

Chapter 11 - Management in Other Jurisdictions

Highlights

This chapter documents management approaches for nuisance Canada Geese in certain international, national, and regional jurisdictions, contributing to Goal 4 (examining management in other jurisdictions and identifying options appropriate for this region). For brevity, it does not provide a complete history associated with goose management in these jurisdictions. Recognize that management approaches may change; please check with individual jurisdictions for more up-to-date information.

Canada Geese are considered nuisance animals in many jurisdictions. In 18 of 20 countries participating in the European Network on Invasive Alien Species, the Canada Goose holds one of two top spots among 9,511 invasive species and is considered a serious threat to biodiversity. In some European countries, Canada Geese outnumber native goose populations. In certain countries, destruction of eggs and birds is allowed, while in others, calls for hunting, egg sterilization, and culling are underway. The Network adheres to the slogan, "If you can't beat 'em, eat 'em".

In New Zealand, egg sterilization and culls during the moult were conducted by the Wildlife Service between 1976 and 1987. A 1995 management plan proposed culling where hunting could not maintain populations. By 2000, control measures were shown to be moving birds to other areas.

The Pacific Flyway Council had requested the western United States be excluded from some U.S. regulations to control Canada Geese. An airport control order, nest and egg depredation order, and public health order are available to Pacific Flyway states, but orders to control overabundant migratory bird populations and to control resident Canada Geese - which would allow culling of goslings and adults, are only available to states along the Atlantic, Central, and Mississippi Flyways. Nonetheless, U.S. cities have considerable latitude to deal with urban goose problems under U.S. Fish and Wildlife Service (USFWS) depredation permits. For example, Anchorage, Alaska and Seattle, Washington conducted a series of annual culls beginning in 1996 and 1997, respectively.

In 2014, the Pacific Flyway Council proposed, and the USFWS agreed to combine interior and coastal frameworks for Canada Geese, noting that harvests alone would not completely address agricultural depredation. The hunting seasons, dates, and limits were to be altered in several states to encourage greater harvests. Quotas were to be increased on Dusky Canada Geese in Washington and Oregon.

The USFWS maintains an e-permits website, whereby anyone in the conterminous U.S. can register for federal authorization to destroy resident Canada Goose nests and eggs. Some states do not participate in this program and/or have additional or similar requirements.

Citations, excluded here for brevity, can be found in the text of the document's chapters. Please do not cite highlights without consulting the chapters.

Chapter 11 - Management in Other Jurisdictions

More Highlights

U.S. Department of Agriculture (USDA) Wildlife Services has provided support in many aspects of goose management, including capture and euthanasia. Where geese could not be captured or otherwise controlled, small numbers were selectively removed with a pellet gun or shotgun. Culled geese suitable for human consumption were donated to qualified charitable organizations. Wildlife Services personnel were also responsible for hazing, nest destruction, addling, and relocations.

The National Wildlife Research Center, an arm of the USDA Wildlife Services program, was instrumental in developing a chemical repellent to discourage geese from using grassy areas. The Center also tested drugs to inhibit bird reproduction.

USDA Wildlife Services provides goose management services on a cost-reimbursable basis. Funding has been provided by resource owners, private businesses, and local, state, or federal funding agencies.

There are a variety of State-funded Canada Goose control programs. For example, the Wisconsin Department of Natural Resources provides grants to local and tribal governments, to reimburse damage abatement and control projects (i.e., 50% reimbursement up to a maximum of \$5,000). In Michigan, the Department of Natural Resources conducts nearly half of Canada Goose roundup activities. The state's resident Canada Goose program is financed by hunters and permit fees.

The Patuxent River tidal marshes in Maryland were restored by allowing hunting in a wetland sanctuary, removing ~1,700 Canada Geese over a 4 year period, and by planting and fencing.

Washington's Seattle Goose Program was launched as a pilot project by non-profit groups in 2006. The program was designed to help Seattle Parks and Recreation resolve its human-goose conflicts without culling. Volunteers located nests for addling and oiling; hazed geese with lasers, kites and dogs; and cleaned feces from beaches and recreation areas.

Citations, excluded here for brevity, can be found in the text of the document's chapters. Please do not cite highlights without consulting the chapters.

