

Elly Knight

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ellyknight@gmail.com

7111 82 St NW, Edmonton, AB, T6C 2W9



Education

Ph.D. Candidate Biological Sciences (Ecology)

University of Alberta, Bioacoustics Unit (2015 – 2020; expected)

Thesis: Movement matters: conservation of dramatically declining aerial insectivore birds

Supervisor: Dr. Erin Bayne (University of Alberta), Dr. Mark Brigham (University of Regina)

M.Sc. Biological Sciences

Simon Fraser University, Centre for Wildlife Ecology (2010 – 2013)

Thesis: Impacts of fragmentation by agriculture on shrubsteppe breeding songbirds

Supervisors: Dr. David Green (Simon Fraser University), Dr. Nancy Mahony (Environment Canada)

B.Sc. Biology Honours (Co-op), Environmental Sciences Minor

University of Victoria with Distinction (2005 – 2010)

Langara College University transfer program (2003 – 2005)

Thesis: Population trends and habitat availability of nesting Great Blue Herons in south coastal British Columbia

Supervisors: Dr. Neville Winchester (University of Victoria), Ross Vennesland (Parks Canada)

Research Statement

I am an applied ecologist interested in how environmental variation across temporal and spatial scales affects the ecology and population trends of wide-ranging species. My motivation in understanding that variation is to inform when and where wildlife conservation efforts will be most effective. I believe strongly in collaborative research because it facilitates knowledge transfer, standardizes datasets, and maximizes funding available for conservation. I work towards standardizing protocols and sharing datasets in all my work and am fortunate to share that collaborative vision with many individuals and organizations.

Research Contributions

Importance of movement for aerial insectivore conservation (PhD): The study of animal movement can inform conservation research and management because it connects individual behaviour to habitat use and to population dynamics. Aerial insectivorous birds are a highly mobile group of species that are declining faster than any other group of birds in North America. I use the Common Nighthawk to understand home range movement, dispersal, and migration and incorporate that knowledge into conservation strategies for aerial insectivores. My PhD also provides insight into the basic ecology of the Common Nighthawk, which is one of the most poorly studied bird species in North America. As part of my PhD, I lead a large, international collaboration with the Smithsonian Migratory Bird Center, Environment and Climate Change Canada. I have also organized a network of collaborators across North America to standardize Common Nighthawk research methods and maximize conservation outcomes.

Ecological applications of bioacoustic technology (PhD): Ecologists are increasingly using sound as a non-invasive method to study acoustic animals like birds. I test and develop bioacoustic methods to improve their utility for ecology and conservation research, with particular focus on automated computer processing techniques. I use the Common Nighthawk as a bioacoustic model species because it has a simple, frequent, and consistent call, and its nocturnal behaviour precludes excessive sound

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masking from other acoustic species. My bioacoustic research is a collaboration with the Bioacoustic Unit. I have published four bioacoustic technology papers, have one in review, and have two final papers in preparation.

Citizen science monitoring for nightjars (PhD): The Common Nighthawk is a member of the nightjar family, which is a group of poorly understood nocturnal birds. As part of the non-profit organization WildResearch, I developed and manage a national citizen science program that surveys for nightjars. To date, over 500 volunteers have completed almost 8,000 surveys across Canada. The freely available data been used for a variety of applications, including independent research by several undergraduates at the University of Alberta. As manager for this program, I work closely with wildlife managers across North America on the conservation of this group of species and regularly invited to provide input at technical meetings.

Edge effects on grassland songbirds (MSc): The objective of my MSc thesis was to investigate potential mechanisms of grassland songbird decline in the south Okanagan of British Columbia. I studied the impacts of fragmentation by agriculture on grassland songbirds in the sagebrush shrubsteppe habitat at multiple scales. At a reproductive scale, I examined potential causes for higher nest predation rates in habitat adjacent orchards. At a community scale, I investigated potential local and landscape mechanisms for an agricultural edge effect on songbird community composition.

Urban ecology of Pacific Great Blue Herons (BSc): My undergraduate thesis used a long-term colony survey data set to study the nesting ecology of the Pacific Great Blue Heron in south coastal British Columbia. I studied nesting habitat availability and colony location choice in an anthropogenic landscape.

