

# BRANDON P.M. EDWARDS BSc, A.Stat

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Ottawa, Ontario Canada

## EDUCATION

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- PhD** Carleton University, Biology 2021 – Present  
Thesis: “Using Detectability and Data Integration Techniques to Improve Trend Estimates of North American Birds” (in progress)  
Advisors: Adam Smith & Joseph Bennett
- MSc** Carleton University, Biology 2020 – 2021  
Advisors: Adam Smith & Joseph Bennett
- Fast-tracked to PhD September 2021
- BSc** University of Guelph, Mathematical Science (Statistics) 2015 – 2020  
Thesis: “Comparing deviance information criterion typologies in a spatial Poisson mixture model setting”  
Advisor: Daniel Gillis

## RESEARCH EXPERIENCE

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- Alberta Biodiversity Monitoring Institute**, Edmonton, Alberta Sep 2022 – Present  
Mitacs Accelerate Internship (Boreal Avian Modelling Project)
- Environment and Climate Change Canada**, Ottawa, Ontario March 2021 – Present  
Research Affiliate
- Carleton University**, Ottawa, Ontario Sep 2020 – April 2021  
Graduate Research Assistant (Bennett Lab, Department of Biology)
- University of Guelph**, Guelph, Ontario Jan 2020 – April 2020  
BSc Honours Thesis (Gillis Lab, School of Computer Science)
- Environment and Climate Change Canada**, Ottawa, Ontario Apr 2018 – Aug 2018  
Bird Population Monitoring Analyst
- University of Guelph**, Guelph, Ontario Feb 2016 – April 2020  
Undergraduate Research Assistant (Gillis Lab, School of Computer Science)
- University of Guelph**, Guelph, Ontario Jan 2016 – April 2016  
Undergraduate Research Assistant (School of Environmental Science)

## PUBLICATIONS

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\*Co-first author

### *Journal Publications*

Soroye P\*, Edwards BPM\*, Buxton RT, Ethier JP, Frempong-Manso A, Keefe H, Berberi A, Roach-Krajewski M, Binley AD, Vincent JG, Cooke SJ, Bennett JR. (2022). The perils and promise of community science for threatened species monitoring. **Conservation Science and Practice**, e12788.

<https://doi.org/10.1111/csp2.12788>

Edwards BPM, Binley AD, English WB, Hudgins EJ, Snow SS. (2022). A highly anomalous Red-winged Blackbird (*Agelaius phoeniceus*) song. **Canadian Field-Naturalist** **136(1)**:1-4. <https://doi.org/10.22621/cfn.v136i1.2877>

Edwards BPM, Watson AP, Earley CG. (2022). The University of Guelph's Arboretum Winter Bird Count, 1980 –2022. **Ontario Birds** **40(1)**:43-56.

Edwards BPM, Bouman M. (2022). A possible Canvasback X Ruddy Duck hybrid. **Ontario Birds** **40(1)**:23-27.

Edwards BPM, Smith AC. (2021). bbsBayes: An R Package for Hierarchical Bayesian Modelling of Breeding Bird Survey Data. **Journal of Open Research Software** **9**:17 pp. <https://doi.org/10.5334/jors.329>

Smith AC, Edwards BPM. (2021). North American Breeding Bird Survey status and trend estimates to inform a wide range of conservation needs, using a flexible Bayesian hierarchical generalized additive model. **Ornithological Applications** **123(1)**:16 pp. <https://doi.org/10.1093/ornithapp/duaa065>

Cooke SJ, Soroye P, Brooks JL, Clarke J, Jeanson AL, Berberi A, Piczak ML, Reid CH, Desforges JE, Guay JD, Drake AK, Jardine AM, Ethier JP, Keefe HE, Medd AM, Edwards BPM, et al. (2021) Ten considerations for conservation policy makers for the post-COVID-19 transition. **Environmental Reviews** **29(2)**:111-118. <https://doi.org/10.1139/er-2021-0014>

Gillis D, Edwards BPM. (2019). The utility of joinpoint regression for estimating population parameters given changes in population structure. **Heliyon** **5(11)**:e02515. <https://doi.org/10.1016/j.heliyon.2019.e02515>

Rose D, Edwards BPM, Kett R, Yodzis M, Angevaare J, Gillis D. (2017). Exploring anthropogenic activities and management decisions using a novel environmental agent based model. **2017 IEEE Canada International Humanitarian Conference**, pp. 85-89. <https://doi.org/10.1109/IHTC.2017.8058206>

(Under Review)

Crystal-Ornelas R, Edwards BPM, Hébert K, Hudgins EJ, Sánchez-Reyes LL, Scott ER, Grainger M, ..., Braga PHP. Not Just for Programmers: How Github Can Accelerate Collaborative and Reproducible Research in Ecology and Evolution. Submitted to **Nature Ecology and Evolution**. Preprint: <https://doi.org/10.31222/osf.io/x3p2q>

Edwards BPM, Smith AC, Docherty TGS, Gahbauer MA, Gillespie CR, Grinde AR, ..., Zlonis EJ. Point Count Offsets for Population Sizes of North American Landbirds: NA-POPS. Submitted to **Ibis**. [Under 1<sup>st</sup> Review].

