

# Community Science & Managing for Biodiversity on Parkland

## BC Recreation & Parks Association Professional Pathways 2024

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City of Surrey



- **Biodiversity Conservation in Surrey**
- **A growing tool for filling in the gaps**
- **Community Science in Surrey's parks**
- **Challenges & opportunities**

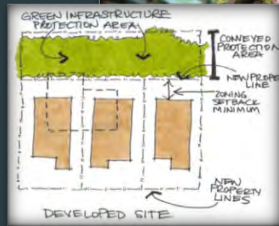
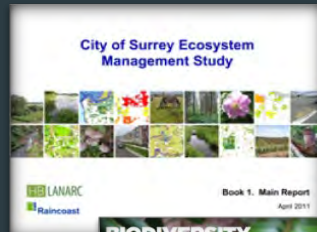


## The Biodiversity Conservation Strategy (2014) provided the following:

- Identified and quantified for the first time, current biodiversity and habitat resources in the City
- Established the Green Infrastructure Network (GIN) to preserve biodiversity for the benefit of existing and future residents over time.
- Created a special development permit area (Sensitive Ecosystem DPA), to assess conservation values and environment priorities equally with land development



# Community Science has become part of the BCS continuum in Surrey



- Finding the Balance: 1990
- Surrey's Environmentally Sensitive Areas 1997

- 2011 Ecosystem Management Study
- Green Infrastructure Network defined
- 2014 Biodiversity Conservation Strategy
- OCP amended to include new Development Permit Area 3 - Sensitive Ecosystems
- 2016 Sensitive Ecosystem Development Permit Area Guidelines

**2019-2020**

- Community science program formally initiated
- First City Nature Challenge (now annual event)

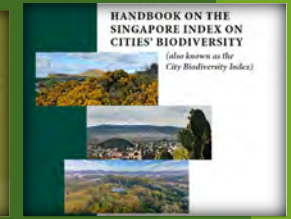


## 2020-2021

- Biodiversity Design Guidelines
- Biodiversity at the site level
- GIN Development Cost Charge (Special Parklands Acquisition Fund)
- First DCC in BC for specifically acquiring biodiversity lands

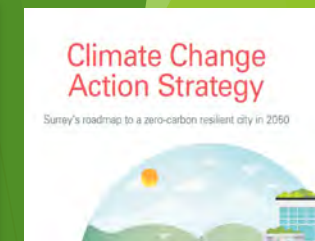


- 2021-2022 Parkland in Surrey's ALR - A Comprehensive Plan for Agriculture
- Pollinator Partnership Certification
- Rodenticide transition



- 2023-2024 Local Government Climate Action Program pilot (Mound Farm Park)
- Pollinator website launched / evolve conservation efforts
- Priority Places Species at Risk Assessment & BMPs project
- Boulevard & yard rewilding guidelines (in progress)
- BCS report card (in progress)

## Key BCS Linkages:

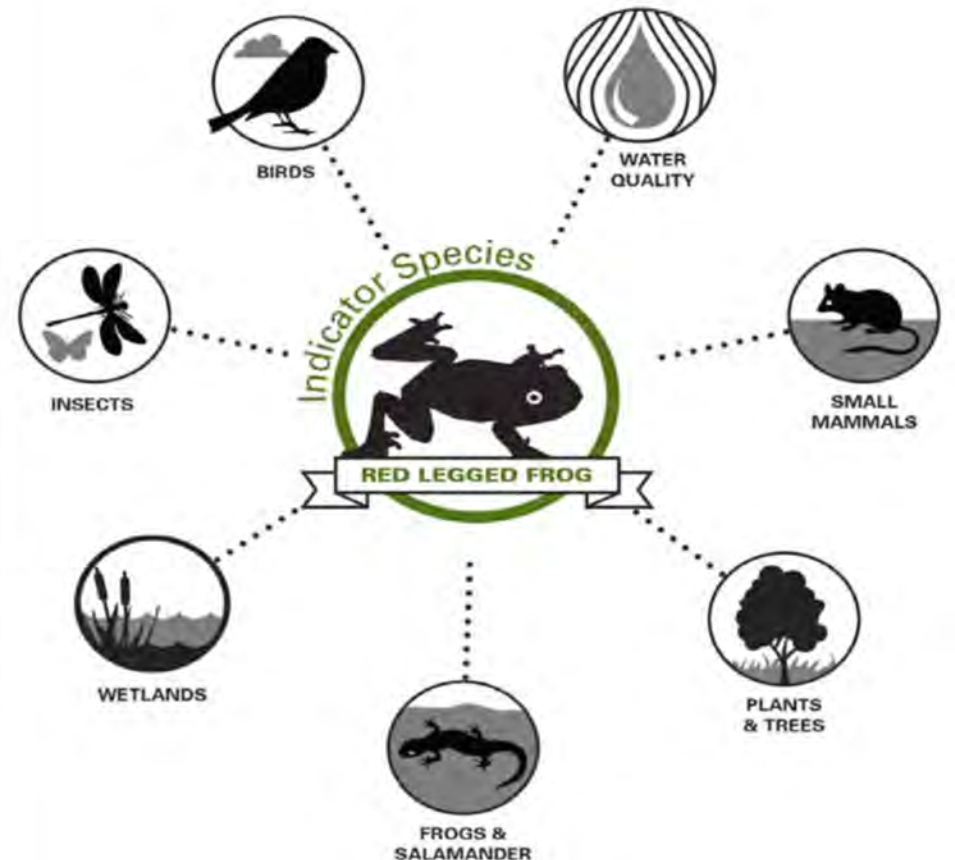


# Wildlife as a key indicator for management and monitoring

The focus for Surrey's BCS is on management of native species and their habitat associations to help ensure their populations remain healthy and persist over time.

