

Branta canadensis

System: Freshwater_terrestrial

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Aves	Anseriformes	Anatidae

Common name Canada goose (English), bernache du Canada (French), ganso Canadiense (Spanish), branta kanadarra (Basque), ganso do Canadá (Galician), oca del Canadá (Catalan)

Synonym *Anas canadensis* , Linnaeus, 1758
Branta canadensis maxima , Delacour, 1951
Branta canadensis moffitti , Aldrich, 1946
Branta canadensis parvipes , Cassin, 1852
Branta canadensis interior , Todd, 1938

Similar species

Summary *Branta canadensis*, Canada geese are very adaptable. They can live in a broad range of habitats, which includes cohabitation with humans. In addition, Canada geese are highly fecund and lacking in amount of predators. Population growth of this species over the past years has caused problems in many different areas including environmental, aesthetic, and human health. Canada geese can either be migratory or resident, which enables them to occupy a large geographical range. This species has created issues not only in areas where it has been introduced, but also in its native locations due to the population explosion of the species. Although this species has created problems, it also has been of economic use as well as being, at times, an enjoyable aspect of wildlife.



[view this species on IUCN Red List](#)

Species Description

Branta canadensis are a diurnal species, but they may be active day or night during migration (NatureServe, 2008). They are known for their v-shaped flying patterns. In fact, migratory flight of this species signals the beginning of fall (USDA Wildlife Services., 1998). Individuals have a grayish-brown body and wings. They have a white breast, black feet, bill and neck as well as a characteristic white patch on each cheek. They range in size from 3 to 15 pounds, with males typically being in the 8 to 14 pound range, and females being slightly smaller (7 to 12 pounds at maturity). Males are referred to as gander and females referred to as geese (Yocom, 1970). When individuals are in flight, they show large, dark wings, a U-shaped white rump and white under-tail feathers. In addition, they have a distinctive musical honking call (Invasive Aliens in Northern Ireland, 2005). Because of their weight, Canada geese require a low flight angle of about 13 degrees to take flight (Gosser, Conover & Messmer, 1997). In fact, Canada geese may exhibit the largest size variation of any animal species in the world (Smith, Craven & Curtis, 1999). Large Canada geese may even have a wingspan of 6 feet (USDA Wildlife Services., 1998). This species has two distinct behavioral patterns: truly migratory and non-migratory/resident (French & Parkhurst, 2001). Flocks of family groups migrate together (NatureServe, 2008). During their molting in late-June to mid-July, Canada geese undergo complete simultaneous replacement of all their flight feathers. This process takes a little less than a month to complete in which time the geese are unable to maintain sustained flight (French & Parkhurst, 2001). Nonbreeding yearlings, nonnesting adults, and adults whose nests have been destroyed are usually the first to molt (Smith, Craven & Curtis, 1999). An adult Canada goose may produce 1 to 2 pounds of guano per day (Filion, Kidd & Aguirre, 2006). Canada geese are very persistent and adaptable (Gosser, Conover & Messmer, 1997).

Notes

Population growth is most rapid in urban areas with little shooting pressure and correspondingly low adult mortality (Allan, Kirby & Feare, 1995). There are few natural predators to Canada geese to keep them in check, thus in areas where they are protected from legal hunting, there has been a population explosion over the past 20 years (MacGowan, Loven & Whitford, undated). In fact, the population explosion is largely due to human factors such as encouragement of hunting restrictions and artificial water sources of food and water created by humans in addition to humans giving "handouts" or feeding the geese (Maccarone & Cope, 2004). Predators of goose eggs include crows, ravens, magpies, seagulls, skunks, and raccoons. Coyotes, red foxes, mink, domestic and feral dogs, and snapping turtles are predators of juveniles (French & Parkhurst, 2001). In North America, Canada geese are protected under the Migratory Bird Act of 1918, which made it illegal to harm, take, or possess migratory birds, any parts of the bird, their nests, or their eggs, except during the hunting season, or by special permit (MacGowan, Loven & Whitford, undated).



GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: *Branta canadensis*

Lifecycle Stages

Shortly following the construction of the nest, the laying of the eggs begins. Females lay one egg about every 1 and a half days and the average clutch size is about 5 or 6 eggs per nest but can range from 1 to 15 eggs (French & Parkhurst, 2001). Eggs are cream colored (USDA Wildlife Services., 1998). The clutch size may be linked to energy reserves. For example, migration distance from the last feeding grounds should correlate negatively with total energy investment in eggs (Sjöberg & Sjöberg, 1992). The female will not begin incubating the eggs until all of them have been laid in order to ensure that hatching will occur at the same time. Incubation lasts about 25 to 30 days. Once a clutch begins to hatch, it could take from 8 to 36 hours for them to be completely hatched out (French & Parkhurst, 2001). Canada geese are precocial; they are born with their eyes open, down covered, and able to move about freely (USDA Wildlife Services., 1998). Goslings will be mobile within 24 hours after hatching. The parents will continue to defend the goslings for about 10 weeks, then the goslings will be self supporting and fully capable of sustained flight. "Gang broods" may form, which are goslings from several family broods that join together. These "gang broods" can include up to 100 goslings. Juveniles typically reach maturity at age 2, but usually do not breed before the age of 3 years. Canada geese are relatively long-lived. In fact, it is not unusual for an individual to live up to 25 years. The average annual mortality rates for Canada geese range from 20 to 52 percent. The survival of first year resident birds ranges between 70 and 90 percent. Conversely, migratory birds have a survival rate that ranges from 25 to 80 percent. Males usually suffer a higher mortality rate than females, which is primarily due to greater hunting loss (French & Parkhurst, 2001).

Uses

In the United States, Canada geese greatly contributed to the economy specifically in 1996 when nationwide hunting resulted in 1.3 billion dollars in total hunting related expenditures. In addition, communities derive economic benefit from other recreational benefits associated with geese, which includes activities such as birdwatching (French & Parkhurst, 2001). Canada geese may be a sustainable target for dead bird surveillance activities. Based on experiments, Highly Pathogenic Avian Influenza (HPAI) Virus can be expected to produce pronounced neurologic signs and high deaths in this group (Pasik, Berhane, Embury-Hyatt *et al*, 2007).

Habitat Description

Migratory Canada geese spend spring and summer on breeding grounds in the northern part of their range and then they fly south to their wintering range during the fall period. Conversely, the resident individuals spend most of the year in the same general area and only fly far enough to find food or open water (French & Parkhurst, 2001). Individuals tend to favor grassland associated with water bodies. These habitats are mostly found in many urban and rural parks, thus also being areas where you can find many Canada geese (Feare, Sanders, Blasco *et al* 1999). In urban settings, Canada geese also prefer large lawns that are next to a body of water having few obstructions so that any predators can easily be seen (Elvecrog, undated). This species is native to North America where it occupies a wide range of habitats from tundra to woodland lakes and prairie. In areas of Europe where it has been introduced, this species is closely associated with larger waterbodies, both coastal and freshwater (Invasive Aliens in Northern Ireland, 2005). Warmer temperatures and longer days of spring bring an increase in activities of Canada geese (MacGowan, Loven & Whitford, undated).



GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: *Branta canadensis*

Reproduction

This species is highly fecund, usually producing up to 6 young per pair and having high fledging success (Allan, Kirby & Feare, 1995). Males and females form pair bonds and remain together for life, only selecting a new mate if one dies. Each pair constructs a bowl-shaped nest approximately 1 and a half feet in diameter. Nests are usually made from vegetation and then lined with down feathers that have been plucked from the female's breast. Pairs will locate their nest beneath shrubs or small trees, in a raised patch of wetland vegetation, or on an elevated artificial nest platform. Pairs like to nest in areas of low nest concentration, however, they may sometimes nest within 10 feet of each other. Both sexes defend the nest site until all the eggs are laid, at which point the male becomes the defender while the female incubates the eggs. Canada geese will produce only one brood per year unless the clutch is destroyed by a predator or humans.

Nutrition

Adult and immature food habits of Canada geese cause them to be both granivores and herbivores (NatureServe, 2008). They spend the majority of daytime hours foraging for food. In addition, they can feed while in motion about 70 percent of the time, moving from plant to plant and rarely staying in one spot for very long (Elvecrog, undated). Canada geese forage on tender new shoots and stems of grasses, clover, watercress and aquatic plants. They also feed on agricultural grain crops such as corn, soybeans, and wheat. Goslings require a high protein diet for proper development, so they will consume insects, small crustaceans, and mollusks attached to aquatic vegetation, thus making Canada geese carnivorous at times (French & Parkhurst, 2001). Canada geese have low digestive efficiency. Therefore, food will pass through their digestive system in an hour or sometimes even a half hour. This is the reason for such large amounts of feces (Elvecrog, undated).