## CONFERENCE PRESENTATIONS

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\*Presenter

### *Invited Symposia*

Edwards BPM\*, Smith AC. (2022). NA-POPS: 2 Years In. **Partners in Flight Science Symposium**. Virtual.

Edwards BPM\*, Smith AC. (2021). An Introduction to NA-POPS: Point Count Offsets for Population Sizes of North American Landbirds. **Partners in Flight Science Symposium**. Virtual.

Smith AC\*, Edwards BPM\*. (2020). A strategy for integrating observational monitoring data and predictive modeling of population change. **The Road to Recovery: Identifying Causes of Bird Declines, Part 2**. Virtual.

Edwards BPM\*, Smith AC. (2020). Open, accessible, and customizable analysis of North American Breeding Bird Survey data using the R package *bbsBayes*. **7<sup>th</sup> North American Ornithological Conference** (Symposium: Back to the future of the Breeding Bird Survey), Virtual.

Edwards BPM\*, Smith AC, Hudson M-AR, Francis CM, Pardieck KL, Ziolkowski Jr DJ. (2019). *bbsBayes*: An R Package for Hierarchical Bayesian Modelling of Breeding Bird Survey Data. **Society of Canadian Ornithologists Annual Meeting** (Symposium: R for Ornithologists: Perspectives from UseRs to programmeRs), Quebec City, QC.

### *Oral Presentations*

Edwards BPM\*, Smith AC, et al. (2022). NA-POPS: A collaborative effort to synthesize detection probabilities for North American landbirds. **Ecological Society of America/Canadian Society for Ecology and Evolution 2022 Joint Conference**, Montreal, Canada.

Edwards BPM\*, Solymos P, Stralberg D, Michel N, Robinson B, Gahbauer M, Grinde A, Hope D, Bennett J, Smith AC. (2022). A Bayesian hierarchical implementation of the QPAD framework for estimating detectability of landbirds. **International Statistical Ecology Conference 2022**, Cape Town, South Africa.

Edwards BPM\*, Smith AC, et al. (2021). Point count offsets for population sizes of North American landbirds. **American Ornithology 2021**, Virtual.

Edwards BPM\*, Jacobs S, Gillis D. (2019). Risk Assessment of Great Lakes piping plovers using eABM: An R package to run Environment Agent-based Models. **American Ornithology 2019**, Anchorage, AK.

Edwards BPM\*, Jacobs S, Gillis D. (2018). Assessing the effects of beach raking on piping plover reproductive success using an environmental agent-based model. **42nd Annual Waterbird Society Meeting**, Vancouver, BC.

Edwards BPM\*, Jacobs S, Gillis D. (2018). Digital Plovers: Informing management decisions of endangered Piping Plovers using an environmental agent-based model. **National Integrative Research Conference 2018**, Montreal, QC.

Rose D\*, Edwards BPM\*, Kett R, Yodzis M, Angevaare J, Gillis D. (2017). Exploring Anthropogenic Activities and Management Decisions Using a Novel Environmental Agent Based Model. **IEEE International Humanitarian Technology Conference**, Toronto, ON.

(Co-author Only)

Roberts CP\*, Allen CR, Allred B, Angeler DG, Donovan VM, Edwards BPM, Naugle D, Scholtz R, Tack J, Twidwell D, Uden DR. (2022). What happens when biomes collapse, move, or contract? **The Wildlife Society 2022 Meeting**. [Upcoming November 2022]

Cosby AE\*, Andriatsitohaina B, Edwards BPM, Maheritafika MHR, Razafitsalama M, Steffens TS. (2022). Temporal Differences in Forest Disturbances in Relation to Community Conservation. **Student Conference on Conservation Science**, New York, NY. [Upcoming October 2022]

Knight E\*, Brigham M, Edwards BP, Harrison A-L, Marra PP, Scarpignato A, Smith AC, Van Wilgenburg S, Bayne EM. (2022). Full Annual Cycle Conservation of a Declining, Nocturnal Bird: A Data Integration Journey. **Ecological Society of America/Canadian Society for Ecology and Evolution 2022 Joint Conference** (Symposium: Minimizing Data Waste: Conservation in the Big Data Era), Montreal, Canada

Edwards BPM, Gillis D\*, Jacobs S. (2018). Citizen scientists and Plover Lovers: how nearly a decade's worth of data has played a role in saving the endangered piping plover at Sauble Beach. **People, Place & Public Engagement**, St. John's, NL.