Chapter 11 - Management in Other Jurisdictions

More Highlights

The Capital Regional District on Vancouver Island commissioned the production of a technical report and strategy to manage Canada Geese. Population trends and seasonal abundance and distribution were estimated using historical data and monthly goose surveys conducted by volunteers. Goose exclosures were erected on area farms to assess crop losses. Funding from the Agricultural and Environmental Initiative supported much of the work. A threshold and population target of 1,000 geese was set, based on the number of geese in the region in 1985. The regional working group collaborated with CWS and the Province to conduct the first goose cull on Vancouver Island in summer 2015.

The Campbell River Environmental Committee began monitoring Canada Geese in 2013 in response to grazing pressure on the Campbell River estuary. Exclosures were installed in spring 2014, and with the help of the Guardians, 199 birds were banded during the summer of 2015. The Campbell River Indian Band may harvest moulting birds on reserve lands to help reduce the goose population.

A problem analysis published in 1991 documented stakeholder concerns and efforts to control Canada Goose populations in the Fraser Valley. Relocations to areas where geese could be hunted had taken place from 1987 through 1990. Egg addling programs had begun at key breeding sites in 1988. In the analysis, farmers asserted that scare permits did not work and they were too busy to chase birds.

In 2013, the Vancouver Airport Authority led the first annual Canada Goose workshop on the Lower Mainland and created an informal partnership, the Lower Mainland Canada Goose Working Group. Group members, including staff from CWS, began mapping population abundance and distribution using existing data. A Google Earth-based Conflict Mapping Project was launched in 2014 to engage communities and document where human-goose conflicts were occurring. A Terms of Reference was drafted to formalize the group's existence, along with a problem statement, goals and objectives, research questions, a list of potential stakeholders, and a communications strategy. The communications strategy noted that Environment Canada is not responsible for dealing directly with the birds or their actions, or mitigating damage that the birds may cause.

Citations, excluded here for brevity, can be found in the text of the document's chapters. Please do not cite highlights without consulting the chapters.

Chapter 11 - Management in Other Jurisdictions

More Highlights

The Okanagan Valley Goose Management Committee was formed in 1995, and an action plan with strategies to manage Canada Geese was endorsed in 2006 following public meetings in Vernon, Kelowna, Penticton, and Osoyoos. Of greatest concern was the level of contamination on area beaches. The Okanagan Valley Goose Management Program was established in 2007 as a partnership among local governments and an Irrigation District. The City of Kelowna contributed \$75,000 to the \$136,000 program, and committed to spending an additional \$90,000 to control and clean-up after geese on City-owned properties. The program conducted aerial population surveys during the moult in 2011 and 2014, banded birds in 2012, and estimated gosling production with post-nesting ground surveys in 2014. Banding was largely funded by the Western Canada Turfgrass Association. The flagship of the program was annual egg addling, with a goose hotline to coordinate goose sightings and addling crews.

One of the Okanagan Valley Goose Program partners, the Town of Osoyoos, requested the Union of B.C. Municipalities (UBCM) endorse a resolution for more Canada Goose kill permits from senior governments, as addling had limited effect. The UBCM endorsed the resolution in 2013. That year, CWS permitted the Town to kill up to 10 adult birds per week at two sites: a horse racing facility and a golf course, with no blinds or decoys, and the geese could not be kept by the hunter. A owl rehabilitation centre in Oliver agreed to take some of the birds.

Citations, excluded here for brevity, can be found in the text of the document's chapters. Please do not cite highlights without consulting the chapters.

11.1 International



Other jurisdictions struggle with the same issues we experience here. See <http://www.telegraph.co.uk/news/earth/wildlife/9160190/Canada-geese-cull-is-scrapped.html>

Canada Geese are native to North America (i.e., Canada, U.S., Mexico, and Greenland), and are considered nuisance animals in many jurisdictions. Beauty of Birds.com (2011) noted they are also native to eastern Siberia, eastern China, Japan, and a number of Caribbean islands (i.e., Bahamas, Cayman Islands, Cuba, Haiti, Puerto Rico, Saint Pierre and Miquelon, Turks and Caicos), although other authors dispute this (cf. Jansson, Josefsson, & Weidema 2008).