General Impacts

Experiments have shown that in some regions, the feces of the Canada goose contains Fecal Coliform Bacteria, which may contribute to pollution of water systems due to large amounts of their fecal deposits in the water (Aldersisio & Deluca, 1999). Aircraft collisions with Canada geese are a huge issue due to the damage caused to the aircraft as well as threatening the lives of people aboard (Baxter & Robinson, 2007). Canada geese trample vegetation and compact soil, which creates a "hard pan" that prevents new growth of vegetation (French & Parkhurst, 2001). Flocks of Canada geese can dramatically change grassland and wetland habitats through trampling, grazing and enrichment caused by their droppings. In addition, some authorities consider abundant droppings in public places to be a health hazard due to the bacteria they contain (Invasive Aliens in Northern Ireland, 2005). Individuals can be aggressive at times. They will aggressively charge people and pets and possibly bite them (MacGowan, Loven & Whitford, undated). Canada geese are suspected of transmitting salmonella to cattle, and a potential exists for individuals transmitting disease or parasites to humans (Smith, Craven & Curtis, 1999). Canada geese are also susceptible to influenza A virus and may be a risk factor if individuals are living close to domestic poultry (Bonner, Lutz, Jager *et al*, 2004). In total, the actual or perceived problems that are associated with large numbers of Canada geese include financial (crop loss), aesthetic (unsightly droppings), environmental (eutrophication of waterways), and human health-related issues (pathogenic bacteria in droppings, aircraft strikes, nuisance) (Maccarone & Cope, 2004).

Management Info

Integrated management: Combining habitat management, behavioural modification of birds, and where necessary, population reduction, is necessary for management of Canada geese (Allan, Kirby & Feare, 1995). An integrated approach combining several techniques is usually the key to successful programs. Long term solutions usually require some form of population management to stabilize or reduce goose numbers (Smith, Craven & Curtis, 1999).

Preventative measures: In agricultural areas, the use of sonic deterrents such as propane cannons, cracker shells, screamers, and sirens have been implemented to control goose damage to agriculture (Castelli & Sleggs, 2000). Distress calls of Canada geese can also be recorded and played back as a means to scare them. In addition, reduce the amount and attractiveness of forage that exists near ponds and small bodies of water, and reduce the amount of fertilizer, thus decreasing nutritional quality of the forage. Reduce total amount of lawn area, planting the area between the water's edge and the foraging area with plants that are less palatable to geese. Visual devices such as simple strobe lights, might be sufficient to startle the geese providing temporary relief from nighttime goose problems. Other visual devices used to scare Canada geese include scarecrows, mylar reflective tape strung between posts, rubber snakes, owl effigies, and "eyespot" balloons. Harrassment by radio-controlled toy aircraft or boats present a threat to geese in addition to spray devices (pressurized water sprayers).

Physical barriers such as boulders strategically placed around the perimeter of a body of water create a potential hiding spot for predators, thus making that area not as desirable to the geese. This type of border also prevents the geese from easily moving to and from the water to the grassy feeding areas (French & Parkhurst, 2001). Pond edges could also be completely fenced in order to achieve the same result. It will deter geese from that area, especially during molting. Eliminating food handouts to Canada geese can help to alleviate the problems associated with large numbers of geese in an area. Access to ponds and other desirable areas can also be restricted by bordering ponds with a boardwalk or boulders over 2 feet in diameter, planting thick shrubs or hedges, or placing a short fence in the water and surrounding it with aquatic vegetation (Gosser, Conover & Messmer, 1997). Reducing or eliminating mowing helps to manage geese due to the fact that geese will have more difficulty locating new shoots in taller grass (MacGowan, Loven & Whitford, undated).

Chemical: The technique of population management involving coating of the eggs with a cheap and readily available chemical, liquid paraffin, to prevent hatching has been practiced (Baker, Feare, Wilson *et al* 1993).

Physical: Border collies have been used to harrass geese from an area, although this would require 24 hour harrassment per day at one site (Castelli & Sleggs, 2000).

