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THE SANDHILL CRANE  
IN THE  
LOWER FRASER VALLEY

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## The Sandhill Crane in North America

The Sandhill Crane, Grus canadensis, is one of the most ancient birds of North America. Its bones have been found in Pliocene deposits nine million years old. During the Pleistocene era, it was divided by the icesheets into several breeding populations which probably form the basis of the subspecies recognised today. The crane population breeding north of the icesheet in the refugia of Beringia and Banksia became a smaller subspecies. South of the icesheet, the larger races of the Sandhill Crane were, with the Whooping Crane, Grus americana, avian companions to the great herds of mammals that once grazed across the open expanses of grassland and marsh. Like the Pleistocene mammals, the cranes are now much reduced, some to the verge of extinction. Being a bird of the open expanses, the Sandhill Crane has been unable to adapt to changes and human activity on its habitat. It left its haunts on the north-eastern seaboard of North America in the 18th century, and subsequently ceased to nest in Ontario, Ohio, Indiana, Illinois, Iowa, Nebraska, North and South Dakota, eastern Montana, southern Alberta, southern Saskatchewan, parts of southern Manitoba, Louisiana, possibly southern Alabama, most of Cuba and many parts of Florida. In recent decades, protection from hunting and the provision of large expanses of undisturbed habitat in sanctuaries have contributed to a revival which has enabled the Sandhill Crane to spread back into some of its former range (Walkinshaw 1973). Nevertheless, the non-migratory Cuban and Florida Sandhill Cranes, G. c. nesiotus and G. c. pratensis, are listed as endangered subspecies by the International Union for the Conservation of Nature; they number approximately 100 and 3,500 respectively. The Greater Sandhill Crane, G. c. tabida, together with the very similar Canadian Sandhill Crane, G. c. rowani, total only about 6,000 birds. Although the Greater Sandhill Crane is not on the I.U.C.N. endangered list, the U. S. Bureau of Sport Fisheries and Wildlife regards it as "an endangered continental subspecies" (Miller 1974).

The Lesser Sandhill Crane, G. c. canadensis, has remained reasonably secure in its arctic summer habitat and numbers some 200,000 birds. The autumn migration of migratory cranes on the Central Flyway, G. c. canadensis, G. c. rowani, G. c. tabida, brings large flocks to the grain fields of the prairie provinces and north-central states at harvest-time. The resulting crop damage contributed to the decision to open hunting seasons on Sandhill Cranes in several states and provinces. This decision was criticised on the grounds that hunting did not solve the crop predation problem and constituted too heavy a drain on the crane population. Miller (1974) suggested that the annual harvest of 5 to 6 percent left no room for natural mortality in a population with an annual recruitment of only 4 to 8 percent, and predicted a "programmed extinction".

The Sandhill Crane in the North-west

The recent history of the Sandhill Crane in the Pacific north-west resembles that of this species in the east. The early explorers found this conspicuous bird in most of the marshes and open grasslands along the coast, both on the mainland and the islands. On arrival at Admiralty Inlet in 1792, Archibald Menzies, Surgeon and Naturalist with Captain George Vancouver on H.M.S. Discovery, aptly described "a few gigantic cranes of between three or four feet high who strided over the lawn with lordly step". Vancouver himself remarked that they seemed to equal the largest turkey in size, but he was unable to extend the comparison to the table because they

"...seemed to prefer open situations and used no endeavors to hide themselves from our sight, but were too vigilant to allow our sportsmen taking them by surprise." (Pearse 1968)

The crew of the American explorer, Robert Gray, were more successful; they not only saw "turkies" on the wing, but occasionally shot one in the course of their voyages to the Queen Charlotte Islands and along the west coast between 1787 and 1793.

White settlement placed increasing pressure on the cranes. William Fraser Tolmie, physician and fur-trader for the Hudson's Bay Company at Fort McLoughlin, now known as Bella Bella, made the following entry in his journal for 3rd June 1834:

"Found a crane's nest in the plain containing two eggs which Francois broke in carrying them home - fired at one of the birds with rifle but missed. The nest was formed of a few dry cedar twigs placed in an open situation on a mossy islet in a small pond." (Large 1963)

The distinguished American naturalist, J. D. Cooper, who accompanied the Northern Pacific Railroad Exploration in the mid 1850's, gave the following account of the Sandhill or "Brown Crane" in Washington Territory:

