

RESULTS FROM THE MOST RECENT COSEWIC ASSESSMENT OF WILD AMERICAN BISON

By Justina C. Ray, Co-chair, Terrestrial Mammal Subcommittee for the Committee on the Status of Endangered Wildlife in Canada (COSEWIC)

The history of American Bison is well-known to most, evoking images of thundering herds of millions that once moved without impediment across the Great Plains of this continent. The near extinction of this species is equally well recognized, serving to illustrate how quickly even large populations can disappear at the hands of humans. Bison were nearly eliminated by the mid 19th century, almost entirely as a consequence of overhunting. In Canada by the late 1800s, they were gone from the plains and only a small herd of 250 remained in what is now Wood Buffalo National Park. The story of the painstaking efforts to recover this animal has involved breeding, reintroductions, and intensive management since the early 1900s. Private ownership and production of bison as a market commodity have played a major role in the numerical recovery of this animal. Nevertheless, wholesale conversion of prairie habitats during this century have largely precluded a similar success story for wild bison, which today persist at a tiny fraction of their historical numbers (tens of millions in North America).

Accordingly, wild bison are recognized as "species at risk" in Canada -- defined as being in danger of extinction -- and have been assessed as such by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) on multiple occasions. In this article, I describe the results of the most recent COSEWIC evaluation of American Bison status in Canada that took place in November 2013.

What is COSEWIC?

COSEWIC is a committee of independent scientists that was first established in 1977 to provide a single, scientifically sound classification of wildlife species at risk of extinction in Canada. Once the federal Species at Risk Act (SARA) came into force in 2003, COSEWIC was established as the authority under the Act for assessing the status of species -- from lichens to marine mammals -- in Canada. The status assigned by COSEWIC is not the final word, in that the Governor in Council renders the ultimate decision after taking into account socio-economic implications of listing the species. However, COSEWIC's assessments serve as the basis for legal listing decisions under SARA, the results of which are regularly reported by COSEWIC to the government and the public.

COSEWIC uses internationally-established criteria to classify wildlife species into categories of extinction risk, such as Special Concern, Threatened, Endangered, Not At Risk, but also Data Deficient and Extinct/Extirpated. Biological factors of each species that are considered in an assessment include those that are known from experience to be important predictors of extinction. These include: population size, rate of population decline, area of geographic distribution, degree of population and distribution fragmentation, and nature and intensity of prevailing threats.

The process of completing a COSEWIC assessment can take two years of information collection, analyses, and writing, culminating in a status report, a comprehensive technical report that contains all the information on which the status assessment is based. It is made publicly available on the COSEWIC

website once it has been translated and sent to the Minister. Each report undergoes extensive scientific review by experts throughout the species' range, and is brought to the COSEWIC table (which meets twice a year) for review, discussion, and voting. The mandate of the committee is to conduct a scientific assessment, without regard for socio-political ramifications. In effect, a COSEWIC assessment serves as a diagnosis, using the best available information, of the nature and severity of the conservation concern for a given species, including why it is at risk of extinction. As of its last species assessment meeting in November 2013, the total number of wildlife species recognized by COSEWIC as at risk in Canada is 686.

The Assessment Process for American Bison

Two kinds of American Bison -- Plains Bison and Wood Bison --- have been recognized for some time by bison scientists, managers, and COSEWIC. Although there is much controversy as to whether these two qualify as subspecies, due to significant genetic mixing that took place at crucial stages in the recovery, they remain morphologically and ecologically distinct from one another in the wild.

An issue that required clarification in this particular assessment was which bison populations (or herds) would be included in the assessment. SARA defines a "wildlife species" that is eligible to be assessed by COSEWIC as being 'wild by nature'. For bison, this determination was based on whether herds included in the assessment function both ecologically and evolutionarily in a manner that maintains their wild nature in the long term. COSEWIC guidelines exclude any herds established for purposes other than strictly for species conservation; hence, privately-owned commercial herds were not included in this assessment. COSEWIC defined a 'wild by nature' bison herd as one where the management policy or plan fosters both natural selection as an evolutionary process and conservation of the significant ecological roles of bison.

