

Barbara Frei

Dept. of Biology, University of Ottawa, Ottawa, ON
Dept. of Natural Resource Science, McGill University, Montreal, QC
barbara.frei@mail.mcgill.ca

Education

- 2014 – 2016 FQRNT Postdoctoral Fellow, University of Ottawa (Supervisor: Dr. Jeremy Kerr)
Visiting Scholar, McGill University (Supervisor: Dr. Elena Bennett)
- 2009 – 2013 Ph.D. (Natural Resource Sciences), McGill University
Thesis: Roles of maladaptive behavior and evolutionary traps in the decline of a
threatened woodpecker (Supervisors: Drs. James Fyles and Joe Nocera (Trent U.))
- 2005 – 2008 M.Sc. (Natural Resource Sciences), McGill University
Thesis: Ecology and management of Bobolinks in hayfields of Québec and
Ontario (Supervisors: Drs. Rodger Titman and David Bird)
- 2000 – 2004 B.Sc. honors (Biology), Carleton University
Thesis: Vibrational communication in Hook-tip moth caterpillars
(Supervisor: Dr. Jayne Yack)

Publications

Refereed publications

- Frei B**, Nocera JJ, Fyles J. 2015. Interference competition and nest survival of the threatened Red-headed Woodpecker. *Journal of Ornithology*. DOI 10.1007/s10336-015-1177-66
- Frei B**, Fyles J, Nocera JJ. 2013. Maladaptive habitat use of a North American woodpecker in population decline. *Ethology* 119: 377-388.
- Guedes RNC, Matheson SM, **Frei B**, Smith ML, Yack JE. 2012. Vibrational detection and discrimination in the masked birch caterpillar (*Drepana arcuata*). *Journal of Comparative Physiology A* 198: 325-335.
- Frei B**, Bird DM, Titman RD. 2010. Bobolink egg mass variability and nestling growth patterns. *Wilson Journal of Ornithology* 122: 432-438.
- Hudson MA, Gahbauer M, Leckie S, **Frei B**. 2008. Unusually Extensive Preformative Molt in Hatching-year Song Sparrows. *North American Bird Bander* 33: 1-6

In revision/ preparation

Frei B, Fyles J, Berl JL, Edwards JW, Nocera JJ. *In revision*. Low fecundity of Red-headed Woodpeckers at the northern edge of the range. *Wilson Journal of Ornithology*

Frei B, Withgott JH, Rodewald PG, Smith KG. *In revision*. Red-headed Woodpecker (*Melanerpes erythrocephalus*), *The Birds of North America Online* (A. Poole, Ed.). Ithaca, Cornell Lab of Ornithology

Frei B, Bennett E, Kerr JT. *In prep*. Attributes of land sharing, land sparing, and biodiversity conservation potential in a temperate agroecosystem. Target journal: *Conservation Biology*

Frei B, Nocera JJ, Cadille J, Fyles J. *In prep*. Mapping temporal fluctuations in the relationship between a threatened species and two possible competitors. Target journal: *Condor*

Frei B, Fyles J, Nocera JJ. *In prep*. Avian communities in deciduous woodlots of Ontario. Target journal: *The Canadian Journal of Forestry Research*.

Other publications

Frei B. 2014. Have you seen the Redhead? *Ontario Nature*.

Howes L-A, **Frei B**. 2013. *North American Banding Council Manual to Banding at Nest Boxes*. North American Banding Council. 35 pp.

McCracken JD, Reid RA, Renfrew RB, **Frei B**, Jalava JV, Cowie A, Couturier AR. 2013. DRAFT Recovery Strategy for the Bobolink (*Dolichonyx oryzivorus*) and Eastern Meadowlark (*Sturnella magna*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. viii + 86 pp.

Frei B. 2013. Roles of maladaptive behaviour and evolutionary traps in the decline of a threatened woodpecker. Ph.D. Dissertation, McGill University, Montréal, QC. 170 pp.

Frei B. 2011. Ontario's Threatened Bobolink. *Ontario Field Ornithologists* 29(3): 9-10.

Frei B. 2011. Researching Ontario's Red-headed Woodpeckers. *Ontario Field Ornithologists* 29(1): 8-9.

Frei B. 2009. Ecology and management of Bobolinks in hayfields of Québec and Ontario. M.Sc. Dissertation, McGill University, Montréal, QC. 96 pp.

Frei B. 2009. Environmental review report for the Wolfe Island wind project. www.waterkeepers.ca/documents/2009-03_FREI.pdf

Frei B. 2008. Étude Sur l'Écologie du Goglu des Prés: Ecological Study of Bobolinks. Canadian Wildlife Service Technical Report, Environment Canada. 25 pgs.

Teaching Experience

Lecturer, Natural History of Vertebrates, McGill University (2011)

- Responsible for 3 hours of lecture and 3 hours of laboratory or field trips a week. Class size of 63 first and second year undergraduate students from a diversity of backgrounds. Used a mixture of traditional lecturing, along with discussions, debates, presentations, and hands-on learning in the field. Topics covered included: phylogenetics, food webs, macroecology, community structure, invasive species, biodiversity, cognition, and the arctic, boreal, and deciduous forest ecosystems.

