



# BIRD STEWARDSHIP ACTION PLAN

Proceedings from the 2018  
Stewardship Roundtable held  
August 24, 2018 in Vancouver,  
British Columbia:

A summary of information,  
resources, and actions to support  
conservation and management  
of birds and bird habitat.



DEVELOPED BY:  
THE STEWARDSHIP CENTRE  
FOR BRITISH COLUMBIA

# STEWARDSHIP ROUNDTABLE CO-HOSTS

## THE STEWARDSHIP CENTRE FOR BC

The Stewardship Centre for BC (SCBC) was created to assist governments, businesses, environmental organizations, and citizens carry out stewardship activities in the most efficient, effective, and rewarding ways. A leader in promoting stewardship values as the foundation for sustainability, the SCBC wants to help make “shared stewardship” – the voluntary adoption of environmentally sustainable practices by all sectors of society – a reality in British Columbia.

We are committed to champion science-based best stewardship so that British Columbians understand, enjoy, and sustain healthy ecosystems through stewardship. As good stewardship relies on good decision-making, we work closely with our partners to develop innovative technical, educational, and capacity building resources, such as this Action Plan. For more information about the Stewardship Centre, go to [www.stewardshipcentrebc.ca](http://www.stewardshipcentrebc.ca).

## BIRD STUDIES CANADA

Bird Studies Canada's mission is to conserve wild birds of Canada through sound science, on-the-ground actions, innovative partnerships, public engagement, and science-based advocacy. Bird Studies Canada is a national charity built on the contributions of thousands of supporters and Citizen Scientists. Using data from our volunteer monitoring programs and targeted research, our scientists identify significant population changes and direct conservation planning.

We are a strong partner in BirdLife International, the world's largest conservation alliance for nature and people, active in more than 120 countries and territories. For more information about Bird Studies Canada, go to [www.birdscanada.org](http://www.birdscanada.org).

## DISCLAIMER

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Image Source: Paula Courteau

# BACKGROUND ON THE ACTION PLAN

On August 24, 2018 during the 2018 International Ornithological Congress, over 150 participants gathered in Vancouver, British Columbia to discuss important topics in bird conservation and stewardship as part of the Stewardship Roundtable 2018 (SRTatIOC). Bird enthusiasts and policy makers gathered with non-governmental organizations, park managers, First Nations, researchers, and the public to contemplate best practices for advancing bird conservation in the 21<sup>st</sup> century.

The purpose of this document is to summarize information presented at the SRT and to provide resources for conservation practitioners, land managers, enthusiasts, communities, and others participating in bird stewardship around the world. This Action Plan and the associated resources are made available to the public to facilitate conservation and management of our shared natural heritage.

## HOW TO USE THIS ACTION PLAN

Stewardship of birds and bird habitat is a vast topic. Here we focus on six themes relevant to bird stewardship in British Columbia and applicable to many other parts of the world. Themes were selected by the SRTatIOC Steering Committee prior to the event. Each theme was explored during the SRTatIOC through panel presentations, World Café style discussions, and storytelling. This Action Plan identifies key threats, strategies, activities, indicators, and in-depth resources which will help advance on-the-ground stewardship of birds and bird habitat. We encourage you to familiarize yourself with the information in this document, review the associated resources, and organize local bird stewardship activities in your neighborhood.

This Action Plan summarizes each stewardship theme around the following five topics:

### THREATS

A concise review of the impacts on birds, bird habitat, and wildlife.

### STRATEGIES

Big-picture approaches to addressing identified threats.

### ACTIONS

Practical on-the-ground activities you can take in your local communities.

### INDICATORS

Observable and measurable conditions to indicate progress is being made. Indicators are used to evaluate effectiveness of programs and adapt stewardship actions.

### RESOURCES

In-depth materials which provide greater context, additional activities, and more ideas for bird stewardship. In addition to printed resources, consider reaching out to speakers who presented at the SRTatIOC, our partner organizations, or directly to SCBC at [info@stewardshipcentrebc.ca](mailto:info@stewardshipcentrebc.ca).



# SPONSORS & ACKNOWLEDGEMENTS

The Stewardship Roundtable 2018 was convened by the Stewardship Centre for British Columbia (SCBC) and co-hosted with Bird Studies Canada (BSC). The Steering Committee consisted of 21 members representing the following organizations: the Planning Institute of BC, Canadian Wildlife Service, the Adaptation to Climate Change Team at Simon Fraser University, Environment and Climate Change Canada, Nature Canada, Thompson Rivers University, Stanley Park Ecology Society, the Fatal Light Awareness Program, Kwantlen Polytechnic University, South Coast Conservation Program, Biodiversity Research Centre at the University of British Columbia, and the City of Vancouver. The Steering Committee, BSC, and SCBC staff members contributed significant time to planning and delivery of the SRTatIOC.