Indicator species, specifically fauna are the key element for long-term monitoring:

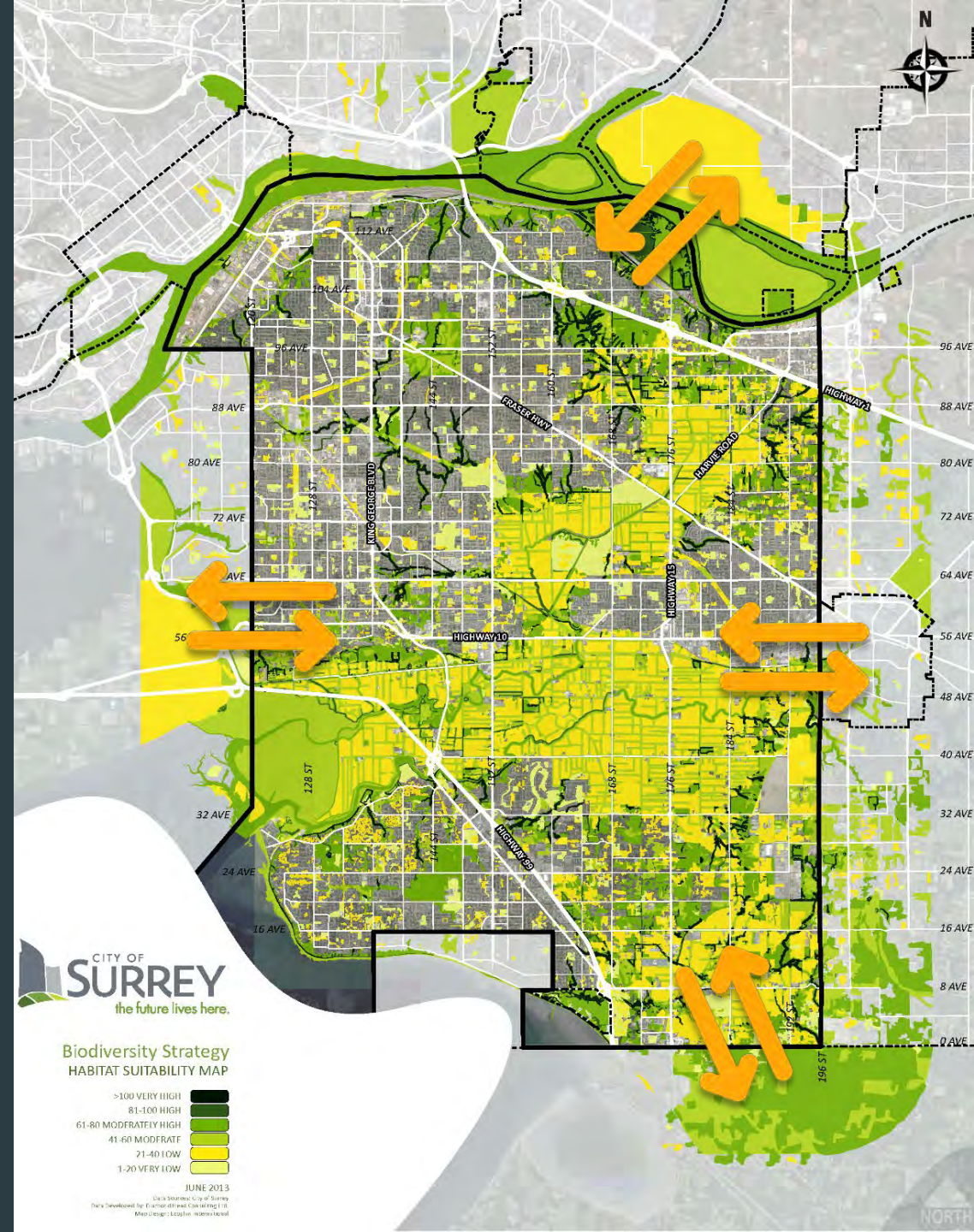
- Help assess and measure development impacts and evaluate management actions.
- Selected based on best representation across the City's diverse land cover and distinct ecological communities
- Use a "species guild" approach that includes common species, species at risk as well as invasive species



Indicator species rely on a well-connected landscape, in turn important to regional and transboundary planning.

Using a 2-dimensional connectivity model like Surrey's GIN is important for informed land use decision making.

There's just one problem, we don't know where many of these indicator species are, or whether they are using the corridors and hotspots we've protected or hope to protect.



# A growing tool for filling in the gaps: Biodiversity monitoring in Surrey through Community (aka citizen) science

“the direct participation by members of the public in the production of scientific knowledge.” (Miller et al 2022)

With the rapid loss of biodiversity from the local to global scale, Surrey recognizes the significant value of volunteer data in building our knowledge and understanding of biodiversity across the City.

Filling the knowledge gaps on where plants and wildlife occur, including invasive species and species at risk is critical to making informed decisions around how our city grows



**1. Connect people to nature through going outside and exploring the plants and animals around them.**

**2. Empower citizen science and generate scientifically valuable data from observations made on iNaturalist**

**eBird\***





# From small beginnings to major biodiversity data resource:

October 2019 (verifiable)	December 2023 (verifiable)
2,028 observations	56628 observations
659 species	2813 species
662 identifiers	3420 identifiers
320 observers	2637 observers

**Milestones – May 2019 first BioBlitz, April 2020 first CNC**




## Become a Citizen Scientist

Take part in one of the world's largest community science events to monitor local plants and wildlife.

Help show the world Surrey's natural values!



