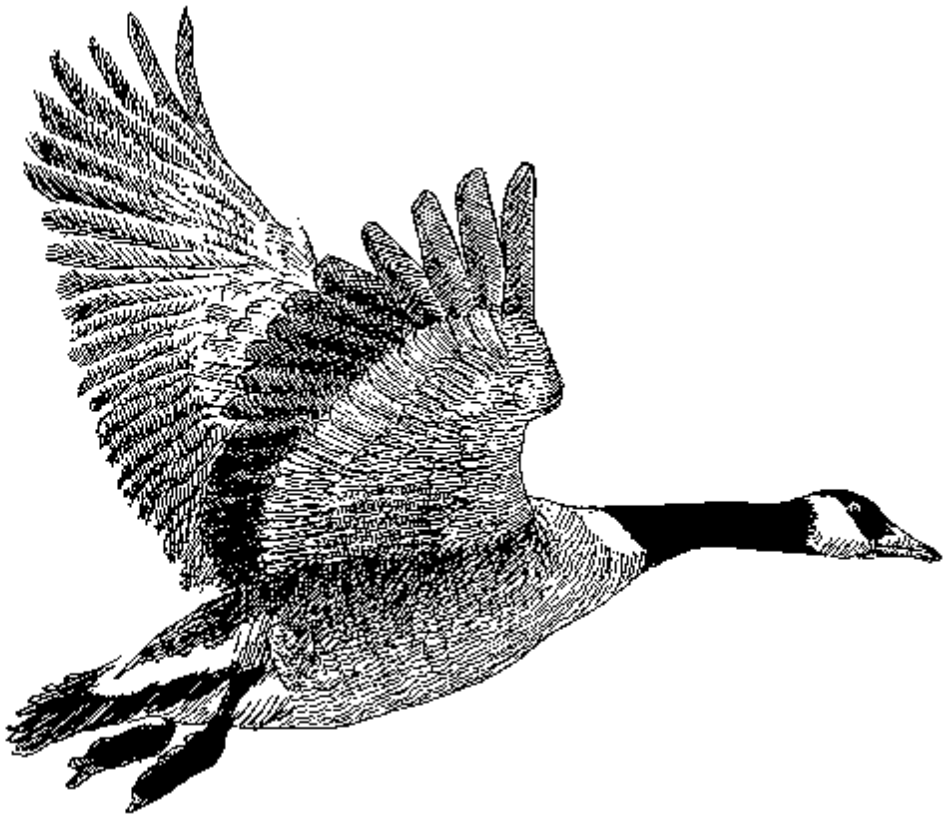
IOWA
CANADA GOOSE
MANAGEMENT PLAN



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IOWA DEPARTMENT OF NATURAL RESOURCES
Conservation and Recreation Division

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FOREWORD

Nearly two centuries ago, governing bodies in a young United States established the principles that wildlife resources belonged to the public at large, rather than to the king or his nobility, and that the government was ultimately responsible for protecting these resources. Hunting regulations were developed at local and state levels that protected some wildlife species from over-exploitation while encouraging the eradication of others. Thus began the long and controversial history of wildlife management in the United States.

Although our understanding of the biology and habitat requirements of many wildlife species has come a long way since those early days, the basic principle that wildlife is held in trust by the government for the benefit of the public at large remains steadfast. In Iowa, the Department of Natural Resources (DNR) is the government agency responsible for the stewardship of the indigenous and migratory wildlife species found in the state. For migratory birds, this responsibility is shared with the U. S. Department of the Interior's Fish and Wildlife Service (Service). The Service has ultimate authority for the conservation of migratory birds in the U. S. by virtue of the Migratory Bird Treaty Act of 1918.

The process of managing migratory birds requires conservation agencies to work in a larger arena than is necessary for the management of resident wildlife. Migratory bird resources are not just shared by the public within a state, but are shared among publics in different states and different countries. One of the major roles of the Service is to ensure sound, long-term management of migratory resources among states and countries that have different goals, perspectives and traditional uses. Under their leadership, migratory birds are cooperatively managed in a sustainable manner. This management process is one of the best examples of cooperative wildlife resource management in the world.

Long-range planning, cooperation, coordination and communication are essential elements for successful management of migratory resources. These elements have been used extensively in the Mississippi Flyway for more than 50 years to manage several populations of Canada geese. Interior Canada geese (*Branta canadensis interior*) such as the Eastern Prairie Population (EPP) or the Mississippi Valley Population (MVP) of Canada geese, Richardson's Canada geese (*B. c. hutchinsii*), also referred to as the Tall Grass Prairie Population (TGPP), and giant Canada geese (*B. c. maxima*) are all found in Iowa during the spring and fall, but only geese of the giant subspecies nest in Iowa. Even the giant Canada geese that nest in Iowa, however, cannot be managed as resident wildlife because many migrate out of the state at some time during the year, most notably during the winter. Giant Canada geese, like other migratory birds, do not recognize political boundaries. Canada geese produced in Iowa provide aesthetic and economic benefits to people in other states. These benefits must be given consideration when developing population management strategies for giant Canada geese that nest in Iowa.

This plan focuses on giant Canada goose management within Iowa. Strategies to manage these geese may, however, be constrained by the goals and objectives cooperatively developed for other Canada goose populations by the 14 states (MN, WI, MI, OH, IN, IL, IA, MO, AR, KY, TN, LA, MS & AL), three provinces (ON, MB, & SK) and two federal conservation agencies (U.S. Fish and Wildlife Service and Canadian Wildlife Service) that comprise the Mississippi Flyway Council (MFC). Only through such cooperative and coordinated management programs can we ensure sustainable use of migratory waterfowl resources in the future.

PURPOSE

This plan outlines basic principles and strategies to guide the management of giant Canada geese in Iowa within the context of management strategies for other Canada goose populations in the Mississippi Flyway. It is not intended to dictate management policies or procedures, but to assist in guiding decision-making processes. Objectives and strategies are provided as management guidelines to allow for adjustment depending upon the status of the various Canada goose populations in the Flyway, their biology, migration patterns, harvest rates, habitats, injurious activities, the DNR's management resources, and public input.

GOAL

To manage the population of giant Canada geese in Iowa at a sustainable level that provides maximum recreational opportunities consistent with social acceptability.

HISTORY, BIOLOGY, STATUS AND DISTRIBUTION

Giant Canada geese were the most widely distributed of the 11 subspecies of Canada geese found in North America at the time of European settlement. Their historical nesting range covered most of the central part of the continent (Cooke 1906, Hanson 1965) (Fig. 1). Even this bird's widespread distribution and adaptability, however, was no match for the unregulated subsistence hunting, egg gathering and wetland destruction that accompanied 19th century settlement of mid-America. By 1900, numbers of giant Canada geese nesting south of central Iowa were few (Cooke 1906). Extirpation progressed northward until these birds had all but disappeared from the lower 48 states by the 1930's (Hanson 1965).

