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CANADA GOOSE

(*Branta canadensis*)



Canada geese began nesting in Pennsylvania only after people captured, bred, and conditioned them to change their historic breeding grounds.

Figure 25.1 Canada geese find a patch of open water in ice above Fairmount Dam in early morning, January 24, 2013.

In 1799 Benjamin Smith Barton described the Canada goose as a “passenger-bird” that migrated through Philadelphia from the south as early as March 3 and in the opposite direction in the fall.¹ In 1814 Alexander Wilson wrote that the Canada goose bred far to the north of the United States, but where he could not determine; certainly nowhere near Philadelphia.²

How did the Canada goose come to breed in Philadelphia?

Commercial hunting with decoys

Wilson described the bird in Philadelphia:

The Wild Goose, when in good order, weighs from ten to twelve, and sometimes fourteen pounds. They are sold in the Philadelphia markets at from seventy-five cents to one dollar each; and are estimated to yield half a pound of feathers a piece, which produces twenty-five or thirty cents more.³

Gunners shot Canada geese lured with captive geese used as decoys. The shooters pinioned or clipped captives to prevent them from escaping. The captive geese performed their job well:

They hail every flock that passes overhead, and the salute is sure to be returned by the voyagers, who are only prevented from alighting among them by the presence and habitations of man. The gunners take one or two of these domesticated Geese with them to those parts of the marshes over which the wild ones are accustomed to fly; and concealing themselves within gun-shot, wait for a flight, which is no sooner perceived by the decoy Geese, than they begin calling aloud, until the whole flock approaches so near as to give them an opportunity of discharging two and sometimes three loaded musquets among it, by which great havoc is made.⁴

Migrating geese flew through a gauntlet of carnage from Canada in the north to their overwintering areas in the south and back. Wilson blamed the slaughter for the Canada goose’s increasing scarcity.⁵

Breeding of Canada geese in Pennsylvania

In 1935, the use of live decoys for hunting geese became illegal.⁶ In the Midwest, hunters transferred captive flocks to wildlife managers, who used them as decoys to attract migratory and overwintering populations into wildlife refuges.⁷ In 1936 fifty pinioned (flightless) geese were released in a Pennsylvania state game refuge on Pymatuning Lake, a reservoir on the border between Ohio and Pennsylvania. These birds nested in 1937, and in 1938 produced progeny that were able to fly.⁸ This is the first documented instance of Canada geese breeding outside of captivity in Pennsylvania.⁹



Figure 25.2 Canada goose with goslings on the Schuylkill River Trail in downtown Philadelphia, May 3, 2011. When first described in Philadelphia, Canada geese migrated through the region but did not breed here.

Public financing of wildlife restoration

In 1937 President Roosevelt signed the Pittman–Robertson Act, which imposed an 11 percent manufacturer’s tax on hunting gear, including shotguns, rifles, ammunition, and archery equipment. The U.S. Treasury collected the money and transferred it to the U.S. Fish and Wildlife Service, which dispersed it to state wildlife agencies; states were required to make matching contributions on a portion of the receipts. In its first fifty years, the Pittman–Robertson Program raised \$2 billion for wildlife restoration.¹⁰

In 1986, Pennsylvania ranked number one in sales of hunting licenses and number three in receipt of Pittman–Robertson funds, compared to all other states. That year alone, the Pittman–Robertson Program transferred to Pennsylvania over \$4 million for wildlife restoration.¹¹ Many other state and federal laws, including the Migratory Bird Treaty Act of 1918 and its amendments, protected Canada geese and their wetland habitats.¹²