"The brown crane is a common summer resident arriving at the Straits of De Fuca in large flocks in April, and then dispersing in pairs over the interior prairies to build their nests, which are placed among tall fern on the highest and most open ground, where they can see the approach of danger. They frequent in this season the mountains to a height of 6,000 feet above the sea. The young are often raised from the nest by Indians for food." (Suckley and Cooper 1860)

### The Sandhill Crane in the Fraser Valley

In the lower Fraser Valley, the Katzie Indians inhabiting the shores of the tributary Pitt River included the crane among their guardian spirits. They named it "syahaha'w", meaning "superior in everything", and believed that it imparted skill to women in their work. According to a Katzie legend, a supernatural being named Khaals found two sisters digging up Indian potatoes (Wapato or Arrowhead, *Sagittaria latifolia*) because they had nothing else to eat. When the girls laughed and mocked Khaals he transformed them into cranes, henceforth to roam the meadows, and to laugh and dance after they root up the ground just as the two sisters did (Jenness 1955). Simon Pierre, a Katzie Indian born about 1880, recalled his father, Old Pierre, describing the cranes arriving "in thousands" to feed and nest on the flat meadows near Pitt Lake. Whatever their actual numbers were, the arrival of these large birds must certainly have been spectacular, for it made such a deep impression upon the Indians that they called March the "Sandhill Crane month" (Jenness 1955).

Before white settlement brought dykes and drains to transform the lowlands of the Fraser Valley, the Sandhill Crane probably fed mainly in the open, grassy "prairies" kept free of trees and shrubs by the periodic flooding of the Fraser River (North and Teversham 1976). However, it seems to have preferred the more inaccessible bogs as nesting habitat. John Keast Lord, naturalist with the Boundary Commission between 1858 and 1862, described the Sandhill Crane as "very common east and west of the Cascades" (Lord 1866). The checklist published by the Provincial Museum in 1891 stated that it was "tolerably abundant", breeding throughout its range across British Columbia "but chiefly east of the Cascades". The catalogue of 1904 stated that it was "common" throughout the province, breeding "in the interior of the mainland", but by this time it was disappearing from its haunts in the lower Fraser Valley. Allan Brooks reported that the Sandhill Crane had "...bred regularly in a cranberry bog at Sumas up to 1902" but had not nested there for fifteen years. However, it was still breeding near New Westminster in the large cranberry bogs (Brooks 1917). This location could have been on Lulu Island or along the Fraser towards Port Coquitlam. In the early 1920's, Canon Martin Holdom was told by older parishioners at Surrey Centre that cranes had once been common in the bog between the Serpentine and Nicomekl Rivers. In 1925, Brooks and Swarth included "mouth of the Fraser River" among the isolated localities in the province where the Sandhill Crane still nested. Cumming (1932) described it as "common at Ladner in May". By 1947, Munro and Cowan reported that cranes "formerly nested or occurred in summer...on the southern coast, at Sumas Prairie, Pitt Meadows and Ladner". They stated, "So far as known, the (mainland) coast population is now restricted to Lulu Island...". However, this was not correct; Robert Luscher reported a pair with young on Lulu Island in 1946, but several pairs continued to nest in Burns Bog, Delta, throughout the 1940's. By the mid-1960's, the number of breeding pairs in Burns Bog had dwindled to two or three, and in 1970 "several low (aircraft) flights over Burns Bog on June 9 to check for nesting cranes revealed only a single adult in the area" (Campbell, Shepard and Drent 1970). Since then a few cranes have arrived there in the spring and have attempted to nest on at least one occasion, but with little success. In the late summer they are joined by another flock that feeds in the meadows beside Burns Bog and flies to loafing areas among the peat cuttings. The cranes all depart in October. The late summer arrivals at Burns Bog are probably the birds that comprise the last breeding population in the lower mainland, nesting in the marshes and bogs of the Pitt Valley. They too are declining.

### The Sandhill Cranes in the Pitt Valley

There is remarkably little data on the Sandhill Cranes of the Pitt Valley prior to the present decade. Wilma Robinson and her family and friends have kept notes of their observations over the years. In 1975 they identified nine pairs of adult cranes and five birds believed to be immature. Eight of the paired birds nested, but only three pairs reared young, of which four survived to the end of the summer. In 1976 the B. C. Hydro and Power Authority constructed a power line across the valley using helicopters to erect the pylons. The pair of cranes which normally nested nearest to this project failed to do so. Only five nests were found, and only one young bird was seen. In 1977 only two nests were found and a third nest was presumed to be located in the bog west of the road. A pair was seen with one young bird in the Snake Rock area on 11th June, and two weeks later a pair with two young were seen in a blueberry field on the Polder Farm. 1978 brought a further deterioration; only one nest was found and another suspected, and no young were reported. At the time of writing in 1979, two pairs of cranes have been seen each with two young. A third pair is thought to have nested in the central marsh but neither nest nor young have been seen.