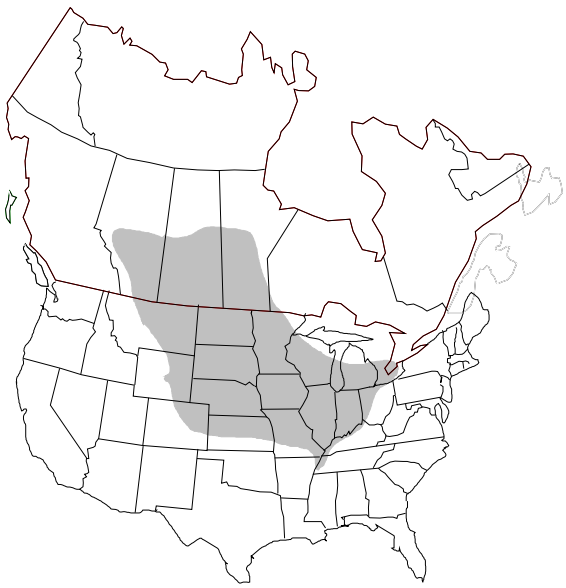

Fig. 1. Breeding range (shaded area) of giant Canada geese prior to European settlement (Hanson 1965).

The Iowa Conservation Commission, now part of the Iowa Department of Natural Resources (DNR), initiated a program in 1964 to restore giant Canada geese to their former nesting range throughout Iowa (Bishop and Howing 1972). The restoration project began at the Ingham Lake Wildlife Management Area (WMA) (Fig. 2) with 16 pairs of pinioned giant Canada geese whose origins could be traced to geese that had been taken from the wild in northern Iowa, southern Minnesota and South Dakota (Bishop and

Howing 1972). The young geese produced by the penned adults were permitted to fly and explore the surrounding habitats. To enhance the survival of these free-flying young, all public and private lands in a 120-mi.^{2} area around Ingham Lake were closed to Canada goose hunting in 1967 (Table 1). As a result of this program, the first nest of a free-flying giant Canada goose that was initiated in Iowa in the 20th century was found on a marsh 1 mile north of East Slough near Ingham Lake in 1967 (Bishop and Howing 1972).

Similar procedures were used to restore viable populations of giant Canada geese to the Ruthven (Smith Slough), Spirit Lake (Hogsback) and Rice Lake areas beginning in 1971-72 (Bishop 1978) and to the Rathbun Reservoir, Bays Branch and Lake Icaria areas in 1977-79 (Fig. 2). Additional core restoration flocks were initiated throughout Iowa (Red Rock Reservoir, Badger Lake, Green Island, Big Marsh, Sweet Marsh, Lake Sugema, 3-mile Lake, Forney Lake) between 1981 and 1996 by releasing flightless goslings on WMA's rather than establishing and caring for penned flocks (Zenner and LaGrange 1998a).

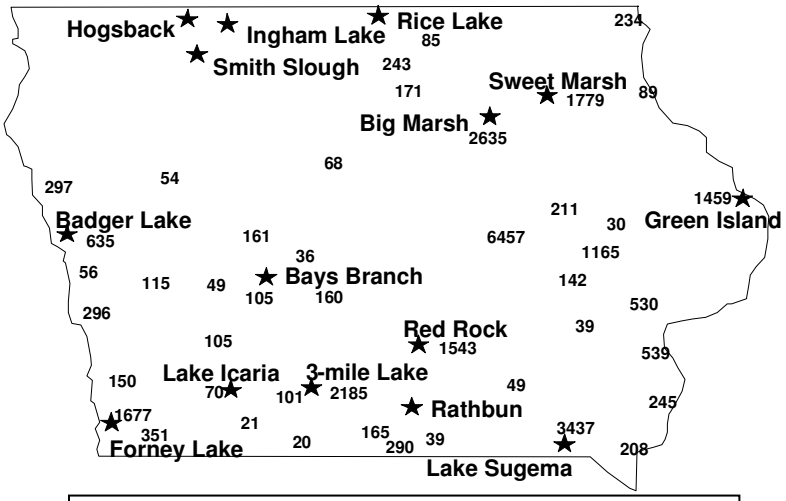

Fig. 2. Locations of giant Canada goose flocks and numbers of translocated geese by release site, 1964-2001.

In all cases, large areas were closed to Canada goose hunting around the penned flocks or the release sites (Table 1). In 2002, 15 such areas remained closed to Canada goose hunting. In most cases, the size of the area that is currently closed to Canada goose hunting is only a fraction of its original size. Closed Canada goose hunting areas are critical elements of Iowa's giant Canada goose restoration program because giant Canada geese are vulnerable to over-harvest on their natal areas. For example, 68% of the direct recoveries of Canada geese banded in Iowa during 1981-90 were shot by hunters in Iowa (LaGrange and Zenner 1998). (Direct recoveries are banded birds that are shot and reported in the same year they are banded.) More than 50% of these geese were taken within the first 9 days of the season in Iowa. The harvest of 16,000 Canada geese, nearly all Iowa giants, on the opening 2 days (Sept. 14-15) of the goose season in 1996 is another good example of the vulnerability of these birds to local hunting pressure.

Table 1 Initial and present size (mi.^{2}) of areas closed to Canada goose hunting around restoration sites, 1967-2002.

Restoration Site	Year Estab.[1]	Size	
		Initial	Present
Ingham Lake	1967	120	18
Smith Slough	1971	63	20
Hogsback	1971	57	33
Rice Lake	1972	113	28
Rathbun	1980	54	23
Bays Branch	1978	150	26
Lake Icaria	1979	88	32
Red Rock	1991	235	155
Badger Lake	1991	213	182
Green Island	1990	39	29
Lake Sugema	1992	322	180
Big Marsh	1994	68	68
Sweet Marsh	1994	130	105
Three-mile Lake	1995	69	69
Forney Lake	1996	66	66

[1]Year the closed area was established.

To accelerate the expansion of nesting Canada geese into unoccupied habitat in other parts of Iowa, the DNR translocated over 20,000 geese to 38 sites during 1983-2001 (Fig. 2). Geese were not released in urban areas despite requests by the public to do so. Neck-collar observations of marked translocated geese confirmed that successful nesting occurred within 3 years at many of these release sites.

Estimates of the size of Iowa's giant Canada goose population have been made annually since the restoration program was initiated. DNR personnel, with aid of county conservation board staff and private individuals, estimate numbers of Canada geese in their wildlife units during May and June each year. These estimates indicate that Iowa's giant Canada goose population has grown at average annual rates of 22%, 14%, and 15% during 1971-80, 1981-90 and 1991-2000, respectively. In 1975, giant Canada geese nested in 8 counties in northern Iowa. By 1985, they nested in 55 of Iowa's 99 counties. In 1993, at least 1 pair of Canada geese had been observed nesting in every county in Iowa (Zenner and LaGrange 1998a).