### ***Other Presentations***

Edwards BPM\*, Smith AC, et al. (2021). Point count offsets for population sizes of North American landbirds. **EURING Analytical Meeting & Workshop**, Virtual. [Poster]

Edwards BPM\*, Smith AC. (2018). bbsBayes: An R Package for Hierarchical Bayesian Analysis of North American Breeding Bird Survey Data. **British Ornithologists' Union 2018 Twitter Conference**. [Twitter Conference]

Edwards BPM\*, Smith AC. (2018). Improved population trajectories for North American swallows, swifts, and nightjars with a hierarchical Bayesian GAM. **International Ornithological Congress 2018**, Vancouver, BC. [Poster]

Edwards BPM\*, Jacobs S, Gillis D. (2017). Modelling breeding success of Piping Plovers using an environmental agent-based model. **British Ornithologists' Union 2017 Twitter Conference**. [Twitter Conference]

Edwards BPM\*, Gillis D. (2017). Using environmental agent-based modelling to simulate the breeding success of piping plovers. **CEPS Undergraduate Poster Session 2017**, Guelph, ON. [Poster]

Edwards BPM\*, Gillis D. (2017). Modelling habitat loss in Piping Plovers using an environmental agent-based model. **American Ornithology 2017**, Lansing, MI. [Poster]

Edwards B\*, Rose D, Requejo F, Rollins E, Kett R, Gillis D. (2016). Improving efficiency of traditional agent-based models to investigate anthropogenic activities on a wild fish population. **CPES Undergraduate Poster Session 2016**, Guelph, ON. [Poster]

### **TEACHING**

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#### ***Contract Instructor***

**Carleton University**, Ottawa, ON

Jan 2023 – April 2023

- ENSC 2002 – Methods and Analysis in Environmental Science
  - Forty-seven 2<sup>nd</sup> year environmental science students

#### ***Teaching Assistant***

**Carleton University**, Ottawa, ON

Sep 2020 – Present

**Teaching Assistant**, Department of Biology

- BIOL 4604 – Landscape Ecology (Winter 2022)
- BIOL 2600 – Ecology (Fall 2020, Fall 2021)
- BIOL 1104 – Foundations of Biology II (Winter 2021)

University of Guelph, Guelph, ON Sep 2018 – April 2020  
Undergraduate Teaching Assistant, Department of Mathematics & Statistics

- STAT\*2040/2050 – Statistics I/II
- STAT\*2060 – Statistics for Business Decisions
- STAT\*2080/2090 – Introductory Applied Statistics I/II
- STAT\*2120 – Probability and Statistics for Engineers
- STAT\*2230 – Biostatistics for Integrative Biology

### *Workshops*

Edwards BPM, Smith AC. (August 2021). Customized BBS trends, trajectories, graphs, and maps using the bbsBayes R package. **American Ornithology 2021**. [Virtual]

Crystal-Ornelas R, Hudgins E, Edwards B, Pereira Braga PH, Martinez C, Hébert K, Reyes LS. (July 2021). Promoting GitHub Use in EcoEvo. **SORTEE Conference 2021**. [Virtual]

Smith AC, Edwards BPM. (December 2020). Customized BBS trends, trajectories, graphs, and maps using the bbsBayes R-package, an Introduction. **Landbirds Technical Committee Webinar, Environment and Climate Change Canada**. [Virtual]

### *Tutoring*

#### **Private Statistics Tutor**

Jan 2019 – April 2020

- Provided one-on-one private tutoring sessions for students in the following courses offered by the University of Guelph
  - STAT\*2040 – Statistics I (Fall 2019, Winter 2020)
  - PSYC\*3290 - Conducting Statistical Analyses in Psychology (Winter 2019)