## CO-HOSTS



**STEWARDSHIP CENTRE**  
FOR BRITISH COLUMBIA



**BIRD STUDIES**  
ÉTUDES D'OISEAUX **CANADA**

## SUPPORTERS



HABITAT  
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## SPONSORS



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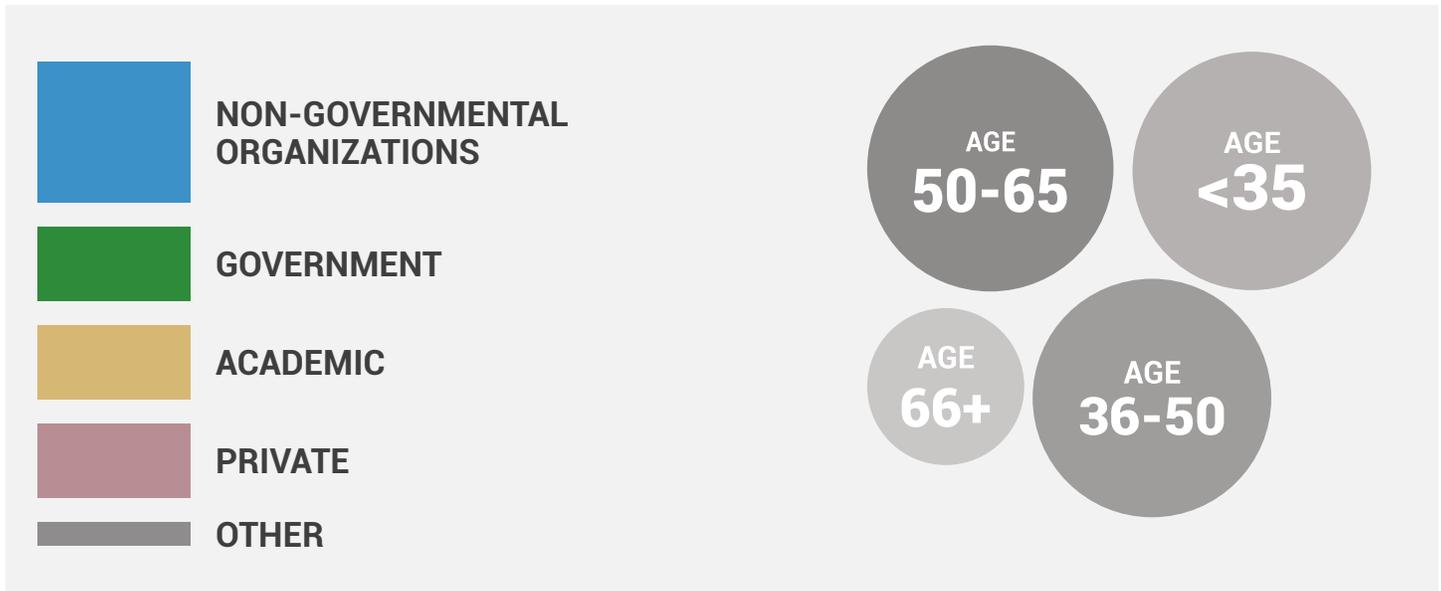
## PARTNERS



# PARTICIPANTS

One-hundred and fifty-two participants attended the SRTatIOC representing over 53 institutions, organizations, and companies. Participants represented municipal, provincial, and federal governments in Canada, in addition to a variety of non-governmental organizations associated with habitat protection, land management, and bird conservation. Private sector representation included members of professional planning boards, consulting biologists, and landscape architects. Students and researchers representing six academic institutions were present.

Participation was diverse, including early- and late-career conservationists. Participants identified working on bird stewardship and research projects on 4 continents, including North America, South America, Africa, and Asia.



# SRTatIOC THEMES OUTLINE

## BIRDS & BUILDING COLLISIONS

Building collisions account for one of the greatest causes of bird mortality in North America. Fortunately, many bird-collision deterrent solutions exist. This session explored how and why birds collide with windows and identified practical approaches for implementing solutions.

**SRTatIOC  
SPEAKERS:**

**Michael Mesure** (Fatal Light Awareness Program Canada), **Krista De Groot** (Canadian Wildlife Service), **Alan Duncan** (City of Vancouver), **Liska Richer** (UBC). *Session Chair: Jody Allair* (Birds Studies Canada).

## CATS & BIRDS LIVING IN HARMONY

Solutions to the controversial issue of domestic cat impacts on birds require particularly careful consideration of the human dimension. Best stewardship practices improve welfare for both cats and birds. This session explored resources and approaches to collaboration across sectors to address this important conservation issue.

**SRTatIOC  
SPEAKERS:**

**Amy Morris** (BC SPCA), **Tanya Luszcz** (Environment/Climate Change Canada), **Ted Cheskey**, **Sarah Cooper** (Nature Canada), **Bob Sallinger** (Audubon Society of Portland). *Session Chair: Denise King* (Thompson Rivers University).

## CLIMATE ADAPTATION FOR BIRDS & WILDLIFE

Birds serve as indicators of ecosystem health. Current research is untangling the many ways birds are sensitive to climate change. This session explored how climate impacts continental-scale bird migration and the ways communities and municipalities are responding. SRTatIOC

**SRTatIOC  
SPEAKERS:**

**Christine Callihoo** (Planning Institute of BC), **Marshall Iliff** (Cornell University), **Matt Osler** (City of Surrey). *Session Chair: James Casey* (Bird Studies Canada).

## CO-BENEFITS OF AGRICULTURAL LAND AS BIRD HABITAT

Productive agricultural land overlap with important habitats for birds and other wildlife. Often the maintenance of biodiversity on agricultural lands is at odds with the economics of modern farming. This session explored how farm and ranch lands can continue to support healthy populations of aerial insectivores, grassland birds, waterfowl, and raptors.

**SRTatIOC  
SPEAKERS:**

**Ted Cheskey** (Nature Canada), **Marc Macdonald** (West Coast Seeds), **Christy Morrissey** (U of Saskatchewan), **Dave Zehnder** (Farmland Advantage), *Resource guests: Steve Litke* (Fraser Basin Council), **Deborah Harford** (Simon Fraser University ACT), **Marlow Pellatt** (Parks Canada), **Erin Clement** (City of Delta). *Session Chair: James Casey* (Bird Studies Canada).

## URBAN HABITAT FOR BIRDS & WILDLIFE

Humans place pressure on wildlife in urban landscapes, yet habitat persists in private backyards, public parks, waterways, and in the margins of developed lands. This session explored the challenges and opportunities to improve habitat for wildlife and birds and opportunities for restoring lost habitat.

**SRTatIOC  
SPEAKERS:**

**Karin England** (Grow Green Guide), **Jason Hsieh** (City of Vancouver), **Nick Page** (Vancouver Board of Parks and Recreation), **Myles Lamont** (WildResearch). *Session Chair: Christine Callihoo* (Planning Institute of BC).

