

THE GIANT CANADA GOOSE POPULATION IN IOWA

Giant Canada geese (*Branta canadensis maxima*) were the largest and most widely distributed of the 11 subspecies of Canada geese found on the North American continent at the time of European settlement. Their historical nesting range covered most of the central part of the continent, including all of Iowa (Cooke 1906, Hanson 1965) (Fig. 1). Even this bird's widespread distribution, 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) and extirpation progressed northward until these birds disappeared from the lower 48 states by the 1930's (Hanson 1965).

The Iowa Conservation Commission, now part of the Iowa Department of Natural Resources (IDNR), 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 taken from the wild in northern Iowa, southern Minnesota and South Dakota (Bishop and Howing 1972). The pinioned geese reproduced in a 14-acre pen and the young were permitted to fly and use surrounding habitats. To enhance the survival of 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 found in the wild in Iowa after 1900 was located in 1967 on a marsh 1 mile north of East Slough near Ingham Lake (Bishop and Howing 1972).

Similar practices were used to restore nesting populations of giant Canada geese to the Ruthven (Smith Slough), Spirit Lake (Hogsback) and Rice Lake areas beginning in 1971-72 and to Rathbun Reservoir, Bays Branch and Lake Icaria in southern Iowa during 1977-79 (Fig. 2) (Bishop 1978). Additional flocks were started throughout Iowa (Red Rock Reservoir, Badger Lake, Green Island, Big Marsh, Sweet Marsh, Lake Sugema, 3-mile Lake, Forney Lake) between 1981 and 1994 by releasing flightless goslings at specific sites rather than establishing penned flocks (Zenner and LaGrange 1998a).

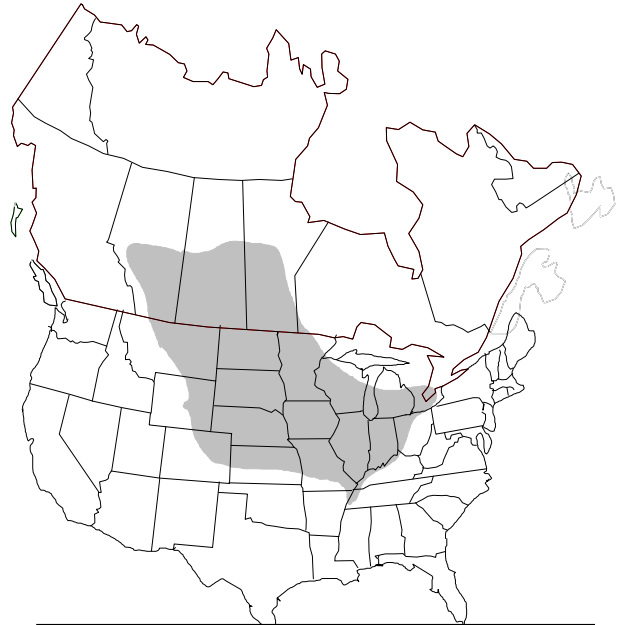


Fig. 1. Breeding range (shaded area) of giant Canada geese prior to European settlement (Hanson 1965).

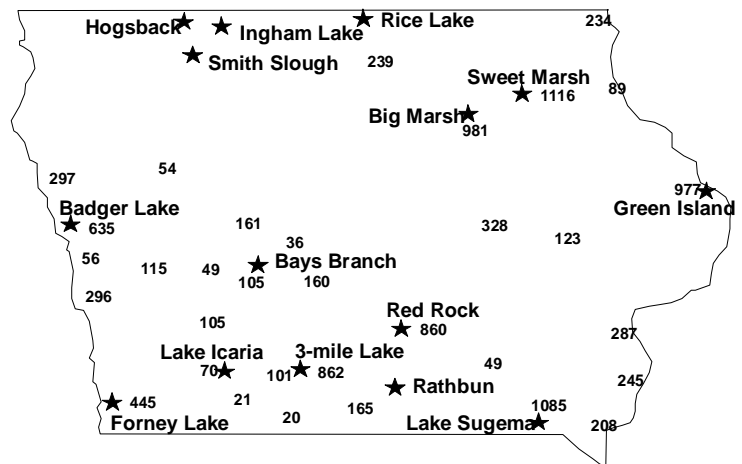


Fig. 2. Locations of giant Canada goose flocks and numbers of translocated geese by release site, 1964-98.