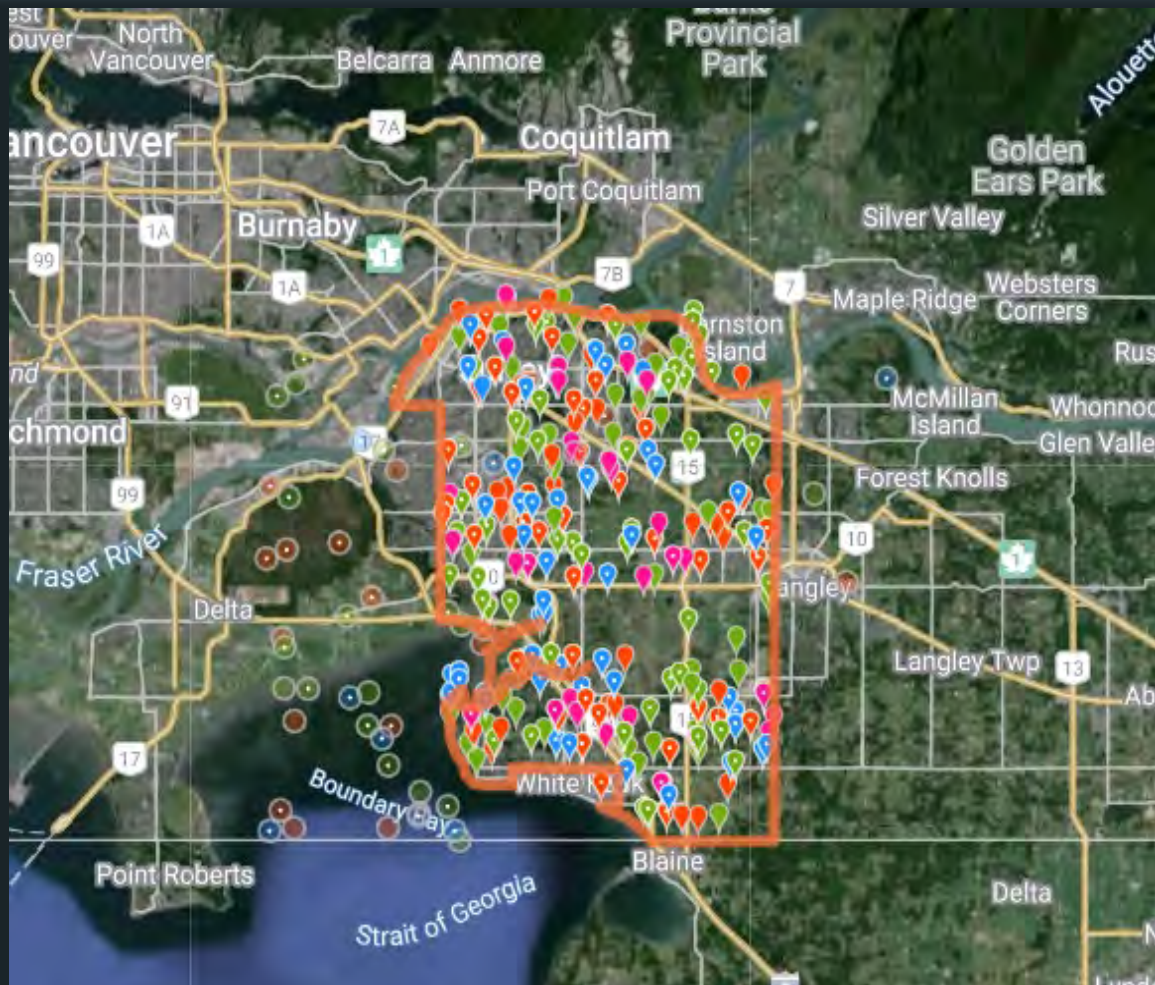
**APRIL 28-MAY 1**

- 1 Download  iNaturalist.ca
- 2 Find plants & wildlife
- 3 Take a photo
- 4 Share it on iNaturalist
- 5 Inspire other Citizen Scientists