## WILDLIFE MANAGEMENT AREAS, IBAs & SHORELINES

Important regions of bird habitat have been identified globally and, in some cases, protected. This session explored how social and economic structures can be incorporated into regional conservation planning within WMAs, IBAs, and along shorelines within the context of climate change and development pressures.

**SRTatIOC  
SPEAKERS:**

**Eric Balke** (South Coast Conservation Land Management Program), **DG Blair** (Stewardship Centre for BC/Green Shores), **Pete Davidson** (Bird Studies Canada). *Session Chair: James Casey* (Bird Studies Canada).

# BIRDS & BUILDING COLLISIONS

**42**  
MILLION  
**BIRDS KILLED**  
**DUE TO COLLISION**  
(per year)

Up to 42 million birds are killed in collisions with glass annually in Canada<sup>1</sup>. Bird collisions with windows occurs at commercial and institutional buildings and private homes. Private homes collectively kill the most birds, however, commercial and institutional buildings can kill more birds per building.

There are many effective solutions to the issue of bird collisions with glass. Bird-friendly architectural design features can be incorporated into the initial design of new buildings. Bird-friendly design guidelines, developed through collaboration among conservationists, architects, researchers, and municipal planners are readily available on-line. At existing buildings, collisions can be mitigated by making glass visible to birds using a range of products and strategies.

## THREATS

The highest rates of bird strikes with windows occurs during the daytime. Birds also collide with windows at night while they are on migration, often on foggy nights when they become disoriented by artificial lights.

The clear and reflective properties of glass pose a significant hazard to birds. Clear glass provides the illusion of open passage and becomes a hazard when birds attempt to access vegetation that they see on the opposite side. Reflective glass mirrors surrounding vegetation and sky; birds fly into this reflection believing it to be the real thing.

Architectural design elements with high collision-risk include: large all-glass facades, glass linkways/atria, glass railings and glass noise barriers. Collisions increase in areas with high concentrations of migrant birds and areas surrounded by green space and natural bird habitat.

Collision risk is typically highest during the migratory seasons, particularly during fall migration. However, along the Pacific coast of Canada, collision rates are also very high during winter.



Markers increase visibility of glass to birds. Left, an unmarked window. Right, a bird-safe window with effective visual markers.

Image Source: FLAP Canada.

## STRATEGIES

- Understand the factors associated with sites of high collision-risk, such as seasonality, life stage (e.g. migrating or breeding), and site conditions (e.g. lighting, corridors, and surrounding vegetation).
- Overcome the lack of public awareness about this issue through education campaigns.
- Increase availability of cost-effective solutions for mitigating bird collisions with glass.

**Common yellowthroat** (*Geothlypis trichas*) is a common victim of glass strikes in western Canada.



## ACTIONS

**Apply markers** to existing windows to persuade birds to fly around the glass, rather than attempt to fly through it.

**Identify low barrier best practices** for reducing collisions at no cost, e.g. when a room is unoccupied venetian blinds can be closed to increase visibility of windows, but note that features inside become invisible when reflections on the window are strong.

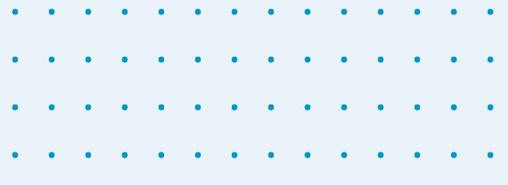
Building managers can reduce the threat of nighttime collision by minimizing the use of lighting, avoiding uplighting and **turning off all unnecessary office lights**.

Work with local government to **implement bird-friendly development policies**. Support actions to retrofit existing high collision sites with bird-friendly markers.

Record bird collisions in a database, such as the [Global Birds Collision Mapper](#)

### MARKER GUIDELINES:

- Markers should be located on the outside surface of glass.
- Markers should have gaps no larger than 5 cm (2") vertically and 10 cm (4") horizontally.
- Markers should be high contrast to increase visibility to birds.



## INDICATORS



- 1 Decrease in rates of bird collisions with glass.
- 2 Implementation of mandatory bird-friendly design policy for commercial, institutional, and residential developments.
- 3 Documentation of increased use of bird friendly designs in new buildings and retrofits.
- 4 Increased public awareness of the scale of the problem and solutions.
- 5 More quantitative data on bird collisions through public reporting.
- 6 Increased collaboration between researchers, conservationists, politicians, and developers.
- 7 Lower cost of bird-friendly retrofitting options for commercial and residential buildings.

*Varied Thrush (Ixoreus naevius) is a common victim of glass strikes in western Canada.*

*Image Source: Paula Corteau*

## RESOURCES

Homes Safe for Birds: [Homeowner Brochure](#)

[BirdSafe: Resources to keep daytime and nighttime birds safe from building collisions.](#)

[Homeowner Products:](#) Window coverings, markers, and other products to keep birds safe.

[ABC Bird-Friendly Building Design Guidelines:](#) A guide for Bird Friendly Architecture

[Fatal Light Awareness Program \(FLAP\):](#) Resources and data for understanding and addressing bird strikes

[Nature Canada](#)

# CATS & BIRDS

## LIVING IN HARMONY

In Canada, there are 9.3 million domestic cats<sup>1</sup> (*Felis catus*) and an estimated 1.4 - 4.2 million feral cats. Human introduction of cats increases predation pressure on native wildlife in many habitats. Outdoor cats kill an estimated 100 and 350 million birds per year in Canada, exceeding all other sources of direct human-caused mortality<sup>2</sup>. Based on these statistics, Canadian cats each kill between 9 and 26 birds per year.

While the estimates of cat predation of birds have provoked widespread public discussion in the media, educating the public using this data has not proven to be an effective means of changing cat owners' behaviour and can limit the potential for collaboration with animal welfare organizations<sup>3</sup>. Improving the tenor of the public discussion and co-operation among sectors are critically important steps to solving the spectrum of issues around outdoor cats and wildlife.

