

# WILDLIFE CHANGES IN SOUTHEASTERN SASKATCHEWAN

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Historical changes in game populations over the last 100 years have been evaluated as part of an inventory of wildlife habitat made in southeastern Saskatchewan.<sup>26</sup> This study has helped us to understand more fully the nature of present populations and to predict future trends. Prior to the early 1800's animal populations were little influenced by man, but fluctuated naturally in response to changes in climate and habitat conditions. With the coming of the fur trade and subsequent land settlement, much more substantial and permanent changes in numbers and distribution occurred.

The area that I am reporting on in this paper is the hilly Moose Mountain Upland and the gently undulating Souris River Plain (Fig. 1). The hummocky "knob and kettle" topography of the central portion of Moose Mountain has a scattering of ponds and lakes left from the melting of glacial ice some 20,000 years ago.<sup>16</sup> It is now largely an aspen-covered area, contained within Moose Mountain Provincial Park. The steep-sloping southern escarpment of the Upland supports open prairie grassland, cut by shrub and tree-filled coulees. The plains to the south and east have fertile black soils which are largely cultivated for the production of annual grain crops and perennial tame grasses. The remaining is that of the native vegetation, mixed-grass prairie and aspen parkland. The study area embraces portions of three major valleys through which flow the Souris River, Pipestone Creek and Moose

Mountain Creek. Numerous shallow ponds and sloughs are scattered through the farmlands.

## Pre-Settlement (prior to 1880)

Prior to settlement the Souris River Plain was dominated by a treeless mixed-grass prairie. Owing to frequent prairie fires, woody vegetation usually disappeared except in moist depressions, sloughs, drainage systems and valleys. Moreover, Indians "fired" the prairie on a regular basis to influence American bison\* movements and range conditions.<sup>10 18</sup> The central Moose Mountain Upland and the north-facing slopes of the Pipestone Creek and Souris River valleys provided the only substantial woody cover in the area. Vast herds of bison and many smaller bands of pronghorn called "cabri" in the early days, were the dominant ungulates.<sup>10 25 18</sup> White-tailed jackrabbits, badgers, red and swift foxes, coyotes, ground squirrels, Upland Sandpipers, grassland passerine birds and Sharp-tailed Grouse were also typical prairie species.<sup>24 19 27</sup> Muskrats, Sandhill Cranes, Whooping Cranes and a variety of ducks and other marsh birds occupied the numerous prairie sloughs.<sup>17</sup> Ferruginous and Swainson's hawks, Golden Eagles, Common Ravens,<sup>13</sup> and Turkey Vultures were common predators and scavengers. Wapiti

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\*The common names of mammals referred to in the text follow those used in *The Mammals of Canada*.<sup>3</sup>

