

dives, at least eight of which were successful. This was after the gulls had already been feeding for about an hour; thus their prey was considerably less plentiful and their appetites must have been satiated somewhat by the time we took count. The flock of gulls conceivably devoured 700-800 fingerlings in the first hour after the fish were stocked, suggesting heavy mortality for the evening.

We stocked another 5-acre pond just over the ridge from this pond with 600 fish (200 of each species) an hour earlier. There were nine gulls on the water when we stocked the fish, but they did not engage in active feeding as did the gulls on the first pond. All these fingerlings were in good condition going into the water and dispersed without any surface activity. Only occasionally did a gull dip below the surface, presumably feeding on aquatic invertebrates or fingerlings swimming by. The different behaviour of the birds on these two ponds suggests that

the gulls were attracted by fingerlings spinning and jumping at the surface.

Trout fingerlings are particularly susceptible to predation shortly after stocking. Hatchery-reared trout possess inherent traits, such as surface response, schooling tendency, lack of wariness, and lack of foraging experience, which may place them at a definite disadvantage when they are required to make a rapid adjustment to conditions in the wild.¹ Research at the Freshwater Institute in 1975 has indicated that survival of trout was improved 30 to 40 percent by caging the fingerlings in the lake for two weeks prior to their release (pers. comm. Dr. G. B. Ayles).

¹Vincent, R. E. 1960. *Some influences of domestication upon three stocks of brook trout (Salvelinus fontinalis Mitchell)*. Trans. Amer. Fish. Soc. 89:35-52.



SETTLEMENTS OF THE GRASSLANDS AND THE GREATER PRAIRIE CHICKEN

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Settlement of the western Canadian prairies had a great impact on bird life. Certain species failed to adapt to settlement and disappeared; others changed to conform to the changed environment and survived. Examples are the Turkey Vulture, which is now very scarce or absent from the region, and the Brown-headed Cowbird, which changed from an association with buffalo to an association with cattle.

Population densities of still other species changed radically. One of these was the Greater Prairie Chicken,

known also as the pinnated grouse, squaretail or prairie hen. It migrated into the country from Minnesota and North Dakota and its population increased rapidly from 1881 to about 1900, then declined equally rapidly to very low numbers by 1925. The last reliable records of the species were a specimen taken near Youngstown, Alberta, in 1938 and another in Saskatchewan in 1943.^{7 11} More recent sightings have been reported.^{1 4 8}

The purpose of this study was to relate the fluctuations in numbers of

the Greater Prairie Chicken to the elimination of the buffalo and the later settlement of the Prairie Provinces.

The Canadian prairie was grazed from time immemorial by the buffalo. Wasteful, often senseless slaughter of these animals began about 1840 and ended in their virtual extinction in 1879.⁵ With the removal of the buffalo, and the presence in the Territories of the North-West Mounted Police, grass became available to the stockman and an environment was created in which he could thrive. Although cattle had been kept on the various fur trading posts of the Hudson's Bay Company from 1702 onwards, it was not until the early 1880's that livestock in appreciable numbers began to move on to the Canadian plains. The ranges were not fully stocked until about 1920 (Fig. 1).

With the buffalo gone, the Indians faced starvation and, hence, turned to other animals. Soon the prong-horned antelope was reduced to a fraction of its former numbers; the elk was killed or driven from the plains. Smaller game, even ground squirrels and other rodents, suffered in turn. By about 1880, the western prairie was devoid of grazing animals and, because the late 1870's and early 1880's were much wetter than normal, the grass grew luxuriantly. Even though prairie fires continued to remove some topgrowth, the prairies benefitted from non-use and produced a cover of grass the like of which had never been seen before and which will never be seen again. Light use continued until about 1920.

The period of non- or light-use is the period the first settlers experienced and is the period to which much of the written record refers. It was one of the most unusual periods in the history of the grasslands of the Prairie Provinces. The ranges of today would probably compare very favorably with the ranges of, for example, the 1840's when the buffalo slaughter began; they would not compare very favorably with the ranges of the 1880's, which were stimulated by non-use and abnormally wet seasons (Fig. 2).

In a parallel development to ranching, farming spread westward from Manitoba's Red River Settlement starting about 1871. Numbers of homesteaders gradually increased but it was not until the period immediately before and during World War I that most of the prairie croplands were broken and farmed.