**OUTDOOR  
CATS KILL**  
**100 - 350**  
**MILLION**  
*birds per year*

### THREATS



Worldwide, cat predation has caused the extinction of 63 species

Worldwide, cat predation is the primary threat for 38 critically endangered species, has caused the extinction of 63 species, and has had significant impacts on native wildlife in mainland regions<sup>4,5,6</sup>. Ground nesting and ground feeding birds, young nestlings, and birds attracted to backyard feeders are at highest risk. Cats also predate significant numbers of native small mammals, amphibians, and reptiles<sup>7</sup>.

There are significant welfare issues for roaming cats, who are at higher risk of car accidents, fights with other cats, dogs and wildlife, toxins and poisons, and the many diseases and parasites they can contract, in addition to getting lost. Feral cats are at even higher risk than roaming pet cats.

### STRATEGIES

Develop a comprehensive, long-term plan to manage outdoor cats in your community. Efforts to reduce outdoor cat populations need to include different approaches for each category of cat (owned, stray and feral) and consider impacts on local wildlife.

Increase effectiveness of municipal bylaws by preceding or accompanying efforts with extensive community education and outreach campaigns (see "The Calgary Model" in Resources).

Analyze barriers to understanding of the issue, such as lack of information or resources, poor relationship between cat advocates and wildlife conservation groups, etc.

Employ collaborative, community-wide approaches including both cat welfare and wildlife conservation organizations as they offer the best opportunity to address the issue without generating undue community conflict.

Evaluate and measure impact of efforts (SMART goals for public engagement; polls to measure changes in attitudes and practices; changes in outdoor cat population (see Indicators, below).

Develop collaborative approaches to community education and science-based municipal policy.

1 CFHS 2017. [A Five- Year Review of Cat Overpopulation](#).  
2 Blancher 2013. DOI: [10.5751/ACE-00557-080203](#).  
3 McDonald et al. 2015. DOI: [10.1002/ece3.1553](#)

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6  
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Lepczyk et al. 2004. DOI: [10.1016/S0006-3207\(03\)00107-1](#)  
Loss and Marra 2017. DOI: [10.1002/fee.1633](#).  
Woinarski et al. 2017. DOI: [10.1016/j.biocon.2017.08.006](#).  
Loss et al. 2013. DOI: [10.1038/ncomms2380](#).

### ACTIONS

**Educate** cat-owners about the impact of allowing their cats to roam, emphasizing the risks to the cat.

Provide multiple avenues for people to participate, **avoiding one-size-fits-all solutions** (i.e. don't just focus on "keep your cats indoors") by providing solutions like catios and leashes for outdoor walks.

**Implement a multi-dimensional approach** with research and adaptive management.

**Ensure messaging is delivered at key touch-points** with cat owners (vet visits, adoptions, reclamations of a lost cat, when they bring in wildlife injured by their cat).

**Use recommended language and strategy** when communicating with pet owners (see "Best Communication Practices" in Resources section).



Example of outdoor cat enclosure.  
Image Source: [CatioSpaces](#)

### INDICATORS

- 1 Reduction in outdoor cat populations generally and especially in areas of greatest bird risk. Previous research on ways to "count" cats are being applied in other cities (e.g. The D.C. Cat Count; Flockart et al. 2016), providing a methodology to measure reduction.
- 2 Reduction in owned cats permitted to roam unsupervised. Decrease in numbers of cats being taken to shelter and increased rates of adoption and cats returned to owners.
- 3 Proliferation of "catios" and cats on leash outdoor walks.
- 4 Elevated profile of the issue in public perception using more nuanced language sensitive to pet owners' perspectives.
- 5 Increased awareness by individuals adopting cats of the impacts on birds and increased commitment to practices for reducing risk to wild birds.
- 6 Increased number of collaborations between bird organizations and cat organizations.
- 7 Increased number of communities with collaboration between sectors, progressive municipal policies, no-roam bylaws and protection for areas of particular importance to birds and wildlife.

### RESOURCES

[Best Practices Document](#) (includes a list of resources from Nature Canada, the Stewardship Centre for BC & the BC SPCA)

[Best Communication Practices](#)

Briefing Note & Recommended Bylaws and Policies for Local Governments (available by request to [info@catsandbirds.ca](mailto:info@catsandbirds.ca))

[Canada's State of the Birds \(2012\)](#)

[Cats and Wildlife Guide](#) from Portland Audubon

[The Happy Cat: Tips for Responsible Pet Ownership](#)

[Cats Safe at Home](#) (Portland Audubon & the Portland Feral Cat Coalition)

[Estimated Number of Birds Killed by House Cats in Canada](#)

[The Calgary Model: Best Municipal Practices in Encouraging Responsible Cat Ownership](#)

[The impact of free-ranging domestic cats on wildlife of the United States](#)

[Refining online communication strategies for domestic cat management](#)

# CLIMATE ADAPTATION FOR BIRDS & WILDLIFE

Climate change is happening with 16 of the warmest years on record having occurred since 2001. Communities across BC are confronting the realities of climate change, from wildfires to sea level rise. Major investments are taking place to help communities adapt to change in weather patterns. Climate change is also impacting BC's biodiversity with a multitude of local impacts on birds, from changes in species distributions to changes in body functions to changes in seasonality.

Historically, species adapted to climatic cycles through evolutionary and behavioural changes. Current levels of habitat loss, fragmentation, and other anthropogenic impacts increase the impact of climate change on birds. Going forward, climate change related impacts need to be explicitly considered in our adaptive management strategies to ensure we develop a better understanding of the mechanisms and scope of climate impacts on birds.