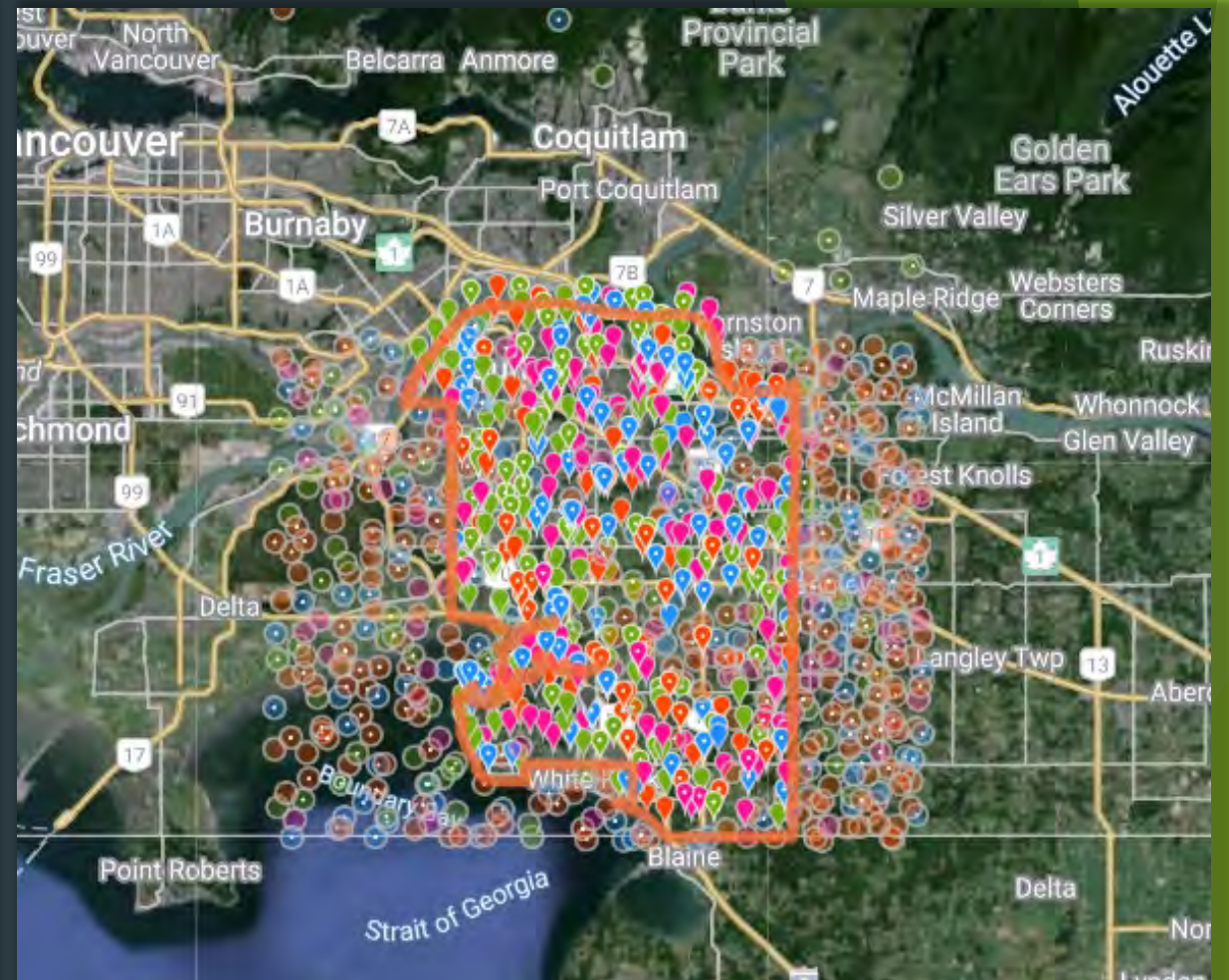
CITY NATURE CHALLENGE IS ORGANIZED BY



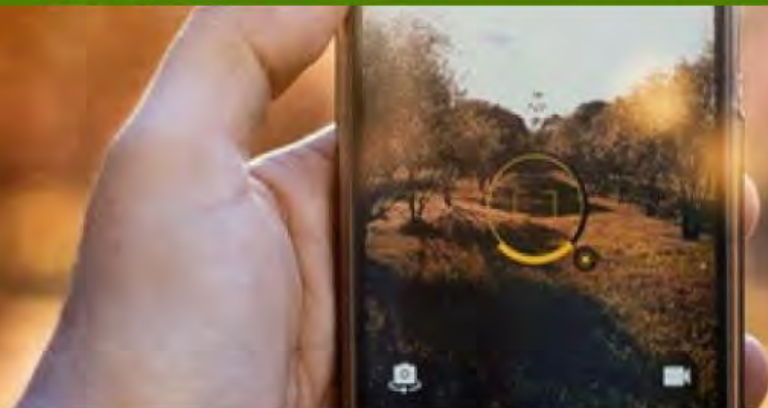
2019



2023



<https://inaturalist.ca/people/1797783>



[Home](#) | [Renovating, Building & Development](#) | [Land, Planning & Development](#) | [Environmental Protection](#) | [Biodiversity Conservation](#) | [Citizen Science](#)

## Citizen Science

[Biodiversity Design Guidelines](#)

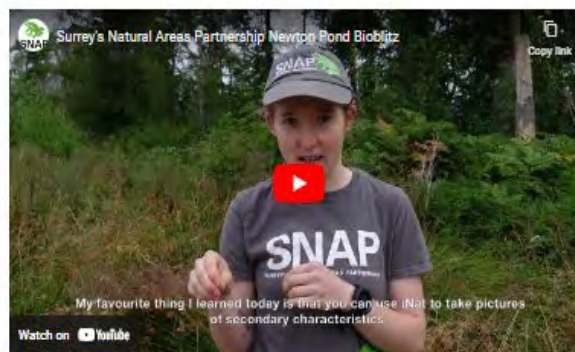
**Citizen Science**

[Pollinator Conservation](#)

[Parkland and Agriculture](#)

Learn how to use iNaturalist to contribute to the City's biodiversity conservation goals.

### Citizen Science in Action



### City Nature Challenge

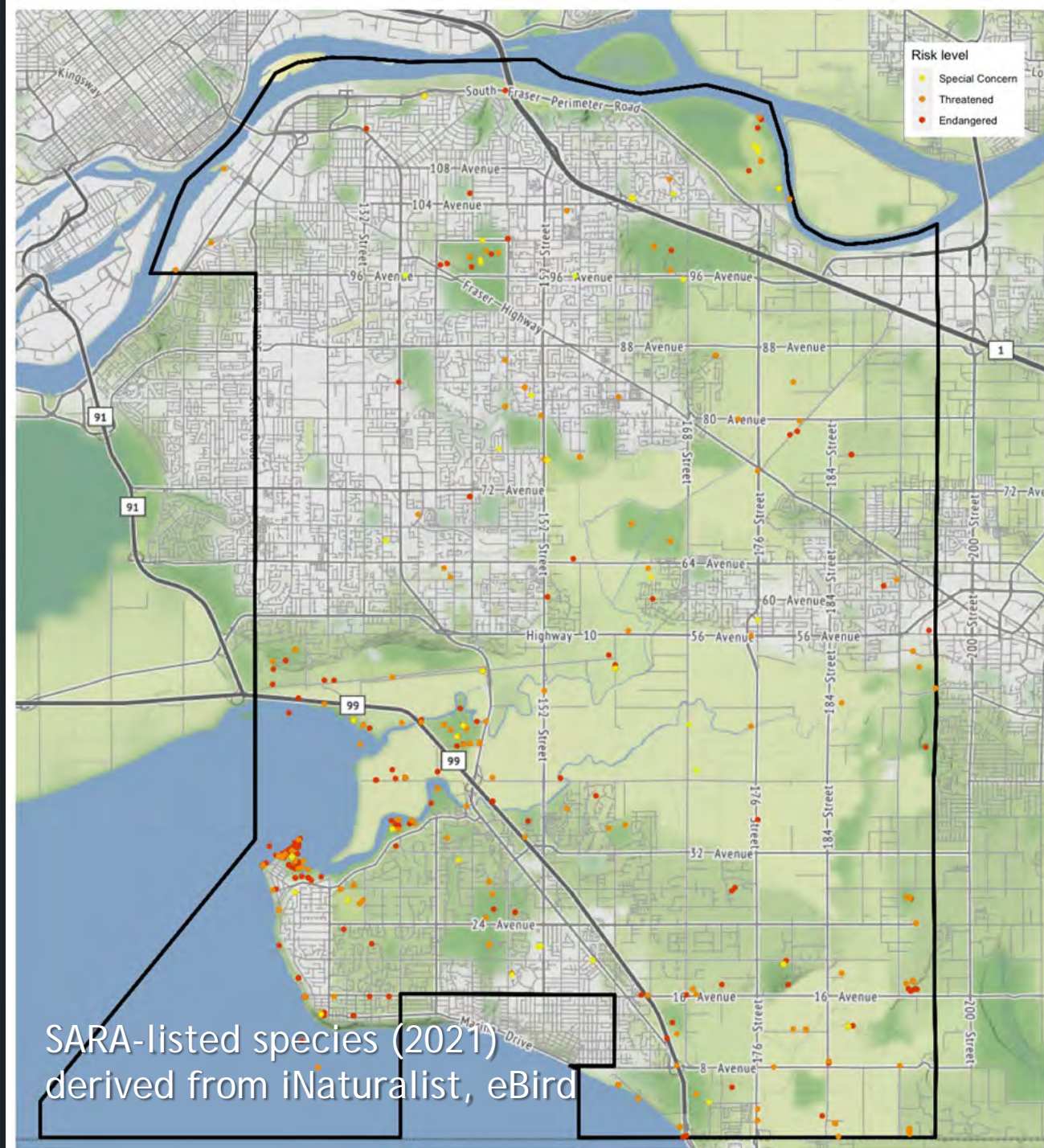
The City Nature Challenge is an annual event in April and May that focuses on growing the citizen science community in Surrey.