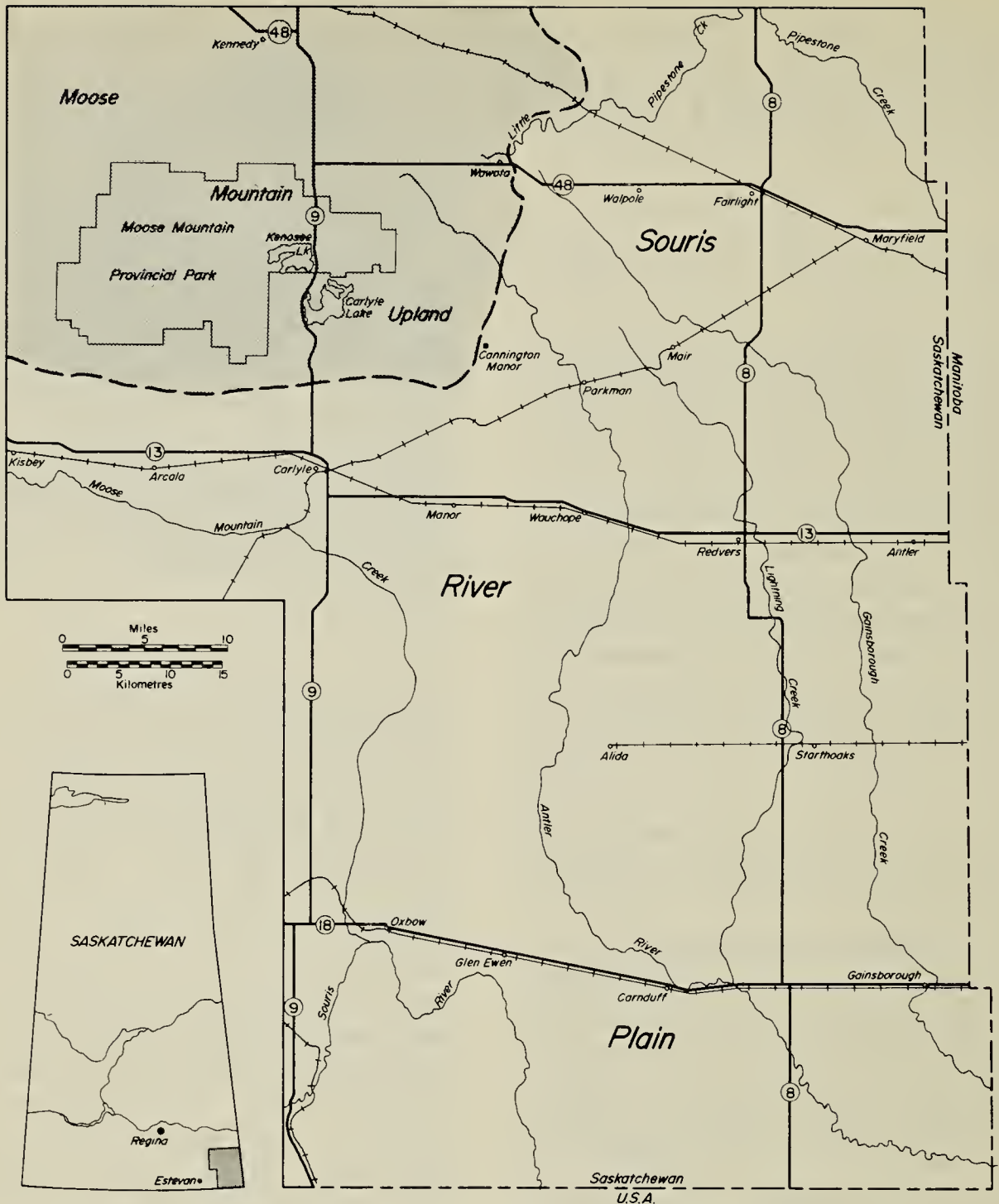


Figure 1: Study area located in the southeast corner of Saskatchewan.

(elk), moose, mule deer, mountain lions (cougars) and black bears stayed closer to the wooded portions of the Moose Mountain Upland and the Pipestone Creek and Souris River valleys. White Pelicans, Double-crested Cormorants and Great Blue Herons frequented the secluded lakes of Moose Mountain. Other species which were no doubt also former residents of the area, given their known earlier breeding range and habitat preferences, included wolves, grizzly bears,

wolverines, river otters, Trumpeter Swans, Bald Eagles and Passenger Pigeons.<sup>29 6 7 3 27</sup>

### 1880 to 1900

Bison declined rapidly during the mid-1800's as a result of excessive hunting.<sup>18</sup> The last one in the area was reported to have been killed by 1881.<sup>9</sup> Hunting pressures then shifted to other big game species. Moose reportedly disappeared from Moose Mountain in the late 19th cen-



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Figure 2: Farmstead on predominantly treeless prairie around the 1920's.

tury, perhaps as a result of both organized drives and hunts by bands of Indians from the surrounding territory<sup>11</sup> and an extensive fire that burned off much of the tree cover in 1894.<sup>9</sup> An early settler reported that in 1882 elk, deer, a few bears, beavers, lynx, muskrats, mink, fishers, and foxes, occurred in the Moose Mountain area, but that there were no moose.<sup>8</sup>