Refereed Publications

Knight, E.C., S. P. Hernandez, V. Bulitko, E.M. Bayne, B. Tucker. 2019. Pre-processing spectrogram parameters improve the accuracy of birdsong classification using convolutional neural networks. *Bioacoustics*. doi:10.1080/09524622.2019.1606734

D. Yip*, Knight, E.C.*, H. Audete, S. Wilson, C. Charchuk, P. Solymos, and E.M. Bayne. 2019. Sound level measurements from audio recordings provide objective distance estimates for distance sampling wildlife populations. *Remote Sensing in Ecology and Conservation*. doi:10.1002/rse2.118 *Equal contributions

Knight, E.C., and E.M. Bayne. 2018. Classification threshold and training data affect the quality and utility of focal species data processed with automated audio recognition software. *Bioacoustics*. doi:10.1080/09524622.2018.1503971

Ng, J.W., E.C. Knight, A.L. Scarpignato, A. Harrison, E.M. Bayne, and P.P. Marra. 2018. Full annual-cycle tracking identifies long distance migration route, nonbreeding habitat, and breeding site fidelity of a declining aerial insectivorous bird. *Canadian Journal of Zoology* 96(8):869-875. *Editor's Choice

Knight, E.C., J.W. Ng, C. Mader, R.M. Brigham, and E.M. Bayne. 2018. An inordinate fondness for beetles: first description of Common Nighthawk diet for the boreal biome. *The Wilson Journal of Ornithology* 130(2):525-531.

Knight, E.C., K. Hannah, G. Foley, C. Scott., M. Brigham, and E.M. Bayne. 2017. Recommendations for acoustic recognizer performance assessment with application to five common automated signal recognition programs. *Avian Conservation and Ecology* 12(2):14.

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Knight, E.C., R.G. Vennesland, and N.N. Winchester. 2016. Importance of proximity to foraging areas for the Pacific Great Blue Heron (*Ardea herodias fannini*) nesting in a developed landscape. *Waterbirds* 39(2).

Knight, E.C., N.A. Mahony, and D.J. Green. 2016. Local and landscape effects on the bird community in sagebrush shrubsteppe habitat fragmented by agriculture. *Agriculture, Ecosystems, and Environment* 223:278-288.

Knight, E.C., N.A. Mahony, and D.J. Green. 2014. Crop type influences edge effects on the reproduction of songbirds in sagebrush habitat near agriculture. *Avian Conservation and Ecology* 9(1): 8.

Manuscripts in Review

Knight, E.C., P. Solymos, and E.M. Bayne. *In revision*. Validation prediction: a protocol for increasing the efficiency of bioacoustic data processing with recognizers. Submitted to *Ecological Applications*.

Lostanlen, V., K. Palmer, E.C. Knight, C. Clark, H. Klinck, A. Farnsworth, T. Wong, J. Cramer, and J.P. Bello. *In review*. Long-distance Detection of Bioacoustic Events with Per-Channel Energy Normalization. Submitted to DCASE 2019.

Manuscripts in Prep (full drafts available)

E.C. Knight, A.C. Smith, E.M. Bayne, R.M. Brigham. *In prep*. Better together: A nightjar case study to evaluate how targeted survey programs can enhance population monitoring and habitat modelling for taxa of conservation concern. For submission to *Conservation Biology*.

E.C. Knight, A. Harrison, A. Scarpignato, S. Van Wilgenburg, P. Marra, E.M. Bayne, et al. *In prep*. Migratory connectivity profiles identify barrier crossings and breeding grounds as potential limiting stages of the annual cycle for a declining migratory bird. For submission to *Ecography*.