Learn more about local plants and wildlife in Surrey as your observations are confirmed

# Applying the data: Example mapping - SARA-listed species

- Endangered
- Threatened
- Special Concern

Threatened & Endangered species have designated critical habitat that must be effectively protected on non-federal lands



# Applying the data: BCS Indicator species in land use planning

Tynehead RP: BCS Indicator spp. - Northern Flicker, Song Sparrow, Spotted Towhee, Yellow Warbler, Common Yellowthroat, Willow Flycatcher, Downy Woodpecker, Douglas Squirrel. Conservation interest - Short-tailed Weasel. SARA-listed/CH: Myotis bat species, Pacific Water Shrew, Barn Owl.

Bothwell Park: BCS indicator spp - Northwestern Salamander Northern Pacific Treefrog, dragonflies, SARA-listed: Great Blue Heron ssp., Myotis bat species as well as high likelihood for Pacific Water Shrew.

Godwin BFP: Northwestern Salamander Northern Pacific Treefrog, Northern Red-legged Frog, Long-toed Salamander, dragonflies. High likelihood for SARA-listed Myotis bat species as well as Pacific Water Shrew. Barn Owl active nesting,

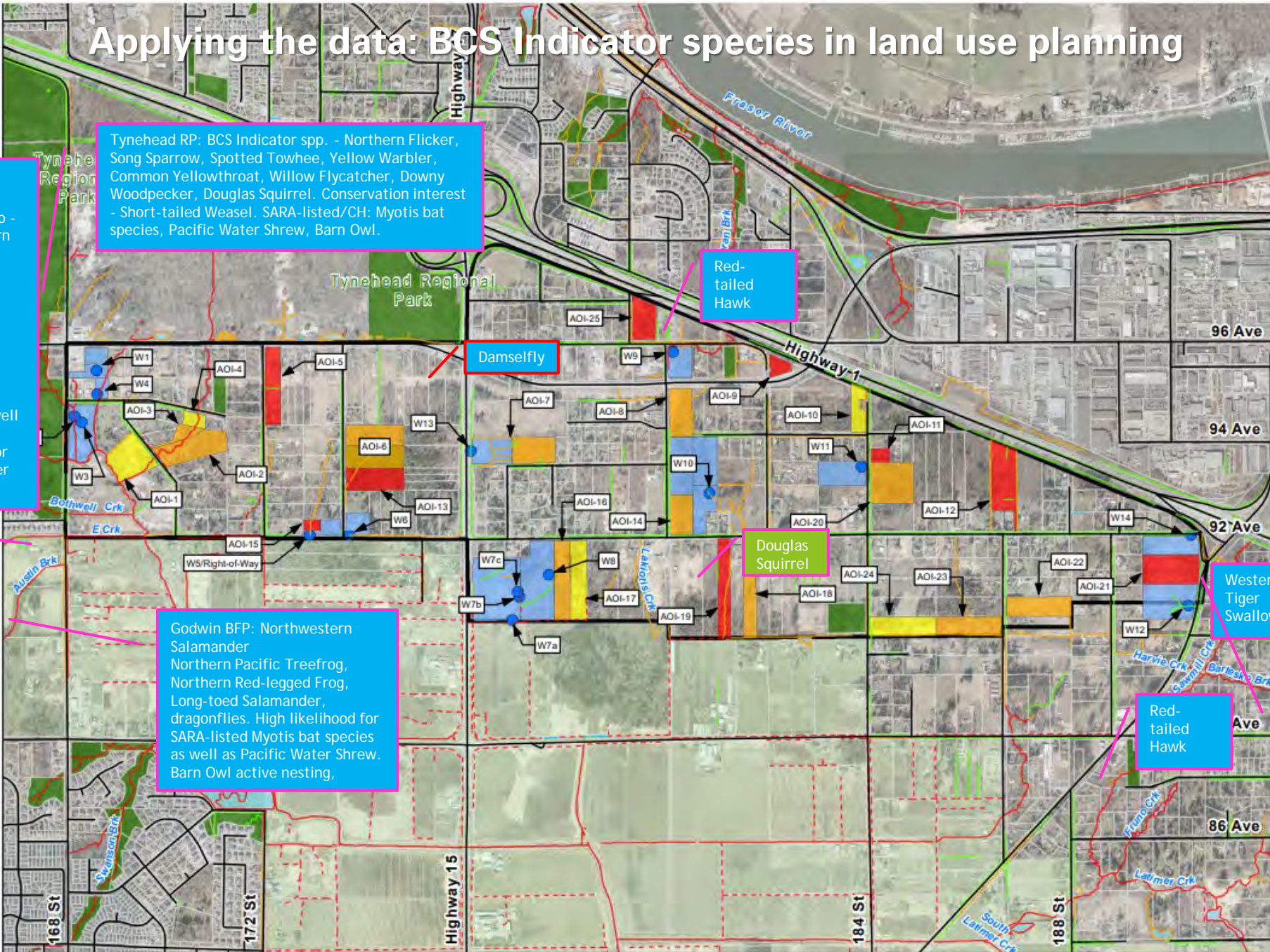
Red-tailed Hawk

Damselfly

Douglas Squirrel

Western Tiger Swallowtail

Red-tailed Hawk



City of Surrey  
Annedale-Tynehead NCP  
Area Wetland Inventory and Watercourse Assessment