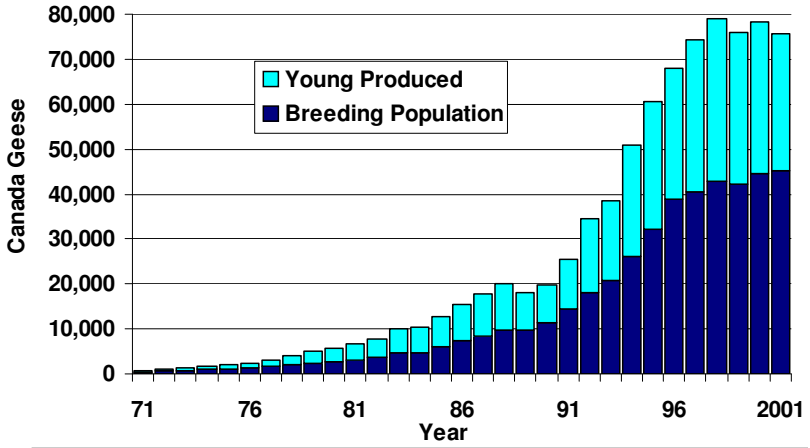

Fig. 3. Estimates of the giant Canada goose population in Iowa, 1971-2001.

During 1970-95, the highest densities of nesting giant Canada geese were found in the prairie pothole region of northwest and north-central Iowa. These regions were not only home to the first restoration flocks, but they also contain the most highly productive Canada goose nesting habitat in Iowa - prairie wetlands. In recent years, however, numbers of Canada geese in other parts of Iowa have contributed substantially to the overall growth of the state's population. For example, the giant Canada goose population grew at an average annual rate of 10% in northwest and north-central Iowa during 1991-2000, but averaged an 18% growth rate in the rest of the state during that same period. Although these growth rates may seem high, it should be noted that the rate of change, or growth, is relative to the population's size. High growth rates are typical of small populations of wildlife when they are initially reintroduced into vacant habitat.

There are still large areas in Iowa, especially in eastern and southern Iowa, where suitable habitat is only sparsely populated with Canada geese. Densities of nesting geese (i.e., geese/wetland acre) in these areas are much lower than in north-central and northwestern Iowa. In north-central and northwestern Iowa, prairie marshes usually contain numerous high-quality insular nest sites in the form of muskrat houses. These high quality nest sites result in high goose nesting densities and excellent nest success. Marshes are a less common landscape feature in other parts of the state. Consequently, geese nesting outside the prairie pothole region must often use less optimum nest sites. Most wetlands found outside the prairie pothole region are located in river bottoms where periodic flooding can substantially reduce nest success. Lower quality nest sites, coupled with an apparent higher rate of nest and gosling predation, generally result in slower growth rates for Canada goose populations outside the prairie pothole region.

Iowa's Canada goose population has yet to reach its full potential. It will be a few more years before all suitable habitat in the state is fully utilized by breeding pairs. Ultimately, however, the population's size will be limited by the amount of wetland habitat in the state. Only one quarter of the state's 56,275 mi^2 contain suitable Canada goose nesting habitat and, in most cases, only a fraction of each of these sections is classified as wetland habitat. Ideally, it would be nice to have the geese uniformly distributed across the state. This, however, will not occur because geese are tied to wetland habitats and wetlands are themselves not evenly distributed across the landscape. Consequently, there will always be regions of the state with an abundance of geese and regions with few.

Biology and Behavior

Like other geese, giant Canada geese are long-lived birds with low reproductive rates and high survival rates. Of the 3 subspecies of Canada geese found in Iowa, giant Canada geese have both the highest reproductive rate and highest adult survival rate (Table 2). Unlike arctic (e.g., Richardson's) and subarctic-nesting geese (e.g., EPP or MVP), whose annual production is greatly influenced by the weather on their breeding grounds, giant Canada geese inhabit temperate regions with relatively stable breeding conditions. Giant Canada geese also tolerate human disturbance, have adapted to contemporary landscapes and will nest in close proximity to each other (Klopman 1958, Ewaschuk and Boag 1972, Zenner and LaGrange 1998b). Combined with their willingness to use a variety of wetland habitats, these factors result in more consistent annual production from giant Canada geese than from arctic and subarctic-nesting geese.

Table 2. A comparison of biological and population aspects of giant Canada geese, interior Canada geese and small Canada geese (*B. c. hutchinsii*) in the Mississippi Flyway.

Population Trait	Large Geese *B. c. maxima*	Medium Geese *B. c. interior*	Small Geese *B. c. hutchinsii*
Weight (pounds)	9-12	7-9	4-7
Nesting area	S. of latitude 54	Latitude 50-60	N. of latitude 60
Age at first nesting	2-3 years	2-5 years	2-5 years
Clutch size	5-7 eggs	3-5 eggs	3-5 eggs
Reproductive success	High, constant	Medium, fluctuates	Low, boom-bust
Migration distance	Short	Medium	Long
Wintering areas	Latitude 37-45	Latitude 35-43	S. of latitude 35
Exposure to hunting	50-120 days	160 days*	160 days*
Adult survival	0.9	0.7-0.9	0.7
Population trend	Increasing	Fluctuating	Fluctuating

*plus subsistence hunting

Giant Canada geese usually start nesting when 3 years old, although some may start when only two (Hanson 1965). Average clutch size is about 5 eggs and usually 3 goslings achieve flight (Bellrose 1976, Nigus and Dinsmore 1980). Nonbreeding geese and failed breeders often migrate north in late May or June to molt, some as far north as northern Manitoba. When they reach breeding age, female geese, accompanied by their mates, usually return to the area where they first learned to fly, thereby perpetuating a nesting population (Hanson 1965). This behavior,

which is called homing, contributed substantially to the success of Canada goose restoration programs in the Midwest. Homing, however, can also result in high densities of nesting geese in some locations, a situation that can perpetuate chronic conflicts between geese and people. Adults and goslings have strong ties to natal areas and often remain near these areas until winter weather forces them to leave. Compared to interior and small Canada geese, most giant Canada geese migrate relatively short distances, which helps improve their overall survival.

Giant Canada geese are primarily grazers, preferring the new growth of grasses, sedges and forbs. They select grazing sites that are open and with good visibility so predators can be easily detected, especially when their young are flightless. During fall and winter, they feed extensively on waste grains in harvested crop fields. Their adaptable feeding and nesting behavior, as well as tolerance for human disturbance, has enabled them to successfully exploit many contemporary habitats.

Most of the Canada geese harvested by Iowa hunters during the first three-quarters of the 20th century came from arctic and subarctic-nesting populations of Canada geese (e.g., EPP, MVP, or TGPP). Annual Canada goose harvests ranged from 4,500-13,000 and averaged 9,500 during 1961-80 (source: USFWS harvest surveys) (Fig. 4). Canada goose harvests were widely distributed across the state during the 1961-70 period (Fig. 5) and opportunities to take geese were dependent upon the timing and duration of the migrations of arctic and subarctic nesting geese.