## **HONOURS AND AWARDS**

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### *Scholarships*

**Canada Graduate Scholarship (CGS-D) – 105,000 CAD** 2022 – 2025

- Awarding Body: Natural Sciences and Engineering Research Council of Canada

**Ontario Graduate Scholarship – 15,000 CAD (Declined)** 2022/2023

- Awarding Body: Government of Ontario and Carleton University

**Departmental Scholarships, PhD – 34,848 CAD** 2021 – 2025

- Awarding Body: Carleton University Department of Biology

**Domestic Entrance Scholarship, PhD – 3,000 CAD** 2021

- Awarding Body: Carleton University
- Entrance GPA of 10.5/12 or higher

**Departmental Scholarships, MSc – 7,100 CAD** 2020 – 2021

- Awarding Body: Carleton University Department of Biology

**Domestic Entrance Scholarship, MSc – 2,000 CAD** 2020

- Awarding Body: Carleton University
- Entrance GPA of 10.5/12 or higher

**Gordon Ashton Scholarship – 500 CAD** 2019

- Awarding Body: University of Guelph, Department of Mathematics & Statistics
- 3<sup>rd</sup> year statistics major with minimum 70% cumulative average

**Jay Majithia Scholarship – 1,000 CAD + 1,000 CAD** 2017 & 2018

- Awarding Body: University of Guelph, School of Computer Science
- Excellent undergraduate research in the School of Computer Science, University of Guelph

**M.H. (Mike) Nicols Scholarship Plan – 7,500 CAD** 2015 – 2018

- Awarding Body: Insulators Local 95
- Demonstrated academic excellence and volunteer experience

**University of Guelph Entrance Scholarship – 2,000 CAD** 2015

- Awarding Body: University of Guelph
- Entrance average of 90% or higher

**Grants**

**Mitacs Accelerate – 30,000 CAD** 2022 – 2023

- Awarding Body: Mitacs
- Funding for visiting research position at Boreal Avian Modelling project, University of Alberta

**ISEC Travel Grant – 470 CAD** 2022

- Awarding Body: International Statistical Ecology Conference
- Funding for registration to International Statistical Ecology Conference 2022 in Cape Town, South Africa

**Fred Cooke Award – 1,000 CAD** 2022

- Awarding Body: Society of Canadian Ornithologists
- Funding for visiting research position at Boreal Avian Modelling project, University of Alberta

**George R. Carmody Graduate Student Travel Award – 3,100 CAD** 2022

- Awarding Body: Carleton University, Department of Biology
- Funding for travel to International Statistical Ecology Conference 2022 in Cape Town, South Africa & 2022 Ecological Society of America/Canadian Society of Ecology and Evolution Joint Meeting in Montreal, Canada

- Alfred and Isabel Bader Student Travel Award – 3,000 CAD** 2021
- Awarding Body: Carleton University, Department of Biology
  - Funding for travel to International Statistical Ecology Conference 2022 in Cape Town, South Africa
- AOS Travel Grant – 470 USD** 2019
- Awarding Body: American Ornithological Society
  - Funding for travel to American Ornithology 2019 in Anchorage, AK
- Taverner Award – 2,000 CAD** 2019
- Awarding Body: Society of Canadian Ornithologists
  - Funding for field research studying piping plovers at Sauble Beach, ON
- Northern Scientific Training Program Research Grant – 2,300 CAD** 2019
- Awarding Body: Northern Scientific Research Program
  - Funding for field research studying bird harvest in Rigolet, NL
- BSC/SCO Travel Award – 400 CAD** 2018
- Awarding Body: Bird Studies Canada & Society of Canadian Ornithologists
  - Funding for travel to International Ornithological Congress 2018 in Vancouver, BC
- Arthur D. Latornell Undergraduate Travel Grant – 500 CAD** 2018
- Awarding Body: University of Guelph
  - Funding for travel to International Ornithological Congress 2018 in Vancouver, BC
- Waterbird Society Student Travel Grant – 250 USD** 2018
- Awarding Body: Waterbird Society
  - Funding for travel to 42<sup>nd</sup> Annual Meeting of Waterbird Society in Vancouver, BC
- University of Guelph Travel Scholarship – 500 CAD** 2018
- Awarding Body: University of Guelph
  - Funding for travel to American Ornithology 2017 in East Lansing, MI
- AOS Travel Award – 300 USD** 2018
- Awarding Body: University of Guelph
  - Funding for travel to American Ornithology 2017 in East Lansing, MI

*Awards*

- Best Oral Presentation – 300 CAD** 2021
- Awarding Body: Society of Canadian Ornithologists
  - Student presentation award given at the 2021 American Ornithological Society/Society of Canadian Ornithologists joint meeting