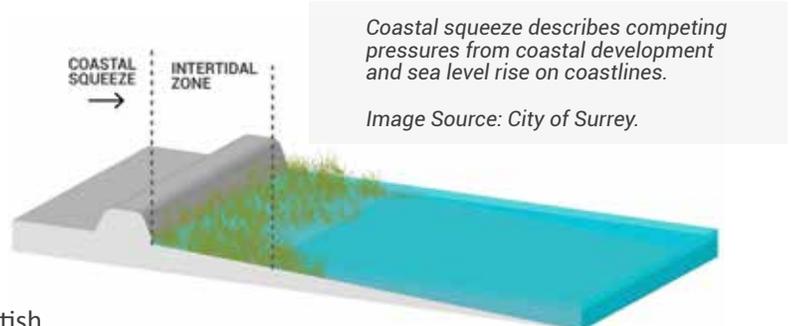
Fortunately, climate change adaptation strategies for biodiversity are already being developed and implemented, providing first steps in thoughtful adaptive management with the changing climate in mind. One challenge is that climate adaptation is generally addressed at the municipal level and primarily considers impacts to infrastructure, services, and finance. The gap between biodiversity, ecosystem services, resilience, and human economy needs to be closed through collaborative research and creative climate adaptation strategies built on deep collaboration among planners, governments, conservationists, and citizens.

## THREATS

Climate change is expected to impact both the abundance and distribution of biodiversity and the services ecosystems provide to humans. Changing ecological conditions include:

- Shifting seasonality in timing of migration, prey availability, flowering plants, etc.
- Coastal squeeze associated with sea level rise and inland flooding
- More severe and larger wildfires
- Increase in extreme events, such as storms
- Loss of rare ecosystems such as high altitude environments.

Climate change adaptation requires trade-offs amongst major societal values; environmental health can no longer be assigned secondary value as current resource management regimes tend to do.



Direct effects on biodiversity are diverse. In British Columbia effects include reduced foraging and nesting success of shorebirds, waterfowl, and marsh birds due to sea level rise and coastal flooding, among others.

## STRATEGIES

Integrate of both climate mitigation and adaptation (aka. low carbon resiliency) is paramount when planning all significant investments, both built and natural assets, in order to support the resulting co-benefits to society; the ability to adapt while also maintaining and/or enhancing supporting ecological systems.

To address climate adaptation, conservation approaches must extend beyond static spatial planning to account for dynamic ecological processes such as species range shifts, changing migration patterns, and increased environmental variability.

Collaborations across jurisdictions and professions are needed to coordinate resilience planning, response, and policy development. Utilizing strategic approaches (such as Vancouver's Climate Change Mitigation Strategy and Canada's Climate Change Adaptation Platform) to optimize limited resources for climate adaptation at municipal levels of government is further encouraged at all levels of government and throughout all sectors of the economy.

## CLIMATE ADAPTATION FOR BIRDS & WILDLIFE

Climate corridors can be designed to facilitate the movement of species across climate gradients over time. The research must further describe the mechanisms and implications of climate impacts on birds, while actively applying the research in partnership with communities to 'ground truth' and enable adaptive ecological management. This research needs to be completed with and effectively communicated to and by those implementing local bird and biodiversity strategies.

### ACTIONS

Prioritize and **protect areas and species at greatest risk** of climate impacts (e.g. shorebirds at risk of rising sea level).

**Improve climate resilience** by maintaining or creating ecosystem functions in urban areas including:

- **Building rain gardens** to manage increased stormwater runoff
- **Increase number of green roofs** in urban and rural areas
- **Preserving green spaces** (woodland areas and creeks, soil and vegetated areas and other 'softscape' areas that provide storm water management capacity, mitigate heat island effect, water filtration, and improve air quality to name a few).
- **Involve and engage the public** in citizen science programs to collect data on the abundance and population of birds (e.g. eBird) at large spatial scales to improve understanding of climate impacts. Protect and restore salt marshes to increase coastal habitat for birds and wildlife.

Strategically and fulsomely **involve all stakeholders in the planning process** early and throughout in order to develop robust priorities and actions that can be championed by the communities who helped guide in the development (vs impeding due to lack of awareness).

Demand **increased political action** for climate mitigation and adaptation, from funding to policy development.

Development of a **coastal corridor strategy** to enable northward migration of birds and biodiversity.

**Participate in existing climate adaptation planning processes** including the Lower Fraser, Flood Management Strategy and Farm Adaptation Innovator Program

Encourage strategic engagement in the democratic process to ensure ecological values are given serious consideration.

### INDICATORS

- 1 Total acreage of coastal estuaries supporting historical biophysical processes is maintained.
- 2 Volume and quality of data submitted globally to bird and biodiversity databases (such as eBird).
- 3 Number of climate adaptation plans for municipal and regional governments that explicitly considers biodiversity as a relevant factor and are being actively implemented.
- 4 Number of academic research papers describing the relationship between climate change, ecosystem change, and opportunities for biodiversity adaptation.
- 5 Inclusion of green infrastructure in capital budgets of local government
- 6 Documentation of climate adaption and mitigation (low carbon resiliency) as an objective with leadership ratification and implementation
- 7 Dollars budgeted with clear funding objectives relating to biodiversity adaptation and management in the provincial and federal government

### RESOURCES

[Plan2Adapt](#): Generates maps and data projecting future climate conditions across regions in BC.