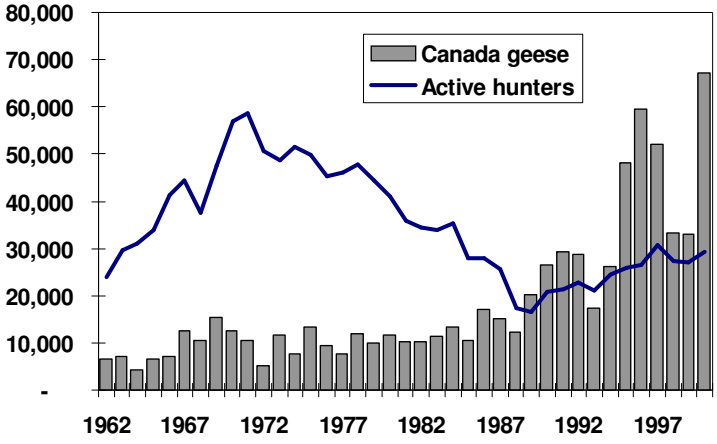

Fig. 4. Canada goose harvests and active waterfowl hunters in Iowa, 1961-97. (Source: USFWS harvest surveys)

During the 1980's, Canada goose harvests increased in Iowa to an average of nearly 15,000. During that same period, the proportion of Canada geese that Iowa hunters were taking from the EPP, as indicated by band recoveries, appeared to be decreasing (LaGrange and Zenner 1998).

In the 1990's, the average annual Canada goose harvest has exceeded 39,000 birds, most of which is directly or indirectly attributable to increased numbers of giant Canada geese in Iowa. Iowa hunters continue to harvest more Iowa-grown giant Canada geese with each passing year. The average seasonal Canada goose harvest/active hunter has increased from 0.2 Canada geese per season during the 1960's to 2.5 geese per season during the 1990's. Canada goose harvest opportunities geese are also more consistent and widespread across the state as illustrated by the increase in the average annual harvest by county for the 1991-97 period (Fig. 5).

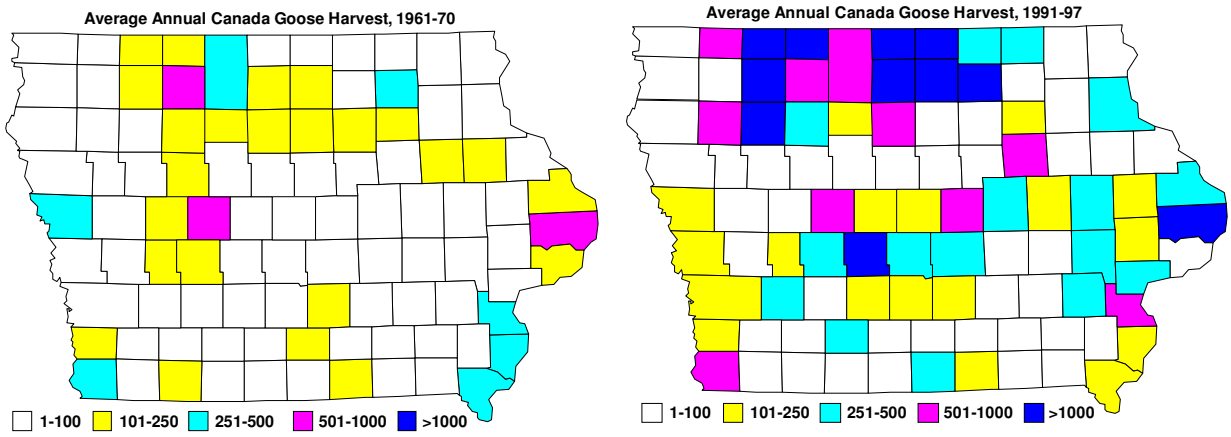

Fig. 5 Average annual Canada goose harvests within counties during 1961-70 and 1991-97. (Source USFWS harvest surveys)

Increasing numbers of giant geese in Iowa also appear to be enticing more migrant Canada geese to stop during the fall. This can be observed in the growth of the peak numbers of Canada geese using surveyed areas in Iowa during the fall in recent years. During the early 1970's, numbers of Canada geese using refuges throughout the state during the fall migration peaked at about 5,000 birds. That peak number is now exceeded during the second week of September, weeks before significant numbers of migrant Canada geese begin to move into the state (Fig. 6). As the fall season progresses, numbers of Canada geese using surveyed areas throughout Iowa continue to increase, usually peaking sometime in November or early December, depending upon the weather. During 1995-98, Canada goose use days on surveyed areas averaged over 5.8 million during September through December.

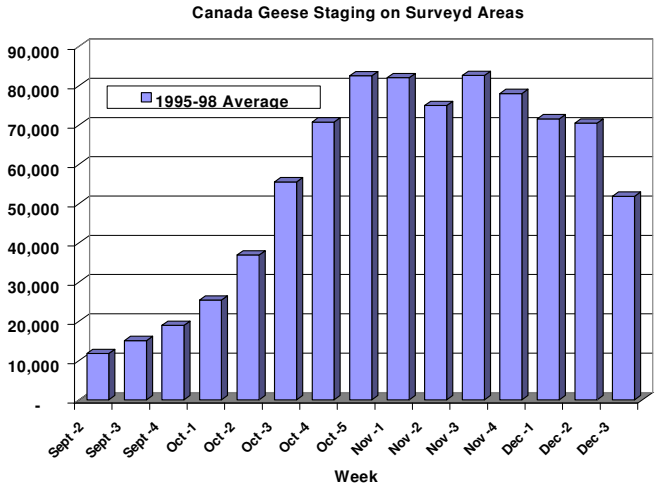

Fig. 6. Average numbers of Canada geese using surveyed areas in Iowa during 1995-98

GIANT CANADA GOOSE POPULATION MANAGEMENT

OBJECTIVE 1

Manage Iowa's giant Canada goose population at a level that will improve recreational opportunities, both consumptive and nonconsumptive, encourage population growth in areas with underutilized habitat, and permit a sustainable annual harvest of approximately 60,000 Canada geese from the population.

Rationale:

The restoration of the giant Canada goose population in Iowa was a major accomplishment of 20th century wildlife management and has significantly increased recreational opportunities, both consumptive and nonconsumptive, across the state. Although inherently valuable as a component of Iowa's native fauna, giant Canada geese also provide significant economic benefits to Iowa through revenues generated outdoor enthusiasts, especially hunters. Giant Canada geese currently occupy most of the available nesting habitat in north-central and northwestern Iowa, although the population size has varied over time due to changes in harvest rates and the amount and condition of the wetland habitat. In other parts of the state, wetland habitats are often not fully utilized by breeding geese. When these remaining habitats are fully utilized, the statewide goose population will likely be twice its present size and should be capable of sustaining an annual harvest of about 60,000 geese. For example, the total Canada goose harvest in Iowa during 1995-97 (all subspecies combined) averaged 53,000. Harvest derivation analyses for that period suggested that about 15% of these birds were EPP geese, 10% were small Canada geese, 20% were giant Canada geese from surrounding states and 55% (about 30,000) were Canada geese from Iowa. During that same period, Iowa's giant Canada goose spring population ranged from 40-45,000. A harvest of 60,000 Iowa giant Canada geese should therefore be sustainable by a spring population of about 100,000 geese.

Canada goose hunters and the viewing public have become accustomed to high levels of recreational opportunities and have requested improved opportunities in much of the state. Iowa outdoor enthusiasts cannot rely on subarctic and arctic-nesting Canada geese to provide these opportunities. Populations of subarctic and arctic-nesting geese fluctuate substantially with the arctic weather, frequently resulting in population declines and harvest restrictions. In recent years, many of these migrant geese (EPP, MVP) have also lingered longer north of Iowa, further reducing harvest opportunities in Iowa. Iowa's giant Canada goose population can supply the majority of the desired recreational opportunities within the state. When the goose population reaches the desired level, harvest regulations can be liberalized to slow or stabilize its growth.

