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# DUCK POPULATIONS: AN ECOSYSTEM INDICATOR

ALBERTA'S  
STATE  
OF THE  
ENVIRONMENT

## Introduction

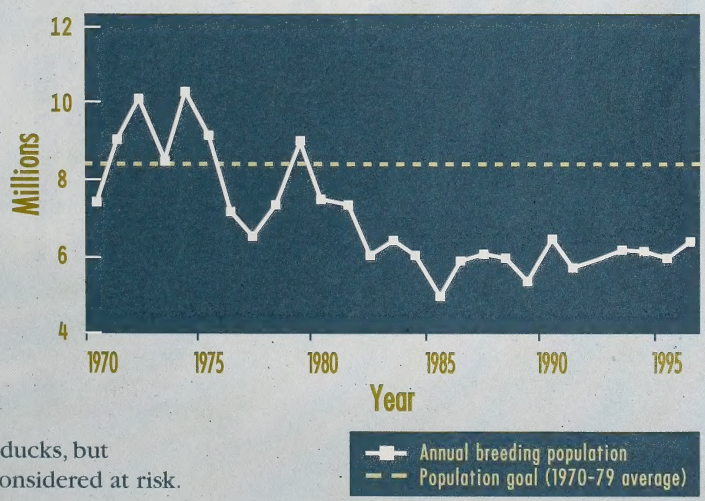
Alberta has some of the best waterfowl habitat in North America and annually supports a duck density and productivity traditionally higher than any other major duck-producing area of North America. Over one-quarter of the surveyed continental mallard and pintail breeding populations and one-fifth of all duck species use Alberta's wetlands, lakes and marshes during the breeding season. Therefore, the health of Alberta's duck populations affects the status of North American duck populations. The success of breeding ducks in Alberta depends on the health and integrity of the wetland habitat and adjacent uplands.

## Historical Trends

North American duck populations fluctuate from year to year, but experts have observed that on average they have declined significantly since the 1970s. This decline is also evident in Alberta (Figure 1). Breeding populations of all species of ducks in the province decreased from an average of 8.4 million during the 1970s to an average of 6.2 million during the 1980s, hitting an all time low of 5.1 million in 1985. The 1970-79 average has been accepted as a population goal for ducks in Alberta. Mallard breeding populations in Alberta dropped from an average of 2.0 million to an average of 1.4 million over the same time period, with a low of 1.1 million in 1984. In southern Alberta, where the decline was more dramatic, mallard breeding populations dropped from an average of 1.4 million to an average of 770 000, with a low of 586 000 in 1989 (Figure 2).

Breeding duck populations have shown some improvement during recent years. The 1996 breeding population for all ducks in Alberta was 6.3 million birds. There is some concern over the lower population numbers for mallard and pintail ducks, but neither species is considered at risk.

Figure 1. Alberta spring breeding duck population



# FACT SHEET

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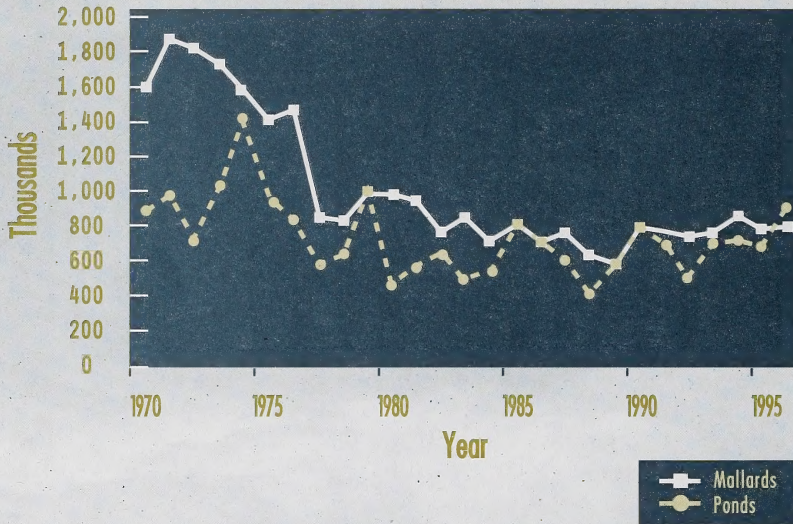
Alberta  
ENVIRONMENTAL PROTECTION



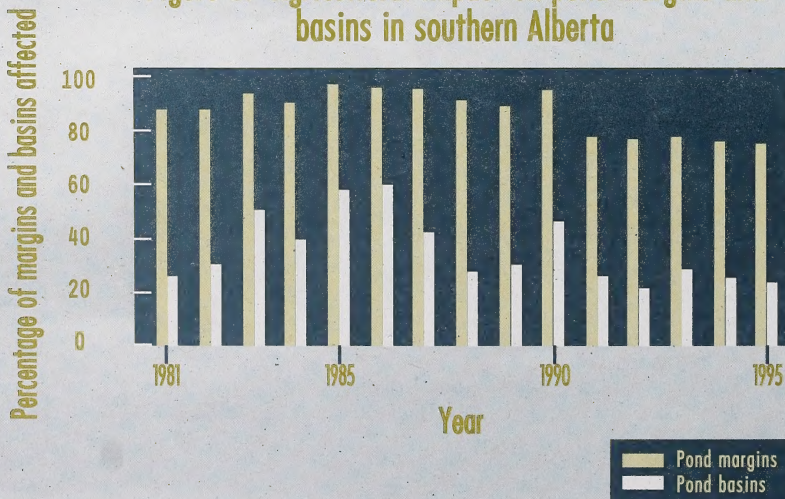
# Stresses

A stable or growing duck population indicates a healthy wetland ecosystem in which water is abundant and pond margins and surrounding upland nesting cover are intact. Conversely, a declining population indicates that stresses are occurring in the environment that adversely affect waterfowl habitat and the ability of ducks to reproduce. Some stresses are natural phenomena, such as drought, while others result from human activity, such as wetland drainage or impacts on the quality or amount of upland nesting habitat. The number of ducks in Alberta is related to the amount of wetland habitat available (Figure 2).