In summary, between 1976 and 1979 the number of nesting pairs seems to have fallen from eight to three. During that time two nesting areas have been lost to agricultural developments in the Cod Island and Snake Rock areas, and disturbance has been caused by dyke construction and by power line construction projects.

### Causes and Effects of Decline

The reasons for the decline and disappearance of the Sandhill Crane were evidently reduction by shooting, disturbance, and, finally, loss of habitat. Oliver Wells (1969) recorded that when his family first settled at Sardis

"...the Sandhill Cranes, or wild turkeys as the pioneers called them, could be seen regularly as they flew to the marshland at the eastern end of the valley from their nesting grounds on Sumas Prairie. The pioneer thought favourably of them, for they bothered no one and were good eating."

The Migratory Birds Convention of 1916 included a clause closing the hunting of swans, cranes and curlews for ten years. But, of all the states and provinces of North America, British Columbia alone refused to accept this clause, and so it was amended to give this province an open season on these birds. A year later, in a pessimistic reply to an enquiry about his opinion of the Convention, Allan Brooks wrote that the cranes "... must have conditions where they are not much disturbed when at rest". The "large open plains" that they formerly inhabited, he stated, "are too much disturbed," (Brooks 1918).

To the layman, the sensitivity of cranes to disturbance seems strange when compared with the tameness of the Great Blue Heron, a bird of such similar shape and size that it, too, is commonly called a crane. But, in spite of its outward similarity, the Heron is not closely related to the cranes, and differs from them in its habits. It is a bird that perches readily, and it nests and roosts in trees. When disturbed while feeding,

it often flies to a convenient branch until the danger on the ground has passed. In contrast, the Sandhill Crane is a bird of the open spaces, spending its entire life on the ground, its only defence is distance. George Gladden (1917) wrote:

"On the fenceless prairies and the treeless marshes, where its keen eyes can detect afar off the approach of an enemy, the demeanor and habits of this fine, brave bird challenge the admiration of the man who appreciates alertness, courage and strength in wildlife. Not for an instant is the great bird off his guard...If the approach of his chief enemy, man, is discovered, the crane surveys the intruder for a few minutes and then, with a few long, running strides takes to his wings, at the same time sounding his wild and defiant cry."

It is clear why such a bird found survival difficult in the crowded confines of the lower mainland, where by 1905 "...almost every part of the valley was...within two miles of road" (Meyer 1968). The main exceptions were the Delta and Richmond peat bogs and the Pitt Marshes. As long as these areas offered undisturbed havens, a dwindling population of cranes survived by feeding on the neighbouring farmlands and retreating to the bogs and marshes to breed and loaf.

It seems likely that half a century of unrestricted shooting had already sealed the fate of the cranes in the Fraser Valley before protection was finally extended to them. These birds lay only two eggs but seldom raise more than one young each year. They are long-lived, surviving for twenty to twenty-five years, but they do not begin to breed until they are four or five years old. Annual recruitment is unlikely to be higher than 4 to 8 percent even in large populations inhabiting favourable habitat. As a result it is quite probable that the crane population of the lower Fraser Valley was seriously reduced by shooting and had reached an unviable level by the beginning of the present century when it was reduced to the colonies at Lulu Island, Burns Bog and the Pitt Marshes. The continued presence of cranes may be due rather to their longevity than to their annual recruitment. Their decline has been hastened in the last four decades by the commercial exploitation of their last remaining habitat in Richmond and Delta, where peat-cutting, berry growing and filling has fragmented and reduced the bogs. The mechanisation of peat cutting in Burns Bog may have intensified the impact of disturbance in the last two decades. Drainage and development of adjoining lands has also quickened the plant succession in bogs where once the Indians retarded the process by burning to foster the growth of berries. Recent conservation measures for the restoration of the Pitt Marshes may well have similar effects on the Sandhill Cranes there. The new dykes give raised access to areas formerly difficult to approach. Much of the cover afforded by the tall grasses and Hardhack Spiraea douglasii to the nesting cranes is reduced or overlooked from the dykes. The lack of means for controlling public use of the area, now that it is virtually an unstaffed public park, guarantees a degree of human activity far in excess of that of peat cutters which has contributed to the reduction of the crane population in Burns Bog. Although conducted with good intent,

the present development and use of the Pitt Wildlife Management Area encourages little hope that its remaining bogs and restored marshes will provide a suitable basis for the continued survival of Sandhill Cranes in the Lower Mainland.