During this interval, from about 1881 to 1925, the Greater Prairie Chicken migrated into the western prairies, reached a population density estimated at over a million by the early 1900's and then declined (Fig. 1).¹⁰

The species was first noted in Manitoba in 1881 when a specimen was shot near Winnipeg.³ It was recorded at Portage La Prairie in 1882 and at Indian Head in 1895. By 1901, the species was plentiful in the district between Moosomin and Qu'Appelle, in the foothills west of Calgary, in the region between Macleod, Alberta, and the international boundary, and in the Sullivan Lake region of Alberta.²

Because of the abundance of Prairie Chickens, hunting was permitted. At first there were no restrictions. By about 1900, the hunting season lasted from September 16 to December 14 and the bag limit was 20 birds per day.² Shortly after the turn of the century, the seasonal bag was 200 birds.⁹

But by March 1917, the *Lethbridge Daily Herald* reported that the Alberta legislature was considering the imposition of a closed season on Prairie Chicken. Under the heading, "Amendments to the Game Act", the paper reported in April that, "The shooting of pinnated grouse (prairie chicken) is prohibited until October 1, 1918". A front page story on April 7, 1920, stated that the chicken season was to be "... limited to two weeks this year." The days of abundance were over.

Habitat preferences of the species were mainly responsible for the rapid increase and decline in its population although hunting pressure may have played a part in the latter. The Greater Prairie Chicken requires tall grass vegetation as protection for roosting

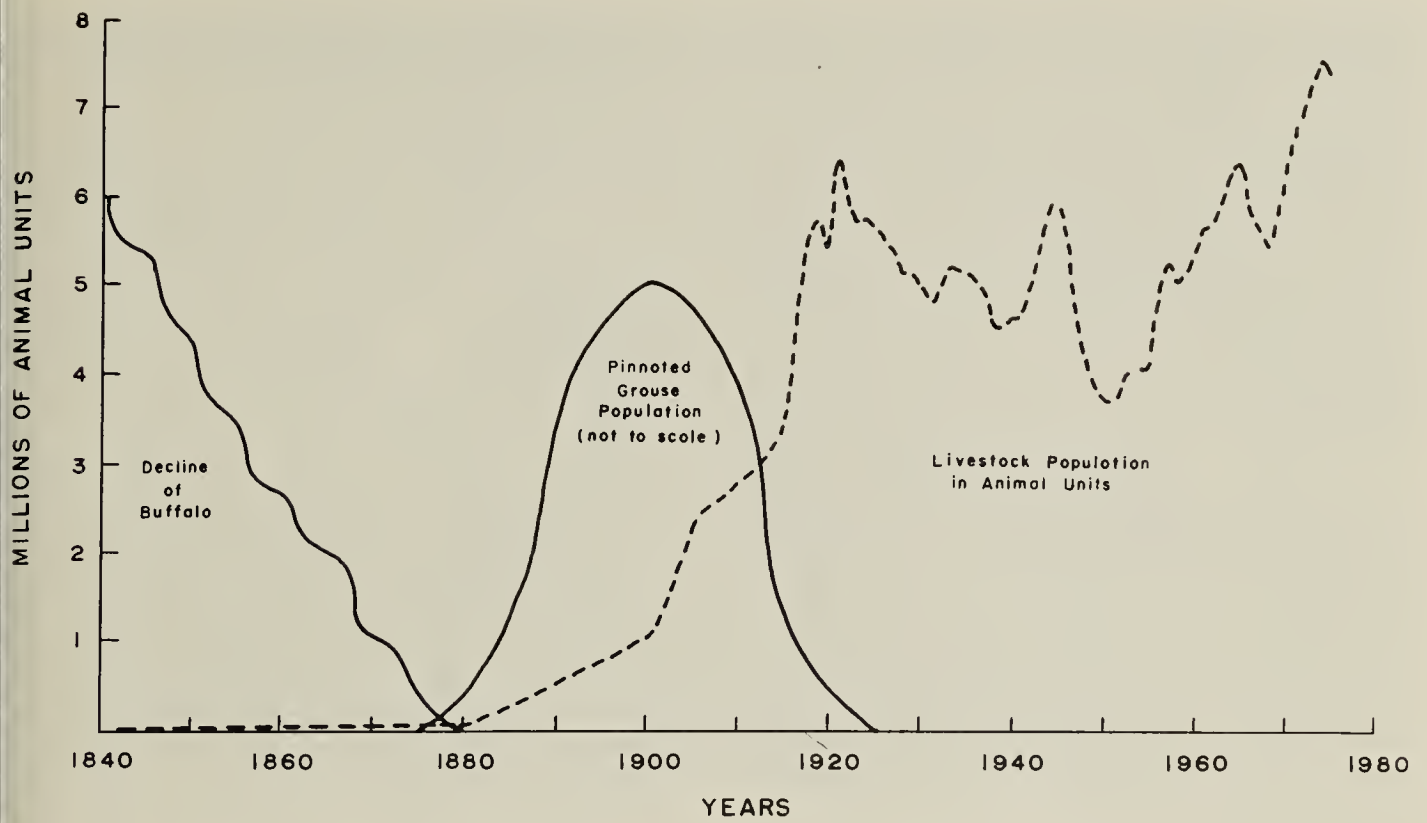


Figure 1. Growth curves to show the decline of the buffalo, the build-up of domestic livestock, and the increase and decline of the Greater Prairie Chicken (Pinnated Grouse). (The last curve is not to scale).