[ReTooling for Climate Change](#)

[BC Climate Action Toolkit](#)

[Green ByLaws Toolkit](#) for Conserving Sensitive Ecosystems and Green Infrastructure

[MVRD Spatial Data](#): Publicly-accessible sensitive ecosystem inventory data

[Surrey Coastal Flood Adaptation Strategy](#)

[Lower Mainland Flood Management Strategy](#)

[Climate Atlas of Canada](#)

[BC Farm Adaptation Innovator Program](#)

[Vancouver Climate Change Mitigation Strategy](#)

[Canada's Climate Change Adaptation Platform](#)

[Simon Fraser University Climate Solutions Program](#)

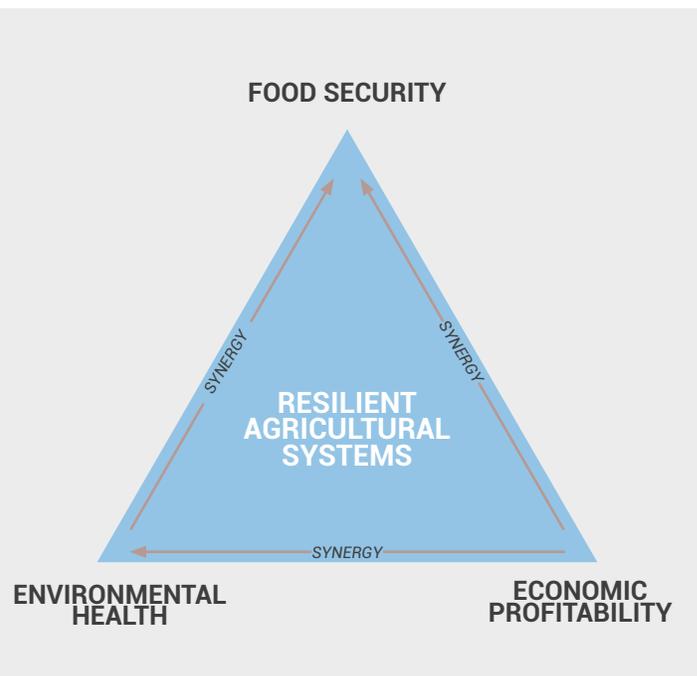
# CO-BENEFITS OF AGRICULTURAL LAND AS BIRD HABITAT

Biodiversity and productive agricultural lands can coexist. Agricultural lands provide habitat for many bird species facing steep population declines, such as grassland birds, aerial insectivores, and shorebirds<sup>1</sup>. The economics of modern agriculture drive habitat conversion which reduces habitat for native species.

Farming is increasingly mechanized and vertically integrated, leaving little room for native habitats on working lands. Additionally, intensive pest control practices reduce insect prey for birds with impacts that extend beyond the farmstead. Opportunities exist for incorporating ecosystem services concepts into agricultural practices which improve biodiversity outcomes and profitability for farmers. Ultimately everyone has a role to play in the food system because we are all a part of it.

*A systems-level approach can maximize synergies and co-benefits to strengthen the agricultural industry's sustainability and resilience for the future.*

*Image Source: University of Saskatchewan.*



## THREATS

Based on typical practices there is a systematic tension between environmental health, food security and economic profit.

Habitat loss and fragmentation on farm and ranch lands reduces native habitat for birds and wildlife. Specific practices which reduce habitat include conversion of hay pasture into row crops, reduction of native habitat in field margins, loss of riparian habitats, and longer and warmer growing seasons (leading to more frequent and earlier hay harvest).

Intensive pest control practices create a negative feedback cycle where insect prey is reduced, which reduces natural predation by birds and bats, requiring increased pest control inputs.

## STRATEGIES

Enable an agricultural discourse about how a focus on diversity rather than maximum yield leads to profitability and long-term stability.

Producers and society must consider input costs, which includes ecosystem services, and opportunities for reducing these costs.

Improve science-based best management practices for specific sectors of the agricultural system, such as integrated pest management (IPM).

Research and incentivize ecosystem services on agricultural lands.

Management practices need to maintain or increase biodiversity, ecosystem services and profitability.

Research initiatives must include producers from an early stage to understand the context of the agricultural system.

Share stories of successful programs which protect biodiversity and increase agricultural profitability.

Support the resurgence in small farms, particularly organic farms and Community Supported Agriculture (CSA) operations.

## ACTIONS

Work with producers to **implement biodiversity friendly farming practices**.

- Deliberate use of cover crops and crop rotation to provide habitat for grassland species
- Maximize and enhance native habitat (e.g. field margins, freshwater sources, shelterbelts, and wetlands)
- Maintain or extend riparian buffers around wetlands and open water
- Diversify in-field planting, such as rows of native plants between commercial crops, which can improve profitability by reducing inputs and enhancing ecosystem services

Support actions by government and industry to phase in **effective alternatives to pesticides** with known adverse impacts to biodiversity (i.e. neonicotinoids/neonics).

Support the enactment of **Community Conservation Funds** by your local government.

Local and federal governments work together with researchers to **implement programming focused on biodiversity**.

**Support the inclusion of the concept of sustainability and ecosystem services** within the policy guiding the Agricultural Land Reserve in BC.

**Share stories** with fellow birders about examples of how certain farmers are taking action to increase the biodiversity values of farmlands.

**Buy groceries from Community Support Agriculture programs** that include a commitment to biodiversity.

## INDICATORS

1 Documentation of biodiversity friendly farming practices including:

- Area of land using cover crops and crop rotation
- Area of land dedicated to maintaining or enhancing natural habitats and function
- Percentage of stream length with riparian buffers
- Documentation of profitability of farms applying diversity strategies

2 Documentation of increased adherence to integrated pest management strategies.

3 Reduction in sale numbers of pesticides with known adverse impacts to biodiversity.

4 Documentation of policy restrictions on harmful pesticides.

5 Documentation of compensation to farmers for providing ecosystem services.

6 Number of mentions of the concept of ecosystem service provision within the food security narrative taking place in the media and online.

7 Increased quantitative evidence of agroecosystem resilience and ecosystem services.

8 Dollars being provided to programs intended to support provision of ecosystem services.

9 Size of budgets for provincial and federal programs intended to support the provision of biodiversity values on farm land.

10 Documentation of progress in Government of Canada reporting on Aichi target 7 that by 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity, indicates substantive progress being made on agricultural lands.

## RESOURCES

Canadian Prairie Agroecosystem Resilience Network (CPARNet)

[Ecological Farming Systems on the Canadian Prairies](#)

[Redesigning Canadian prairie cropping systems](#) for profitability, sustainability, and resilience.