In all these cases, large areas around the penned flocks or the release sites remained closed to Canada goose hunting (Table 1). In 1999, 15 areas around restoration sites, ranging in size from 18-321 mi.², remained closed to Canada goose hunting. In many cases, the size of the area that is presently closed to Canada goose hunting is only a fraction of its original size.

Management of closed areas has been a critical element of the giant Canada goose restoration program in Iowa. Giant Canada geese are particularly vulnerable to harvest on their natal areas; nearly 68% of the direct band recoveries of Iowa giant Canada geese during 1981-90 seasons were harvested in Iowa (LaGrange and Zenner 1998). More than 50% of these geese were taken within the first 9 days of the season. The importance of local harvest control in sustaining the giant Canada goose population in Iowa is further illustrated by the harvest of 16,000 Canada geese in just 2 days (September 14-15) in 1996.

To accelerate the expansion of the Canada goose populations into unoccupied habitat, the IDNR translocated 14,500 geese to 38 sites during 1983-98 (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 Iowa's giant Canada goose population have been made annually since the restoration program was initiated. Geese are counted from the ground by IDNR personnel during April and May on all major WMA's and estimates of geese on private lands are made by direct observation or consulting landowners. These estimates indicate that Iowa's giant Canada goose population has grown at average annual rates of 25%, 15%, and 18% during 1972-81, 1982-91 and 1992-98, respectively. In 1975, giant Canada geese nested in just 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).

Since the restoration program was initiated, the highest densities of nesting giant Canada geese have been found in northwest and northcentral Iowa. In addition to containing the oldest restoration flocks, these regions also have some of the most highly productive nesting habitat,

Table 1 Initial and present size (mi.²) of areas closed to Canada goose hunting around restoration sites, 1967-1999.

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	45
Red Rock	1991	235	155
Badger Lake	1991	213	182
Green Island	1990	39	39
Lake Sugema	1992	322	322
Big Marsh	1994	68	68
Sweet Marsh	1994	130	130
Three-mile Lake	1995	69	69
Forney Lake	1996	66	66

¹Year the closed area was established.

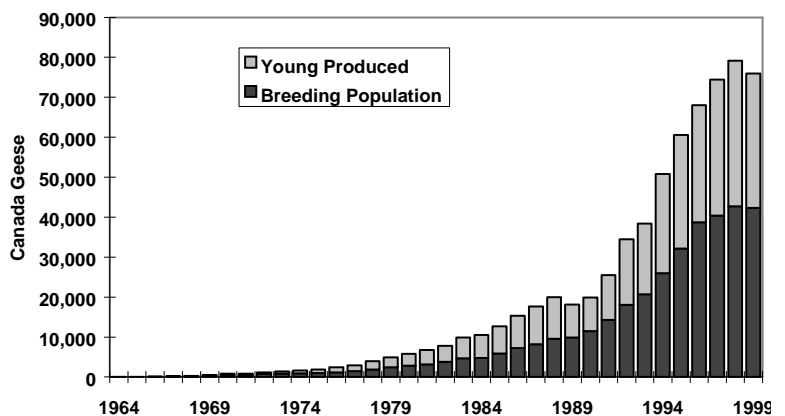


Fig. 3. Estimates of the giant Canada goose population in Iowa, 1964-99.

i.e., prairie wetlands. Recent population increases in other parts of Iowa, however, have contributed substantially to the growth observed in the last decade.

There are still large areas of Iowa, especially eastern and southern Iowa, where suitable habitat is only sparsely populated with geese. Densities of nesting geese in these areas are much lower than in northcentral and northwestern Iowa. Prairie marshes in northcentral and northwestern Iowa usually contain an abundance of high-quality insular nest sites, i.e., muskrat houses, that facilitate high densities of nesting geese and improve the odds of nests hatching. Marshes are less common landscape features in other parts of the state, so geese nesting outside Iowa's prairie pothole region often have lower production rates. Most wetlands found outside the prairie pothole region are also located in river bottoms where periodic flooding can further reduce nest success. These factors, as well as higher predation of nests and goslings, appear to slow goose population growth in much of the state outside the prairie pothole region.