They were deliberately introduced to Great Britain in 1665, to New Zealand in 1905, Germany in 1928, Sweden in 1929, Denmark in 1930, and Norway in 1936 (Thomson 1922 in Winn 2001; Jansson, Josefsson, & Weidema 2008). Other early introductions were unsuccessful in establishing populations (e.g., Dawes 2008).

Today, Canada Geese are observed in most countries around the North Sea and along the Atlantic coast, in parts of central and eastern Europe, northern Russia, and New Zealand (Campbell et al. 1999; Banks et al. 2004; various authors in Jansson, Josefsson, & Weidema 2008). In some European countries, Canada Geese now outnumber native goose populations (Jansson, Josefsson, & Weidema 2008). New introductions of Canada Geese are regarded as a serious threat. Dawes (2008), for example, warned that Canada Geese had entered Australia and called for immediate eradication.

Interestingly, Canada Goose populations in Scandinavia are believed to have originated from

only 5 individuals, four from a zoo in Germany and one from North America, and despite losses in genetic variation over time, the species has continued to increase its range (Jansson, Josefsson, & Weidema 2008).

11.11 United States

Regulations

Legislation for managing resident Canada Geese in the U.S. is found in the Code of Federal Regulations, Title 50 (Wildlife and Fisheries), Chapter 1, Subchapter B, Part 21 (Migratory Bird Permits), Section 21.26 (Special Canada Goose permit), 21.49 (Control order for resident Canada Geese at airports and military fields, 21.50 (Depredation order for resident Canada Geese nests and eggs), 21.51 (Depredation order for resident Canada Geese at agricultural facilities), 21.52 (Public health control order for resident Canada Geese), and Subpart E (Control of Overabundant Migratory Bird Populations), 21.61 (Population control of resident Canada Geese). Sections 21.49, 21.51, and 21.52 allow culling of goslings and adults, in addition to other lethal and non-lethal controls. These regulations cover states along the Atlantic, Central, and Mississippi Flyways only. The USFWS may issue depredation permits in situations that do not fall under the depredation orders (J. Sands and T. Smith, pers. comm. February 17, 2015).

The Pacific Flyway Council requested the western states not be included in all of the regulations



Directed management vs. 'vigilante bird justice'. See http://www.thestar.com/life/2010/07/15/deadly_summer_for_canada_geese_in_the_us.html

Canada Geese; only the airport control order, the nest and egg depredation order, and the public health control order are available to the Pacific Flyway States (USFWS 2006).

Section 21.61 regulates a population control program, "implemented under the authority of the Migratory Bird Treaty Act to reduce and stabilize resident Canada Goose populations when traditional and otherwise authorized management measures are unsuccessful, not feasible in dealing with, or applicable, in preventing injury to property, agricultural crops, public health and other interests from resident Canada Geese". Managed take allows hunting August 1-31, extends shooting hours, and removes daily bag limits. Following one full operational year of Sections 21.49 through 21.52, any of the states or tribes may request approval for the population control program. Once approved, the government may "without permit, kill or cause to be killed under its general supervision, resident Canada Geese" under a suite of conditions (e.g., no baiting, no live decoys, etc.).

The USFWS maintains an e-permits website, whereby anyone in the conterminous U.S. can register for federal authorization to destroy resident Canada Goose nests and eggs (see <https://epermits.fws.gov/ercgr/gesi.aspx>). Some states do not participate in this program and/or have additional or similar requirements (e.g., WA, OR).

In 2014, the Pacific Flyway Council proposed, and the USFWS

agreed to combine interior and coastal State frameworks for Canada Geese, to increase the hunting season length in WA, OR, and CA from 100 to 107 days, to change opening date in these states from the Saturday closest to October 1 to the Saturday closest to September 24, to increase bag limits in CA to 10, to increase bag limits in OR on hunt days on or before the last Sunday in January to 6, and to increase quotas on Dusky Canada Geese in WA and OR, among other things. The Service acknowledged that harvests alone would not completely address agricultural depredation issues and encouraged the States in the Pacific Flyway to work towards implementing other approaches detailed in the Flyway's Canada Goose depredation plan (Federal Register 2014).

