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## Canada goose *Branta canadensis* (Linnaeus, 1758): a majestic water bird from the continent of North America

Canada goose *Branta canadensis* (Linnaeus 1758) (Synonym: *Anas canadensis* Linnaeus 1758) is a major water bird, native to the continent of North America (Basu, 2015a). The species is sexually non-dimorphic, and males are slightly larger in size than the females (Appendix 1 – Fig. 1a). The avian member represents an iconic symbol of the majestic beauty of wild North America. The species is distributed across the continent from the Pacific coast in the west to the Atlantic in East; making the distribution of the species as pan American. The species is distributed across the length and breadth of the continent, stretching from northern Canada, across the United States into Northern Mexico (Basu, 2015b). It has been reported from Eastern Siberia and Eastern China into Japan as the eastern most global range of the species. Outside the continental range of North America and Eurasia, Canada geese has been introduced in UK, some parts of EU; and also in New Zealand and Argentina. Canada geese, being a migratory species (Appendix 1 – Fig. 1b), travels to the warmer part of the North American continent to Southern United States, Puerto Rico as well as Northern Mexico to avoid harsh North American winter (Collias, Jahn, 1959; Madge, Burn, 1988). They have also been reported to travel to parts of Caribbean Latin America, such as Cuba, Belize, Bermuda, Jamaica, Trinidad and Tobago, Dominican Republic, Grenada, Saint Pierre, and Miquelon (Basu, 2015c).

The birds are reported to travel at a speed of 60–80 km per hour and are known to cover as much as 800-900 km per day during their classic migration flight (Madge, Burn, 1988). The sight of V-shaped migration pattern of Canada geese flocks with their characteristic honks during autumn in search of their winter homes down south is an outstanding moment of natural beauty. Each such flock is led by an experienced leader bird guiding the entire flocks to their preferred destination like a highly coordinated squadron (Collias, Jahn, 1959; Mowbray et al., 2002). However, recently, a number of resident flocks are being reported from the US and Canada (Maccarone, Cope, 2004).

The species is associated with the folklores, poems, songs, art work, and socio-cultural traditions of several North American and Eastern Siberian aboriginal communities (Appendix 1 – Fig. 1c) (Basu, 2015a,b,c). According to an online survey by the Canadian Geographic magazine in 2015, the Canada goose was voted among the top five preferred avian species to be considered as the National Bird of Canada (Basu et al., 2016).

### Life cycle and other characteristics

Canada geese inhabit a wide range of habitats from mountainous lakes and rivers to the Canadian Prairies (Appendix 1 – Fig. 1d) and the Great Northern Plains of the US, boreal forests, woodlands, parks and meadow grassland, flat river basins as well as coastal areas and dry southern plains of Southern US and Northern Mexican plains to preferred Caribbean island habitats (Basu, 2017a; Mowbray et al., 2002).

The species varies in weight between 4–10 kg with length varying between 0.76–1.1 m and a wingspan in the range of 1.4–1.8 m. The majestic species is characterised by the presence of a black head and a long extended neck with a distinct white face and body plumage varying between brown, black, white, and grey and webbed feet (Appendix 1 – Fig. 1e). Around seven to ten different subspecies of Canada goose is reported from North America (Tab. 1).

But it is important to mention that there are differences of opinions among ornithologists regarding the exact number of subspecies of Canadian goose across North America. Some of the smaller Canada geese (*B. canadensis* ssp. *minima* Ridgway 1885) subspecies are often confused with some related species, like cackling goose *B. hutchinsii* Richardson 1832. Some subspecies like the lesser Canada goose is believed to be of a hybrid nature and not a true subspecies (Hanson, 1997; Mowbray et al., 2002). However, more taxonomical, molecular and biochemical studies needed to be conducted before all the current Canada goose subspecies can be clearly distinguished and is subjected to change in future (Madge, Burn, 1988; Mowbray et al., 2002; Basu et al., 2016; Basu, 2017).

The Canada goose is strictly monogamous and highly gregarious in nature. They assemble in large numbers in water bodies and agricultural fields during their annual migration (Collias, Jahn, 1959). The species is known to be extremely territorial, and male birds are aggressive in defending their territories and mate. Both parents are extremely dedicated towards their parental duties and aggressively protect their foraging space, nesting ground, nests, eggs, and goslings from other competing geese as well as their natural predators. The species is predominantly vegetarian in nature and depend on aquatic vegetation in water bodies like ponds, pools, lakes, swamps, bogs, as well as fresh germinating sprouts or young seedlings in a farmer fields or fresh grass tips in yards, lawns, city gardens and parks, golf courses, and roadside ditches.