Canada geese are banded annually at all restoration sites during late June and early July. During 1980-89, 9,666 Canada geese (status code 300) were banded in the Northwest (4,295), Rice Lake (3,313), Bays Branch (733), Rathbun (1,028), and Lake Icaria (297) flocks. Mean annual direct recovery rates of giant Canada geese banded in the Northwest, Rice Lake, Bays Branch, Rathbun, and Lake Icaria flocks during 1980-89 were 0.052, 0.018, 0.012, 0.046, and 0.005, respectively (Zenner and LaGrange 1998). Mean annual direct recovery rate for 2,577 (status 200) geese translocated between 1983-88 was 0.056. Iowa goose hunters accounted for the majority of reported recoveries of giant Canada geese banded in Iowa, but 45% of the recoveries also occurred outside the state (LaGrange and Zenner 1997). Minnesota and Missouri goose hunters reported 22% and 11% of these recoveries, respectively.

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 survival rate (Table 2). Unlike arctic (Richardson's, *B. c. hutchinsii*) and subarctic nesting geese (EPP, *B. c. interior*), whose annual production is greatly influenced by weather conditions, giant Canada geese inhabit a temperate environment with relatively stable breeding habitat. Giant Canada geese also tolerate human disturbance and willingly 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.

Giant Canada geese usually start nesting when 3 years old, although some 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. Female geese, accompanied by their mates, usually return to the area where they first learned to fly when they reach breeding age, thereby perpetuating or establishing a nesting population (Hanson 1965). This behavior, which is called homing, contributed significantly to the success of restoration programs, especially efforts to repopulate areas by translocating goslings. Adults and goslings have strong ties to natal areas and often remain near these areas until winter weather forces them to leave. Compared to the migrations of interior and small Canada geese, most giant Canada geese migrate relatively short distances.

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	Large Geese	Medium Geese	Small Geese
Trait	<i>B. c. maxima</i>	<i>B. c. interior</i>	<i>B. c. hutchinsii</i>
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 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. Their adaptable feeding behavior and tolerance for human disturbance has enabled them to successfully exploit many contemporary habitats.

Canada Goose Harvests

Most of the Canada geese harvested in Iowa during the first three-quarters of the 20th century came from arctic and subarctic-nesting populations. 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 because opportunities to shoot Canada geese were dependent upon the timing and duration of the migrations of arctic and subarctic Canada geese.

During the 1980's, Canada goose harvests increased in Iowa to an average of nearly 15,000/year. In the 1990's, the average Canada goose harvest has exceeded 37,000 birds, most of which is directly or indirectly the result of increased numbers of giant Canada geese in Iowa. Iowa hunters continue to harvest more than 30,000 Canada geese each year. This is reflected by the average seasonal harvest of 15,000 Canada geese during the 1960's to 2000's. Opportunities to harvest Canada geese are also more consistent during the fall and winter months.

At the same time, increasing numbers of giant Canada geese have migrated to Iowa during the fall. This can be seen in the increasing number of giant Canada geese harvested in Iowa during the fall.