Figure 2. Grassland of southern Alberta about the turn of the century.

and nesting sites and for winter cover and this was provided when grazing by buffalo ceased. Also, the species obtained a considerable amount of its food from cropped fields. Thus, the ungrazed grasses and scattered tracts of cultivation that characterized the western prairies from 1880 to about 1900 provided ideal habitat and the species increased rapidly. However, it was found that the Prairie Chicken would not survive in any area if more than 60% of the grassland was converted to cultivated land.⁶ This is what happened in the Prairie Provinces between 1900 and 1920 and resulted in the disappearance of the species.

It is ironic that the Greater Prairie Chicken at first prospered from an expanding agriculture, which made available new resources and led to its establishment in vast regions of the Prairie Provinces. Unfortunately, the further development of cereal farming and cattle ranching eliminated the tall grass vegetation on which the species had depended and led to its disappearance.

¹BELCHER, M. 1961. *Recent records of the greater prairie chicken in Saskatchewan*. Blue Jay 19:76-77.

²BULYEA, G. H. V. (Comp.) 1901. *The Canadian North-West Territories*. The Stovel Co., Winnipeg. 72 p.

³MACOUN, J., and J. M. MACOUN. 1909. *Catalogue of Canadian birds*. King's Printer, Ottawa. 761 p.

⁴PETERSON, R. T. 1960. *A prairie chicken at Old Wives Lake*. Blue Jay 18:13.

⁵ROE, F. G. 1951. *The North American buffalo*. Univ. Toronto Press, Toronto. 957 p.

⁶RUE, L. L., and D. ALLEN. 1973. *Game birds of North America*. Harper and Row, N.Y. 490 p.

⁷SALT, W. R., and A. L. WILK. 1958. *The birds of Alberta*. The Queen's Printer, Edmonton. 511 p.

⁸SCHANTZ, B. R. 1966. *Greater prairie chicken in southern Alberta*. Blue Jay 24:78-79.

⁹SMITH, D. 1961. *Endangered Canadian species: The prairie chicken*. Herald Magazine, Calgary. (Mar. 28) p. 12.

¹⁰STEWART, G. 1971. *Prairie chicken is almost extinct*. North Hill News, Calgary. (July 30) p. 4.

¹¹SYMONS, R. D. 1963. *Grouse and introduced game birds of Saskatchewan*. Popular Series No. 5, Sask. Museum of Nat. Hist., Regina. 16 p.

WESTERN KINGBIRD KILLS HOUSE SPARROW

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On May 17, 1976, Eric Lang observed a Western Kingbird kill a House Sparrow in what may have been a territory dispute.

The sparrows, having established a territory on Cardinal Crescent in Regina, were prepared to defend it and did so when a pair of kingbirds arrived. Eric observed the two sparrows pestering the kingbirds in a group of trees and the male sparrow drove one of the kingbirds away. It chased the kingbird for about 300 yards at which point the kingbird wheeled around, seized the sparrow by the neck with its bill and after a short struggle let it fall lifeless to the ground. At that time the kingbird's mate chased the female sparrow away and the territory was theirs. Eric was about to collect the sparrow for examination to determine how it had been killed when a small dog trotted up and collected it for himself.

Bent lists the Western Kingbird as a spirited bird having an intolerance towards intruders on its domain, like the Eastern Kingbird.¹ He also writes of it as slightly more tolerant of large raptors, occasionally living in harmony with Swainson's Hawks, Ballock's Orioles, Mourning Doves, Yellow Warblers and even House Sparrows. Baird et al agree with Bent, describing the species as almost an exact counterpart of the Eastern Kingbird in defence of its nest.²

I can only assume that these were the actions of thoroughly fed up kingbirds in an attempt to claim the territory.

¹A. C. BENT. *Life histories of North American flycatchers, larks, swallows and their allies*. Smithsonian Institution, Washington, D.C.

²BAIRD, BREWER and RIDGWAY. 1905 *North American land birds*. Vol. III. Little, Brown, and Company.

