

# Drew Sauve

Mitacs Elevate Postdoctoral Fellow

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## Education

Queen's University, Ph.D. Evolutionary Ecology and Quantitative Genetics 2023  
Queen's University, MSc. Evolutionary and Ecological Genetics 2018  
Queen's University, B.Sc. (Hons) Biology 2016

## Publications

2023

10. **Sauve, D.**, Friesen, V.L., A, Hatch, S.A., Elliott, K.H., Charmantier A. Shifting environmental predictors of phenotypes under climate change: a case study of growth in high latitude seabirds. *Journal of Avian Biology*

9. **Sauve, D.**, Charmantier A, A, Hatch, S.A., Friesen, V.L. The magnitude of selection on growth varies among years and increases under warming conditions in a subarctic seabird. *Evolution Letters*

8. Kerr, K. C., **Sauve, D.**, Winton, S. Thorne, T. J., Chabot, A. A. Examining the representation of locally threatened species in North American zoos. *Animal Conservation*

2022

7. **Sauve, D.**, Hudecki, J., Steiner, J., Wheeler, H., Chabot, A.A. Improving species conservation plans under IUCN's One Plan Approach using quantitative genetic methods. *Peer Community Journal* 2, e50.

6. **Sauve, D.**, Charmantier, A, Hatch, S.A., Friesen V.L. Environmental conditions variably affect growth across the breeding season in a subarctic seabird. *Oecologia* 198, 307-318.

2021

5. **Sauve, D.**, Friesen, V.L., Charmantier, A. 2021. The effects of weather on avian growth and implications in the context of climate change. *Frontiers in Ecology and Evolution* 9.

4. Friesen, V.L., Brunt, R., Morris-Pocock, J.A., **Sauve, D.**, Baker, A.J., Birt, T.P., Davidson, W.S., Elliott, K.H., Montevicchi, W.A. 2021. A test of mechanisms of population differentiation in gannets (genus *Morus*) using comparative phylogeography and morphometrics. *Marine Ornithology* 49, 275-291.

2020

3. **Sauve, D.**, Dale, C.A., Tigano, A., Ratcliffe, L.M., and Friesen V.L. 2021. Do candidate genes for migration and behaviour explain migratory variation in bluebirds (*Sialia spp.*)? *The Wilson Journal of Ornithology* 132, 820-829.

2019

2. **Sauve, D.**, Divoky, G., and Friesen V.L. Phenotypic plasticity or evolutionary change? An examination of the phenological response of an Arctic seabird to climate change. 2019. (*Cepphus grylle mandtii*) *Functional Ecology* 33, 2180-2190.

1. **Sauve, D.**, Patirana, A., Chardine, J., and Friesen V.L. 2019. Mitochondrial DNA reveals genetic structure within Atlantic but not Pacific populations of a holarctic seabird *Marine Ornithology* 47, 199-208.

## Presentations

10. **Sauve, D.**, Friesen, V. L., Teplitsky, C., Hatch, A. S, Charmantier, A. Exploring the influence of food supplementation on variance components of early life traits of black-legged kittiwakes. *Evolution*. Presentation.

9. **Sauve, D.**, Friesen, V.L., Teplitsky, C., Hatch, S.A., Charmantier, A. 2021. Impacts of fluctuating environmental conditions and experimental feeding on selection of growth in black-legged kittiwakes. *Virtual Evolution*. Presentation.

8. **Sauve, D.**, Friesen V.L., Divoky G.J., Hatch, S.A., Elliott, K.H., Gaston, A.J., Charamantier, A. 2020. Ecological and evolutionary impacts of climate change on the phenology and growth of seabirds. Presentation. *Seminars in Ecology and Evolution*. Presentation. Centre d'Ecologie Fonctionnelle & Evolutive, Montpellier, France.

7. **Sauve, D.**, Chabot, A. The value of quantitative genetics for managing captive breeding populations. 2019. *Loggerhead Shrike Recovery Meeting* Presentation. African Lion Safari, Cambridge, Ontario.

6. **Sauve, D.**, Charmantier, A., Divoky, G., Hatch, S., Elliott, K., Gaston, T., Friesen V. 2019. *Evolution*. Variation in chick growth in response to climate change in three high latitude seabird species. Poster. Providence, Rhode Island.

5. **Sauve, D.**, Divoky, G., and Friesen V. 2018. Queen's University. *Biology Graduate Student Day*. Phenological change in Mandt's Black Guillemot is driven by phenotypic plasticity. Presentation. Kingston, Ontario.

4. **Sauve, D.**, Divoky, G., and Friesen V. 2018. Queen's University. *American Genetics Associations: Quantitative Genetics in the Wild*. Phenological change in Mandt's Black Guillemot is driven by phenotypic plasticity. Presentation. Toronto, Ontario.

3. **Sauve, D.**, Divoky, G., and Friesen V. 2017. Disentangling evolutionary and plastic change in the laying date of an Arctic seabird. *Wild Animal Modelling Biennial Meeting*. Presentation. Saint-Michel-Des-Saints, Quebec.