Figure 2.  
Confirmed Wetlands and Areas of Interest

**LEGEND**

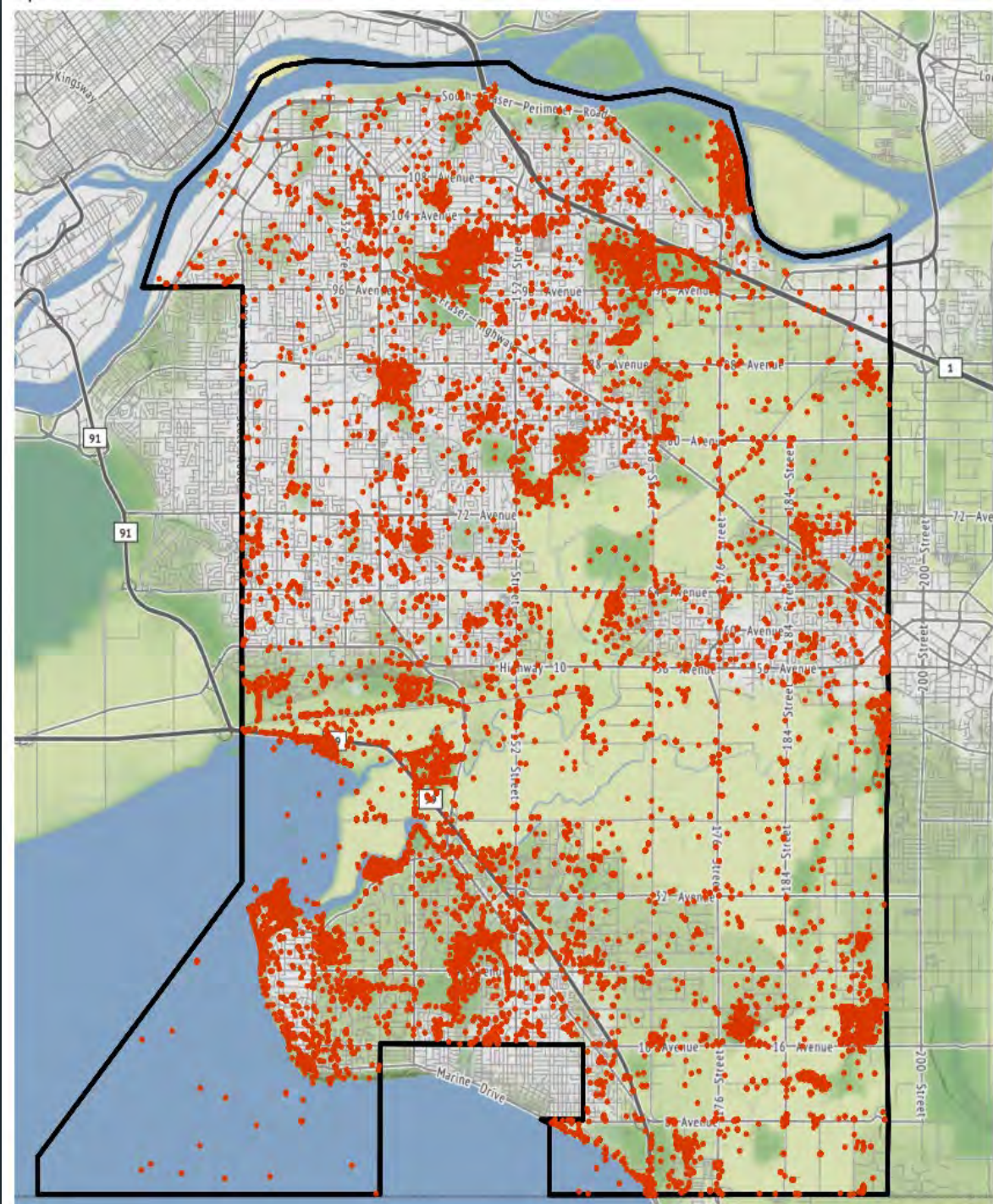
<b>Confirmed Wetlands</b>	<b>Fish Classification (Waterbody)</b>
● Wetland	Class A
■ Wetland Property	Class A(O)
<b>Area of Interest</b>	Class B
■ High	Class C
■ Medium	<b>Fish Classification (Open Channel)</b>
■ Low	Class A
■ Annedale-Tynehead - Tynehead NCP Area	Class A(O)
■ Parcel	Class B
■ Park	Class C
■ Agricultural Land Reserve (ALR)	Unknown
— Road	



SCALE 1:15,000  
MAP DRAWING INFORMATION:  
DATA PROVIDED BY DILLON CONSULTING LIMITED,  
CITY OF SURREY  
MAP CREATED BY: RBB  
MAP CHECKED BY: SW/LKD  
MAP PROJECTION: NAD 1983 UTM Zone 18N

# Challenges and opportunities:

- Most observations are concentrated in certain areas around the city, most notably in parks, greenspaces, along beaches and waterways.
- Sampling bias, users tend to frequent parks and greenspaces to look for wildlife, more so than making observations in their neighbourhoods or backyards.
- Many of these observations can also be redundant as multiple individuals record the occurrence of the same organism in the same place (e.g., “birding life list” affect).
- Things that don’t move (plants and fungi), and daytime observations are most frequent data captured
- Species may be misidentified, but still become “research grade” in iNaturalist
- Capacity and \$\$\$ to effectively curate, analyze and archive data (a big issue)!





### About

Members 6

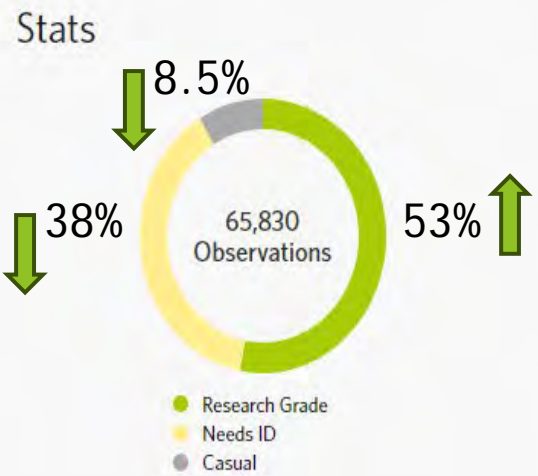
As part of Surrey's ongoing efforts to track and monitor biodiversity, the City is working to track the occurrence of species indicators developed for Surrey's Biodiversity Conservation Strategy (BCS) to analyze how well they correlate to the City's Green Infrastructure Network (GIN). For further information on the BCS, indicator species

[Read More >](#) [Your Membership](#)

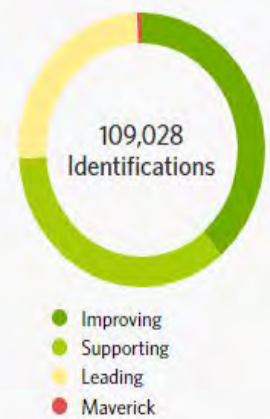
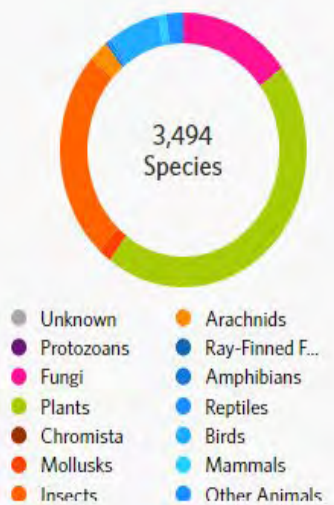
[Edit Project](#) [Project Journal](#)

Overview **65,830** OBSERVATIONS **3,494** SPECIES **3,880** IDENTIFIERS **3,368** OBSERVERS [Stats](#)

Desired outcome: The amount of "Casual" and "needs ID" observations are decreasing compared to past years.