**Tab. 1.** The most frequent subspecies of Canada goose noticed from North America

No.	Name of subspecies	Range of occurrence
1.	Atlantic Canada goose ( <i>Branta canadensis</i> ssp. <i>canadensis</i> Linnaeus 1758)	nesting and breeding in Newfoundland and Labrador (Eastern Canada) and wintering in Southern US
2.	Dusky Canada goose ( <i>B. canadensis</i> ssp. <i>occidentalis</i> . SF. Baird 1858)	breeding around South Western Alaska and wintering in the US
3.	Giant Canada goose ( <i>B. canadensis</i> ssp. <i>maxima</i> Delacour 1951)	restricted to Southern Canada and Northern US
4.	Interior Canada goose ( <i>B. canadensis</i> ssp. <i>interior</i> Todd 1938)	breeding in Canada and wintering in Southern US and Northern Mexico
5.	Lesser Canada goose ( <i>B. canadensis</i> ssp. <i>parvipes</i> Cassin 1852)	breeding from Central Alaska (US) to the Canadian Prairie and wintering in southern US
6.	Moffitt's Canada goose ( <i>B. canadensis</i> ssp. <i>moffitti</i> Aldrich 1946)	breeding around southern Canada, Great Northern Plains and the Great Basin of US and wintering in Southern US and Northern Mexico
7.	Vancouver Canada goose ( <i>B. canadensis</i> ssp. <i>fulva</i> Delacour 1951)	is a predominantly resident species distributed from southern Alaska (US) to the province of British Columbia (Canada)

Occasionally they also forage on aquatic insects and crustaceans. Goose droppings on fields and turf as well as in parks and gardens could turn into a challenging concern if huge flocks stop for temporary or permanent shelter in these places, and this serves as a potential source of coliform bacteria. Canada goose is also known to be notoriously dangerous in colliding with aircrafts and are a serious threat to safe aviation at some places where their populations explode due to abundant food supply and the lack of natural predators checking their numbers (Mowbray et al., 2002).

The number of eggs produced per nest can vary between 2-18 depending upon on safety of the nesting site and the local predation pressure (Appendix 1 – Fig. 1f, 2a). In a good year, a pair can raise up to 8–16 chicks (goslings) depending upon availability of food, good weather conditions and low predation pressures (Collias, Jahn, 1959; Mowbray et al., 2002). The size of the Canada goose egg is almost 2–2.5 X times that of an average poultry chicken egg (Appendix 1 – Fig. 2b, c), and the yolk colour of Canada goose egg is pale orange compared to the bright yellow coloured yolk of poultry chicken (Appendix 1 – Fig. 2d). The volume of yolk is almost 3X in the case of Canada goose compared to that of a poultry chicken egg.

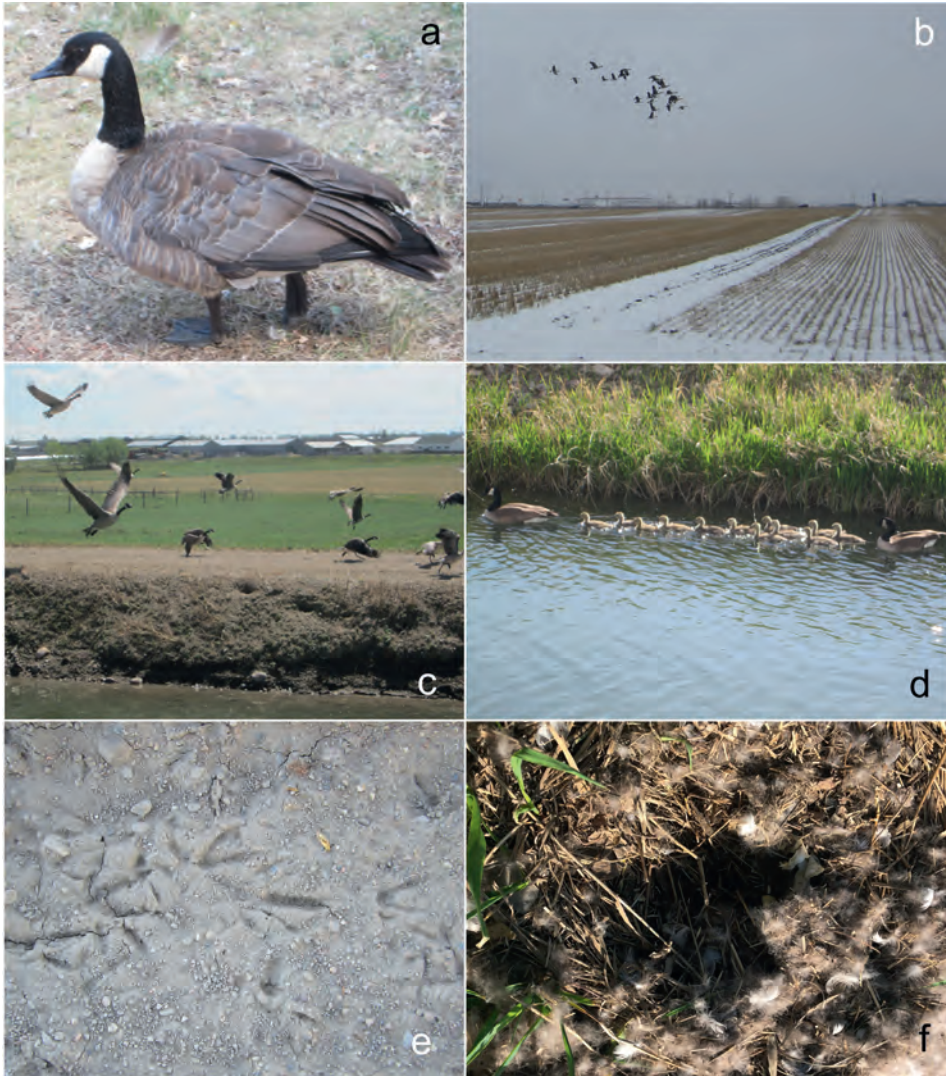
Among the most known natural predators of Canada goose are mammals like coyotes, raccoons, foxes, badgers, and bears, plus birds like the American crow, carrion crow, common ravens, gulls, and raptors (Mowbray et al., 2002). They mostly target eggs, goslings as well as injured, sick and aged birds struggling to defend themselves (Appendix 1 – Fig. 2e). In addition, the Canada goose is treated as a traditional game bird and extensively hunted by both professional and amateur hunters as well as members of aboriginal communities across North America. Young chicks (goslings), ju-