Pathway

Individuals were established in Sweden for the purpose of establishing a population for hunting (Josefsson & Andersson, 2001). In addition, the impetus for the increase in the range and size of the Canada goose population was deliberate translocation of the population. The population explosion of Canada geese in North America is due to human factors, which include management programs that have encouraged population growth (Maccarone & Cope, 2004). In England, the Canada goose was originally presented to the delight of Charles II (Invasive Aliens in Northern Ireland, 2005).



GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: *Branta canadensis*

Principal source: [French, Lisa and Jim Parkhurst., 2001. Managing wildlife damage: Canada goose *Branta canadensis*. Undergraduate, Department of Fisheries and Wildlife Sciences, and Associate Professor and Extension Wildlife Specialist, respectively; Virginia Tech Elvecrog, Haley., undated. The impact of *Branta canadensis* herbivory on shoreline restorations. Restoration and Reclamation Review. Student Online Journal University of Minnesota, St. Paul, \(MN\) USA](#)
[NatureServe. 2008. *Branta canadensis* - \(Linnaeus, 1758\) Canada Goose. NatureServe Explorer: An online encyclopedia of life \[web application\]. Version 7.0. NatureServe, Arlington, Virginia](#)

Compiler: National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG)

Updates with support from the Overseas Territories Environmental Programme (OTEP) project XOT603, a joint project with the Cayman Islands Government - Department of Environment

Review:

Publication date: 2010-10-04

ALIEN RANGE

[1] ALGERIA	[1] AUSTRALIA
[1] AUSTRIA	[1] BELGIUM
[1] BERMUDA	[1] BULGARIA
[1] CANADA	[1] CHINA
[1] CZECH REPUBLIC	[1] DENMARK
[1] ESTONIA	[1] FAROE ISLANDS
[1] FINLAND	[1] FRANCE
[1] GERMANY	[1] ICELAND
[1] IRELAND	[1] ITALY
[1] JAMAICA	[1] JAPAN
[1] KIRIBATI	[1] KOREA, DEMOCRATIC PEOPLE'S REPUBLIC OF
[1] KOREA, REPUBLIC OF	[1] LATVIA
[1] LIECHTENSTEIN	[1] LITHUANIA
[1] LUXEMBOURG	[1] MARSHALL ISLANDS
[1] NETHERLANDS	[1] NEW ZEALAND
[1] NORWAY	[1] POLAND
[1] PORTUGAL	[1] SCANDINAVIA
[1] SLOVAKIA	[1] SLOVENIA
[1] SPAIN	[1] SWEDEN
[1] TAIWAN	[1] UKRAINE
[3] UNITED KINGDOM	[5] UNITED STATES
[1] VENEZUELA	[1] WEST INDIES

BIBLIOGRAPHY

66 references found for *Branta canadensis*



GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: *Branta canadensis*

Management information

Allan, J R; Kirby, J S; Feare, C J., 1995. The biology of Canada geese *Branta canadensis* in relation to the management of feral populations. *Wildlife Biology*. Vol. 1, no. 3, pp. 129-143. 1995.

Austin, Graham E; Rehfisch, Mark M; Holloway, Steve J., 2007. Population size and differential population growth of introduced Greater Canada Geese *Branta canadensis* and re-established Greylag Geese *Anser anser* across habitats in Great Britain in the year 2000. *Bird Study*. 54 (Part 3). NOV 2007. 343-352.

Baker, S. J.; Feare, C. J.; Wilson, C. J.; Malam, D. S.; Sellars, G. R., 1993. Prevention of breeding of Canada geese by coating eggs with liquid paraffin. *International Journal of Pest Management*. 39(2). 1993.

Baxter, Andrew T. & Andrew P. Robinson., 2007. Monitoring and influencing feral Canada goose (*Branta canadensis*) behaviour to reduce birdstrike risks to aircraft. *International Journal of Pest Management*, October ? December 2007; 53(4): 341 ? 346

Blackwell, Bradley F; Bernhardt, Glen E., 2004. Efficacy of aircraft landing lights in stimulating avoidance behavior in birds. *Journal of Wildlife Management*. 68(3). July 2004. 725-732.

Blackwell, Bradley F.; Bernhardt, Glen E.; Dolbeer, Richard A., 2002. Lasers as nonlethal avian repellents. *Journal of Wildlife Management*. 66(1). January, 2002. 250-258.