Management Actions

Along the Atlantic Flyway at least, hunting has been liberalized, egg treatments are widespread, and culling operations have grown. In some jurisdictions, goose numbers have peaked and are falling, while in others populations continue to grow (Best et al. 2014).

The USDA Wildlife Services assists the USFWS, State governments, and many others with goose management. The USDA (1999) reported that its Wildlife Services personnel were trained and certified in the use of a capture drug to contain geese outside of the moulting period, 30 days in advance of or during the hunting season. Where geese could not be captured or otherwise controlled, small numbers were selectively removed

with a pellet gun or shotgun. Geese captured and euthanized that were suitable for human consumption were donated to qualified charitable organizations. Wildlife Services personnel also assisted with hazing, nest destruction, addling, and relocations (USDA, 1999).

The Patuxent River tidal marshes in Maryland (introduced in Chapter 5.2, The Need for Action, Estuaries) were restored by allowing hunting in a wetland sanctuary, thereby removing approximately 1,700 Canada Geese over a 4 year period, and re-establishing wild rice through a large-scale fencing and planting program (Haramis & Kearns 2006).

In general, U.S. cities have had considerable latitude to deal with urban and resident goose problems. The City of Seattle is a case in point. In 1987, the Seattle Waterfowl Committee was formed to deal with the growing numbers of Canada Geese. A year-long study by the University of Washington recommended 90% reductions in 1990, 80 to 90% reductions in 1991, and smaller reductions later on, as necessary. From 1989 to 1994, the USDA Wildlife Services program facilitated the translocation of 7,342 geese to eastern Washington and Idaho. From 1992 to 1998, Wildlife Services added more than 6,000 eggs, but numbers continued to grow. In 1997 and 1998, Wildlife Services captured and euthanized 578 geese from the city and area (USDA, 1999). Culling continued annually for several years, in public parks, private golf courses, and on

the University of Washington campus. This motivated Paws and the Humane Society of the U.S. to launch the Seattle Goose Program, a program to help Seattle Parks and Recreation explore more humane methods of resolving human-goose conflicts. A pilot project from 2006 to 2008 provided volunteers who located goose nests for addling and oiling; hazed geese with lasers, kites, and dogs; and cleaned goose poop from beaches and recreation areas (Paws n.d.).

To reduce populations of 'urban' Canada Geese in Anchorage, Alaska, a similar program was undertaken from 1996 to 1998. The USFWS, USDA Wildlife Services, Alaska Department of Fish and Game, municipalities, and conservation groups formed a working group to plan culls and other activities, and senior governments carried out various facets of the plans (T. Smith, pers. comm. February 17, 2015).

The National Wildlife Research Center, the research arm of the USDA Wildlife Services program, was instrumental in developing the chemical repellent methyl anthranilate, used to discourage geese from using grassy areas. It also tested drugs to inhibit bird reproduction (USDA 1999).

Funding

USDA Wildlife Services programs are not federally funded; a congressional mandate requires they help with goose management, however no monies are available to do so. Therefore, controls undertaken by USDA

Wildlife Services personnel are implemented on a cost-reimbursable basis (USDA 1999; T. Smith, pers. comm. February 17, 2015). Funding was usually provided by resource owners, private businesses, or local, state or federal funding agencies (USDA 1999).

Some State governments have taken the lead, funding and/or implementing goose management. The Wisconsin DNR (2007) provided \$25,000 worth of annual grants to towns, cities, villages, counties, or tribal governments in urban areas, to help develop wildlife plans and/or implement specific damage abatement/and or control measures for Canada Geese. The program provided 50% project reimbursement up to a maximum of \$5,000 (Wisconsin DNR 2007). In Michigan, the Department of Natural Resources (DNR) conducts ~46% of the goose roundup activities in the state, while others manage the rest. Half of the costs of Michigan's resident Canada Goose program come from hunter dollars, and the other half from permit fees (Michigan DNR 2015).