Conference Posters & Presentations

E.C. Knight, A. Harrison, A. Scarpignato, S. Van Wilgenburg, P. Marra, E.M. Bayne. Conservation implications of migratory connectivity for the Common Nighthawk. American Society of Ornithologists 2019 Conference. Anchorage, AK. **Oral presentation.**

E.C. Knight, A. Harrison, A. Scarpignato, S. Van Wilgenburg, P. Marra, E.M. Bayne. Migratory connectivity: Connecting Common Nighthawk populations across the annual cycle. Alberta Chapter of the Wildlife Society 2019 Conference. Canmore, AB. **Oral presentation.**

E.C. Knight, A.C. Smith, E.M. Bayne, R.M. Brigham. 2018. Shining a light on nocturnal species: Targeted citizen science surveys increase detections, trend estimate precision, and habitat prediction for nightjars. 27th International Ornithological Congress. Vancouver, BC. **Oral presentation.**

E.C. Knight, E.M. Bayne. 2018. Linking acoustic signal to Common Nighthawk habitat function in the boreal forest. Northern Research Day. Edmonton, AB. **Oral presentation.**

E.C. Knight, S. Van Wilgenburg, P. Marra, E.M. Bayne. 2018. Applications of a migratory network for a declining aerial insectivore, the Common Nighthawk. Movement Ecology of Aerial Insectivores Symposium. Lund, Sweden. **Invited oral presentation.**

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E.C. Knight, K. Hannah, G. Foley, C. Scott, E.M. Bayne, R.M. Brigham. 2017. Assessment and optimization of automated acoustic species for wildlife practitioners. Alberta Chapter of the Wildlife Society 2017 Conference. Lac La Biche, AB. **Oral presentation.**

E.C. Knight, E.M. Bayne. 2016. Can you hear me? Assessing automated acoustic recognition for Common Nighthawk habitat modelling. R.E. Peter Biology Conference. Edmonton, AB. **Poster presentation – Ph.D. First Place Winner.**

E.C. Knight, E.M. Bayne. 2016. Automated acoustic recognition for Common Nighthawk habitat modelling: challenges & opportunities. Alberta Chapter of the Wildlife Society 2016 Conference. Drumheller, AB. **Oral presentation.**

N.A. Mahony, E.C. Knight, D.J. Green. 2014. Local and landscape effects on the bird community in sagebrush shrubsteppe habitat fragmented by agriculture. AOU, COS, and SCO 2014 Joint Meeting. Estes Park, CO. **Oral presentation.**

Knight, E.C., N.A. Mahony, D.J. Green. 2012. Grassland songbirds: do edge effects vary between agricultural types? North American Ornithological Conference. Vancouver, BC. **Poster.**

Knight, E.C., N.A. Mahony, D.J. Green. 2012. Grassland songbirds: do edge effects vary between agricultural types? Ecological Society of America 97th Annual Meeting. Portland, OR. **Poster.**

Knight, E.C. 2012 Life on the edge: impact of vineyards on the nest predator community and nest success of songbirds in adjacent shrubsteppe. BC Field Ornithologists Annual General Meeting. Princeton, BC. **Invited oral presentation.**

Knight, E.C., R.G. Vennesland, and N.N. Winchester. 2010. The cost of waterfront property: nesting habitat availability and colony location choice for Pacific Great Blue Herons (*Ardea herodias fannini*) on a highly urbanized landscape. University of Victoria Vertebrates of BC Symposium. Victoria, BC. **Invited oral presentation.**

Presentations at Technical Meetings

E.C. Knight, A.C. Smith, E.M. Bayne, R.M. Brigham. 2018. Targeted nightjar surveys: How and why. Partners in Flight Western Working Group Meeting. Ft. Collins, CO. **Invited online presentation.**

E.C. Knight, E.M. Bayne, R.M. Brigham. 2019. Occupancy models reveal habitat associations of a Species at Risk, the Common Nighthawk. Shell Enhanced Learning Fund Symposium. Edmonton, AB. **Poster presentation.**

E.C. Knight, A.C. Smith, E.M. Bayne, R.M. Brigham. 2018. Targeted nightjar surveys: How and why. Canadian Wildlife Service Landbird Technical Committee meeting. Ottawa, ON. **Invited online presentation.**

E.C. Knight, A.C. Smith, E.M. Bayne, R.M. Brigham. 2018. Shining a light on nocturnal species: Targeted citizen science surveys increase detections, trend estimate precision, and habitat prediction for nightjars. Canadian Wildlife Service Landbird Technical Committee meeting. Ottawa, ON. **Invited online presentation.**