[Bomford, M., 2003. Risk Assessment for the Import and Keeping of Exotic Vertebrates in Australia. Bureau of Rural Sciences, Canberra.](#)

Summary: Available from: <http://www.feral.org.au/wp-content/uploads/2010/03/PC12803.pdf> [Accessed August 19 2010]

Bremner, Alison; Park, Kirsty., 2007. Public attitudes to the management of invasive non-native species in Scotland. *Biological Conservation*. 139(3-4). OCT 2007. 306-314.

Castelli, Paul M. and Sheila E. Sleggs., 2000. Efficacy of Border Collies to Control Nuisance Canada Geese. *Wildlife Society Bulletin*, Vol. 28, No. 2 (Summer, 2000), pp. 385-392

Christens, Elaine; Blokpoel, Hans; Rason, George; Jarvie, Scott W. D., 1995. Spraying white mineral oil on Canada goose eggs to prevent hatching. *Wildlife Society Bulletin*. 23(2). 1995. 228-230.

Dolbeer, Richard A., Sandra E. Wright and Edward C. Cleary., 2000. Ranking the Hazard Level of Wildlife Species to Aviation. *Wildlife Society Bulletin*, Vol. 28, No. 2 (Summer, 2000), pp. 372-378

Dudley, Steve P., 2005. Changes to category C of the British list. *Ibis*. 147(4). OCT 2005. 803-820.

[Elvecrog, Haley., undated. The impact of *Branta canadensis* herbivory on shoreline restorations. Restoration and Reclamation Review. Student Online Journal University of Minnesota, St. Paul, \(MN\) USA](#)

Summary: Available from: <http://horticulture.cfans.umn.edu/vd/h5015/03papers/elvecrog.pdf> [Accessed 24 June 2008]

[French, Lisa and Jim Parkhurst., 2001. Managing wildlife damage: Canada goose *Branta canadensis*. Undergraduate, Department of Fisheries and Wildlife Sciences, and Associate Professor and Extension Wildlife Specialist, respectively; Virginia Tech](#)

Summary: Available from: <http://www.ext.vt.edu/pubs/wildlife/420-203/420-203.pdf> [Accessed 24 June 2008]

Gosser, A. L., M. R. Conover, and T. A. Messmer. 1997. Managing problems caused by urban Canada geese. *Berryman Institute Publication 13*, Utah State University, Logan, 8pp.

Hauser, C. E.; Runge, M. C.; Cooch, E. G.; Johnson, F. A.; Harvey, W. F., 2007. Optimal control of Atlantic population Canada geese. *Ecological Modelling*. 201(1, Sp. Iss. SI). FEB 10 2007. 27-36.

Holevinski, R.A.; Curtis, P.D; Malecki, R.A., 2007. Hazing of Canada geese is unlikely to reduce nuisance populations in urban and suburban communities. *Human-Wildlife Conflicts*. Vol. 1, no. 2, pp. 257-264. 2007.

[IUCN/SSC Invasive Species Specialist Group \(ISSG\), 2010. A Compilation of Information Sources for Conservation Managers.](#)

Summary: This compilation of information sources can be sorted on keywords for example: Baits & Lures, Non Target Species, Eradication, Monitoring, Risk Assessment, Weeds, Herbicides etc. This compilation is at present in Excel format, this will be web-enabled as a searchable database shortly. This version of the database has been developed by the IUCN SSC ISSG as part of an Overseas Territories Environmental Programme funded project XOT603 in partnership with the Cayman Islands Government - Department of Environment. The compilation is a work under progress, the ISSG will manage, maintain and enhance the database with current and newly published information, reports, journal articles etc. Josefsson, Melanie and Berta Andersson., 2001. The Environmental Consequences of Alien Species in the Swedish Lakes M?laren, Hj?lmaren, V?tern and V?ttern. *Ambio* Vol. 30 No. 8, Dec. 2001

Loker, Cynthia A.; Decker, Daniel J; Schwager, Steven J., 1999. Social acceptability of wildlife management actions in suburban areas: 3 cases from New York. *Wildlife Society Bulletin*. 27(1). Spring, 1999. 152-159.