### 1900 to 1920

The early 1900's were noteworthy for the general absence of big game, particularly in the open treeless plains (Fig. 2). Pronghorns were still present but in very diminished numbers as settlement and agricultural development became widespread and pushed them back towards the less arable rangeland to the south and west. Deer (principally mule deer) were uncommon and largely restricted to the rugged and partially wooded river valleys and Moose Mountain Upland. The first white-tailed deer to occur in the area probably moved in along the wooded river valleys from adjacent Manitoba

and North Dakota during this period.<sup>4</sup>

On Moose Mountain, elk were reported to be uncommon but still more numerous than deer, whereas muskrats, mink, weasels, striped skunks, coyotes, snowshoe hares, red squirrels and Sharp-tailed Grouse were abundant. Beaver populations were still depressed as a result of excessive trapping. Ruffed Grouse were reportedly common in the Pipestone Creek Valley but may have been less so in Moose Mountain until the aspen forest became more mature. A few moose reappeared in the Upland during the 1910's.<sup>9</sup>

Jack rabbits, foxes and badgers were more common in the surrounding plain. Sharp-tailed Grouse were very abundant and the Greater Prairie Chickens were common and widespread at this time. One early resident reported that Sharp-tailed Grouse dancing grounds were on nearly every quarter-section of land in the Parkman area. Greater Prairie Chickens did not occur in Saskatchewan prior to the 1900's but moved in with early settlement.<sup>29 2 7</sup> The tem-

porary success of this bird coincides with a period when native prairie vegetation was particularly luxuriant, with taller grass species favoured. Fire had been largely checked by early settlers and grazing pressure by wild game and livestock was minimal, as bison had been eliminated and cattle were still not numerous.<sup>21</sup> Ducks were abundant and Sandhill Cranes were still common, nesting in the numerous potholes; however, Whooping Cranes now appeared only during migration.<sup>22</sup> A few grey foxes were trapped in 1914 northeast of Carn-duff and eastern cottontail rabbits were reported from the Storthoaks area about this same time.

### 1920 to 1940

During the 1920's and 1930's several wildlife species increased in numbers while a few others virtually disappeared. With land settlement and the curtailment of prairie fires, aspen "bluffs" sprung up on uncultivated lands and were soon occupied by white-tailed deer.<sup>20</sup> By the late 1930's whitetails were common, being well adapted to agricultural settlement wherever there was sufficient woody cover. In contrast, the mule deer's preference for more open terrain and susceptibility to hunting pressure kept populations low and restricted to the more rugged and hilly terrain.

Greater Prairie Chickens declined as rapidly as they had arrived about 30 years earlier<sup>7</sup> and were apparently gone from the Storthoaks area by the late 1920's. Similar declines were observed in the crane populations, with the last regular migrant Whooping Cranes observed in the late 1920's.

The first Gray (Hungarian) Partridge and Ring-necked Pheasant appeared in the Redvers-Wawota

area during the 1920's before any known stocking programs were undertaken.<sup>20</sup> Houston<sup>12</sup> reported that Hungarian Partridge spread naturally from Alberta, where they were initially released in 1908, to Saskatchewan, reaching "beyond Carlyle to the Manitoba boundary" by 1927. Huns survived well and were reported as locally abundant in the 1930's whereas Ring-necked Pheasants temporarily disappeared for several years after their initial appearance.

Sharptails were still very abundant and benefitted from the large amount of "go-back-land" during the 1930's when drought conditions caused many farms to be abandoned and revert to weeds and native vegetation. These drought conditions were not favorable to waterfowl and muskrats as a high proportion of the wetlands dried up. During this period coyotes became very abundant, apparently favoured by increased woody cover, whereas red foxes declined.

Moose Mountain Provincial Park was established in 1931 and provided the additional protection needed for moose, elk and beaver populations to recover.<sup>15</sup> Elk were already benefitting from a province-wide closure of hunting since 1919<sup>14</sup> and herds of 30 to 40 animals were common by the mid-1930's. Beaver populations had previously been virtually wiped out by over-trapping so stocking programs were used at Moose Mountain to aid their recovery. Nesting populations of Common Loon, Double-crested Cormorant and Great Blue Heron occurred in the park during the mid-1930's and White Pelicans were also frequently observed, although not known to nest.

### 1940 to 1960

During the 1940's and 1950's



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Figure 3: Grain sheaves and straw piles, representing harvest techniques before combines appeared, provided valuable food and cover for upland game birds.

white-tailed deer greatly increased in number and distribution, continuing to benefit from the spread and development of aspen parkland. Deer also benefited from the large amount of farmland abandoned during the drought of the 1930's and left idle until the late 1940's and early 1950's. Some residents feel that whitetail populations probably peaked during the 1950's. Porcupine also benefited from increases in woody vegetation and became quite conspicuous during this period.