veniles, sub adults, and even adults also die due to accidental road kills across North America (Appendix 1 – Fig. 2f). Due to population explosion and the lack of natural predation pressure, the bird has been transforming into a local pest in some parts of North America.

Canada goose is an iconic member and symbol of the North American wildlife. It currently has a Least Concern IUCN conservation status with an estimated 4–5 million strong population across different North America habitats. Although, due to population explosion and low predation pressure, the species has turned into a nuisance in some parts of the continent reducing the values of properties and serving as a potential source of coliform bacteria and a threat to safe aviation. However, it still serves as an important constituent of the natural ecosystems. The migratory species with a number of sub species distributed across the continent serves as a socio-cultural heritage of several aboriginal communities and wildlife enthusiasts of North American continent.

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**Fig. 1.** Canada goose male (a); a migrating flock of Canada geese across the Canadian Prairie at the end of Fall (b); a flock taking their flight beside an irrigation canal (c); a Canada geese family thriving in a local water body in the Canadian Prairies (d); footprints of Canada geese captured on clayey soil (e); A typical Canada geese nest made up of grass, dried leaves, stem and other easily available plant materials, soil clods and feathers for maintaining internal nest temperature (f) (Photo. S.K. Basu)



**Fig. 2.** Canada geese nest with eggs (a); size comparison between eggs of Canada geese (left) and poultry chicken (right) (b); a Canada goose egg shell found outside a nest (left) and an unhatched egg found in an abandoned nest (right) (c); comparison between egg yolks: chicken (left) and Canada geese (right) (d); predation by local mammals (like badgers, coyote and foxes) or birds (like raptors) act as a natural balance for regulating wild Canada geese populations (e); accidental road kills are a common cause of death of young, juvenile and adult Canada geese (f) (Photo. S.K. Basu)

## Bernikla kanadyjska *Branta canadensis* (Linnaeus, 1758): majestatyczny ptak wodny z kontynentu Ameryki Północnej

### Streszczenie

Bernikla kanadyjska *Branta canadensis* (Linnaeus, 1758) jest ikoną dzikiej Ameryki i należy, zarówno do naturalnego, jak i społeczno-kulturowego, dziedzictwa Ameryki Północnej. Ten monogamiczny, gromadny i migrujący gatunek majestatycznego ptaka wodnego jest szeroko rozpowszechniony w Ameryce Północnej. Występuje w 8-10 różnych podgatunkach w szerokim spektrum naturalnych siedlisk i ekosystemów. Gatunek jest rozpowszechniony od Alaski przez Kanadę, USA aż do Meksyku. Aby uniknąć trudnych warunków zimowych, migruje z północy do południowych stanów USA i północnego Meksyku. Z powodu eksplozji wielkości jego populacji, jak również braku presji drapieżników, ptak ten w niektórych częściach kontynentu, zmienił się w lokalnego szkodnika. To krótkie opracowanie opisuje jego cykl życiowy rozmieszczenie, reprodukcję i zachowanie w środowisku.

**Key words:** Canada goose, *Branta canadensis*, North America, bird, sub species, Canada, the US, Mexico