Strategies

1. ***Annually monitor changes in regional populations of giant Canada geese in Iowa through breeding pair and gosling surveys.***

   DNR wildlife staff should continue to estimate spring breeding populations and gosling production to monitor changes in the size and distribution of giant Canada goose population in the state. A statistically valid aerial survey should be conducted at least once every 2 years to check and correct the wildlife staff's estimates.

2. ***Annually monitor numbers and distribution of Canada geese staging in Iowa during the fall.***

Waterfowl surveys should continue to be conducted weekly from September to January on major waterfowl staging areas. The DNR should continue to participate in special surveys sanctioned by the MFC, such as the mid-October Canada goose survey, the mid-December goose survey and the Midwinter Waterfowl Survey, to maintain these historical databases and cooperatively monitor changes in distributions of Canada geese throughout the Flyway during fall and winter.

3. ***Monitor the magnitude as well as the temporal and geographical distributions of Canada goose harvests in Iowa.***

Canada goose harvests have been historically monitored through the Service's Waterfowl Harvest Survey. The recently implemented Harvest Information Program (HIP) will improve the precision of Canada goose harvest estimates at both the state and Flyway levels. Canada geese should continue to be banded annually to provide information on harvest rates as well as the geographical and temporal distributions of the harvest. Because giant Canada geese are only one of three subspecies of Canada geese harvested in Iowa, the DNR must continue to support MFC research and banding programs for subarctic and arctic-nesting Canada geese. Information on these geese is essential to developing effective harvest regulation for giant Canada geese that do not negatively impact other goose populations.

4. ***Manage areas where Canada goose hunting seasons remain closed (closed areas) to maintain self-sustaining regional giant Canada goose populations, distribute geese and associated recreational opportunities across the state, and attract migrating Canada geese so that Canada goose use days annually exceed 10 million during the October-December period.***

Much of the success of the giant Canada goose restoration program in Iowa was due to the policy of keeping large areas closed to Canada goose hunting around restoration sites. Closed areas not only protect local goose populations from over-harvest, but also provide essential resting and staging areas for migrating geese, thereby enhancing overall goose harvest opportunities in their vicinity. Maintaining effective closed areas is essential to the long-term sustainability of regional giant Canada goose populations as well as the subarctic and arctic-nesting Canada geese that migrate through Iowa.

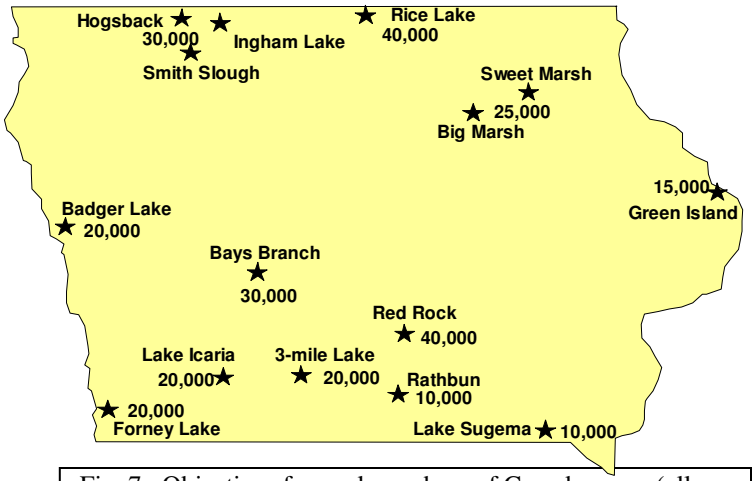

Fig. 7. Objectives for peak numbers of Canada geese (all species combined) using closed areas during the fall.

Because Canada geese are long-lived birds with low reproductive rates and traditional migration patterns, their populations can be suppressed, in most cases, using traditional and

special hunting seasons. Before the size of a closed area is reduced, careful consideration must be given to the potential long-term impacts that may occur on the regional giant Canada goose population, fall goose-use goals for the closed area (Fig. 7), and migrant Canada goose use, especially migrant geese that are below population objectives established by the MFC. Reducing the size of a closed area has historically increased harvests of local giant Canada geese as well as migrant Canada geese (i.e., EPP, TGPP or MVP) (LaGrange and Zenner 1998). These impacts, however, are not fully predictable. Closed areas must be carefully and gradually reduced in size over a period of years to avoid over-harvest and long-term loss of recreational opportunity.

Canada goose numbers do not have to simultaneously reach the objective levels on all the closed areas illustrated in Fig. 7 to annually achieve 10-million goose-use days. In fact, such an event is unlikely because goose use of northern areas usually peaks weeks before it does on southern areas. Ten million goose-use days can be achieved if the closed areas host 100,000 Canada geese during October, 200,000 during November and 100,000 for the first half of December. An important feature of this strategy is the intent to distribute the geese across the state so they provide widespread recreational opportunities and associated economic benefits. This strategy also reduces the chances of a catastrophic waterfowl disease event from a contagion such as fowl cholera.

5. ***Develop and implement harvest regulations that will maintain viable regional populations of giant Canada geese in Iowa and provide optimal recreational opportunities within the constraints of the management objectives for other Canada goose populations in the Mississippi Flyway.***

States and provinces in the Mississippi Flyway cooperatively develop annual recommendations for Canada goose seasons in the Flyway. The Service reviews these recommendations and makes the final decisions on hunting regulations. This process provides a set of checks and balances to prevent any single state or province from implementing regulations that could severely impact our shared migratory resources. Harvest regulations developed for Iowa are constrained by the Service's regulations/policies and must consider potential impacts on Canada geese from other jurisdictions as well as impacts on recreational opportunities in other parts of the Flyway.

6. ***Provide landowners an opportunity to hunt resident giant Canada geese on their properties within closed areas when regional population and fall goose use objectives have been achieved.***

Department rules were promulgated in 1995 to permit controlled hunting of Canada geese in closed areas by landowners and members of their families. Experimental hunts were initiated within the closed area near Ruthven during 1995-97 and subsequently expanded to the closed areas at Spirit Lake, Ingham Lake and Rice Lake in 1998. In all cases, these closed areas had been reduced to the minimum size that DNR biologists' felt was necessary to sustain viable local/regional populations of breeding geese as well as goose use during the fall and early winter. Hunting activities and harvests within the closed areas should continue to be closely monitored to ensure that they do not compromise this plan's regional population and goose use objectives, or the objectives for other Canada goose populations in the Mississippi Flyway.

OBJECTIVE 2

To improve coexistence and reduce conflicts between people and giant Canada geese by assisting the public in managing injurious goose activities and/or controlling goose populations in special circumstances.