Red foxes gradually returned in abundance, while coyotes were depleted by an intensive poisoning and bounty program following World War II.<sup>28</sup> Raccoons first appeared and were reported in the Storthoaks area as early as 1942. They may have benefited from decreased coyote populations and the numerous brush and root piles associated with clearing operations. Jack rabbits were extremely abundant during the early 1940's at which time organized drives were made to capture them. The first

grey squirrels in the area were reported along the lower Gainsborough Creek in the 1950's.

Ruffed Grouse became more abundant in the farmland as trees matured. Ring-necked Pheasants were only locally common and were sustained largely by stocking programs, whereas Gray Partridge were fairly abundant and widespread. Both species benefited from the abundance of cover along roadsides, fencelines and shelterbelts. Sharptails remained abundant, particularly during the 1940's when grain sheaves, threshing and straw piles were still prevalent (Fig. 3). However, a gradual but permanent decline in Sharptail populations appears to have occurred during the 1950's as native grassland was further reduced by cultivation and the continued invasion of woody growth. Also, the combine was introduced as a more efficient means of harvesting cereal grains, leaving less waste available to game birds.

The very wet years of the 1950's reduced upland game bird nesting and fledgling success but greatly increased waterfowl production.<sup>28</sup> However, the previous burning and grazing of marshes and draining large sloughs had already spelled the end of nesting by Sandhill Cranes and they were now observed only during migration.<sup>22</sup>

### 1960 to 1979

During the 1960's and 1970's the natural increase in tree growth was reversed by intensive, highly-mechanized farming practices which removed the small patches of native vegetation as well as many of the quarter and half-sections which had never been broken<sup>7</sup> (Fig. 4). Tree cover on five unbroken parcels of land totalling 2¼ sections in the Parkman-Maryfield area averaged 31% in 1949 and 48% in 1970 representing a 1.7% increase per year<sup>26</sup> (Figs. 5 and 6). However, that portion of the occupied farmland in the Redvers-Maryfield-Kelso area which still remained in native vegetation declined from 38% in 1949 to 28% in 1977, representing a 26% decline in total or 0.9% per year. The 1970-77 average rate of loss to cultivation was even higher at 1.6% per year. At the same time large machinery drained or filled many of the wetlands.

These habitat alterations have resulted in a widespread and apparently permanent decline in upland game bird and waterfowl populations. Upland game birds feeding on waste grain were also hit by the extensive use of grasshopper poison and mercury seed dressings<sup>5</sup> in the 1960's which resulted in substantially lowered reproductive success. With curtailment in the use of these toxic substances during the 1970's game bird numbers recovered to a considerable extent with Sharptails be-

ing quite abundant and Huns common. Ruffed Grouse recently peaked (1976-78) in their 10-year cycle and were reported to have been more abundant in the Storthoaks area than at any time during the previous 60 years. However, Ring-necked Pheasant populations have remained very low with average winter weather conditions likely being too severe.

Long term population trends for white-tailed deer are not so clear. Mortality was very high during the severe winter of 1973-74.<sup>25</sup> However, populations recovered quickly with the aid of two mild winters.<sup>26</sup> The continued loss of suitable native habitat has caused whitetails to feed more and more on agricultural crops during the winter season. Mortality or reduced productivity from severe winter weather is potentially much greater now as suitable blocks of cover within agricultural areas (native aspen parkland one-quarter sections or more in size) become fewer and farther apart.<sup>26</sup>

Grey squirrels first appeared in the Storthoaks area in the 1960's and became fairly common in the 1970's. Coyotes have continued to decline in recent years as the result of heavy hunting and trapping pressure whereas red fox populations are recovering. Lynx are not known to be permanent residents of the area but occasionally move in from the north. Frequent sightings were made in the early 1970's and two were shot near Moose Mountain in 1970 and another two near Storthoaks in 1974. Cougars are still occasionally sighted in the Moose Mountain area (T. White, pers. comm.) and both adults and young of the year were observed near Antler in 1970 and 1972.<sup>30</sup>

In the Moose Mountain Upland moose and elk numbers have stabilized<sup>26</sup> as a result of carefully managed harvests. Beaver have



Figure 4: Brush windrows from recent (1978) bulldozing of aspen stands in southeastern Saskatchewan.