11.12 Europe

The Canada Goose is registered in 18 of 20 countries participating in the European Network on Invasive Alien Species (NOBANIS), holding one of two top spots among 9,511 species. (The other is Canadian Waterweed (*Elodea canadensis*), Oh Canada!) This organization adheres to the slogan, "If you can't beat 'em, eat 'em" (NOBANIS Secretariat 2013).

Canada Geese in Britain are widespread, and deemed responsible for destruction of bank-side vegetation, eutrophication of waterbodies, and aircraft strikes at Heathrow Airport, among other things (Owen et al. 1998 in Winn 2001). They are a recognized game species that can be shot throughout the year (British Association for Shooting & Conservation 2013). Special licenses designed to protect public health and air safety, prevent crop damage, and to conserve wild bird populations allow destruction of eggs and birds (Owen et al. 1998 in Winn 2001).

In France in 2011, Canada Geese were not hunted but agencies and scientists were calling for hunting, egg sterilization, and culls. There, geese are a threat to wetland biodiversity, primarily by excluding other species from nesting territories. They had also caused closures of outdoor swimming pools, and other typical urban nuisance problems. From several hundred birds at the end of the 1990s, populations had increased to more than 5,000 by 2011, with half in the Paris area. “For reasons that remain obscure, their numbers have

started increasing very fast” (Vincent 2011). Vincent (2011) noted that Canada Geese are on a list of 100 invasive species posing a serious threat to biodiversity in Europe.

11.13 New Zealand

In New Zealand, ‘sedentary’ [nonmigratory] Canada Geese are established on the South Island. They were protected until 1931, when farmers were allowed to disturb and destroy geese on their pastures. The species was declared a game bird in 1973. Between 1976 and 1987, the Wildlife Service conducted moult-culling drives and egg-pricking operations in certain areas. The South Island Canada Goose Management Plan was developed in 1995, whereby organized culls were to be used if recreational hunting could not maintain populations at target levels. By 2000, only two areas were at target levels, as control measures were simply moving the birds to other areas (various authors in Winn 2001).



New Zealand Birds Online

The digital encyclopaedia of New Zealand birds

Canada goose

Branta canadensis (Linnaeus, 1758)

Order: Anseriformes

Family: Anatidae

New Zealand status: Introduced

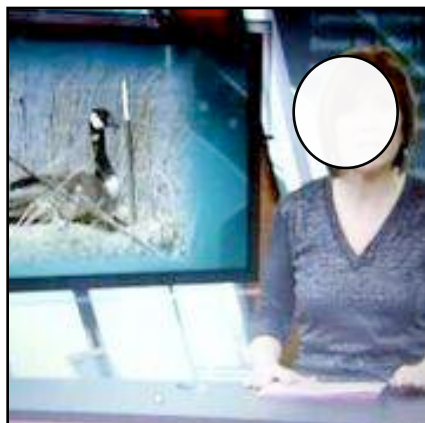
Conservation status: Introduced and Naturalised

Other names: honker

Geographical variation: A native North American goose with an extensive history of population isolation and substructure and with each such grouping distinguishable by size and phenotype. The taxonomy accorded to these groupings remains labile but there is gathering agreement for two species to be recognised, a large-bodied *B. canadensis* and a small-bodied *B. hutchinsii* within each of which are several geographic races accorded sub-species status. The New Zealand population is primarily descended from an importation of 50 birds in 1905. The size and plumage characteristics of these birds, when examined in 1970, matched those of the then largest race recognised, *B. canadensis maxima*.

The New Zealand population of Canada Geese is primarily descended from an importation of 50 birds in 1905 (New Zealand Birds Online, from <http://nzbirdsonline.org.nz/species/canada-goose>)

11.2 National



In just a few years, the views and policies of our regulatory agencies have shifted, partly because of news coverage and a growing awareness of the problems.