E.C. Knight, S. Van Wilgenburg, P. Marra, E.M. Bayne. 2018. Common Nighthawk connectivity project update. Partners in Flight Western Working Group Meeting. St. George, UT. **Invited online presentation.**

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E.C. Knight, E.M. Bayne. 2018. Recent advances in the use of ARUs in biodiversity monitoring. Alberta Biodiversity Chairs Summary Forum. Calgary, AB. **Oral presentation.**

Knight, E.C., E. Upham-Mills. 2017. A grad student perspective on field work at the University of Alberta. University of Alberta Field Research Office Information Session. Edmonton, AB. **Invited oral presentation.**

Knight, E.C. 2017. Advances & applications in Common Nighthawk bioacoustic monitoring. Canadian Wildlife Service Critical Habitat Team Meeting. Ottawa, ON. **Invited online presentation.**

E.C. Knight, T. Luszcz. 2017. Current common Nighthawk migratory connectivity and recovery efforts. Partners in Flight Western Working Group Spring Meeting. Santa Fe, NM. **Invited online presentation.**

E.C. Knight, R.M. Brigham, E.M. Bayne. 2017. Interpreting nighthawk: can acoustic signal be used to differentiate between habitat components? Alberta Biodiversity Committee Chairs Annual Meeting. Edmonton, AB. **Poster presentation.**

E.C. Knight, E.M. Bayne. 2016. Investigation of automated acoustic recognition for Common Nighthawk Habitat Modelling. Alberta Biodiversity Committee Chairs Annual Meeting. Calgary, AB. **Poster presentation.**

E.C. Knight. 2015. Preliminary nightjar detectability results for protocol optimization. Partners in Flight Western Working Group Spring Meeting. Tucson, AZ. **Online presentation.**

Knight, E.C., N.A. Mahony, D.J. Green. 2013. Do they fledge at the edge? Impacts of habitat fragmentation on Okanagan sagebrush songbirds. Canadian Wildlife Service Seminar Series. Vancouver, BC. **Oral presentation.**

Scholarships Awarded

- Andrew Stewart Memorial Scholarship (\$5,000; 2019)
- Izaak Walton Killam Memorial Scholarship (\$90,000; 2019 – 2020)
- CFUW Dr. Margaret McWilliams Pre-Doctoral Fellowship (\$11,000; 2019)
- ACTWS William Wishart Postgraduate Scholarship (\$1,500; 2019)
- Queen Elizabeth II Graduate Scholarship – Doctoral Level (\$15,000; 2018)
- CFUW Margaret Brine Graduate Scholarship for Women (\$4,500; 2018)
- Shell Enhanced Learning Fund (\$1,350; 2018)
- Green & Gold Student Leadership and Professional Development Grant (\$735; 2018)
- Alberta Society of Professional Biologists Graduate Scholarship (\$1,800; 2017)
- Alberta Graduate Citizenship Award (\$2,000; 2016)
- University of Alberta President's Doctoral Prize of Distinction (\$5,000; 2016)
- Bill Shostak Wildlife Award (\$11,100; 2016)
- University of Alberta Science Graduate Scholarship (\$2,000; 2015)
- University of Alberta President's Doctoral Prize of Distinction (\$10,000; 2015)
- University of Alberta Doctoral Recruitment Scholarship (\$15,000; 2015)
- NSERC Postgraduate Scholarship-Doctoral (\$63,000; 2015-2017)
- SFU Travel Award (2012)
- NSERC Alexander Graham Bell Canada Graduate Scholarship (\$18,300; 2011)

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- UVic President's Scholarship (2008)
- Jamila Vlasta Von Drak Thouvenelle Co-op Scholarship (2008)
- BC Federation of Naturalists Rene Savenye Scholarship (\$1,500; 2007)