[Farmland Advantage](#)

[Delta Farmland and Wildlife Trust](#)

[Farm Folk City Folk](#)

# URBAN HABITAT FOR BIRDS & WILDLIFE



Urban threats to birds and wildlife are numerous, yet despite these stressors, some wildlife thrives in urban habitat. The Metro Vancouver region has over 100 species that are provincially designated as at-risk including 8 mammals, 24 birds, 3 amphibians, 1 turtle, 12 fishes, 6 insects, and 43 plant species<sup>1</sup>. Further, urban wildlife fosters an important human connection to nature for some urban residents with little access to wilder environs.

Biodiversity strategies exist in some municipalities, but often biodiversity conservation and management are not meaningfully considered during planning and development activities. Coordinated local action is needed to increase the profile of bird stewardship within our urban areas in order to address bird population impacts and loss.

## THREATS

Population growth and development have significant cumulative impacts on biodiversity through habitat loss and fragmentation and thereby reduce ecosystems services un urban landscapes.

Additional threats to birds using urban habitats include:

- cat predation
- window strikes
- vehicle collisions
- electrocution
- pesticides
- pollution
- recreation
- invasive species
- climate change

### **"Birds of False Creek"** Granville Street Bridge

*This mural seeks to celebrate the importance of birds as a vital component of urban biodiversity*



## STRATEGIES

Maintain, increase and restore natural areas through greening urban areas, rewilding yards and private green spaces, and improving ecological connectivity.

Municipal biodiversity strategies are available to provide context and prioritization for local actions. Biodiversity strategies should be developed in areas without a working plan.

Incorporate active and passive green space into planning and design of developments and implement bird safe practices to reduce window strikes (see Birds and Building Collisions theme).

Identify key Environmentally Sensitive Areas (ESAs) that can be monitored by citizen science programs and initiatives (see Resources).

## ACTIONS

Increase efforts to **motivate and enable bird stewardship on private lands**, focused on areas identified as ecologically sensitive at the regional scale<sup>2</sup>.

**Reduce the impact of light pollution** on wildlife in urban areas, drawing upon successful initiatives from around the world.

**Enhance and restore riparian and wetland habitats** through cross-jurisdictional watershed management with a changing climate lens (incorporating climate change projections and science in order to adapt going forward).

**Maintain an inventory of significant wildlife trees** in the city and develop policy guidelines for development scenarios<sup>3</sup>.



BEFORE



AFTER

### **NEW BRIGHTON PARK Shoreline Restoration Project**

*Construction completed in summer 2017 to restore inter-tidal wetland and salt marsh.*

*Image Source:  
Port of Vancouver*

## INDICATORS

- 1 Shifting attitudes towards wildlife in urban areas, evidenced by increased public appreciation for biodiversity in parks, increased consideration for wildlife at regional planning levels, and increased education on the benefits of wildlife in urban areas.
- 2 Increased abundance and density of native species in urban areas with the changing climate guiding all management decisions and scenarios.
- 3 Increased public engagement, participation and stewardship of biodiversity in urban areas.
- 4 Increased green space in urban areas (both increasing area and ecological representation), with some areas set aside specifically for wildlife habitat.
- 5 Increased financial investment and budget allocations by all relevant parties specific to stewardship of biodiversity in urban areas.

## RESOURCES

**Grow Green:** A Guide to Eco-friendly lawns and gardens in Metro Vancouver

**Strategic Directions for Biodiversity Conservation** in Metro Vancouver

**City of Richmond Ecological Network Management Strategy**

City of Vancouver EcoCity initiative:

- [Vancouver EcoDensity Charter](#)
- [EcoDensity Initial Actions](#)
- [Rezoning Policy for Sustainable Large Developments](#)

[Metro Vancouver Regional Parks](#)

City of Vancouver [Outdoor Lighting Strategy](#)

[Green Bylaws Toolkit:](#) Conserving Sensitive Ecosystems and Green Infrastructure

### **CITIZEN SCIENCE RESOURCES:**

[eBird](#), a real-time online bird checklist program

Bird Studies Canada [Volunteer Programs](#)

[Local Environmental Observer Network](#), a database of observations of our changing environment

[Great Backyard Bird Count](#), one of the largest citizen science projects in North America

Additional [citizen science](#) projects

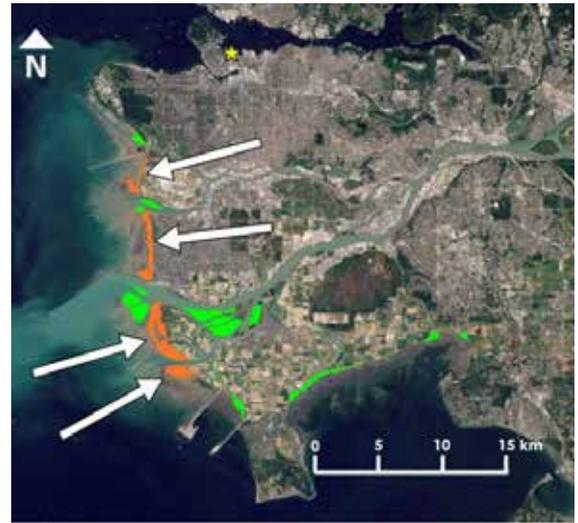
2 BCSP 2008. Strategic Directions for Biodiversity Conservation in Metro Vancouver.  
3 City of Richmond 2015. Ecological Network Mgt. Strategy.

# WILDLIFE MANAGEMENT AREAS

## IMPORTANT BIRDS AREAS & SHORELINES

Certain locations support higher quality bird habitat than others. Many critical habitats for resident and migrating birds are protected within Wildlife Management Areas (WMAs) and others are recognized as Important Bird and Biodiversity Areas (IBAs).

The Fraser Estuary is a particularly important IBA located within a continental bird migration route known as the Pacific Flyway. These sites must be managed adaptively to maintain ecosystem processes and suitable bird habitat in the face of climate change. Social and economic structures can be incorporated into conservation planning for WMAs and IBAs through green infrastructure and traditional food and cultural practices.