The position of federal regulators in Canada has changed significantly from the inception of this project in 2007, when grave concerns for endangered Dusky Canada Geese outweighed any urgency to address the impacts of 'resident' Canada Geese. The Guardians were instructed to avoid using the term 'overabundant', in favour of 'locally overabundant', as the former was a 'legal' term. We were asked not to mention culling (the 'C' word) as a potential management tool, as this was viewed as highly unpopular. And we were instructed to gather the supporting science for mandatory management planning. Fast forward to 2014. Distinguishing resident birds from migratory birds, and from Canada Geese migrating to and from the lower 48 states in

particular, is of little concern, as nearly all temperate-breeding populations are perceived as 'locally overabundant'. Applications for kill and cull permits are encouraged (e.g., I. Whitehorne, pers. comm. June 18, 2014). CWS is engaged with several working groups (e.g., Capital Region, Lower Mainland, Okanagan) that are attempting to manage nuisance Canada Goose populations. CWS staff have provided timely and forthright information as well as advice regarding data analysis for this strategy.

The agency's involvement in Snow Goose and cormorant management is described elsewhere in this document (Chapters 4 and 12, respectively).

11.3 Regional

11.3.1 Capital Region

The Capital Region's Regional Canada Goose Management Strategy Working Group was formed in May, 2010 and has met monthly. It has focused on understanding and mitigating crop loss and damage, and health and environmental impacts to parks and recreation areas, as well as improving aviation safety at the Victoria International Airport. The group has learned from the regional deer management program and has examined sharing resources and integrating program activities (Canada Goose meeting

in Central Saanich, March 14, 2013).

A 2012 technical report (see <https://www.crd.bc.ca/docs/default-source/regional-planning-pdf/regional-canada-goose-management-strategy-technical-report-.pdf?sfvrsn=0>) informed the group's management strategy in the same year (see <https://www.crd.bc.ca/docs/default-source/regional-planning-pdf/regional-goose-management-strategy-.pdf?sfvrsn=0>). The technical report, commissioned by the Working Group and developed by EBB Environmental Consulting,

examined historical data, conducted a crop loss impact analysis with goose exclosures on area farms, and mapped potential goose habitat using Landsat satellite imagery, Capital Regional District (CRD) ortho-photography, the Sensitive Ecosystem Inventory (SEI), and field surveys. Volunteers conducted monthly goose surveys which informed a series of population models. Maps and charts were created depicting seasonal abundance and distribution.

The strategy outlined three management scenarios and a



In the CRD, there was plenty of news coverage regarding a cull, e.g., <http://www.cheknews.ca/c-r-d-to-go-ahead-with-canada-geese-cull-what-do-you-think-104900/>

series of mitigation techniques suitable for the region, including habitat modification, water management (with habitat modification), hazing, relocation, egg addling, hunting, kill permits, and 'regionally implemented, managed goose kills'. Kill-to-support-scaring permits were differentiated from kill-to-remove permits, and managed goose kills were deemed illegal within the current regulatory framework. A review of local government policies (e.g., feeding wildlife) and the development of a guide of sorts to ease permit processes for landowners and managers were recommended. A thousand geese was determined to be the population target and the threshold above which serious impacts occurred; this was the estimated number of geese in 1985. Surveys over the breeding and rearing periods, as well as leg-banding during the moult were suggested. The strategy also included a communications plan for engaging stakeholders and the general public (CRD 2012).

Funding was secured from the Agricultural and Environmental

Initiative to support 2013-14 initiatives (CRD 2015). The Steering Committee and Working Group created a website (see <https://www.crd.bc.ca/project/goose-management>) and an educational brochure that asserted migratory geese are not present in the summer and are rarely present in urban locations (which is not the case here) (CRD 2015). The group hosted an egg addling workshop in January, 2014 for ~40 people, mainly from the Saanich Peninsula agricultural community (K. St. Claire, pers. comm. January 9, 2015). A similar workshop in 2015 was postponed due to low registration (CRD 2015). The group worked with the Province and Environment Canada on an application to conduct a cull in the summer of 2015 (K. St. Claire, pers. comm. January 9, 2015).

Armed with a permit to cull 250 geese on agricultural lands, project partners killed 50 birds in Central Saanich in 2015, providing the carcasses to a nearby raptor centre (T. Clermont, pers. comm. 2015).

Canada Geese below Hatley Castle, Royal Roads University, Colwood, B.C.





Canada Goose roundup and banding at the Campbell River estuary, July 3, 2015. Photo by Tim Clermont.