Plains Bison Assessment

The five wild isolated Plains Bison herds that persist in Canada today are the descendants of approximately 81 ancestors. The best current estimate for the total number of individual wild Plains Bison in Canada is 2,333 - 2,571. This represents an overall increase of ca. 543-751 animals (~36%) since the last COSEWIC assessment in 2004 (1,790-1,820). This increase is a result of the addition of one herd (Grasslands National Park in Saskatchewan) and a 47% increase in the Pink Mountain herd in British Columbia, which occurs outside the historical range of Plains Bison and comprises about half of the Canadian Plains Bison population. During the same time period, however, the Sturgeon River herd in Prince Albert National Park (Saskatchewan) declined by 30%.

Plains Bison continue to face a number of threats to its persistence. The highest impact threat facing this animal is hunting or culling, which occurs with most herds as a means of controlling their size and distribution. The extent to which this is the case is generally dictated by local acceptance and tolerance limits for wild bison. Another threat comes from a variety of cattle-borne and native (anthrax) pathogens. Agricultural settlement and land conversion in the grasslands and parkland areas is ongoing, and the sale of public rangelands is an increasing concern. Further increases in population size or the addition of new herds may be possible in selected areas, but for the most part is limited by fragmented or unsuitable habitat that is often managed to exclude bison.

Last assessed by COSEWIC as Threatened in 2004, this status was maintained for Plains Bison during the most recent meeting, because the population remains very low in numbers, and is strongly susceptible to future declines. The latter is projected because: 1) management practices are in place to prevent the expansion of most herds beyond their current size; 2) the largest (Pink Mountain) is being managed to reduce numbers; 3) there is a strong potential for reductions caused by catastrophic future events, and 4) no herd is estimated to contain more than 1,000 mature individuals, and all but one number fewer than 500; small populations are particularly susceptible to chance events that can lead to their loss.

Wood Bison Assessment

Wild Wood Bison occur nowhere else but in Canada. Today, there are between 7,642-10,458 Wood Bison in nine wild herds, representing a substantial increase through intensive recovery efforts over the past three generations; in 1987 there were 1,827 Wood Bison. Although eight of the nine herds have increased in number since the last COSEWIC assessment, two have experienced significant mortality in the past 18 months. The Mackenzie herd (NWT) decreased by 53% due to an outbreak of anthrax, and the Hay-Zama (Alberta) decreased by 20% due to starvation during a severe winter. This demonstrates the inherent vulnerability of small isolated populations; all but two Wood Bison herds number fewer than 500 individuals. The population in and around the Greater Wood Buffalo National Park represents about 60% of the Canadian population of wild Wood Bison today, and they are affected by two cattle diseases: bovine brucellosis and tuberculosis.

Although subject to a similar suite of threats as Plains Bison, the Wood Bison population has increased since 1987, mostly due to the establishment of new wild herds within the original range. Further recovery is, however, constrained by fragmented or unsuitable habitat, including the existence of bison-free areas that are managed to reduce the risk of disease to livestock. Last assessed by COSEWIC as Threatened in 2001, the status was downgraded to Special Concern at this meeting, in recognition of their steadily rising population numbers that now exceed the threshold for Threatened. Wood Bison remain at risk, however, because all herds are managed to control or reduce numbers, and are subject to unpredictable but potentially catastrophic future events (mainly disease outbreaks and extreme weather) that could easily result in population declines.

What's next?

Once COSEWIC reports its scientific assessments to the Environment Minister (once per year), those species become eligible for addition or amendments to the legal list under SARA. Currently, wild Wood Bison are listed as Threatened, whereas Plains Bison are not listed, in spite of their COSEWIC status. Receipt of COSEWIC's report to the Minister later this year will trigger a consultation period, after which the decision will be made regarding changes to the legal list that relate to bison status. Particularly for Plains Bison, whose condition in the wild remains precarious, SARA listing could bring much-needed additional attention and resources to its conservation in the wild.