[MacGowan, Brian J., Judy Loven, and Fred Whitford, undated. Working With Wildlife: Urban Canada Goose Management. Cooperative Extension Service, Purdue University, West Lafayette IN 47907](#)

Summary: Available from: <http://www.ces.purdue.edu/extmedia/FNR/FNR-FAQ-8-W.pdf> [Accessed 24 June 2008]

[Missouri Department of Conservation \(MDC.online\), 2008. Nuisance Wildlife Wild Geese. Types of Control Methods](#)

Summary: Available from: http://mdc.mo.gov/landown/wild/nuisance/w_geese/types.htm [Accessed 24 June 2008]

Myrfyn Owen., 1990. The damage-conservation interface illustrated by geese. *Ibis* 132 (2) , 238?252
doi:10.1111/j.1474-919X.1990.tb01042.x



GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: *Branta canadensis*

- Nagamichi, Kuroda., 1953. A Wild Hybrid Between *Branta* and *Anser* Obtained in Japan (DJVU format) (Condor: Vol. 55, No. 2, March-April, 1953)
- Pasick, John., Yohannes Berhane, Carissa Embury-Hyatt, John Copps, Helen Kehler, Katherine Handel, Shawn Babiuk, Kathleen Hooper-McGrevy, Yan Li, Quynh Mai Le, and Song Lien Phuong., 2007. Susceptibility of Canada Geese (*Branta canadensis*) to Highly Pathogenic Avian Influenza Virus (H5N1). Emerging Infectious Diseases ? www.cdc.gov/eid ? Vol. 13, No. 12, December 2007
- Scribner, Kim T.; Malecki, Richard A.; Batt, Bruce D. J.; Inman, Rainy L.; Libants, Scot; Prince, Harold H., 2003. Identification of source population for Greenland Canada Geese: Genetic assessment of a recent colonization. Condor. 105(4). November 2003. 771-782.
- [Smith A. E., S. R. Craven, and P. D. Curtis. 1999. Managing Canada geese in urban environments. Jack Berryman Institute Publication 16, and Cornell University Cooperative Extension, Ithaca, N.Y.](#)
- Summary:** Available from: <http://icwdm.org/Publications/pdf/Birds/Canadageese/urbangeese.pdf> [Accessed 24 August 2010]
- [USDA Wildlife Services., 1998. Activity Sheet: Living with Wildlife Canada Geese](#)
- Summary:** Available from: http://www.aphis.usda.gov/wildlife_damage/nwrc/publications/living/geese.pdf [Accessed 24 June 2008]
- Werner, Scott J.; Clark, Larry., 2006. Effectiveness of a motion-activated laser hazing system for repelling captive Canada geese. Wildlife Society Bulletin. 34(1). 2006. 2-7.
- Zakrajsek, Edward J.; Bissonette, John A., 2005. Ranking the risk of wildlife species hazardous to military aircraft. Wildlife Society Bulletin. 33(1). SPR 05. 258-264.