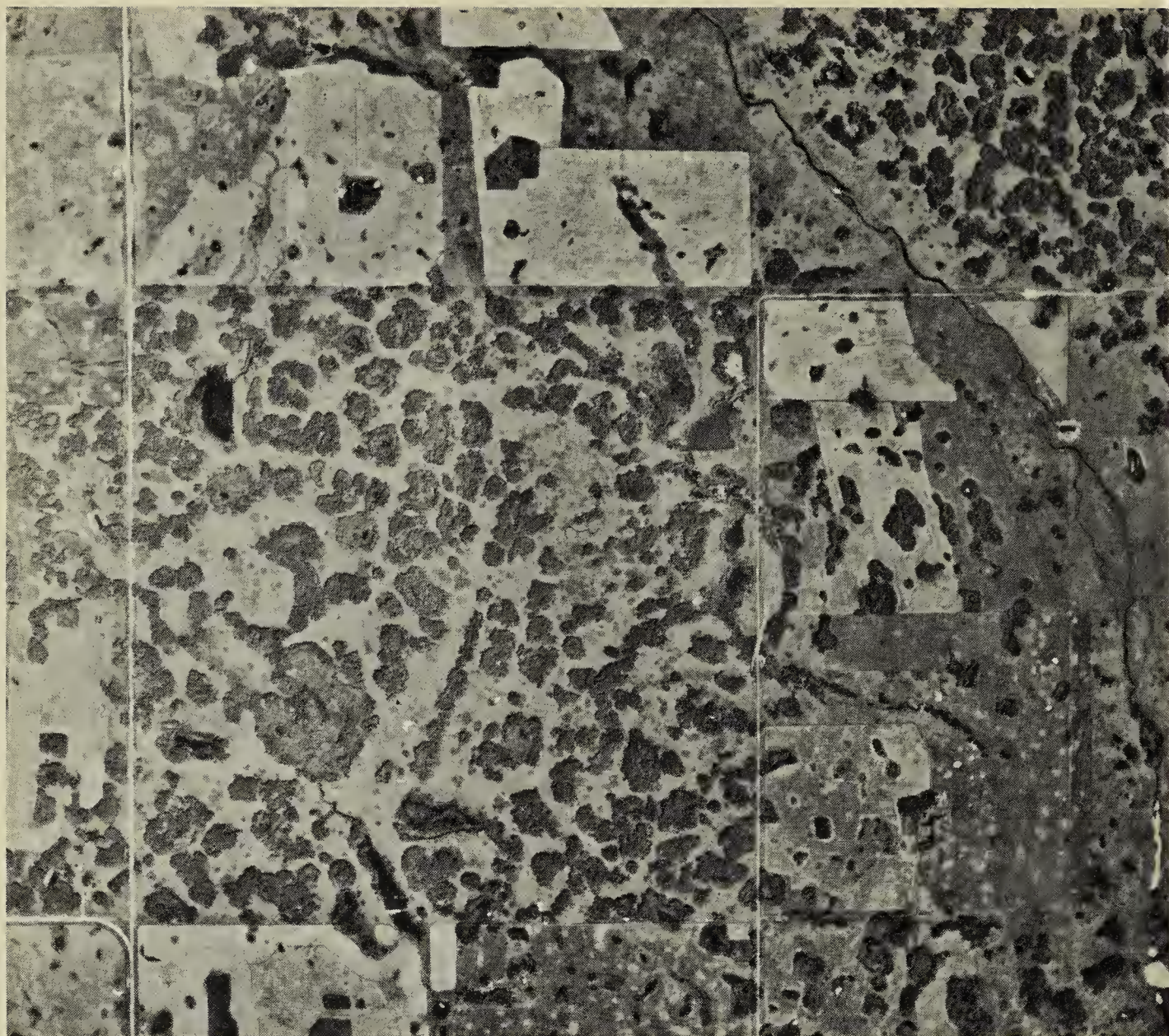
been lightly harvested during the past 10 years and populations are now very high in the Park.<sup>15</sup> Turkey Vultures still occur and an active nest was located in 1978. Nero and Lein<sup>19</sup> found no evidence of White Pelicans or Double-crested Cormorants nesting in Moose Mountain during the late 1960's, whereas two Great Blue Heron colonies were still active in 1979.<sup>26</sup>