Rationale:

The DNR's goal is to maintain a self-sustaining population of giant Canada geese that meets the demand for recreational uses while assisting the public in minimizing negative impacts where conflicts between geese and people arise. It is not the DNR's intention to eliminate all injurious goose activities; this could not be done without eradicating the species. DNR staff will assist the public in developing and implementing effective management strategies to help minimize conflicts with geese. It must be remembered, however, that any policies or strategies developed to address Canada goose activities or population levels in Iowa may be constrained by Service regulations governing migratory bird management as well as Canada goose management plans and objectives developed cooperatively by MFC.

Strategies

1. ***Monitor Canada geese in Iowa as specified in Strategies 1 and 2 under Objective 1 of this document.***

   To develop and implement effective plans to control injurious goose activities, it is essential to monitor changes in goose population levels and distributions. Depredation and population control permits issued by the Service require an estimate of the size of goose populations that will be affected. Regional and local population estimates are necessary to gauge the long-term effectiveness of population or depredation control programs.

2. ***DNR staff will assist the public in dealing with injurious goose activities in a consistent manner using the policies and procedures outlined in Appendix A (Policy And Procedures For Addressing Injurious Canada Goose Activities) as basic guidelines.***

   The basic techniques used to address injurious goose activities include population management through regulated hunting, habitat management, technical assistance, education, translocation, and lethal control in special circumstances. The level of assistance DNR staff will provide, as well as the techniques used, will vary with the situation under which the injurious goose activities occur. In all cases, however, the DNR will adhere to the principles that giant Canada geese are a valuable, shared resource and some level of coexistence and participation will be necessary by the public requesting assistance.

3. ***Monitor the magnitude and distribution of injurious goose activities as well as the staff time and costs associated with assisting the public in controlling these activities.***

   It is important to measure the extent and impact of injurious goose activities as well as the costs to control them, not only to determine the direct and indirect costs to the public, but to determine the cost-effectiveness of the measures taken to control goose activities or populations. These data have become increasingly important in recent years as animal rights groups have filed lawsuits to curtail the use of certain techniques to control injurious goose activities or populations. They are also important in understanding the overall value and costs of coexisting with Canada geese relative to the impacts of other factors.

4. ***Periodically review policies and procedures for addressing injurious Canada goose activities and revise as necessary.***

This document should be periodically reviewed to ensure that it effectively addresses the needs of the public and provides sound guidance for management of the giant Canada goose population in Iowa.

INFORMATION NEEDS

- A geographical information system (GIS) wetland database is needed to improve goose population survey designs and more precisely estimate the size of the Canada goose breeding population in Iowa. It must be at a scale that identifies wetlands as small as 0.5 acres, is more current and accurate than the National Wetlands Inventory (NWI) database, and retains the NWI's detailed wetland classification system.

- Regional and habitat-specific production data (nesting pair densities, nesting success and gosling survival for various habitats) is needed to develop accurate population models to estimate future population growth and expansion.

- Population and harvest models are needed to predict population growth under different habitat and weather scenarios as well as harvest rates for given sets of regulations, population sizes, and levels of production.

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Appendix A

POLICY AND PROCEDURES

FOR ADDRESSING

INJURIOUS CANADA GOOSE ACTIVITIES

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INTRODUCTION

Conflicts between people and wildlife date back to the dawn of humankind, although in those early years it was more of an eat-or-be-eaten relationship. Today, people have shaped much of the natural environment to their will, subjugating many wildlife species to remnants of habitat at the periphery of the modern landscape. As long as people and wildlife coexist, however, conflicts will occur because both are competing for the use of limited space and resources on the landscape.

People have a wide range of appreciation and tolerance for wildlife. Some are extremely intolerant of wildlife, some accept and adapt to high levels of wildlife activity, and others spend their time and money improving habitat on their property so wildlife populations can thrive. Some individuals that experience conflicts feel that wildlife's activities should be controlled or the animals eliminated. Others, including some that have conflicts, appreciate and want abundant wildlife populations. The mission of the Iowa Department of Natural Resources (DNR) is to protect and perpetuate the state's wildlife resources and manage these resources for their intrinsic value as well as their benefits to the public at large. The challenge in wildlife management is to balance the varied public interests with this mission. The policies and procedures presented in this document are guidelines to help resolve conflicts between people and giant Canada geese in a manner that is consistent, effective and economical, and is in keeping with the DNR's overall mission.

The restoration of the giant Canada goose population in Iowa was a major accomplishment of modern wildlife management. Giant Canada geese were a conspicuous part of Iowa's original wildlife community (Dinsmore 1994) and the restoration of this extirpated native species has enhanced the state's biodiversity and the quality of life for all Iowans. As Iowa's giant Canada goose population has grown, however, conflicts have developed between people and Canada geese. Most complaints of injurious goose activities in Iowa have involved flightless geese (usually goslings with adults) grazing on newly germinated crops (Zenner and LaGrange 1998a). Complaints of injurious goose activities in urban environments were uncommon until recent years. To address these concerns, an informal depredation control program was initiated in 1982 to assist landowners in controlling injurious goose activities near restoration flocks. In addition to technical assistance, DNR staff used permanent fences, temporary fences, lure crops, scare devices, land acquisition, translocation, and increased hunting opportunities to control goose activities and, in the process, gained significant experience in the use of these tools to minimize damage from goose activities.

A major management challenge for the DNR in the future will be to provide the recreational opportunities that the public demands and simultaneously manage goose populations to minimize conflicts between people and geese. Recreational opportunities created through the Canada goose restoration program have provided a substantial economic benefit in some areas, which further complicates management of this subspecies. Finally, because these geese migrate, Iowa's Canada goose management strategies will be constrained by federal migratory bird regulations and must consider impacts beyond the state's borders.

POLICY FOR ADDRESSING INJURIOUS GOOSE ACTIVITIES

In keeping with the DNR's mission to manage, protect and conserve Iowa's natural resources, the DNR's goal in managing Canada geese is to maintain a self-sustaining population at a level that meets the demand for recreational uses, both consumptive and nonconsumptive, while assisting the public in minimizing negative impacts when conflicts between geese and people arise. The DNR believes giant Canada geese are a valuable recreational and economical resource and any solutions proposed to control injurious goose activities must be balanced with these considerations. It is not the DNR's intention to eliminate all injurious Canada goose activities as this could not be accomplished without eradicating the species. DNR staff will promptly assist landowners in addressing complaints of injurious Canada goose activities. DNR staff will also follow up on such complaints by periodically contacting landowners to monitor the effectiveness of control techniques. The primary techniques to be used include population management through regulated hunting, habitat management, technical assistance, education, translocation, and lethal control outside hunting seasons.

It must be remembered that strategies and procedures used to control injurious goose activities in Iowa are constrained by policies and regulations established by the U.S. Fish and Wildlife Service (Service) for the management of migratory birds in the U.S. They may further be constrained by management plans developed for other Canada goose populations by the 14 state, three provincial and two federal conservation agencies that comprise the Mississippi Flyway Council (MFC).

It is permissible to harass Canada geese without a federal or state permit, provided the geese are not nesting or that the harassment does not result in birds being hurt or handled by a person. Any activity involving the capturing, handling, or harming of migratory birds requires both federal and state permits. Actions that result in harming migratory birds could be subject to legal action by the federal government. The MFC also reviews all large-scale lethal control programs to ensure they do not negatively impact the Flyway's long-standing, cooperative Canada goose management programs.