% observations in each category compared to 2023 (not % change)



# Community Science

A photograph of two women in a park setting. They are standing on a grassy bank next to a stream, looking at and pointing to various green plants. The woman in the foreground is wearing a dark jacket and has her hair in a ponytail. The background shows a dense forest of trees and a wooden fence.

Surrey Parks

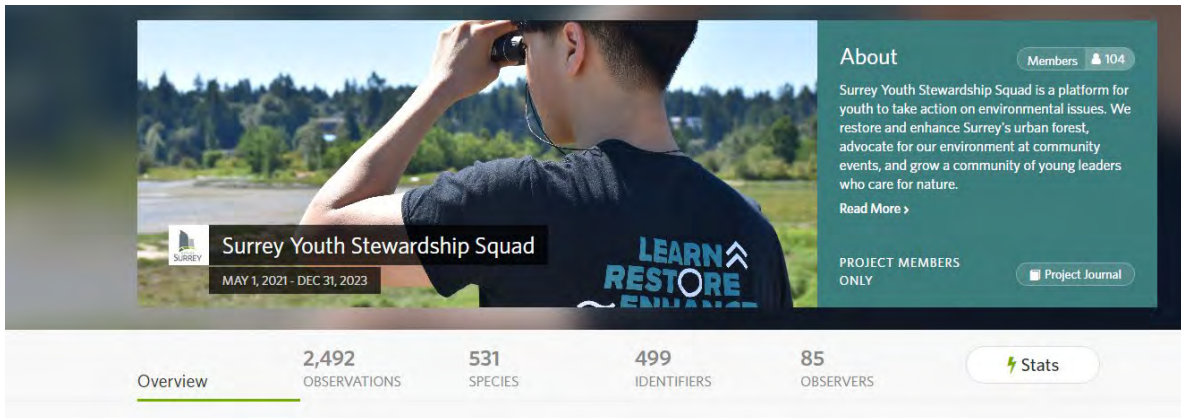


# Surrey Youth Stewardship Squad (SYSS)



# Using iNaturalist

- Tool for learning and connecting youth with nature
- SYSS project in iNaturalist
- ~5 scheduled walks per year
  - Mentorship opportunity (SNAP, UF staff)



The screenshot shows the iNaturalist project page for the Surrey Youth Stewardship Squad. The main image features a young man in a black t-shirt with the slogan 'LEARN RESTORE ENHANCE GROW' looking through binoculars. The project title is 'Surrey Youth Stewardship Squad' with a date range of 'MAY 1, 2021 - DEC 31, 2023'. The 'About' section describes the project as a platform for youth to take action on environmental issues. The 'Stats' section shows 2,492 observations, 531 species, 499 identifiers, and 85 observers.

Overview	2,492 OBSERVATIONS	531 SPECIES	499 IDENTIFIERS	85 OBSERVERS	Stats
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*"I had lots of fun working with SYSS! It was great doing the iNaturalist observations. I loved walking around the peaceful places and observing insects and different species."*



**iNaturalist** Surrey Parks

# Invasive Species Monitoring

- ✦ European Green Crab monitoring – July 2023
- ✦ Worked with local community group Friends of Semiahmoo Bay Society
- ✦ Youth completed online training module and quiz
- ✦ Participate again in July 2024

**INVASIVE SPECIES ALERT!**

PACIFIC SALMON FOUNDATION

There are many types of crabs that are green in colour, but only the European Green Crab has 5 spines.

BC's diverse and productive salt marshes and estuaries now face a potentially destructive invader. The European Green Crab (*Carcinus maenas*) is considered one of the world's worst invasive species. It can alter shoreline ecosystems and negatively impact economically and culturally important species and habitats including eelgrass beds that provide food and cover for juvenile salmon.

**Not to be confused with our native crabs:**

**What can you do?**  
REPORT – If you think you have found a European Green Crab, please email a photo, date of observation and the location to [AISPACIFIC@DFO-MPO.GC.CA](mailto:AISPACIFIC@DFO-MPO.GC.CA)

Stop the spread of aquatic invasive species, remember to:

- plants, animals and mud from your boat and gear
- all water from your boat and gear onto land
- all parts of your boat and gear completely

**CLEAN DRAIN DRY**

[www.CleanDrainDry.ca](http://www.CleanDrainDry.ca)

Funded by:  
Fisheries and Oceans Canada / Pêches et Océans Canada

STRAIT OF GEORGIA DATA CENTRE  
[WWW.SOGDATACENTRE.CA](http://WWW.SOGDATACENTRE.CA)

PSF.ca





Blackie Spit Park

Surrey Parks

# Bird Counts

- ✦ Great Backyard Bird Count – February 17, 2024
- ✦ Bear Creek Park
- ✦ Volunteers observed 12 species (59 individuals)
- ✦ Observations uploaded to eBird



# Bat Box Building & Counts

- ✦ Rocket box built by local Scout group and installed in Godwin Farm Biodiversity Preserve Park in 2023.
- ✦ SYSS to participate in BC Annual Bat Count in summer 2024.



# Surrey Natural Areas Partnership (SNAP)



# Pollinator Monitoring & Tree Well Maintenance

Pilot Project 2022– Tree Well Pollinator Planting 24 Avenue between 165 and 168 Street (inc. Orchard Grove Park). Included 33 tree wells, 8 species of native plants.

Spring/Summer 2022 and 2023 SNAP Field Teams:

- observed and recorded pollinator presence using iNaturalist
- maintained tree wells including weeding and watering

Summer 2023 SNAP Outreach Team:

- delivered pollinator-themed education to promote importance of pollinators and park pollinator initiatives



Orchard Grove Park & Neighbourhood



Surrey Parks

# Purple Martin Box Monitoring

Population of Purple Martins at Blackie Spit Park

New nest box structure constructed to replace existing rotting structures in 2023

SNAP supported monitoring by observing purple martin activity near new and existing boxes; counted pairs.