- Nancy Klamm Undergraduate Presentation Award – 250 USD** 2020
- Awarding Body: Wilson Ornithological Society
  - Best undergraduate student oral paper presented at the WOS Annual Meeting (part of 2020 North American Ornithological Conference)
- Outstanding Undergraduate Research Award (Honourable Mention)** 2020
- Awarding Body: Computing Research Association – Education
  - Honourable mention for outstanding undergraduate research in a computer science or mathematics field
- Best Undergraduate Presentation – 300 CAD** 2019
- Awarding Body: Society of Canadian Ornithologists
  - Student presentation award given at the 2019 Society of Canadian Ornithologists Annual Conference
- Co-op Student of the Year 2018 (Nominated)** 2019
- Awarding Body: Co-operative Education and Career Services, University of Guelph
  - Nominated by Dr Adam Smith at Environment and Climate Change Canada for Summer 2018 co-op work term
- Co-op Student of the Year 2017 (Nominated)** 2018
- Awarding Body: Co-operative Education and Career Services, University of Guelph
  - Nominated by Dr Daniel Gillis at School of Computer Science, University of Guelph for Summer/Fall 2017 co-op work terms
- AOS Student Membership Award** 2018
- Awarding Body: American Ornithological Society
  - Awarded 1-year student membership to American Ornithological Society
- Best Poster in School of Computer Science – 100 CAD** 2017
- Awarding Body: CEPS Undergraduate Poster Session
  - Best research poster in the School of Computer Science at the 2017 College of Engineering and Physical Sciences Undergraduate Poster Session

## CONSULTING EXPERIENCE

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**Environment and Climate Change Canada**, Remote  
R Developer, prism R package March 2022 – April 2022

**Laura Taler – Grimm Pictures**, Ottawa, ON  
Natural History Researcher, MONAHAN Art Installation Jan 2022 – Sept 2022

**Environment and Climate Change Canada**, Remote  
Contract Biostatistician, NA-POPS Project May 2020 – Jan 2021

**Environment and Climate Change Canada**, Remote  
R Developer, bbsBayes R package

Feb 2019 – March 2019

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**SERVICE AND VOLUNTEER**

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*Editor*

**Ontario Birds**

Jan 2022 – Present

- Publication of the Ontario Field Ornithologists

*Peer-reviewer*

- Ecological Applications
- Scientific Reports
- Conservation Science and Practice

*Conferences and Symposia*

**2022 Ecological Society of America/Canadian Society of Ecology and Evolution  
Joint Meeting**

- Symposium Co-organizer & Moderator: “Minimizing Data Waste:  
Conservation in the Big Data Era”

**2021 American Ornithological Society/Society of Canadian Ornithologists Joint  
Meeting**

- Session Chair: “Methods and Models II”

**2019 American Ornithological Society Meeting**

- Session Chair: “Abundance, Occupancy, and Trends”

**2018 Waterbirds Society Meeting**

- Session Chair: “Breeding Ecology II”

*Working Groups*

**Boreal Avian Modelling Project**

- Detectability Working Group (co-chair) 2022 – Present

**Partners in Flight**

- Population Estimates Working Group 2020 – Present

*Committees*

**Ontario Field Ornithologists**

- Equity, Diversity, and Inclusion Committee 2022 – Present

**University of Guelph Co-operative Education & Career Services**

- Student Advisory Committee 2017 – 2019

## *Volunteer*

### **Ontario Breeding Bird Atlas III**

- Regional Coordinator – Region 3 June 2021 – Present
- Principal Atlasser – Region 3 & 24 Jan 2021 – Present

### **Safe Wings Ottawa**

- Window Collision Monitor April 2021 – Dec 2021

### **University of Guelph Arboretum**

- Assistant Bird Bander May 2017 – April 2020

## **SOFTWARE**

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### **napops**

- Programming Language: R 4.0.5
- R package for accessing detection probabilities for North American landbirds
- View at: <https://github.com/na-pops/napops>

### **bbsBayes**

- Programming Language: R 4.0.5
- R package for Hierarchical Bayesian Analysis of North American Breeding Bird Survey (BBS) Data
- View at: <https://cran.r-project.org/web/packages/bbsBayes/index.html>

### **melodus**

- Programming Language: Python 3.6
- Simulate breeding cycle of Piping Plovers, including nesting, growth, and foraging
- View at: <https://github.com/BrandonEdwards/melodus/tree/v1.0.0>

## **PROFESSIONAL AFFILIATIONS**

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### **Statistical Society of Canada (SSC)**

- Accredited Statistician: A.Stat 2021 – Present
- Student Member 2019 – Present

### **American Ornithological Society (AOS)**

- Student Member 2018 – Present

### **Ontario Field Ornithologists (OFO)**

- Student Member 2018 – Present

### **Society of Canadian Ornithologists (SCO)**

- Student Member 2017 – Present

**University of Guelph Wildlife Club**

- President (elected) 2018 – 2020
- Treasurer (elected) 2017 – 2018
- Club Member of the Year 2016 – 2017
- Communications (elected) 2016 – 2017
- Regular Member 2015 – 2016