Proliferation of urban geese in southeastern Pennsylvania

The flock of resident geese at the state game refuge on Pymatuning Lake thrived, reinforced by introductions of more captive geese.¹³ In 1966 the Pennsylvania Game Commission transferred fifteen mating pairs of Canada geese from Pymatuning to the Middle Creek Wildlife Management Area,¹⁴ about 100 kilometers west of Philadelphia. The next year it added more captive geese. Complaints of nuisance geese in Pennsylvania began in the next decade. The Pennsylvania Game Commission then instituted a program to trap and transfer problem geese to destinations within and

outside the state. The program ended in 1995;¹⁵ by then Canada geese were distributed in every county in the state.¹⁶ A survey of resident nesting Canada geese in the Atlantic Flyway found that Pennsylvania had 11,819 breeding pairs—more than any other state.¹⁷

Why Canada geese breed here

Why did these geese nest locally instead of migrating north to ancestral breeding grounds in Canada? In 1970 Dennis C. Surrendi at Montana State University transplanted juvenile Canada geese 100 miles from their place of birth; the following year the transplanted geese homed to the location where they first flew, not to the site where they were born. His findings show that migration to a particular breeding ground is learned, not genetically predetermined.¹⁸ Geese transplanted before they learn to fly nest in their transplant sites.¹⁹ Wildlife managers exploited this phenomenon when they transplanted populations of Canada geese: if they learned to fly near Philadelphia, they would, when mature, return here to breed.



Figure 25.3 Geese grazing in August near the dam at the Fairmount Water Works.

The geese that the Pennsylvania Game Commission released were preadapted to urban habitats. Urban geese in Pennsylvania are derived from a Midwestern subspecies, the giant Canada goose (*Branta canadensis maxima*),²⁰ which is not native to the Philadelphia area.²¹ Compared to other subspecies, this one reaches sexual maturity earlier, nests in more southerly latitudes, and migrates shorter distances; it has large clutch sizes and high rates of nest success and survival,²² it flies at low altitudes, has a placid disposition, and is readily tamed;²³ its large size conditions it for overwintering in northern latitudes.²⁴

Domestication of Canada geese

How did evolution produce a constellation of traits so well suited to human habitats? By the time live decoys were made illegal, wild populations of the giant Canada goose were believed to be extinct.²⁵ The release of captive flocks of giant Canada geese into parks, wildlife refuges, and game preserves introduced this subspecies into its former breeding grounds and beyond, such as Pymatuning Lake.²⁶ These geese, although called “wild,” were actually feral geese that had been semidomesticated.

The scale of captive breeding must have been big. In 1963, almost three decades after the outlawing of live decoys for hunting, the number of permits for breeding Canada geese by game breeders under the U.S. Bureau of Sports Fisheries and Wildlife numbered 1,242, and the number of Canada geese held was 14,581.²⁷ Once released, these geese could incorporate their semidomesticated behavior into free-flying flocks.

Alexander Wilson’s essay on the Canada goose reveals how self-selection could lead to domestication of captive geese. It describes a clipped-wing captive goose that wandered several miles away on foot during migration season.²⁸ Were such birds to escape, they would cease contributing to the captive flock’s gene pool. Natural selection in the flock would favor geese that did not wander off.

In short, the Canada geese that nest in Philadelphia are descendants of captive geese conditioned to breed locally rather than in breeding grounds far to the north. Wildlife managers disseminated these geese in programs funded by state and federal revenue raised by taxes on guns and ammunition. Philadelphia offered these geese sanctuary from gunners and predators. It provided mowed grass (a favorite food)²⁹ and shelter along the Schuylkill River. In winter, when the Schuylkill froze, the Fairmount Dam afforded geese a haven of open water.

Mixed populations of Canada geese in the winter

The geese that overwinter in southeastern Pennsylvania include year-round residents as well as long-distance migrants from the north from as far away as Canada and Greenland.³⁰ Some of the geese that breed here in the summer overwinter in the Chesapeake Bay and Delmarva Peninsula.³¹ Morphometric and molecular studies have distinguished Canada goose populations that migrate to breeding grounds that are geographically separated.³²