DEFINITIONS

Population Management Through Regulated Hunting

Hunting is generally recognized as the primary cause of mortality for Canada geese and harvest control is fundamental to regulating goose populations. Wherever practical, hunting during approved seasons should be the primary method used to control growth of the local goose population. It cannot be overemphasized, however, that Canada goose hunting must be controlled to prevent over-harvest of local geese, to minimize harvests of Canada goose populations of concern in the Flyway, e.g., Eastern Prairie Population (EPP) Canada geese, and to achieve the state's and Flyway's Canada goose management goals. Because many of Iowa's giant Canada geese migrate to other states and provide economic and recreational benefits outside Iowa, the DNR (with guidance from the USFWS and MFC) must consider the impacts of in-state harvest management strategies beyond Iowa's borders.

The public must also recognize that reducing numbers of local Canada geese will not necessarily eliminate undesirable goose activities. Conflicts between geese and people that involve very few geese have and will continue to occur because of varying site-

specific conditions and human tolerances. Reducing numbers of local geese by harvesting more geese may only reduce the severity of goose activities, not necessarily eliminate them. A multi-faceted approach that combines increased harvests, land management changes, and use of abatement techniques may be necessary to minimize injurious goose activities.

Habitat Management

Habitat on public or private land can often be managed to encourage or discourage Canada goose use, especially when geese are flightless. Modifying feeding or loafing sites, or access to those sites, through vegetation management can alter goose use. U.S. Dept. of Agriculture farm programs often contain provisions that can be used to reduce crop depredations at minimal costs. Within the constraints of providing quality habitat for a wide diversity of wildlife on Iowa's public lands, management of wildlife management areas (WMA) can be adjusted to encourage goose use and reduce use of adjacent lands. In many cases, however, management options on public lands are severely limited by the amount or manageability of the uplands. Many public wetlands and sovereign lakes have little or no state-owned uplands around them. In these cases, acquiring adjacent lands from willing sellers to reduce the frequency and magnitude of depredations is a high priority. In some cases, leasing or acquiring easements on adjacent lands may be a reasonable alternative to acquisition.

Technical Assistance

Technical assistance is providing advice, written materials, training and demonstrations of practices that may be used to minimize injurious goose activities. In many cases, injurious Canada goose activities can be minimized by using non-lethal abatement techniques such as scare devices (propane cannons, scarecrows, dogs, mylar tape, balloons, cracker shells) or fences. Fences can be very effective long-term solutions for reducing flightless goose activities at specific sites. The DNR will develop and disseminate information on effective abatement techniques, as well as possible suppliers of abatement materials, upon request.

Education

The DNR will prepare and distribute educational materials to increase the public's understanding and tolerance of Canada geese as well as inform people of what can be done to modifying goose behavior and minimize damage from goose activities. The DNR will also record complaints of injurious goose activities to better understand and define the magnitude of this issue.

Translocation

Translocating geese (capturing geese at one site and releasing them at another), has generally been ineffective at reducing goose populations or permanently resolving conflicts with goose activities. In situations where geese are not vulnerable to hunters, e.g., large metropolitan areas, translocating goslings has slowed population growth, even suppressed it when nearly all goslings were removed annually for an extended period of time. Translocation projects are expensive and time consuming to implement, require

long-term commitments of funds and manpower, and have limited long-term applicability. Because adult geese using metropolitan areas have high survival rates, often living 10+ years, goslings must be removed for a decade or more to effectively suppress a population. If geese are produced on areas around the removal area, birds pioneering into the vacated habitat may offset the effects of the translocation program. Adult geese have strong homing instincts, making adult translocations ineffective. Because translocation is generally an ineffective long-term solution, the DNR will only translocate geese when immediate action is needed to provide relief while other control measures are implemented. In situations where other agencies, individuals or groups want to initiate an annual translocation program in lieu of implementing more permanent control practices, DNR staff will assist in planning, training personnel and designating release sites.

Lethal Control

While hunting can be used to suppress local goose populations in most situations, there are areas, such as municipalities, where Canada geese are virtually protected from harvest during hunting seasons. Increasing adult goose mortality, however, is a prerequisite for reducing goose populations in a timely manner. The DNR realizes that harvest management via hunting will never completely address these situations and other lethal control practices may be necessary. Lethal control programs will only be permitted in special situations where geese are not vulnerable to harvest or where goose activities pose a serious threat to human health or safety. The costs of lethal control programs will be borne by the agency, group or individual desiring to reduce the goose population. Taking geese will only be authorized after other non-lethal means of eliminating the injurious activities have been shown to be ineffective or unfeasible and that no other wildlife will be impacted by the action. Methods of take may include firearms, alpha-chloralose, traps, egg and nest manipulation or destruction, and other techniques consistent with accepted wildlife-damage management programs. Canada geese killed in control programs must be properly disposed of or utilized, e.g., donated to public institutions, given to charities for human consumption, buried or incinerated. Only agents designated by the DNR will be authorized to carry out lethal control programs.

PROCEDURES FOR ADDRESSING INJURIOUS GOOSE ACTIVITIES

It is the intent of the DNR to promptly respond to requests from landowners for assistance in minimizing injurious activities of Canada geese. The responsibility for inspecting properties for goose activity and notifying DNR staff lies with the landowner, manager or tenant. After initial contact with the landowner, an on-site inspection will be made, in most cases, with the complainant to confirm and quantify the extent of the injurious activity. Except in special situations (see Part II. Special Situations), the person legally responsible for the land on which the damage is occurring will be responsible for implementing and maintaining abatement or exclusion practices. Local governments (municipal, township and county) have primary responsibility for implementing goose activity control practices on land they administer (parks, roads, property within city limits).

I. Standard Actions

The following actions can be used by landowners in most situations to minimize injurious Canada goose activities.

1. Increase the legal harvest of Canada geese on the property where the injurious activity is occurring as well as on adjacent properties. Landowners should permit hunters to harvest geese on their property, especially early in the season when local geese are most vulnerable, and encourage hunting on neighboring properties. In cases where local ordinances contribute to the problem by prohibiting hunting, local governments should consider changing local ordinances or assist affected landowners in implementing other actions to control injurious goose activities within their jurisdiction.

2. Manage vegetation to discourage goose use. Alter landscape maintenance practices or crop rotations to reduce the attractiveness of the site to geese. Where applicable, use farm programs like the Conservation Reserve Program (CRP), Wetland Reserve Program (WRP), Wildlife Habitat Incentive Program (WHIP), Environmental Quality Incentive Program (EQIP), etc., to take affected acres out of production, create less attractive habitats or develop vegetative barriers or buffers along rivers or wetlands, to inhibit goose access to adjacent land.

3. Use scare devices (propane cannons, scarecrows, dogs, mylar tape, balloons, and cracker shells) or aversive agents to discourage goose use. When available, the DNR may supply propane cannons, cracker shells and mylar tape to help control injurious goose activities.