Guest lecturer, multiple courses, McGill University (2007 – 2013)

- Presented guest lectures or hosted guest field trips, often in consecutive years, in the following courses: Ornithology, Scientific Communication, Communication Ecology, Natural History of Vertebrates, and the St.-Lawrence Ecosystems. This included presentations on my research, discussion on the ethics of research and scientific communication to the public, the life of a graduate student and researcher, and demonstrating techniques of field ornithology including: bird identification, nest searching, capture with mist-nets, bird banding, aging, and sexing.

Teaching assistant, multiple courses, McGill University (2005 – 2013)

- Responsible in leading classroom discussions, laboratory experiments, and field trips. Courses taught include: Ornithology, Mammology, Introduction to Physiology, Introduction to Cellular Biology, Natural History of Vertebrates, and Scientific Communication.

Scientific communication, leadership, and public engagement

- Director of the McGill Bird Observatory, an active research station dedicated to research, conservation, and education. Involved in training > 100 volunteers, and hosting >20 group visits including up to three different undergraduate courses per year
<http://www.migrationresearch.org/mbo.html>
- Trained in science communication and policy by COMPASS
<http://www.compassonline.org>, an organization aimed at training scientists to engage and communicate with media
- Guest on CBC radio discussion on birds in agricultural areas

- Given dozens of presentations at naturalist meetings and other public venues; written numerous newspapers and newsletter articles
- Blogger for 'Montreal's Ecosystem at Your Service', an outreach and education initiative <http://esmontreal.ca>

Conference and workshops presentations (selection only)

Frei B, Fyles J, Cardille J, Nocera JJ. 2014. Missing the small picture: What is a global model hiding in the story of the Red-headed Woodpecker's decline? AOU/COS/SCO Joint Meeting, Estes Park, CO, USA.

Frei B, Nocera JJ, Fyles J. 2013. The early bird gets the competition: Invasive species lowers breeding success of a threatened woodpecker. Canadian Society for Ecology and Evolution, Kelowna, BC, Canada. (2nd place, best student presentation)

Frei B, Fyles J, Nocera JJ. 2012. Red-headed Woodpeckers exhibit non-ideal habitat selection in a human- modified landscape. North American Ornithological Conference V, Vancouver, BC, Canada.

Frei B, Fyles J, Nocera JJ. 2012. A threatened woodpecker makes bad choices in a rapidly changing world. Symposium on Biodiversity Science. Québec Centre for Biodiversity Science. Montréal, Coeur de science, QC, Canada.

Frei B, Fyles J, Nocera JJ. 2012. Red-headed Woodpecker maladaptive habitat use and competition at the northern edge of their range. Société Québécoise pour l'étude Biologique du Comportement. Université de Montréal, Montréal, QC, Canada.

Frei B, Nocera JJ, Fyles J. 2010. Biodiversity in Your Backyard: The story of the Red-headed Woodpecker in central Ontario. Nature Conservancy Canada and Rice Lake Plains Bird Conservation Workshop, Alderville, ON, Canada.

Frei B, Bird DM, Titman RD. 2008. Ecology and management of Bobolinks in eastern hayfields. Joint Meeting of American Ornithologists' Union, Cooper Ornithological Society, and Society of Canadian Ornithologists (Poster) Portland, OR, USA. (poster)

Frei B, Bird DM, Titman RD. 2007. Nest success, microhabitat selection, and management of Bobolinks (*Dolichonyx oryzivorus*) in farmlands of Québec and Ontario. Society of Canadian Ornithologists, Lake Opinicon, ON, Canada

Grants and awards

- FRQNT, Postdoctoral Fellowship, 2014-2016: \$60,000
- Canadian Society for Ecology and Evolution, Student Presentation Award: \$300
- McGill University, Graduate Excellence Fellowship, 2013: \$3,200
- McGill University, Graduate Student Travel Award, 2012: \$500
- McGill University, Graduate Excellence Fellowship, 2012: \$4,000
- Species at Risk Research Fund for Ontario (SARRFO), 2012: \$17,072
- Species at Risk Stewardship Fund (SARSF), 2010-2011: \$50,680
- FRQNT, Graduate Scholarship, 2011-2012: \$20,000
- NSERC, Postgraduate Scholarship D2, 2009-2011: \$42,000
- McGill University Graduate Student Fellowship, 2009: \$5,000
- Trent University Dean's PhD Scholarship, declined: \$33,000
- Bird Protection Quebec, Alfred B. Kelly Research Grant, 2008: \$3,000
- Canadian Wildlife Service, Environment Canada, Research Grant, 2007-2008: \$10,000
- Bird Protection Quebec, Alfred B. Kelly Research Grant, 2007: \$3,000
- Fondation de la Faune de Québec, Research Grant, 2006-2007: \$10,000
- NSERC, Canada Graduate Scholarship, 2005-2007: \$35,000
- McGill University Graduate Student Fellowship, 2005: \$5,000
- FRQNT, Graduate Scholarship, declined: \$30,000
- NSERC USRA, Carleton University, 2003: \$4,500
- NSERC USRA, Carleton University, 2002: \$4,500
- Carleton University, President's Entrance Scholarship, 2000-2004: \$10,000

Total funding generated = \$350,752 CAN.