Public attitudes to these events are varied. The local naturalists are disappointed that the preservation and protection of this last breeding remnant of the Lower Mainland's Sandhill Crane population has not been made the primary purpose of the Pitt Wildlife Management Area. Some hunters, on the other hand, are impatient of any concerns that may impede marsh restoration and delay the expected increase in waterfowl production. Between these two extremes are those who hope that the reversal of the plant succession, which was rapidly reducing the open bogs and marshes, may have beneficial effects for the Sandhill Cranes as well as for waterfowl and other components of the bog and marsh ecosystems. Ducks Unlimited and the Fish and Wildlife Branch have modified their plans for the area in efforts to retain sufficient bog as nesting habitat for the cranes.

It is impossible to predict with certainty how the Sandhill Cranes in the Pitt Valley will adapt to the changes resulting from the construction of the dykes and the reduction of their nesting habitat. These birds lay their eggs on mounds in cover so thick that the nest can be seen only when the viewer is a yard or two from it. In Idaho, other populations of the same sub-species, G. c. tabida, nest in an open landscape in which the brooding females may be observed from a distance of hundreds of yards. However, such nesting sites are located in large, unbroken expanses of habitat, quite different from the comparatively limited extent of the bogs and "prairies" of the lower Fraser Valley. Throughout its range G. c. tabida appears to have adapted to nest-sites in varied forms and thickness of cover, ranging from shrubs, "tall fern" (Suckley and Cooper 1860), and cattails to "an open situation on a small islet" (Large 1963). Even within the Pitt Valley there is considerable variety in the thickness and height of cover round the cranes' nests. Those in the more southern, Cod Island, area nest in "fairly open sedge marsh with scattered clumps of hardhack" (Robinson 1976). The characteristic common to all sites is the ability of standing cranes to observe the approach of danger a long distance away (Howard 1976). Nevertheless, the variety of nest-site characteristics throughout the range of this subspecies does not permit the assumption that an isolated population of this "conservative" bird that has gradually adapted to nesting in heavy cover will rapidly adopt new nesting sites in open marshy habitat.

The second major change, increased accessibility, is likely to diminish greatly the chances of the cranes' making rapid adjustment to the new circumstances. The Sandhill Crane is a species that requires undisturbed open expanses of feeding meadow and of shallow water (up to 20 cm deep) for loafing and roosting (Howard 1976). The habitat modifications in the Pitt Wildlife Management Area may well increase the loafing and roosting habitat. If sufficient nesting habitat remains, and if the cranes continue to find additional feeding areas on the farmlands to the south, the requirements for their survival may be maintained or even improved. However, the presence of habitat is not enough; all of it will be rendered useless if essential components of it are subjected to increased disturbance.

The impact of disturbance upon large, wary waterbirds in the lower Fraser Valley has been discussed with reference to geese and swans (Leach 1978). Large areas of favourable habitat in the meadows and on the foreshore remain under-used if they are subjected to repeated disturbance. The Sandhill Crane is perhaps the wariest of all the large waterbirds and will undoubtedly retreat from habitats that are subjected to unpredictable movements of people. As stated above, the provision of uncontrolled access via the dyke system of the Pitt Wildlife Management Area greatly reduces the hope of a population of cranes surviving in the Pitt Valley. The contrast between the uncontrolled access here, and the restricted access to enclosed observation blinds and towers via covered approaches between fences, planted hedges or raised dykes at wildlife management areas for waterbirds elsewhere must surely give pause for reflection. (See, for example, Wildfowl, 23, 1972, plate XIV.) At present, the Pitt Wildlife Management Area is completely lacking in those basic restraints on public use that have proved essential to the successful conservation of large waterbirds and other wildlife for public observation and enjoyment. The "have your cake and eat it" attitude that has prevailed to the detriment of the larger waterfowl on the lower mainland foreshore is now being repeated in the Pitt Valley. This is quite unnecessary in a region where the public is remarkably well provided elsewhere with opportunities for hunting, fishing, hiking, canoeing, and, indeed for all forms of outdoor activity that are being unreasonably imposed upon the Pitt Wildlife Management Area.