Benefits to both **SNAP** (bird ID, observation skills, connection to partner park) and **Surrey Parks** (valuable data on species at risk).



# Blackie Spit Park

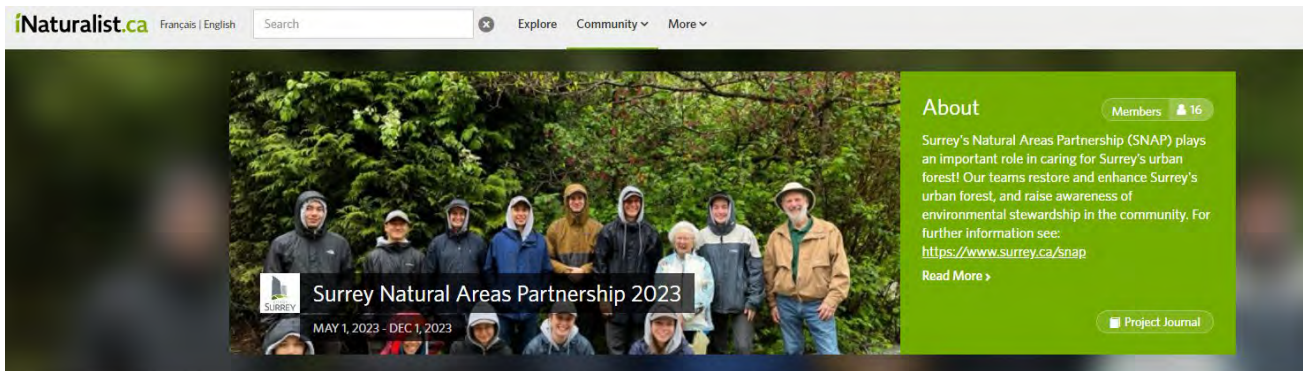


# BioBlitzes & iNaturalist

**BioBlitzes** at Newton Pond Park- twice annually since 2021 (summer and fall)

- Work with Natural Areas Technicians and Registered Biologists (mentoring and training opportunity)

SNAP Project in iNaturalist



The screenshot shows the iNaturalist.ca website interface. At the top, there is a navigation bar with the iNaturalist.ca logo, language options (Français | English), a search bar, and menu items for Explore, Community, and More. Below the navigation bar is a large green banner for the "Surrey Natural Areas Partnership 2023" project, which runs from May 1, 2023, to December 1, 2023. The banner features a group photo of participants in outdoor gear. To the right of the photo, there is an "About" section with a "Members" count of 16. The text in the "About" section describes the project's role in caring for Surrey's urban forest and raising awareness of environmental stewardship. A "Read More" link is provided below the text. At the bottom right of the banner, there is a "Project Journal" button.



Surrey **Parks**



Newton Pond Park

Surrey Parks

# Urban Forest Stewardship

# BioBlitzes

Godwin Farm Biodiversity Preserve Park – May 25, 2019

- public, local scientists, parks staff

South Meridian Park – May 1, 2023

- public, community groups, parks staff

Green Timbers Urban Forest – May 24, 2024 !







What did you see?

**Plants**

Salmon berry  
 Huckleberry  
 Douglas Fir  
 Sitka spruce  
 Western Hemlock  
 Indian Plum  
 Alder  
 Horse chestnut  
 Red maple  
 Oregon ash  
 Sitka spruce  
 Fringe cup

Stinging nettle  
 Liane  
 Red leaf maple  
 Striped blackberry  
 Sand bar  
 Spoken fern  
 Red elderberry  
 Mountain ash  
 Cotton wood  
 Red wood  
 Redwing maple  
 Western hollyhock  
 Spine wood fern  
 Licorice fern  
 Fringe cup

**Invasives/Non-native**

Bull thistle  
 Himalayan blackberry  
 English Holly  
 Laurel  
 In blue  
 Coast blackberry

Nettle  
 Creeping bitter  
 Common daisy  
 Oregon daisy  
 Indian rhubarb

**Other animals**

Banana Slug  
 Chocolate Arion slug  
 Black Arion slug  
 Bumble bee  
 Lady bug (typical) with spots  
 Wolly bear  
 Garter snake  
 Gopher snake

**Bombus flavifrons**  
~~Bombus agrorum~~  
*Anopheles punctipennis*  
*Sp. 1*  
*Culex sp.*  
*Cyclops*  
*Procladius*





South Meridian Park



Surrey Parks

# iNaturalist

iNaturalist Bingo – April-June 2022



## HOW TO PLAY

1. Download  iNaturalist (free app) to your mobile device and set up your profile.
2. Search for and join Surrey's Environmental Extravaganza project.
3. Visit Surrey parks, look for and take photos of plants and animals on the bingo card, and upload them to  iNaturalist Environmental Extravaganza project.
4. Mark off the squares on your bingo card. Once you get five squares in a row, column or diagonally, email a photo of your card to [stewardship@surrey.ca](mailto:stewardship@surrey.ca) for a prize!

**KEEP EXPLORING!**  
UPLOAD & SHARE ALL YOUR  
OTHER OBSERVATIONS TO  
THE ENVIRONMENTAL  
EXTRAVAGANZA PROJECT

PLEASE NO PEOPLE,  
PETS, OR FARM  
ANIMALS.



Public workshop– April 2023

To promote use of iNaturalist as data collection tool and public participation in City Nature Challenge

Guest Presenter: John Reynolds

Surrey **Parks**

Community Science:

# Benefits & Challenges

✦ Community Science in Surrey engages staff, residents and visitors in monitoring Surrey's biodiversity through a safe, socially rewarding, interactive process.

➤ Even when the data isn't telling us a positive story.

✦ The biggest challenge is how well we track and integrate the data and whether we can consistently invest in growing the program.



Surrey Parks

Thank you!

Share your experiences? Any questions? Collaboration Ideas?

[www.surrey.ca/citizenscience](http://www.surrey.ca/citizenscience)

[www.surrey.ca/biodiversity](http://www.surrey.ca/biodiversity)

<https://www.surrey.ca/parks-recreation/parks/park-programs>

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