General information

- Alderisio, K. A. and N. Deluca., 1999. Seasonal Enumeration of Fecal Coliform Bacteria from the Feces of Ring-Billed Gulls (*Larus delawarensis*) and Canada Geese (*Branta canadensis*). Applied and Environmental Microbiology, Vol. 65, No. 12 Dec. 1999, p. 5628-5630
- Anderson, J. T.; Muehl, G. T.; Tacha, T. C., 1999. Wetland use by wintering geese in the Gulf Coast Plains and Rice Prairie Region of Texas, USA. Wildfowl.(50). 1999. 45-56.
- Ankney, C. Davison., 1996. An embarrassment of riches: Too many geese. Journal of Wildlife Management. 60(2). 1996. 217-223.
- Bennett, R. S., B. McComb, H.-J. Shin, M. K. Njenga, K. V. Nagaraja, and D. A. Halvorson., 2002. Detection of Avian Pneumovirus in Wild Canada Geese (*Branta canadensis*) and Blue-Winged Teal (*Anas discors*). Research Note. Avian Diseases 46:1025-1029, 2002
- [BirdLife International 2008\) Species factsheet: Branta canadensis. Downloaded from http://www.birdlife.org on 24/6/2008](#)
- Summary:** Available from: <http://www.iucnredlist.org/details/141453> [Accessed 24 June 2008]
- Brunner, Brigitte M., Walburga Lutz, Sabine Jäger, T. Redmann, B. Reinhardt, U. Reichel, V. Krajewski, R. Weiss, J. Wissing, W. Knickmeier, W. H. Gerlich, Ulrike C. Wend and E. F. Kaleta., 2004. Do Canada geese (*Branta canadensis* Linnaeus, 1758) carry infectious agents for birds and man? European Journal of Wildlife Research. Volume 50, Number 2 / July, 2004
- Borman, Michael M.; Louhaichi, Mounir; Johnson, Douglas E; Krueger, William C.; Karow, Russell S.; Thomas, David R., 2002. Yield mapping to document goose grazing impacts on winter wheat. Agronomy Journal. 94(5). September-October, 2002. 1087-1093.
- [Clavell, J., J. L. Copete, R. Gutierrez, E. de Juana, J. A. Lorenzo., 2005. List of the birds of Spain 2005. Sociedad Espa?ola de Ornitolog?a \(SEO/BirdLife\) English Edition Multilingual Version Spanish-Scientific-English-Catalan-Galician-Basque](#)
- Summary:** Available from: <http://www.rarebirdspain.net/spalis05.pdf> [Accessed 24 June 2008]
- Cole, Dana; Drum, David J. V.; Stallknecht, David E.; White, David G.; Lee, Margie D; Ayers, Sherry; Sobsey, Mark; Maurer, John J., 2005. Free-living Canada Geese and antimicrobial resistance. Emerging Infectious Diseases. 11(6). JUN 05. 935-938.
- Davis, N. E., 2005. Storage and incubation of *Echinostoma revolutum* eggs recovered from wild *Branta canadensis*, and their infectivity to *Lymnaea tomentosa* snails. Journal of Helminthology. 79(4). DEC 2005. 321-326.
- [Feare, C.J., M.F. Sanders, R. Blasco and J.D. Bishop., 1999. Canada goose \(Branta canadensis\) droppings as a potential source of pathogenic bacteria. The Journal of the Royal Society for the Promotion of Health 1999: 119: 146 DOI: 10.1177/146642409911900303](#)
- Summary:** Available from: <http://rsh.sagepub.com/cgi/reprint/119/3/146> [Accessed 24 June 2008]
- Filion, Tera; Kidd, Sarah; Aguirre, Karen., 2006. Isolation of *Cryptococcus laurentii* from Canada Goose guano in rural upstate New York. Mycopathologia. 162(5). NOV 2006. 363-368.
- Fox, A. D., Glahder, Christian, Mitchell, Carl R., Stroud, David A., Boyd, Hugh, Frikke, John., 1996. North American Canada Geese (*Branta canadensis*) in West Greenland. The Auk, Vol. 113, No. 1, Jan., 1996. 231-233.