11.32 North Island

The Campbell River Environmental Committee (CREC) began monitoring Canada Goose populations in May, 2013, in response to losses of habitat following extensive and expensive restoration efforts on the Campbell River estuary. The local population in the vicinity of the estuary was estimated to be less than 200. More than 1,000 birds were present during the moulting period in 2013 and 2014. Three exclosures were installed on the estuary in spring 2014 (CREC, pers. comm. to T. Clermont, January 15, 2014).

The group banded 199 birds during the 2015 moult. The Campbell River Indian Band may take moulting birds on reserve lands to help reduce the goose population (CREC, pers. comm. to T. Clermont, January 15, 2014; T. Clermont, pers. comm. September 2015).

11.33 Lower Mainland

In 1991, CWS published *Canada Geese in the Fraser Valley: A Problem Analysis*. Relocations to areas where geese could be hunted had taken place in 1987, '88, '89 and '90. New areas had closed to hunting as a result of municipal firearms restrictions. The analysis documented complaints from a wide variety of stakeholders, including farmers who stated that scare permits did not work and they were too busy to chase birds. Egg addling programs were initiated at key breeding sites, such as Stanley Park and Burnaby Lake in 1988. Populations were expected to stabilize, based on fall counts and

the success of addling programs (Breault and McKelvey 1991). Over the last 10-20 years, some areas experienced marked increases in wintering Canada Geese, while others show no trend or were variable (Lower Mainland Canada Goose Working Group email 2014).

The Vancouver Airport Authority led a Canada Goose workshop in October, 2013, and another in June, 2014. A preliminary map was created showing areas of conflict and places where geese were known to congregate. A Google Earth-based Conflict Mapping Project was launched in August, 2014, to engage communities and document where people were experiencing conflicts with geese. Members of a newly formed group, including CWS and Ducks Unlimited staff, began mapping population abundance and distribution using a variety of existing data (i.e., Christmas Bird Counts; ~3,000 re-sight records of Canada Geese banded on the Lower Mainland dating back to the 1960s; banding records for birds banded elsewhere and sighted on the Lower Mainland; Coastal Waterbird Surveys, Breeding Bird Surveys, CWS Goose Blitz Data (i.e., annual fall counts coordinated with ground and aerial surveys, ca. 1985 – 1995) (Lower Mainland Canada Goose Working Group email 2014).

Also in 2014, the Lower Mainland Canada Goose Working Group developed a Terms of Reference (ToR) to formalize its existence, and began working on the precursors to a collaborative management strategy: a problem statement, goals and objectives (e.g., a socially determined

population size, aimed at reducing conflict; 50% reduction in crop damage by 2020; zero annual air traffic safety incidents related to Canada Geese) and research questions. The group created a list of potential stakeholders, and a draft communications strategy that aimed to facilitate internal discussions within member organizations; develop communications materials (e.g., fact sheets, press releases, how-to videos) and processes (e.g., outreach person or coordinator, social media); and enable accurate and consistent messaging from group members to the media and public. The group asserted, “Environment Canada is responsible for the management and conservation of goose populations, but is not responsible for dealing directly with the birds or their actions, or mitigating damage that birds may cause”, a fundamental statement with which we disagree.

The second Lower Mainland Canada Goose workshop was held January 26, 2015. The group expected to finalize its ToR and communication strategy. It was looking for commitment from stakeholders, particularly cities and municipalities (D. Bradbeer, pers. comm. January 9, 2015).

11.34 Okanagan Valley

The Okanagan Valley Goose Management Committee was struck in 1995. An action plan with strategies to manage Canada Geese was endorsed in 2006 (Okanagan Valley Goose Management Program 2015).

Plan development included public meetings in Vernon, Kelowna, Penticton, and Osoyoos. Population data was compiled from Christmas Bird Counts, aerial surveys, and band recoveries from the 1980s. However, overall goose numbers were of less concern than the concentration of geese on area beaches and the results of water quality samples, which indicated contamination was reaching threshold levels (Robertson Environmental Services & Ophiuchus Consulting 2006).

The action plan included educating the public and increasing awareness (e.g., signage, encouraging participation through nest reporting); examining and changing bylaws; habitat modification; relocating geese away from sensitive areas (e.g., popular recreational areas); promoting fall hunting; hazing geese from public areas; expanding addling programs; using other lethal controls as a last resort; monitoring goose numbers by way of brood counts and annual surveys; and monitoring water quality at beaches (Robertson Environmental Services & Ophiuchus Consulting 2006; Osoyoos Lake Water Quality Society 2014).