Research and Travel Grants Awarded

- J Gordin Kaplan Graduate Student Travel Award (\$1,500; 2019)
- UofA Northern Research Awards; *Determining the importance of boreal populations for full annual cycle conservation of the Common Nighthawk* (\$2,450; 2019)
- Northern Scientific Training Program; *Determining the importance of boreal populations for full annual cycle conservation of the Common Nighthawk* (\$2,024; 2019)
- Various conference travel awards; ACTWS, SCO, AOS (~\$1500; 2016-2019)
- Kay Ball Memorial Graduate Student Research Travel Award; *Common Nighthawk Migratory Connectivity Project* (\$4,500; 2018)
- UofA Northern Research Awards; *Linking acoustic signal to Common Nighthawk habitat components* (\$3,200; 2017)
- Northern Scientific Training Program; *Linking acoustic signal to Common Nighthawk habitat components* (\$3,292; 2017)
- Alberta Conservation Association Grants in Biodiversity; *Linking Hierarchical Habitat Relationships of Common Nighthawks in a Dynamic Landscape* (\$13,730; 2016-2017)
- Fairmont CARES; *WildResearch Foundation* (\$10,000; 2016)
- TD Friends of the Environment Foundation; *WildResearch Nightjar Survey* (\$5,000; 2016)
- Brink McLean Grassland Conservation Fund; *Roadside Monitoring of Nightjar Populations in BC's Grasslands* (\$2,500; 2016)
- Canada Summer Jobs; *Nightjar Survey Coordinator* (\$4,225; 2016)
- TD Friends of the Environment Foundation; *WildResearch Nightjar Survey Program* (\$10,000; 2015)
- Bird Studies Canada Baillie Fund; *BC Nightjar Survey* (\$3,500; 2015)
- BC Nature Club Grant; *Community Building for the BC Nightjar Survey* (\$1,400; 2015)
- MEC Capacity Building Contribution; *BC Nightjar Survey Citizen Science Atlas* (\$9,602; 2015)
- Science Horizons Youth Internship Program; *BC Nightjar Survey* (\$12,000; 2014)
- Science Horizons Youth Internship Program; *BC Nightjar Survey* (\$12,000; 2013)
- Pacific Conservation Assistance Fund; *WildResearch Nightjar Survey* (\$5,300; 2013)
- Brink McClean Grassland Conservation Fund; *Impacts of Shrubsteppe Fragmentation by Agriculture on Nest Predation of Songbirds* (\$2,500; 2011)

Teaching Experience

Biology of Birds TA, University of Alberta, Edmonton, AB (Jan – Apr 2019)

Conservation Biology TA, Simon Fraser University, Burnaby, BC (Jan – Apr 2011 & 2013)

Science Tutor, Native Education Centre, Vancouver, BC (Sept 2010 – April 2011)

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Student Supervision & Mentorship

Supervisor - BIOL 499 Research Project, *University of Alberta* (Sep 2016 – Apr 2017)

Supervisor - BIOL 498 Research Project, *University of Alberta* (Sep 2016 – Dec 2016)

Supervisor - BIOL 298 Research Project, *University of Alberta* (Sep 2016 – Dec 2016)

Canada Summer Jobs Mentor, *WildResearch* (May 2016 – Aug 2016)

Supervisor - BIOL 398 Research Project, *University of Alberta* (Sep 2015 – Dec 2015)

Science Horizons Mentor, *WildResearch* (May – Oct, 2014 & 2015)

Co-op Program Mentor, *University of Victoria* (Jan – Apr 2009)

Leadership

Graduate Student Representative, *University of Alberta Biological Sciences Safety Committee*, Edmonton, AB (Jan 2018 – present)

Coordinator, *Common Nighthawk Migratory Connectivity Project*, Edmonton, AB (Sept 2016-present)

Program Manager, *WildResearch Nightjar Survey*, Vancouver, BC (Jan 2012 – present)

Vice-President, Secretary, *WildResearch*, Vancouver, BC (Nov 2011 – Feb 2016)

Secretary, *SFU Biological Sciences Graduate Caucus*, Burnaby, BC (Nov 2010 – Nov 2011)

President/Founder, *UVic Natural History Club*, Victoria, BC (Sep 2008 – Apr 2009)

Coordinator, *UVic Wilderness Club*, Victoria, BC (Sep 2006 – Apr 2009)

Ecology Experience

Bioacoustic Technician, *University of Alberta*, Edmonton AB (May 2015 – Aug 2015)