Research and field experience

Researcher, Red-headed Woodpecker outreach and conservation May – August 2010/11

Drs. James Fyles and Joe Nocera, McGill and Trent University

- Responsible for all outreach, education and monitoring logistics for a species-at-risk research and outreach project
- Tasks including but not limited to: website creation and management, creation and presentation of information talks, design and distribution of media advertisement and information brochures, visiting private landowners and public land managers interested in conservation and management efforts, data assessment and final report writing

Volunteer, Goose bander

August 2009

Dr. Joe Nocera, Ontario Ministry of Natural Resources

- Heli-surveys of Canada Goose flocks, as well as goose capture, sexing, molt scoring and banding
- Included travel and stay to remote Cree town of Peawanuck, Ontario, Canada

Contractor, Rusty Blackbird conservation

May – July 2009

Dr. Joe Nocera, Ontario Ministry of Natural Resources

- Extensive avian community surveys
- Nest-searching and monitoring for Rusty Blackbirds (*Euphagus carolinus*)
- Measured a variety of wetland habitat characteristics

Contractor, breeding bird surveys

May – July 2008

Jacques Whitford Environmental, St. John's, Nfld

- Extensive boreal breeding bird surveys in remote areas of Newfoundland and Labrador
- Included extensive GPS use, survey sites planning, travel across difficult terrain, and training of team members

Researcher, Bobolink conservation and management

May – August 2006/7

Drs. Rodger Titman and David Bird, McGill University

- Responsible for all planning and logistics of a field study on a threatened bird species
- Main tasks were nest-searching and monitoring of Bobolinks (*Dolichonyx oryzivorus*) in hayfields of Québec and Ontario
- Other field experiences included habitat and vegetation measurements and identification of grassland bird species

Contractor, breeding bird surveys

May – June 2005

Dr. Ryan Zimmerling, Bird Studies Canada

- Extensive boreal breeding bird surveys in remote areas of northern Ontario
- Included identification of boreal bird species, solo navigation of transects for point counts, use of GPS system and digital recording equipment

Research assistant, fish physiology lab

May – August 2003

Dr. Katie Gilmour, Carleton University

- NSERC Undergraduate Student Research Award recipient
- Tested behavioral effects of hypoxia on Rainbow Trout (*Oncorhynchus mykiss*) in a laboratory setting

Research assistant, neuroethology lab

May – August 2002

Dr. Jayne Yack, Carleton University

- NSERC Undergraduate Student Research Award recipient
- Researched vibration communication in Hook-tip Moth (*Drepana arcuata*) caterpillars in a laboratory setting

Volunteer, marsh bird study

May – August 2001

Dr. Ryan Zimmerling, University of Western Ontario

- Assisted with nest searching of marsh species, and monitoring nest boxes of Hooded Mergansers and Wood Ducks, including egg and duckling handling and measurements

Training

I supervised, in a research context, 16 people, including 12 undergraduate students:

A. Corriveau, McGill University (independent-class research student)	2014
L. Currin, McGill University (banding station intern)	2013
S. Saldanha, McGill University (field assistant)	2011
J.-A. Gagnon, McGill University (field assistant)	2011
L. Bardo, McGill University (field assistant)	2011
V. Aponte, McGill University (field assistant)	2010
S. Gibbs, Trent University (field assistant)	2009/10
S. Duval, Cégep de la Pocatière (banding station intern)	2008
R. Verkade, McGill University (field assistant)	2007
R. Theorin-Gosselin, McGill University (field assistant)	2007
C. Lecoœur, ENITA de Bordeaux (field assistant)	2006
K. Robinson, McGill University (field assistant)	2006

Professional/academic service

- Reviser of Birds of North America accounts for Cornell University (2013 – present)
- Board of Directors for Bird Protection Québec; serving on Research and Conservation Committees (2010 – present)
- Peerage of Science member and reviewer, PEQ score 4.9 with a featured essay
<http://www.peerageofscience.org/review/review-examples/> (2012 – present)
- Board of Directors for the Migration Research Foundation, Inc. (2013 – present)
- Organizing Committee for the Symposium for Women Entering Ecology and Evolution Today (SWEET) <http://sweetecoevo.weebly.com> (2014 and 2015)
- Organizing Committee and Moderator for McGill University's Women in Academia Symposium Series (2014)
- Species expert for the Bobolink and Eastern Meadowlark Recovery Team; a joint initiative between Bird Studies Canada and the Ontario Ministry of Natural Resources (2010-2013)
- Reviser of Breeding Bird Atlas of Ontario (2006)