The Okanagan Valley Goose Management Program was established in 2007. It is a partnership between the City of Kelowna, Central Okanagan Regional District, Regional District of Okanagan Similkameen, District of West Kelowna, City of Vernon, City of Penticton, Town of Lake Country, Town of Osoyoos, Town of Oliver, District of Peachland,

District of Summerland and Glenmore Ellison Irrigation District (Okanagan Valley Goose Management Program 2015). Its focus is to reduce populations, and large concentrations of geese in heavily used public areas in particular (City of Kelowna 2009).

The flagship of the Program is annual egg addling. The first year of the program realized more than 1,170 addled eggs in 216 nests between Osoyoos and Vernon (City of Kelowna 2009). Trained contractors begin the addling season by identifying mating pairs and nesting sites. The public is asked to assist by reporting lone geese, pairs of geese, or nest locations on private or public land. They are advised to keep away from goose nests and avoid touching eggs (Okanagan Valley Goose Management Program 2015). In 2013, the Union of B.C. Municipalities (UBCM) endorsed a resolution from the Town of Osoyoos requesting CWS be more permissive in the issuance of kill permits, as addling has had limited effect (Fletcher 2013; UBCM 2013). Failing an agreement to do so by CWS, the Province was asked to take the initiative to provide kill permits to affected local governments for goose population reduction.

There had been a series of UBCM resolutions related to problem Canada Geese: in 2002, sponsored by Osoyoos; 2003, sponsored by Kent; 2010, sponsored by North Saanich; 2010, sponsored by Osoyoos; and 2011, sponsored by Metchosis (UBCM 2012).



Local media help the Okanagan Valley Goose Management Program reach out to the public. See <http://infotel.ca/newsitem/goose-management-activities-beginning-in-west-kelowna/it18931>

Reliable information regarding culls (e.g., if and when they occurred, how many geese were killed) was difficult to obtain online. The Vancouver Sun (2008) reported that Kelowna and Osoyoos had applied for special permits to cull geese. Walkinshaw (2009, October), reporting for the Penticton Western News, said that the Penticton Council had voted unanimously for a permit to cull Canada Geese, concerned about the slow progress of the goose management program. Earlier in the year, Kelowna had received a permit to cull 50 geese. In Summerland, a child had fallen ill after landing in water contaminated with goose feces, requiring hospitalization (Walkinshaw 2009). In 2013, CWS endorsed the Town of Osoyoos goose management plan and provided a permit to kill up to 10 adult birds per week at its Desert Park horse racing facility and the Osoyoos Golf course, without blinds or decoys, and the geese could not be kept by the hunter. A local hunter agreed to do the work for \$30 per goose, to cover his license, shells, and fuel. The South Okanagan Rehabilitation Centre for Owls in Oliver agreed to take some of the birds (Osoyoos Times 2013).

In 2012, geese were leg-banded (red bands for Penticton, green for Kelowna, and white for Vernon geese). In 2013, all birds were fitted with yellow leg bands (Okanagan

Valley Goose Management Program 2015).

In June, 2014, post-nesting ground surveys were conducted to estimate the gosling proportion of the population (9.5%) and identify areas that were missed during the adding season. In June and July, aerial surveys found that populations had not increased since the last surveys in 2011 (Okanagan Valley Goose Management Program 2015).

At the time the Okanagan Valley action plan was written, municipalities in the Okanagan Valley were collectively spending more than \$100,000 each year to manage Canada Geese (Robertson Environmental Services & Ophiuchus Consulting 2006). In 2007, the program was expected to cost \$136,000; Kelowna contributed \$75,000 and committed to spending an additional \$90,000 to control (haze, relocate, and modify habitats) and clean up after geese on City-owned lands (City of Kelowna 2009). Banding was paid by a grant from the Western Canada Turfgrass Association with staff time donated by LaHawk Ltd. and Wise Wildlife Control (Okanagan Valley Goose Management Program 2015).