Project Biologist, *Spencer Environmental Management Services*, Edmonton AB (Dec 2013 – Apr 2015)

Pacific Great Blue Heron Consultant, *Parks Canada*, Vancouver, BC (part-time; 2009 - present)

Landbird Assessment Crew Leader, *Environment Canada*, Edmonton AB (May – Jul 2013)

Wildlife Technician, *Environment Canada*, Okanagan, BC (May – Jul 2010)

Mist-net Assistant, *University of Southern Mississippi*, Johnson's Bayou, LA (Mar – Apr 2010)

Herbarium Assistant, *University of Victoria*, Victoria, BC (Jan – Apr 2009)

Southwestern WIFL Bander, *SWCA Environmental Consultants*, Lake Havasu, AZ (May – Aug 2009)

Bird Banding Intern, *Institute for Bird Populations*, Ft. Leonard Wood, MO (May – Aug 2008)

Bird Banding Volunteer, *Vaseux Lake Bird Observatory*, Okanagan, BC (Aug 2007)

Song Sparrow Research Assistant, *University of Western Ontario*, Gulf Islands, BC (Apr – Aug 2006)

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Recent Public Science Communication

Knight, E.C. 2019. Getting the Whole Picture: What We've Learned by Studying Nighthawks Year-Round. Alberta Wildlife Association. Calgary, AB. **Presentation.**

Knight, E.C. 2019. Eavesdropping on wildlife: Using sound to inform conservation. Canadian Federation of University Women Edmonton Academic Awards AGM. Edmonton, AB. **Presentation.**

A. Noble-Dalton, and E.C. Knight. 2019. WildResearch Nightjar Survey 2018 Annual Report. **Report** produced for WildResearch.

Knight, E.C. 2018. Birds of the Unknown: Ecology & Conservation of Nightjars in Canada. Red Deer River Naturalist Group. Red Deer, AB. **Presentation.**

Knight, E.C. 2018. Strength in numbers: Collaboration and new technology reveal secrets of the Common Nighthawk. Prairie Conservation Action Plan. Edmonton, AB. **Webinar Presentation.**

Knight, E.C., and A. Noble-Dalton. 2018. WildResearch Nightjar Survey 2017 Annual Report. **Report** produced for WildResearch.

Knight, E.C. 2017. WildResearch Nightjar Survey 2016 Annual Report. **Report** produced for WildResearch.

Knight, E.C. 2016. Birds of the Unknown: Ecology & Conservation of Nightjars in Canada. Edmonton Nature Club Bird Studies Group. Edmonton, AB. **Presentation.**

Knight, E.C. 2016. Fighting fire with bikes: University of Alberta researchers use fat bikes to study birds in the wake of the Fort McMurray wildfire. Wild49. **Blog Post.**

Knight, E.C. 2016. New Citizen Science Program Comes to Alberta: The WildResearch Nightjar Survey. Bios 31(3):3,11.

Hood, A., and Knight, E.C. 2016. WildResearch Nightjar Survey Alberta Orientation. Bruderheim, AB. **Presentation.**

Knight, E.C. 2016. Canadian Nightjar Survey Protocol – WildResearch Draft. WildResearch. **Protocol.**

Knight, E.C. 2016. It's all fen and games – field ecology adventures in and around McClelland Lake fen. Wild49. **Blog Post.**

E.C. Knight. 2016. What are Nightjars? BC Nature Magazine 53(1): 23. **Article.**

Shariff, A., and E.C. Knight. 2016. BC Nightjar Survey 2015 Annual Report. Report produced for WildResearch.

Noble, V., and E.C. Knight. 2015. BC Nightjar Survey 2014 Annual Report. WildResearch. **Report.**

E.C. Knight. 2015. WildResearch's BC Nightjar Survey Takes Flight. BC Nature Magazine 53(1): 14. **Article.**

Knight, E.C. 2015 – 2018. Nightjar News. **Bi-monthly Newsletter.**

Other Science Communication

- Twitter (@ellyknight): Tweeting about bioacoustics, movement ecology, conservation, the boreal forest, and nightjars to 1,700+ followers.

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- PhyloBoreal: an educational card game about the boreal ecosystem. Available for sale [here](#) and at the Royal Alberta Museum.