**Figure 2. Southern Alberta mallard breeding population and pond numbers**



**Figure 3. Agricultural impact on pond margins and basins in southern Alberta**





Some natural factors, like temperature and precipitation, may be global in scope but duck populations are also sensitive to local environmental conditions. Dry fall conditions, a poor frost seal in the soil, and a slow spring thaw may result in low water levels in ponds the following spring. These conditions are common during periods of drought. However, the more important and long lasting factors are those which physically alter the wetland and associated upland habitat. Ducks need both water and upland nesting cover to maintain their numbers. Activities that alter that relationship can result in dramatic population fluctuations. During the 1980s, drought conditions throughout much of Alberta provided the opportunity for intensification of agricultural activities in and around wetlands. In some cases, wetland basins were cultivated as they dried up. In many others, their margins and surrounding uplands were cultivated, leaving little nesting cover for ducks. The high percentages of ponds affected by agriculture in this way are shown in **Figure 3**. Without adequate nesting cover, nest predation rates were high and, correspondingly, nest success was very low, below levels required to sustain populations. The combination of drought conditions and intensification of cultivation destroyed the integrity of the wetland/upland ecosystem.

Because wetlands are important, the Alberta government has several policies and programs aimed at conserving wetland habitat. A Wetland Management Policy outlines several strategies for the conservation and restoration of wetlands. Major programs for wetland conservation in Alberta are implemented under the auspices of the North American Waterfowl Management Plan.

## The North American Waterfowl Management Plan

International concern about the dramatic decline in duck populations during the early 1980s prompted the development of the North American Waterfowl Management Plan (NAWMP). Originally signed in 1986, the NAWMP is an unprecedented partnership between Canada, the United States and Mexico, involving all levels of government, private wildlife conservation agencies, agricultural producers and thousands of dedicated individuals. The objective of NAWMP is to enhance wetland ecosystems to restore waterfowl populations to the levels of the 1970s. "The vision of NAWMP is to recover waterfowl populations by restoring and managing wetland ecosystems, to conserve biological diversity in the western hemisphere, to integrate wildlife conservation with sustainable economic development, and to promote partnerships of public and private agencies, organizations and individuals for conservation." \* Within Alberta, the NAWMP active partners include Alberta Environmental Protection; Ducks Unlimited Canada; Environment Canada; and Alberta Agriculture, Food and Rural Development. The Alberta program is coordinated by a Board of Directors formed of partner agency representatives. Field delivery is conducted by Ducks Unlimited Canada on behalf of the Alberta partners, under the Alberta Prairie CARE program. In recognition of the importance of prairie Canada as a breeding area for North America's duck population, the bulk of the funding for the NAWMP program in Alberta is derived from United States federal and state governments, and private organizations.

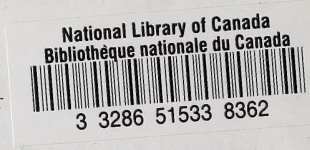
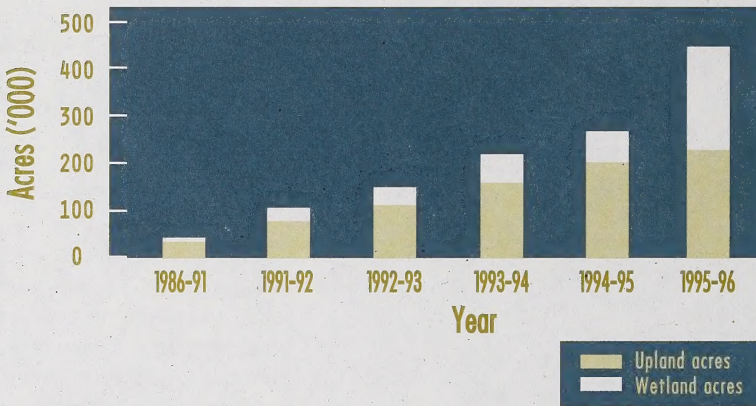
\* Vision statement, North American Waterfowl Management Plan.



Through direct involvement of landowners, the NAWMP program and other waterfowl initiatives are meeting the challenge of securing wetland and upland acres for wildlife habitat (Figure 4). They encourage management of wetland ecosystems and the associated uplands so that agricultural activities and wildlife production are compatible. Many soil and water conservation initiatives that help maintain duck populations are also beneficial to agriculture. A holistic approach to landscape management can benefit both interests.

Duck populations will continue to fluctuate with climatic trends and other natural factors. The population levels appear to have stabilized (Figures 1 and 2), in spite of the dry conditions of the 1980s. By securing important habitat through NAWMP and other programs, wetland and upland habitat will be available when the conditions for duck production are favourable.

Figure 4. Cumulative NAWMP acres of habitat secured



## For More Information

If you are interested in learning more about the status of Alberta's waterfowl resource, please contact Alberta Environmental Protection, Natural Resources Service at (403) 427-6750.

If you would like to learn more about what is being done and how you may get involved with the North American Waterfowl Management Plan, please contact Ducks Unlimited Canada at (403) 489-2002.

Looking for more information on the environment? Contact:

The Information Centre, Alberta Environmental Protection, Main floor, Great West Life Building • 9920 - 108 Street  
Edmonton, Alberta • T5K 2M4 • Phone: (403) 422-2079 Fax: (403) 427-4407