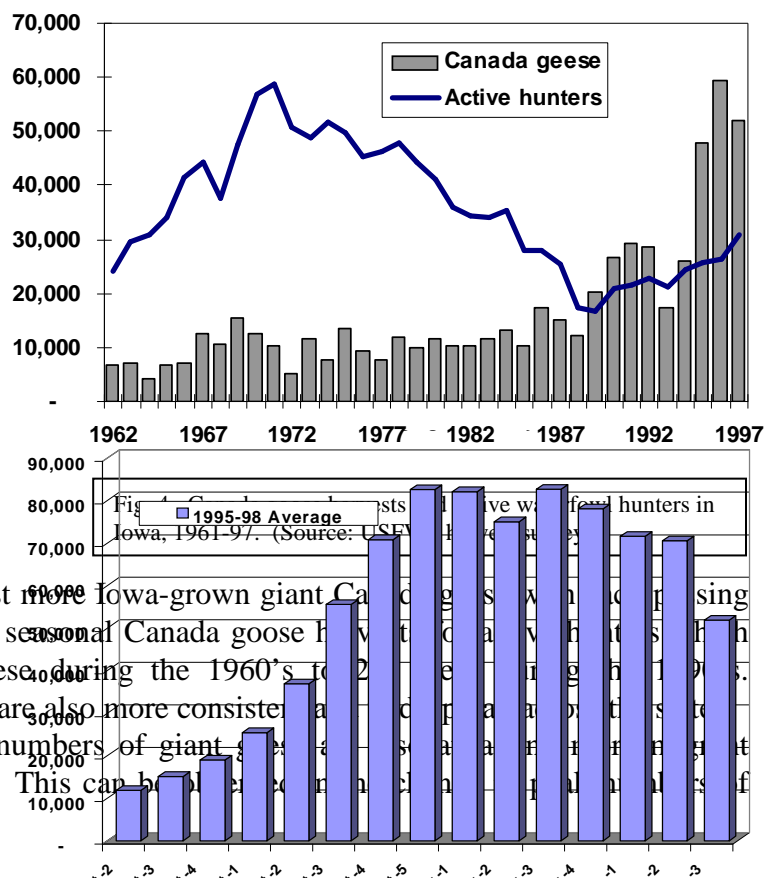


Fig. 6. Average numbers of Canada geese using surveyed areas in Iowa during 1995-98

Canada geese using the state during the fall in recent years. During 1971-75, peak numbers of Canada geese using surveyed areas throughout the state during the fall averaged 6,500. That number is now exceeded during the second week of September, before any migrant geese even begin to arrive in the state. As the fall progresses, numbers of Canada geese using surveyed areas throughout Iowa continue to increase, usually peaking sometime in November, depending upon the weather.

LITERATURE CITED

Bellrose, F. C. 1976. Ducks, geese and swans of North America. Stackpole Books, Harrisburg, PA. 543pp.

Bishop, R. A. 1978. Giant Canada geese in Iowa. *Iowa Conservationist*. 37(10):5-12.

_____, and R. G. Howing. 1972. Re-establishment of the giant Canada goose in Iowa. *Proc. Iowa Acad. Sci.* 79:14-16.

Cooke, W. W. 1906. Distribution and migration of North American ducks, geese and swans. *U.S. Biol. Surv. Bull.* 26. 90pp.

Dinsmore, J. J. 1994. A country so full of game: the story of wildlife in Iowa. University of Iowa Press, Iowa City. 249pp

Ewaschuk, E. and D. A. Boag. 1972. Factors affecting hatching success of densely nesting Canada geese. *J. Wildl. Manage.* 36:1097-1106.

Hanson, H. C. 1965. The giant Canada goose. S. Ill. Univ. Press, Carbondale. 226pp.

Klopman, R. B. 1958. The nesting of the Canada goose at Dog Lake, Manitoba. *Wilson Bull.* 70:168-183.

LaGrange, T. G. and G. G. Zenner. 1998. Iowa's role in the harvest of several Canada goose populations in the western Mississippi Flyway. Pages 143-149 *in* D. H. Rusch, M. D. Samuel, D. D. Humburg, and B. D. Sullivan, eds. *Biology and management of Canada geese. Proc. Int. Canada Goose Symp., Milwaukee, WI.*

Nigus, T. A., and J. J. Dinsmore. 1980. Productivity of Canada geese in northwestern Iowa. *Proc. Iowa Acad. Sci.* 87:56-61.

Zenner, G. G. and T. G. LaGrange. 1998a. Giant Canada geese in Iowa: restoration, management, and distribution. Pages 303-309 *in* D. H. Rusch, M. D. Samuel, D. D. Humburg, and B. D. Sullivan, eds. *Biology and management of Canada geese. Proc. Int. Canada Goose Symp., Milwaukee, WI.*

Zenner, G. G. and T. G. LaGrange. 1998b. Densities and fates of Canada goose nests on islands in north-central Iowa. Pages 53-59 *in* D. H. Rusch, M. D. Samuel, D. D. Humburg, and B. D. Sullivan, eds. *Biology and management of Canada geese. Proc. Int. Canada Goose Symp., Milwaukee, WI.*