2. **Sauve, D.**, Divoky, G., and Friesen V. 2017. Phenotypic plasticity drives phenological change in Mandt's Black Guillemot. *ArcticNet*. Poster. Quebec City, Quebec.

1. **Sauve, D.**, Dale, C.A., Tigano, A., Ratcliffe, L.M., and Friesen V.L. An investigation into the genetic basis of partial migration in Western Bluebirds (*Sialia mexicana*) using candidate genes 2016. *North American Ornithological Conference*. Poster. Washington, DC.

## Media

Sixty Second Seabird Science Youtube Series <https://www.youtube.com/watch?v=sNLRIqPfNFE>

Spotlight Article in Functional Ecology <https://besjournals.onlinelibrary.wiley.com/doi/full/10.1111/1365-2435.13430?af=R>

National Geographic Coverage of 2019 Functional Ecology Paper <https://www.nationalgeographic.com/environment/2019/08/many-animals-can-adapt-climate-change-just-not-fast-enough/>

Blog post on Proteus (Storytelling for a blue planet). <https://proteussciomm.org/2018/08/15/long-term-data-collection-serves-many/>

## Service

*Graduate Student Advisor for Creation of an Online Resource Library for Inclusive Science Communication* 2021-2022

*SciNapse Undergraduate Case Study Judge* 2021-2022

*OE3C 2017 Organizing Committee* 2016-2017

*Queen's University Biology Graduate Student Co-Chair* 2016-2017

## Awards

Mitacs Elevate Postdoctoral Research Fellowship **\$160,000CAD**

NSERC Michael Smith Foreign Study Supplement **\$6,000CAD**

NSERC Alexander Graham Bell Canada Graduate Scholarship – Doctoral **\$105,000CAD**

Haldane Prize Shortlist - Best Early Career Paper in Functional Ecology 2020

TD Fellowship in Arctic Environmental Issues 2019-2020 **\$30,000CAD**

Northern Studies Training Program. Canadian Polar Commission. 2019. **\$2,343CAD**

Northern Studies Training Program. Canadian Polar Commission. 2018. **\$2,890CAD**

Society for the Study of Evolution Travel Grant. Society for the Study of Evolution. 2018. **\$500USD**

Northern Studies Training Program. Canadian Polar Commission. 2017. **\$2,263CAD**

Canadian Society for the Study of Ecology and Evolution Travel Grant. 2016. **\$750CAD**

Undergraduate Student Research Award. NSERC. 2016. **\$4,500CAD**

North American Bluebird Society Grant. North American Bluebird Society. 2015. **\$1,000USD**

## Research Skills

### *Statistics and Bioinformatics*

I have used R throughout my academic career and I am comfortable with generalized linear models, mixed models, and non-linear models. I am proficient in basic bioinformatics (filtering and preparing ddRADseq or whole genome data) and comfortable navigating and submitting jobs on a UNIX computer cluster. I have done basic programming in Python and have run non-linear and custom Bayesian models using STAN. I am happy and eager to learn and work with the best statistical software for any given analysis.

### *Fieldwork*

I have spent three field seasons of working with numerous seabird species in Northern Alaska, Newfoundland, and in the Gulf of Alaska. I have worked with both small and large teams under difficult weather conditions to collect blood samples, make field observations, and capture and record morphometrics. I led the field team on Middleton Island for part of the 2019 field season. I have worked with teams in France to help maintain long-term data sets on great and blue tits near Montpellier and in Corsica.

### *Labwork*

I am proficient in DNA extraction, PCR, microsatellite analysis, and preparing DNA samples for next-generation sequencing.

## **Teaching**

### *Teaching Fellowship*

I co-taught a ~300 student undergraduate course on evolutionary genetics. The course is a required biology course at Queen's University and introduces population genetics, quantitative genetics, and evolutionary genomics.

### *Teaching Assistanceships*

I've helped to teach five biology courses at Queen's University. Topics included introductory genetics, evolutionary genetics, conservation biology, and evolutionary biology. I designed and taught a custom tutorial on quantitative genetics and conservation for an upper-year genetics course.

### *Student Supervision*

I've helped co-supervise three honours thesis students at Queen's University on effective population size, phenotypic plasticity, and measuring selection in captivity.

*Dominique Charland* Measuring Unintentional Selection in a Captive Breeding Program for the Eastern Loggerhead Shrike (*Lanius ludovicianus migrans*) 2022. Now a JD candidate at the University of Ottawa.

*Haley Turcotte* Phenotypic plasticity of parental investment in early-life growth traits within black-legged kittiwakes (*Rissa tridactyla*) 2021. Now a MSc student at Carleton University.

*Ferris Nowlan* Estimation of effective population size from demographic and genomic data for an Arctic seabird (*Cephus grylle*) 2020. [Now a PhD student at the University of Toronto.](#)

## **Certifications & Courses**

<i>Indigenous Canada Course at University of Alberta</i>	In Progress
<i>Breeding Program Modelling with AlphaSimR</i>	2022
<i>Wilderness First Responder</i>	2022
<i>Basic Life Support Certification/CPR-C</i>	2022
<i>Pleasure Craft Operator Card:18032589508</i>	2016
<i>Canadian Firearms Safety Course</i>	2016