#### Artificial Propagation of Cranes

Even if action is eventually taken to give priority to the needs of wildlife in the Pitt Wildlife Management Area, there is still a strong possibility that the Sandhill Cranes will continue to decline here simply because their annual recruitment cannot keep up with their losses through natural mortality and accident. Artificial propagation will then be the only way to avert their eventual disappearance. The purpose of hatching cranes in captivity would be either to release juveniles annually as "reinforcements" to the natural recruitment, or to build up a captive or free flying population elsewhere (Serpentine Fen, Reifel Island, or Burns Bog) from which to transfer young birds to the Pitt Valley when the cranes cease to breed there.

It may be argued that propagation need not be commenced until the natural population has died out. However, if action is delayed till then, a hiatus of several years will occur until the reintroduced population reaches maturity. During this time there will be no adult pairs with breeding territories to provide a fixed basis for the local population. Released birds may tend to wander and disperse without developing a firm territorial attachment to Pitt Valley.

On the other hand, it can be argued that the introduction of captive-reared birds may disturb the local birds or result in their rejection by the adults. This is probably not a major problem, because juveniles would be released at a time when the breeding pairs are moving out of their nesting territory and beginning to form a flock with other family groups. As a further safeguard against possible adverse effects from introducing birds into breeding territories, the juveniles could be released in the feeding or loafing areas at Burns Bog frequented by the wild flock in the late summer. Here there is a chance that the captive-reared birds will be accepted into the daily

routine of the flock and eventually into the migratory cycle commencing with their departure in October.

Another objection to the artificial propagation of cranes is that this effort will detract from the effort to maintain the natural population. The validity of this argument has already been demonstrated by the example of the Canada Goose in the Fraser Valley. The establishment of a resident, nesting population has for many removed the need for measures to revive the traditional visits of the migratory, wintering population of Branta canadensis taverneri.

Nevertheless, the chances of the survival of the natural population are now so slight that serious consideration should be given to its reinforcement or eventual replacement with introduced birds of the same sub-species.

One of the advantages of introduced birds, as demonstrated by the resident Canada Geese, is their greater toleration of man on or near their habitat. On the other hand such birds may not migrate, especially if introduced only after the final disappearance of the local population. Remaining in their nesting habitat, they would be exposed to dangers of predation or death by starvation when the inland waters freeze in mid-winter. This is an important factor in favour of commencing introductions before the natural, migratory population of cranes dies out.

It is fortunate that there are in the area a number of people with interest and experience in the propagation of waterbirds. Richard Trethewey has already successfully reared several Sandhill Cranes in his waterbird collection at Maple Ridge. Fred Bard, retired curator of the Natural History Museum, Regina, has worked on projects for the restoration of the Whooping Crane and is familiar with the rearing techniques used at Patuxent Wildlife Research Centre. He is now residing at Serpentine Fen where the facilities for rearing Canada Geese could be adapted for cranes. The B. C. Waterfowl Society and the Canadian Wildlife Service at Reifel Island both have the capability of contributing to a crane propagation programme. Dr. Paul Joslin of the Tynehead Zoo Society is also interested in the propagation of cranes. The fortuitous presence of these knowledgeable individuals and organisations offers a unique opportunity to form an advisory committee to examine the problem of the cranes' decline and to define recommendations for measures to avert its disappearance from the last of its traditional haunts in the Pitt Valley.

#### Why Bother?

The reasons for taking measures to preserve and propagate Sandhill Cranes are basically the same as for all wildlife conservation measures. However, due to its natural characteristics this species will require special efforts if it is to survive close to a major urban area. Furthermore, it exists in large numbers elsewhere, especially in refuges on the Pacific Flyway in the United States. Why then should it merit special consideration here?

There are many answers, none very satisfactory to persons who feel no sense of excitement at the sight or sound of these great birds, and who feel no sense of remorse that a species that has survived on earth for nine million years is disappearing from this valley after a little more than a century of the white man's presence. But to anyone who cares about the natural world upon which we have super-imposed the structures and systems of our human environment, the Sandhill Crane is a precious remnant of something that need not be entirely lost.

The bird itself is something special; its size, its call, its very wildness capture the imagination. To retain it in the close proximity to a major portion of the human population of the province would be to extend the possibility of an exciting experience to a large number of people who would otherwise never chance upon the sight and sound of a crane in its natural habitat. Furthermore, if we do not make an effort to preserve here this remnant of a species that is under pressure in other parts of its range, where then do we begin?

To the Stalo people, who were here before us, the Sandhill Crane was a guardian spirit. In a larger sense it is still the guardian spirit of the place in which it lives. The pioneers found that wild landscape just over a century ago. Perhaps, the test of our ability to retain a tiny remnant of it in the Pitt Valley today lies in our ability to restore its guardian spirit - the Sandhill Crane.

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