- Friend, Milton; McLean, Robert G.; Dein, F. Joshua., 2001. Disease emergence in birds: Challenges for the twenty-first century. *Auk*. 118(2). April, 2001. 290-303.
- [Global Biodiversity Information Facility \(GBIF\), 2008. Species: *Branta canadensis* Linnaeus, 1758.](#)
- Summary:** Available from: <http://data.gbif.org/species/13815863/> [Accessed 15 June 2010]
- Haramis, G. Michael; Kearns, Gregory D., 2007. Herbivory by resident geese: The loss and recovery of wild rice along the tidal Patuxent river. *Journal of Wildlife Management*. 71(3). MAY 2007. 788-794.
- Heggberget, T. M., 1987. Development of the Norwegian population of Canada geese *Branta canadensis* up to 1984. *Fauna (Blindern)*. Vol. 40, no. 1, pp. 1-9. 1987.
- Hughes, B.; Kirby, J.; Rowcliffe, J. M., 1999. Waterbird conflicts in Britain and Ireland: Ruddy Ducks *Oxyura jamaicensis*, Canada Geese *Branta canadensis*, and Cormorants *Phalacrocorax carbo*. *Wildfowl*.(50). 1999. 77-99.
- Hussong, D., J. M. Damare, R. J. Limpert., W. J. L. Sladen., R. M. Weiner and R. R. Colwell., 1975. Microbial Impact of Canada Geese (*Branta canadensis*) and Whistling Swans (*Cygnus columbianus columbianus*) on Aquatic Ecosystems. *Applied and Environmental Microbiology*, Jan. 1979, p. 14-20
- [Invasive Aliens in Northern Ireland, 2005. *Branta canadensis* Canada Goose Anatidae](#)
- Summary:** Available from: <http://www.habitas.org.uk/invasive/species.asp?item=9> [Accessed 24 June 2008]
- [ITIS \(Integrated Taxonomic Information System\), 2008. Online Database *Branta canadensis* \(Linnaeus, 1758\)](#)
- Summary:** An online database that provides taxonomic information, common names, synonyms and geographical jurisdiction of a species. In addition links are provided to retrieve biological records and collection information from the Global Biodiversity Information Facility (GBIF) Data Portal and bioscience articles from BioOne journals. Available from: http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=28669 [Accessed 24 June 2008]
- Jansson, Desiree S., Ricardo Feinstein, Veronika Kardi, Tama's Mato?, and Vilmos Palya., 2007. Epidemiologic Investigation of an Outbreak of Goose Parvovirus Infection in Sweden. *Case Report?Avian Diseases* 51:609?613, 2007
- Jehl, Joseph R. Jr., 2004. Carnivorous Canada geese. *Wilson Bulletin*. 116(2). June 2004. 179-180.
- Kullas, Heather; Coles, Matt; Rhyan, Jack; Clark, Larry, 2002. Prevalence of *Escherichia coli* serogroups and human virulence factors in faeces of urban Canada geese (*Branta canadensis*) *International Journal of Environmental Health Research*. 12(2). June, 2002. 153-162.
- Maccarone, Alan D.; Cope, Charles H., 2004. Recent trends in the winter population of Canada geese (*Branta canadensis*) in Wichita, Kansas: 1998-2003. *Transactions of the Kansas Academy of Science*. 107(1-2). Spring 2004. 77-82.
- Madsen, Jesper., 1991. Status and trends of goose populations In the Western Palearctic in the 1980 s. *Ardea* 79 (2) 1991: 113-122
- Maloney, R. F., 1999. Bird populations in nine braided rivers of the Upper Waitaki Basin, South Island, New Zealand: Changes after 30 years. *Notornis*. 46(2). June, 1999. 243-256.
- Moore, Marianne V.; Zakova, Pavla; Shaeffer, Kristin A.; Burton, Rebecca P., 1998. Potential effects of Canada geese and climate change on phosphorus inputs to suburban lakes of the Northeastern U.S.A. *Lake & Reservoir Management*. 14(1). March, 1998. 52-59.
- [NatureServe, 2008. *Branta canadensis* - \(Linnaeus, 1758\) Canada Goose. NatureServe Explorer: An online encyclopedia of life \[web application\]. Version 7.0. NatureServe, Arlington, Virginia.](#)
- Summary:** Available from: <http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Branta%20canadensis> [Accessed 24 June 2008]
- Rivers, David O.; Short, Frederick T., 2007. Effect of grazing by Canada geese *Branta canadensis* on an intertidal eelgrass *Zostera marina* meadow. *Marine Ecology Progress Series*. 333 2007. 271-279.
- Sj?berg, G?ran and Kjell Sj?berg., Geographical variation in reproductive investment in Canada Geese (*Branta canadensis*) in Sweden. *Journal of Ornithology* Volume 133, Number 4 / October, 1992
- Tegelstr?m, Hakan and G?ran Sj?berg., 1995. Introduced Swedish Canada geese (*Branta canadensis*) have low levels of genetic variation as revealed by DNA fingerprinting *Journal of Evolutionary Biology* 8 (2) , 195?207
doi:10.1046/j.1420-9101.1995.8020195.x
- Unckless, Robert L.; Makarewicz, Joseph C., 2007. The impact of nutrient loading from Canada Geese (*Branta canadensis*) on water quality, a mesocosm approach. *Hydrobiologia*. 586 JUL 2007. 393-401.
- Yocom, Charles F., 1970. The Giant Canada Goose in New Zealand. *The Auk*, Vol. 87, No. 4, (Oct., 1970), pp. 812-814
- Zacheis, Amy; Hupp, Jerry W.; Ruess, Roger W., 2001. Effects of migratory geese on plant communities of an Alaskan salt marsh. *Journal of Ecology*. 89(1). February, 2001. 57-71.
- Zhou, Ling ., Hailu Kassa, Monica L. Tischler, and Lihua Xiao., 2004. Host-Adapted *Cryptosporidium* spp. in Canada Geese (*Branta canadensis*). *Appl Environ Microbiol*. 2004 July; 70(7): 4211?4215. doi: 10.1128/AEM.70.7.4211-4215.2004.