### THREATS

Extensive development within coastal and estuarine systems reduces and fragments native terrestrial, freshwater, and marine habitat for birds.

Climate-mediated sea-level rise may further reduce estuarine habitat for birds where dykes and flood control structures prevent an upward migration of marsh habitat. Tidal marsh recession also reduces bird habitat.

Salt-tolerant invasive species (e.g. English cordgrass, *Spartina anglica*) colonizes mudflats in the Fraser Estuary which reduces foraging habitat for shorebirds. Longer-term impacts of invasion include clogging drainage channels, increasing flood risk, and reducing rearing habitat for salmon.

*Many salt marshes (green) are receding (orange) on the south coast of BC due to coastal management, invasive species, and climate change.*

*Image Source: South Coast Conservation Land Management Program.*

Fragmented government jurisdictions mean no single level of government has the mandate or resources to maintain the ecological values found within most IBA/WMA's.

### STRATEGIES



LACK FORMAL PROTECTION

Prioritization of sites important for bird habitat at the global scale using consistent criteria (e.g. IBAs) followed by meaningful protected area designation by relevant governments. Currently, 33% of IBAs lack formal protection<sup>1</sup>.

Implement restoration in areas where ecological processes have been impacted to maintain and enhance habitat function. Activities must address impacts at the relevant scale.

Expand science-based solutions such as promoting designs that preserve remaining shoreline habitat, incentivizing local restoration activities, coastal ecology education and training to extend awareness and use of green shores.

Develop rigorous standards and best practices materials available for regulators and planners at multiple levels of government (municipal, provincial, federal) to help guide future development activities.

Develop collaborative governance arrangements that allow all levels of government to coordinate actions intended to maintain or improve the health of WMA and IBA's.

## ACTIONS

**Support the IBA Canada Caretaker Program** volunteers in monitoring the status and trends of bird populations within IBAs and conducting outreach with local communities.

Support or implement **local-level initiatives on private lands** to improve habitat quality for birds:

- Green Shores for Homes
- Green Shores for Developments
- Green Shores for Local Governments

Engage in **regional-level initiatives for infrastructure** and public spaces to improve habitat quality for birds:

- Utilize **“living dikes”** which gradually widen dike toe to conserve tidal marshes from rise in sea level
- Restoration of beach creek with aim to **restore natural beach profile** and enhance foreshore estuary habitat and riparian.

**Provide funding** to programs aiming to provide stewardship benefits for birds and wildlife identified priority areas.

Support efforts to **establish collaborative governance programs for IBA and WMA’s**.



*[Green Shores Credit Interpretation Guides](#) available for download.*

## INDICATORS

- 1 Population trends of keystone species and robust wildlife populations using WMAs and IBAs.
- 2 Area of coastal wetlands as climate impacts increase in frequency and severity.
- 3 Density of collaboration between local, regional, and federal governments collaborating with developers and conservation practitioners.
- 4 Documentation of best practices for birds and shorelines being integrated into government and industry practice.
- 5 Number Green Shore certifications issued within WMA or IBA .
- 6 Dollars being invested in a given WMA/IBA for stewardship proposes.
- 7 Documentation of collaborative governance agreements between multiple levels of government.

## RESOURCES

[Important Bird and Biodiversity Areas in Canada](#)

[Green Shores for Coastal Development](#)

[Green Shores for Homes](#)

[BC Wildlife Management Areas](#)

[Stewardship Practices Guides](#)



# CONCLUDING THOUGHTS

## HIGHLIGHTS FROM THE STEWARDSHIP ROUNDTABLE

“The eclectic composition of the participants was my first indication that this gathering would be different from others. The wide spectrum of ages, sectors, people, and ideas shared provided one of the most lively and engaging opportunities to discuss a number of ecologically pressing issues with concrete, collaborative steps going forward. Together we truly can!”

— **Christine Callihoo, MSc, RPP, MCIP** Representing Planning Institute of BC (PIBC)

“The opportunity to explore conservation actions to address the challenges facing birds with 150 other committed environmental stewards was a wellspring of hope and energy.”

— **James Casey**, Representing Bird Studies Canada (BSC)

“Climate change, combined with land and water degradation and habitat loss, poses catastrophic threats to many species. This event provided inspiring insights into collaborative, transformative adaptation solutions that would have significant benefits for birds.”

— **Deborah Harford**, Adaptation to Climate Change Team, Faculty of Environment, Simon Fraser University (ACT)

“Stewardship is the heart of our communities and the actions that connect us to nature. Creating solutions for stewardship requires a united effort. The Stewardship Roundtable 2018 brought together the stewardship community for much needed learning, insights and plans for action to herald a new era of stewardship for birds and their habitats.”

— **DG Blair, M.Sc.**, Representing the Stewardship Centre for British Columbia

## BUDDING BIRDER KITS

### A LEGACY OF THE 2018 BIRD STEWARDSHIP ROUNDTABLE

A legacy of the Bird Stewardship RoundTable is the “Budding Birder Kit”, an initiative of Bird Studies Canada. As one of the easiest forms of wildlife to observe on a daily basis, birds are considered by many to be a window into the natural world. To encourage young birders across BC to get out and witness nature, Bird Studies Canada is working with a small number of public libraries in the province on a pilot. Thompson-Nicola Regional Library and the Prince Rupert Library are our first participants. The Budding Birder Kits include:

- One backpack
- One pair of Vortex
- A Guide to Birds of Western North America
- A foldout waterproof guide to birds of BC
- A book mark highlighting some simple conservation actions people can take.

In consultation with the participating libraries, we have developed a one-page guide on how to use binoculars, birding guides and birding apps. To support this program please donate [here](#). Discover how your local library might be able to participate – contact James Casey, Bird Studies Canada, [jcasey@bsc-eoc.org](mailto:jcasey@bsc-eoc.org).



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