but it will help AAFC achieve its goal of protecting biodiversity.

The planting of trees and suppression of fire has increased burrowing owls predator's population; trees serve as nesting habitat for large raptor predators (Wellicome and Huag 1995). Growing trees with forage and livestock enhances yields, reduces soil losses, conserves soil moisture, recycles nutrients and reduces environmental impacts of agricultural operations (AAFC 2011). Therefore stopping tree growth may lead to reduction in yields or soil erosion on AAFC lands. This paper suggests that efforts must target reducing burrowing owls predators to a sustainable population and also controlled introduction of fire as a long term plan.

Habitat fragmentation due to anthropogenic developments such as urban sprawl and road construction leaves Burrowing Owls more vulnerable to mammalian predators especially those on small isolated fragments (Saskatchewan Burrowing Owl Interpretive Center, 2007). Again the number of prey species may decrease due to land fragmentation (Alberta Burrowing Owl Recovery Team 2005). This paper agrees with the suggestion that an effort be made to link the fragmented habitats by preserving or planting corridors of native vegetation and enlarge smaller habitats (Green and Anthony, 1989). As a long-term plan, understanding of habitat requirements and risk are necessary (Alberta burrowing owl Recovery Team 2005). Habitat securing, efforts must be made to create protected areas on the grasslands of Canada. Private landowners must be adequately compensated and encouraged to preserve nesting sites and adopt beneficial management practices.

Drought and intensive grazing played a part in reducing the number of burrowing owls (Hull et al. 2004). On a day-to-day basis land managers must embark on re-seeding of pasturelands since owls prefer pastures for nesting (Clayton and Schmutz 1999). Also, limit over grazing by using a formula that allocates grazing privileges based on an inverse proportion to benefit small producers. As a long-term plan, land managers need to understand the natural disturbance regimes, and recognize the scope, scale, and temporal patterns of change (Scudder 2000). The impact of these policies on AAFC operations and landowners will be a reduction in cattle numbers and an increase in cost as a result of scientific research and the employment of experts to deal with drought. Federal and provincial governments must minimize cost.

Collision with vehicles is the second cause of juvenile mortality in Alberta and Saskatchewan (Shyry and Todd 2000). The existence of roads in grasslands has contributed to reduction in burrowing owl population. This creates habitat changes likely to increase mortality from predators and possibly reduce the food supply (Saskatchewan Burrowing Owl Interpretive Center 2007). An immediate response will be the feeding of burrowing owls on fragmented lands and signs put at vantage points along roads to warn vehicle users. As a long-term measure, infrastructure developments within burrowing owl habitats must be halted. This may affect recreation and tourism because easy movement may be hampered but conservation comes with tradeoffs.

Government incentive programs, such as Conservation Easement Program or Pasture Enhancement Program, should encourage land owners to participate in conservation practices and assist in gaining conservational goals. Educational events, such as learning sessions and workshops, are necessary to involve local people into the Burrowing Owl research and protection, and increase public awareness.

## CONCLUSION

Overall, the success of the recovery strategy in Saskatchewan will depend on how it determines beneficial management practices and encourages stewardship, develops and encourages policies and programs that retain or increase amount of burrowing owl habitat, optimizes survival of the burrowing owls, determines cause of declines in burrowing owls, optimizes productivity of burrowing owls and monitors populations of burrowing owls (Alberta Burrowing Owl Recovery Team 2005).

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