4. Exclude flightless geese from entering the property by constructing temporary or permanent fences.

5. In some cases, with appropriate plans and permits, geese may be translocated from the area. The individual, group or organization that wants to translocate geese in lieu of implementing more permanent control practices will be responsible for capturing and moving the geese.

The party proposing translocation must obtain appropriate federal and state permits, submit a plan 3 months in advance of capturing any geese, and have the trapping equipment, holding pens and transportation equipment inspected before the project is approved. DNR staff will assist in planning, training personnel and designating release sites. All approved translocation projects must be coordinated with the DNR's local wildlife biologist and conservation officer before any geese are captured or released.

II. Special Situations

A. Properties Near or Adjacent to State-Owned Wildlife Areas or Lakes

On private lands close to state-managed wildlife areas or lakes where the property owner or tenant has already attempted to increase harvest and manage vegetation to reduce injurious goose activities (Actions 1 and 2, Part I), the DNR will offer the following additional assistance to control injurious goose activities:

1. Scare devices such as propane cannons, cracker shells and guns, mylar tape, and plans for scarecrows will be supplied by the DNR to be used and maintained by the property owner or manager.

2. The DNR will consider acquiring, through fee title or easement, all or portions of the property rights on acres chronically impacted by geese and manage this land to minimize future damage in the area.

3. Management of state-owned wildlife areas will be adjusted to help reduce goose use of private lands where appropriate state-managed uplands are available and goose management does not seriously compromise the primary management objectives for the area.

4. The DNR will provide materials and labor to erect temporary fences between state-managed wildlife areas and private lands to reduce the accessibility of private land to flightless geese for up to 3 years. The landowner will be required to check and maintain the fence the first 3 years, and install and maintain the fence thereafter if a temporary fence is desired.

5. In accordance with fencing common law, the DNR will construct its half of a permanent fence (the right hand half of the fence when faced from the property) capable of excluding flightless geese on the boundary between the state-owned land and the affected private property, provided the adjacent landowner agrees to construct the other half of the fence in a similar manner. The landowner must also agree to maintain his/her half of the fence. A fence agreement will be prepared by the DNR, signed by both parties, and recorded with the landowner's property deed before construction begins. Where environmental conditions significantly increase the difficulty or cost of constructing or maintaining a fence, the portion of the fence to be constructed by one party may be more or less than half the length of the boundary to compensate for this additional cost.

6. Where environmental conditions make it difficult or impossible to construct or maintain a boundary fence, such as along the shore of a meandered lake, a fencing agreement may be used to establish and record a permanent convenience fence. The agreement, which will be recorded as an attachment to the property deed, should state that the line on which the fence is established is not the boundary between the two properties, that the fencing materials are the property of the DNR on that portion that is the state's half, and that the landowner agrees to maintain the fence.

7. In cases where there is an existing barbed-wire boundary fence between state-managed wildlife areas and private lands, the DNR will provide materials and labor to make the fence a more effective barrier to flightless geese. The adjacent landowner or manager will be responsible for checking and maintaining his/her half of the fence after installation.

B. Properties in Areas Not Open to Canada Goose Hunting (closed areas) by DNR Rule.

On private lands in areas not open to Canada goose hunting by DNR rule, the DNR will offer the following assistance in addition to the previously described actions:

1. Scare devices such as propane cannons, cracker shells and guns, mylar tape, balloons and scarecrows will be supplied and maintained by the DNR. Landowners or tenants will be required to inspect their property, locate specific goose damage, inform DNR staff of such damage, and assist in operating and maintaining scare devices.

2. The DNR will provide materials and labor to install and maintain temporary fences, even when the property is not adjacent to state-managed land. The landowner or tenant will monitor the temporary fences to ensure they are functioning and will advise DNR staff when and where repairs are necessary.

3. The DNR will provide materials and labor for construction of permanent boundary fences adjacent to state-managed wildlife areas that will exclude flightless geese from private land. Where environmental conditions make it difficult or impossible to construct or maintain a boundary fence, such as along the shore of a meandered lake, a fencing agreement may be used to establish and record a permanent convenience fence. The agreement, which will be signed and recorded as an attachment to the property deed before construction begins, should state that the line on which the fence is established is not the boundary between the two properties and that the fencing materials are the property of the DNR. In this situation, fence maintenance and inspection are negotiable.

C. Areas Within Municipalities or in the Vicinity of Airports

Within municipalities, and on airport properties, DNR staff will provide advice to individual landowners, organizations or agencies on appropriate techniques to use to minimize the impacts of injurious goose activities. In addition to the techniques described under Part I, the following practices can also be used to control goose populations and activities in these areas.

1. Municipalities and airport management agencies should adopt ordinances prohibiting waterfowl feeding, installing and maintaining goose nesting structures, or engaging in any activities that encourage geese to use areas where goose activities conflict with people or geese create a hazard.

2. DNR staff will assist municipal and airport management agencies in formulating guidelines for developing and maintaining landscapes that are unattractive to geese.

3. Municipality and airport management agencies should modify ordinances or regulations, where appropriate, to permit hunters to harvest Canada geese during regular seasons in areas where chronic injurious goose activities occur or where geese pose a hazard. Increasing the goose harvest in and around the municipality or airport, when combined with standard abatement practices, can help minimize the impacts of injurious goose activities and reduce numbers of complaints.

4. In cases where a municipality's or airport governing body determines that the Canada goose population within their jurisdiction is higher than desirable or the geese pose a significant threat to human health or safety, and standard control techniques, including increased harvest, have proven unsuccessful or unfeasible, the Wildlife Bureau Chief can authorize permits to translocate geese from the municipality or airport property. The party proposing translocation must obtain appropriate federal and state permits, submit a plan 3 months in advance of capturing geese, and have the trapping equipment and holding facilities inspected before the project is approved. DNR staff will assist in planning, training personnel and designating release sites. All approved translocation projects must be coordinated with the DNR's local wildlife biologist before any geese are captured. The biologist will keep the local conservation officer apprised of all permits issued to capture geese.

5. When all other means of controlling the Canada goose population and associated injurious goose activities have proven ineffective or unfeasible, or it is determined that the geese pose a significant threat to human health or safety, the Director can authorize lethal methods (outside the regular hunting season) to reduce the goose population within municipal or airport boundaries. Lethal methods will initially be limited to egg shaking or oiling and nest manipulation or destruction unless the threat to human health or safety requires more expedient population reduction actions, such as killing geese, to lower the risk to human health or safety. The governing body proposing the population reduction must determine, in consultation with the DNR and the public, an appropriate level for the municipality's or airport's goose population. The governing body must also obtain appropriate federal and state permits and submit a plan at least 4 months in advance of any proposed action unless it is determined that the threat to human health or safety requires more expedient action. The plan must address current goose population levels, quantify injurious/hazardous activities, threats to human health or safety, and/or economic impacts, and clearly state proposed actions and anticipated outcomes. Costs of lethal control programs will be borne by the agency or group desiring to reduce the goose population. DNR staff will assist in planning and training. Only agents designated by the DNR will be authorized to carry out lethal

control programs. Implementation of approved lethal control programs must be closely coordinated with the DNR's local wildlife biologist and conservation officer.