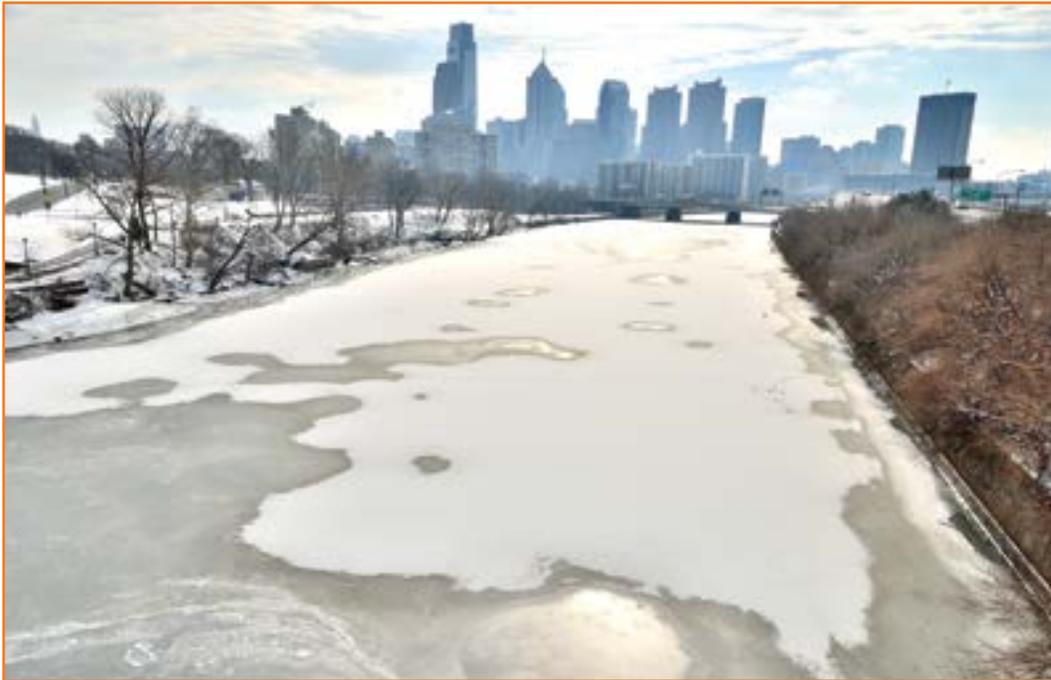


Figure 25.4 The Schuylkill River, frozen, January 26, 2013. View is from Spring Garden Street Bridge looking south. Canada geese congregate on ice only when it abuts open water.



Figure 25.5 The Fairmount Dam, providing the only open water in the vicinity. The birds on the edge of the ice are Canada geese.

Canada geese that nest in urban and suburban areas are probably continuing to adapt. On an evolutionary time scale, the short time that Canada geese have inhabited suburbs and cities suggests that adaptations, both genetic and learned, may take more time. The tendency of Canada geese to evolve genetically distinct geographic races³³ encourages the evolution of local adaptations.

The story of Canada geese in Philadelphia parallels stories of other wildlife, including mallards (*Anas platyrhynchos*), wood ducks (*Aix sponsa*), wild turkeys (*Meleagris gallopavo*), and white-tailed deer (*Odocoileus virginianus*). All of these species have been beneficiaries of the Pittman-Robertson Act.³⁴ The mallard and Canada goose have both established semidomesticated populations that breed in Philadelphia, and the Canada goose and white-tailed deer have later become targets of programs to reduce overpopulation.³⁵



Figure 25.6 Canada geese grazing while sitting on their feet in the snow on the same lawn as in figure 25.3.

Retention of adaptations to cold

During a cold snap in 2013, the Schuylkill River froze, except around the Fairmount Dam. I observed Canada geese grazing in snow-covered grass near the dam. These geese allowed me to observe them from a distance of only a meter. This tame behavior is characteristic of giant Canada geese that breed here. The geese grazed sitting rather than standing, their usual posture when feeding. They sat on their feet in the snow and browsed the grass by craning their necks. This behavior protected their feet and breasts from exposure to cold air. Despite their ancestral origin as semidomesticated captive geese, their instincts for thermal protection under frigid conditions have endured.