### Summary and Conclusions

In the space of 100 years the change in wildlife numbers and distributions has been very dramatic in southeastern Saskatchewan (Fig. 7), as throughout the intensively settled and developed regions of southern Canada. Numerous species including bison, pronghorns, swift foxes, White Pelicans, Double-crested Cormorants, Whooping and Sandhill Cranes, Long-billed Curlews and Common Ravens are no longer residents of the area. Greater Prairie Chickens made a brief appearance,

arriving around 1900, and disappeared some 30 years later. In contrast white-tailed deer first appeared during the early 1900's and stayed to become abundant and widely distributed up to the present day. Also the exotic Gray Partridge and Ring-necked Pheasant first appeared in this area during the 1920's and have persisted, with the latter species aided by periodic stocking programs. Many other species have seesawed up and down in numbers in response to climatic changes, hunting, trapping and poisoning, and various other land use practices.

Most of the early wildlife declines were due to heavy hunting and trapping pressures. Population changes following early agricultural settlement reflected in some cases continued hunting and trapping pressures as well as climatic variation, but in most cases resulted from major alterations in the extent and distribution of natural



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Figure 5: Aerial photo from 1949 of Sec. 29 - Twp. 10 - Rge. 30-W1, one mile north of Maryfield. Dark patches represent aspen bluffs.

vegetation. Fire was curtailed, grazing pressure was altered, woody vegetation invaded grassland, prairie was cultivated, wetlands were drained and filled, and brush was cleared. The eventual trend was towards a more homogeneous and simplified environment which no longer had the capability to support the same variety and numbers of wildlife as in former times.

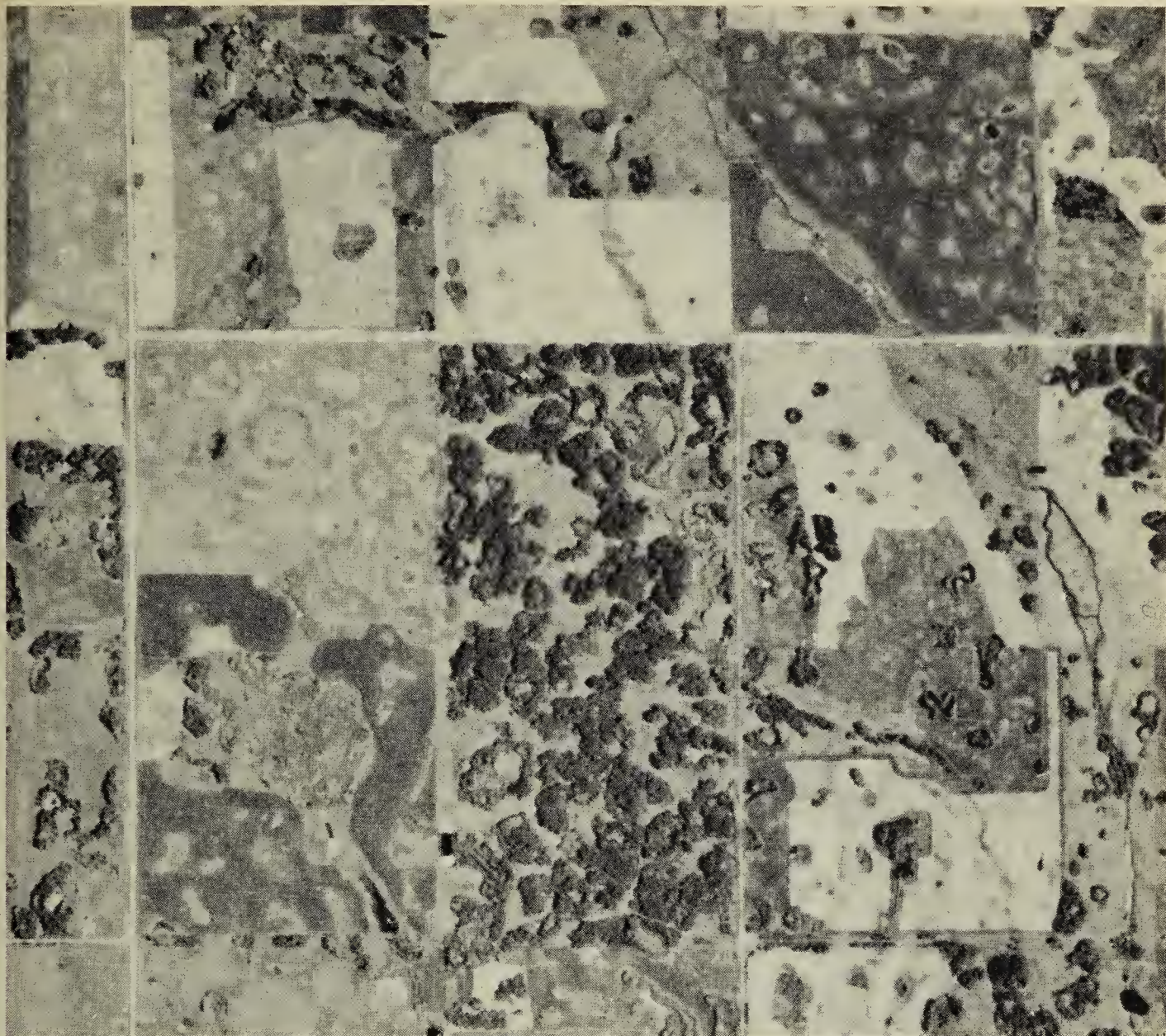
Most wildlife species for which we have data are currently below previous population levels (Fig. 7). Continued agricultural developments which result in the further removal of natural vegetation and the