Media

2018, July 30, *Global News 770 CHQR*, Nighthawk migration - what do we know about the bird? [Radio](#).

2018, July 24, *Radio-Canada*, Sur les traces de l'engouement d'Amérique. [Article](#).

2018, July 24, *The Globe and Mail*, 'Little backpacks': GPS used to track nighthawks' migration from northern Alberta to Brazil. [Article](#).

2018, July 24, *CBC Edmonton*, 'Little backpacks': GPS used to track nighthawks from northern Alberta to Brazil. [Article](#).

2018, July 24, *Canadian Science Publishing*, Unravelling the Mystery of Where Common Nighthawks Fly. [Article](#).

2018, April 26, *Prairie Naturalist*, Episode 101. [Radio](#).

2018, April, *Smithsonian Air & Space*, Penguin Spotting, and Other Cool Satellite Tricks. [Article](#).

2017, December 1, *Alberta Wilderness Association*, Conservation corner: How to hunt for nighthawks. [Article](#).

2017, November, *Firestorm: How Wildfire Will Shape our Future*. **Book**.

2017, July 24, *Government of Canada*, Science Horizons intern: Azim Shariff. [Article](#).

2017, June 21, *Nature*, Sustainability: A greener culture. [Article](#).

2016, December 21, *Hakai Magazine*, Big bird in the city. [Article](#).

2016, October 31, *Contours*, Future focus: Life after the Fort McMurray fire. [Article](#).

2016, October 11, *The Gateway*, Biologists swap ATVs for fat bikes in wake of Fort McMurray fires. [Article](#).

2016, September 23, *CBC News*, Fort McMurray wildlife researchers ditch ATVs. [Article](#).

2016, September 23, *Folio*, Rough-riding biologists turn to fat bikes for field work. [Article](#).

2016, September 22, *CBC Radio Active*, Interview about using fat bikes for science. **Radio**.

2016, September 22, *CBC TV*, Interview about using fat bikes for science. **TV**.

2016, September 22, *Edmonton Metro*, Scientists on bikes: Alberta researchers ditch quads after Fort McMurray ban. [Article](#).

2017, July 7, *CBC News*, Wildlife returns as forest regenerates after Fort McMurray wildfire. [Article](#).

2015, November 20, *Yukon News*, Fewer nighthawks grace the aerial diner. [Article](#).

Professional Development Courses

- Becoming Leaders: An Introduction to Leadership, WinSETT (2018)
- Occupancy Modelling, *Parks Canada* (2018)

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- Introduction to Linear Mixed Effects Models and GLMM, *Highland Statistics* (2018)
 - Data Visualization in R, *University of Alberta* (2016)
 - Microsoft SQL Server Level II, *NAIT* (2016)
 - Microsoft SQL Server Level I, *NAIT* (2016)
 - Communication Skills for Leaders, *Mount Royal College* (2015)
 - Fish Identification Workshop, *Alberta Society of Professional Biologists* (2015)

Technical Skills

- **Program Management:** Grant application and management, employee and volunteer coordination, stakeholder engagement, terms of reference and protocol documentation, information management.
- **Field Ecology** Bioacoustics, animal track ID, radiotelemetry, vegetation ID & surveys, ecosite classification, endangered species, herbarium & insect collection, camping in remote areas, GPS, 4WD, trailering, ATV, boat operation.
- **Field Ornithology** Point counts, mist-netting & banding, transmitter attachment, fecal and blood sampling, nest searching.
- **Ecology Research** Landscape, conservation & community ecology, avian behaviour, knowledge of provincial & federal environmental legislation, landcover classification, univariate and multivariate statistical analysis, machine learning, signal detection.
- **Computer** GIS (ArcGIS, Q), MS office esp. Excel and Access, SQL, R, PC-ORD.

Professional Memberships

Professional Biologist, *Alberta Society of Professional Biologists* (2014 – 2017; currently inactive)

Member, *Alberta Chapter of the Wildlife Society* (2015 – present)

Member, *Canadian Society of Ornithologists* (2011 – present)

Member, *Citizen Science Association* (2014 – present)