creation of a less diversified landscape will probably result in the continued decline and possible disappearance of more wildlife species. With the aid of past observations and experiences a long term strategy for the future must be developed whereby we secure the essential wildlife habitat mosaics which still remain and restore some of the natural diversity which we have lost.

#### **Acknowledgements**

Thanks to G. Duff who drafted the figures and J. B. Gollop, C. S. Houston and G. W. Pepper who reviewed several drafts of the





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Figure 6: Aerial photo from 1970 of the same parcel of land shown in Figure 5. Note the removal of aspen and increased area of cultivation, as well as increases in the size of aspen bluffs which were not cleared.

manuscript. Also a special thanks to the numerous residents of the study area who provided the author with personal observations of wildlife and land use changes since early settlement: F. Baran, R. Barber, H. Coté, K. Cummins, A. Dennis, L. Dennis, W. Hill, J. Lees, D. C. McCormick, W. Mills, H. J. Munro, K. Racz, F. Thompson, E. J. Turton, H. Weatherald, T. White, T. Wilson. E. Kennett was particularly helpful in arranging several interviews.

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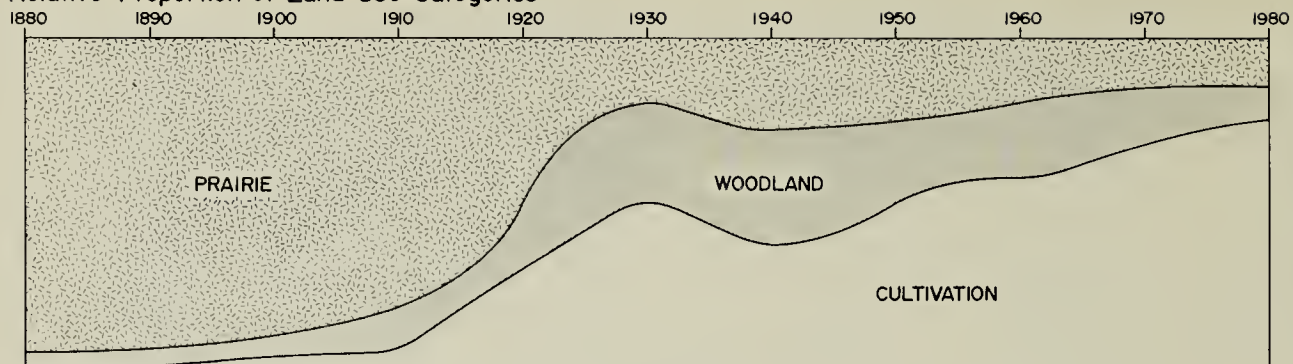
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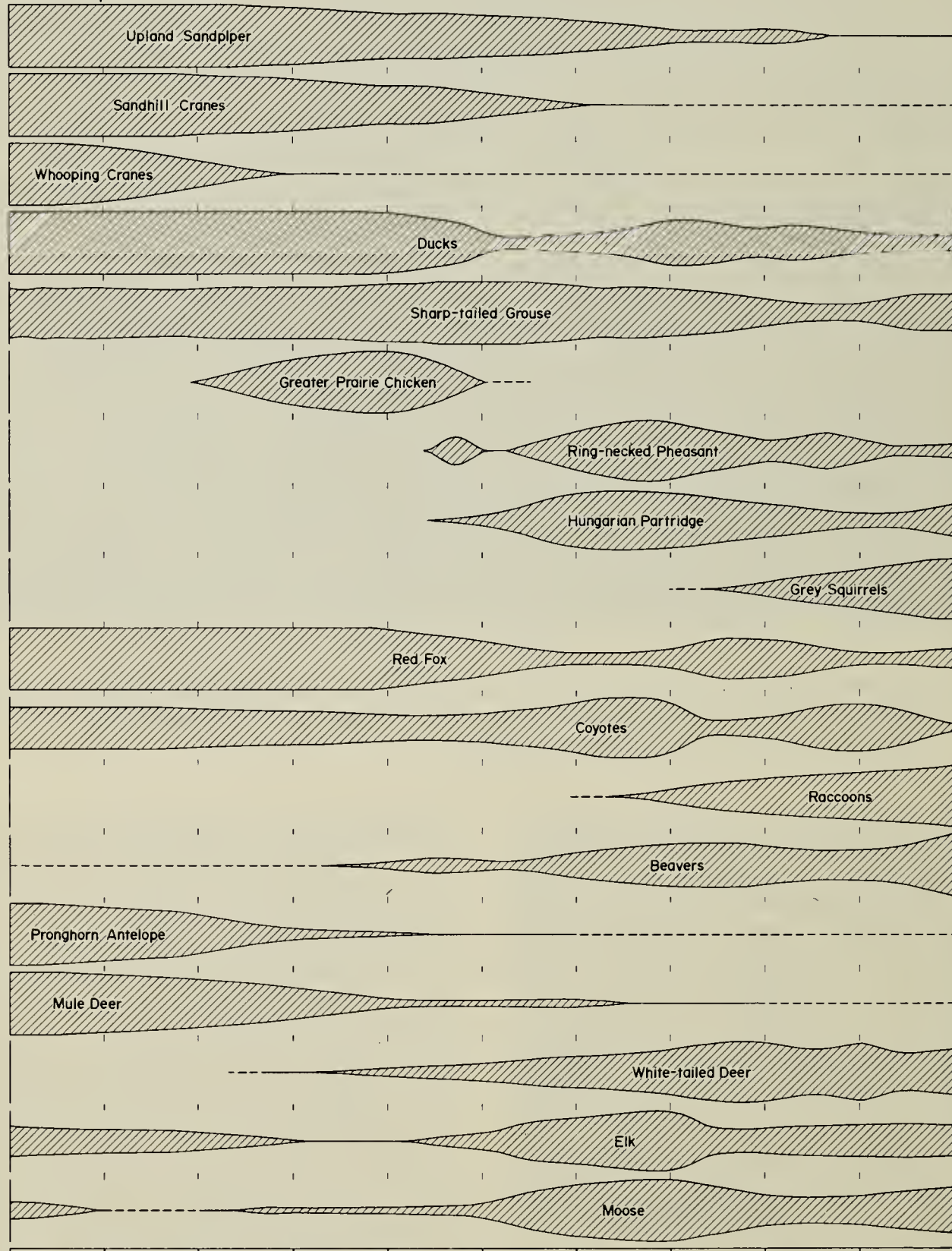
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Relative Proportion of Land Use Categories



Relative Population Levels\*



\* Population levels are relative only within an individual species. The highest population level is assigned to each species of its known or suspected maximum within the 100 year period. --- Seasonal or occasional occurrence

Figure 7: Diagrammatic summary of relative changes in land use and wildlife populations in southeastern Saskatchewan from 1880 to 1980.

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